

Sept. 8, 1970

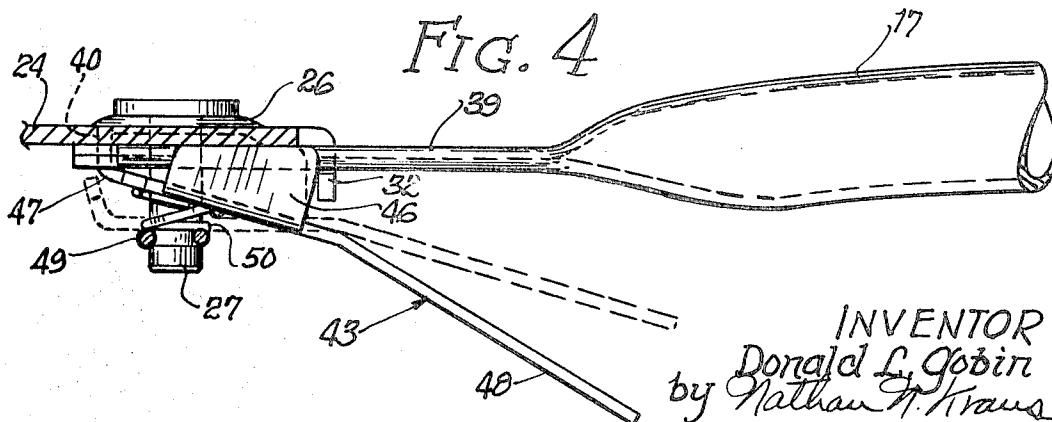
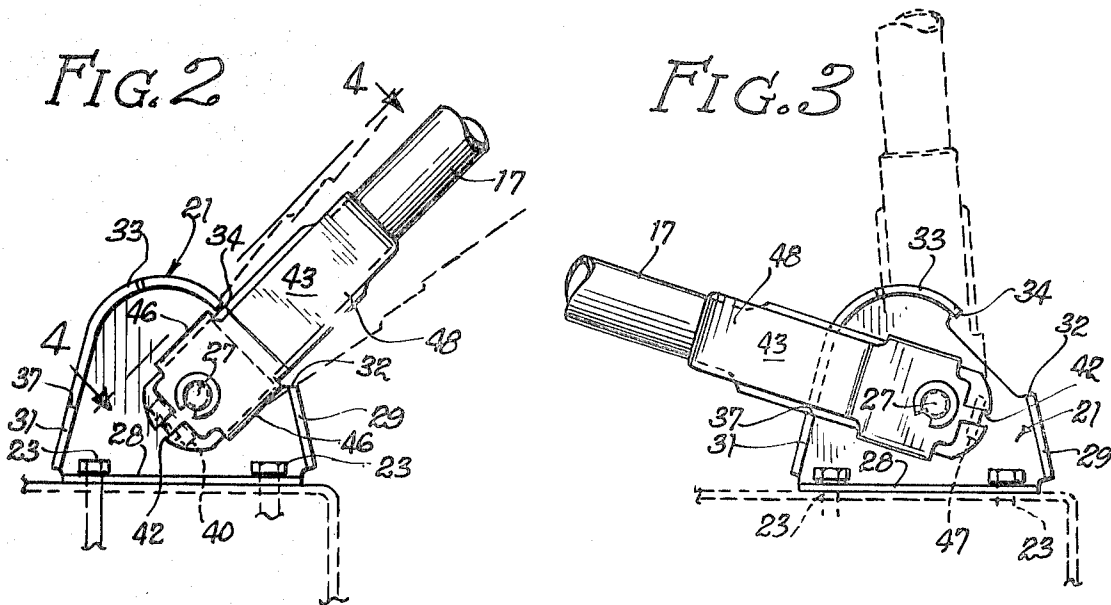
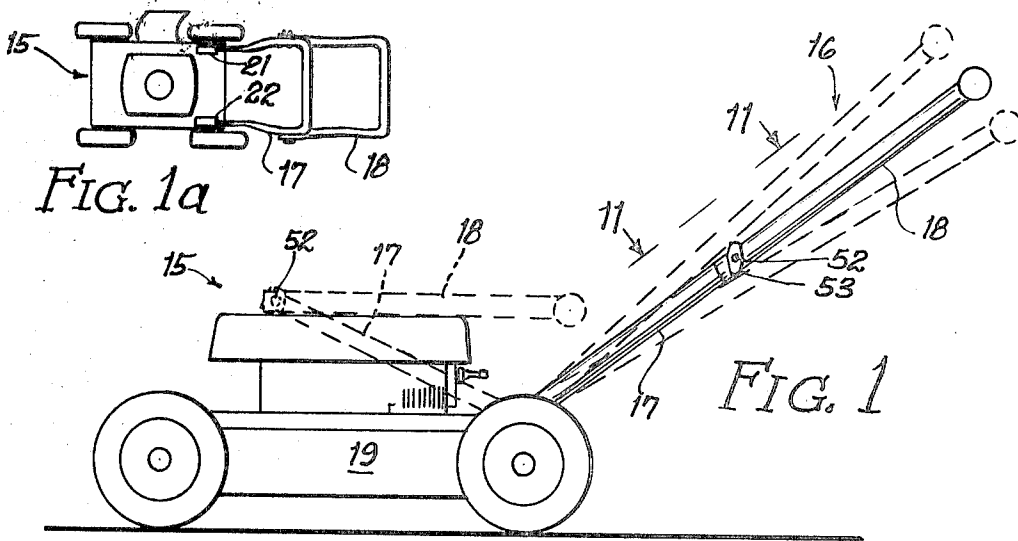
D. L. GOBIN

3,527,469

FOLDABLE HANDLE CONSTRUCTION FOR A PUSH TYPE APPARATUS

Filed Dec. 6, 1968

2 Sheets-Sheet 1



INVENTOR
Donald L. Gobin
by Nathan H. Kraus
Frank A. Marks Attys

Sept. 8, 1970

D. L. GOBIN

3,527,469

FOLDABLE HANDLE CONSTRUCTION FOR A PUSH TYPE APPARATUS

Filed Dec. 6, 1968

2 Sheets-Sheet 2

FIG. 5

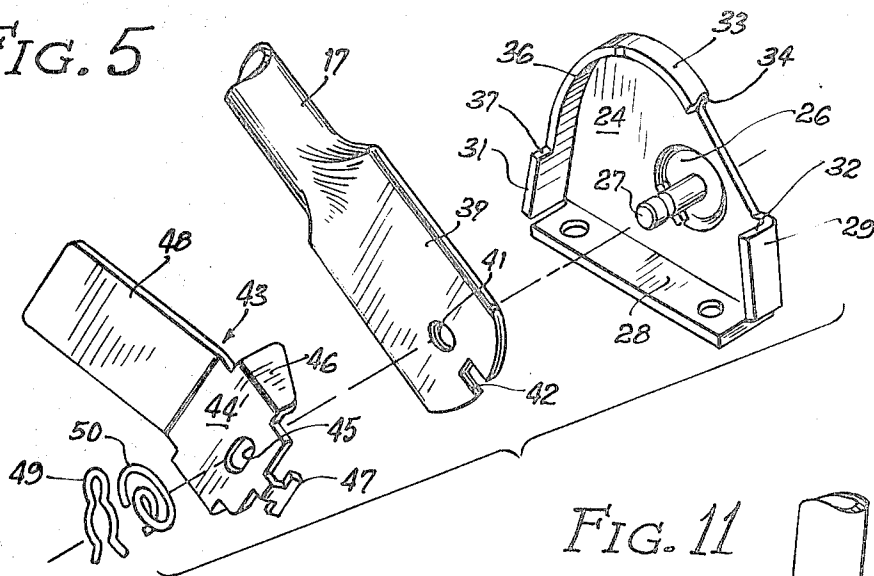


FIG. 11

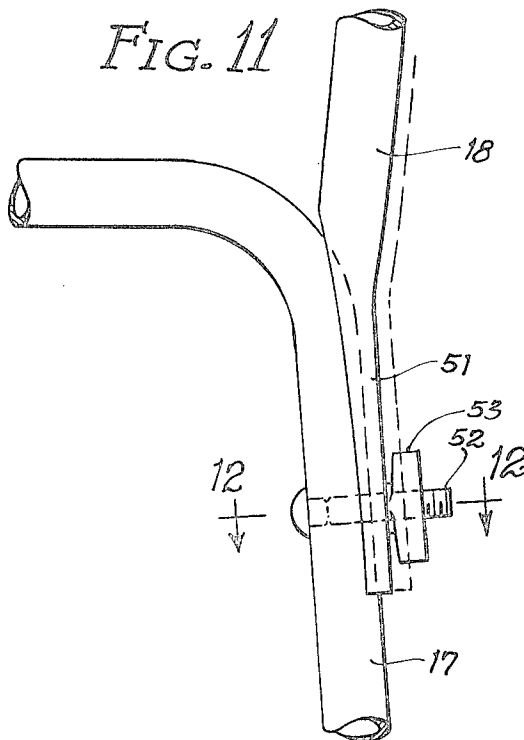


FIG. 6

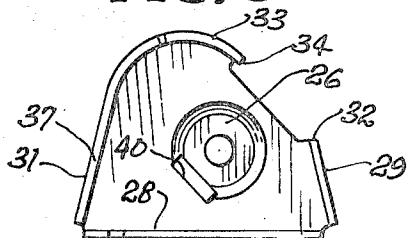


FIG. 7

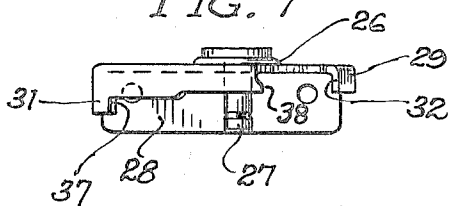


FIG. 8

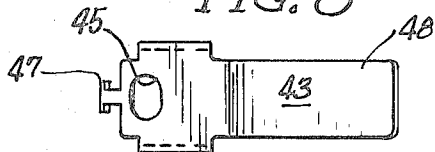


FIG. 9

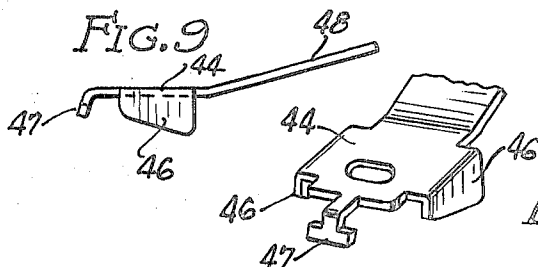
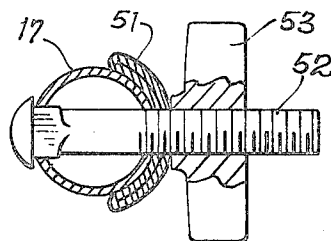


FIG. 10

FIG. 12



1

2

3,527,469

FOLDABLE HANDLE CONSTRUCTION FOR A PUSH TYPE APPARATUS

Donald L. Gobin, Newark, Ohio, assignor to Roper Corp.,
Kankakee, Ill., a corporation of Delaware
Filed Dec. 6, 1968, Ser. No. 781,760
Int. Cl. B62b 3/00

U.S. Cl. 280—47.37

11 Claims

ABSTRACT OF THE DISCLOSURE

A foldable handle construction and mounting means for a push-type apparatus in which the handle includes upper and lower generally U-shaped tubular sections with the end portions of the legs of the upper section being arcuate in cross-section and receiving in nesting relation corresponding legs of the lower section. Corresponding legs of the sections are secured by bolts so that the two sections may be made rigid in co-planar relationship or may be arranged in folded relationship.

The end portions of the legs of the lower section are generally flat and each is pivotally supported on a pin extending laterally from a vertical wall portion of a respective bracket mounted on the apparatus. Each bracket has spaced abutments defining a space locating the operative position for the handle. A lever provided with camming means is connected to each flat end portion of a leg and manipulation of the levers will withdraw the respective end portions from respective spaces so as to permit rocking of the handle to non-operative position.

This invention relates to a foldable handle construction and mounting means therefor.

GENERAL OUTLINE OF THE INVENTION

The present invention is related to a foldable handle and mounting means for use on push-type apparatus, such as lawnmowers, snowblowers and the like, wherein the handle may be fully extended for in-use position and then may be collapsed to occupy a minimum of space within the size limitations of the apparatus, for storage and shipment. In use, the handle construction is rigidly locked in extended position for operation. The locking means are readily manipulable to free the handle so that it may be folded to non-operation position.

BRIEF DESCRIPTION OF THE DRAWINGS

In the drawings,

FIG. 1 is a side elevational view illustrating a power lawnmower having a handle construction, in accordance with my invention, the same being shown in extended condition, in full lines, and in folded or non-operative position, in broken lines.

FIG. 1a is a top plan view of the mower illustrated in FIG. 1.

FIG. 2 is a fragmentary elevational view illustrating the parts with the handle in operating position.

FIG. 3 is a similar view showing the handle folded in non-operative position.

FIG. 4 is a top plan view, on an enlarged scale, taken substantially on line 4—4 of FIG. 2.

FIG. 5 is an exploded perspective view showing the details of the handle and mounting means therefor.

FIG. 6 is a front elevational view of a mounting bracket.

FIG. 7 is a top plan view thereof.

FIG. 8 is a front elevational view of a lever constituting part of the mounting means.

FIG. 9 is a top plan view thereof.

FIG. 10 is a fragmentary perspective view of structural details of the lever shown in FIGS. 8 and 9.

FIG. 11 is a fragmentary top plan view taken on line 11—11 of FIG. 1 and illustrating a joint of the handle structure, and

FIG. 12 is a cross-sectional view, on an enlarged scale, taken substantially on line 12—12 of FIG. 11.

DETAILED DESCRIPTION

Referring to the drawings, the numeral 15 indicates a push-type rotary lawnmower provided with a foldable handle, in accordance with my invention, indicated generally by the numeral 16. The handle includes two tubular sections 17 and 18, hereinafter to be more fully described.

Supported on the deck of the mower housing 19 is a pair of allochiral brackets 21 and 22 secured as with bolts 23 to respective deck portions. The brackets 21 and 22 are arranged in transverse registration and each of the brackets is formed substantially like that illustrated in FIGS. 5—7. It will be seen that each bracket includes a vertical wall portion 24 provided with a stamped embossing 26 in the center of which is welded a pin 27. The lower edge of the wall portion 24 is provided with a pierced integral flange 28 adapted to rest on the deck portion of the housing. Each bracket is formed with integral inwardly directed lateral flanges 29 and 31. The flange 29 extends upwardly from the base flange 31 along one edge of wall 24 and terminates a short distance therefrom to provide a shoulder 32. The flange 31 also extends upwardly along an opposite edge of wall 24 and includes an upper arcuate portion 33 which terminates at some distance from the shoulder 32 to provide a stop or shoulder 34 against which the handle section 17 is adapted to abut.

Referring to FIG. 7 it will be seen that the flange 31 is so shaped as to provide a stepped camming surface 36 along its edge, said camming surface terminating at a shoulder 37. The shoulder 34 is provided with an overhanging retaining projection 38. A rectangular cut-out 40 is provided in the wall 24 for clearance purposes, as will be hereinafter explained.

The handle 17 is generally U-shaped and the terminal portion 39 of each leg is flattened, as illustrated in FIG. 5, each flattened portion being pierced as at 41 and provided with a recess 42 cut in from the edge thereof. The terminal portion 39 is adapted to be pivotally supported on the pin 27 with the pin extending through the hole 41.

An actuating lever 43 shaped, substantially as illustrated in FIG. 5, includes a body portion 44 provided with an elongated slot 45 adapted to receive the pin 27. The body portion 44 includes a pair of opposed camming portions 46 which are arranged to straddle the terminal portion 39 of the handle and to engage against the inner surface of the vertical wall 24 of the bracket. One end of the body portion 44 is provided with an integral T-shaped formation 47 which is angularly related to the body portion, with the longitudinal leg of said formation being received in the recess 42 of the handle, as illustrated in FIGS. 2—4. An arm 48 is integral with the body portion 44 and extends along the leg of the handle 17 in angular relation thereto. The parts are maintained in assembled relation by a spring clip 49 which engages in an annular recess provided in the end of the end of the pin 27. A spring 50 biases the body portion 44 against the vertical wall 24.

The legs of the U-shaped handle section 17 are normally resilient so that when the handle section is mounted on the brackets 21 and 22 the flattened terminal portions 39 of the legs tend to abut the respective inner wall surfaces 24 of the brackets, as illustrated by the solid lines in FIG. 4. It will be understood that in such position the terminal portion 39 of each leg of the handle section is received in the space between the shoulders 32 and

3

34, as illustrated in FIG. 2. It will also be noted that the space between the said shoulders affords some clearance for the terminal portion 39 so that the handle section in normal use position may be rocked within the limits defined by said shoulders to assume either of the extreme positions illustrated by the broken lines or any intermediate position there between. It will be apparent that the overhanging projection 38 of the shoulder 34 aids in retaining the terminal portions 39 of the legs against inadvertent displacement from in-use position.

In the position illustrated in FIGS. 2 and 4, the transverse leg of the T-formation 47 of the lever 43 is received in the clearance cut-out 40 in the wall 24 of the bracket.

In order to move the handle section 17 from the operative position illustrated in FIGS. 2 and 4 to the non-operative position illustrated in FIG. 3, the lever 43 is rocked to the broken line position shown in FIG. 4, causing the camming elements 46 to rock the T-formation 47 out of the cut-out 40, and in such movement, the T-formation draws the terminal portion 39 of the handle section outwardly through the space defined by the shoulders 32 and 34 to a point where said terminal portion clears the edge of the flange 33 so that the handle may be rocked in a counter-clockwise direction, as viewed in FIG. 2, to the position illustrated by the solid lines in FIG. 3. In such movement that the outer face of the terminal portion 39 will engage against the camming edge 36 of the flange 33 by reason of the normal resilience of the handle so that when it is finally moved to the stop position illustrated in FIG. 3, in abutment with the shoulder 37, the normal resilience of the legs of the handle section will retain the same in folded or non-operative position. When the handle section is rocked back to operative position the terminal portions 39 will snap back in the respective spaces.

Referring to FIGS. 1, 11 and 12, it will be seen that each of the legs of the handle section 18 which is also U-shaped has a collapsed terminal portion 51 which is arcuately formed so as to engage snugly against the outer wall of a respective leg of the handle portion 17, as illustrated in FIG. 12. Both of the handle sections 17 and 18 are pierced to receive a bolt 52 provided with a suitable T-nut 53 for effecting securement for the two handle sections. The legs of the handle section 18 are resilient so that when the nut 53 is unscrewed, the leg portions 51 normally will tend to move away from engagement with respective legs of the handle section 17 permitting the handle section 18 to be rocked about the bolts to assume the position illustrated by the broken lines of FIG. 1. In such position the handle sections do not extend beyond the dimensional limits of the mower or other apparatus on which my invention is applied. Thus, the apparatus may be compactly arranged for storage or shipment.

Various changes coming within the spirit of my invention may suggest themselves to those skilled in the art; hence, I do not wish to be limited to the specific embodiment shown and described or uses mentioned but intend the same to be merely exemplary, the scope of my invention being limited only by the appended claims.

I claim:

1. In combination,

- (a) a handle having a generally flat end portion,
- (b) a mounting bracket including a vertical wall portion having a laterally extending pin pivotally supporting said handle,
- (c) said wall portion having spaced abutments defining there-between a space to receive said flat end portion, said space locating the operative position for said handle,
- (d) an actuating lever loosely supported on said pin and operatively engaged with said flat end portion,
- (e) said lever having camming means engageable with said wall portion,

4

(f) said lever when rocked on said camming means being adapted to withdraw said flat end portion outwardly of said space to permit rocking of said handle to nonoperative position.

2. The invention as defined in claim 1 in which the camming means comprises a pair of camming elements embracing opposite edges of said flat end portion.

3. The invention as defined in claim 1 in which the flat end portion has a notch at the end thereof and the lever has T-shaped formation engaged in said notch.

4. The invention as defined in claim 1 including a camming edge associated with said vertical wall portion adjacent to said space to guide said flat end portion in its movement from operative to non-operative position.

5. In combination,

- (a) a generally U-shaped handle having generally flat terminal leg portions,
- (b) a pair of spaced mounting brackets, each including a vertical wall portion having a laterally extending pin,
- (c) said handle being pivotally supported on said pins,
- (d) each of said wall portions having spaced abutments defining there-between a space to receive a respective terminal leg portion, said space locating the operative position for said handle,
- (e) a pair of actuating levers each being loosely supported on respective pins and operatively engaged with respective terminal leg portions,
- (f) each of said levers having camming means engageable with a respective wall portion,
- (g) each of said levers when rocked on said camming means being adapted to withdraw a respective terminal leg portion outwardly of a respective space to permit rocking of said handle to non-operative position.

6. The invention as defined in claim 3 in which the vertical wall portion has an opening therein in which is received the T-shaped formation when the handle is in operative position.

7. The invention as defined in claim 1 including an arm attached to the lever and extending longitudinally of said handle and in angular relation thereto.

8. The invention as defined in claim 1 in which the handle is foldable and comprises

- (a) a first tubular section,
- (b) a second tubular section having an end portion arcuate in cross-section and arranged to nest said first tubular section therein,
- (c) both of said sections having registering holes,
- (d) and fastening means passed through said holes to releasably secure said sections together.

9. The invention as defined in claim 8 in which the end portion of said second tubular section is collapsed and in arcuate formation.

10. A foldable handle comprising

- (a) a first generally U-shaped handle section having generally flat terminal leg portions,
- (b) a pair of spaced mounting brackets, each including a vertical wall portion having a laterally extending pin,
- (c) said handle section being pivotally supported on said pins,
- (d) each of said wall portions having spaced abutments defining there-between a space to receive a respective terminal leg portion, said spaces locating the operative position for said handle section,
- (e) a pair of actuating levers each being loosely supported on a respective pin and operatively engaged with a respective terminal leg portion,
- (f) each of said levers having camming means engageable with a respective wall portion,
- (g) each of said levers when rocked on said camming means being adapted to withdraw a respective terminal leg portion outwardly of a respective space to

5

permit rocking of said handle section to non-operative position,

(h) a second generally U-shaped tubular handle section,

(i) each of the legs of said second handle section having an end portion arcuate in cross section and arranged to nest a respective leg of said first tubular section therein,

(j) cooperating legs of said handle sections having registering openings, and

(k) fastening means passed through said registering openings to secure said handle sections together in planar relation.

11. The invention as defined in claim 10 in which the legs of the second U-shaped section are resilient and tend to spread away from each other so that when the fastening

5

10

15

6

means are released said legs will normally disengage from the respective legs of said first U-shaped section.

References Cited

UNITED STATES PATENTS

3,144,258	8/1964	Ottosen et al.	280—47.37
3,038,737	6/1962	Lill	280—47.37
2,727,753	12/1955	Johnson et al.	280—47.37

BOBBY R. GAY, Primary Examiner

P. A. ASCHENBRENNER, Assistant Examiner

U.S. Cl. X.R.

16—112