

No. 638,926.

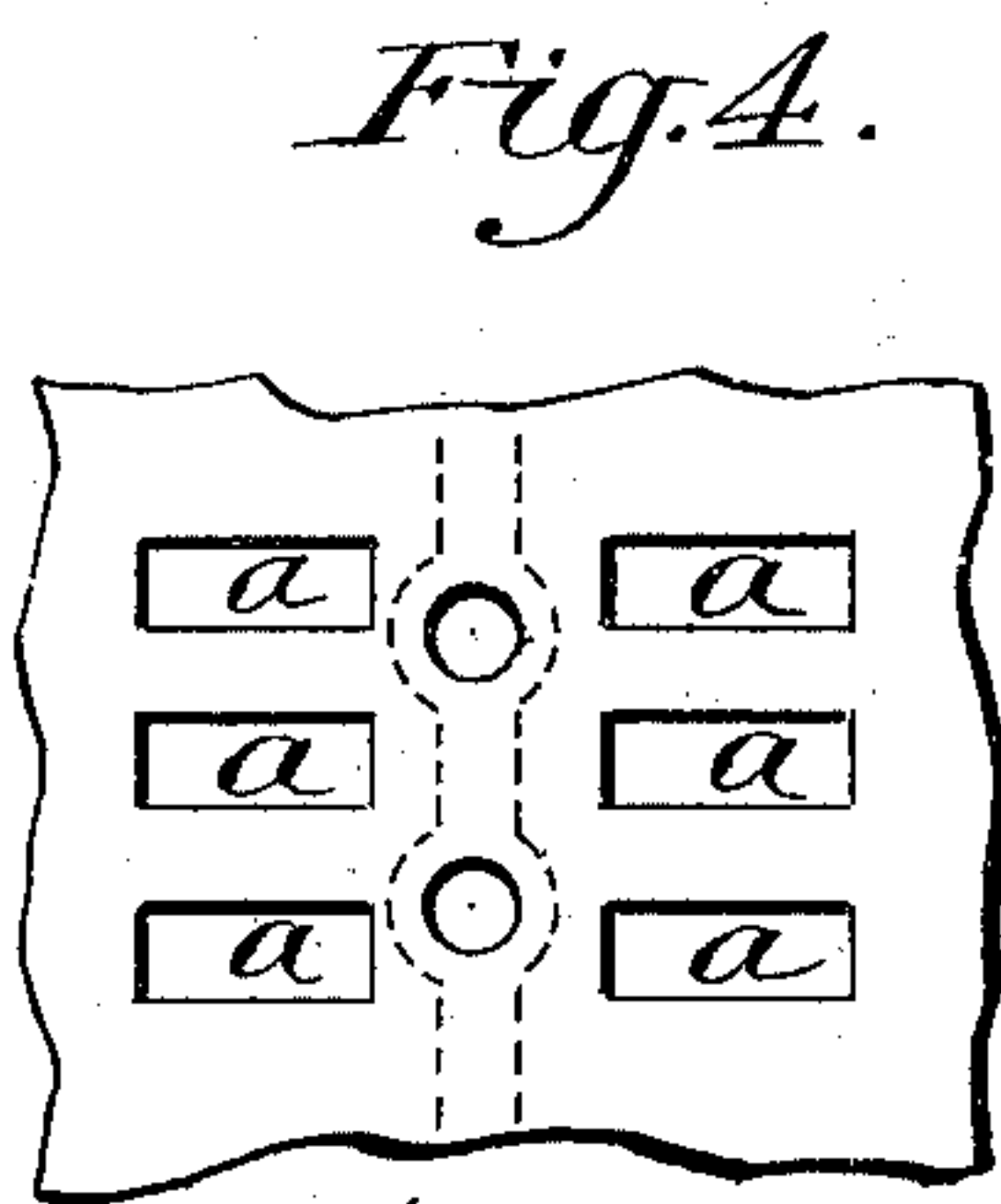
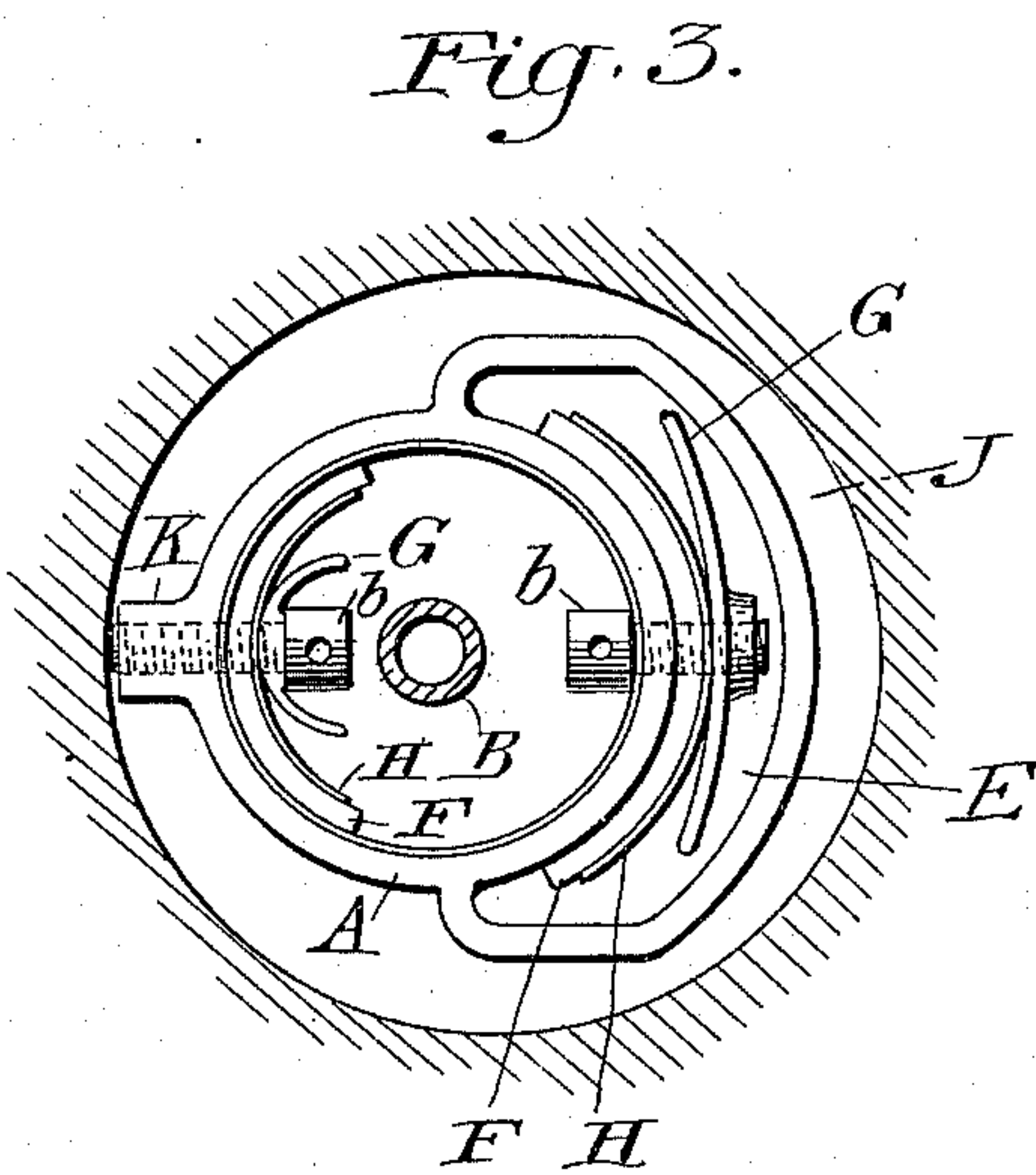
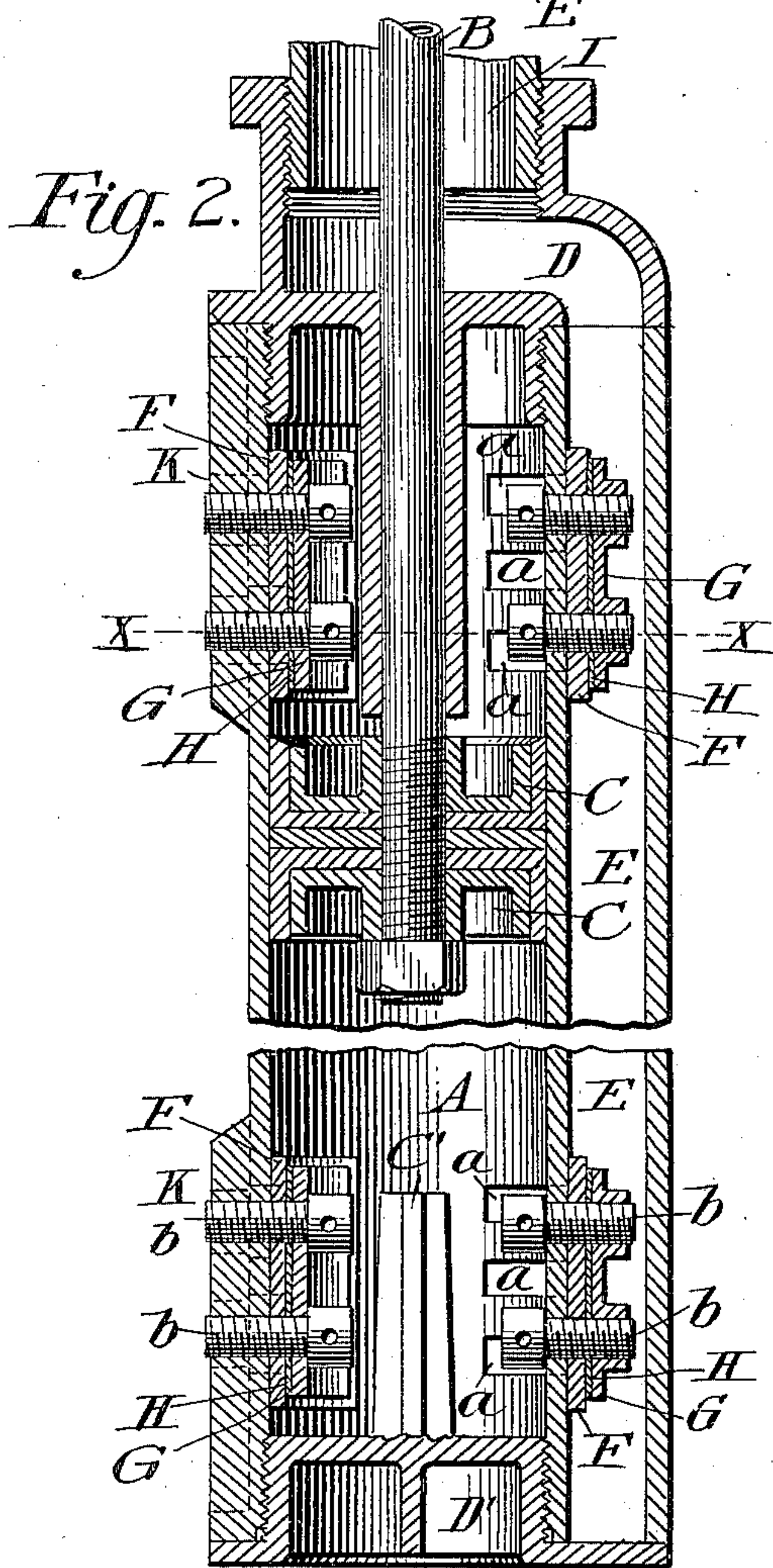
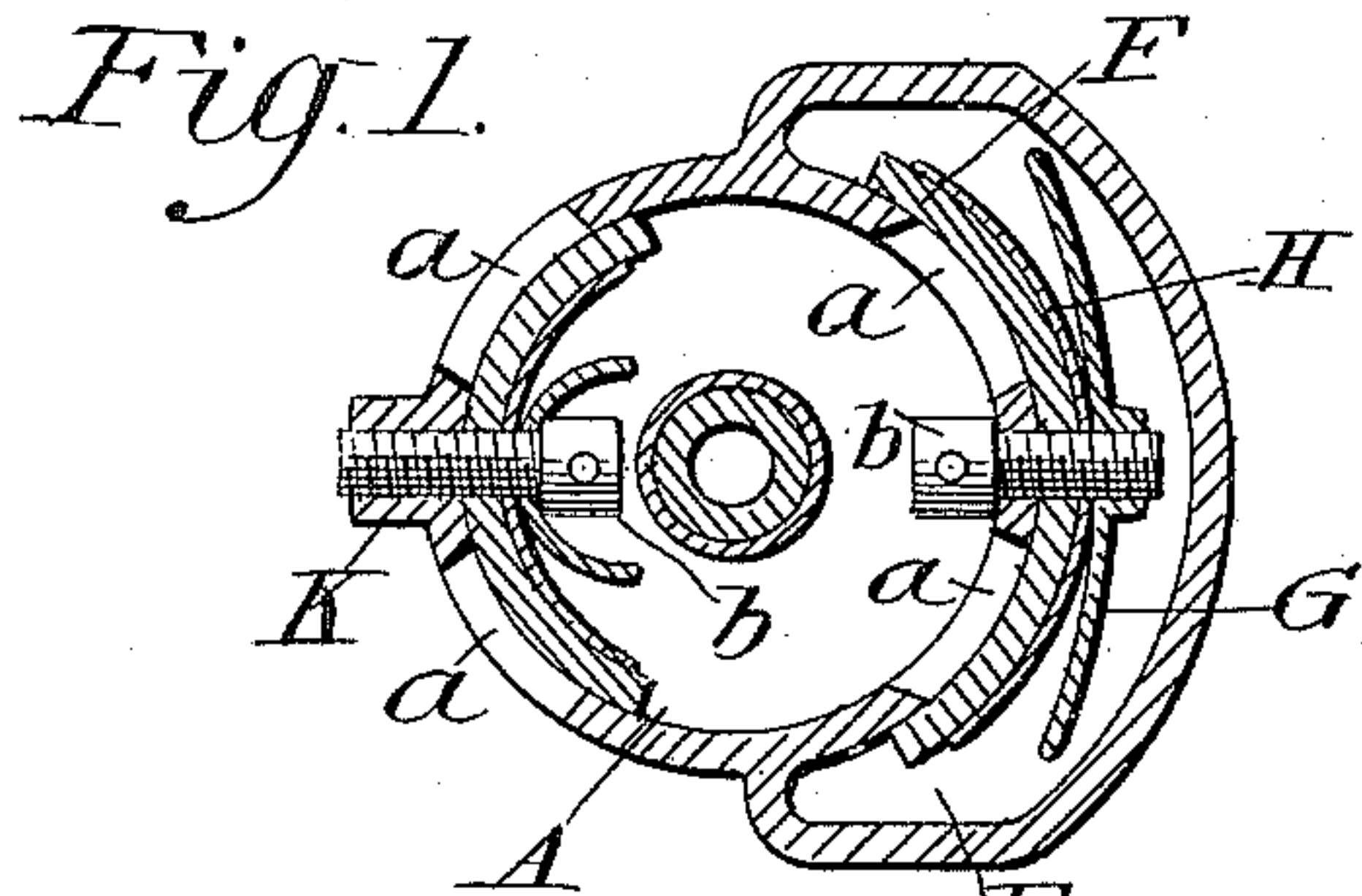
Patented Dec. 12, 1899.

W. D. HOOKER.

DOUBLE ACTING SUBMERGED PUMP.

(Application filed June 25, 1898.)

(No Model.)



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UNITED STATES PATENT OFFICE.

WILLIAM DAVIS HOOKER, OF CHICAGO, ILLINOIS.

DOUBLE-ACTING SUBMERGED PUMP.

SPECIFICATION forming part of Letters Patent No. 638,926, dated December 12, 1899.

Application filed June 25, 1898. Serial No. 684,518. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM DAVIS HOOKER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Double-Acting Submerged Pumps, of which the following is a specification.

My invention relates to improvements in double-acting submerged pumps for use in any situation where a pump is needed, but more particularly for use in deep-bored or Artesian wells, and my purpose is to improve upon the construction of pump set forth in my prior Letters Patent, No. 555,096, whereby a pump of large capacity may be used in a well of small bore or in one where the bore is irregular or untrue.

It is also my object to so construct the pump that a free passage-way may be left between the pump and bore of the well, so that water coming in from above the pump can pass by the pump-barrel and enter the induction-ports, as will hereinafter appear.

I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a transverse section of the pump, taken on line *x x*, Fig. 2. Fig. 2 is a vertical longitudinal section through the pump, parts being shown in elevation. Fig. 3 is a top view of the pump, showing its position in the bore of the well, the top cover of the pump being removed. Fig. 4 is a plan of the valve-seats, showing the grated openings leading through the pump-barrel.

In the drawings, A represents the cylindrical pump-barrel, interiorly screw-threaded at either end to receive the heads D D'. The head D' has an inwardly-projecting stop *c'*, secured to or formed integral with it and projecting toward the opposite pump-head D, as clearly illustrated in Fig. 2. The head D has also secured to or formed integral with it another stop *c*, which in this instance is formed as a sleeve or hub projecting toward the opposite pump-head and affording a long bearing-sleeve for the piston-rod B. The purpose of these stops is to check the piston to prevent the same contacting with and injuring the valves, hereinafter described.

C is the piston, of usual construction, suitably secured to the piston-rod B and actuated by any usual or suitable means, as will be readily understood.

Through the pump-barrel are formed suitable openings *a a*, (see Fig. 1,) which are normally closed by the valves F F, formed of any suitable yielding material, as leather, rubber, or the like, and constitute the induction-valves of the pump. These valves are held to their seats by the springs H and threaded bolts *b b*, and under the action of the piston open inward, as clearly appears from Figs. 1 and 3. In order to prevent undue opening of the valves, suitable guard-plates G G are held by the bolts *b b* on the inward sides of the springs H. These induction ports and valves are located on the same side of the pump-barrel, one near the top within the extension or stop *c* and the other near the bottom, as shown.

The eduction-valves are similar to the induction-valves just described, except that they open outward under the action of water pressed upon by the piston C. They are located at each end of the pump-barrel opposite the induction-valves, as shown by Fig. 2, and consist of the flexible valves F, the springs H, and guard-plates G, all secured in proper relation by the screw-bolt *b* in a manner similar to that described for the induction-valves, the same letters of reference being employed to designate the same or similar parts in all the valves.

Cast or otherwise formed on the pump-barrel between the induction-valves *a a* are the elongated fins or projections K K, extending from the top and bottom of the pump-barrel toward each other and constituting spacing projections which serve to hold the pump-barrel away from the wall of the well. Opposite the spacing projections K K on the pump-barrel is formed the eduction-pipe E, which communicates with a suitable outlet-pipe I, leading upward from the top of the pump. It will be noticed that the eduction-pipe E is formed as a portion of a cylinder extending the length of the pump-barrel, and its longitudinal axis is coincident with that of the barrel.

The induction-openings *a a* in the pump-barrel are formed in close proximity to and

on opposite sides of the spacing projections K K, which thereby act to preserve a clear circulating-space between the said openings and the wall of the surrounding well in order that
 5 water entering the well above the pump may freely circulate around the pump-barrel and enter the openings, and be thus carried out of the well. The eduction-pipe E also coacts
 10 the end in view and for that purpose is carried only part way around the pump-barrel.

It will be readily seen that by the construction just described all water entering the well above the pump will fall into the space around
 15 the pump-barrel between the spacing projections K K and the eduction-pipe E and have free circulation into the induction-valves of the pump, to be thereafter discharged. By reason of the relatively small area of the
 20 pump-barrel occupied by the spacing projections and eduction-pipe E and by reason of the fact that the spacing projections do not extend the entire length of the pump-barrel the pump may be placed in a well whereof
 25 the bore is somewhat irregular. The spacing projections K K are provided with screw-threaded openings which serve as a long bearing for the screw-bolts *b b*.

Having thus described my invention, what
 30 I claim, and desire to secure by Letters Patent, is—

1. In a pump adapted for use in a bored or Artesian well, the combination of a pump-barrel, a piston, and rod for operating the same,
 35 and induction and eduction valves, of spacing projections on one side only of the barrel, and extending from either end of the pump-barrel toward each other, the ends of said projections being separated by an intervening
 40 space, the induction valves and openings be-

ing located in close proximity to the spacing projections.

2. In a pump adapted for use in a bored or Artesian well, the combination of a pump-barrel, a piston and a rod for operating the same, 45 and induction and eduction valves in said pump-barrel, of spacing projections extending from either end of the pump-barrel toward each other and of a combined length less than the length of the pump-barrel, the induction- 50 openings of the induction-valves being located in close proximity to a spacing projection.

3. In a pump adapted for use in bored or Artesian wells, the combination of a cylindrical barrel, a piston and a rod for operating 55 the same, and suitable induction and eduction valves, spacing projections extending on one side of and from the ends of the cylindrical barrel toward each other with a space be- 60 tween their opposed ends, and an eduction-pipe located on the side of the cylindrical barrel and extending only part way around the same.

4. In a pump adapted for use in bored or 65 Artesian wells, the combination of a cylindrical barrel, a piston and rod for operating the same, suitable induction and eduction valves located near either end of the cylindrical barrel, and comprising a plurality of 70 openings, spacing projections extending between said openings lengthwise of the cylindrical barrel and having a space between their opposing ends and an eduction-pipe located on the side of the cylindrical barrel and 75 extending only part way around the same.

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