May 14, 1929. W. L. LINDGREN 1,712,922

VACUUM CLEANER

Original Filed Oct. 21, 1921

Fig. 1.

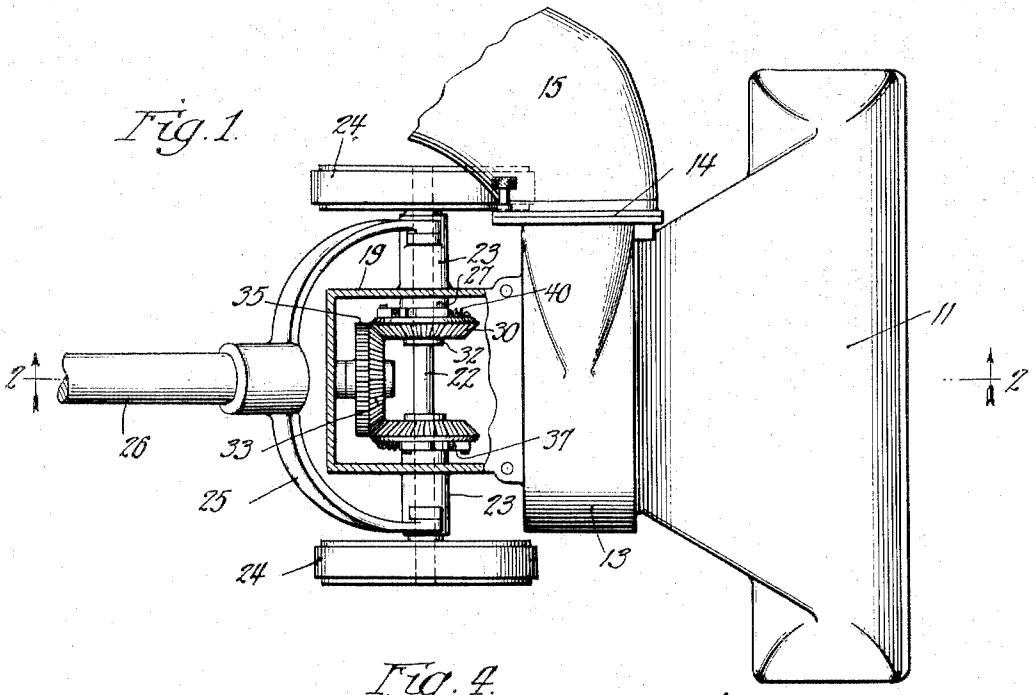


Fig. 4.

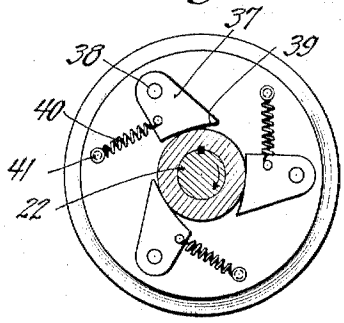


Fig. 3.

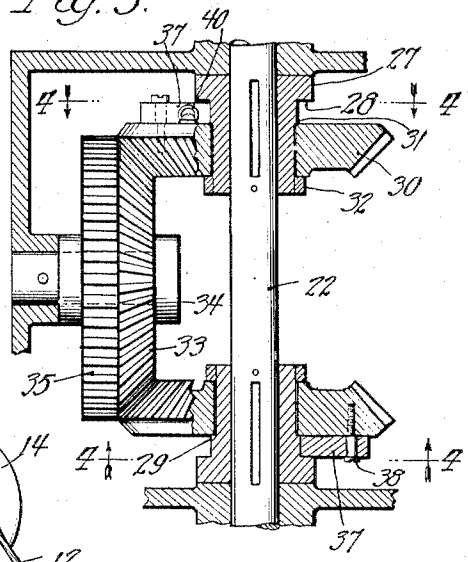
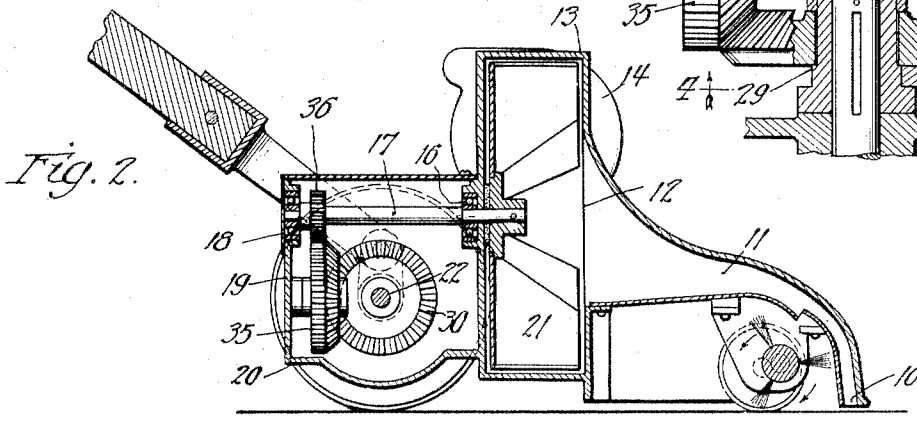


Fig. 2.



Inventor.

Waldemar L. Lindgren

By: John Howard McElroy Atty.

Patented May 14, 1929. 1,712,922

UNITED STATES PATENT OFFICE.

WALDEMAR LUINE LINDGREN, OF WAUKEGAN, ILLINOIS, ASSIGNOR TO ALFRED A. NORTON, TRUSTEE, OF CHICAGO, ILLINOIS.

VACUUM CLEANER.

Application filed October 21, 1921, Serial No. 509,275. Renewed December 8, 1927.

My invention is concerned with carpet sweepers of the class in which a suction or blast fan is rotated by gearing interposed between the fan shaft and one or more wheels by which it is supported as it is drawn back and forth over the floor, and it is designed to produce a device of the class described in which the fan is rotated continuously in the same direction irrespective of whether the sweeper is being moved forward or backward, thus making it more effective than the ordinary construction in which the fan is propelled only by the movement of the sweeper in one direction and not in the other.

To illustrate my invention, I annex hereto a sheet of drawings in which the same reference characters are used to designate identical parts in all the figures, of which—

Fig. 1 is a top plan view of a cleaner embodying my invention with the upper portion of the gear casing removed;

Fig. 2 is a view in vertical section on the line 2—2 of Fig. 1;

Fig. 3 is an enlarged plan view of the gearing with a portion thereof in central horizontal section; and

Fig. 4 is a detail as seen in section on the line 4—4 of Fig. 3.

I have shown my invention as applied to a vacuum cleaner of the class shown in my application No. 489,964, filed August 5, 1921, in which there is a nozzle 10 passing close to the floor and connected by an air passage 11 with the inlet opening 12 of a fan casing 13 which is provided with an outlet connection 14 to the dust collecting bag 15. Mounted in the rear wall of the fan casing 13 is the bearing 16 for the fan shaft 17, the other end of which is journaled in the bearing 18 placed in the rear wall 19 of the gear casing 20, and it will of course be understood that the fan 21 is secured on the inner end of the fan shaft 17. The driving shaft 22 is journaled in suitable bearings 23 projecting from the sides of the gear casing 19, and has on its outer end the main wheels 24 upon which the sweeper is mainly supported. The yoke 25 carrying the handle 26 is pivotally mounted on the bearings 23 for propelling the sweeper in either direction. The structure so far described is the same as that shown in my aforesaid prior application No. 489,964.

Secured upon the shaft 22 just inside of the casing 19 are a pair of collars 27 each of which has the annular surface 28 forming an annular channel 29 between it and the adjacent face of the pair of opposed beveled gear wheels 30 which are free to rotate in one direction on the collars 27, being positioned between the shoulder 31 formed on the collar 27 and the retaining ring 32 which may be pinned on the shaft 22. The wheels 30 mesh with the beveled gear wheel 33 journaled on the stud shaft 34 secured in the rear wall 19 of the gear casing, and rotating therewith and preferably integral therewith is the spur-gear wheel 35 meshing with the spur-gear pinion 36 secured on the fan shaft 17.

To secure the constant rotation of the fan shaft in one direction irrespective of whether or not the cleaner is being moved backward or forward, it is necessary to interpose clutches between the collars 27 and the beveled gear wheels 30 and these clutches preferably take the form shown in Figs. 3 and 4, where it will be seen that I pivot on the outer faces of the wheels 30 preferably a plurality of clutch dogs 37, by the screw pins 38, and the operating ends 39 of these clutches are preferably cut slantingly and extend into the annular channel 29, the ends being held in engagement with the bottom of the channel by the helically coiled contractile springs 40 secured at one end to the dogs 37 and at the other end to the pins 41 projecting outwardly from the wheels 30. The result of this construction is that when the shaft 22, as seen in Fig. 4, rotates clockwise, the bottom of the channel 29 engaging the ends 39 of the dogs draws them out of clutching position, but if the shaft 22 is rotated anti-clockwise, the friction of the bottom of the channel 29 with the ends 30 of the dogs swings them to clutching position. The clutch dogs 37 on the two wheels 30 are mounted so that one set of them is operative as the shaft is rotated clockwise, and the other set is operative as it rotates anti-clockwise, with the result that due to the action of the opposed beveled gears 30 on the interposed beveled gear wheel 33 causes the fan shaft 17 to be rotated always in the same direction.

While I have shown and described my invention as embodied in the form which I at present consider best adapted to carry out its purposes, it will be understood that it is

capable of some modification, and that I do not desire to be limited in the interpretation of the following claim, except as may be necessitated by the state of the prior art.

What I claim as new and desire to secure by Letters Patent of the United States is:

In a device of the class described, the combination with a frame, of a nozzle, a fan casing, an air passage from the nozzle to the casing, a fan in the casing, a shaft having one end extending into the casing and secured to the fan, a supporting wheel, a shaft on which the wheel is secured to rotate therewith, a pair of opposed bevel gears on the second shaft, a bevel gear wheel meshing with the opposed gears, a pair of collars having annular faces secured upon the second shaft and upon which the opposed bevel gears are mounted so as to form annular channels between the outer faces of the gears and the annular faces on the collars, clutch dogs pivoted on the outer faces of the bevel-gear wheels and having their beveled ends extending into the annular channels, springs connecting the clutch dogs and the bevel gear wheels to hold the dogs in operative position, and connections between the bevel gear wheel and the fan shaft.

In witness whereof, I have hereunto set my hand this 10th day of October, A. D. 1921.

WALDEMAR LUINE LINDGREN.