

No. 662,383.

Patented Nov. 27, 1900.

F. L. ALLEY & E. E. WINKLEY.
SHUTTLE MECHANISM FOR SEWING MACHINES.

(Application filed July 18, 1896.)

(No Model.)

FIG. 1.

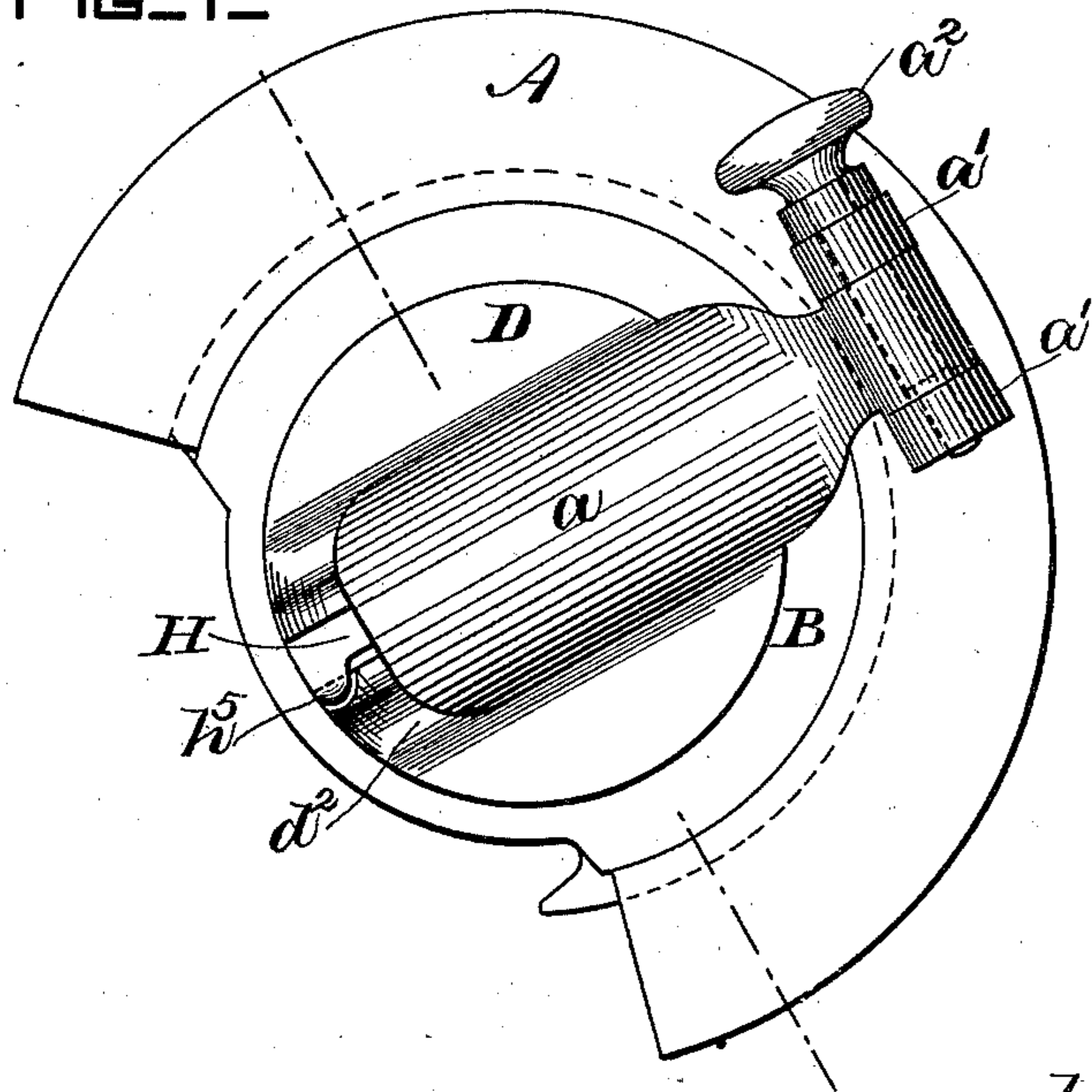


FIG. 2.

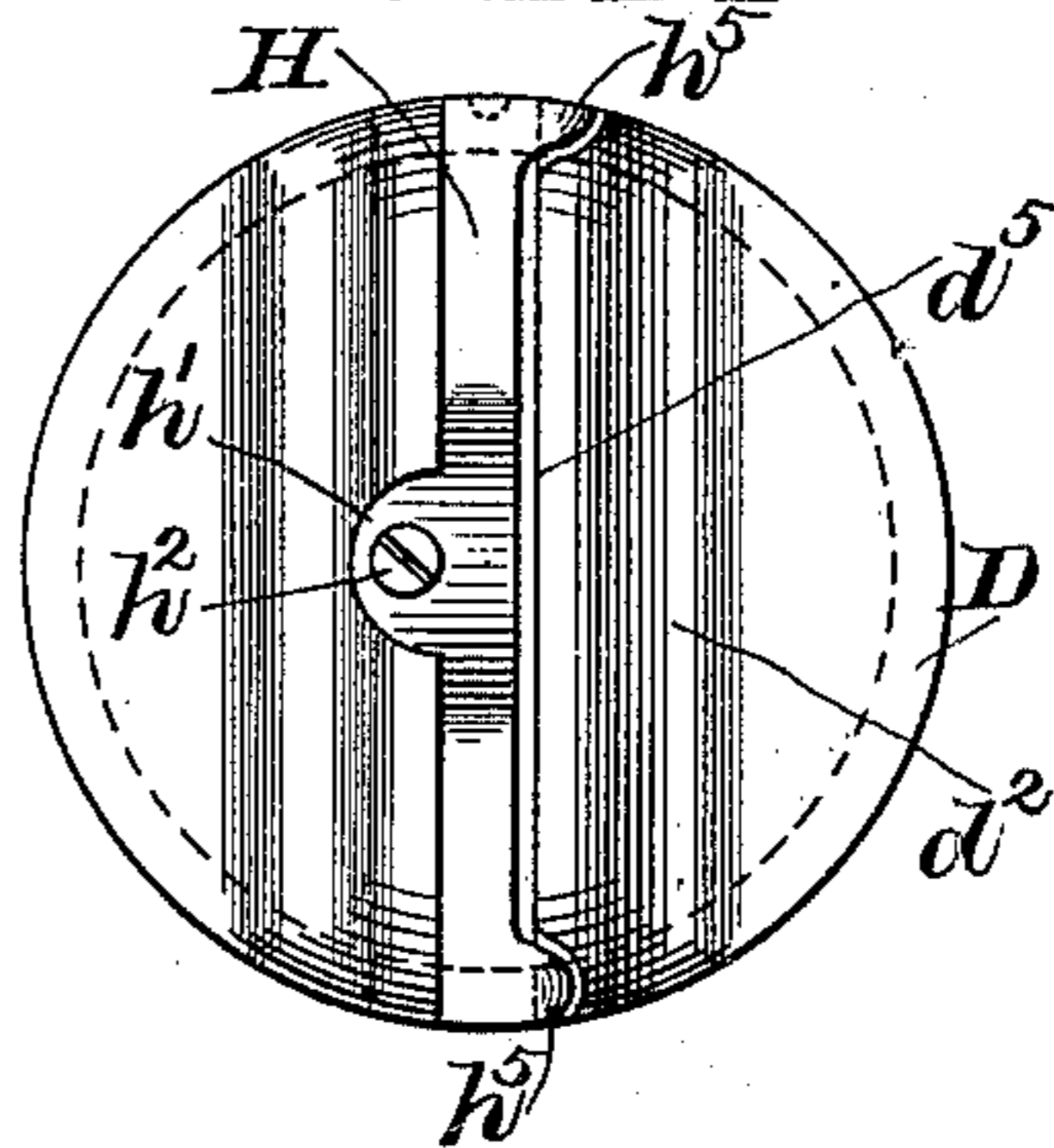


FIG. 3.

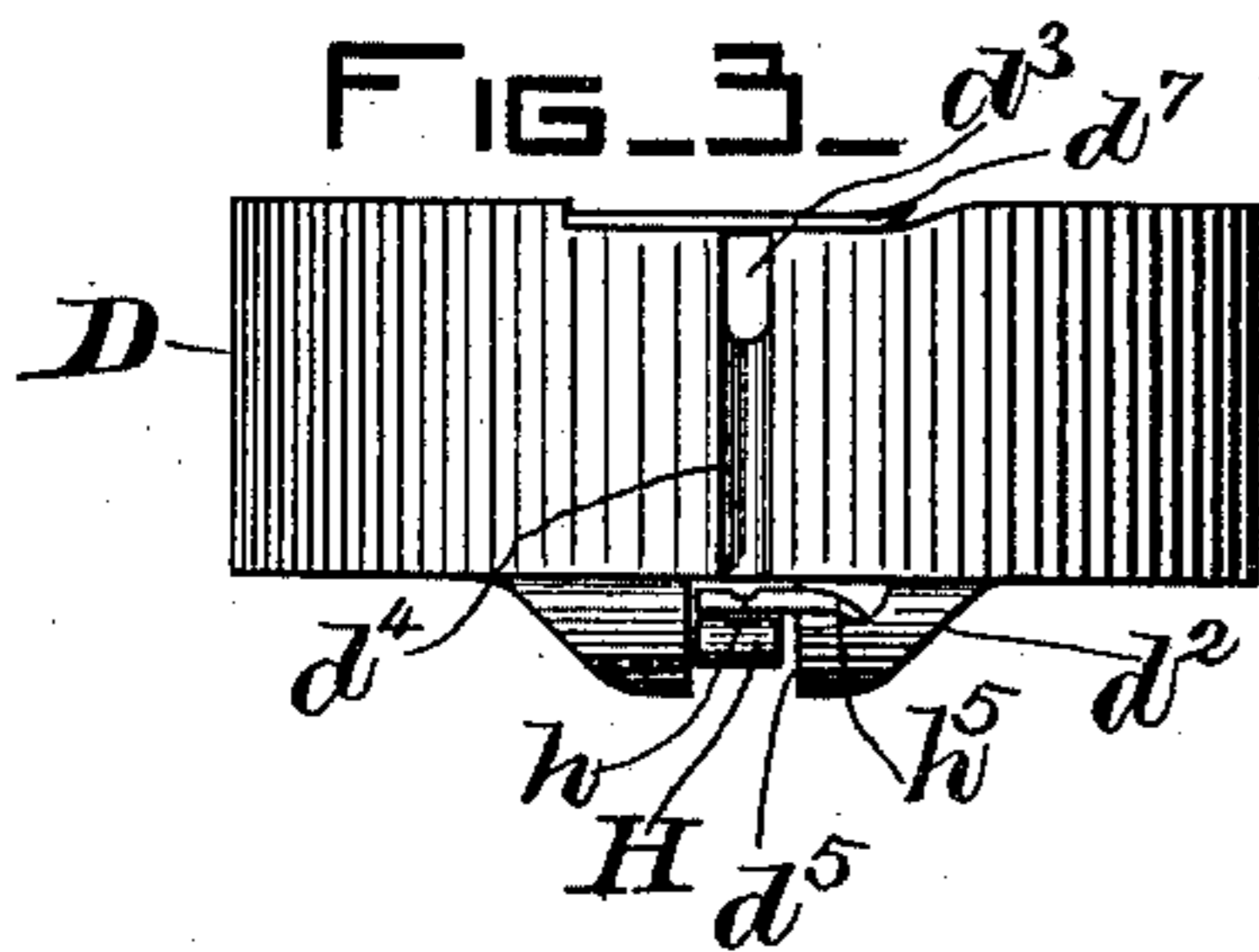


FIG. 4.

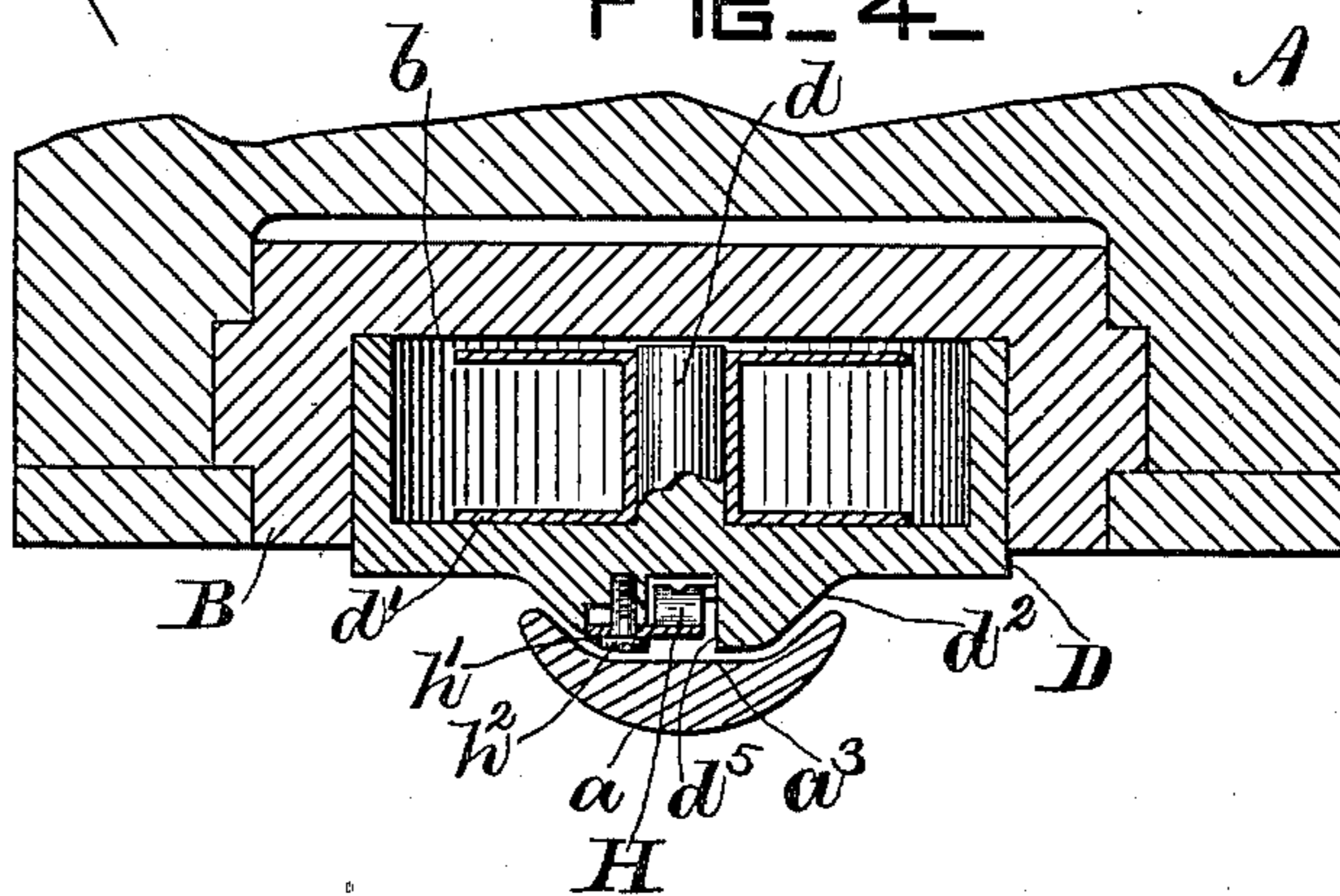


FIG. 5.



FIG. 6.



WITNESSES

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FREDERICK L. ALLEY AND ERASTUS E. WINKLEY, OF LYNN, MASSACHUSETTS.

SHUTTLE MECHANISM FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 662,383, dated November 27, 1900.

Application filed July 18, 1896. Serial No. 599,655. (No model.)

To all whom it may concern:

Be it known that we, FREDERICK L. ALLEY and ERASTUS E. WINKLEY, citizens of the United States, residing at Lynn, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Shuttles; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates generally to devices of the above class, and more particularly to that type of shuttle which is arranged to rotate or oscillate and is provided with a stationary bobbin-case, the present invention consisting of an improved arrangement of the thread-passages in the bobbin-case and tension devices which control the passage of thread through the same, whereby a uniform tension is secured on the shuttle-thread, which is not materially varied by irregularities or bunches in the thread.

The present invention further consists of the devices and combination of devices hereinafter more specifically set forth and claimed.

The present invention is illustrated in the accompanying drawings, in which—

Figure 1 is a front elevation of a shuttle embodying the present invention, showing a portion of the frame of the machine in which the same is mounted. Fig. 2 is a front view of the bobbin-case detached. Fig. 3 is a side view of same. Fig. 4 is a section on line $x x$, Fig. 1; and Figs. 5 and 6 are respectively a side view and a transverse section, enlarged, of the tension device.

Similar letters of reference refer to similar parts throughout the several views.

In the drawings, A represents a fixed portion of a sewing-machine, in which is provided a suitable bearing or race for the shuttle and in which the shuttle is free to oscillate or rotate.

B represents the shuttle, provided with an annular recess b , to which the bobbin-case is fitted and in which it is free to turn.

D represents the bobbin-case, which is fitted to the recess b , as above stated, and which

carries upon the centrally-placed spindle d the bobbin d' .

We may say in this connection that, except as hereinafter noted, the parts heretofore described may be and conveniently are substantially the same as corresponding parts of devices heretofore known and used in prior art, and their form and arrangement may be varied without any departure from the present invention.

The shuttle B is designed to oscillate or rotate in its bearings, as hereinbefore stated, and the bobbin-case D is stationary, being held from motion therewith.

As shown in the drawings, we secure the result above suggested by means of a latch a , mounted in suitable bearings a' on the fixed portion A of the machine, in which it is free to swing, a set-screw a^2 being provided, whereby it may be clamped and held from motion in its bearing to hold the bobbin-case, as hereinafter specified. The latch a is projected along the bobbin-case D, and in the side thereof, adjacent thereto, is formed the longitudinal groove a^3 , which is preferably curved in section and engages a correspondingly-shaped block d^2 on the case D. When the latch a is clamped in engagement with the block d^2 , it holds the bobbin-case D from movement with the shuttle, whether the same is oscillated or rotated.

In accordance with the present invention we form in the bobbin-case D the aperture d^3 , which communicates with the groove d^4 , which extends substantially across the rim of bobbin-case D and communicates with the groove d^5 , which extends substantially across the face of the case D. As shown in the drawings, the groove d^5 is formed in the block d^2 , extending longitudinally along the same. In the form of our invention shown in the drawings the lead of the thread is from the bobbin d' , through the aperture d^3 , along the groove d^4 , across the rim of the case D, and thence along the groove d^5 across the face of the case D. As shown, the groove d^5 extends along the line of a diameter of the face of case D.

H represents the tension device, which preferably consists of a spring formed of a

strip of steel or other elastic material, which lies in the groove d^5 and is provided upon its under side with a thread-groove h . The center of the spring H is curved outwardly and is provided with a laterally-projecting shoulder h' , through which extends a set-screw h^2 , having a thread-bearing in the face of the case D. By means of the set-screw h^2 , arranged as above set forth, the spring H is held in the groove d^5 and may be adjusted to bear upon the thread with greater or less pressure and the tension of the shuttle-thread thus adjusted as required. It will be noted in this connection that the spring H has a long bearing on the thread equal in length to the diameter of the case D and that for that reason a less pressure is required on the thread to give the required tension than is required where the pressure is concentrated upon a short portion of the thread, and since the pressure on the thread at any given point is comparatively light a bunch or irregularity occurring at such point will not materially alter the tension. It will be further noted that in leading from the bobbin to the work the thread makes but two turns and that neither of said turns is sharper than a right angle, which is a feature of great importance, as preventing excessive friction on the thread.

For convenience in threading the shuttle the aperture d^3 is opened through the inner side of the rim of the case D, and a spring-clip d^7 is provided, which extends across the aperture d^3 and bears upon the rim of case D on opposite sides of said aperture, as shown in the drawings. The spring-clip d^7 is secured at one end to the rim of case D and its opposite and free end is slightly upturned to allow the thread to be readily passed under the same into the aperture d^3 .

To facilitate the insertion of the thread in the groove d^5 we have found it convenient to provide the following device: The spring H preferably extends substantially across the case D and is provided with laterally-projecting shoulders h^5 , which are preferably fitted to corresponding recesses in the face of the case D and which are slightly upturned at their outer ends to allow the thread to be readily passed under the same.

It will be noted that, as shown in the drawings, the greater part of the groove d^5 and

the tension devices H is covered by the latch a , so that all liability of the thread catching thereon is practically obviated.

Having thus described our invention and its mode of operation, we claim as novel and wish to protect by Letters Patent of the United States—

1. A shuttle mechanism for sewing-machines having in combination a discoidal shuttle, a bobbin-case fitted therein, a rib extending across the face of the bobbin-case, a thread-groove formed in said rib, a swinging latch mounted on a fixed support and provided with a groove to engage the rib on the bobbin-case and cover the thread-groove therein, the rib and groove in the latch cooperating to hold the bobbin-case from rotation, substantially as described.

2. A shuttle mechanism for sewing-machines having in combination a discoidal shuttle, a bobbin-case fitted therein, a thread-groove in the face of the bobbin-case, a tension-spring lying in said groove and having a projection overlapping the face of the bobbin-case, and a screw extending through said projection and adjustably securing the spring to the bobbin-case, substantially as described.

3. A shuttle mechanism for sewing-machines having in combination a discoidal shuttle, a bobbin-case fitted therein, a thread-groove in the face of the bobbin-case, a tension-spring for the shuttle-thread lying in said groove and having upturned projecting shoulders, and means for holding said spring in position in said groove, substantially as described.

4. A shuttle mechanism for machines having in combination a discoidal shuttle, a circular bobbin-case fitted in said shuttle, and open at its inner side, a thread-receiving aperture in the rim of said bobbin-case located near and open at the inner side thereof, and a spring-clip-carried by the bobbin-case for closing the inner side of said aperture, substantially as described.

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

FREDERICK L. ALLEY.

ERASTUS E. WINKLEY.

Witnesses:

BENJAMIN PHILLIPS,
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