

(No Model.)

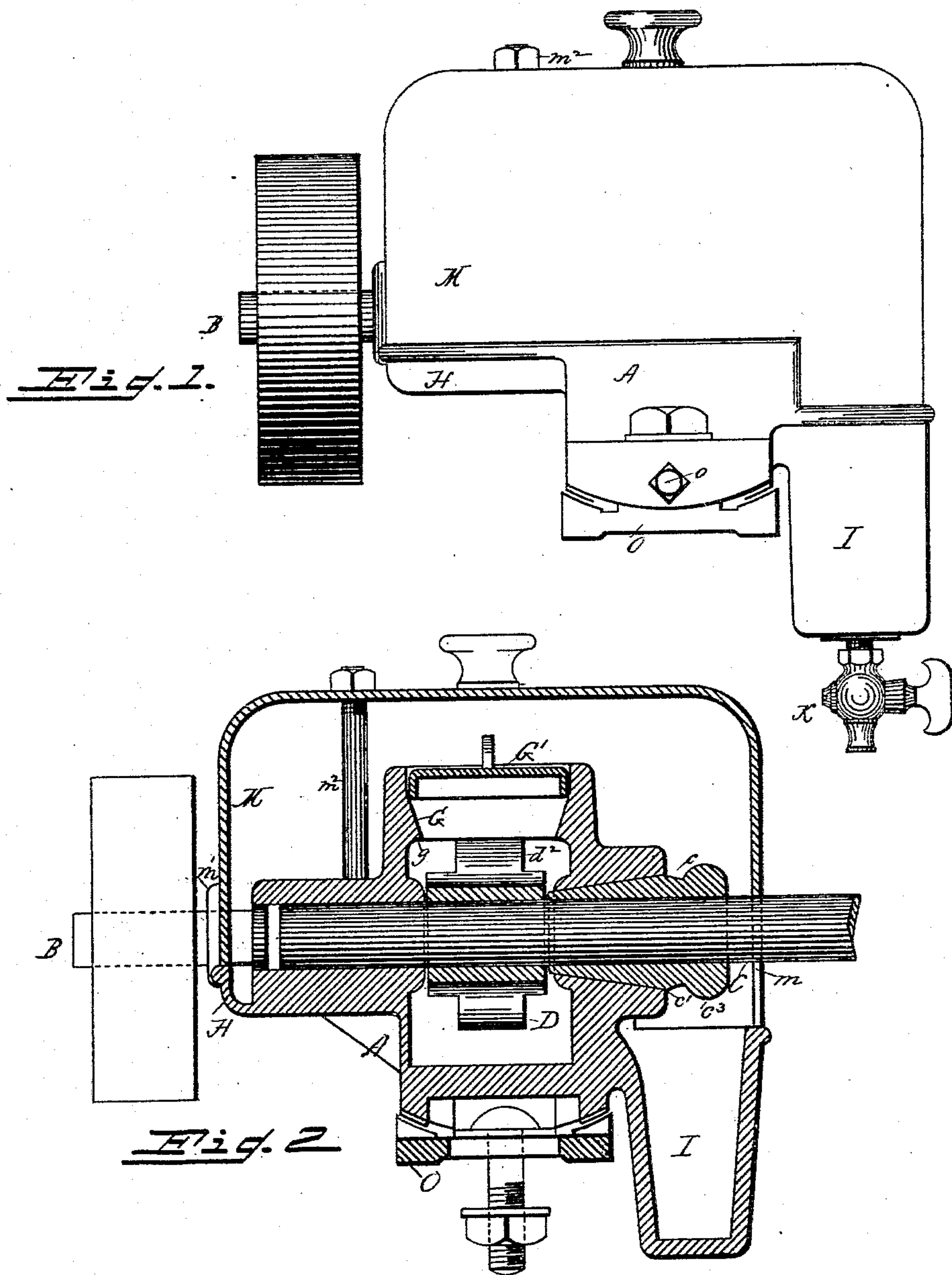
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J. K. PROCTOR & J. H. KNOWLES.

DOFFER COMB HEAD FOR CARDING MACHINES.

No. 339,581.

Patented Apr. 6, 1886.



WITNESSES:

Will H. Powell.

E. C. Connolly.

INVENTORS

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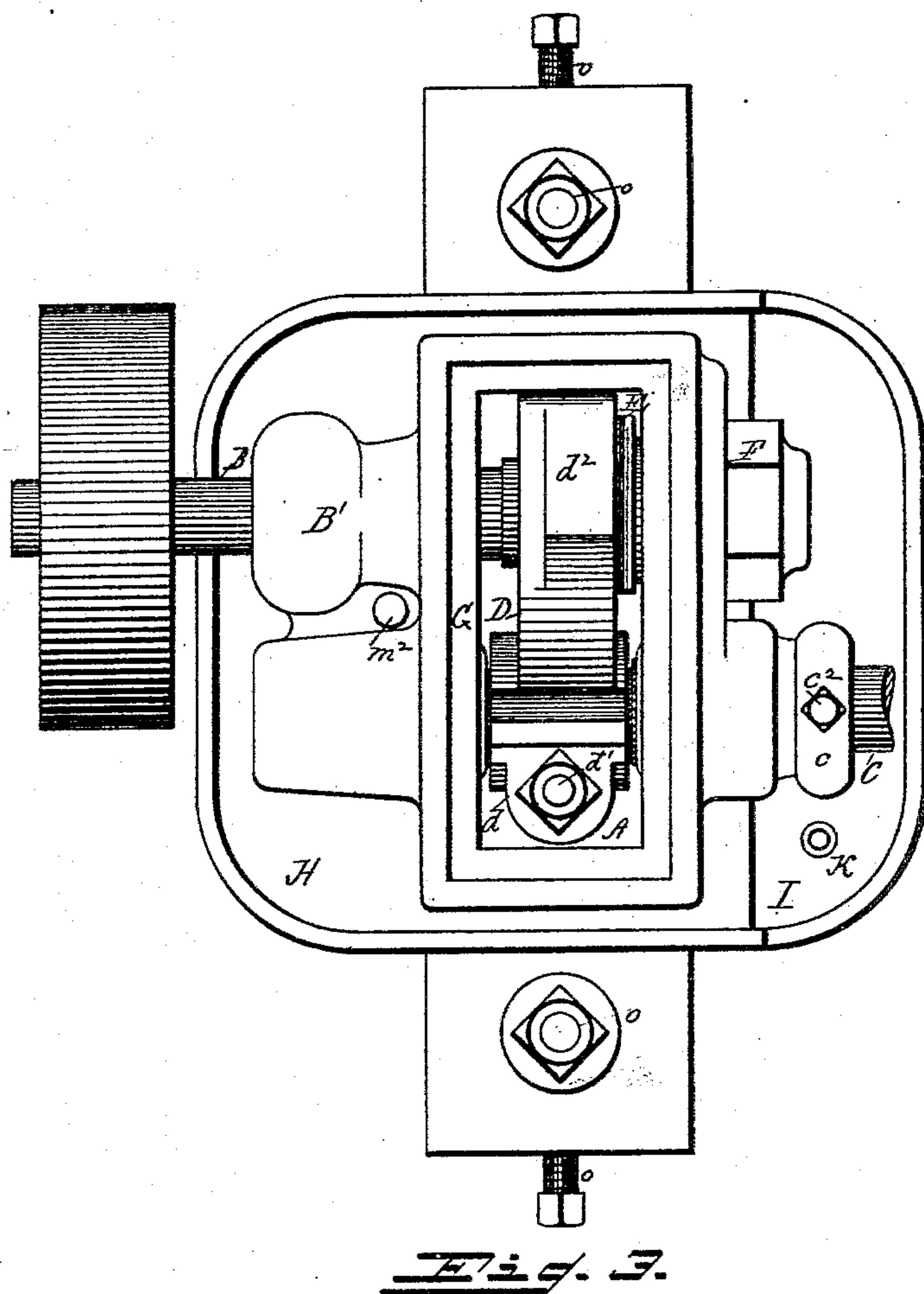
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Fig. 4.

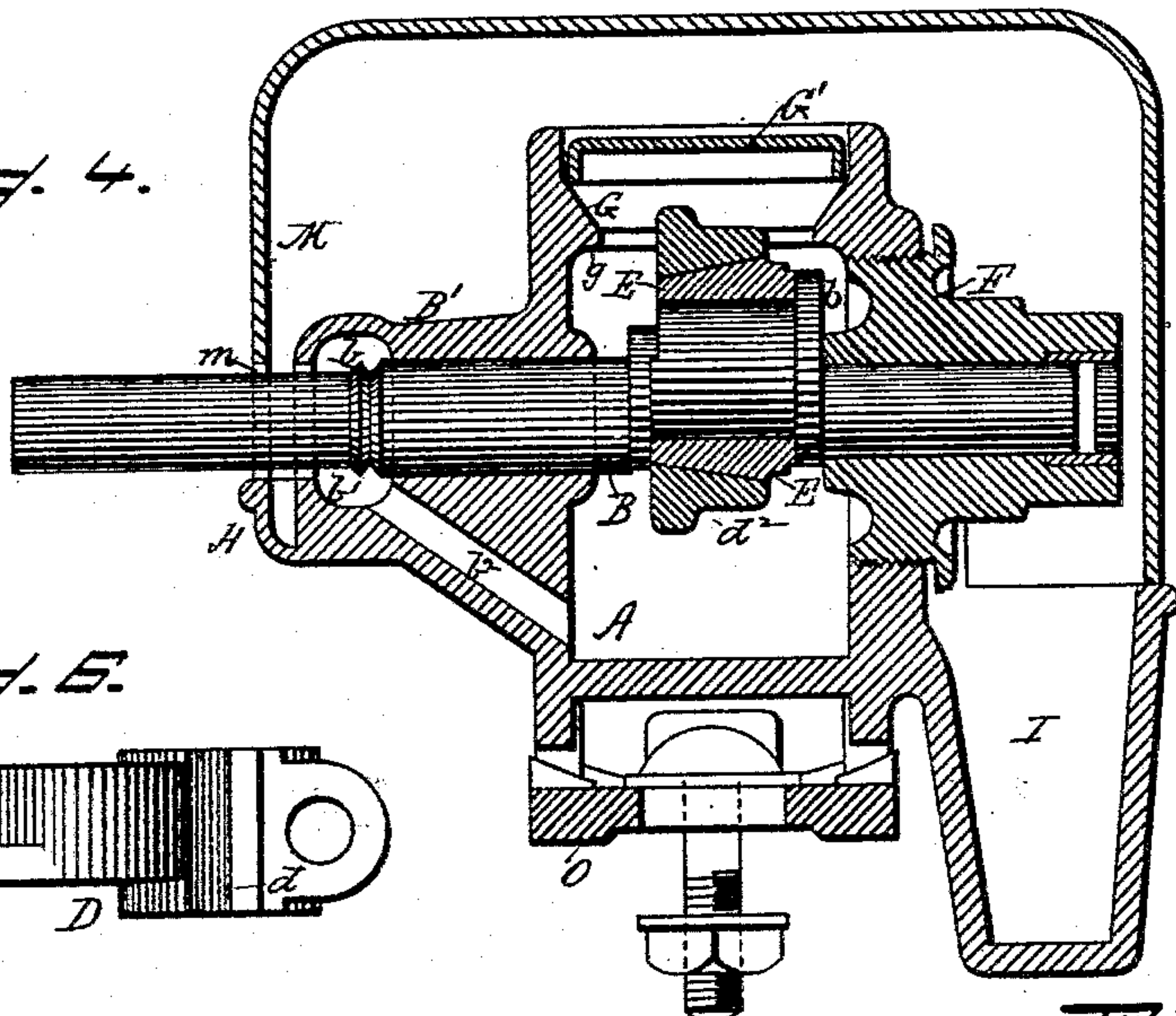


Fig. 5.

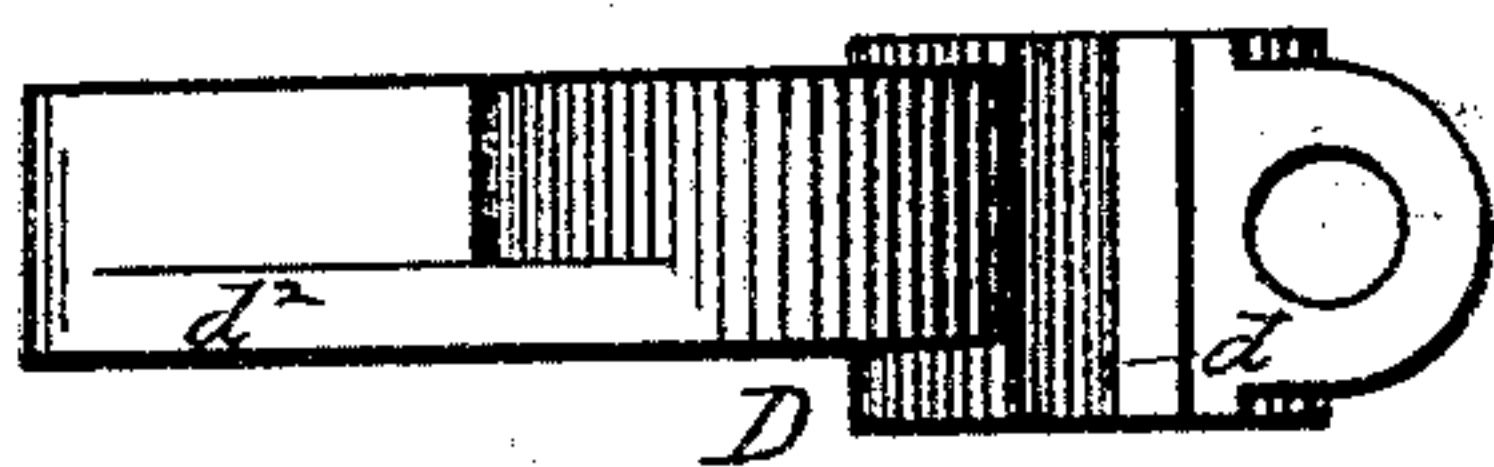


Fig. 7.

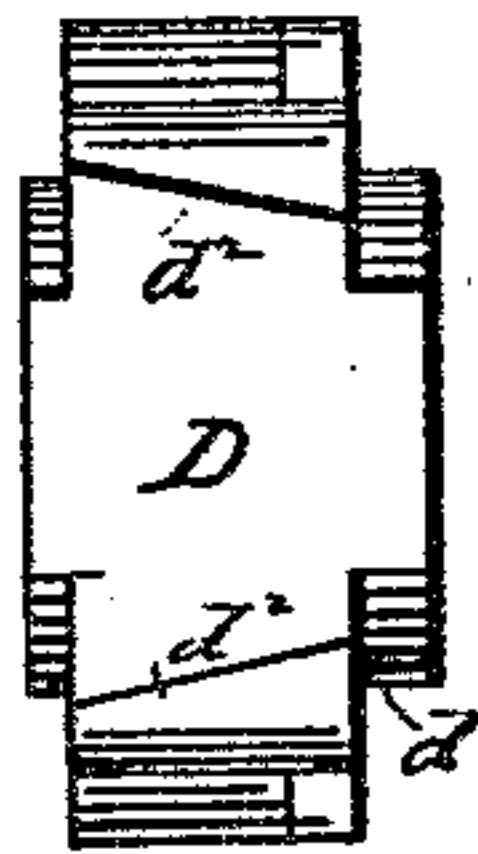
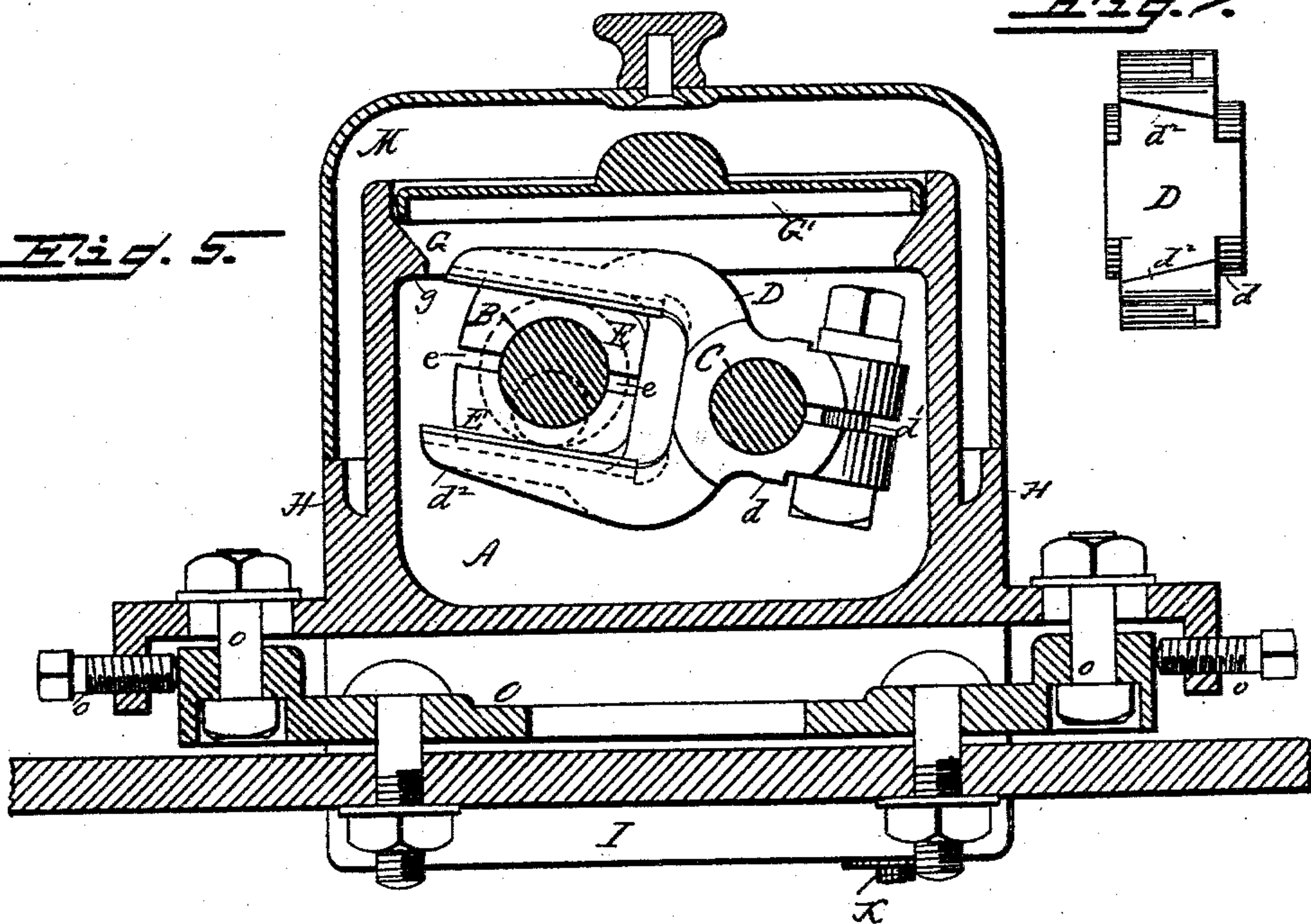


Fig. 5.



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UNITED STATES PATENT OFFICE.

JOSIAH K. PROCTOR AND J. HENRY KNOWLES, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNORS TO THE PHILADELPHIA TEXTILE MACHINERY COMPANY, OF SAME PLACE.

DOFFER-COMB HEAD FOR CARDING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 339,581, dated April 6, 1886.

Application filed November 2, 1885. Serial No. 181,573. (No model.)

To all whom it may concern:

Be it known that we, JOSIAH K. PROCTOR and J. HENRY KNOWLES, citizens of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Doffer-Comb Heads of Carding-Machines; and we do hereby declare the following to be a full, clear, and exact description of the invention, reference being had to the accompanying drawings, which form part of this specification, in which—

Figure 1 is a side elevation of a doffer-comb head. Fig. 2 is a vertical section of a doffer-comb head on line of comb-shaft, said shaft being shown in elevation. Fig. 3 is a top view of a doffer-comb head with cover and lid removed. Fig. 4 is a vertical section of a doffer-comb head on line of crank-shaft, said shaft being shown in elevation. Fig. 5 is a vertical transverse section of a doffer-comb head. Fig. 6 is a plan of yoke, and Fig. 7 an end view of same.

Our invention, which relates to the doffer-comb heads of carding-machines, has for its objects to provide, first, an improved construction of the "motion" devices to afford certain convenient facilities for adjustment, together with means for taking up wear or lost motion of the parts, and to secure more thorough lubrication of the same; and, second, a novel construction of the motion-chamber and its surroundings, which will secure a reduction in the amount of oil escaping from said chamber, which will provide means for the collection of so much of the oil as does escape from said chamber, and which will prevent the admission of loose fiber or dust into the oil-reservoir, and the accumulation of such fiber on the shafts and around the bearings of the latter.

Our improvements consist, first, in the peculiar construction and combination of the parts constituting the motion devices, and, second, in the novel construction of the motion-chamber and its surroundings, including an oil-collection apron, a reservoir, and a cover, all as hereinafter fully set forth and specifically claimed.

Referring to the accompanying drawings, A represents the motion-chamber, which is a

casting of oblong form, the two long sides of which afford bearings for the shafts B and C, which are, respectively, the crank-shaft and the comb-shaft. As is usual in mechanisms of this class, the crank-shaft imparts a rocking or vibratory motion to the comb-shaft. The intermediate devices by which such motion is imparted comprise the following parts: a yoke or stirrup, D, having a split hub, d , fastened by a bolt, d' , to the comb shaft C, and a forked end, d'' , which straddles part boxes or bushings E E, that are fitted on the crank-shaft and slide in the forked end of the yoke D when said crank-shaft revolves. The boxes do not completely encircle the crank-shaft, their adjacent or inner edges being some distance apart, so that open spaces $e e$ are constantly left on two opposite sides of the said shaft for the free and unimpeded contact of the lubricant in the motion-chamber, and every part of the surface of the crank is at some part of each revolution exposed to such contact. By these means the shaft or crank can never run dry so long as there is a supply of oil in the motion-chamber, thus avoiding a defect incident to those constructions in which the crank is completely encircled. The outer or top and bottom sides of the boxes E E are beveled, and the inner sides of the forks of the arm d'' are reversely inclined, so that by a lateral movement of the boxes and shaft B, effected by turning inwardly an adjusting-nut, F, in one of the sides of the motion-chamber, and which affords a bearing for one end of said shaft, lost motion can be taken up between the shaft and boxes, and also between the latter and fork d'' . The inner end of the nut F is in contact with a shoulder or fixed collar, b , on the crank-shaft, as is clearly shown in Fig. 4; hence an inward adjustment of the nut effected by turning it with a suitable wrench in its threaded bearing in the side of the motion-chamber moves the crank-shaft lengthwise, and as the said shoulder or fixed collar on the crank-shaft is also in contact with the end of the boxes E E, such inward adjustment of the crank-shaft forces said boxes E E into the fork of the yoke, and the top and bottom sides of the boxes E E being beveled, as described, the forcing of said boxes into the corresponding beveled sides of the yoke causes the boxes to close or press to-

ward each other, thus causing them to tightly encircle the crank-pin in the crank-shaft. The adjustment of the nut F moves the crank-shaft lengthwise, which forces the boxes E E into the fork of the yoke, and at the same time presses said boxes toward each other on the crank-pin. It also, by bringing pressure to bear on said yoke, which is fast to the comb-shaft, imparts a longitudinal axial movement to the latter, forcing its taper bearing *c* farther into its taper socket *c'* in the side or wall of the motion-chamber. Said taper bearing is secured adjustably to its shaft by a set-screw, *c*². Thus by one movement of the adjusting-nut wear or lost motion is taken up in three places—viz., between the boxes E E and the forks of the yoke D, between said boxes and the crank-pin, and between the taper bearing of the comb-shaft and its socket. The yoke D may be adjusted on the comb-shaft, being secured thereto by a split hub and clamping-bolt, and the object of this construction is to be able to vary the position of the stroke of the comb, and by having both the yoke and the taper bearing of the comb-shaft adjustable said shaft may be set to any position longitudinally within certain limits.

To prevent the oil which is thrown upwardly by the centrifugal action of the crank-shaft and the vibration of the yoke from surging out around the sides of the motion-chamber, said sides are formed with an inwardly-extending lip or ledge, G, the under side of which is in the form of a square or abrupt shoulder, *g*. This lip forms a rest for a lid, G', which is sunken or rests below the plane of the upper edge of the sides of the motion-chamber, so that if any oil should possibly escape above the lid it will not flow or drain over outside of the chamber, but will run back into the latter.

To provide for the collection and retention of any oil which may escape from the motion-chamber, which escape will be wholly or principally through the shaft-openings in the sides of the chamber or around the shaft-bearings, we provide an external apron or oil-gutter, H, on three sides of said chamber, which leads into a tank or reservoir, I, on the fourth side or outside end. The apron H is in a plane below the shafts B and C, and the bottom of the reservoir I is or may be in a still lower plane.

Said reservoir has a faucet, K, by means of which the collected oil may be drawn off at any time. And it may be here remarked that the capacity of the reservoir is such that the latter will hold a considerable body of oil, and hence will not require very frequent attention. It may be also here further observed that the apron and reservoir differ essentially from the small drip-cups or lips heretofore sometimes employed in this, that the latter have channels of communication with the motion-chamber for the immediate return of the oil which they catch, and hence are not in any sense reservoirs, while the tank I of our invention has no such means of communication with the

motion-chamber, and is in every sense a reservoir, retaining the oil until a considerable quantity of it collects, when it is to be drawn off by hand through the faucet provided for the purpose. The shaft B has formed on it an annular ridge or bead, *b*, and its bearing B' has a correspondingly-shaped groove, *b'*, in which said ridge runs. From the annular groove *b'* there is a passage-way, *b*², which leads to the reservoir I and conducts to the latter the oil that drips or runs off the shaft. A similar ridge or a shoulder, *c*³, is formed on the adjustable bearing of the comb-shaft C, and any oil escaping around the latter drips directly off its bearing into the reservoir I.

To prevent any oil that may be thrown off the shaft B outside the motion-chamber from escaping into the surrounding apartment or space around the comb-head, the latter is provided with a cover, M, the sides of which are formed with slots *m*, for the passage of the shafts B and C, and with lugs or dowels *m'*, that fit in grooves or sockets in the outer sides of the apron H, and is secured to the upright stud or bolt *m*². This cover subserves two purposes—viz., it prevents the splashing or throwing out of any oil beyond it, and it also prevents loose fiber or dust from getting into the oil in the reservoir or on the apron around the bearings of the shafts.

The apron and the reservoir, either or both, may be, and preferably are, formed integral with the motion-chamber, the whole being a single casting; or both said apron and reservoir, or either of them, may be placed under the motion-chamber, being a separate piece from the chamber, on which the chamber may rest.

To enable the head to be correctly and truly fitted on the frame of the machine to which it may be applied, (even if said frame be not true,) its bottom or under side is made convex, and the head is fastened by adjusting-bolts to an attaching bar or shoe, O, whose upper side is concave and receives the bottom of the head. When the bar O is fastened to the machine-frame, the head may be accurately adjusted on the latter and fastened in position by means of the bolts *o o*, provided for the purpose.

What we claim as our invention is as follows:

1. The combination, with the motion-chamber A, of the adjusting-nut F, crank-shaft B, rock-shaft C, yoke D, having split hub *d* and forked end *d*², part boxes or bushings E E, and adjustable taper bearing *c*, said several parts being constructed and combined substantially as shown and set forth.

2. The combination, with a doffer-comb head, of an external oil tank or reservoir, constructed and adapted to catch and retain the oil that may escape from the motion-chamber of said head, substantially as shown and described.

3. A doffer-comb head having an apron or gutter extending around the outside of the motion-chamber, and adapted and designed to form a conduit for escaping oil from the mo-

tion-chamber to the oil-reservoir external to said chamber, substantially as shown and set forth.

4. A doffer-comb head having a motion-
5 chamber, and an apron or gutter and tank or reservoir external to and completely surrounding the said motion-chamber, whereby any oil escaping at any point around the said chamber is caught and retained in such reservoir,
10 substantially as shown and set forth.

5. The combination, with the head of a doffer-comb, having a motion-chamber, an apron,

and an oil-reservoir, of a cover, M, which incloses said chamber, apron, and reservoir, and prevents the escape of oil and the admission 15 of dust, &c., substantially as set forth.

In testimony that we claim the foregoing we have hereunto set our hands this 14th day of October, 1885.

JOSIAH K. PROCTOR.
J. HENRY KNOWLES.

Witnesses:

HOWARD BANES,
WM. F. BOYD.