UNITED STATES PATENT OFFICE.

JOHN MACLEAN, OF TOLEDO, OHIO.

VACUUM-CREATING MECHANISM FOR DUST-COLLECTORS.

1,013,606.


Patented Jan. 2, 1912.

To all whom it may concern:

Be it known that I, JOHN MACLEAN, a citizen of the United States, residing at Toledo, in the county of Lucas and State of Ohio, have invented certain new and useful Improvements in Vacuum-Creating Mechanism for Dust-Collectors, of which the following is a specification.

This invention relates to dust collectors, and more particularly to that type of device which employs a suction fan.

The particular object of the invention is to provide a device of this character which may be manually operated, and which may be conveniently handled.

With these and other objects in view, the present invention consists in the combination and arrangement of parts which will be hereinafter more fully described and particularly pointed out in the appended claims, it being understood that the changes in the specific structure shown and described may be made within the scope of the claims without departing from the spirit of the invention.

In the drawings: Figure 1 is a side elevation of the device. Fig. 2 a similar view partly in section. Fig. 3 an enlarged sectional view taken on the line 1-1 of Fig. 1. Fig. 4 a detail view of the driving mechanism, Fig. 5 a sectional view of one of the pinions forming a part of the driving mechanism. Fig. 6 a detail view showing the manner of positioning the brush member, Fig. 7 is a top plan view of the preferred form, and Fig. 8 is a section on line 11-11 of Fig. 7.

In the drawings: 10 designates a cylindrical casing which is provided with the elongated slot 11. Extending centrally within the casing is a yoke 12 which supports a sleeve 13, the end portions of said sleeve being arranged to extend through the side walls of the casing. Loosely mounted upon the sleeve 13 is a sprocket wheel 14 which is in mesh with the chain 15 which extends to the other end portion of the tube. The end portion 16 of the tube is secured to a casing 17 which is bolted at 18 to a fan casing 19, said fan casing being arranged upon a hood 20. Extending within the casing 17 is a sleeve 21 which has mounted thereon, a sprocket 22, around which passes the chain 15. Arranged upon the end portion of the sleeve 21 is a gear wheel 23 which is adapted to rotate with said sleeve. A shaft 24 is arranged centrally within the casing 17, said shaft being provided with ratchet pinions 25 and 26 which are adapted to mesh with the gear 23. Arranged upon said shaft is the fan 30 which is adapted to rotate with the same. It will be seen that as the sprocket 22 is rotated, the gear 23, through one of the pinions 25 or 26, will rotate the fan shaft 24, thereby revolving the fan 30.

Arranged to slide upon the tubular member 10, is a sleeve 25, which is provided with a pin 26, which extends through the elongated slot 11, and is connected to the chain 15, at the point 27. It will be seen that as the sleeve is reciprocated upon the member 10, the chain 15 will be driven first in one direction, and then in the other, thereby causing the sprocket 22 to rotate. When the sprocket 22 is rotated in one direction, the fan shaft will be caused to rotate in a corresponding direction, and when said sprocket is driven in the other direction, a reverse movement will be imparted to said shaft, first one, and then the other of the pinions 25 and 26, being locked to the shaft 24. Each of said pinions is provided with a spring-pressed dog 28, which is seated in a sleeve portion 29, which is formed integral with the pinion. The shaft 24 is provided with an extension 30 which, when the pinion is rotated in one direction, locks the same to the shaft 24, through the engagement of the pin, or dog 28. It will be seen that, when said pinion is rotated in the opposite direction, the spring-pressed dog 28 will slide over the projection 30 on the shaft. This construction allows first one pinion and then the other to rotate the shaft 24 in order to take up the reversed movement of the sprocket 22, caused by the reciprocation of the sleeve 25.

The hood 20 is mounted upon rollers 31, which permits the device to move evenly across the surface to be cleaned. Extending from the pin 31', upon which the rollers are mounted, are the brackets 32, which are substantially L shaped. These brackets are adapted to support a brush 33, by means of a pin 34, a spring 35 being interposed between the arm 36, of said bracket, and brush member 33, the brush 33 being held upon the pin 34 by the resilient supporting member 37 which is secured to the member 32, and which is provided with the offset portion 38 which engages the base portion.
of the brush 32. It will be seen that the brush is thus resiliently mounted so as to allow the same to move upwardly in the event that it contacts with an obstacle on the surface to be cleaned.

In assembling the device, the yoke member 12 is inserted through the open end of the tube 10, and its extension 12' being passed through an opening formed in the end portion of the tube, the member is then held in position by a suitable nut. The shaft 13 is then passed through the side walls of the casing, the arms of the yoke 12, and the sprocket 14, the chain 15 is passed around said sprocket, and its end portions connected. The pin 26 is now secured to the chain in such manner as to reciprocate the same upon the movement of the sleeve 25°. The tube is provided with the extensions 39, which are bolted to the members 40, which extend within the casing 17, said members 39 being held in position by thumb screws 41. The casing 17 is provided with an opening 17' through which the chain 15 passes, in order to engage the sprocket 22. The sprocket 22 is keyed to a sleeve 21 which is mounted to rotate upon the end portion of the member 40, said sleeve terminating in the portion 42 upon which is mounted the gear wheel 23.

In operating the device, the hood 20 is placed upon the surface to be cleaned, the member 25 is then reciprocated, causing the chain 15 to rotate the sprocket 22, thus in the manner heretofore described, will rotate the fan 30, thereby creating a suction in the hood 20 which will draw the dust, which has been agitated by the brush member 33, into the fan casing. The dust thus drawn in by the fan will be forced through the tubular extension 43, and into the flexible receptacle 44, which is supported upon said tube, and the member 10.

It will be seen that a device of this character will form a convenient device for cleaning floors and other surfaces. It will also be noticed that such a device may be easily and cheaply constructed, and the various parts readily and quickly assembled.

What is claimed is:

1. Suction creating mechanism for vacuum cleaners comprising a fan casing, a tubular casing pivotally secured to the fan casing and having a slot formed in one side thereof, a fan bearing shaft journaled in the fan casing, a plurality of pinions mounted upon the shaft, a spindle carried by the casing and having a combined gear and sprocket wheel mounted thereon, the gear being in mesh with the various pinions, a sprocket chain passing around the sprocket and into the tubular casing, a sleeve slidably mounted on the tubular casing and having a lug projecting inward through the slot of said casing and secured to the sprocket chain, whereby the movement of the sleeve along the tubular casing will shift the chain and thus the combined gear and sprocket wheel, and means for operatively connecting certain of the pinions with the shaft upon the turning of the gear in either direction, whereby the fan shaft is rotated in a constant direction irrespective of the direction of rotation of the gear wheel.

2. Vacuum creating mechanism for dust collectors, comprising a shaft, a fan mounted thereon, a combined gear and sprocket wheel rotatably mounted adjacent the fan shaft, a tubular casing, a sprocket chain supported therein and passing over the sprocket of the combined sprocket and gear wheel, a sleeve slidable upon the tubular casing, connections between the sleeve and the sprocket chain for moving the chain with the sleeve, and connections between the gear of the combined gear and sprocket wheel and the fan shaft for driving the shaft in a constant direction irrespective of the direction of rotation of the gear.

3. Vacuum creating mechanism for dust collectors comprising a tubular member, a chain arranged within said member, means for imparting movement to said chain, said member being connected to a casing, a shaft arranged horizontally within said casing, a sprocket wheel mounted upon said shaft, a gear wheel carried by the end portion of said shaft, a shaft arranged vertically within said casing, pinions mounted upon said shaft, a sleeve formed integral with each of said pinions, a spring-pressed pin carried by said sleeve, said shaft being provided with a projection adapted to contact with said pin, and a fan mounted upon the end portion of said shaft.

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

JOHN MacLEAN.

Witnesses:
Bert Woods,
Anna Hughes.