

(No Model.)

J. BOLTON.

DRIVING MECHANISM FOR ROTARY SEWING MACHINE SHUTTLES.

No. 390,644.

Patented Oct. 9, 1888.

FIG. 1.

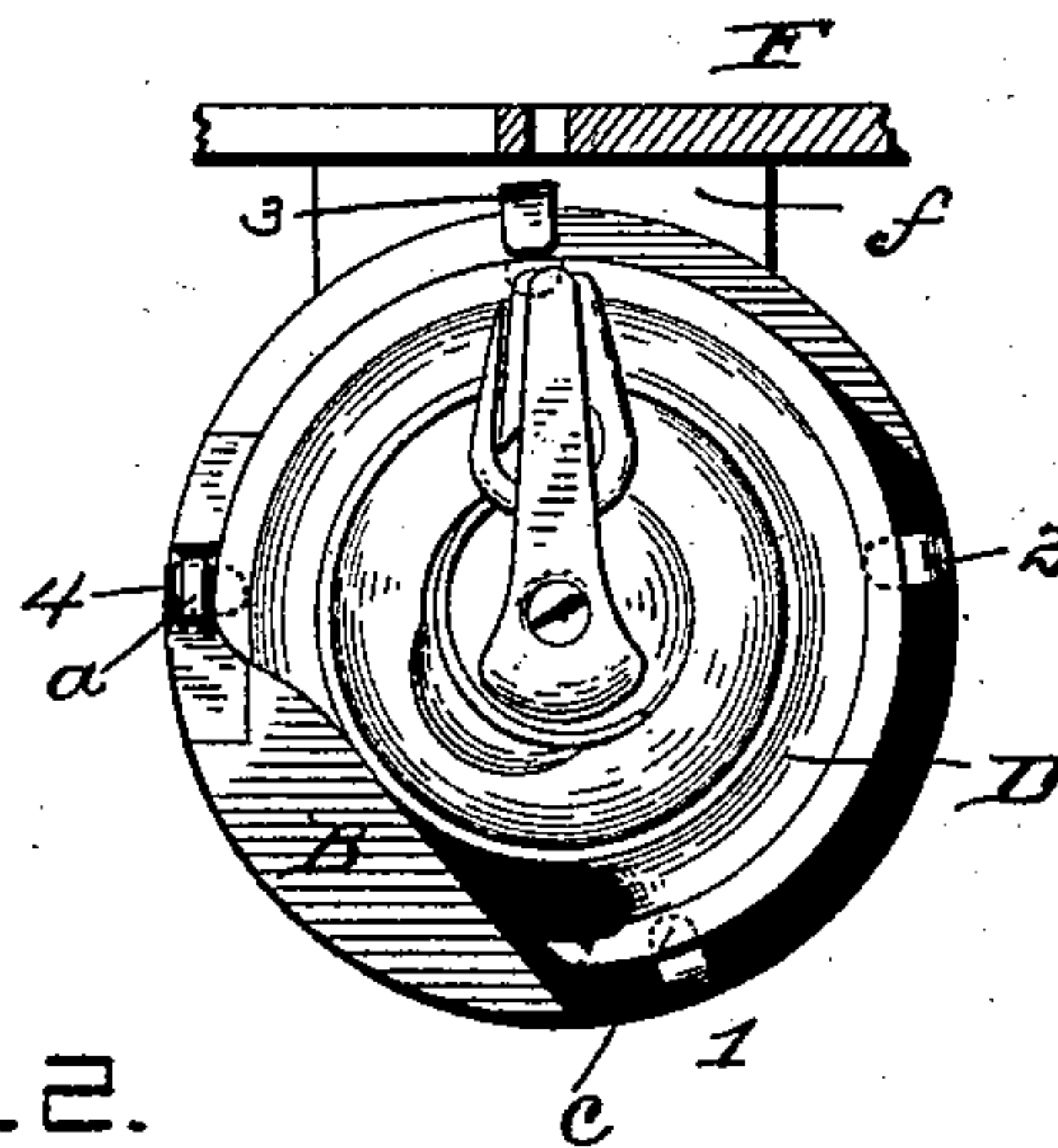


FIG. 2.

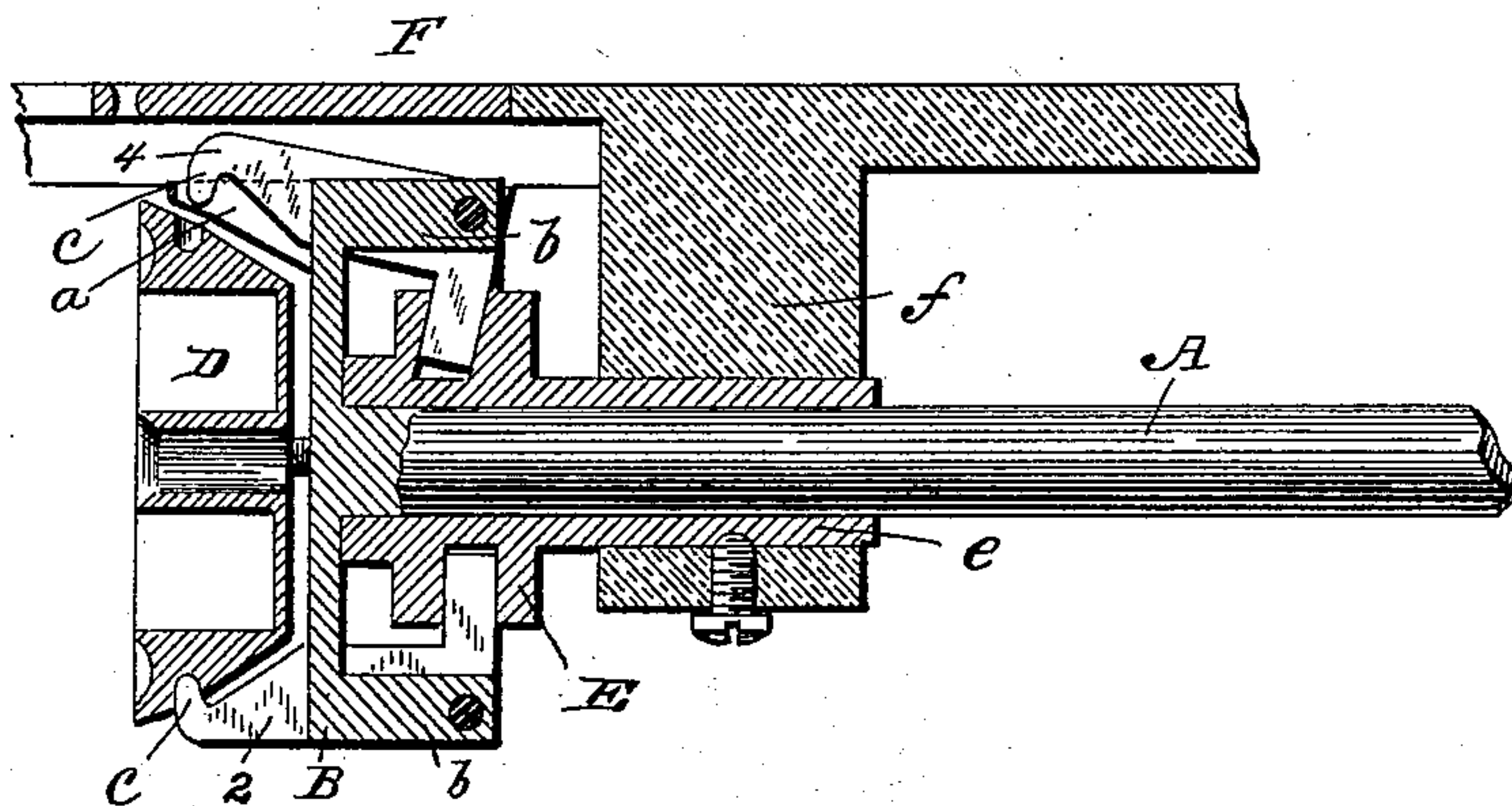
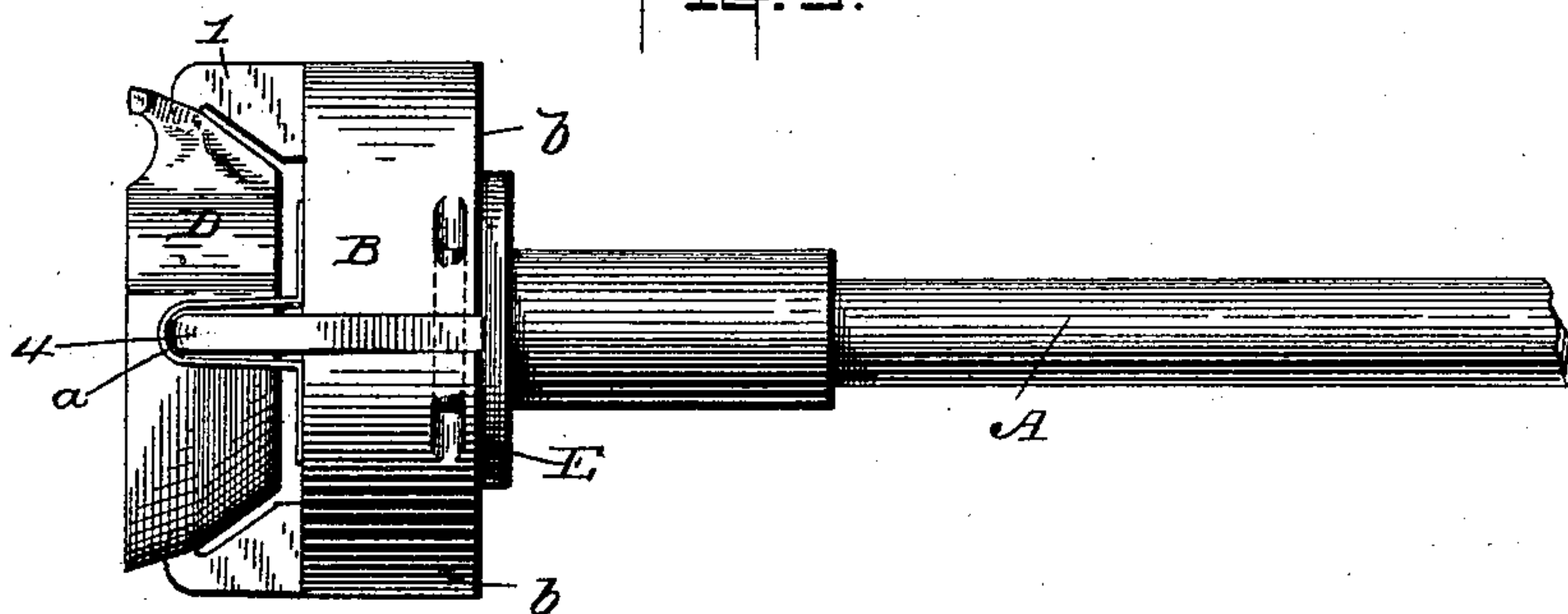


FIG. 3.



WITNESSES

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UNITED STATES PATENT OFFICE.

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DRIVING MECHANISM FOR ROTARY SEWING-MACHINE SHUTTLES.

SPECIFICATION forming part of Letters Patent No. 390,644, dated October 9, 1888.

Application filed July 1, 1887. Serial No. 243,061. (No model.)

To all whom it may concern:

Be it known that I, JAMES BOLTON, a citizen of the United States, residing at Glen Spey, in the county of Sullivan and State of New York, have invented certain new and useful Improvements in Rotating-Shuttle Sewing-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

As is well known to those familiar with rotating-shuttle sewing-machines, much trouble is occasioned by the friction between the shuttle and its race. The latter is unavoidably located beneath the needle and feed-openings in the work-plate, and considerable dirt and lint from the work therefore get into the race, and thus clog up the latter more or less. Moreover, when the machine stands idle for any considerable time the oil with which the race is lubricated becomes gummed, and this gum, together with the dirt and lint in the race, makes so much friction that the machine runs hard, and the wear of the parts is therefore excessive.

My invention has for its object to obviate this difficulty by supplying a rotary shuttle-carrier of such construction that no shuttle-race is required. This object I accomplish by providing the shuttle-driving disk with a series of pivoted arms or levers, between the outer ends of which the shuttle is held, the said arms or levers being successively operated by a stationary cam, so that they are lifted from the shuttle one at a time to permit the loops of needle-thread to pass around the shuttle. To enable the shuttle-carrying levers to hold and carry the shuttle securely, the latter is provided with small recesses or pockets, into which the ends of the said levers normally enter and from which they are withdrawn when lifted from the shuttle. That one of the shuttle-carrying levers which is the last to be lifted from the shuttle as a loop of the thread passes around the latter is partly surrounded by a guard, which prevents the diminishing loop from catching on the end of the said lever as the said loop is tightened by the take-up.

In the drawings, Figure 1 is a front view of a rotating shuttle-carrier with my invention applied thereto. Fig. 2 is a partial sectional view through the stationary cam and adjacent

parts. Fig. 3 is a plan view of the shuttle-carrying disk and other parts.

A denotes the shuttle-operating shaft to be rotated by any suitable or well-known mechanism.

B is the shuttle-carrying disk, which may be integral with or secured to the said shaft. The said disk has a rearwardly-extending flange, *b*, in which are pivoted the shuttle carrying and clamping levers 1, 2, 3, and 4. (Shown in the present instance as elbow or bell-crank levers.) The said levers are provided at their forward ends with small fingers *c*, entering small recesses or pockets in the periphery of the shuttle D. The rear or shorter arms of the said levers enter a groove in a stationary cam, E, and the said cam is provided with a sleeve, *e*, by which it is secured in a hanger, *f*, depending from the bed-plate F, the shaft A passing through the said sleeve and cam. The lever 4, which is at the heel of the shuttle, and which is therefore the last to be lifted from the latter as a loop of needle-thread passes, is surrounded by a guard, *a*, within which the finger *c* on the said lever is withdrawn, as shown in Fig. 2, when the lever is lifted from the shuttle, to prevent the diminishing loop of needle-thread from catching on the said finger or lever.

The shuttle-holding levers are arranged at about ninety degrees from each other on the disk B, and as three of them are always in contact with the shuttle the latter is always securely clamped and held thereby, so that it is positively supported and rotated without a race, and thus the usual friction between the shuttle and its race is avoided.

From the foregoing it will be apparent that as the shuttle-operating shaft is rotated the shuttle-carrying levers will be successively raised at the upper part of their orbit by the stationary cam to permit the loops of needle-thread to pass around the shuttle. The lever 4 is placed slightly nearer to the lever 3 than to the lever 1 to give sufficient time after a loop has passed the said lever 4 for the take-up to tighten the stitch.

It will be observed that the fingers *c* on the shuttle-carrying levers, by entering the recesses or pockets in the periphery of the shuttle, effectually prevent any lateral or back or for-

ward movement of the shuttle in the carrier. In other words, the shuttle is firmly grasped and held positively by the said levers, so that it is impossible for it to move, except with the carrier as the latter rotates.

As I believe I am the first to successfully operate a rotating shuttle without a shuttle race or driver by providing a carrier having a series of shuttle-carrying levers which are successively lifted from the shuttle, and between two or more of which the shuttle is always firmly clamped, I do not wish to be understood as limiting my invention to the special form or to the exact number of the said levers herein shown.

I am aware of the device embraced by Patent No. 283,636, August 21, 1883, to Miller and Diehl, which shows a carrier by which an oscillating shuttle can be operated without a shuttle-race by means of a series of levers embracing the rim of the shuttle; but in the said device the shuttle was loosely held between the levers and the driver, and could not be operated without the latter, while in my device the shuttle is both carried and driven by

the holding or clamping levers, and owing to the recesses or pockets in the periphery of the shuttle and the fingers or projections on the said levers to enter the same the shuttle would be securely held in the carrier, even if the levers did not tightly clamp the same.

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

In a sewing-machine, the combination, with a horizontal rotary shaft and a shuttle, which is arranged edgewise vertically, of a rotary shuttle-carrier driven by said shaft and consisting of a series of supporting clamping-levers engaging said shuttle, and by which the latter is wholly sustained and driven, and a stationary cam for operating said levers, whereby the shuttle is entirely supported and driven without a race for it to run in.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES BOLTON.

Witnesses:

HENRY CALVER,
J. S. BARKER.