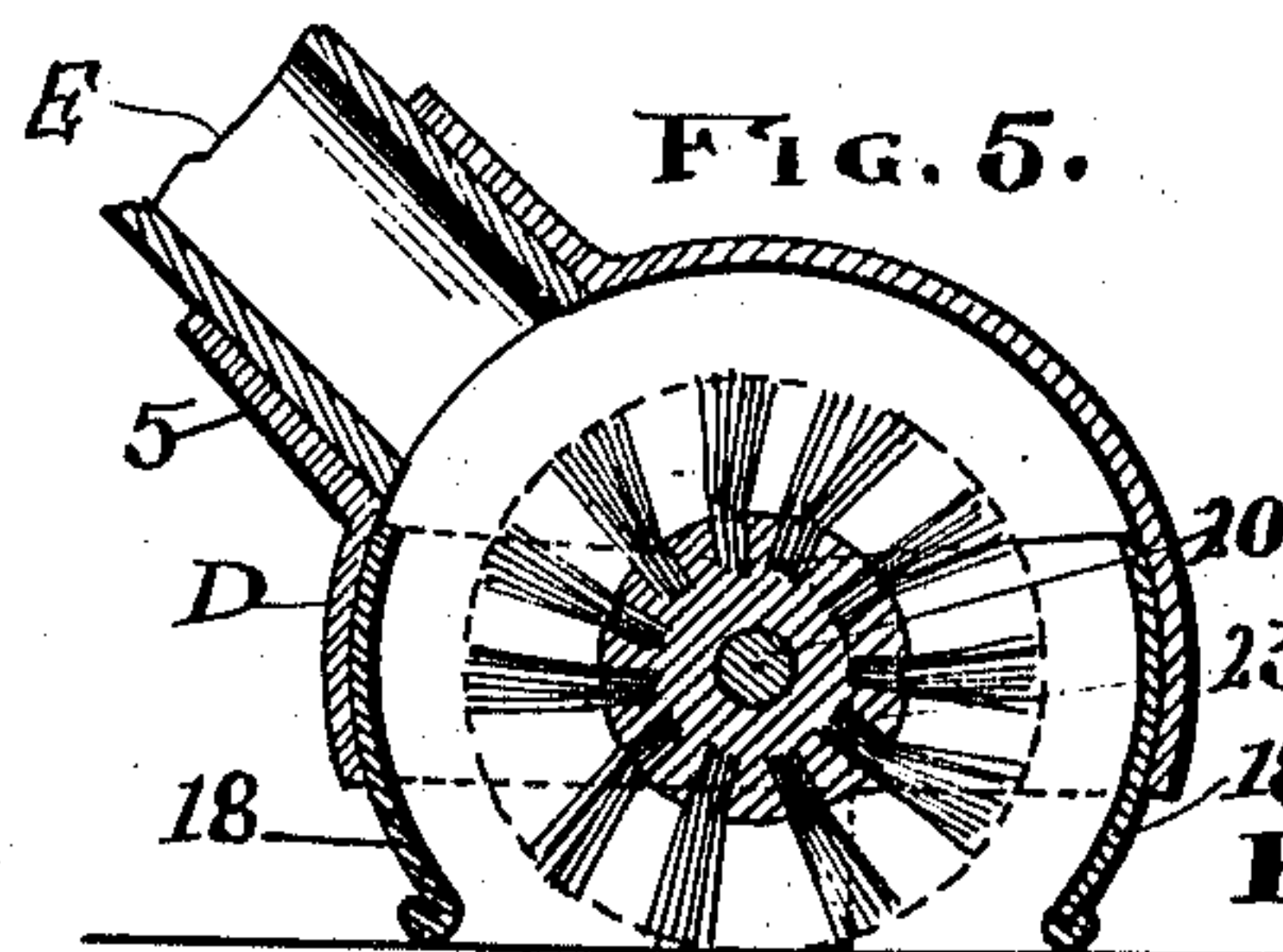
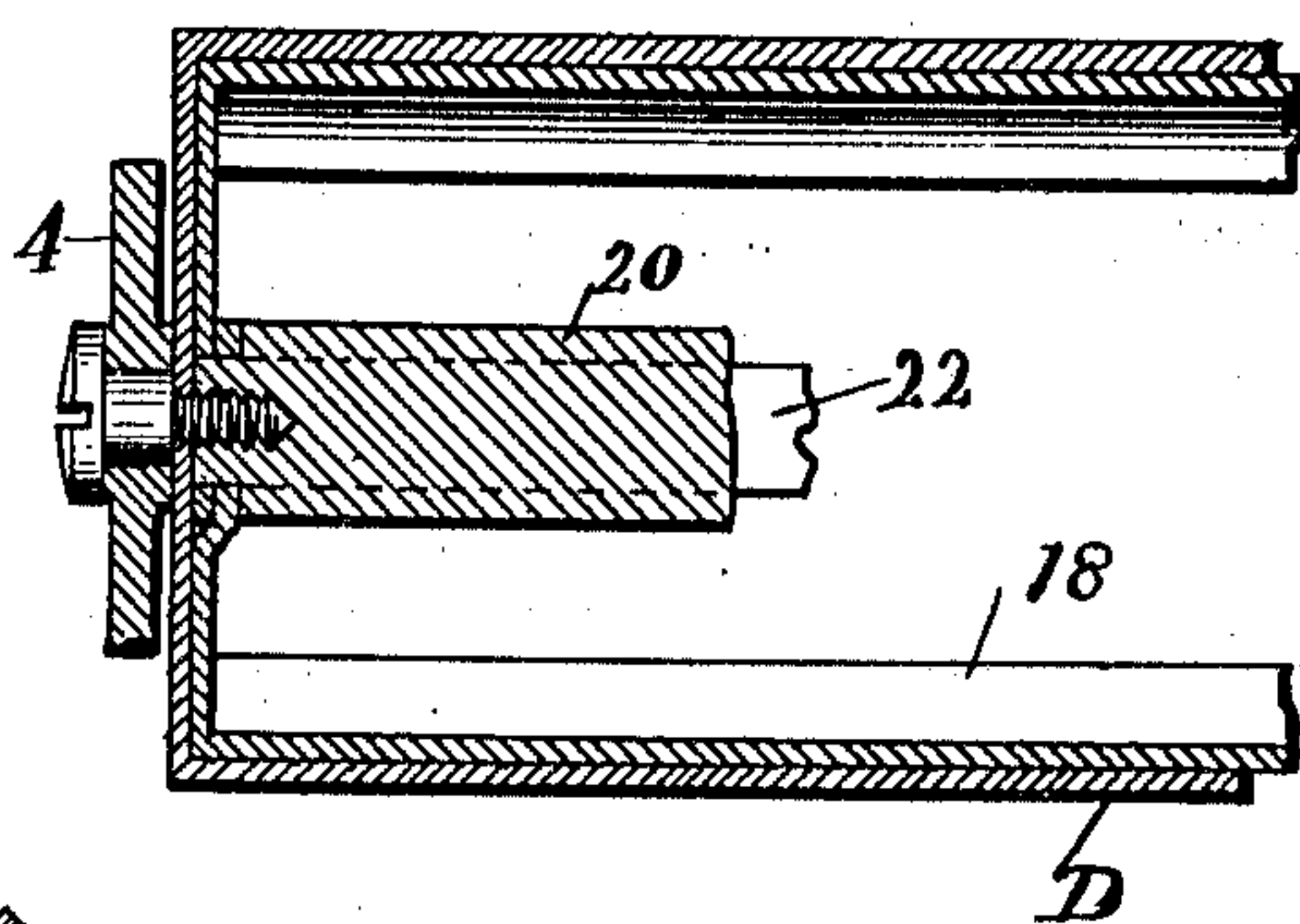
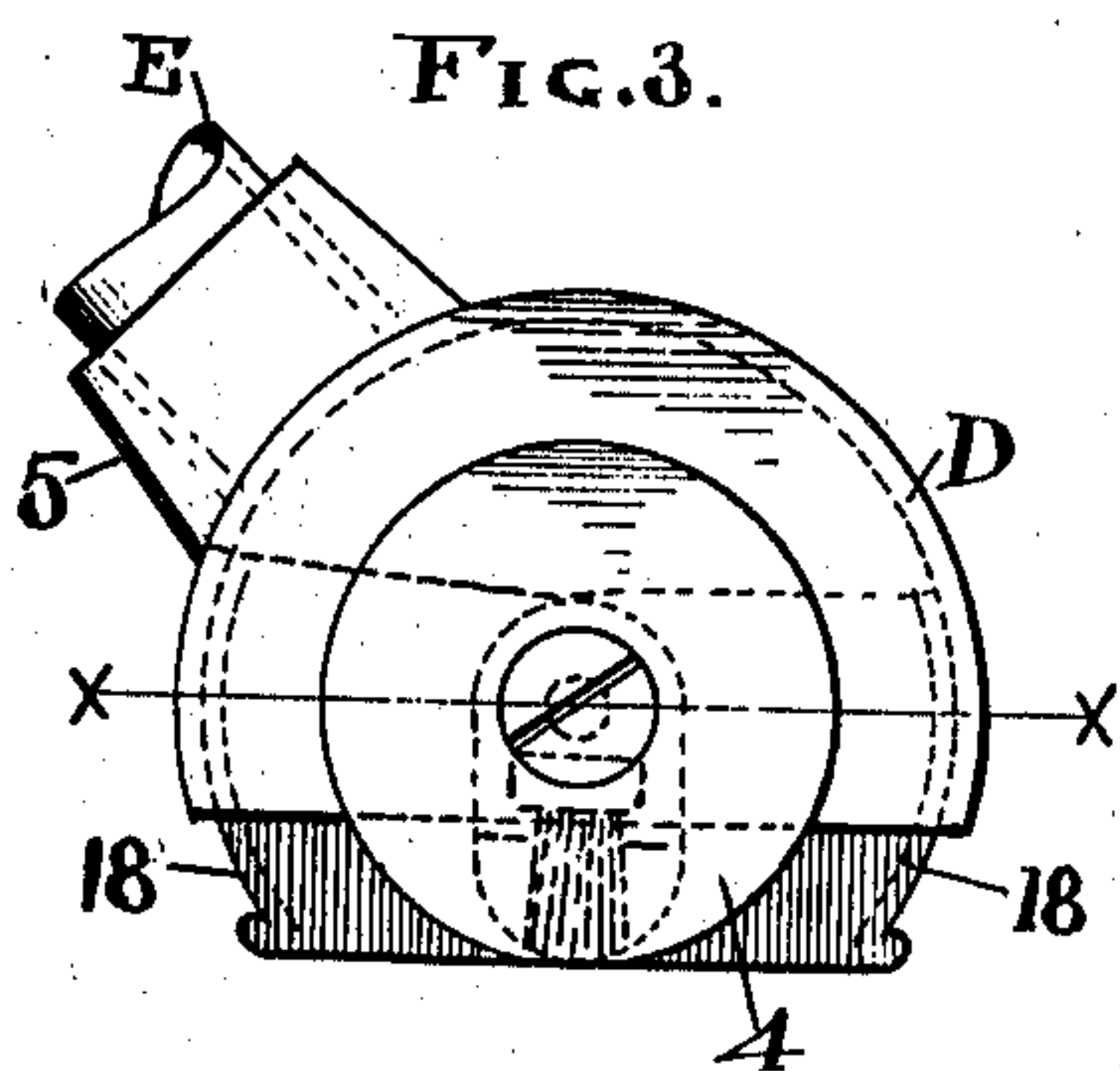
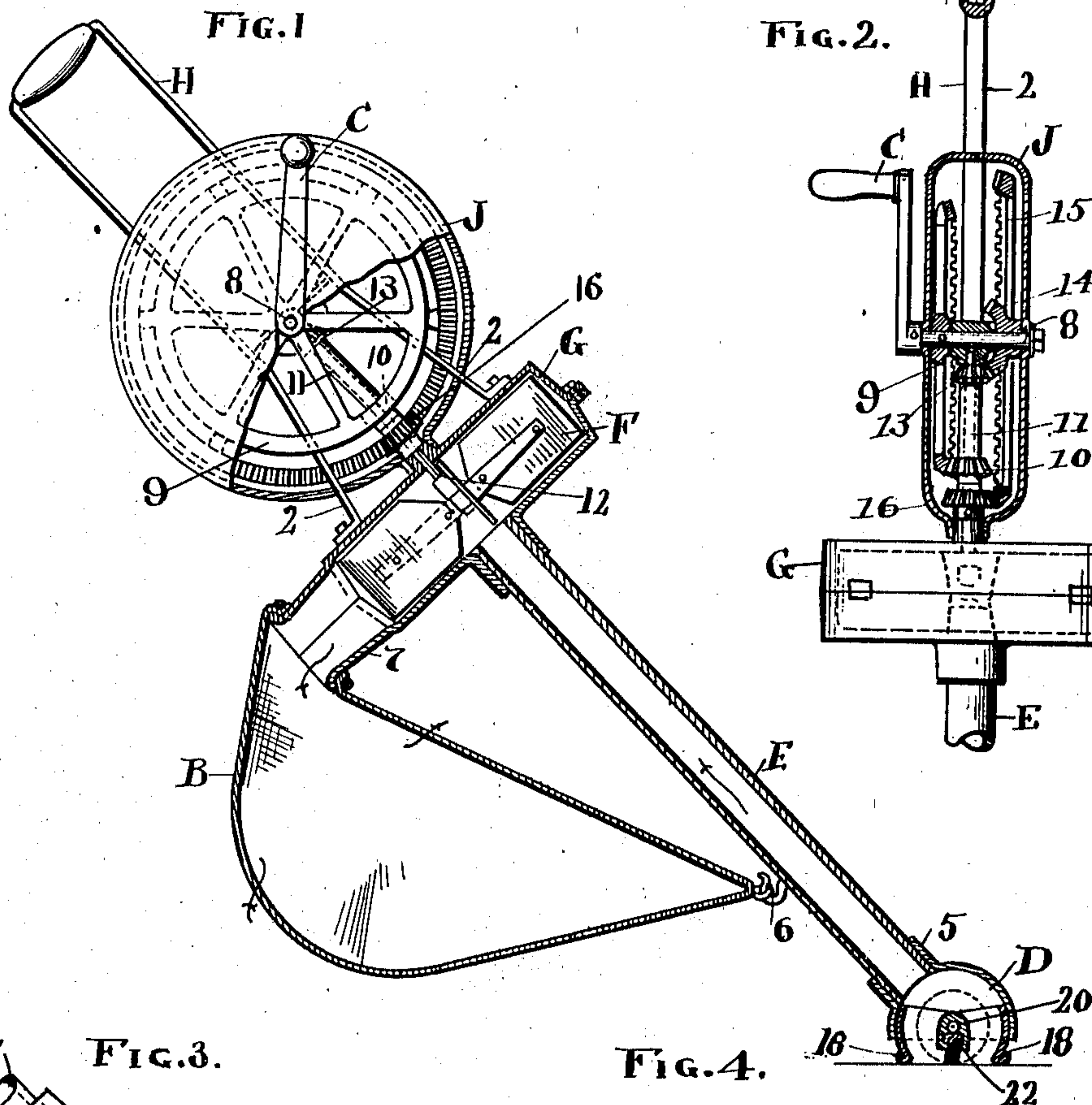


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APPLICATION FILED JULY 6, 1909.

993,202.

Patented May 23, 1911.

2 SHEETS—SHEET 1.



ATTEST
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FIG. 6.

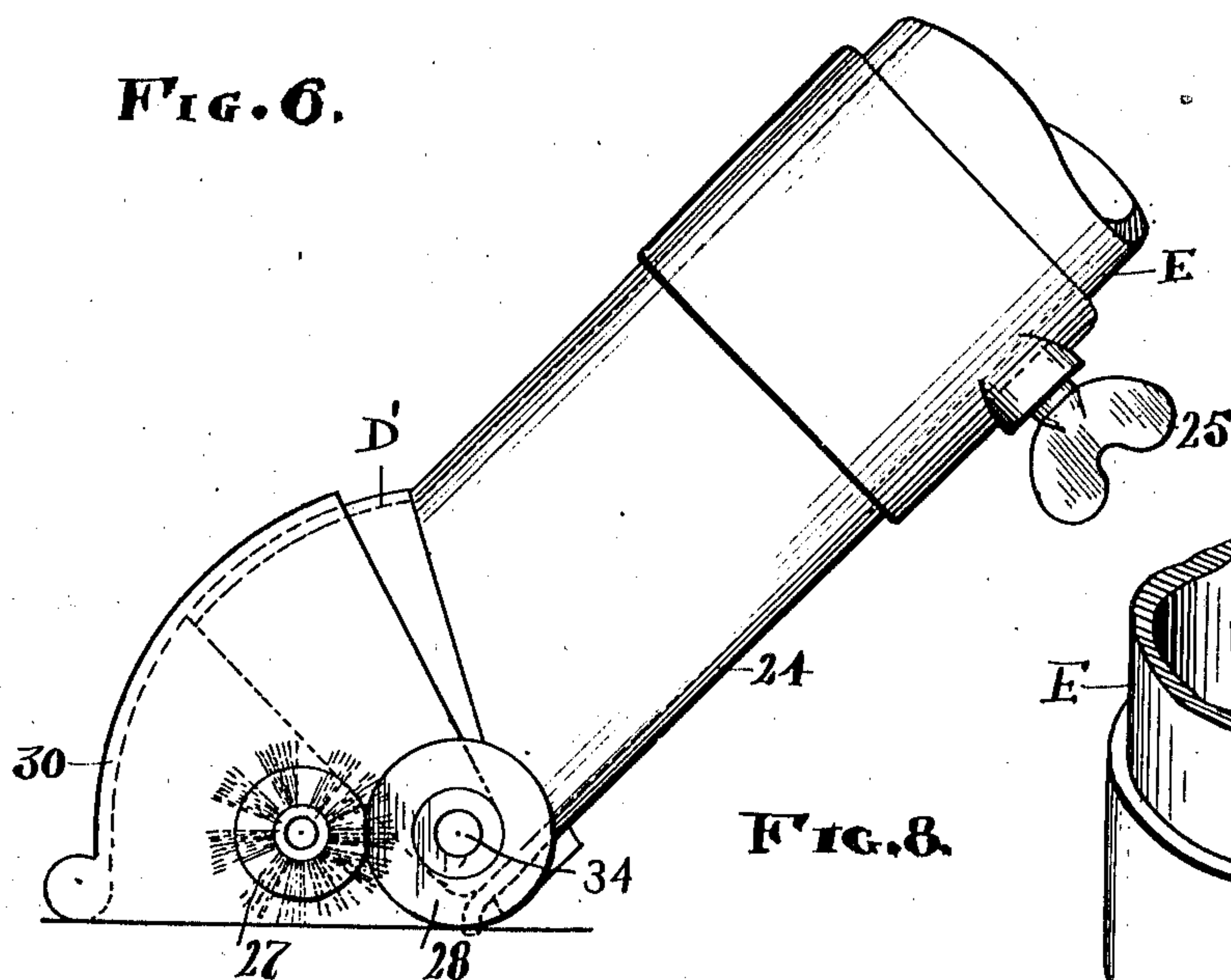


FIG. 8.

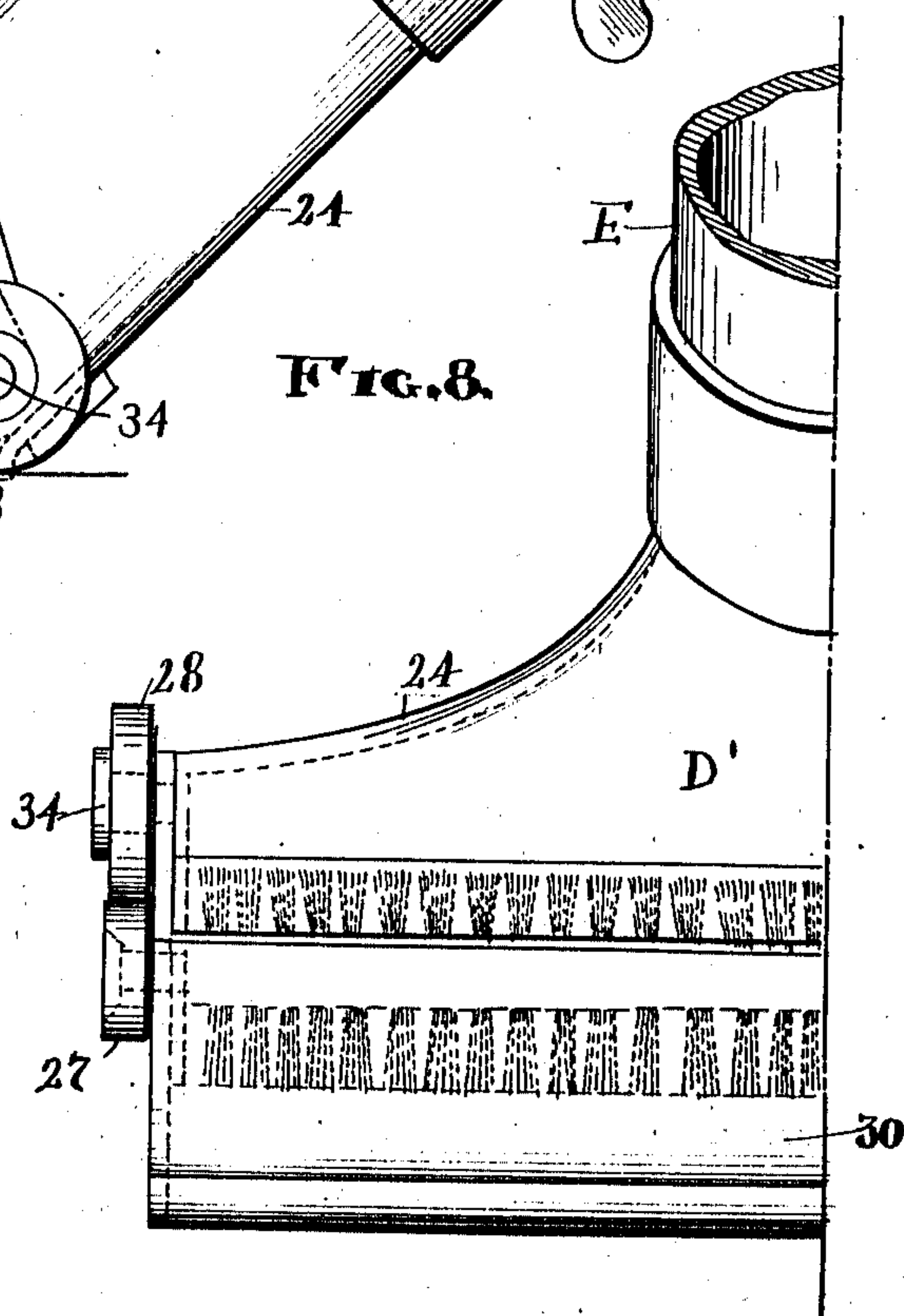


FIG. 9.

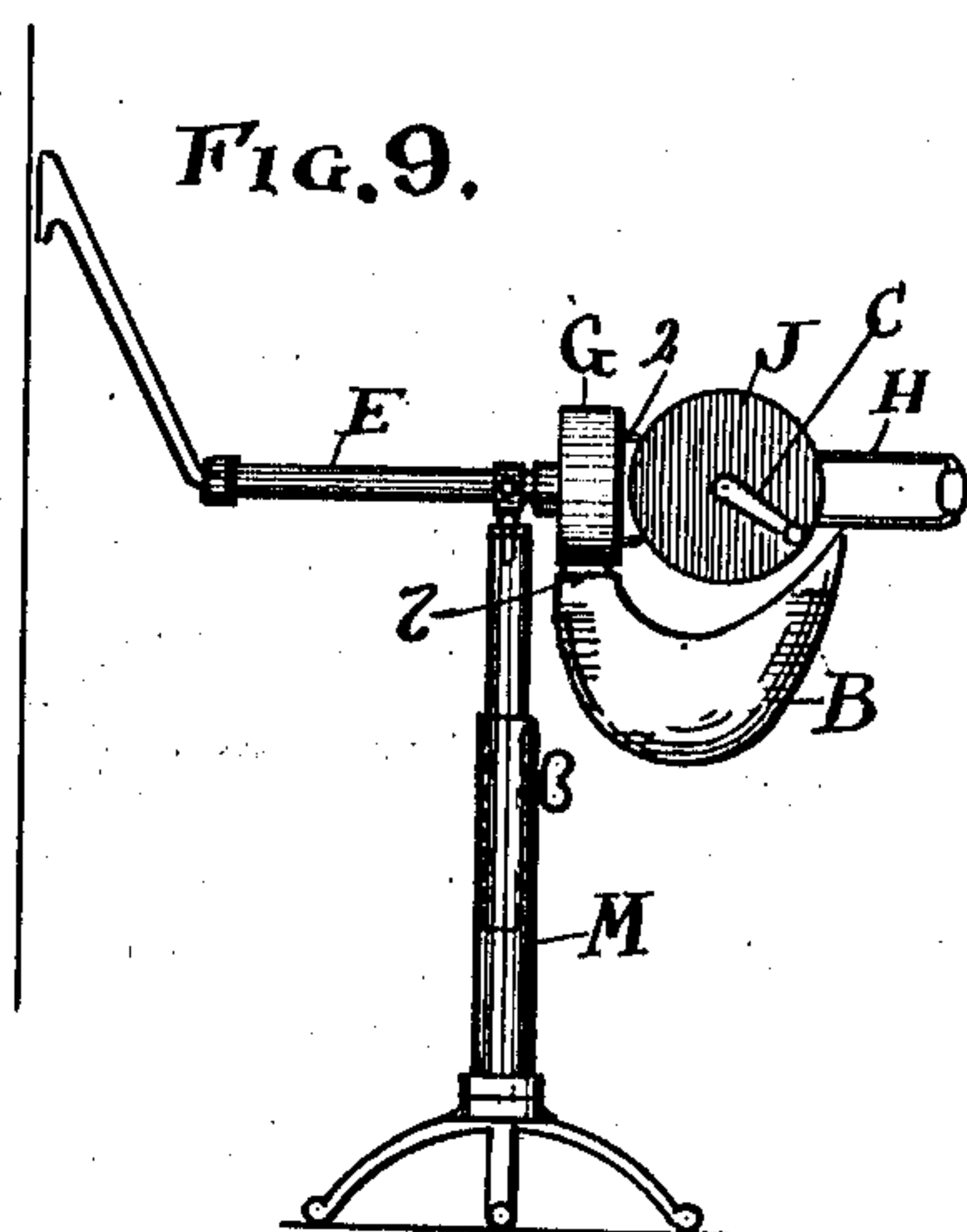
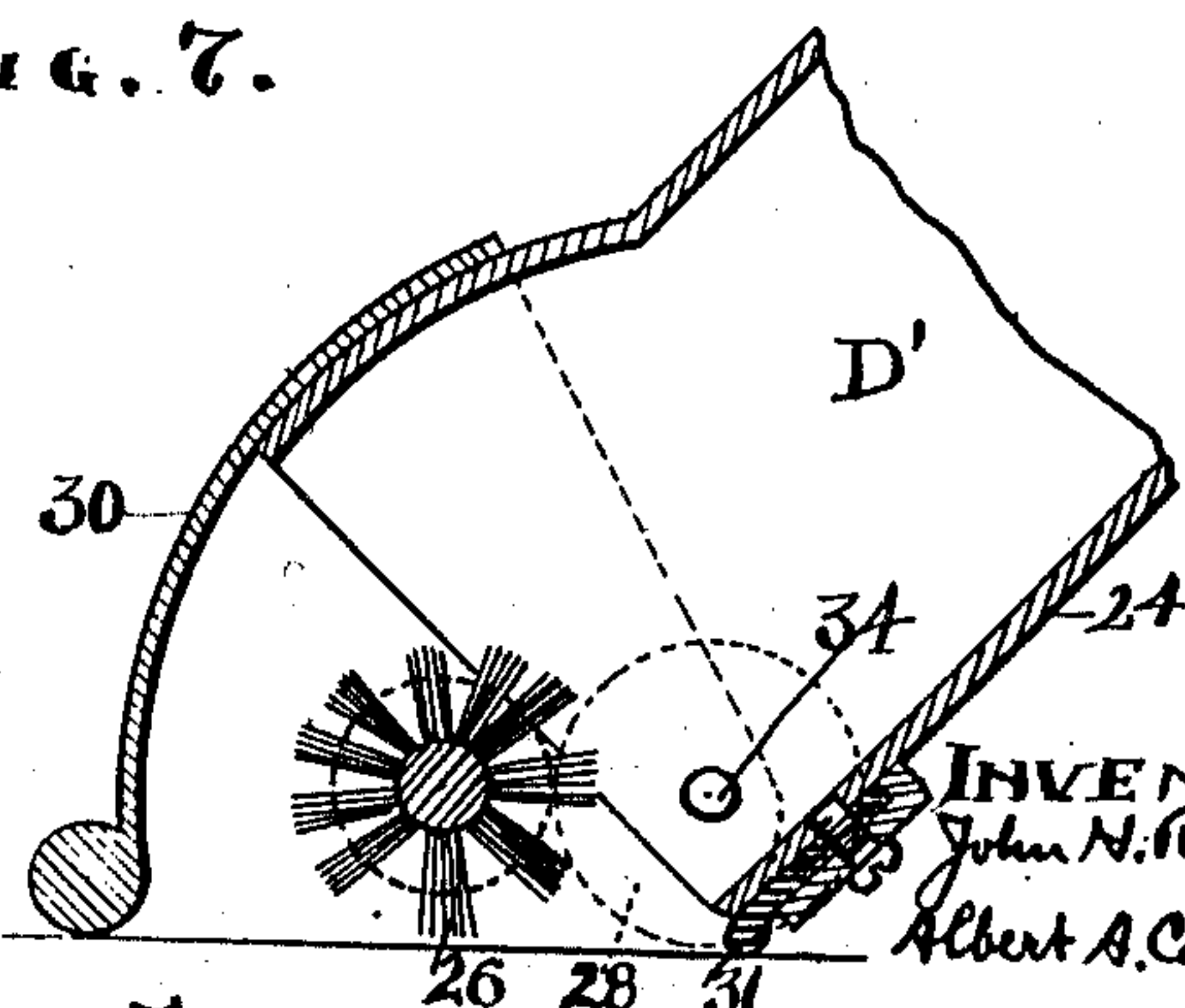


FIG. 7.



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UNITED STATES PATENT OFFICE.

JOHN H. RUSSELL AND ALBERT A. CARSON, OF ASHLAND, OHIO, ASSIGNORS TO E. J. RAMEY, OF NEWARK, OHIO.

VACUUM-CLEANER FOR CARPETS AND THE LIKE.

993,202.

Specification of Letters Patent.

Patented May 23, 1911.

Application filed July 6, 1909. Serial No. 505,956.

To all whom it may concern:

Be it known that we, JOHN H. RUSSELL and ALBERT A. CARSON, citizens of the United States, residing at Ashland, in the county of Ashland and State of Ohio, have invented certain new and useful Improvements in Vacuum-Cleaners for Carpets and the Like, of which the following is a specification.

Our invention relates to vacuum cleaners for carpets and the like, and the invention consists in a hand power cleaner constructed and adapted to operate substantially as shown and described and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a sectional side elevation of the machine with one of several different forms of suction heads or tools adapted to be used in this connection. Fig. 2 is a vertical sectional elevation of the upper part of the machine showing especially the gear mechanism by which the exhaust fan is operated. Fig. 3 is an end elevation enlarged of the floor tool or suction head shown in Fig. 1, and Fig. 4 is a plan view on line $x-x$, Fig. 3. Fig. 5 is a cross section of a modification of the said head shown in Figs. 1, 3 and 4, with a revolving brush instead of a fixed brush as in said views. Figs. 6, 7 and 8 illustrate a further modification of the device, showing a gravity hood or skirt- ing at the front of the suction head adapted to close the same upon the floor as herein- after fully described. Fig. 9 is a reduced view of the machine pivotally mounted upon a vertically adjustable standard.

The object and general character of the invention are clearly disclosed in the foregoing views, and contemplate a vacuum machine adapted to serve the various purposes of such machines for floor and other work as is now well known, and the machine is projected upon the line of simplicity, light- ness and convenience of operation, so that a woman can conveniently handle and operate the same for ordinary housework.

To these ends the machine is built with a handle H adapted to be gripped by one hand and a crank C to be grasped by the other hand, and serving to both handle and guide the machine. The said handle part H is shown as provided with two stems or legs 2 of sufficient length to make the re- quired connection with casing G of the suc-

tion fan F, and the head or mouth piece or part indicated by D is removably engaged on the tube or pipe E which permanently connects with the fan casing at its upper end, and thus a rigid structure or frame work is made comprising the parts E, G and H and the casing J as we shall presently see. The said suction head D is provided with a neck or extension 5 sleeved upon the lower end of tube E and removably engaged thereon, so that it can be taken off and replaced at will, but said tube and casing G are rigidly connected, and a dust receptacle or bag B is hung upon a hook 6 or the like at one end upon the tube E and engaged at its upper end over the mouth of the discharge neck 7 of casing G which opens to the interior of the said casing and provides an outlet through which the casing discharges under the operation of the fan.

Mechanism for operating the fan is inter- posed between the hand crank C and the fan, and the said mechanism is constructed to give the maximum of speed to the fan with the minimum of power required in crank C to drive the fan. That is, we have planned to obtain the greatest possible vol- ume of suction practicable in a device of this kind with the least exertion or power to effect such result, and high speed as well as ease of rotation of the fan are among the things necessary to accomplish this end. Therefore, we have adopted a system of gears mounted in a casing J which is lo- cated over or upon the fan casing G and carries the crank shaft 8 and the said gears and pinions for driving the fan. These comprise a relatively large bevel gear 9 fixed on shaft 8 meshing with a pinion 10 fixed on a sleeve 11 mounted upon shaft 12 which extends down into casing G and car- ries the fan. The sleeve 11 is provided with a pinion 13 upon its upper end and said sleeve with its pinions is free to rotate upon shaft 12. Pinion 13 engages a relatively small gear 14 about the axis of the large gear 15 which is loosely mounted upon crank shaft 8 and meshes with a bevel pin- ion 16 fixed upon shaft 12, so that as the crank C is rotated power is communicated to the fan through the foregoing series of gears, pinions and shafts, and gear 14 is unitary with gear 15. Now, retracing the operating connections just described, it is seen that gear wheel 9 meshes pinion 10

which drives pinion 13 through sleeve 11, and this pinion meshes with the small gear 14 on larger gear 15 and which in turn meshes with the fan driving pinion 16 5 locked on the shaft 12. The fan is driven by this mechanism with comparative ease at a high rate of speed and the desired vacuum results in the suction head D. The said suction head comprises the casing or hous- 10 ing D as a whole which has a tubular neck 5 sleeved over the extremity of tube E and is supplemented on the inside by two wings or guards 18 which have right angled end portions pivoted upon a shaft 20 and con- 15 structed to ride or slide by gravity upon the floor or carpet or other surface over which the tool is being worked, and effect closure to the outside air. Both wings or guards accommodate themselves to any 20 inequalities in the surface and to the angle at which the tool or head may be held. A screw in each end of the shaft 20 through the wall of head D serves as a trunnion therefor and as a bearing or support for 25 the wheel or roller 4 outside. No special value is attached to this arrangement as it can be readily changed to an equivalent construction for the same purpose. In Fig. 1 we show a stationary brush 22 therein, and 30 in Fig. 5 a revolving brush 23. Either may be used at pleasure and the shaft 20 is shown as engaged in the casing D at its ends and equipped with rollers 4 at its extremities outside said shell or casing and 35 carrying the same upon the floor to lighten the work.

Figs. 6, 7 and 8 show a modification of the suction head D and which we deem the preferable form. In these views the casing 40 D' is provided with a comparatively long tubular neck 24 attached by set screw 25 to the suction tube E and has a revolving brush 26 mounted therein and provided with rollers 27 on the ends of its shaft out- 45 side the casing and in friction engagement with rollers 28 which carry the device on the floor and through which and the rollers 27 rotation is imparted to the brush. The said neck 24 is shown as somewhat enlarged

at its lower portion on segmental lines and 50 supplemented by a gravity hood 30 or guard pivotally mounted at its rear and base upon the spindle or shaft 34 of wheels 28 and, like guards 18, makes a complete closure around about the bottom of the said 55 head except at the heel or rear thereof where a rubber or like flexible strip 31 extends lengthwise and is adapted to close off the air from the outside as well as yield ac- 60 cording to the position or angle of the tool to the floor. Thus in this as well as in the other form or forms of the head an effective skirting of a yielding or accommodating nature is interposed about the bottom of the 65 said head or vacuum tool which accommodates itself to all working conditions and promotes the efficiency of the suction head as described.

The bag B is of a suitably close woven duck or drilling which serves to intercept 70 the dust and yet allows the air to be driven through the same, and is removably supported on the outside of the machine for convenience of cleansing.

What we claim is: 75

1. In vacuum cleaning machines, a suction head, a shaft lengthwise through said head and a brush mounted thereon, in combination with a gravity dust guard pivotally mounted in respect to said head and 80 adapted to slide over the floor and close the space about the bottom of said head against suction from the outside.

2. In vacuum cleaners, a suction head and a brush therein, in combination with a 85 dust guard pivotally mounted on said head at the rear and bottom and extending below the bottom and across the front thereof, and a flexible guard-strip at the rear and bottom of said head and hood extending downward 90 flush with said dust guard.

In testimony whereof we affix our signatures in presence of two witnesses.

JOHN H. RUSSELL.
ALBERT A. CARSON.

Witnesses:

E. M. FISHER,
F. C. MUSSUN.