Sept. 2, 1941. C. H. TAYLOR 2,254,667

VACUUM CLEANER

Original Filed Aug. 14, 1937 2 Sheets-Sheet 1

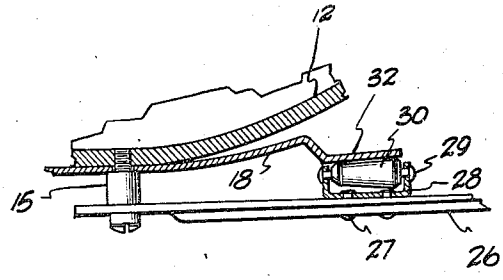
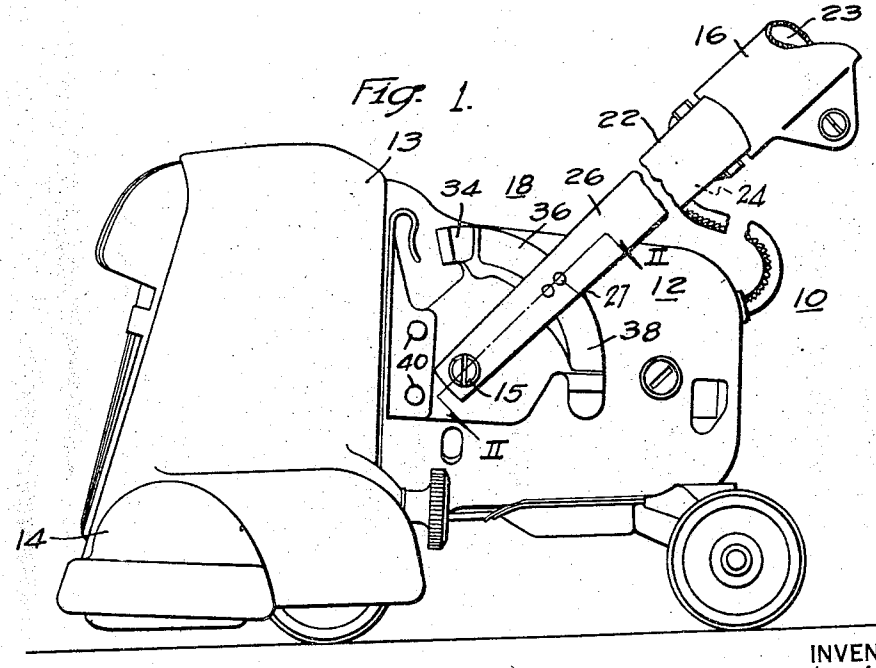


Fig. 2.

Fig. 1.



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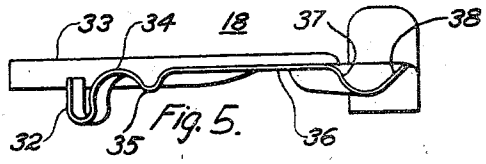


Fig. 5.

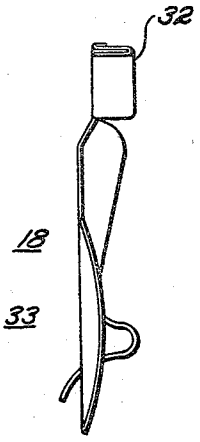


Fig. 4.

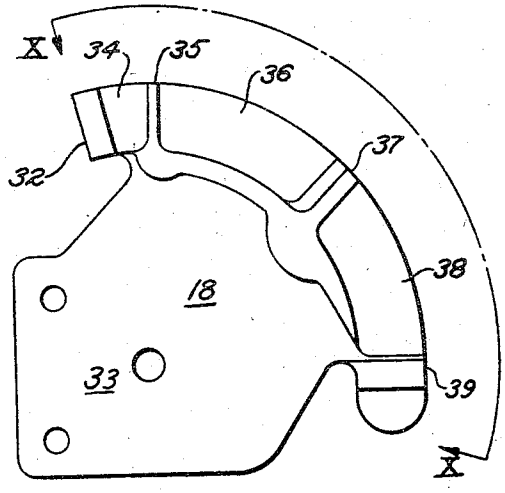


Fig. 3.

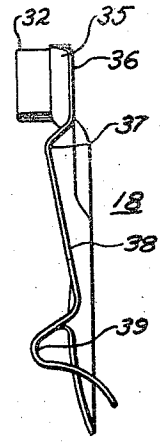


Fig. 6.

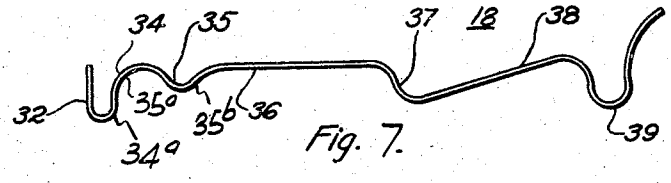


Fig. 7.

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Patented Sept. 2, 1941

2,254,667

UNITED STATES PATENT OFFICE

2,254,667

VACUUM CLEANER

Charles H. Taylor, Springfield, Mass., assignor to Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., a corporation of Pennsylvania

Original application August 14, 1937, Serial No. 159,050. Divided and this application January 30, 1940, Serial No. 316,337

2 Claims. (Cl. 306—12)

My invention relates to vacuum cleaners or like articles adapted to be operated on the floor, and more particularly to a handle control device therefor. This application is a division of my application, Serial No. 159,050, filed August 14, 1937, for Vacuum cleaners.

In vacuum cleaners known to the art having handle control devices associated therewith, it is the common procedure to have a device that is manually adjustable, movable by the fingers, operatively associated with the handle to control or limit the operating position of such handle. Most manually adjustable devices are somewhat complicated in construction and difficult to operate, resulting in undue inconvenience for the operator when adjusting the handle to a desired operating position.

It is an object of my invention to provide a device which retains the handle in a desired position or within a desired range of movement but which permits easy and convenient adjustment of the handle from one position to another; a particular object being to provide a device which permits the handle to be moved from one position to another by applying a slightly increased force to the handle.

A further object is to provide a simple, reliable and inexpensive handle control device.

These and other objects are effected by my invention as will be apparent from the following description and claims taken in accordance with the accompanying drawings, forming a part of this application, in which:

Fig. 1 is a side elevational view of a vacuum cleaner embodying my invention;

Fig. 2 is a detail sectional view, taken along the line II—II of Fig. 1, showing the handle control device;

Fig. 3 is an elevational view of the automatic handle position control shown in Figs. 1 and 2;

Figs. 4, 5 and 6 are, respectively, left-hand, top and right-hand side views of the device shown in Fig. 3; and,

Fig. 7 is a developed view of the device shown in Fig. 3, taken along the line X—X.

Referring to the accompanying drawings in detail, I show a vacuum cleaner 10 comprising a motor casing 12, a fan housing 13, a suction nozzle 14, an operating handle 16 pivotally mounted on said casing, and an automatic handle control device 18 operatively associated with said handle and rigidly attached to the casing 12. The housing 13 and the nozzle 14 are integral, and the casing 12 is rigidly attached to the housing 13, thereby providing a rigid body for the main member of the cleaner. The vaccum cleaner includes a fan within the housing 13 for producing a suction within the nozzle 14 and a motor in the casing 12 for driving the fan. A plurality of boss portions 15 may be operatively associated with the casing 12 in any suitable manner, and may have the handle 16 operatively associated therewith as hereinafter described.

The handle 16 has a bifurcated lower end portion 22 operatively associated with the main handle portion 23. The bifurcated end portion 22 comprises a plurality of tines 24 and 26, the free ends of which are operatively associated with the boss portions 15, to permit the handle 16 to pivot or swing about such boss portions as an axis. A U-shaped bracket 28 may be rigidly attached to the tine 26 by rivets 27 so that a roller 30, rotatably mounted upon the end of the U-shaped bracket 28, may be operatively associated with the automatic handle control device 18. The roller 30 may be rotatably mounted upon the free ends of the U-shaped bracket 28 by means of a suitable pin 29 rigidly attached to the U-shaped bracket 28 in any desirable manner.

The automatic handle-position controlling device 18 comprises a plate which may be formed from any suitable sheet metal so that the outer or free end portion 32 thereof may be capable of springing or bending with relation to the main portion 33 thereof. The plate 18 is rigidly attached to the casing by means of suitable screws 40 or the like which are spaced from the resilient portion 32 so as to permit the aforesaid springing or bending thereof. The resilient portion 32 is in the form of an arc concentric with the axis on which the handle 16 is pivoted to the casing 12. It is formed in an irregular manner substantially as shown in Figs. 3 to 7 so that it has a small circular indent 34, a long flat indent 36, and a tapered indent 38. A shoulder or stop 34a is located at one end adjacent the indent 34 while a shoulder or stop 39 is located at the other end adjacent the tapered indent 38. The indents 34 and 36 are separated by shoulders 35a and 35b formed by a boss portion 35, and the indents 36 and 38 are separated by a shoulder 37.

When operating the handle 16 to its various working positions, the roller 30 operatively associated with the bifurcated end portion 22, as hereinabove described, rides along the resilient portion 32 of the plate 18, bearing against the side thereof. When the vacuum cleaner is not in use, the roller 30 will be operatively associated with plate 18 within the indent 34, and due to the presence of the shoulders 34a and 35a, will

hold the handle 16 in vertical position. When it is desired to operate or move the vacuum cleaner, the upper end of the handle 16 may be grasped and pulled down or swung about the boss portions 15 to its normal working position. The roller 30 will then ride upon the shoulder 35a which will cause the resilient portion 32 to be biased outwardly away from the handle as the handle is lightly forced downward. The roller 30, due to the inward movement of the portion 32 as the roller rides upon the shoulder 35b, will proceed on into the elongated indent 36 as the handle progresses downwardly. The length of the elongated indent 36 will then permit the free or unrestrained normal use of the vacuum cleaner without having the roller 30 become engaged with either the shoulder 35b or 37.

The shoulder 37, as shown in Fig. 7, because of the distance it projects from the elongated indent 36, will prohibit the handle 16 from falling below a predetermined position corresponding to the position of such shoulder. However, if it be desired to operate the vacuum cleaner with the handle 16 in a substantially horizontal position, the operator may merely force the handle down into such position. As the handle is forced downwardly, the roller 30 will engage shoulder 37 and force the resilient portion 32 outwardly, permitting the roller 30 to proceed on into the tapered indent portion 38 substantially as hereinabove described, where it will be limited in its downward motion by the shoulder 39. With the roller located within the tapered indent or notch portion 38, the handle will be in a substantially horizontal position, permitting the vacuum cleaner to be operated under low objects such as a bed.

Should the operator desire to rotate the handle back to its normal operating position or to its vertical position, she merely needs to raise the handle into such desired position. While the handle is being returned to an upper position, the resilient portion 32 will readily move outwardly, because of the gradual taper of the indent portion 38, permitting the roller 30 to move to the upper position desired by the operator, substantially as hereinabove described. However, it is to be understood that the shoulders 35a, 35b, and 37 will prevent the handle 16 from proceeding from any one notched position to another by its own weight or motion without additional force being supplied thereto by the operator.

It is, therefore, obvious that the automatic handle-position controlling device 18 will readily permit the handle to be located and retained in any desired position or maintained within a predetermined intermediate or normal operating range while operating the vacuum cleaner, and will permit an operator to move the handle from one position to another and retain it therein automatically, that is, without manually adjusting or operating the controlling device 18.

While I have shown my invention in but one form, it will be obvious to those skilled in the art that it is not so limited, but is susceptible of various changes and modifications without departing from the spirit thereof, and I desire, therefore, that only such limitations shall be placed thereupon as are specifically set forth in the appended claims.

What I claim is:

1. The combination with a vacuum cleaner adapted for operation upon the floor and comprising a main member having wheels for movably supporting the same on the floor and a handle pivoted to the main member on a horizontal axis for moving the main member, of an automatic handle control device comprising a resilient plate fastened to one of said members adjacent said pivot axis and including an arcuate portion disposed concentrically of said pivot axis and spaced from the point of fastening, said resilient plate further including portions extending substantially radially from the point of fastening to the two ends of the arcuate portion, a contact portion carried by the other of said members in such position as to engage the side of said arcuate portion, said arcuate portion being formed with a portion along which said contact portion moves freely during the normal operation of the vacuum cleaner, shoulders at the opposite ends of said normal operation portion to yieldably retain said handle member within the normal operating range against movement either upwardly or downwardly, and a shoulder disposed so as to engage said contact portion to yieldably retain said handle member, when in vertical position, against movement toward the normal operating range, the automatic handle control device further including a stop adapted to engage said contact portion, when the handle is in vertical position, to retain the handle against movement away from the normal operating range and with a stop adapted to engage the contact portion, when the handle is in horizontal position, to retain the handle member against downward movement.

2. The combination set forth in claim 1 wherein said contact portion comprises a roller which rotates on an axis extending radially of said pivot axis.

CHARLES H. TAYLOR.