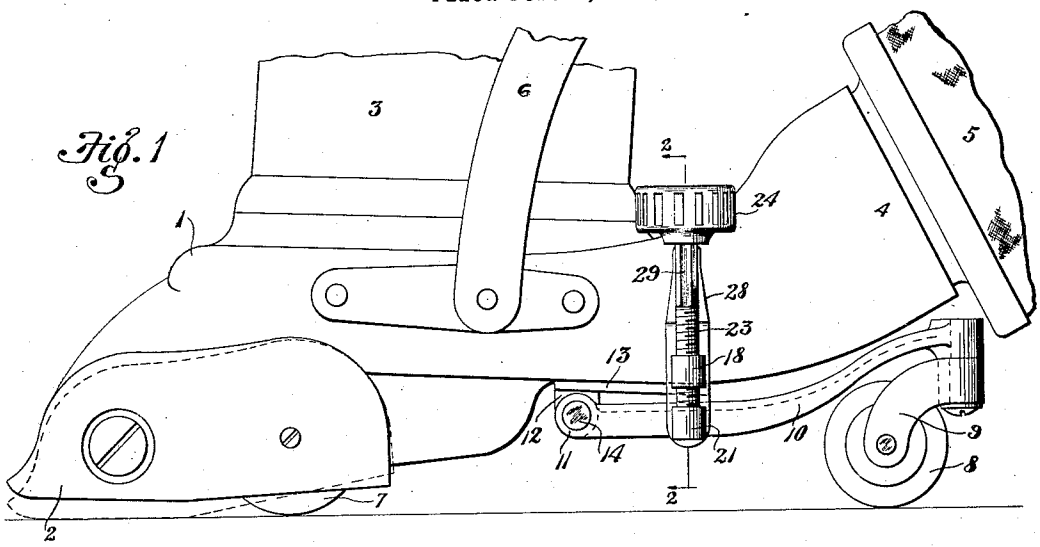
Feb. 5, 1924. 1,482,946

A. A. SERVA ET AL

CASTER

Filed Feb. 1, 1923

Fig. 1



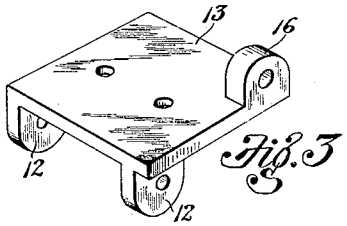


Fig. 3

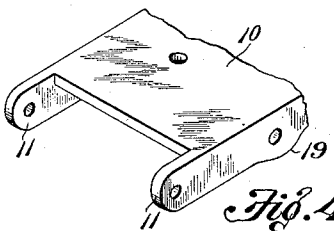


Fig. 4

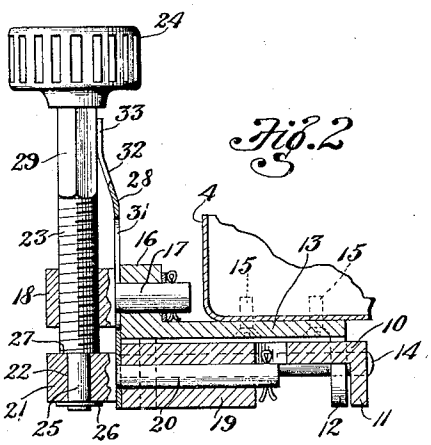


Fig. 2

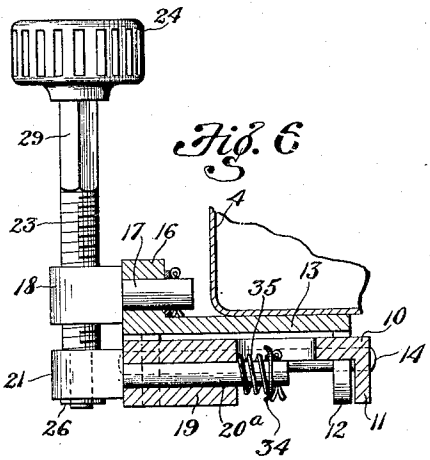


Fig. 6

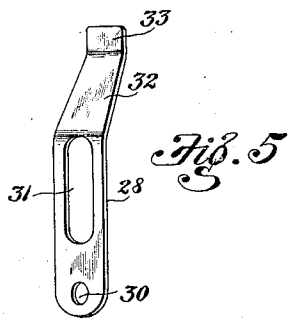


Fig. 5

Inventor

A. A. Serva and
W. S. Simpson

By Fraser and Bould Attorneys

Patented Feb. 5, 1924. 1,482,946

UNITED STATES PATENT OFFICE.

ADAM A. SERVA AND WALTER S. SIMPSON, OF CANTON, OHIO, ASSIGNORS TO THE UNITED ELECTRIC COMPANY, OF CANTON, OHIO, A CORPORATION OF OHIO.

CASTER.

Application filed February 1, 1923. Serial No. 616,294.

To all whom it may concern:

Be it known that we, ADAM A. SERVA and WALTER S. SIMPSON, citizens of the United States, both residing at Canton, in the county of Stark and State of Ohio, have invented new and useful Improvements in Casters, of which the following is a specification.

This invention relates to casters for the rear end of portable vacuum cleaners or similar use wherein it is desirable to adjust the caster vertically with reference to the machine, to tilt the same upward or downward upon its forward wheels, and wherein the vibration of the machine tends to change the adjustment of the caster; and the objects of the improvement are to provide a simple and easy means for adjusting such a caster to any desired position, for stopping or holding it in the various positions, for preventing rattling or vibration of the parts, and for limiting the movement of the adjusting screw.

More generally, the invention involves means for adjusting two separable parts, one of which parts carries an adjusting screw swivelly connected to the other part, and spring means for taking up lost motion, limiting the movement of the adjusting screw and holding the same in adjusted position, whereby the parts may be separated or brought toward each other and held in any given position of adjustment.

An application of the invention is illustrated in the accompanying drawings, forming part hereof, in which—

Figure 1 is a side elevation of a portable machine showing the improved caster thereon;

Fig. 2, a fragmentary section on line 2—2, Fig. 1;

Fig. 3, a perspective view of the bracket plate;

Fig. 4, a fragmentary perspective view of a portion of the caster arm;

Fig. 5, a detached perspective view of the spring; and

Fig. 6, a view similar to Fig. 2, showing a slightly modified form of the invention.

Similar numerals refer to similar parts throughout the drawings.

For the purpose of illustrating the application of the invention to a portable machine, a vacuum cleaner of any usual type is illustrated and comprises the fan casing 1, having the usual suction shoe or cleaning nozzle 2 at its forward end and supporting the motor casing 3, the discharge neck 4 being located at the rear end of the casing and communicating with the dust collecting bag 5, a handle bail 6 being pivotally connected to opposite sides of the casing for connection with the usual handle for manipulating the machine to and fro upon the floor or other surface to be cleaned.

Machines of this type are usually provided with a caster 7 on each side in rear of the ends of the cleaning nozzle so that the same can be tilted forward or downward by lowering or raising the rear end of the machine; and for the purpose of limiting the downward movement, a rear caster 8 is usually employed.

By making this rear caster adjustable upward and downward with reference to the rear end of the machine, the normal position of the nozzle with reference to the floor or carpet can be varied at will.

For the purpose of the present invention, the rear caster is preferably mounted between the forks of the bracket 9 which is swivelly connected to the rear end of the caster arm 10, the forward end of said arms being provided with the ears 11 pivotally connected to the ears 12 of the bracket 13 by means of a pin 14.

The bracket plate 13 is fixed to the under side of the fan casing, as by the screws 15, and is provided with the bearing 16 extending upward at one side of the casing, the spindle 17 of the internally threaded bearing 18 being journaled therein.

The caster arm 10 is provided on its under side with a tubular bearing portion 19 within which the spindle 20 is journaled, said spindle carrying at its outer end a head 21 having a transverse bore 22 therethrough.

The adjusting screw 23 is provided with a knurled head 24 conveniently located at the side of the rear of the machine, said screw being located through the threaded bearing 18 and having the reduced shank 25 swivelled within the bore 22 of the head 21, a washer 26 being fixed upon the lower end of the shank and coacting with the shoulder 27 of the screw to prevent longitudinal movement of the shank in either direction, within the head 21.

For the purpose of holding the adjusting screw against accidentally turning and for

preventing rattling or vibration of the parts, a spring 28 may be provided for engagement with the flat sides 29 of the upper portion of the adjusting screw.

The spring 28 may be of the leaf type having an aperture 30 to receive the spindle 20 and an elongated slot 31 to receive the spindle 17, the upper end portion being bent outward as at 32 and provided with the flat foot 33 for engagement with the flat faces 29 of the screw.

The parts are so arranged and proportioned that as the screw 23 is adjusted the caster arm 10 will be moved toward or from the bottom of the vacuum cleaner, the spindles 17 and 20 adjusting themselves within their bearings to accommodate the screw in each position.

As the adjusting screw is turned to each position the flat foot 33 upon the spring will frictionally engage the adjacent flat face 29 of the adjusting screw, holding the same against accidental rotation and pressing the upper end of the screw slightly outward, taking up any lost motion in the journals of the spindles 17 and 20, preventing any rattling or vibration of the parts.

It will be seen that the spring 28 being connected at its lower end to the caster arm 10 and having the vertical slot 31 receiving the spindle 17 upon the bracket plate, the downward movement of the caster arm and adjusting screw are positively limited, thus preventing complete separation of the parts.

In Fig. 6 of the drawing is illustrated a slightly modified form of invention in which all of the parts are the same as those above described and illustrated in Figs. 1 to 4, inclusive, with the exception that the leaf spring is not used. The spindle 20^a is provided with a collar 34, spaced from the inner end of the tubular bearing 19, a coil spring 35 being interposed between said bearing and collar for the purpose of normally holding the head 21 against the outer end of the tubular bearing 19 and thus taking up any lost motion in the parts and preventing rattling or vibration of the same.

By this construction and arrangement it is evident that the caster arm with the rear caster thereon may be adjusted to and from the bottom of the vacuum cleaner by merely turning the adjusting screw one way or the other, and that when a particular adjustment is given to the arm the screw will be normally held in the adjusted position and the several parts held against rattling or vibration permitting the vacuum cleaner to be lifted from the floor either bodily or at its rear end, without disturbing the adjustment of the caster arm.

We claim:—

1. In combination with a vacuum cleaner, an arm pivoted thereto at one end and having a caster at the other end, bearings on the cleaner and arm, an adjusting screw on one of the bearings and swivelled to the other bearing, and spring means for preventing vibration of said parts.

2. A caster for vacuum cleaners or the like including an arm pivoted thereto at one end and having a caster at the other end, bearings on the cleaner and arm, an adjusting screw on one of the bearings and swivelled to the other bearing, and means for holding the screw in adjusted position.

3. A caster for vacuum cleaners or the like including an arm pivoted thereto at one end and having a caster at the other end, bearings on the cleaner and arm, an adjusting screw on one of the bearings and swivelled to the other bearing, and spring means for holding the screw in adjusted position.

4. In combination with a vacuum cleaner, an arm pivoted thereto at one end and having a caster at the other end, an adjusting screw on the vacuum cleaner and swivelled to the arm and means for holding the screw in adjusted position.

5. In combination with a vacuum cleaner, an arm pivoted thereto at one end and having a caster at the other end, a swivelled screw-threaded bearing upon the vacuum cleaner, an adjusting screw carried by the bearing and swivelled to the arm and spring means for holding the screw in adjusted position.

6. In combintion with a vacuum cleaner, an arm pivoted to the cleaner at one end and having a caster at the other end, a screw-threaded bearing swivelled on the vacuum cleaner, a bearing swivelled on the arm, an adjusting screw carried by the threaded bearing and swivelled to the arm bearing and spring means for holding the screw in adjusted position.

7. In combination with a vacuum cleaner, an arm pivoted to the cleaner at one end having a caster at the other end, a screw-threaded bearing swivelled on the vacuum cleaner, a bearing swivelled on the arm, an adjusting screw carried by the threaded bearing and swivelled to the arm bearing and having a portion provided with flat faces and a leaf spring for engagement with said flat faces to hold the screw in adjusted position.

8. In combination with a vacuum cleaner, an arm pivoted to the cleaner at one end and having a caster at the other end, a screw-threaded bearing swivelled on the vacuu. cleaner, a bearing swivelled on the arm, an adjusting screw carried by the threaded bearing and swivelled to the arm bearing and provided with flat faces and a leaf spring carried by the arm and engaging the flat faces of the screw to hold the same in adjusted position.

9. In combination with a vacuum cleaner,

an arm pivoted to the cleaner at one end and having a caster at the other end, a screw-threaded bearing swivelled on the vacuum cleaner, a bearing swivelled on the arm, an adjusting screw carried by the threaded bearing and swivelled to the arm bearing and provided with flat faces and a leaf spring carried by the arm and engaging the flat faces of the screw to hold the same in adjusted position, and provided with an elongated slot through which the threaded bearing is extended.

ADAM A. SERVA.
WALTER S. SIMPSON.