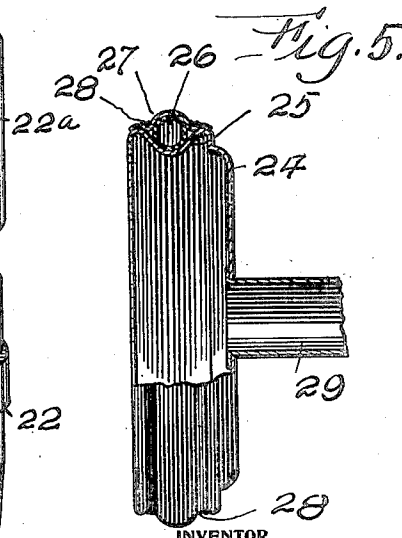
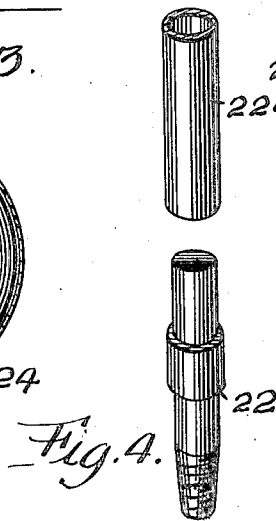
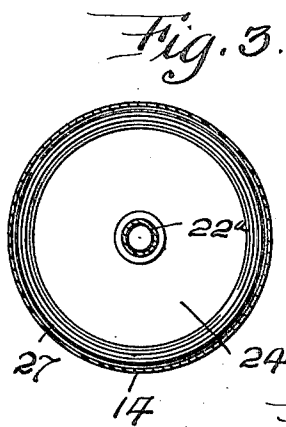
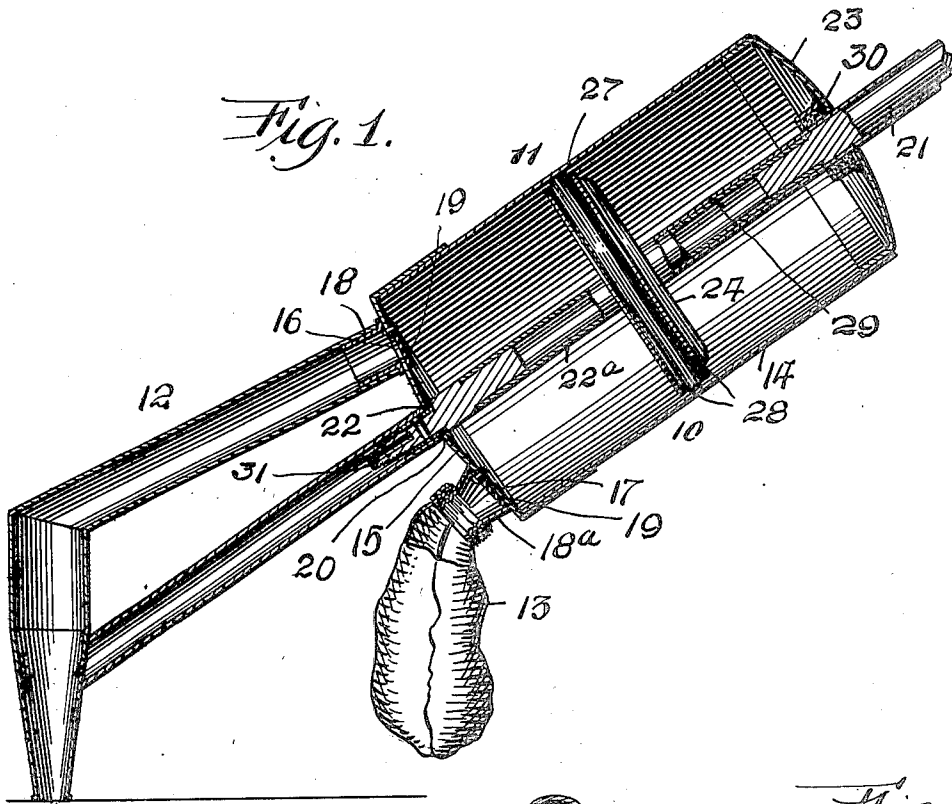


J. SCHIRRA.
 SUCTION CREATING MECHANISM FOR VACUUM CLEANING APPARATUS.
 APPLICATION FILED APR. 17, 1912.

1,106,682.

Patented Aug. 11, 1914.
 2 SHEETS—SHEET 1.



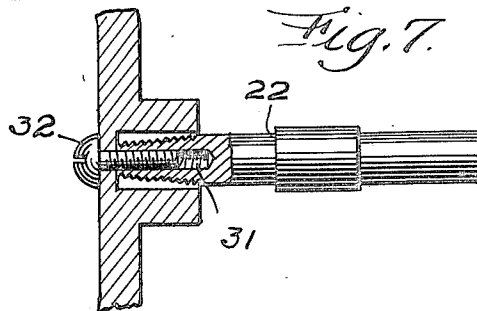
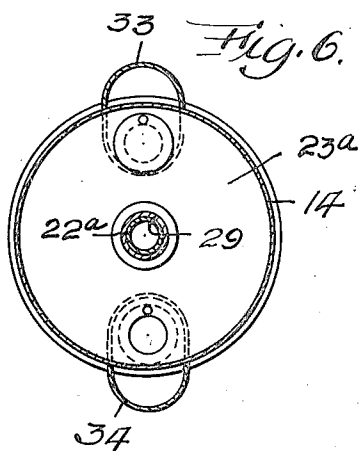
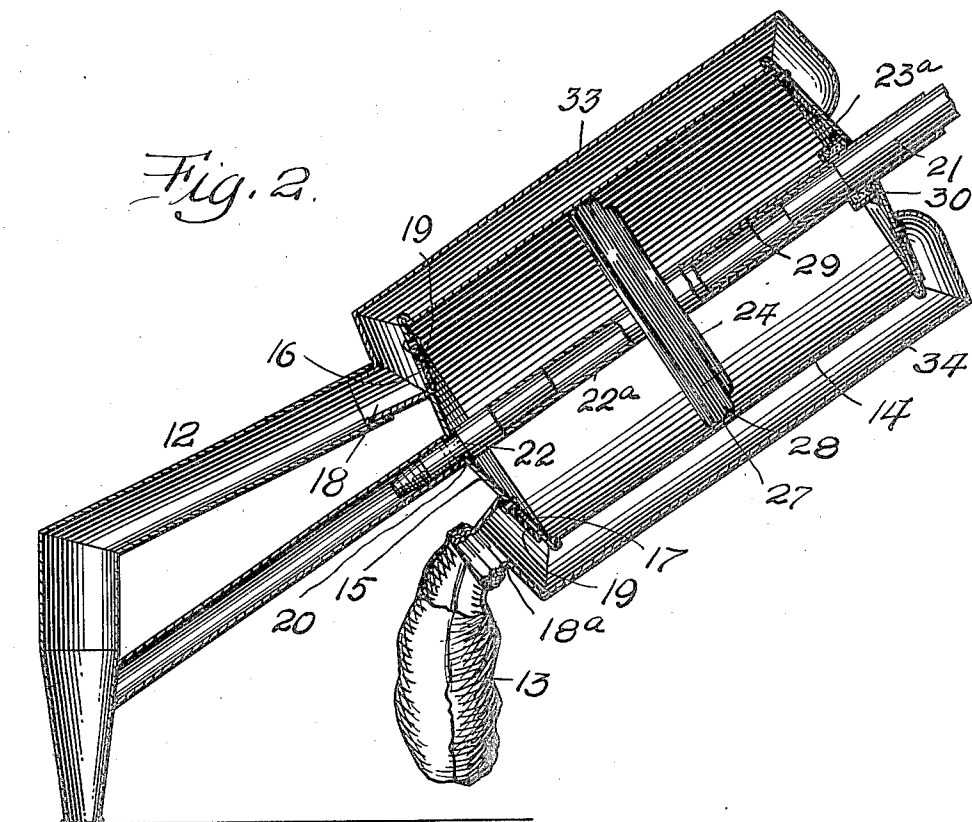
WITNESSES
Samuel Payne
Ralph C. Evert.

INVENTOR
Julius Schirra.
 BY *M. E. Evert & Co.*
 ATTORNEYS

J. SCHIRRA.
 SUCTION CREATING MECHANISM FOR VACUUM CLEANING APPARATUS.
 APPLICATION FILED APR. 17, 1912.

1,106,682.

Patented Aug. 11, 1914.
 2 SHEETS-SHEET 2.



WITNESSES
Samuel Payne.
Ralph C. Evert.

INVENTOR
Julius Schirra.
 BY *N. C. Evert.*
 ATTORNEYS

UNITED STATES PATENT OFFICE.

JULIUS SCHIRRA, OF PITTSBURGH, PENNSYLVANIA, ASSIGNOR TO HAND VACUUM SWEEPER COMPANY, OF PITTSBURGH, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

SUCTION-CREATING MECHANISM FOR VACUUM CLEANING APPARATUS.

1,106,682.

Specification of Letters Patent.

Patented Aug. 11, 1914.

Application filed April 17, 1912. Serial No. 691,484.

To all whom it may concern:

Be it known that I, JULIUS SCHIRRA, a citizen of the United States of America, residing at Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Suction-Creating Mechanism for Vacuum Cleaning Apparatus, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention relates to improvements in vacuum cleaning apparatus and relates more particularly to a construction of this type operated on the general principles set forth in the patent granted to me November 14, 1911, No. 1,008,865, in the provision of an apparatus which can be used as an attachment to a carpet sweeper or be used independently thereof, either when attached to or entirely disconnected from the sweeper. In the construction shown in the said patent, the suction providing element is in the form of a collapsible or bellows structure, the specific type of which is best indicated in the patent granted to me November 7, 1911, No. 1,008,205, the present invention being shown as of the type disclosed in this latter patent, it being understood that the construction is such as to be applicable for use in the manner indicated in either of these patents.

Among the objects of my invention are to provide a construction which is substantially non-collapsible, in which the sweeper handle forms a support on which the movable member of the suction device reciprocates to provide the suction action; to provide a novel form of movable member for the suction device; to provide a novel form of handle and support; to provide a structure in which the handle may be attached to different types of sweepers, to provide a device which is capable of use to produce a suction in one direction only of the movable member of the device, or in both directions of its movement; and to provide a construction which is attractive in appearance, durable in construction, and which can be manufactured at a relatively low cost.

To these and other ends, the nature of which will be readily understood as the invention is hereinafter disclosed, said invention consists in the improved construction and combination of parts hereinafter fully

described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims.

In the accompanying drawings, in which similar reference characters indicate similar parts in each of the views—Figure 1 is a central longitudinal sectional view of one form of my device, showing it applied to a suction nozzle. Fig. 2 is a similar view showing the device adapted for use in providing a suction in both directions of movement of the movable member. Fig. 3 is a cross sectional view taken on the line III—III of Fig. 1. Fig. 4 is a detail view of a portion of the handle and of the sleeve which coöperates therewith. Fig. 5 is a detail view partly in section of the movable member of the suction device. Fig. 6 is a sectional view taken on the line VI—VI of Fig. 2. Fig. 7 is a detail view of the lower end of the handle showing the manner in which the latter may be attached to a sweeper bail of the type having no threads for engagement of the handle.

The apparatus indicated generally at 10 comprises a suction device 11, a suction head 12, and a dust receptacle 13, the head shown in the drawings being of the type disclosed in the Patent No. 1,008,205 heretofore referred to, it being understood, however that the form of head and the connection between it and the suction device may be of the type shown in the patent granted to me, No. 1,008,865 referred to. The dust receptacle is similar to that shown in said patent, the principal variation from the disclosure of said patent being in the form of the suction device itself, which, as shown in Figs. 1 and 2 may be employed in connection with either an apparatus adapted to work in but one direction of movement of the movable member or in both directions.

In the present form of my device, employing that shown in Fig. 1 as an example, I employ a tubular member 14, preferably of metal, although other materials may be used, said member having its forward end closed by a cap 15 having an inlet port 16 and an outlet port 17, the forward face of the cap being provided with nozzles 18, 18^a, the former being adapted to receive the connection from the suction head, while the nozzle 18^a is formed for the connection of the dust receptacle 13. As shown, the ports

16 and 17 are controlled by suitable valves 19 properly located to provide the action necessary for the operation of the apparatus. The cap 15 is also provided with a central opening 20 through which the forward end of the handle or support 21 extends, the handle having a shoulder 22 which is adapted to abut against the inner face of the cap to close the opening.

10 The handle or support 21 is preferably formed in three parts, the forward and rear portions being preferably of wood, these portions being connected by a sleeve 22^a as shown in Figs. 1 and 2, this construction 15 having the double purpose of strengthening the handle within the member 14 and also insuring that the portion of the handle on which the movable member travels is straight, limiting the liability of the parts becoming difficult to operate through warping or other action of the handle. The rear 20 of the tubular member may be closed by a cap 23, as shown in Fig. 1, or a closure 23^a as shown in Fig. 2, the cap 23 being capable 25 of being removed when desired.

The movable member shown in detail in Fig. 5 is in the form of a piston, comprising a hollow member 24 having an annular groove 25 adapted to receive a resilient 30 packing preferably in the form of a tubular hose suction 26 resting within the groove and the outer covering 27 thereof, the latter being held in place by suitable securing means such as cords or threads 28. Extending axially through the member 24 is a 35 tubular member 29, said member extending rearwardly from the piston and being of a length to project from the cap 23 a suitable distance along the handle 21, said member 40 29 being adapted to slide upon the handle and the sleeve 22 in providing reciprocations of the piston. If desired, suitable packing may be placed between the sleeve 22 and the member 29 to reduce noise which might 45 arise through the contact of the two metallic members 22 and 29 during the movements of the piston in the casing or cylinder 14. To prevent leakage, suitable packing 30 may be carried by the cap 23 or 23^a, the forward 50 end of the handle is preferably screw-threaded to permit of its attachment to the complementary threads of a bail of a carpet sweeper. Since, however, some types of sweepers do not have the particular type 55 of fastener provided by the threads, I preferably provide a screw-threaded opening leading axially from the forward end of the handle, this opening, designated at 31 in Fig. 7, being adapted to receive a suitable 60 member 32, such as a screw which, as shown in Fig. 7, acts to secure the handle to the bail of the sweeper.

The general action of the apparatus shown in Fig. 1 is similar to that shown in the patents referred to, viz: A relative movement

of the handle 21 and the member 29 in the direction of length of the handle provides the suction action or the discharge action depending upon the direction in which this movement is had. Where the device is carried by the sweeper and coöperates therewith, such relative movement may be obtained by simply holding the member 29 against movement and operating the handle 21 in a manner similar to that employed in moving the sweeper over the carpet, this action causing the cylinder or casing to travel with the sweeper while the piston remains stationary with respect to the operator, the effect being, however, to provide the relative movement of handle and member 29. Obviously, if the member 29 is not held, the movements of the handle will simply operate the sweeper without providing any suction effect. Where the device is employed with the suction head alone, as in Fig. 1, a similar action in moving the head over the floor and holding the member 29 stationary will provide the suction effect, or a retaining of the handle stationary with a movement of the member 29 will cause the suction effect to be provided while the head remains at a fixed point; in either instance the relative movement of these two parts is provided.

In Fig. 2 I have shown a somewhat similar apparatus designed for a suction action in both directions of relative reciprocation of the cylinder and piston. In this form, both caps 15 and 23^a are provided with the ported openings, a passageway 33 connecting the suction head with the rear of the cylinder, and the passageway 34 leading from such cylinder rear end to the dust collector.

In operation, the forward movement of the piston in the cylinder acts to draw the dust practically through the suction head and the passageway 33 into the cylinder in rear of the piston, at the same time driving the dust particles in front of the piston into the dust collector. A succeeding movement of the piston in the opposite direction closes the entrance to the passageway 33 and opens that to the passageway 34, resulting in discharging the dust particles from the rear of the piston into the dust collector and drawing in the dust particles from the suction head into the space in front of the piston, providing a continuous suction whenever relative movement is had between the member 29 and the handle.

The advantages of the construction herein disclosed are readily perceived. The piston is guided both by the casing 14 and the handle through the member 29, insuring a smooth movement of the piston through the casing with the requirement of a minimum amount of power regardless of the particular direction in which the pressure is ap-

plied, the particular structure of the packing of the piston serving to cause the piston to operate with the maximum effect; by the particular construction of the handle, this effect is increased, since the binding of handle and member is practically eliminated.

As will be obvious, the device is one which is of relatively low cost in manufacture, at the same time providing for maximum efficiency, durability, and simplicity.

While I have herein shown and described several ways in which my invention will be carried into effect, it will be readily understood that changes and modifications therein may be desired or required to meet the exigencies of particular usage, and I desire it to be understood that I reserve the right to make any and all such changes and modifications therein as may be so required or desired, in so far as the same may fall within the spirit and scope of the invention as expressed in the accompanying claims.

Having thus described my invention, what I claim as new is:—

1. In vacuum cleaning apparatus, a handle, a sleeve carried by and movable longitudinally of the handle and having a piston thereon at approximately its forward end, and a cylinder of substantially fixed dimensions secured at its forward end to said handle, and having its rear end mounted on said sleeve in rear of the piston, said piston and cylinder coöperating to provide a suction-creating device upon relative reciprocation of handle and sleeve, said sleeve extending axially of and through the rear end of the cylinder and being movable relatively to such end.

2. In vacuum cleaning apparatus, a handle, a sleeve carried by and movable longitudinally of the handle and having a piston thereon approximate its forward end, and a cylinder of substantially fixed dimensions secured at its forward end to said handle and having its rear end mounted on said sleeve in rear of the piston, said piston and cylinder coöperating to provide a suction-creating device upon relative reciprocation of

handle and sleeve, said sleeve extending axially of and through the rear end of the cylinder and being movable relatively to such end, said handle having a tubular portion intermediate its ends and forming a guide to retain the axial alinement of the piston.

3. In vacuum cleaning apparatus, a handle, a sleeve carried by and movable longitudinally of the handle and having a piston thereon approximate its forward end, and a cylinder of substantially fixed dimensions secured at its forward end to said handle and having its rear end mounted on said sleeve in rear of the piston, said piston and cylinder coöperating to provide a suction-creating device upon relative reciprocation of handle and sleeve, said sleeve extending axially of and through the rear end of the cylinder and being movable relatively to such end, said handle having a tubular portion intermediate its ends and forming a guide to retain the axial alinement of the piston, the length of said tubular portion being substantially equal to the length of travel of the piston.

4. In vacuum cleaning apparatus, a handle, a sleeve carried by and movable longitudinally of the handle and having a piston thereon approximate its forward end, and a cylinder of substantially fixed dimensions secured at its forward end to said handle and having its rear end mounted on said sleeve in rear of the piston, said piston and cylinder coöperating to provide a suction-creating device upon relative reciprocation of handle and sleeve, said sleeve extending axially of and through the rear end of the cylinder and being movable relatively to such end, said piston having a peripheral yielding packing including a resilient tubular member.

In testimony whereof I affix my signature in the presence of two witnesses.

JULIUS SCHIRRA.

Witnesses:

MAX H. SROLOVITZ,
HORACE G. SEITZ.