March 14, 1933. C. OTTO 1,901,467

VACUUM CLEANING APPARATUS

Filed Feb. 8, 1930

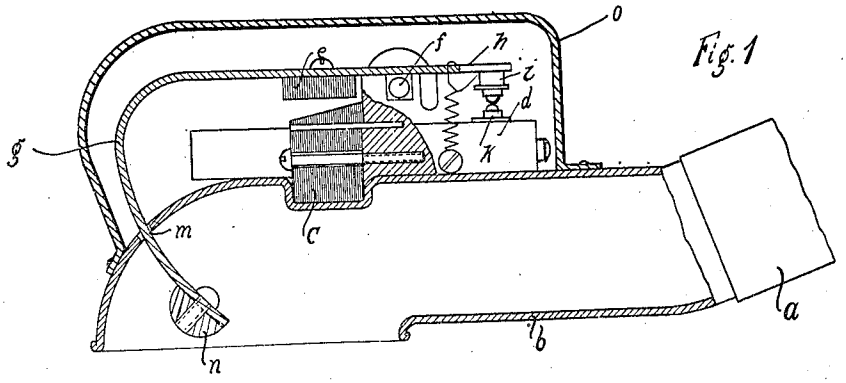

Fig. 1

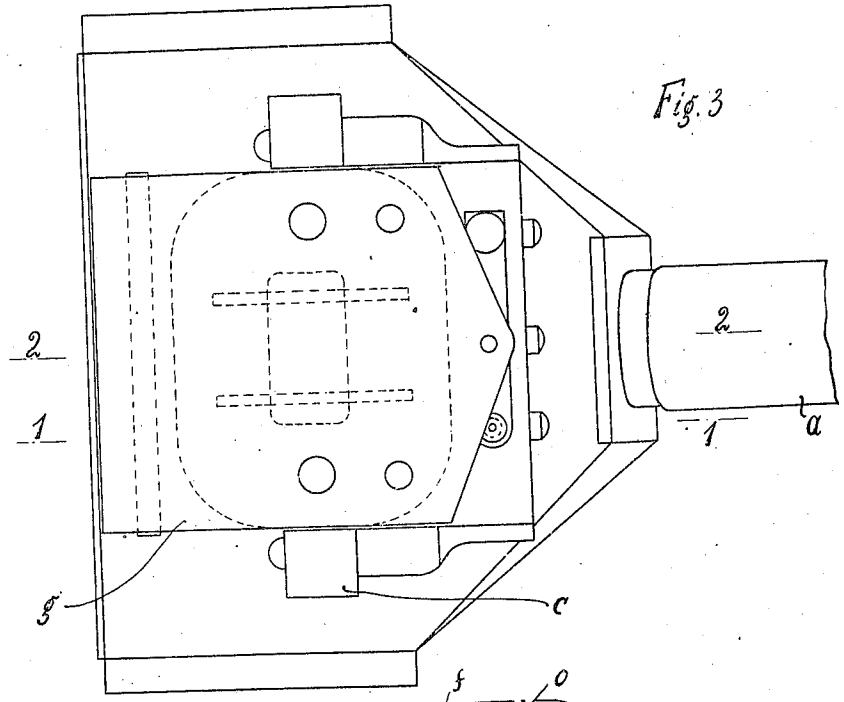

Fig. 3

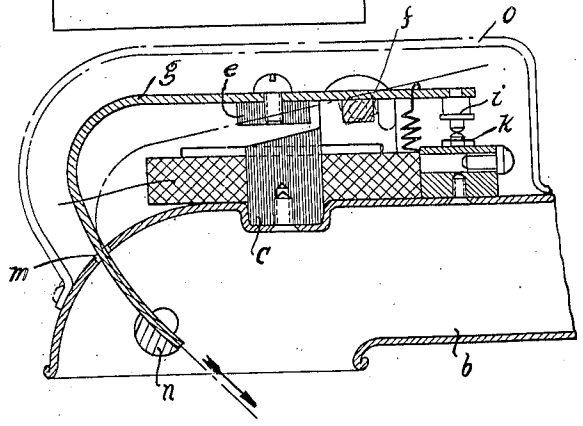

Fig. 2

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UNITED STATES PATENT OFFICE

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VACUUM CLEANING APPARATUS

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My invention relates to improvements in vacuum cleaning apparatus, and more particularly to apparatus of the type in which beaters are associated with the nozzle for more effectively cleaning the carpet or the like. The object of the improvements is to provide an apparatus which is effective in operation and with this object in view my invention consists in constructing the operating mechanism of the beater in the form of a magnetic hammer break. Preferably the beater is constructed so that it has a rubbing or sweeping action in addition to beating action. Finally an object of the improvements is to construct the beating apparatus so that it can be rigidly mounted onto or dismounted from the nozzle of a vacuum apparatus.

For the purpose of explaining the invention an example embodying the same has been shown in the accompanying drawing, in which the same letters of reference have been used in all the views to indicate corresponding parts.

In said drawing

Fig. 1 is a sectional elevation taken on the line 1—1 of Fig. 3 and showing the mouthpiece or nozzle of the apparatus,

Fig. 2 is a sectional elevation taken on the line 2—2 of Fig. 3 showing the downward movement of a flexible rockable member as hereinafter described, and

Fig. 3 is a top plan view of Fig. 1.

In the examples shown in the figures the mouthpiece of the vacuum cleaning apparatus comprises a tubular member *b* having an extension *a* adapted to be secured to a tubular handle or flexible tube. On the top of the tubular member *b* an electromagnet *c*, *d* is mounted the armature *e* of which is fixed to a curved arm *g* rockingly mounted at *f*. The arm *g* is passed into the casing through a slot *m* and it carries a contact *i* which in the out-of-service position of the parts is pressed by a spring *h* into the engagement with a contact *k*, the said contacts *i* and *k* being included in the circuit of the coil *d*. The front end of the arm *g* is curved downwardly and through an opening *m* into the casing *b*, and it carries a beating member *n* adapted upon operation of the device to act on the surface to be cleaned. The operative parts are covered by a hood *o*. Preferably, the beater *n* is removably fixed to the arm *g* so that at any time a beating member suitable for the purpose aimed at may be fixed to the arm.

In the operation of the apparatus the mouthpiece *b* is passed across the surface to be cleaned, the exhauster is started and the electromagnet *c*, *d* is energized. Thereby the armature *e* is oscillated upwardly and downwardly and by reason of the elasticity of the arm *g*, the member *n* has a rubbing action on the surface to be cleaned in addition to the beating action.

I claim:

1. In a vacuum cleaner, a tubular mouthpiece adapted to be connected with a vacuum device, a rockable arm on the mouthpiece and having a free lashing end, beating means on the rockable arm mounted within the mouthpiece for acting on a surface to be cleaned, and a magnetic hammer break for operating said rockable arm, the free lashing end of said rockable arm having a curved portion extending through an opening and into the interior of said mouthpiece.

2. In a vacuum cleaner, a tubular mouthpiece adapted to be connected with a vacuum device, a rockable arm on the mouthpiece and having at one end thereof a projecting substantially longitudinally arcuate beating and rubbing flexible portion for acting against a surface to be cleaned, whereby said arm by its rocking movement will cause said beating and rubbing portion to bind flexibly when acting against the resistance of the surface to be cleaned, to cause beating and rubbing movements against said surface, and means for operating said rockable arm.

3. In a vacuum cleaner, a tubular mouthpiece adapted to be connected with a vacuum device, an arm rockingly mounted on the outside of said mouthpiece and having a free end extending into the mouthpiece, a beating member secured to the free end

of said arm within said mouthpiece, and an electromagnet for operating said arm.

4. In a vacuum cleaner, a tubular mouthpiece adapted to be connected with a vacuum device, an arm rockingly mounted on said mouthpiece and having a curved flexible end bent into said mouthpiece, a beating member fixed to the free end of said arm in position for engaging the surface to be cleaned and means for imparting oscillating movement to said arm.

5. In a vacuum cleaner, a tubular mouthpiece adapted to be connected with a vacuum device, a rockable arm on the mouthpiece, a flexible extension in continuation of one end of the arm, positioned for acting on a surface to be cleaned and adapted, when the arm is rocked, to have an impinging and rubbing action on the surface to be cleaned, and means for operating said rocking arm.

6. In a vacuum cleaner, a tubular mouthpiece adapted to be connected with a vacuum cleaner, a rockable arm on the exterior of the mouthpiece, a beating element within the mouthpiece, an arcuate extension on one end of the arm extending through a guide opening into the interior of the mouthpiece and carrying the beater element therein, and means for operating said rockable arm.

In testimony whereof I hereunto affix my signature.

CARL OTTO.