

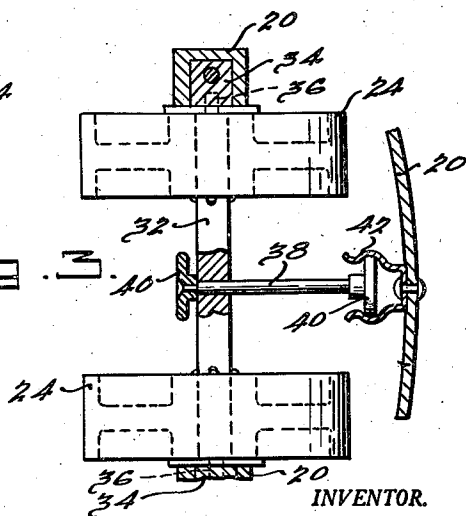
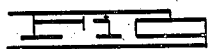
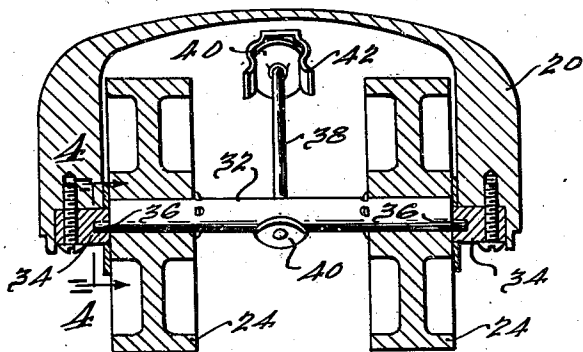
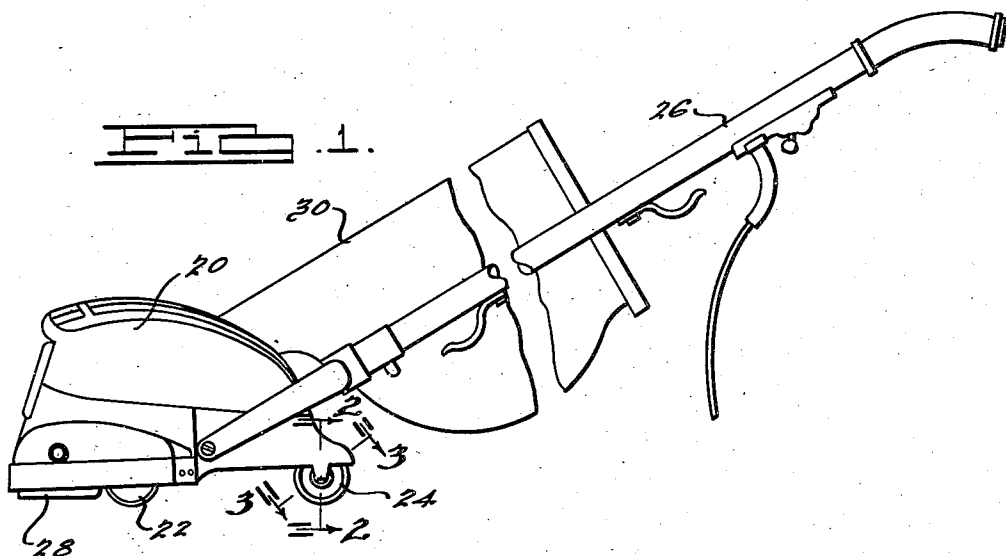
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NOZZLE ADJUSTMENT FOR SUCTION CLEANERS

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NOZZLE ADJUSTMENT FOR SUCTION
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7 Claims. (Cl. 280-43)

This invention relates to suction cleaners and has particular reference to a new and improved form of construction of a means for adjusting the nozzle with respect to the surface covering being cleaned.

A principal object of the invention is to provide a new and improved construction for a nozzle adjustment of a suction cleaner.

Other objects and advantages of the invention will be apparent from a consideration of the following specification taken in conjunction with the accompanying drawings, of which there is one sheet and wherein:

Fig. 1 is a fragmentary elevational view of a suction cleaner embodying the invention;

Fig. 2 is a sectional view taken in a plane along the line 2-2 of Fig. 1, looking in the direction of the arrows;

Fig. 3 is a sectional view taken in a plane along the line 3-3 of Fig. 1, looking in the direction of the arrows; and

Fig. 4 is a sectional view taken along the line 4-4 of Fig. 2.

In Fig. 1 there is illustrated a known construction of a floor type suction cleaner which includes a casing 20 adapted to be supported for movement by front wheels 22 and rear wheels 24. A handle 26 pivoted to the casing is provided for maneuvering the cleaner over the surface covering to be cleaned. The suction cleaner may be of the construction illustrated in the application of Vernon E. Carlson and Paul T. Hahn, Serial No. 395,744, filed May 29, 1941, and includes a floor nozzle 28, a suction creating means (not shown) having its inlet communicating with the floor nozzle for inducing a flow of air into the cleaner through the mouth of the nozzle, an electric motor (not shown) for driving the suction creating means, and if desired a rotary agitator may be suitably journaled in the nozzle and have a driving connection with the motor so as to be driven thereby during operation of the suction creating means. The outlet from the suction creating means terminates in a dust collecting and air filtering bag 30.

The nozzle 28 is provided with a mouth which is arranged in the plane substantially parallel to the surface over which the cleaner is maneuvered. It is well known in the art that in order to obtain satisfactory cleaning of the surface covering, the mouth of the nozzle must be properly positioned with respect to the surface covering being cleaned. Because of the wide variation in texture and character of surface coverings employed, and because of the sinkage of the wheels of the

cleaner various amounts into surface coverings, it has been found to be necessary to provide suction cleaners with some form of adjustment so as to properly position the mouth of the nozzle with respect to the surface covering in order to compensate for the sinkage of the wheels of the cleaner into the surface covering with the attendant lowering of the nozzle toward the surface covering.

While many forms of nozzle adjustments have been suggested by the prior art, I have devised the herein disclosed means for adjusting the nozzle, and I have found this particular form of means to be particularly expedient because of its simplicity of construction, ease of operation, and great utility. With the form and construction of cleaner illustrated, I have found that a two-position adjustment of the nozzle will permit the cleaner to be used satisfactorily on all types of surface coverings that may be encountered.

In order to adjust the mouth of the nozzle 28 with respect to the surface covering in the form of the invention herein disclosed, I contemplate adjusting the rear wheels of the cleaner either toward or away from the body of the cleaner. To accomplish this the rear wheels 24 are journaled on an axle 32. The axle 32 in turn is journaled in bearing blocks 34, such blocks 34 being suitably and removably secured to a part of the body or casing 20 of the cleaner. The axle 32 at its ends is provided with trunnions 36, such trunnions being disposed off-center with respect to the axis of the axle 32. The trunnions 36 are journaled in suitable bearings provided in the bearing blocks 34. In the position in which the parts are illustrated in Fig. 2, the wheels 24 are in their uppermost position so that the mouth of the nozzle 28 is in its highest position. Rotation of the axle 32 one hundred eighty degrees about its axis will shift the wheels 24 to their lowermost position, thereby moving the mouth of the nozzle 28 closer toward the surface covering.

At this point it may be observed that the wheels 22 and 24 may be arranged so that the mouth of the nozzle 28 will be positioned approximately $\frac{3}{4}$ in. above the plane of the surface on which the wheels 22 and 24 are supported when the wheels 24 are in their uppermost position. By shifting the wheels to their lowermost position the mouth of the nozzle may be positioned $\frac{1}{8}$ in. closer to the plane of the surface on which the wheels are supported, or approximately $\frac{3}{4}$ in. above such surface.

For shifting the axle 32 so as to shift the wheels, I provide a pin 38 which is provided with a head

40 at each end and which pin is slidably arranged in a transverse bore in the axle 32. The heads 40 are selectively engageable with a spring clip 42 carried by a part of the casing 20 for holding the axle 32 and the wheels 24 in one or the other of their respective positions. The heads 40 are frictionally held in the clip 42 and may be readily detached therefrom by a slight manipulation of one's fingers extending under the skirt of the casing, and by shifting the axle 32 through 180° engagement of the other head 40 in the clip 42 will secure the wheels 24 in their other position.

While the invention has been described with some detail, it is to be understood that the description is for the purpose of illustration only and is not definitive of the limits of the inventive idea. The right is reserved to make such changes in the details of construction and arrangement of parts as will fall within the purview of the attached claims.

I claim:

1. In a vacuum cleaner provided with wheels for supporting the same, an axle for said wheels, said axle being provided with trunnions which are disposed off center with respect to the axis of said axle, bearings on said cleaner for said trunnions, manually operative means arranged on said axle and between said wheels for rotating the axle so as to shift the axis thereof relative to said trunnions, and means arranged on the underside of said cleaner with which said manually operative means are detachably engageable for locking said axle against rotation.

2. In a vacuum cleaner provided with wheels for supporting the same, an axle for said wheels, said axle being provided with trunnions which are disposed off center and parallel with respect to the axis of said axle, bearings on said cleaner for said trunnions, manually operative means for rotating said axle comprising a pin carried thereby and slidable transversely thereof, and means co-operable with said pin for locking said axle against rotation.

3. In a vacuum cleaner provided with wheels for supporting the same, an axle for said wheels, said axle being provided at its ends with trunnions which are disposed off center with respect to the axis of said axle, spaced bearings on said cleaner for said trunnions and between which bearings said axle and wheels are arranged, a pin carried by said axle, and a spring clip carried by said cleaner on the underside thereof and engageable with said pin for holding said axle against rotation.

4. In a vacuum cleaner provided with wheels for supporting the same, axle means provided with trunnion means which are disposed off center with respect to the axis of said axle means, bearings on said cleaner for one of said means,

said wheels being journaled on the other of said means, and adjusting and locking means on the underside of said cleaner cooperable with said axle means for determining at least two different vertical positions for the axis thereof with respect to said trunnion means, said adjusting and locking means comprising a manually operative member arranged on said axle means for rotating the same and a member arranged on said cleaner with which said manually operative means are detachably engageable for locking said axle against rotation.

5. In a vacuum cleaner, means for supporting said cleaner on a surface comprising axle means having a wheel journaled thereon, supporting means on said cleaner for said axle means, one of said means being provided with a trunnion and the other of said means being provided with a bearing for said trunnion, said trunnion being off center with respect to the axis of said axle means, and adjustable means on the underside of said cleaner for determining the position of the axis of said axle means relative to said trunnion comprising a pin carried by said axle and a clip carried by said cleaner and engageable with said pin for preventing the rotation of said axle.

6. In a vacuum cleaner, means for supporting said cleaner on a surface comprising axle means adjacent the rear of said cleaner having a wheel rotatable thereon, supporting means on said cleaner for said axle means, one of said means being provided with a trunnion and the other of said means being provided with a bearing for said trunnion, said trunnion being parallel but off center with respect to the axis of said axle means, and means on the underside of said cleaner for determining a plurality of positions of the axis of said axle means relative to said trunnion and for preventing the rotation of said axle.

7. In a vacuum cleaner provided with wheels for supporting the same, axle means provided with trunnion means which are disposed off center with respect to the axis of said axle means, bearings on said cleaner for one of said means, said wheels being journaled on the other of said means, and adjusting and locking means on the underside of said cleaner and between said wheels cooperable with said axle means for determining at least two different vertical positions for the axis thereof with respect to said trunnion means, said adjusting and locking means comprising a manually operative member arranged on said axle means between said wheels for rotating the same and a spring member arranged on said cleaner with which said manually operative means are detachably engageable for locking said axle against rotation.

PAUL T. HAHN.