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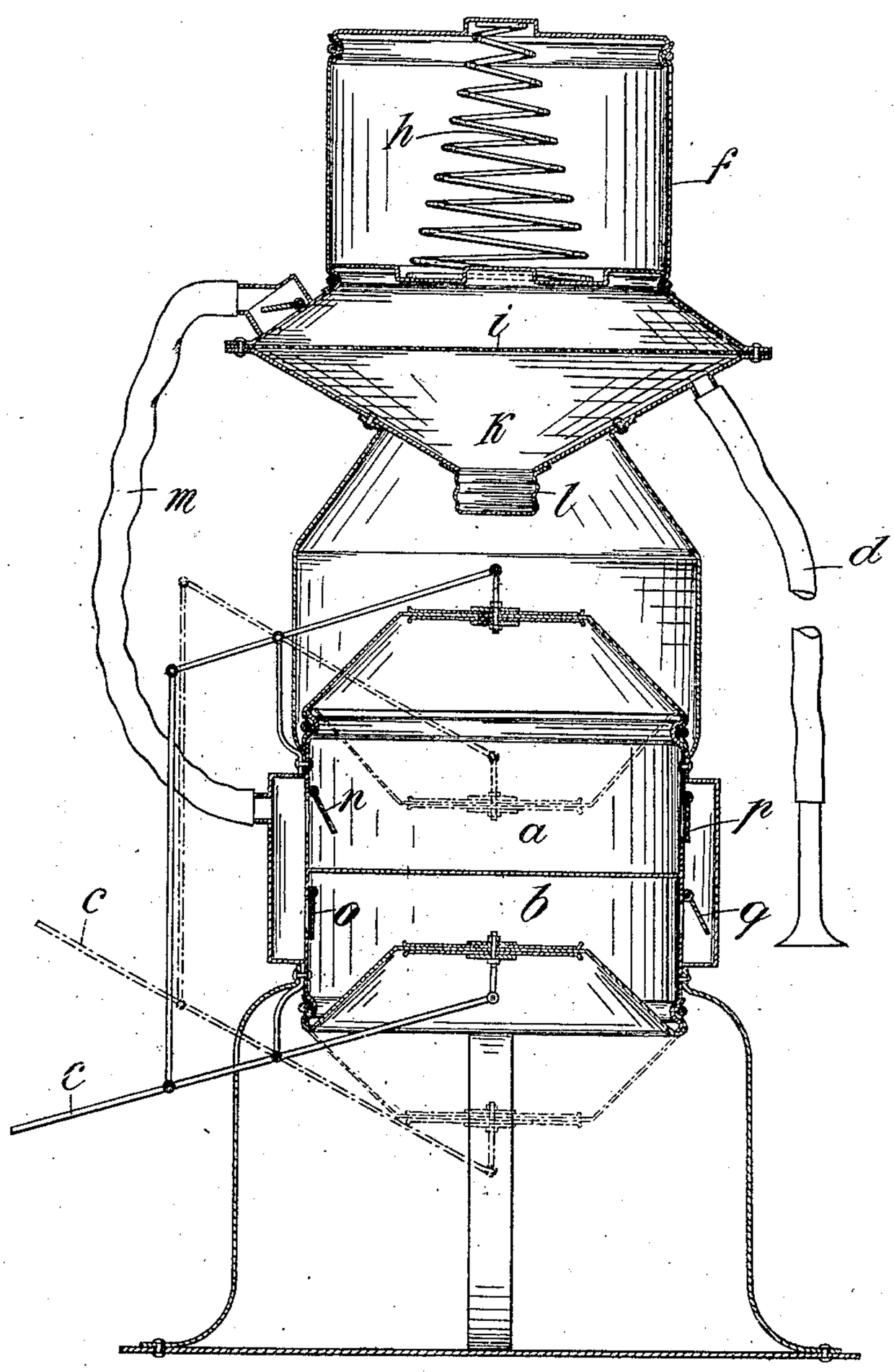
C. F. HOLDER.

DUST ASPIRATING APPARATUS.

APPLICATION FILED JAN. 19, 1907.



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DUST-ASPIRATING APPARATUS.

No. 863,607. Specification of Letters Patent. Patented Aug. 20, 1907.

Application filed January 19, 1907. Serial No. 353,076.

To all whom it may concern:

Be it known that I, CHRISTIAN FRIEDRICH HOLDER, a subject of the German Emperor, and residing at Metzingen, county of Urach, Germany, have invented certain new and useful Improvements in Dust-Aspirating Apparatus, of which the following is a specification.

Nearly all the dust-aspirators in private use are driven by hand, whereby the cranks of the commonly used two air pumps are arranged to form an angle of 90° with each other in order to procure a constant current of air. These aspirators are not practicable since they require the work of two persons: one for the rotating of the crank-shaft and another for handling the aspirating-mouth-piece. When there is only one person at command only foot-work may be employed, but in this case, in order to procure a constant current of air, the apparatus must be fitted with a fly-wheel whereby the weight of the aspirator is increased and the transport is rendered very difficult. In order to obviate this inconvenience, some constructors have arranged the two air-pumps in such a manner that the bottoms are turned towards each other and that one of the pistons is in its highest position when the other is in the lowest point of its movement. This arrangement has another inconvenience, for, on each alternation of the direction of motion the aspirating work stops for some moments whereby the dust rests in corresponding places of the room or of the objects to be cleaned.

The object of the present invention is a dust-aspirating apparatus for foot-driving whereby the air with the dust is sucked up in a continuous current having the effect of producing a continuous uninterrupted aspirating work and the invention consists in the fact that the dust-carrying air is aspirated by the pumps not directly but by means of a regulating bellows aspirating independently of the driving-mechanism.

The invention will now be described in conjunction with the drawing forming a part of this specification where the new dust-aspirator in accordance with the invention is shown in an arrangement having the bottoms of the pumps turned towards each other.

a and *b* represent the two aspirating devices which, in connection with levers, are set in action by means of the treadle *c*. Between the suction pipe *d* and the bellows *a* and *b* I arrange a third bellows *f* fitted with a filter-plate *i* and the bellows being extended to its utmost length by means of a spring *h*. The strain of the spring *h* is adjusted in such a manner that, on each aspirating-motion of both pumps, the regulating-bellows *f* is compressed while, in the moments of the alternations of the direction of motion, where no aspirating action takes place, the spring *h* extends again the regulating bellows *f* and now the latter itself acts as an aspirator. By this way the temporary interruptions of the work of the pumps are prevented from being transmitted to the aspirating conduit-pipe *d* and therefore a continuous current of air is produced.

The mode of operation of the improved dust-aspirating apparatus is the following. When the treadle *c* is swung down by the foot of the manipulating person the membrane of the upper aspirating device *a* is lifted and the dust-carrying air is sucked through the suction-conduit-pipe *d* into the chamber *k* arranged below the regulating bellows, whereby the regulating bellows *f* is compressed. The dust sinks down in chamber *k* while the air passes through the filter-plate *i* and the conduit-pipe *m* and arrives in bellows *a*. The moment in which the direction of the motion alternates is shown in the drawing. In this moment none of the two pumps acts as aspirator and the working would be interrupted, if the spring *h* would not extend the bellows *f*. The strain of the spring *h* now lifts the membrane or the like of the regulating-bellows *f* and this lengthening of bellows *f* produces an aspirating action of the regulating bellows itself, until the membrane of bellows *b* begins to sink down whereby the lower aspirating device *b* begins to aspirate. The air which has passed through the valves *n* and *o* and arrived in the bellows goes through the valves *p* and *q* and—if necessary—through another filter-device into the open air. The dust accumulated in chamber *k* may, from time to time, be withdrawn in a very simple manner by opening the closure *l*.

In the form of construction shown in the drawing the lengthening of the regulating-bellows *f* independently of the driving-mechanism is effected by a spring *h*, but, of course, it may in the same manner, be actuated also by other means.

It may still be observed that the arrangement of a regulating bellows aspirating—in accordance with the present invention—independently of the driving mechanism allows the producing of a continuously aspirating current of air also when applying one pump only.

Having now particularly described and ascertained the nature of my invention and in what manner the same is to be performed, I declare what I claim is:—

1. A foot driven dust-aspirating apparatus having two aspirating devices (*a* and *b*) as pumps actuated by means of a treadle (*c*) and a third regulating bellows (*f*) arranged between the aspirating conduit-pipe (*d*) and said aspirating pumps (*a*, *b*) and means by which said regulating bellows (*f*) is operated independently of the driving mechanism substantially as and for the purpose described.

2. A foot driven dust-aspirating apparatus having two aspirating pumps (*a*, *b*) and a regulating bellows (*f*) arranged between the aspirating-conduit-pipe (*d*) and said aspirating pumps (*a*, *b*) and in said regulating bellows (*f*) a spring (*h*) so arranged and the strain of said spring so adjusted, that independently of the driving mechanism, the regulating-bellows is compressed on each aspirating motion of the pumps, and lengthened when the direction of motion is alternating substantially as described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

CHRISTIAN FRIEDRICH HOLDER.

Witnesses:
WM. HAHN,
ERNST ENTENMANN.