IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

HY-KO PRODUCTS COMPANY LLC,	)	
	)	
Plaintiff,	)	
	)	
v.	)	**C.A. No. 2:21-cv-00197-JRG**
	)	
THE HILLMAN GROUP, INC.,	)	
	)	
Defendant.	)	

DECLARATION OF ROBERT ALMBLAD

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DISPUTED CLAIM CONSTRUCTIONS

I. U.S. Patent No. 9,687,920

#	Term	Claim(s)	Hillman's Construction	Hy-Ko's Construction
1	"key positioner configured to engage said master key"	1, 10, 19	**Function:** engage and position said master key **Structure:** finger engaging the side of the master key Alternatively, to the extent 35 U.S.C. § 112(6) does not apply, "positioner finger engaging the side of the master key"	35 U.S.C. § 112(6) does not apply; plain and ordinary meaning; in the alternative, "positioning device capable of engaging the master key"
2	"tip view"	10	view of the key into the tip towards the head	Plain and ordinary meaning; in the alternative, "view of a tip"
3	"substantially tip view"	10	Indefinite	Not indefinite; plain and ordinary meaning; in the alternative, "view including a tip"
4	"measure a thickness"	18	Indefinite Alternatively, "measure the distance from the lowest to highest point of the key"	Not indefinite; plain and ordinary meaning
5	"the housing"	18	Indefinite	Not indefinite; plain and ordinary meaning; in the alternative, "a housing"

II. U.S. Patent No. 9,656,332

#	Term	Claim(s)	Hillman's Construction	Hy-Ko's Construction
6	"positioning said master key to a desired location to align the master key with an optical imaging device"	11	This step must occur after the "receiving" step.	Plain and ordinary meaning
7	"selectively capturing a second image"	11	This step must occur after the "determining" step.	Plain and ordinary meaning; in the alternative, "capturing a second image in a selected manner"

III. U.S. Patent No. 10,421,133

#	Term	Claim(s)	Hillman's Construction	Hy-Ko's Construction
8	"retention mechanism panel"	1, 24	slidable panel with a retention mechanism located on it	Plain and ordinary meaning In the alternative, "panel with a retention mechanism"
9	"An integrated key duplication machine"	1	The preamble is limiting	This language appears in the preamble and is not a limitation, therefore no construction is required; in the alternative, plain and ordinary meaning.
10	"A plurality of key duplication systems"	11	The preamble is limiting	This language appears in the preamble and is not a limitation, therefore no construction is required; in the alternative, plain and ordinary meaning.
11	"key blank identification system configured to operate individually from the key cutting system"	1, 11, 24	Indefinite	Not indefinite, plain and ordinary meaning; in the alternative, "key blank identification system capable of operating independently from the key cutting system"

IV. U.S. Patent No. 9,682,432

#	Term	Claim(s)	Hillman's Construction	Hy-Ko's Construction
12	"for communicating with a transponder on the key"	1, 13	for communicating with a transponder on the key in the key load position	Plain and ordinary meaning; in the alternative, "for receiving data from and/or transmitting data to a transponder on the key"
13	"for communicating with a transponder on the master key [or key blank]"	8, 20	for communicating with a transponder on the master key [or key blank] in the key load position [retention mechanism]	Plain and ordinary meaning; in the alternative, "for receiving data from and/or transmitting data to a transponder on the master key"

#	Term	Claim(s)	Hillman's Construction	Hy-Ko's Construction
14	"A method for identifying [and duplicating] a key"	1, 8, 13	The preamble is limiting.	This language appears in the preamble and is not a limitation, therefore no construction is required; in the alternative, plain and ordinary meaning.
15	"An identification system for duplicating keys"	20	The preamble is limiting.	This language appears in the preamble and is not a limitation, therefore no construction is required; in the alternative, plain and ordinary meaning.

DECLARATION OF ROBERT ALMBLAD

I, Robert Almblad, do hereby declare as follows:

I. INTRODUCTION

1. I have been retained on behalf of The Hillman Group, Inc. ("Hillman"), and its counsel, McKool Smith, P.C., as an expert in this proceeding. I am personally knowledgeable about the matters stated herein and am competent to make this declaration.

2. I understand that Hillman will submit this Declaration in connection with a brief supporting its proposed construction of various terms in certain claims of the Patents-in-Suit.

3. I receive compensation at an hourly rate of $125 per hour for my time working on this matter, plus expenses. I have no financial interest in Hillman or in the patents involved in this litigation, and my compensation is not dependent on the outcome of this litigation. The conclusions I present are due to my own judgment.

II. BACKGROUND AND QUALIFICATIONS

4. I have over thirty years of experience with automated key copying technology. I founded Credit Card Keys, Axxess, and Laser Keys, each of which developed automated key copying technology. My CV is attached to this declaration as Exhibit 2. I am an inventor on numerous patents, including the following U.S. patents relating to keys:

- Flat plastic key with rigid torque transfer insert (US5029459)
- Flat plastic key with shortened key alignment groove (US5201203)
- Key cutting machine with a code selectable key duplicating system (US5271698)
- Key handle applique (USD0439134)
- Key handle applique set (USD0405679)
- Key positioning fixture for a key cutting machine (US5556240)
- Method and apparatus for aligning and cutting single-sided and double sided keys (US5443339)

- Method and apparatus for aligning and cutting single-sided and double-sided keys (US5607267)
- Method and apparatus for automatically making keys (US5807042)
- Method and apparatus for automatically making keys (US6065911)
- Method and apparatus for duplicating keys using tip-referenced alignment between key blank and master key (US5314274)
- Plastic card/key combination and hinge structure (US4677835)

5. I studied business and economics at Loyola University Chicago, Northwestern University, and the University of Colorado.

6. Axxess was a pioneer in the key duplication space that ultimately become acquired by Hillman around 2000. Hillman stated the following in its SEC filing regarding Axxess. "The patent-protected Axxess Precision Key Duplication System revolutionized the metal key duplication process, allowing key duplication to be transformed into a highly profitable revenue source within Big Box retailers (defined as mass merchants, home centers, large-format grocery/drug centers). This system has been placed in over 10,000 retail locations to date….Axxess Precision Key Duplication System creates high quality duplicate keys with the precision of a locksmith while minimizing the technical skill required by operators. The system was developed in response to retailers needs for reducing the miscut rate on keys. Axxess keys provides retailers with nearly ten times more gross profit per square foot than the average of all products sold in grocery and mass merchant channels."[1] I was instrumental in the design and engineering of the Axxess system and technology discussed above, and I am an inventor on many of the Axxess patents related to this technology.

7. I have received a number of awards for my work related to key technology. For example, in 1987, for my work on the plastic credit card key, Dupont awarded me the most

[1] Hillman's SEC filing for fiscal year ended December 31, 2000. Available at https://www.sec.gov/Archives/edgar/data/1029831/000095011601000560/0000950116-01-000560.txt.

"inventive use" of plastics in 1987 and featured me on the front cover of their 100,000 employee magazine. My patents have been cited on the covers of each of the patents-in-suit, as well as many other Hy-Ko patents. The '432 patent-in-suit, for example, cites at least eight of my patents and published patent applications on the cover, and each of these were cited by Hy-Ko to the Patent Office as relevant prior art pertinent to the patentability of Hy-Ko's claims.

III. SCOPE OF ASSIGNMENT AND MATERIALS CONSIDERED

8. I have been retained by Hillman to provide an explanation to the Court regarding the inventions described in the Patents-In-Suit. I understand that the patents have been asserted by Hy-Ko Products Company LLC against Hillman. I have also been retained to provide my opinion regarding the meaning of certain terms to persons of ordinary skill in the field of the inventions and to address certain issues of claim indefiniteness.

9. In preparing this Declaration, I am relying on my own knowledge and expertise as well as the following documents:

- The Patents-In-Suit:

  U.S. Patent No. 9,656,332 to Bass et al. ("332 patent")

  U.S. Patent No. 9,682,432 to Mutch et al. ("432 patent")

  U.S. Patent No. 9,687,920 to Bass et al. ("920 patent")

  U.S. Patent No. 10,421,133 to Bass et al. ("133 patent")

- Prosecution histories for the Patents-In-Suit, which I understand constitute the exchange of correspondence between the Patent Office and the applicant;
- The parties' claim construction statements, and the non-confidential portions of the intrinsic and extrinsic evidence cited in those statements; and
- The other references cited within this Declaration.

IV. PERSON OF ORDINARY SKILL IN THE ART (POSA)

10. When interpreting a patent, I understand that it is important to view the disclosure and claims of that patent from the level of ordinary skill in the relevant art at the time of the invention. My opinion of the level of ordinary skill in the art with regard to the Patents-in-Suit is based on my personal experience working and teaching in the fields of key duplication and numerically controlled machining, my study of the Patents-in-Suit, and its file history, and my knowledge of:

- The level of education and experience of persons actively working in the field at the time the subject matter at issue was developed;
- The types of problems encountered in the art at the time the subject matter was developed;
- The prior art patents and publications;
- The activities of others working in that same technical field;
- Prior art solutions to the problems addressed by the relevant art; and
- The sophistication of the technology at issue in this case.

11. In determining the level of ordinary skill in the art, I also considered the following factors: (1) the sophistication of the relevant technology; (2) the rapidity with which innovations are made in that field; and (3) the educational level of active workers in that field. It is my further understanding that these factors are not exhaustive and are merely a useful guide to determining the level of ordinary skill in the art.

12. Taking the above factors into account, in my opinion a POSA in the technology field of the Patents-in-Suit would have had a degree in engineering and three years of experience involving key duplication equipment. This level of skill is approximate and more experience would compensate for less formal education, and vice versa. For example, an individual having no degree in engineering, but ten years of key duplication equipment experience would qualify as a person of ordinary skill in the art. Moreover, a person with no key duplication experience but a masters or doctorate in engineering may also qualify as a person of ordinary skill in the art. The experience

in the field of key duplication equipment may include experience with various types of key duplication equipment, including vending machines.

13. I consider myself at least a person of ordinary skill in the art in this field. I have over thirty years of experience with key duplication equipment, as well as numerous patents on such equipment.

14. My opinions regarding claim construction for the Asserted Claims are based on the relevant knowledge and skillset of the POSA for the Patents-in-Suit. For clarity, at times in this declaration I may refer to a person of skill in the short-hand when describing my opinions, but this should be interpreted to be a person of ordinary skill in the art at the time of the invention.

V. THE PATENTS-IN-SUIT

15. The Patents-in-Suit relate to key identification and duplication systems.

16. U.S. Patent No. 9,656,332 (the "'332 patent"), entitled "Key Duplication Machine," issued on May 23, 2017. I understand the Asserted Claims from the '332 patent include claims 1, 2, 4, 8, 9, 10, 11, and 13.

17. U.S. Patent No. 9,682,432 (the "'432 patent"), entitled "Key Duplication Machine," issued on June 20, 2017. I understand the Asserted Claims from the '432 patent include claims 1, 2, 3, 6, 7, 8, 9, 10, 11, 12, 13, 15, 16, 17, 18, 19, 20, 22, 23, 24, 25, 26, and 27.

18. U.S. Patent No. 9,687,920 (the "'920 patent"), entitled "Key Duplication Machine," issued on June 27, 2017. I understand the Asserted Claims from the '920 patent include claims 1, 4, 5, 6, 7, 9, 10, 11, 14, 15, 17, 18, 19, 20, 22, 23, 24, and 25.

19. U.S. Patent No. 10,421,133 (the "'133 patent"), entitled "Key Duplication Machine," issued on September 24, 2019. I understand the Asserted Claims from the '133 patent include claims 1, 2, 3, 4, 5, 6, 9, 10, 11, 12, 13, 14, 15, 16, 18, 20, 21, and 24.

20. The Asserted Claims are directed to various systems and methods relating to key duplication and identification.

VI. APPLICABLE CLAIM CONSTRUCTION LEGAL STANDARDS

21. I understand that the parties do not agree on the meanings of several terms and phrases in the claims of the Patents-In-Suit, and that it is the role of the Court to resolve these disputes. I have reviewed the parties' respective positions as summarized in their claim construction charts. I agree with the positions taken by Hillman for each such term or phrase. In my opinion, Hillman's claim construction proposals reflect how persons of ordinary skill in the field of key duplication would interpret the disputed claim terms. I have reviewed Hy-Ko's Rule 4-2 statement and the evidence cited therein. I understand that no constructions were expressly posed in Hillman's IPR petitions, and that does not preclude a party from raising a claim construction in the district court. I also understand that indefiniteness challenges cannot be raised in an IPR petition.

22. I am not an attorney. For the purposes of this declaration, I have been informed about certain aspects of the law that are relevant to my opinions. The claim construction legal standards provided by counsel that I was asked to apply in forming the opinions expressed in this Declaration are summarized below.

23. I have been informed and understand that the terms of a patent claim are generally given their ordinary and customary meaning. This is the meaning that the term would have to a person of ordinary skill in the art at the time of the claimed invention.

24. I have been informed and understand that although the parties may not agree on the priority date for the patents, the earliest priority date alleged by Hy-Ko for the patents in suit is January 23, 2006. I understand that for the 432 Patent, Hillman contends that the patent is entitled to a priority date no earlier than April 29, 2011. My opinions set forth herein would remain the same whether the priority dates were 2005, 2006, 2011, or anytime in between.

25. I have been informed and understand that a patent specification may reveal a special definition given to a claim term by the patentee that differs from the meaning it would otherwise possess. In such cases, the inventor's "lexicography" governs. In other cases, the specification may reveal an intentional disclaimer, or clear disavowal, of claim scope by the inventor. In that instance

as well, I have been informed and understand that the inventor has dictated the correct claim scope, and the inventor's intention, as expressed in the specification, governs.

26. I have been informed and understand that terms of a claim should be understood in the context of the claim as a whole. I also understand that the specification of the patent is relevant to the meaning of a claim term. I have been informed and understand that the claims must be read in light of the specification.

27. I have been informed and understand that the file history should also be considered when interpreting the meaning of the claims of a patent. The file history can contain evidence of how the U.S. Patent and Trademark Office ("PTO") and the applicant understood the patent and the meaning of the terms of the patent.

28. I have been informed and understand that the claim language, specification, and prosecution history are referred to as "intrinsic evidence."

29. I have been informed and understand that evidence from an expert in the field may also be relevant in the determination of how a person of ordinary skill in the art would understand the claims. I have been informed and understand that this evidence, which is referred to as a type of "extrinsic evidence," must be considered in the context of the intrinsic evidence and cannot be used to change the meaning of a claim term to be inconsistent with the intrinsic evidence.

30. I have been informed and understand that 35 U.S.C. § 112 ¶ 6 recites: "An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof." Limitations that are recited as means-plus-function limitations, e.g., "means for _____" and "_____ means," are presumptively interpreted under 35 U.S.C. § 112 ¶ 6. Conversely, if a claim limitation does not use the word "means," there is a presumption that it should not be interpreted under 35 U.S.C. § 112 ¶ 6. That presumption may be rebutted. If a claim limitation is written in functional terms and does not recite sufficient structure to perform the

recited function, the limitation should be construed as a "means-plus-function" limitation even if the word "means" is not recited in the limitation.

31. I understand that the construction of a means-plus-function limitation under 35 U.S.C. § 112, ¶ 6 requires a two-step approach. The first step is to identify the claimed function, staying true to the claim language and the limitations expressly recited by the claims. One must be careful not to adopt a function different from that explicitly recited in the claim, as such an error in identification of the function could improperly alter the identification of the structure corresponding to that function. The second step is to ascertain the corresponding structure(s) in the written description that performs those function(s). A disclosed structure is corresponding only if the specification clearly links or associates that structure to the function recited in the claim. I further understand that a computer-implemented means-plus-function limitation must be supported by a step-by-step algorithm in the specification to disclose the corresponding structure. The knowledge of a person of ordinary skill in the art cannot be used to substitute for the lack of a corresponding structure or algorithm.

32. If a claim term is a means-plus-function term under 35 U.S.C. § 112, ¶ 6 and the specification does not disclose sufficient structure for performing the claimed function, the patent claim is invalid as indefinite due to lack of sufficient corresponding structure.

33. I have been informed and understand that the terms in the claims of patents are required by statute to be definite. I have been informed and understand that while terms do not need to be defined with mathematical precision, the terms of a claim must inform one of ordinary skill in the art about the scope of the terms and the scope of the invention with reasonable certainty. I have been informed and understand that a term is indefinite if it does not provide one of ordinary skill in the art with reasonable certainty about the scope of the term. I further understand that the specification and prosecution history should be consulted to determine whether a claim term is definite because the specification and prosecution history can inform the meaning and scope of a term.

34. I understand that a lack of clarity could arise where a claim term lacks antecedent basis, e.g., where it refers to "said lever" or "the lever," but the claim contains no earlier recitation or limitation of a lever and where it would be unclear as to what element the limitation was making reference. I also understand that the failure to provide explicit antecedent basis for terms does not always render a claim indefinite, and if the scope of a claim would be reasonably ascertainable by those skilled in the art, then the claim is not indefinite.

35. I understand that a preamble is not limiting where a patentee defines a structurally complete invention in the claim body and uses the preamble only to state a purpose or intended use for the invention. I understand that a preamble is limiting, however, when it is necessary to give life, meaning, and vitality to the claim. For example, dependence on a particular disputed preamble phrase for antecedent basis may limit claim scope because it indicates a reliance on both the preamble and claim body to define the claimed invention. Similarly, I understand that when the preamble is essential to understand limitations or terms in the claim body, the preamble limits claim scope. I understand that when reciting additional structure or steps underscored as important by the specification, the preamble may operate as a claim limitation.

36. I understand that the preamble is limiting when it tethers the claim body to the described invention. For example, when the specification makes clear that the inventors were working on a particular problem and not on general improvements in a field, language in the preamble referring to the particular problem may be limiting when the claim body is ostensibly more broadly directed. I understand that the preamble is limiting when the preamble tethers the claim to the focus of the described invention—when the preamble provides an important aspect of the invention, and when that aspect is not understood solely from the body of the claim. I also understand that the preamble may be limiting it if states a fundamental characteristic of the claimed invention, serves to focus the reader on the invention that is being claimed, or states the framework of the invention. I also understand a preamble may be limiting if it sets forth a feature underscored as important by the specification.

VII. MEANING OF CLAIM TERMS TO PERSONS OF ORDINARY SKILL

A. "key positioner configured to engage said master key" (920 patent, cl. 1, 10, 19)

37. Claims 1, 10, and 19 of the 920 patent include the claim term "key positioner configured to engage said master key".

38. I understand that Hillman proposes that the term "key positioner configured to engage said master key" to be construed as a means plus function term, with a function of "engage and position said master key," and a structure of "finger engaging the side of the master key." I understand that in the alternative, Hillman proposes a construction of "positioner finger engaging the side of the master key."

39. I understand that Hy-Ko proposes the following construction for "key positioner configured to engage said master key": 35 U.S.C. § 112(6) does not apply; plain and ordinary meaning. Further, I understand that in the alternative, Hy-Ko proposes a construction of "positioning device capable of engaging the master key".

40. In my opinion, a person of ordinary skill in the art would understand "key positioner configured to engage said master key" to be a means-plus-function term, with a function of "engage and position said master key," and a structure of "finger engaging the side of the master key."

41. I disagree with Hy-Ko's constructions of "plain and ordinary meaning" and "positioning device capable of engaging the master key"

1. The Disputed Term is a Means-Plus-Function Term

42. There is no plain and ordinary meaning of the term because there is no known structure for a "key positioner." "Key positioner" is not a term of art or understood by a person of skill in the art to connote structure. Rather, the term "key positioner" as used in the 920 patent appears to be equivalent to "means for positioning a key." My understanding is that 35 U.S.C. § 112, ¶ 6 is invoked by such broad functional claiming of any type of structure that performs a function.

43. "Key positioner" is not understood by a person of ordinary skill in the art to connote structure. For example, glossaries published for locksmiths do not identify any definition for "key positioner." Exs. 9, 10 (Phillips, Bill, "Locksmithing" and "Master Locksmithing").

44. The evidence identified by Hy-Ko also does not indicate that "key positioner" is understood to connote structure. Rather, Hy-Ko identified a definition from Webster's Third New International Dictionary indicating a positioner is simply "one that positions; esp: a mechanical device for placing or holding a body in position during an operation (as welding or drilling)." Ex. 13 at 1769. This does not identify what *structure* the term "positioner" connotes, but rather states that a positioner could be *any* device that places or holds a body in position during an operation. Further, the dictionary indicates that even that broad definition applies only to welding or drilling, making no mention of key duplication. In addition, claims 1, 10, and 18 separately recite "a retention mechanism configured to receive at a portion of a master key" and "at least one key positioner…" If all the "key positioner" amounts to under Hy-Ko's construction is receiving and placing or holding a key in position, it is not clear what Hy-Ko contends a "key positioner" adds on top of other claim requirements like a "retention mechanism."

45. In contrast, the only examples of a "positioner" provided by the patent specification indicate that positioners are "positioner fingers." Outside of the claims, the word "positioner" is used 25 times in the '920 patent specification, and is followed by the word "finger" every single time. None of the intrinsic evidence identifies any positioner that is not a "finger." Thus, the patent repeatedly and consistently discloses the "positioner" as a finger engaging the side of a key.

46. Because the term "positioner" does not itself recite any specific structure, and recites only function, the term should be construed as a means-plus-function limitation.

2. **The Claimed Function is "Engage And Position Said Master Key"**

47. The claim language itself makes clear that a "key positioner configured to engage said master key" must engage the master key.

48. In addition, the fact that this element is described as a "key positioner" makes clear that it must also *position* the master key.

49. Other intrinsic evidence confirms that the key positioner fingers both engage and position a key. For example, "a pair of key positioner fingers 72 and 74 engages the key blank 24 to align the blank 24." Ex. 3, 920 Patent, 11:26-28. The patent further explains that "positioner fingers 72 and 74 may be used, for example, to align a master key 22 prior to capturing an image of the key 22 to be analyzed by the logic." *Id*., 12:7-11.

50. Accordingly, a person of skill in the art reading the claim language in light of the specification would understand the claimed function to be "engage and position said master key."

3. The Disclosed Structure is "Finger Engaging the Side of the Master Key"

51. As explained above, the only positioner disclosed in the specification is a finger engaging the side of a key blank. These are shown, for example, in Figures 9 and 10 with the labels "72" and "74," and in the specification of the 920 patent at 11:26-12:11.

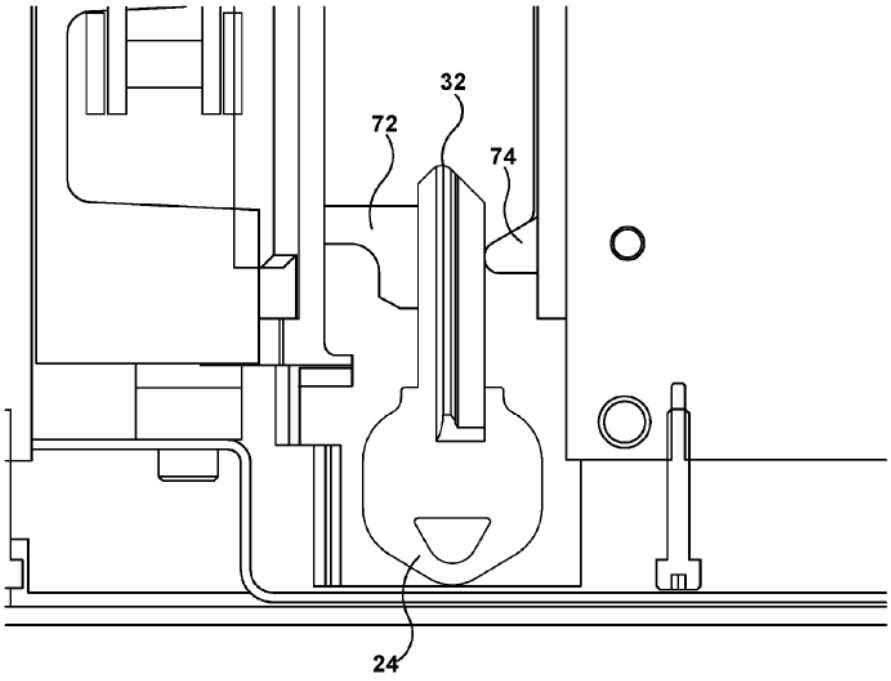


Figure 10

52. These fingers engage the side of the key, as shown in figures 9 and 10. The specification explains: "As best shown in FIGS. 9 and 10, a pair of key positioner fingers 72 and 74 engages the key blank 24 to align the blank 24. The left positioner finger 72 engages the left side of the blade 32, and the right positioner finger 74 engages the right side of the blade 24." Ex. 3, 920 Patent, 11:26-31.

53. The claim language also supports the key positioner engaging the side of a key. For example, claim 10 recites "at least one key positioner configured to engage said master key, while exposing a tip end of the master key." Thus, it is clear the one or more key positioners would not be engaging the tip end of the master key as that end is exposed. In addition, claims 1 and 19 recites the "key positioner being linearly movable from a first location adjacent to the slot to a second location away from the slot." It is not clear how this language could possibly be met if the key positioner were engaging something other than the side of the key, and the specification provides no guidance.

54. Therefore, in my opinion, a person of ordinary skill in the art would understand the corresponding structure disclosed in the specification to be "finger engaging the side of a key blank."

4. **Alternative Construction**

55. If this term is not found to be a means plus function term, it is my opinion that a person of skill in the art would understand it to mean "positioner finger engaging the side of the master key." As discussed above, the specification repeatedly and consistently refers to "positioner fingers," and no other type of positioner. Similarly, as discussed above, a person of skill in the art would not understand "positioner" to have an established meaning in the industry to refer to any particular structure. Rather, a person of skill in the art would see the dozens of references to "positioner finger" in the patent that engages the side of a key, and the lack of disclosure of any alternative positioner, and conclude that the patentee acted as a lexicographer to define "positioner" as the positioner finger defined in the specification, engaging the side of a key.

B. "tip view" (920 patent, cl. 10)

56. Claim 10 of the 920 patent includes the claim term "tip view".

57. I understand that Hillman proposes the following construction for "tip view": view of the key into the tip towards the head.

58. I understand that Hy-Ko proposes a construction of plain and ordinary meaning. I understand that in the alternative, Hy-Ko proposes that "tip view" be construed as "view of a tip".

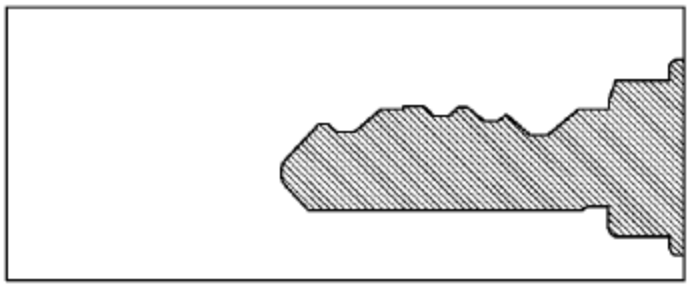
59. In my opinion, a person of ordinary skill in the art would understand "tip view" as a view of the key into the tip towards the head.

60. The claim language itself supports this construction. The claim requires "exposing a tip end of the master key," suggesting that the tip is exposed so that a camera can look down the end.

61. The only discussion of "tip view" in the 920 Patent specification is in a section describing how "additional imaging of the master key 22 may be performed to determine or quantify surface features of the master key 22 such as, for example, the keyway groove 34." 920 Patent, 9:40-42. The patent explains that "[s]uch imaging may be performed by providing a ring of structured light about the key blade 32 and an optical imaging device to record a tip view or cross-sectional view of the key 24 . . ." 920 Patent, 9:44-47. A person of skill in the art would understand this to mean that light is used to illuminate all the way around the blade, with a camera or similar imaging device pointed into the tip of the key toward the head. A person of ordinary skill in the art would understand that such a ring of light, if viewed from a different angle, would not effectively show the surface features or cross section of the key.

62. A "tip view" is intended to show the cross section of a key, and thus must be a view of the key *into* the tip towards the head. Hy-Ko's alternative "view of a tip" construction, on the other hand, may include side views of the tip of the key that do not serve the purpose of determining surface features of the key. 920 Patent at 9:40-47 ("additional imaging of the master key 22 may be performed to determine or quantify surface features such as, for example, the keyway groove 34 . . . by providing . . . an optical imaging device to record a tip view"). These views might

arguably "include the tip" but would not show surface features of the key. For example, the following image from Figure 22 of the 920 Patent could be argued to include a "view of a tip" but does not provide information about surface features or keyway grooves:



63. For example, U.S. Patent No. 4,899,391 to Cimino, which I understand is cited on the cover of the 920 patent and intrinsic evidence, discloses capturing a "tip view," which Cimino calls a "head-on view" or "front view." As Cimino discloses, the "manufacturer's unique coding system of grooves and indentations 4 are most easily identified in a head-on view of the front 2 of the shank 4 as shown in FIG. 2C. It is this front 2 view which provides the distinctive features which allow the present invention to distinguish key blanks among manufacturers and among specific manufacturer's product lines." '391, Col. 2:46-57. Fig. 12 depicts the camera pointed into the tip of the key to capture a "head-on view" or "tip view." '391, Col. 4:59-5:20.

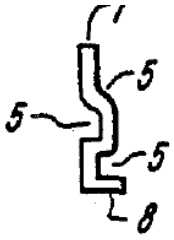


FIG. 2C

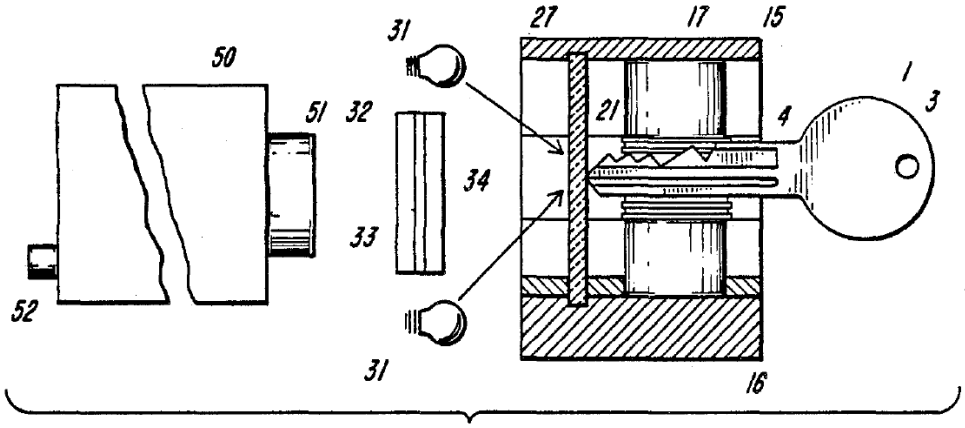


FIG. 12

64. By way of another example, Hy-Ko's U.S. Patent 9,514,385, which includes some of the same inventors as the 920 Patent, shows a camera ("Camera 2") pointed *into* the tip of the key:

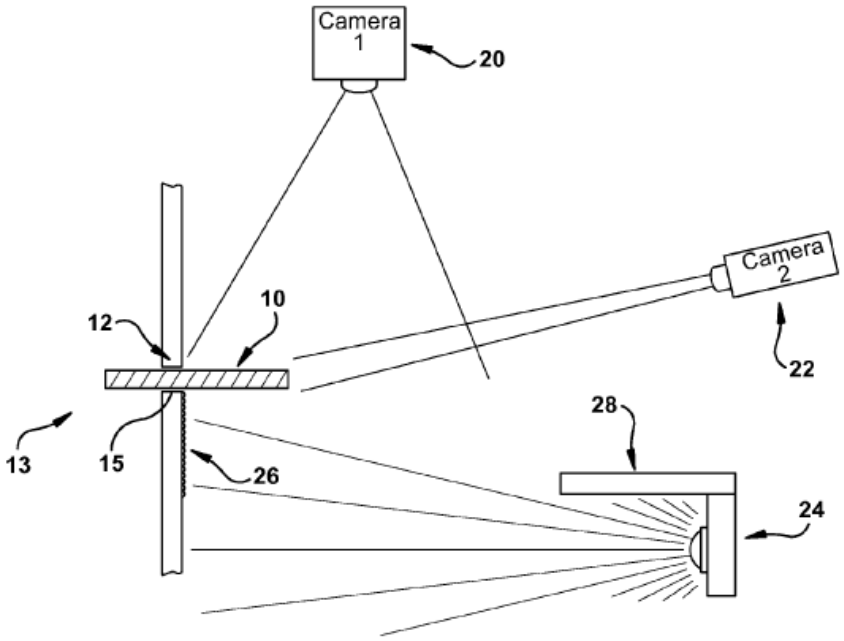


FIG. 2a

Ex. 7, Fig. 2A; *see also* Fig. 14.

65. The 385 patent explains that "the key ID system may include a camera 22 facing the tip 14, and positioned at an angle slightly above parallel to the blade. In an embodiment, the camera is positioned facing the tip of the key 10, between 5 and 15 degrees from parallel to the blade of the key 10. This positioning allows the camera 22 to capture the contours of the tip 14 formed by the bottom groove 11." Ex. 7, 5:27-34. The 385 patent claims refer to this as "substantially a tip end view." Ex. 7, claims 1, 24.

66. During prosecution of the 385 patent, Hy-Ko disagreed with the examiner's rejection of this claim based on the assertion that "Campbell indicates taking an image of a whole key . . . therefore, Campbell discloses taking at least a tip end view." Ex. 8 at 1126.[2]

However, Campbell actually describes only taking a side view image of a key while the key is placed on a lamination surface. In particular, Campbell is directed to capturing images of the key that exhibits views of a milling exit shape 76 that exist on the side of the key by the head 64. See Figures 6a, 7a, 8a, and 11a-11d. See milling exit shape 76 within the circled area from Figure 6A of Campbell below:

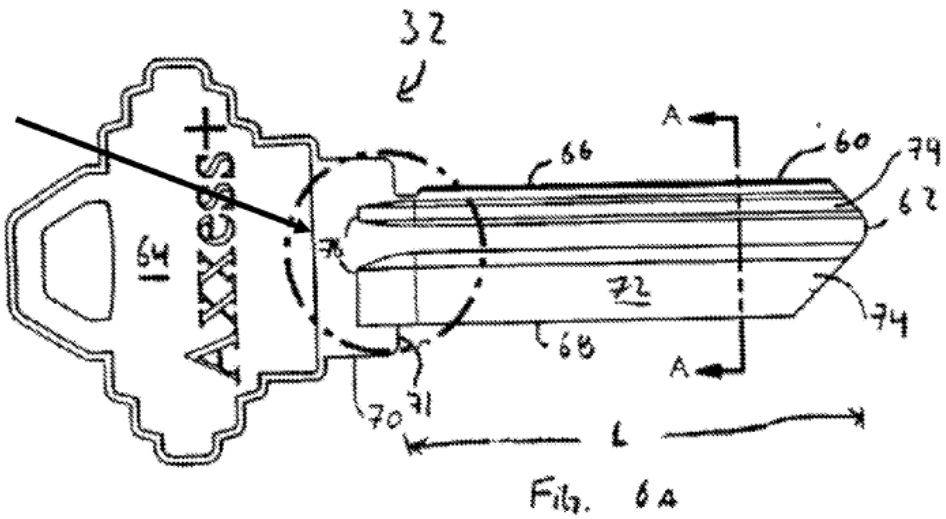


Fig. 6A

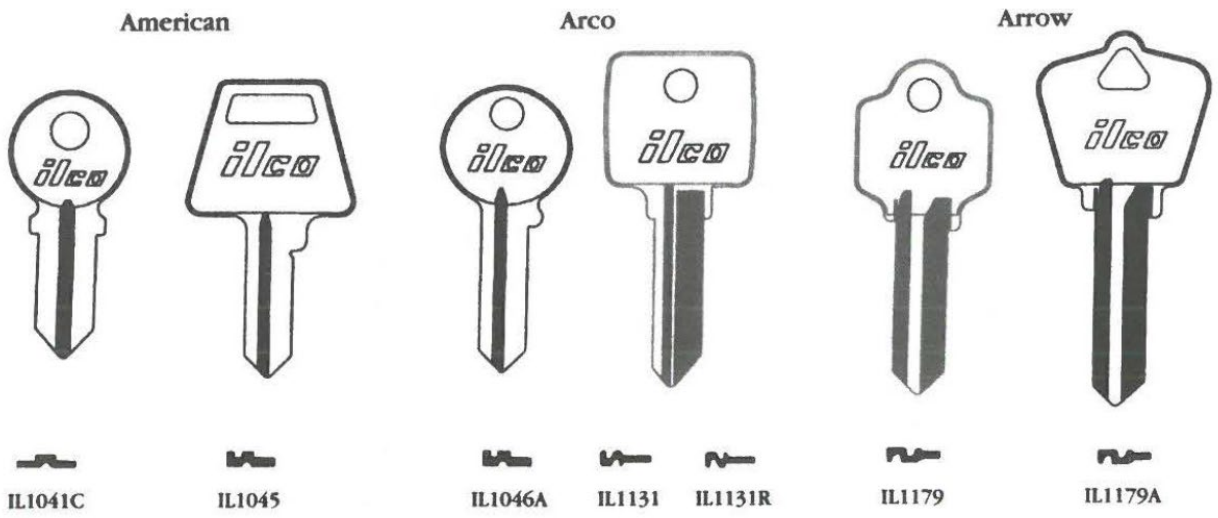
….

[2] The Campbell patent in the Office Action is U.S. Patent Publication No. 2002/0191849, which ultimately issued as U.S. Patent No. 6,839,451.

> Therefore, Campbell does not teach a key identification system configured to capture a substantial tip end view as recited by the claims. Inuoe and Allred fail make up for the deficiencies of Campbell. Thus, it is respectfully submitted that claim 1 and claims 2-12, and 14-24 dependent therefrom as well as claims 25 and 27 are now in condition for allowance.

67. Instead, Hy-Ko argued, Campbell was directed to the view of a "milling exit shape," which could "only be taken from a side view or image of a key." Ex. 8 at 1127. Hy-Ko clearly indicated that this sort of side view, or view of a milling exit shape, is not a "tip end view." *Id*. at 1128. The patent was ultimately allowed after the applicant made this argument. *Id*. at 1140. A person of ordinary skill in the art would understand, based on this disclosure, that Hy-Ko did not consider side views, or any view that is not into the tip of the key toward the head, to be a "tip end view." I understand that under the doctrine of disclaimer, this disavowal of claim scope limits the scope of the claim term. This further confirms that a person of skill in the art would understand "tip view" to be limited to a "view of the key into the tip towards the head."

68. The extrinsic evidence confirms this construction. Rathjen's "Locksmithing From Apprentice to Master" explains: "Although bow identification tells the manufacturer, it does not tell the section the key fits. To do so, you have to be familiar with key sections and milling profiles. You can check key sections by **looking at the key from the tip, or at the side of the blade**." Ex. 11, 173. The illustrations in Rathjen illustrate these two types of views:



13-7 Shows key millings, manufacturer key blank number under each key. Accredited Lock Supply Co.

Ex. 11, 175.

69. A person of ordinary skill in the art would understand that the images on top are looking "at the side of the blade," and the images on the bottom are "looking at the key from the tip," *i.e.*, the tip view. The top images do not clearly identify or quantify the shape of the grooves on the key, but the bottom images do. In figure 13-7 above, the "IL1131" and IL1131R" keys share the same side view, but the tip view indicates that the two types of key blanks have different millings. A person of ordinary skill in the art would understand that the view *into* the tip is the only view that would be useful for determining surface features as contemplated by the 920 patent. In contrast, Hy-Ko's "view of a tip" construction would arguably encompass other views that do not indicate the surface features of the key.

70. "Master Locksmithing" and "Locksmithing" define "tip" as "the portion of the key that enters the keyway first." Ex. 9 (Locksmithing, 2nd ed.), 394; Ex. 10 (Master Locksmithing), 397. This definition is consistent with Hillman's proposed construction.

C. "substantially tip view" (920 patent, cl. 10)

71. Claim 10 of the 920 patent includes the claim term "substantially tip view".

72. I understand that Hillman proposes that "substantially tip view" is indefinite.

73. I understand that Hy-Ko proposes that "substantially tip view" is not indefinite and carries its plain and ordinary meaning. I understand that in the alternative, Hy-Ko proposes the construction "view including a tip."

74. In my opinion, this term does not provide one of ordinary skill in the art with reasonable certainty about the scope of the term. In other words, this term is indefinite.

75. The term "substantially tip view" is a term of degree, but there is no guidance or guide posts in the claims or specification of when a "tip view" becomes a "substantially tip view." The patent specification does not explain what type of view is a "substantially tip view," or how or whether this differs from a "tip view." Rather, the only discussion of "tip view" in the 920 Patent specification is the following: "Such imaging may be performed by providing a ring of structured light about the key blade 32 and an optical imaging device to record a tip view or cross-sectional view of the key 24 . . ." 920 Patent, 9:44-47.

76. The specification never mentions "substantially tip view." A person of skill in the art would not know whether a view that was slightly offset from a "tip view" is a "substantially tip view," and if so, the amount of offset that is allowed for a "substantially tip view." If the viewing angle differs by one degree, or ten degrees, from the "tip view," would that fall within the scope of the claim? The specification provides no guidance on that question. The specification does not disclose any standard by which a person of ordinary skill in the art could determine whether a view is a "substantially tip view."

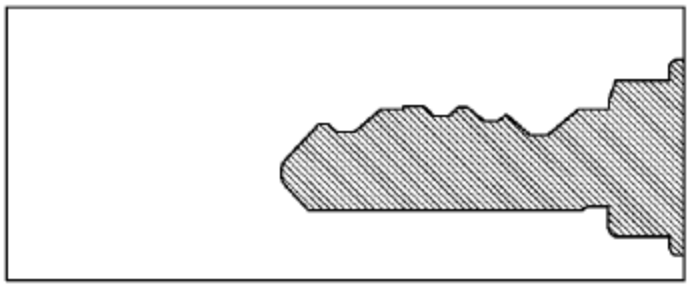
77. The patentee's choice to claim varying degrees without guideposts for how to distinguish among them would leave a person of ordinary skill in the art uncertain as to the scope of the claims. The scope of this claim would therefore not be reasonably ascertainable by a person of skill in the art. I understand this renders the term indefinite.

78. "Substantially tip view" is not a term of art, I do not recall every hearing of this term, and, to the best of my recollection, the only time I have ever seen it used is the Hy-Ko 385 Patent I discuss above. It is not clear to me what this term means in the context of the 385 Patent, and it is certainly not clear to me what this term means in the context of the 920 Patent, where,

unlike the 385 Patent, there is no discussion at all on "tip view" or "substantially tip view" aside from a single sentence using the term "tip view." 920, 9:44-51.

79. I also note that it is not clear to me why there would be a benefit of an angled view, instead of a "tip view." I see no discussion in the specification of the 920 Patent, or any other intrinsic or extrinsic evidence that provides an explanation of why an angled view is apparently better than a "tip view," or in what sense. For this additional reason, the meaning of "substantially tip view" is not certain. A person of ordinary skill in the art at the time of invention would not have understood the benefits of an angled view, or at what angle there would apparently be benefits, over a "tip view." There are no guideposts for a person of ordinary skill in the art to understand when a view would be considered a "substantially tip view."

80. I also disagree with Hy-Ko's proposed alternative construction of "view including a tip" for the same reasons discussed for "tip view" above. A "tip view" is intended to show the cross section of a key, and thus must be a view of the key *into* the tip towards the head. Hy-Ko's construction, on the other hand, would include side views of the key that do not serve the purpose of determining surface features of the key. 920 Patent at 9:40-47 ("additional imaging of the master key 22 may be performed to determine or quantify surface features such as, for example, the keyway groove 34 . . . by providing . . . an optical imaging device to record a tip view"). These views might include the tip but would not show surface features of the key. For example, the following image from Figure 22 of the 920 Patent is a "view including a tip" but does not provide information about surface features or keyway grooves:



D. "measure a thickness" (920 patent, cl. 18)

81. Claim 18 of the 920 patent includes the claim term "measure a thickness".

82. I understand that Hillman proposes that "measure a thickness" is indefinite. I understand that in the alternative Hillman proposes that "measure a thickness" means "measure the distance from the lowest to highest point of the key."

83. I understand that Hy-Ko proposes that "measure a thickness" is not indefinite and carries its plain and ordinary meaning.

84. In my opinion, this term does not provide one of ordinary skill in the art with reasonable certainty about the scope of the term. In other words, this term is indefinite.

85. The surfaces of keys are not flat. For example, keys are covered with "keyway grooves [] which are long, narrow, milled-out areas along the sides of the blade [] that allow the blade [] to bypass the wards in the keyway." Ex. 15, U.S. Patent 7,214,011 at 2:56-59 (incorporated by reference at 920 Patent, 7:15-16). A person of ordinary skill in the art would not understand how "a thickness" of a key is to be measured, particularly when the cross section of keys is not uniformly thick but rather tends to be oddly shaped to fit oddly shaped keyways. For example, the "thickness" of a key such as the following would not be clear to a person of skill in the art:

Ex. 11 (Rathjen), 175 (Fig. 13-7, "IL1131R").

86. The patent specification does not explain how a thickness of a key would be measured. In fact, the 920 Patent specification does not include the term "thickness." Neither the specification nor the claims provide any guideposts for a person of ordinary skill in the art in terms of how or where to measure the pertinent values to determine whether that satisfies the "thickness"

of the claim. To the extent a reference in the art were to use the term "thickness" in the context of measuring an aspect of a key, a person of ordinary skill in the art would expect the reference to provide specificity in terms of how or where to measure thickness.

87. One possible interpretation of measuring a thickness is "measuring the distance from the lowest to highest point of the key." For example, the head, which typically does not have jagged dimensions, may be laid flat and the distance from the lowest to highest point of the key may be measured. For clarity, the lowest to highest point would be in the Z-axis, which the 920 confirms is top to bottom. 920, Col. 7:24-39, Fig. 3. In my view, "measuring the distance from the lowest to highest point of the key" would be the most reasonable interpretation of measuring a thickness to a person of ordinary skill in the art, if there is a reasonably certain construction at all which I contest given the lack of any context or discussion in the specification.

88. I find that this is the most reasonable interpretation to a person of skill in the art, to the extent there is a reasonable interpretation at all given the lack of context or discussion in the specification, because a person of ordinary skill in the art at the time of invention would not view "measuring a thickness" to me measuring more than one key thickness (unless there was context otherwise), and the most reasonable place to measure a thickness would be from the lowest to highest point of the key. I note that one reference, U.S. Patent No. 7,890,878, Ex. 16 at Col. 12:35-43 discusses "measurement of the key's length or thickness" confirming my view that a person of ordinary skill would view measurement of thickness to be measurement of one distance. To the extent Hy-Ko contends that "measuring a thickness" could be any of multiple thicknesses or that it is something other than measuring a distance from the lowest to highest point of the key, this would further confirm my opinions that the term is not reasonably certain.

89. Further, I note that glossaries of key terms for locksmiths do not define the "thickness" of a key. Exs. 9, 10 (Locksmithing and Master Locksmithing). I have also reviewed Hy-Ko's P.R. 4-2 disclosure, and while they cite dictionary definitions of "measure," I see no place where Hy-Ko asserts there is any pertinent dictionary definition of "thickness" in the context of the claims.

90. Ultimately, the scope of this claim would not be reasonably ascertainable by a person of skill in the art. I understand this renders the term indefinite.

E. "the housing" (920 patent, cl. 18)

91. Claim 18 of the 920 patent includes the claim term "the housing".

92. I understand that Hillman proposes that "the housing" is indefinite.

93. I understand that Hy-Ko proposes that "the housing" is not indefinite and carries its plain and ordinary meaning. I understand that in the alternative, Hy-Ko proposes a construction of "a housing".

94. In my opinion, this term does not provide one of ordinary skill in the art with reasonable certainty about the scope of the term. In other words, this term is indefinite.

95. The term "the housing" uses the definite article "the," but it would not be clear to a person of ordinary skill in the art what "housing" "the housing" refers to, particularly considering that the claim does not contain any other references to a "housing." I understand the term "the housing" lacks antecedent basis. The claim also refers to "an outer shell." In my opinion, a person of skill in the art would not have reasonable certainty whether "the housing" refers to the "outer shell", a separate housing, or a housing which includes the outer shell or is part of the outer shell. I understand this lack of reasonable certainty renders the term indefinite.

96. A person of ordinary skill in the art would be further confused by the specification's lack of discussion of "housing." The term "housing" is never used in the specification, and "outer shell" is mentioned only once, in a passage which also discusses "panels," a "door clamp," and a "base." 920 Patent, 6:1-12. A person of ordinary skill in the art would not have reasonable certainty about which of these components are or are not encompassed by "the housing," particularly given the uncertainty over whether "outer shell" provides antecedent basis for "the housing" or whether "the housing" is something altogether separate. The scope of this claim would not be reasonably ascertainable by a person of skill in the art.

97. Hy-Ko's proposed alternate construction replaces "the housing" with "a housing." Aside from changing the claim language, this construction would still leave a person of ordinary skill in the art unclear whether the "outer shell" is "a housing," a part of "a housing," or separate structure. This construction still uses the word "housing," which is nowhere to be found in the 920 patent's specification. A person of ordinary skill in the art would not necessarily understand "the housing"—which on its face connotes a *specific*, previously recited housing—to refer to any housing. Thus, I understand that Hy-Ko's alternate construction is unsupported and in any event does not resolve the claim's indefiniteness issue.

F. "positioning said master key to a desired location to align the master key with an optical imaging device" (332 patent, cl. 11)

98. Claim 11 of the 332 patent includes the claim term "positioning said master key to a desired location to align the master key with an optical imaging device".

99. I understand that Hillman proposes that "positioning said master key to a desired location to align the master key with an optical imaging device" must occur after the "receiving" step.

100. I understand that Hy-Ko proposes that the plain and ordinary meaning applies.

101. In my opinion, a person of ordinary skill in the art at the time of invention would have viewed the step of "positioning said master key to a desired location to align the master key with an optical imaging device" to occur after the "receiving" step.

102. The claim language would have caused a person of ordinary skill in the art to reach this conclusion. Claim 11 recites "receiving" before "positioning," and indicates that positioning aligns "*said* master key" that is "receiv[ed] from a user." 332 Patent, claim 11. A person of ordinary skill in the art would understand that a machine cannot position a key until it has received the key. "Receiving" a key *after* positioning the key would make little sense.

103. A person of ordinary skill in the art at the time of invention would understand the specification to indicate that the key is positioned to a desired location to align the master key with an optical imaging device *after* it is received from a user. The only specification disclosure of

aligning a master key with an optical imaging device is in the context of "positioner fingers 72 and 74" that may be used "to align a master key 22 prior to capturing an image of the key 22 to be analyzed by the logic." 332 Patent, Col. 12:4-10. The positioner fingers may position the key to a desired location after the key is received from a user. For example, "[i]f the user did not insert the blank 24 far enough into the slot 20, the fingers 72 and 74 may move the blade 32 along the X-axis to the proper position." 332 Patent, Col. 11:34-37.

104. I also note that the specification discloses that "The position of the key blank 24, as initially manually positioned by the user, may be determined from the captured image of the blank 24. This image is analyzed by logic and compared to the ideal position for cutting the blank 24, and the positioning of the blank 24 is adjusted to conform to the ideal cutting position." 332 Patent, 11:20-25. I note that this section is in the context of a key blank and an ideal cutting position, not a master key aligned with an optical imaging device as claimed. In any event, to the extent it is relevant, it supports the notion that a key is moved to an ideal position after it has been received.

105. Thus, the specification confirms the understanding that receiving the key occurs before positioning the key.

G. "selectively capturing a second image" (332 patent, cl. 11)

106. Claim 11 of the 332 patent includes the claim term "selectively capturing a second image".

107. I understand that Hillman proposes that "selectively capturing a second image" must occur after the "determining" step.

108. I understand that Hy-Ko proposes that the plain and ordinary meaning applies. I also understand that Hy-Ko proposes, in the alternative, "capturing a second image in a selected manner."

109. In my opinion, a person of ordinary skill in the art at the time of invention would have viewed the step of "selectively capturing a second image" to occur after the "determining" step.

110. The claim language would have caused a person of ordinary skill in the art to reach this conclusion. Claim 11 first recites "capturing a back lit image", then recites "determining" a key blank type based on the (first) back lit image, and finally recites "selectively capturing a second image." This order of steps would indicate to a person of skill in the art that the "selective" capture of a second image happens after the determination based on the first image has been completed.

111. A person of ordinary skill in the art would understand the specification to indicate that "selectively capturing" occurs after "determining." The specification discusses the processing of the first image to determine a key blank. 332 Patent, 9:21-39. The specification explains that "such comparisons may lead to the determination and selection of the proper key blank 24 for the master key 22." *Id*., 9:37-39. The very next sentence explains that "Optionally, additional imaging of the master key 22 may be performed to determine or quantify surface features which . . . may assist in narrowing or choosing the proper key blank." *Id*., 9:40-44.

112. A person of ordinary skill in the art would understand that this implies the "selective" additional imaging would be optionally performed based on how precisely the first image was able to identify the key blank. If further narrowing is required, the second image could be "selectively captured." But a person of ordinary skill in the art would understand that "selective" capturing would only work if the "determining" was performed first, based on the first image. Otherwise, if the first image was not analyzed, there could be no selection. The specification does not disclose any other type of selective capturing of a second image.

113. Further, if "selectively" capturing is done before any determining, there is no basis or written description support in the specification for why one would selectively do anything (or how), and the claim would not make sense.

114. I have also considered Hy-Ko's alternative construction, but disagree with it to the extent Hy-Ko is suggesting that the "selectively" step need not come after the "determining." I

further note that it is not clear from the claims or specification what Hy-Ko's "in a selected manner" would refer to, or the circumstances around how it would be decided to capture a "second image in a selected manner."

H. "retention mechanism panel" (133 patent, cl. 1, 24)

115. Claims 1 and 24 of the 133 patent include the claim term "retention mechanism panel".

116. I understand that Hillman proposes the following construction for "retention mechanism panel": "slidable panel with a retention mechanism located on it."

117. I understand that Hy-Ko proposes that for retention mechanism panel," the plain and ordinary meaning applies. I also understand that Hy-Ko proposes in the alternative "panel with a retention mechanism."

118. In my opinion, a person of ordinary skill in the art would understand "retention mechanism panel" as "a slidable panel with a retention mechanism located on it."

119. "Retention mechanism panel" is not a term of art that would be understood by a person of skill in the art as having a particular meaning. For example, glossaries published for locksmiths do not identify any definition for "retention mechanism panel." Exs. 9, 10 (Phillips, Bill, "Locksmithing" and "Master Locksmithing"). Further, a person of skill in the art would find no explanation in claims 1 or 24 of what a "retention mechanism panel" is other than that it "is positioned within a housing and includes a slot to receive a blade of a key to be retained."

120. The specification repeatedly and consistently discloses a "retention mechanism panel" as having a retention mechanism located on it, and being slidable.

121. For example, the specification explains that "the door clamp 14, base 16, handle 18, and slot 20 are located on a retention mechanism panel 21." 133 Patent, 6:48-49. The specification illustrates the retention mechanism 19 located on the retention mechanism panel 21 in Figure 5. The specification explains: "The combination of the door clamp 14, base 16, handle 18, and biasing member forms a retention mechanism 19 for retaining or securing a master key 22

or key blank 24." *Id*., 6:13-15. A person of skill in the art would understand based on this disclosure and based on the term "retention mechanism panel" itself that components located on the panel form a retention mechanism. The specification repeatedly and consistently discloses a "retention mechanism" located on a "retention mechanism panel."

122. The specification further explains in at least four separate occasions that the retention mechanism panel is slidable. For example, the specification explains: "The panel 21 is arranged such that the panel 21 may slide to the left and right, with respect to FIG. 2. As will be further described, such movement allows the machine 10 to move the blade 32 of a key blank 24 between an imaging zone, where an image of the blade 32 may be captured, and a cutting zone, where a key pattern 36 may be cut into a key blank 24." *Id*., 6:49-55; see also 12:30-36, 13:67-14:2, and 14:57-61, . Therefore, a person of skill in the art would understand the purpose of the "retention mechanism panel" is to allow sliding of the panel between imaging and cutting zones. The specification repeatedly and consistently discloses a "retention mechanism panel" being slidable. A person of ordinary skill in the art would understand that the 133 Patent discloses a system with a single slot (20) that can be moved left and right between the imaging zone and a cutting zone, as illustrated by Figure 2 of the 133 Patent, instead of having separate slots for imaging and for cutting:

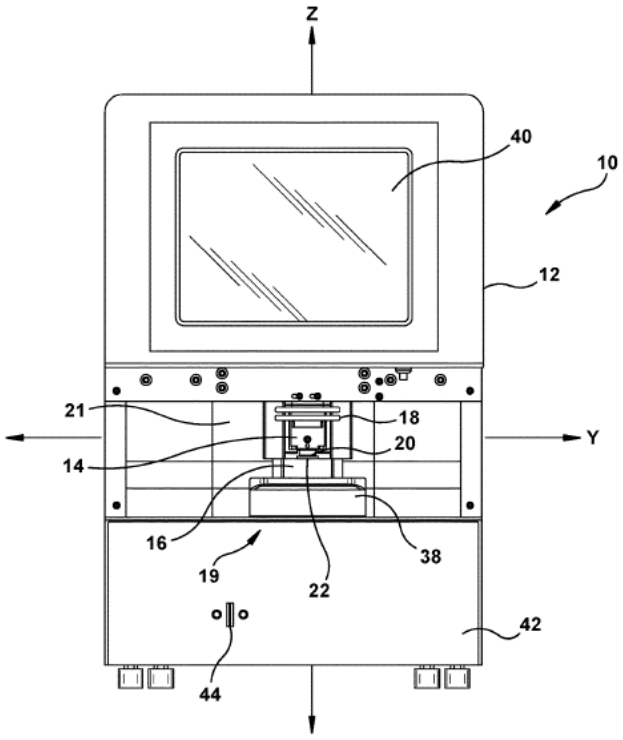


Figure 2

123. A person of ordinary skill in the art would understand that the only "retention mechanism panel" disclosed in the specification is a panel specifically built to allow the slot and retention mechanism to slide between the imaging and cutting components. Accordingly, a person of ordinary skill in the art would understand this term to mean "slidable panel with a retention mechanism located on it."

124. I have considered Hy-Ko's alternative construction of "panel with a retention mechanism" and disagree with it for at least the reason that it does not include the notion of "slidable," which is an important aspect of the retention mechanism panel as disclosed in the specification. In addition, it is not clear to me why Hy-Ko proposes "panel with a retention mechanism" instead of "panel with a retention mechanism located on it" when the specification language is more aligned with the latter as discussed above, or whether Hy-Ko contends there is a difference between the two.

I. "An integrated key duplication machine" (133 patent, cl. 1)

125. The preamble of Claim 1 of the 133 patent includes the claim term "An integrated key duplication machine".

126. I understand that Hillman proposes that this preamble be construed as limiting.

127. I understand that Hy-Ko contends that this language appears in the preamble and is not a limitation, and therefore no construction is required. I understand that Hy-Ko contends in the alternative that plain and ordinary meaning applies.

128. In my opinion, this preamble is limiting for the following reasons.

129. In my opinion, the body of the claim does not recite a structurally complete invention at least because it is not clear that the recited structure is in the context of duplication. The claim body describes a separate optical key blank identification system and key cutting system. The preamble confirms that these systems are in the context of key duplication and recites structure. For at least this reason, the preamble is necessary to give life, meaning, and vitality to the claim.

130. In my opinion, the preamble tethers the claim body to the described invention. The 133 patent specification makes clear that the inventors were working on the particular problems of key duplication and not on general improvements in a field.

131. For example, the specification explains that "This invention relates generally to apparatus and methods for duplicating keys, and more specifically, this invention relates to apparatus and methods for cutting duplicate keys based on a captured image of a master key." 133 Patent, 1:24-27. The specification further explains that "Apparatus, methods, and other embodiments associated with a key duplication machine are described." *Id*., 2:53-55.

132. The claim body of claim 1, however, does not explicitly discuss duplication of keys. *Id*., claim 1. Thus, this critical aspect of the invention is described only in the preamble and is not understood solely from the body of the claim. Rather, the preamble is needed to tether the claim body to key duplication. Further, the preamble provides important context for elements of the independent and dependent claims. For example, it is important to understand that the "key blank

identification system" and "key cutting system" described in independent claim 1 are in the context of a "key duplication." It is also important to understand the context, for example, of "determining a proper key blank" in, for example, dependent claim 5.

133. Further, I have been informed that a preamble may limiting if it states a fundamental characteristic of the claimed invention, serves to focus the reader on the invention that is being claimed, states the framework of the invention, or sets forth a feature underscored as important by the specification. In my opinion, all of these apply to the preamble of the 133 patent claim 1 (and claim 11) because the notion of the invention as in the context of "key duplication" is repeatedly underscored as significant and the context of the invention. For example, the title of the 133 patent is "Key Duplication Machine." The Field of Invention is "duplicating keys." 133, Col. 1:24-27. The Background of the invention is in the context of "key duplication" with the goal for "improvements in machines and processes for cutting duplicate keys." 133, Col. 1:31-2:49. The Summary of the Invention is about an "Apparatus, methods, and other embodiments associated with a key duplication machine." 133, Col. 2:53-55. Duplication is mentioned over 130 times in the specification.

134. In addition, I am also informed that where certain claims have nearly the same scope but different preambles, that is also an indication that the preamble is limiting. Here, claims 1 and 24 have nearly the same scope except different preambles because claim 1 recites an "integrated key duplication machine" and claim 24 recites a "key duplication system." In addition, claims 1 and 11 are similar but have different preambles.[3]

135. In my opinion, because the preamble recites structure and context of duplication that is required to give meaning and context to the claim; and because the preamble tethers the claim body to the described invention, the preamble is limiting.

[3] I note that claim 1 recites a "retention mechanism panel" whereas claim 11 recites a "retention mechanism" but otherwise has substantially similar elements in the body of the claims.

J. "A plurality of key duplication systems" (133 patent, cl. 11)

136. Claim 11 of the 133 patent includes the claim term "A plurality of key duplication systems".

137. I understand that Hillman proposes that this preamble be construed as limiting.

138. I understand that Hy-Ko contends that this language appears in the preamble and is not a limitation, and therefore no construction is required. I understand that Hy-Ko contends in the alternative that plain and ordinary meaning applies.

139. In my opinion, this preamble is limiting for the following reasons.

140. In my opinion, the body of the claim does not recite a structurally complete invention. The claim body separately describes at least one key blank identification system and at least one key cutting system with a housing. The body states that the identification system is configured to operate individually from the key cutting system, and states that the two systems "may interact and share" unspecified information." The preamble's explanation that the two individual systems form "key duplication systems" explains how the two systems can work together to duplicate keys, and is necessary to give life, meaning, and vitality to the claim.

141. In my opinion, the preamble tethers the claim body to the described invention. The 133 patent specification makes clear that the inventors were working on the particular problems of key duplication and not on general improvements in a field.

142. I also refer to my discussion in the previous section regarding duplication being a important aspect of the invention as described in the specification. I also refer to my discussion in the previous section regarding how claims 1, 11, and 24 have similar scope but different preambles, which further re-affirms that the applicant intended the preambles to be limiting.

143. For example, the specification explains that "This invention relates generally to apparatus and methods for duplicating keys, and more specifically, this invention relates to apparatus and methods for cutting duplicate keys based on a captured image of a master key." 133 Patent, 1:24-27. The specification further explains that "Apparatus, methods, and other embodiments associated with a key duplication machine are described." *Id*., 2:53-55.

144. The claim body of claim 11, however, does not explicitly discuss duplication of keys. *Id*., claim 11. Thus, this critical aspect of the invention is described only in the preamble and is not understood solely from the body of the claim. Rather, the preamble is needed to tether the claim body to the identification and duplication invention described in the patent specification. Further, the preamble provides important context for elements of the independent and dependent claims. For example, it is important to understand that the "key blank identification system" and "key cutting system" described in independent claim 11 is in the context of a "key duplication." It is also important to understand the context, for example, of "determining a proper key blank" in, for example, dependent claims 15 and 20.

145. In my opinion, because the preamble recites structure that is required to give meaning to the claim; because the body of the claim does not recite a structurally complete invention; and because the preamble tethers the claim body to the described invention, the preamble is limiting.

K. "key blank identification system configured to operate individually from the key cutting system" (133 patent, cl. 1, 11, 24)

146. Claims 1, 11, and 24 of the 133 patent include the claim term "key blank identification system configured to operate individually from the key cutting system".

147. I understand that Hillman proposes that "key blank identification system configured to operate individually from the key cutting system" is indefinite.

148. I understand that Hy-Ko proposes that "key blank identification system configured to operate individually from the key cutting system" is not indefinite and carries its plain and ordinary meaning. I understand that in the alternative, Hy-Ko proposes a construction of "key blank identification system capable of operating independently from the key cutting system".

149. In my opinion, this term does not provide one of ordinary skill in the art with reasonable certainty about the scope of the term. In other words, this term is indefinite.

150. The specification includes very limited discussion of this term, only referring once to "individual" systems and once to "individually." 133 Patent, 5:35-39. The specification provides the below.

> In addition, the key duplication machine 10 described herein incorporates a key blank identification system and a key cutting system into a single apparatus. However, it should be understood that either system **could be used individually or used togethe**r. Nothing in this description should be interpreted to limit novel features of each individual system as used alone or in an integrated unit."

133 Patent, 5:35-39.

151. This discussion explains that individual use is different from being used together to duplicate a key, *i.e.*, the two are alternatives: "either system could be used individually ***or*** used together." *Id*. A person of ordinary skill in the art at the time of invention would view the specification as stating that "used individually" means not "used together." The specification then follows this up by stating that each individual system may alternatively be "used alone" or as "an integrated unit." This is consistent with the previous sentence which provided two alternatives, using the systems individually on the one hand, or together. Therefore, a person of ordinary skill in the art would view the specification as disclosing the options of a system in which a key blank identification system and a key cutting system are separate, stand-alone devices that are used individually and by a user by themselves or, in the alternative, part of one integrated device and used together.

152. Independent claims 1, 11, and 24 recite that the "optical key blank identification system is configured to operate individually from the key cutting system." Reading this element in the context of the specification, a person of ordinary skill in the art would understand that the claims are claiming the first of the two alternatives disclosed above in which the key blank identification system and key cutting systems are separate, stand-alone devices that are used individually and operated by a user by themselves. For example, a user uses the key identification system by itself as a separate, stand-alone device to identify a key. Certain of the claims are

consistent with this interpretation. For example, claim 11 recites that it is claiming a "plurality of key duplication systems." However, other claims appear to contradict this interpretation and recite the systems being used together as part of an integrated unit. For example, claim 1 recites an "integrated key duplication machine." This appears to be in contrast to the specification's disclosure above that the systems being "used individually or used together" or "used alone or in an integrated unit." Dependent claim 21 also recites that the systems in claim 11 may be "within a single apparatus."

153. At bottom, it is not clear what scope the limitation of a "key blank identification system is configured to operate individually from the key cutting system" adds, particularly in light of the lack of meaningful disclosure in the specification as well as the fact that the very limited disclosure in the specification contradicts the claim language. A person of ordinary skill in the art would not have reasonable certainty what the limitation means, and I understand this renders the claims indefinite. As noted above, based on the plain meaning of the term "individually" and the disclosure in the specification, a person of ordinary skill in the art at the time of invention would expect this to limit the claims to the alternative where the systems are not "used together" or in an "integrated" fashion. But certain claims, like claim 1 of the '133 patent contradicts that notion. It is not clear, what scope the limitation adds to the claim.

154. Extrinsic evidence is also consistent. Technical dictionaries define "integrated" to be "designed to act or function as one unit." TechTerms.com (definition of "integrated"), November 21, 2014, HILLMAN-000017706. A person of ordinary skill in the art at the time of invention would view systems that operate "individually" as the opposite of an integrated system.

155. Further, all three claims 1, 11, and 24 recite that the two systems "interact and share information," which also seems to be in contrast to "configured to operate individually," particularly in light of the discussion in the specification that the systems may be used "individually" or together.

156. A person of skill in the art would recognize that key identification and cutting systems that are configured to operate individually are fundamentally different than an integrated

system and do not form an integrated system. Because the claims purport to require *both* of these contradictory aspects, a person of skill in the art would not have reasonable certainty about the scope of the claim, which I understand renders the term indefinite.

157. Although independent claim 11 does not use the word "integrated" it likewise presents the same ambiguity of claim 1 as to when a "key blank identification system" and "key cutting system" are operating individually. Dependent claim 21 indicates that the system may be a "single apparatus." A person of ordinary skill in the art would not be able to determine with reasonable certainty the scope of the claims. For example, a person of ordinary skill in the art would not know with reasonable certainty when the key blank identification system and key cutting system are operating individually as opposed to operating non-individually or working together as a unit.

158. I also note that I have reviewed the prosecution history, and it does not provide a person of ordinary skill in the art at the time of invention reasonable clarity of the scope of "key blank identification system configured to operate individually from the key cutting system." I note that the intrinsic evidence further supports my view that the term does not have reasonable clarity. The Applicant amended the claims to add this limitation in the 3/2/2017 Remarks and Amendments and stated that passages in U.S. Patent No. 7,890,878, which Applicant contended is incorporated by reference, support the notion that "the key identification system and the key cutting system may be used individually." Ex. 17, 1073, 1075. I note that the passage the Applicant block cites in the Remarks appears to relate to a "lighted display rack" of key blanks, which does not seem particularly relevant to the "key blank identification system" and "key cutting system" of the 133 Patent. *See id.* at 1073. Regardless, the Applicant underlined the fact that the system may be implemented by "hand-held devices and systems coupled to key-cutting devices," which suggests to me, like the specification, that the Applicant is conveying that operating individually means as separate, stand-alone systems. *Id*. The Applicant also underlined the statement "All of the components of KIDS may exist on a single computing machine or on a plurality of computing machines…" *Id*. It is not reasonably clear if the Applicant is attempting

to convey here that "operating individually" means separate, stand-alone machines, an integrated machine, or something else. The Applicant provides no clarity in the Remarks. *Id*. 1071-74. I have also reviewed the Examiner's subsequent rejections, including the 6/16/2017 Final Rejection, which again do not clarify the meaning of the term. The Examiner appears to have rejected the claims under disclosure in the Campbell reference that codes may be transmitted "by direct connection or over a network," seemingly reading the claims on the embodiment in Campbell of separate, stand-alone devices that communicate, for example, by a network. *Id*. at 1084.

159. Hy-Ko's proposed alternate construction replaces "configured to operate individually" with "capable of operating independently." A person of ordinary skill in the art would not understand "configured to" to mean "capable of." Rather, a person of ordinary skill in the art would understand "configured to operate individually" to mean just that—the two systems do not work together, but operate on their own. I disagree with Hy-Ko's alternate construction.

L. "for communicating with a transponder on the key" (432 patent, cl. 1, 13)

160. Claims 1 and 13 of the 432 patent include the claim term "for communicating with a transponder on the key".

161. I understand that Hillman proposes the following construction for "for communicating with a transponder on the key": "for communicating with a transponder on the key <u>in the key load position</u>."

162. I understand that Hy-Ko proposes that "for communicating with a transponder on the key" carry its plain and ordinary meaning. I understand that Hy-Ko proposes that in the alternative, the term be construed as "for <u>receiving data from and/or transmitting data to</u> a transponder on the key".

163. In my opinion, a person of ordinary skill in the art would understand that the term requires that the key be the key in the key load position. First of all, the antecedent basis for "the key" in the claims is "a key load position for receiving the key." The claims do not disclose

providing a different key or placing a key at any other location on the system. So a person of skill in the art would understand that "the key" can only refer to "the key in the key load position."

164. The specification also supports this construction. The antenna disclosed in the specification as communicating with a transponder is specifically disclosed as communicating with a key located in the slot, *i.e.*, the key load position. The specification explains that "The antenna 226 may be positioned on the key duplication machine 10 to interface with a master key 22 or key blank 24 *located in the slot* 20. 432 Patent, 17:57-59. The specification further explains how the antenna can surround the slot to facilitate this:

> The opening 230 may surround the slot 20 allowing a key to be passed through the opening 230 into the slot 20.
>
> The antenna 226 may be positioned about the opening 230. For example, as illustrated in the cut-away view of FIG. 29, the antenna 226 may be embedded in the outer shell 228, such as wrapped about a circular opening 230. The antenna 226 may surround a key inserted into the slot 20 to facilitate both reading data and information on an existing master key 22 and writing to the new key blank 24.

432 Patent, 17:63-18:5. This portion of the specification describes figures 28 and 29, which both specifically refer to "a key load point." 432 Patent, 4:27-32. These passages would confirm to a person of skill in the art that "the key" referred to by the claim must be the key at the key load position.

165. To the extent Hy-Ko is suggesting that a user would place a key in a slot for imaging, remove it and place it another slot for transponder communication, and then place it back into the slot for imaging, there is no disclosure of any such arrangement in the specification. Rather, the specification consistently and repeatedly discloses only a single slot to place a key. For example, the specification provides more than a dozen figures and accompanying disclosure all around a single slot. Figs. 1-3, 5-6, 8-10, 12, 14-15, 21, and 27-28. Moreover, the disclosure of the purpose of the machine is around a "simplif[ied]" and "user-friendly" device in which a

consumer an "duplicate a key with minimal instructions." 432, Col. 2:57-66. The machine has a "table 38 [that] holds additional keys on a key ring so that the user does not have to remove the master key 22 from its key ring for the purposes of duplication." 432, Col. 7:18-21. Adding another slot, another table, etc. and other complications to the machine for transponder communications is not consistent with the purpose of the machine or any disclosure, and a person of ordinary skill in the art would view a separate slot for transponder communications as inconsistent with the purpose of the machine.

166. I disagree with Hy-Ko's alternative construction that "for communicating with a transponder on the key" is "for receiving data from and/or transmitting data to a transponder on the key." This construction merely replaces "communicating with" with "receiving data from and/or transmitting data to." A person of ordinary skill in the art would see no need to define "communicating," a common term in engineering, in this way.

M. "for communicating with a transponder on the master key" (432 patent, cl. 8, 20)

167. Claims 8 and 20 of the 432 patent include the claim term "for communicating with a transponder on the master key".

168. I understand that Hillman proposes the following construction for "for communicating with a transponder on the master key": "for communicating with a transponder on the master key in the key load position [retention mechanism]".

169. I understand that Hy-Ko proposes that "for communicating with a transponder on the master key" carry its plain and ordinary meaning. I understand that Hy-Ko proposes that in the alternative, the term be construed as "for receiving data from and/or transmitting data to a transponder on the master key".

170. For the reasons I explained above with respect to "for communicating with a transponder on the key," a person of skill in the art would understand Hillman's construction to be correct and Hy-Ko's construction to be incorrect.

171. Claims 8 and 20 both refer to "a key load position to receive said master key" or key blank, which includes a "retention mechanism configured to receive a master key" and "an opening positioned about a key load position to receive a master key". Further, a person of skill in the art would understand the specification to the key load position and the retention mechanism as the same place. For example, the only disclosure of "a key load point" is the description of figures 28 and 29. 432 Patent, 4:27-32. The descriptions of these figures describe the key as being received in "slot 20." *Id*., 17:63-65. The specification explains that "slot 20" is formed by "the door clamp 14 and the base 16." *Id*., 6:44-48. The door clamp and base are part of "retention mechanism 19 for retaining or securing a master key or key blank." *Id*., 6:42-44. In light of this disclosure, and the explicit claim language, a person of skill in the art would understand that "said master key" or key blank refers to a key "in the key load position [retention mechanism]."

172. I refer to, and incorporate by reference, my discussion and analysis for "for communicating with a transponder on the key" (claims 1 and 13) here. My discussion for this term for claims 1 and 13 applies equally to my discussion of the corresponding term in claims 8 and 20.

N. "A method for identifying [and duplicating] a key" (432 patent, cl. 1, 8, 13)

173. Claims 1, 8, and 13 of the 432 patent include the claim term "A method for identifying [and duplicating] a key".

174. I understand that Hillman proposes that this portion of the preamble be construed as limiting.

175. I understand that Hy-Ko contends that this language appears in the preamble and is not a limitation, and therefore no construction is required. I understand that Hy-Ko contends in the alternative that plain and ordinary meaning applies.

176. In my opinion, these preambles are limiting for the following reasons.

177. In my opinion, the body of the claim does not recite a structurally complete invention. The claim bodies describe only "providing" various equipment, but merely "providing" the equipment without using it does not identify or duplicate a key. *See* 432 Patent, claims 1, 8,

13. On the other hand, the preamble explains how the provided components are used for identifying or duplicating keys. In my opinion, this additional structure is necessary to give life, meaning, and vitality to the claim.

178. In my opinion, the preambles tether the claim body to the described invention. The 432 patent specification makes clear that the inventors were working on the particular problems of key identification and duplication and not on general improvements in a field.

179. For example, the specification explains that "This invention relates generally to apparatus and methods for duplicating keys, and more specifically, this invention relates to apparatus and methods for cutting duplicate keys based on a captured image of a master key." 432 Patent, 1:24-27. The specification further explains that "Apparatus, methods, and other embodiments associated with a key duplication machine are described." *Id*., 3:7-8.

180. The claim bodies of claims 1, 8, and 13, however, do not explicitly discuss identification of keys. *Id*., 20:27-37. Thus, this critical aspect of the invention is described only in the preambles and is not understood solely from the body of the claim. Rather, the preambles are needed to tether the claim body to the identification and duplication invention described in the patent specification.

181. Further, I have been informed that a preamble may limiting if it states a fundamental characteristic of the claimed invention, serves to focus the reader on the invention that is being claimed, states the framework of the invention, or sets forth a feature underscored as important by the specification. In my opinion, all of these apply to the preamble of the 432 patent claims 1, 8, and 13 because the notion of the invention as in the context of "identifying keys" is repeatedly underscored as significant and the context of the invention. The Title, Field of Invention, and Summary of Invention are in the context of "duplicating keys" and "[i]dentifying the correct key blank for use in duplication." 432, Col. 2:1-6. The Background of the invention is in the context of "key duplication" and key identification with the goal for "improvements in machines and processes for cutting duplicate keys" and "improv[ing] the accuracy of key blank identification." 432, Col. 1:61-66. Key identification is mentioned nearly 40 times in the specification.

182. In my opinion, because the preambles recite structure that is required to give meaning to the claims; because the bodies of the claims do not recite a structurally complete invention; and because the preambles tether the claim body to the described invention, the preambles are limiting.

O. "An identification system for duplicating keys" (432 patent, cl. 20)

183. Claim 20 of the 432 patent includes a preamble with the term "An identification system for duplicating keys".

184. I understand that Hillman proposes that this portion of the preamble be construed as limiting.

185. I understand that Hy-Ko contends that this language appears in the preamble and is not a limitation, and therefore no construction is required. I understand that Hy-Ko contends in the alternative that plain and ordinary meaning applies.

186. In my opinion, this preamble is limiting for the following reasons.

187. In my opinion, the body of the claim does not recite a structurally complete invention. The claim body describes only a retention mechanism, optical imaging device, and antenna, but these components are not useful by themselves and cannot alone identify or duplicate a key. *See* 432 Patent, 20:27-37. On the other hand, the preamble explains how the components are used, as part of an "identification system for duplicating keys." In my opinion, this additional structure is necessary to give life, meaning, and vitality to the claim.

188. In my opinion, the preamble tethers the claim body to the described invention. The 432 patent specification makes clear that the inventors were working on the particular problems of key identification and duplication and not on general improvements in a field.

189. For example, the specification explains that "This invention relates generally to apparatus and methods for duplicating keys, and more specifically, this invention relates to apparatus and methods for cutting duplicate keys based on a captured image of a master key." 432

Patent, 1:24-27. The specification further explains that "Apparatus, methods, and other embodiments associated with a key duplication machine are described." *Id*., 3:7-8.

190. The claim body of claim 20, however, does not explicitly discuss identification or duplication of keys. *Id*., 20:27-37. Thus, these critical aspects of the invention are described only in the preamble and are not understood solely from the body of the claim. Rather, the preamble is needed to tether the claim body to the identification and duplication invention described in the patent specification.

191. Further, I have been informed that a preamble may limiting if it states a fundamental characteristic of the claimed invention, serves to focus the reader on the invention that is being claimed, states the framework of the invention, or sets forth a feature underscored as important by the specification. In my opinion, all of these apply to the preamble of the 432 patent claim 20 (and claim 8) because the notion of the invention as in the context of "duplicating keys" is repeatedly underscored as significant and the context of the invention. For example, the title of the 432 patent is "Key Duplication Machine." The Field of Invention is "duplicating keys." 432, Col. 1:24-27. The Background of the invention is in the context of "key duplication" with the goal for "improvements in machines and processes for cutting duplicate keys." 432, Col. 1:31-2:49. The Summary of the Invention is about an "Apparatus, methods, and other embodiments associated with a key duplication machine." 432, Col. 3:8-11. Duplication is mentioned over 140 times in the specification.

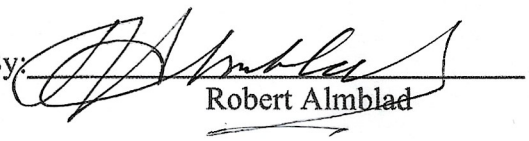
192. In my opinion, because the preamble recites structure that is required to give meaning to the claim; because the body of the claim does not recite a structurally complete invention; and because the preamble tethers the claim body to the described invention, the preamble is limiting.

VIII. CONCLUSION

193. I declare under penalty of perjury under the laws of the United States that the foregoing is true and correct to the best of my knowledge.

Respectfully submitted,

Date: December 14, 2021

By: 
Robert Almblad

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EMPLOYMENT

SUSAN CLICKNER DESIGNS — LYNCHBURG, VA
CEO and Marketing Director — December 2011-Present

- Design and facilitate licensing of business signage and communication technology to serve brick-and-mortar businesses.
- See https://www.etsy.com/shop/SusanClicknerDesigns.

WELBILT — NEW PORT RICHEY, FL
Design Automated Food Service Equipment (Freelance) — June1995-2020

- Invented and licensed innovative automated food service equipment for fast food restaurants.

CREDITCARD KEYS, AXXESS, AND LASER KEYS — AZ, IL AND UK
Founder and CEO — Jan 1975–2012

- Invented, built and licensed a lot of automated key copying technology.
- See USPTO Almblad patents on key copying.

EDUCATION

LOYOLA UNIVERSITY — CHICAGO, IL
Business & Economics (no degree awarded) — 1966-67

NORTHWESTERN UNIVERSITY — CHICAGO, IL
Economics (no degree awarded) — 1967

UNIVERSITY OF COLORADO — BOULDER, CO
Business & Economics (no degree awarded) — 1967-68

PUBLICATIONS

- Not including patents, to the best of my knowledge, I have not published any technical articles in the last 10 years.

EXPERT WITNESS

- To the best of my knowledge, I have not testified as an expert at trial or by deposition within the last four years