

July 16, 1963

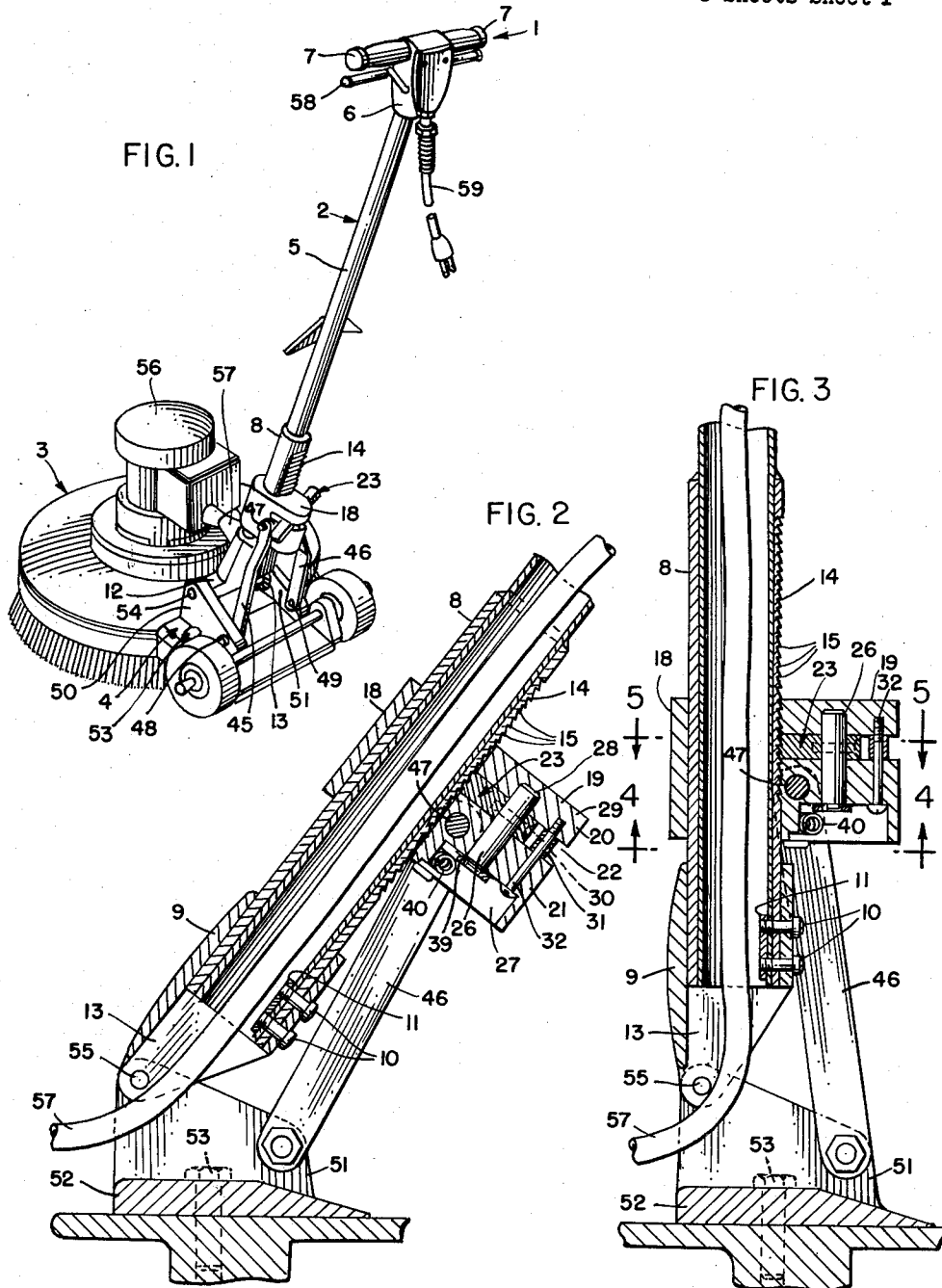
P. E. DOYLE

3,097,890

ADJUSTABLE HANDLE FOR FLOOR MACHINES

Filed March 16, 1961

3 Sheets-Sheet 1



INVENTOR:
PATRICK E. DOYLE
BY
Margall, Johnston, Cook & Post

ATT'YS

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P. E. DOYLE

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FIG. 4

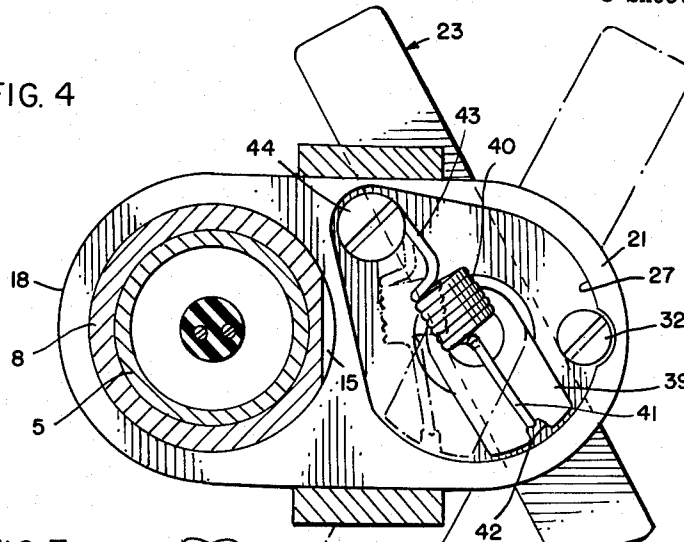


FIG. 7

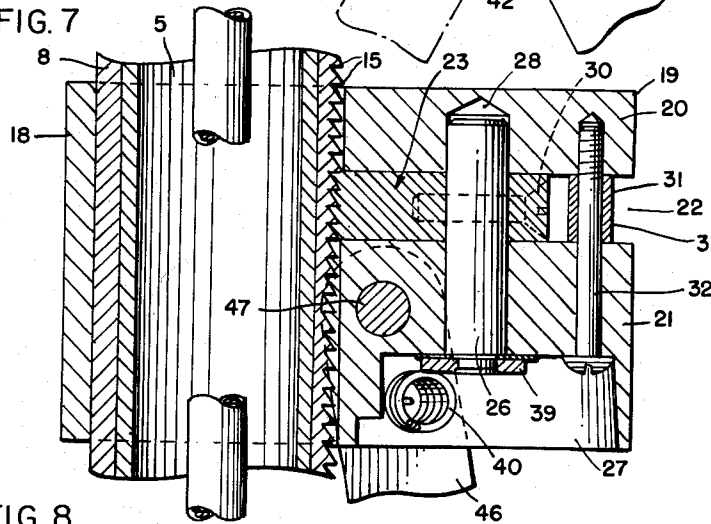


FIG. 8

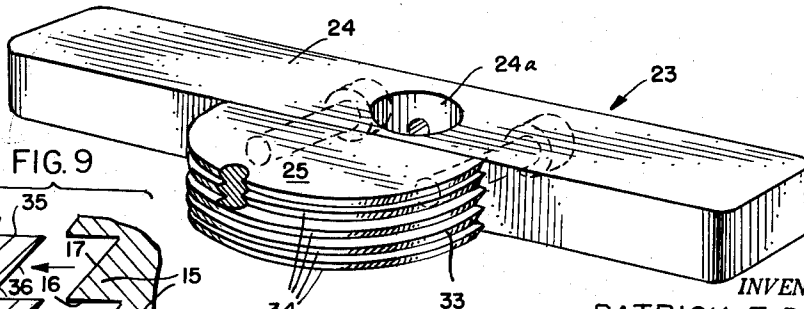
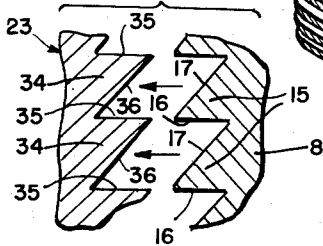


FIG. 9



INVENTOR:
PATRICK E. DOYLE
BY
Marzall, Johnston, Cook & Post

ATT'YS

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P. E. DOYLE

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FIG. 6

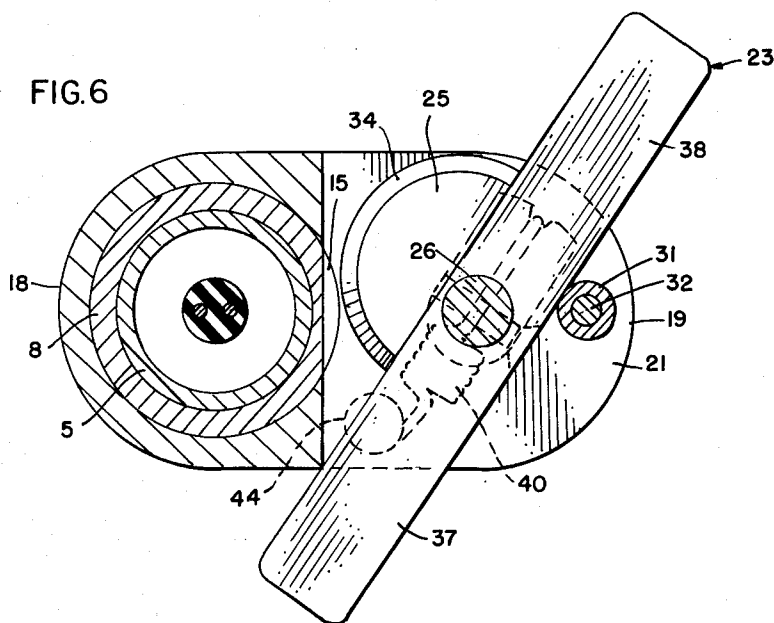
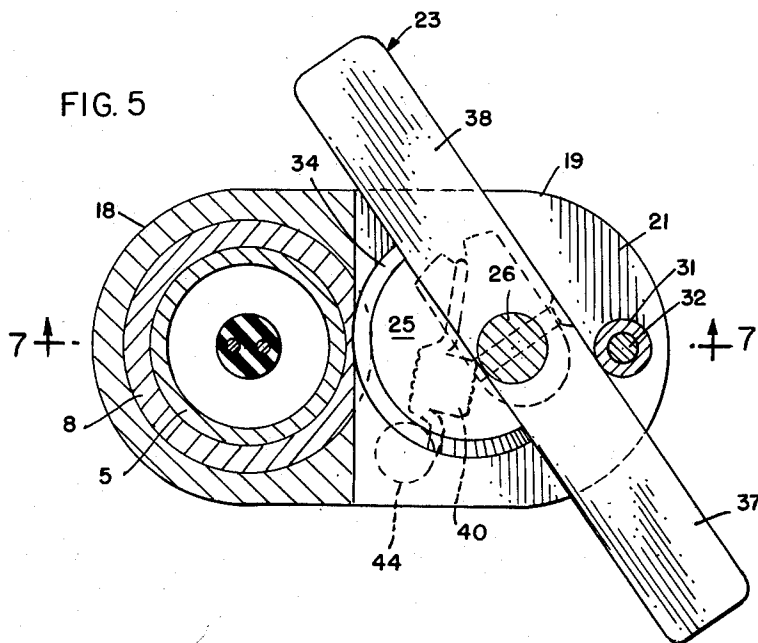


FIG. 5



INVENTOR:

PATRICK E. DOYLE

BY

Marshall, Johnston, Cook & Post

ATT'YS

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3,097,890

ADJUSTABLE HANDLE FOR FLOOR MACHINES
Patrick E. Doyle, Grand Rapids, Mich., assignor to Doyle Vacuum Cleaner Company, Grand Rapids, Mich., a corporation of Michigan

Filed Mar. 16, 1961, Ser. No. 96,237

2 Claims. (Cl. 306—4)

This invention relates to handles and, more particularly, to handles which are particularly well adapted for use on floor machines, such as, for example, floor scrubbing or polishing machines, and the like.

A primary object of the present invention is to enable a novel elongated handle to be afforded for floor machines, and the like, which may be readily adjusted in a novel and expeditious manner to various positions of use.

Adjustable handles for floor machines, and the like, have been heretofore known in the art. However, such handles as have been heretofore known in the art have had several inherent disadvantages such as, for example, being freely movable so that they are not held in adjusted position; not being quickly and easily adjustable to different positions; or embodying locking mechanism which is readily rendered inoperative by the accumulation of dust or dirt therein, or the like. Another important object of the present invention is to overcome such disadvantages.

A further object of the present invention is to afford a novel handle for floor machines, or the like, which may be quickly and easily adjusted to different positions of use.

Another object is to afford a novel handle of the aforementioned type which embodies novel positive locking mechanism for holding the handle in adjusted position.

Another object is to afford a novel handle of the aforementioned type wherein the locking mechanism thereof is self cleaning so that dust or dirt which may accumulate therein is effectively dislodged therefrom by the operation of the locking mechanism.

Yet another object of the present invention is to afford a novel handle of the aforementioned type wherein the locking mechanism may be quickly and easily engaged and disengaged, in a novel and expeditious manner, by the simple actuation of a single, readily accessible lever.

A further object of the present invention is to afford a novel handle of the aforementioned type wherein the locking thereof in adjusted position is afforded by the interengagement of teeth in a novel and expeditious manner.

Another object is to afford a novel handle of the aforementioned type which is practical and efficient in operation and may be readily and economically produced commercially.

Other and further objects of the present invention will be apparent from the following description and claims and are illustrated in the accompanying drawings which, by way of illustration show a preferred embodiment of the present invention and the principles thereof and what I now consider to be the best mode in which I have contemplated applying these principles. Other embodiments of the invention embodying the same or equivalent principles may be used and structural changes may be made as desired by those skilled in the art without departing from the present invention and the purview of the appended claims.

In the drawings:

FIG. 1 is a rear perspective view of a floor machine embodying a handle embodying the principles of the present invention;

FIG. 2 is a fragmentary longitudinal sectional view of the handle shown in FIG. 1;

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FIG. 3 is a fragmentary sectional view similar to FIG. 2 but showing the handle in a different adjusted position; FIG. 4 is a detail sectional view taken substantially along the line 4—4 in FIG. 3;

5 FIG. 5 is a detail sectional view taken substantially along the line 5—5 in FIG. 3;

FIG. 6 is a detail sectional view similar to FIG. 5 but showing parts thereof in different position;

10 FIG. 7 is a detail sectional view taken substantially along the line 7—7 in FIG. 5;

FIG. 8 is an enlarged perspective view of the locking lever shown in FIGS. 5 and 6; and

FIG. 9 is an enlarged, exploded fragmentary sectional view of the teeth shown in FIG. 7.

15 In the drawings, a floor machine, in the form of a cleaning or scrubbing machine 1, embodying an elongated handle 2 which is adjustable in accordance with the principles of the present invention, is shown to illustrate the preferred embodiment of the present invention.

20 The floor machine 1, in addition to the handle 2, includes, in general, a body portion 3 adapted to be moved over a floor in a scrubbing operation, and an attaching mechanism 4 for attaching the handle 2 to the body portion 3.

25 The handle 2 includes an elongated, substantially straight shank, in the form of a tubular member 5 having a switch box 6 mounted on the upper end thereof, with hand grips 7 projecting outwardly from the switch box 6 to afford members to be gripped by the operator in the manipulation of the floor machine 1 during a scrubbing operation.

30 A rack tube 8 is mounted on the lower end portion of the tubular member 5, FIGS. 1, 2, and 3. A mounting sleeve 9 is mounted on the lower end portion of the rack tube 8, and the sleeve 9 and the rack tube 8 are secured to each other and to the tubular member 5 in fixed stationary relation by suitable means such as bolts or screws 10 which extend through the lower end portions of the sleeve 9, the rack tube 8, and the tubular member 40 5 and are threadedly engaged in a plate 11 disposed in the tubular member 5, FIGS. 2 and 3. The mounting sleeve 9 includes two mounting brackets 12 and 13, which project downwardly below the rack tube 8 and the tubular member 5 in substantially parallel spaced relation to each other for a purpose which will be discussed in greater detail presently.

45 The rack tube 8 includes a rack 14 on the rear outer face thereof, the rack 14 extending longitudinally of the tube 8, FIGS. 1, 2, and 3. The rack 14 includes a plurality of equally spaced, parallel elongated teeth 15 which are disposed perpendicular to the longitudinal center line of the rack tube 8 so that when the handle 2 is disposed in vertical position each of the teeth 15 extends longitudinally in a horizontal direction. Each of the teeth 15 includes a lower face 16 which is perpendicular to the longitudinal center line of the rack tube 8, and an upper face 17 which projects upwardly and forwardly at an acute angle to the lower face 16. The upper face 17 of each tooth 15 which underlies another tooth 15, projects upwardly at the aforementioned acute angle from the lower face 16 of the aforementioned underlying tooth into the engagement with the inner edge portion of the lower face of the tooth 15 disposed immediately thereabove, FIGS. 2 and 9.

50 A sleeve 18 having a split boss 19 projecting rearwardly therefrom is slidably mounted on the rack tube 8 for movement longitudinally thereof. The sleeve 18 has an internal diameter of such size that it fits on the rack tube 8 with a relatively snug, but freely slidable fit.

55 The boss 19 includes an upper portion 20 and a lower portion 21 spaced from each other by a recess 22 disposed therebetween, FIGS. 2, 3, and 7. The recess 22 com-

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pletely separates the upper and lower portions 20 and 21 of the boss 19, and a locking lever 23, having a substantially straight, elongated body portion 24 and a boss 25 projecting laterally from the longitudinal central portion of the body portion 24, is pivotally mounted in the recess 22 in the boss 19 on a pin 26, FIGS. 2, 4, 7, and 8. The boss 25 is preferably removably secured to the lever 23 to enable replacement of that part which receives the greatest wear.

The lower portion 21 of the boss 19 has a downwardly opening recess 27 therein, and the pin 26 projects upwardly through the lower portion 21 of the boss 19 from the recess 27, and through opening 24a in the body portion 24 of the locking lever 23 into a recess 28 in the upper portion 20 of the boss 19. The recess 28 into which the pin 26 extends in the upper portion 20 of the boss 19 terminates at its upper end in downwardly spaced relation to the upper face 29 of the boss 19. Suitable fastening means, such as, for example, a screw 30 is mounted in the locking lever 23 and extends through the pin 26 to thereby secure the locking lever 23 to the pin 26 for rotation therewith, and also to secure the pin 26 in the boss 19 of the sleeve 18, FIGS. 2, 3, and 7.

A spacer 31 is disposed between the upper and lower portions 20 and 21 of the boss 19 outwardly of the locking lever 23. The spacer 31 is so disposed in the boss 19 that the longitudinal center line thereof is in the same plane as the longitudinal center line of the pin 26 and the tubular member 5 when the sleeve 18 is disposed in operative position on the sleeve 8. A screw or a bolt 32 extends upwardly through the lower portion 21 of the boss 19 and the sleeve 31, and is threaded into the upper portion 20 of the boss 19. The head of the screw or bolt 32 is disposed in the recess 27 in the lower portion 21 of the boss 19, and the bolt 32 is effective to clamp the upper and lower portions 20 and 21 of the boss 19 snugly against the upper and lower faces, respectively, of the spacer 31. The spacer 31 is of such length that when the upper and lower portions 20 and 21 of the boss 19 are so clamped by the screw or bolt 32, the locking lever 23 fits between the upper and lower portions 20 and 21 of the boss 19 with a relatively snug, but a freely slidable fit so that it may be readily rotated on the pin 26 in the boss 19.

As is best seen in FIG. 8, the boss 25 on the locking lever 23 is substantially semi-circular in shape, having an arcuate front face 33 projecting outwardly from the body portion 24 of the locking lever 23. A plurality of elongated, spaced parallel teeth 34, which are complementary in size and shaped to the teeth 15 on the rack tube 8 are formed in the outer face 33 of the boss 25 and extend in parallel relation to the teeth 15 when the sleeve 18 is mounted on the rack tube 8. The teeth 34 are substantially mirror images of the teeth 15, having flat upper faces 35 which are disposed perpendicular to the longitudinal center line of the pin 26, and lower faces 36 which project downwardly and rearwardly from the upper faces 35 at an acute angle thereto, FIGS. 7 and 9.

The opening 24a is offset longitudinally of the body portion 24 of the locking lever 23 from the longitudinal center of the body portion 24 a sufficient distance to the right, as viewed in FIG. 8, that by oscillating the lever 23 around the pin 26 the teeth 34 may be slid longitudinally into and out of engagement with the teeth 15 of the rack 14, as shown in FIGS. 5 and 6. The spacer 31 is so disposed relative to the lever 23 that when the lever 23 is rotated in a counterclockwise direction, as viewed in FIG. 5, the spacer 31 engages the rear face of one end 37 of the lever 23 to stop rotation of the lever 23 in such direction in such position that the teeth 34 on the lever 23 are fully engaged with the teeth 15 on the rack tube 8; and when the lever 23 is rotated in a clockwise direction, as viewed in FIGS. 5 and 6, the spacer 31 acts as a stop engageable with the other end portion 38 of the lever 23 to prevent further movement of the lever 23 in this direc-

tion when the lever 23 has been rotated in this last-mentioned direction an amount sufficient to fully disengage the teeth 34 from the teeth 15, as shown in FIG. 6.

A plate 39 is mounted on the lower end of the pin 26 and is secured thereto by suitable means, such as, for example, welding, for rotation, therewith. The plate 39 is disposed in the recess 27, FIGS. 2, 3, and 4, and a tension coil spring 40 has one end portion 41 hooked into a notch 42 in one end of the plate 39, and the other end portion 43 thereof attached to the boss 19 by a screw or bolt 44, FIG. 4. The spring 40 is so disposed relative to the plate 39 that it is effective to urge the lever 23 to rotate in a counterclockwise direction, as viewed in FIGS. 5 and 6, or, in other words, to rotate toward the position effective to engage the teeth 34 with the teeth 15.

The end portions of the body portion 24 of the lever 23 project outwardly from the sleeve 18 to thereby afford readily accessible handles for rotating the lever 23 against the urging of the spring 40. Thus, it will be seen that the sleeve 18, which is normally locked in position on the shank 5 by the teeth 34 on the lever 23 engaged with the teeth 15 on the rack 14, may be quickly and easily released from such locked relation by the operator grasping an end portion of the handle 23 and rotating the latter from the position shown in FIG. 5 to the position shown in FIG. 6 to thereby disengage the teeth 34 from the teeth 15. With the teeth 34 and 15 thus disengaged, the sleeve 18 may be moved longitudinally of the rack tube 8 to another position, and the operator may then release the lever 23 to thereby free it to the urging of the spring 40, which is effective to again rotate the lever 23 in a counterclockwise direction, as viewed in FIGS. 5 and 6 into position to again engage the teeth 34 with the teeth 15 at the new adjusted position.

Two elongated links 45 and 46 are pivotally attached at their upper end portions to respective opposite sides of the lower portion 21 of the boss 19 by a bolt or screw 47, FIGS. 1, 2, and 3. The links 45 and 46 are disposed rearwardly of the brackets 12 and 13 on the mounting sleeve 9, and the lower end portions thereof are connected by screws or bolts 48 and 49, respectively, to mounting brackets 50 and 51, respectively, projecting upwardly from a plate 52 secured to the body portion 3 of the floor machine 1 by bolts or screws 53, FIGS. 1, 2, and 3. The plate 52 and the screws 53 constitute the attaching mechanism 4 of the floor machine 1, and, as will be appreciated by those skilled in the art, the attaching mechanism 4 may be of any suitable type. However, I prefer to use attaching mechanism of the type shown in the co-pending application for United States Letters Patent of Patrick E. Doyle, Serial No. 93,431, filed March 6, 1961.

The mounting brackets 12 and 13 on the mounting sleeve 9 are pivotally attached to the brackets 50 and 51 by suitable means such as bolts or screws 54 and 55, respectively. The links 45 and 46 are disposed rearwardly of the brackets 12 and 31 and are so disposed on the handle 2 that when the locking lever 23 is disposed in position to disengage the teeth 34 and 15, as shown in FIG. 6, the handle 2 is freely pivotable upwardly and downwardly around the screws or bolts 54 and 55, the sleeve 18 sliding along the rack 14 during such movement of the handle 2. The rack 14 on the rack tube 8 is preferably of such length that the teeth 15 thereon are disposed in position to engage the teeth 34 on the locking lever 23 in any one of several positions of the handle 2 from a truly vertical position thereof to a position wherein the handle 22 is disposed at a rearwardly opening acute angle of approximately thirty degrees to the floor or other supporting surface on which the floor machine rests.

It will be seen that when an elongated handle embodying the novel adjusting mechanism of the handle 2 shown in the drawings is mounted on a machine such as the floor machine 1, requiring the electrical connection of a motor, or the like, such as, for example, the motor 56 on the body portion 3 to a source of electrical power such as,

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for example, a wall outlet in a house, or the like, this may be readily accomplished by threading a suitable electrical conductor such as, for example, a cord 57 from the motor 56 upwardly through the tubular member 5 to the switch box 6, in which it may be connected through a switch 58 to an electrical conductor such as a cord 59 which may be attached to the suitable source of electric power. The parts of the handle 2 are so constituted and arranged, and the handle 2 is so disposed on the body portion 3 that the angular position of the handle 2 is fully adjustable even with an electrical conductor, such as the conductor 57 extending therethrough.

One of the features of the novel adjusting mechanism disclosed herein is that the teeth 34 on the locking lever 23 have a wiping contact with the teeth 15 on the rack tube 8 with which they are engaged in an adjusting operation. Therefore, even if dust or dirt has accumulated in the teeth to be engaged when the handle 2 is moved to a new adjusted position, the teeth 15 and 34 are effective to cut and dislodge such dirt or dust and permit ready engagement of the teeth 15 and 34 in the new position.

Also, it will be seen that with the novel adjusting mechanism disclosed herein, the handle 2 may be adjusted to a number of intermediate positions between the two extreme positions of adjustment thereof.

In addition, it will be seen that with the novel adjusting mechanism disclosed herein, the handle 2 is firmly and positively held in adjusted position by the interengagement of a plurality of teeth, so that a strong and practical locking mechanism for holding the handle 2 in position of adjustment is afforded.

Also, it will be seen that handles of the type disclosed herein are practical and efficient in operation and may be readily and economically produced commercially.

Thus, while I have illustrated and described the preferred embodiment of my invention, it is to be understood that this is capable of variation and modification, and I therefore do not wish to be limited to the precise details set forth, but desire to avail myself of such changes and

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alterations as fall within the purview of the following claims.

I claim:

1. A handle for a floor machine, or the like, comprising an elongated shank, having an elongated rack extending longitudinally along one side thereof, said rack including a plurality of teeth, a sleeve disposed around said shank for movement longitudinally thereof, an elongated lever having elongated arcuate-shaped teeth projecting from the longitudinal central portion thereof, said lever being pivotally mounted at the longitudinal central portion thereof in said sleeve in position for swinging said last mentioned teeth longitudinally across said rack teeth in wiping contact therewith into and out of operative engagement with said rack teeth, the end portions of said lever projecting outwardly from said sleeve in position to afford handles, said sleeve being movable longitudinally of said shank when said lever teeth are disposed out of said operative engagement with said rack teeth, and said sleeve being held against said movement when said lever teeth are disposed in said operative engagement with said rack teeth, and means on said one end portion of said shank and on said sleeve for pivotally attaching said shank and said sleeve to such a machine.

2. A handle as defined in claim 1, and in which said sleeve has two recesses therein, said lever is pivotally mounted in one of said recesses, and spring means are mounted in the other of said recesses and operatively connected to said lever in position to urge said lever to rotate in one direction.

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