H. E. HOOVER.

SUCTION CLEANER.

APPLICATION FILED JAN. 6, 1919.

1,336,078.

Patented Apr. 6, 1920.

2 SHEETS—SHEET 1.

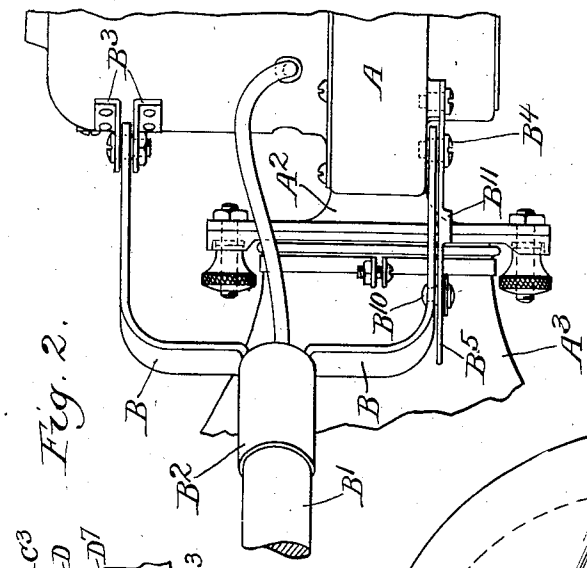


Fig. 2.

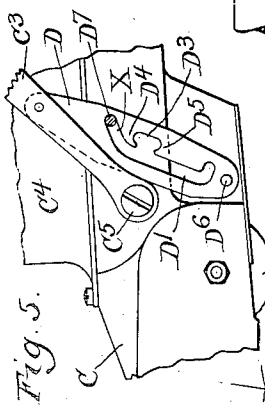


Fig. 5.

Fig. 1.

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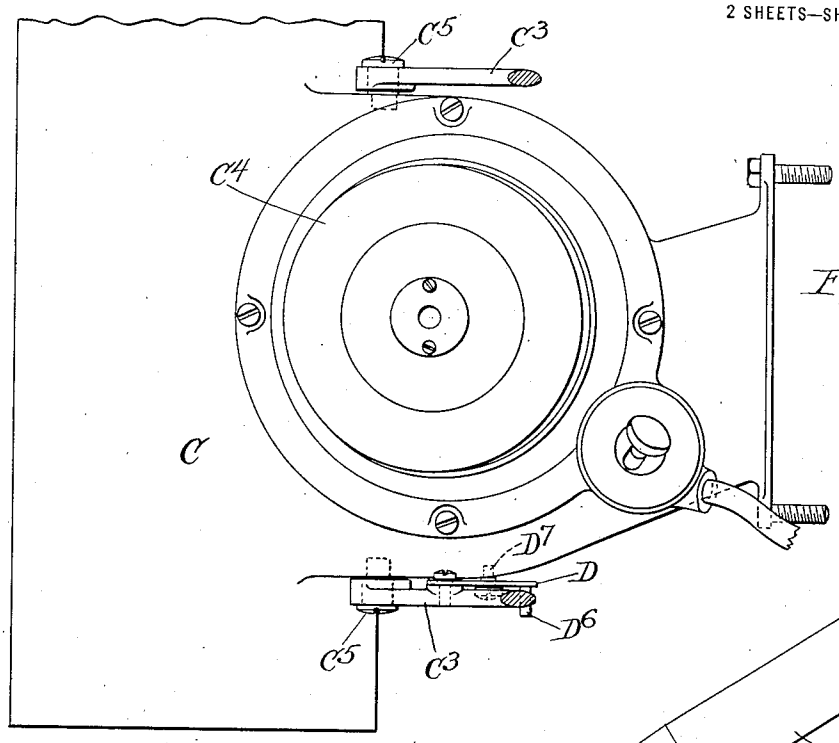


Fig. 4.

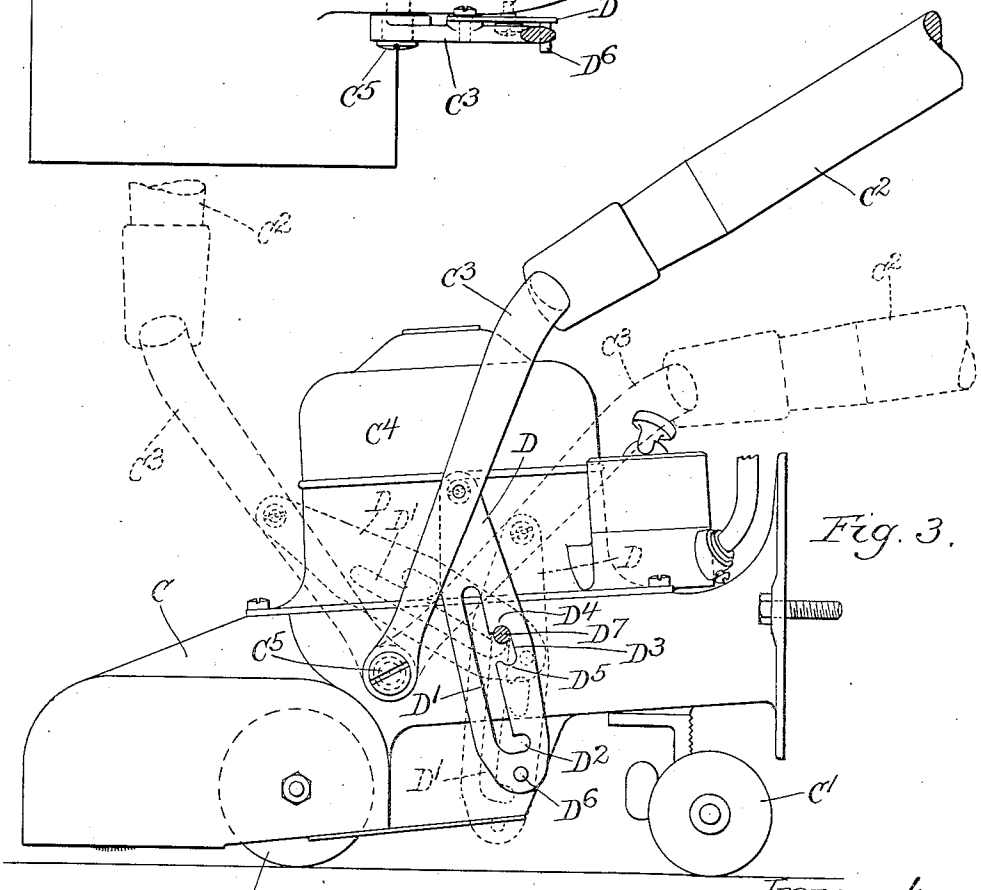


Fig. 3.

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UNITED STATES PATENT OFFICE.

HOWARD EARL HOOVER, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE HOOVER SUCTION SWEEPER COMPANY, OF NORTH CANTON, OHIO, A CORPORATION OF OHIO.

SUCTION-CLEANER.

1,336,078. Specification of Letters Patent. Patented Apr. 6, 1920.

Application filed January 6, 1919. Serial No. 269,788.

To all whom it may concern:

Be it known that I, HOWARD EARL HOOVER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Suction-Cleaners, of which the following is a specification.

My invention relates to improvements in suction cleaners and more particularly to means for limiting the rotation of handle bails used therewith.

My invention is illustrated more or less diagrammatically in the accompanying drawings, wherein—

Figure 1 is a side elevation;

Fig. 2 is a plan view of part of my suction cleaner.

Fig. 3 is a side elevation in modified form;

Fig. 4 is a plan view;

Fig. 5 is a detail of a modification;

Like parts are indicated by like letters in all the drawings.

A is a suction cleaner casing with a suction nozzle A^1, a discharge opening A^2 and a dust receiving bag A^3.

B is a handle bail communicating with the cleaner manipulating handle B^1 and may be made in two parts as indicated, bound together by a sleeve B^2 which clamps them to the end of the cleaner handle. The free ends of the bail are pivoted one of them upon the brackets B^3 B^3 on the casing A, the other upon a pin B^4 on the casing. B^5 is the handle bail stop. It is provided with an irregular elongated slot B^7 on one side of which are two adjacent hook members B^8 B^9. B^{10} is a pin projecting from the handle bail headed at each end and adapted to lie within the slot B^7 to limit the movement of the handle bail. It will be understood that the stop rests by gravity on the pin and that the only way to get it out of the position shown in Fig. 1, is to lift it by engaging the projecting foot piece B^{11}. When this is done, the handle may be moved down into a position where it does not rise above the top of the fan housing or it may be raised until it stands straight up. As soon, however, as the bail is moved back, it will drop down into the position shown in Fig. 1 when the excursion or rocking movement of the handle with respect to the cleaner is more or less limited as is necessary to permit adjustment during the operation to suit the height or convenience of the operator.

It will be evident that while I have shown in my drawings an operative device, still many changes might be made both in size, shape and arrangement of parts without departing materially from the spirit of my invention, and I wish, therefore, that my drawings be regarded as in a sense diagrammatic.

The handle of a suction sweeper is under different circumstances supposed to be in a number of positions. For storage when the apparatus is out of use the handle should stand generally upright so as not to take up room. When in that position the pin engages the forward end of the slot with the handle held upright and inclined slightly forward and resting against the end of the slot. When the apparatus is in normal use the operator holds the handle and this position is about that shown in Fig. 1. As she swings her arm back and forth pushing the apparatus along the floor, there will be slight changes in the height of her hand and these changes may take place between the limits imposed by the two hooks or hook surfaces in the upper wall of the slot. When it is desired to raise the nozzle above the floor, as for instance, in climbing on a thick rug, the operator merely depresses the handle and because a rotational movement of the handle with respect to the housing is limited by the rearward of the two intermediate hooks, the housing will rotate about the rear supporting wheels and the nozzle will be raised. If for any reason such as for instance, to get at deep seated dirt in a thick rug or to pick up material from a smooth floor, it is desired to tilt the nozzle down, the operator raises up on the handle and as soon as the pin engages the forward of the two intermediate hooks, the rear wheels will be lifted from the ground and the nozzle depressed. If it is desired to clean under a bed or anything of that kind, the operator lifts up the latch and allows the handle to swing to the rear until the pin on the bail engages the rearmost end of the slot in which position it is properly held with the handle substantially in line with the machine and projecting appreciably above it.

In Figs. 3 and 4 I have shown how the same general type of handle bail stop which I have illustrated in Figs. 1 and 2 may be applied to a different form of suction sweeper.

C is a suction sweeper housing of the vertical motor type supported on rollers C^1 C^1. The handle C^2 terminates in a forked handle bail C^3 which straddles the motor housing C^4 and is pivoted on the screws C^5 on either side of the body of the housing.

D is the stop plate pivoted on one arm of the handle bail. It is slotted as indicated at D^1. The lower end of the slot has an offset D^2 and intermediate the two ends of the slot is a pocket D^3 having at either end intermediate limiting hooks or surfaces D^4 D^5. At the lower end is a handle D^6. D^7 is a pin projecting outwardly from the body of the casing into the slot.

When the parts are in the position shown in Fig. 3 the handle bail is permitted a certain limited movement between the full line position and a slightly raised position of the handle not shown to permit the usual rocking or rotating of the handle as the hand of the operator swings back and forth. When in the right hand dotted line position the upper end of the stop engages the pin and the handle is substantially on a level with the top of the motor housing. If you lift the handle, the weight of gravity will cause the pin to engage the intermediate stop pocket and you must attach the little trigger or handle on the end of the locking link and disengage the parts if you want to move the handle into the dotted line position shown on the left of the drawing.

The interesting thing about this arrangement is that although the stop plate extends down below the bottom of the fan housing, still the relation between it and the supporting wheels is such that no matter how you tip or displace the housing and no matter what the position of the stop is, you can never cause the stop itself to touch and be bent by the floor.

In order to protect the handle bail stop against any possible blow or bending, I provide in one form a special type of slot, that is the uppermost portion of the slot D^1 is bent far to the rear as indicated in X so that when the handle is bent way down the handle stop is bent way forward bringing it close up against the back of the casing and thus the end of the stop is absolutely protected.

The use and operation of my invention are as follows:—

In my form of casing, the height of the machine is so reduced that it may be run under beds, chairs, tables and the like where ordinary machines cannot be run. In this connection the handle bail is a narrow rigid structure and it may be dropped down so as to fall completely down below the top of the machine. It is thus possible to run clear in under a bed without interference.

The latch or lock for limiting the movement of the handle bail is always in operation. When the pin on the bail is at one end of the slot the handle will be held in a substantially horizontal position, when at the other end of the slot the handle will be held in a substantially vertical position. The horizontal position is used when cleaning under a bed or the like. The vertical position is used when storing the cleaner. The two intermediate positions are immediately assumed when you rotate the handle from either one of the extreme positions. The weight of the stop causes it to drop down when it is released so that the hook members on the upper side of the slot come into opposition to the pin and thus limit the rotational movement of handle and bail with respect to the housing to that narrow movement which is desirable during the operation to permit the position of the handle to conform to or to change with the convenience of the operator.

I claim:

1. The combination with a tool and pivoted handle bail therefor of a slotted stop plate pivoted on one and a part projecting from the other into the slot and means intermediate the ends of the slot for limiting the rotation of the handle bail the projecting part being always in engagement with the slot.

2. The combination with a tool and pivoted handle bail therefor of a slotted stop plate pivoted on one and a pin projecting from the other into the slot and means intermediate the ends of the slot for limiting the rotation of the handle bail the pin being always in engagement with the slot said means comprising pin engaging parts of the slot.

3. The combination with a tool and pivoted handle bail therefor of a slotted stop plate pivoted on one and a pin projecting from the other into the slot and means intermediate the ends of the slot for limiting the rotation of the handle bail the pin being always in engagement with the slot said means comprising pin engaging parts of the slot and adapted to drop into line with the pin under the influence of gravity.

4. The combination with a tool and pivoted handle bail therefor of means for limiting the movement of the handle bail when it is in a substantially vertical and in a substantially horizontal position and means for additionally limiting the movement of the handle bail between intermediate limits between the vertical and the horizontal position.

5. The combination with a tool and

pivoted handle bail therefor of means for limiting the movement of the handle bail when it is in a substantially vertical and in a substantially horizontal position and means for additionally limiting the movement of the handle bail between intermediate limits between the vertical and the horizontal position, said means comprising a pin on one member, a slotted pivoted plate on the other engaging the pin, and spaced pin engaging means intermediate the ends of the slot the slot being so positioned with respect to the pin that the ends of the slot limit the handle bail by their engagement with the pin at either end of its excursion and the pin engaging means in the slot intermediate its ends provide the intermediate limits to its excursion.

6. The combination with a tool and pivoted handle bail therefor of unitary means for limiting the motion of the handle bail at its upper and at its lower position and for limiting its excursion to a relatively narrow arc of movement intermediate both such positions.

7. The combination with a tool and pivoted handle bail of a stop comprising a slotted plate pivoted on one, a part extending from the other into the slot, and stops opposed one to another and located on one side of the slot intermediate its ends.

8. The combination with a tool and pivoted handle bail of a stop comprising a slotted plate pivoted on one, a pin extending from the other into the slot, pin-engaging members opposed one to another and located on one side of the slot intermediate its ends, said members being located on the side of the slot which lies farthest from the handle bail pivot point.

9. The combination with a tool and pivoted handle bail of a stop comprising a slotted plate pivoted on one, a pin extending from the other into the slot, pin engaging members opposed one to another and located on one side of the slot intermediate its ends, said members being located on the side of the slot which lies farthest from the handle bail pivot point and means for raising the plate to move the members out of line with the pin.

10. The combination with a handle and a case to which it is pivoted of a slotted stop plate pivoted on the bail, a stop pin projecting from the case and in engagement with the slot, supporting rollers for the case, the distance from the top of said slot to the bottom of said plate being less than the distance from the pin to the floor so that no matter what the position of plate or case the stop plate can never touch the floor upon which the case rests.

11. The combination with a handle bail and a case to which it is pivoted of a movable handle stop comprising a slotted plate pivoted on the bail, a pin projecting from the case and in engagement with the slot, the pin being at all times lower than the pivot point of the plate on the bail, the slot being provided with a part adapted to lock the handle against rotation in either direction with respect to the case when the handle is in the vertical position.

12. The combination with a handle bail and a case to which it is pivoted of a movable handle stop comprising a stop plate having a straight slot, a pin adapted to travel in the slot and a limiting pocket communicating with one side of the slot and having pin engaging surfaces at either end thereof intermediate the ends of the slot.

13. The combination with a handle bail and a case to which it is pivoted of a movable handle stop comprising a stop plate having a straight slot, a pin adapted to travel in the slot and a limiting pocket communicating with one side of the slot and having pin engaging surfaces at either end thereof intermediate the ends of the slot and an offset pocket at one end of the slot on the same side thereof as the intermediate limiting pocket.

14. The combination with a handle bail and a case to which it is pivoted of a movable handle stop comprising a stop plate having a generally straight slot the uppermost portion of which is sharply inclined to the rear, a pin adapted to travel in the slot, means removed from the rearwardly inclined portion of the slot for limiting movement of the handle, said inclination of the slot being adapted to cause the forward movement of the stop plate as the handle approaches its lowest position.

In testimony whereof I affix my signature, in the presence of two witnesses, this 17th day of December, 1918.

HOWARD EARL HOOVER.

Witnesses:

MINNIE M. LINDENAU,

MARION L. INGRAHAM.