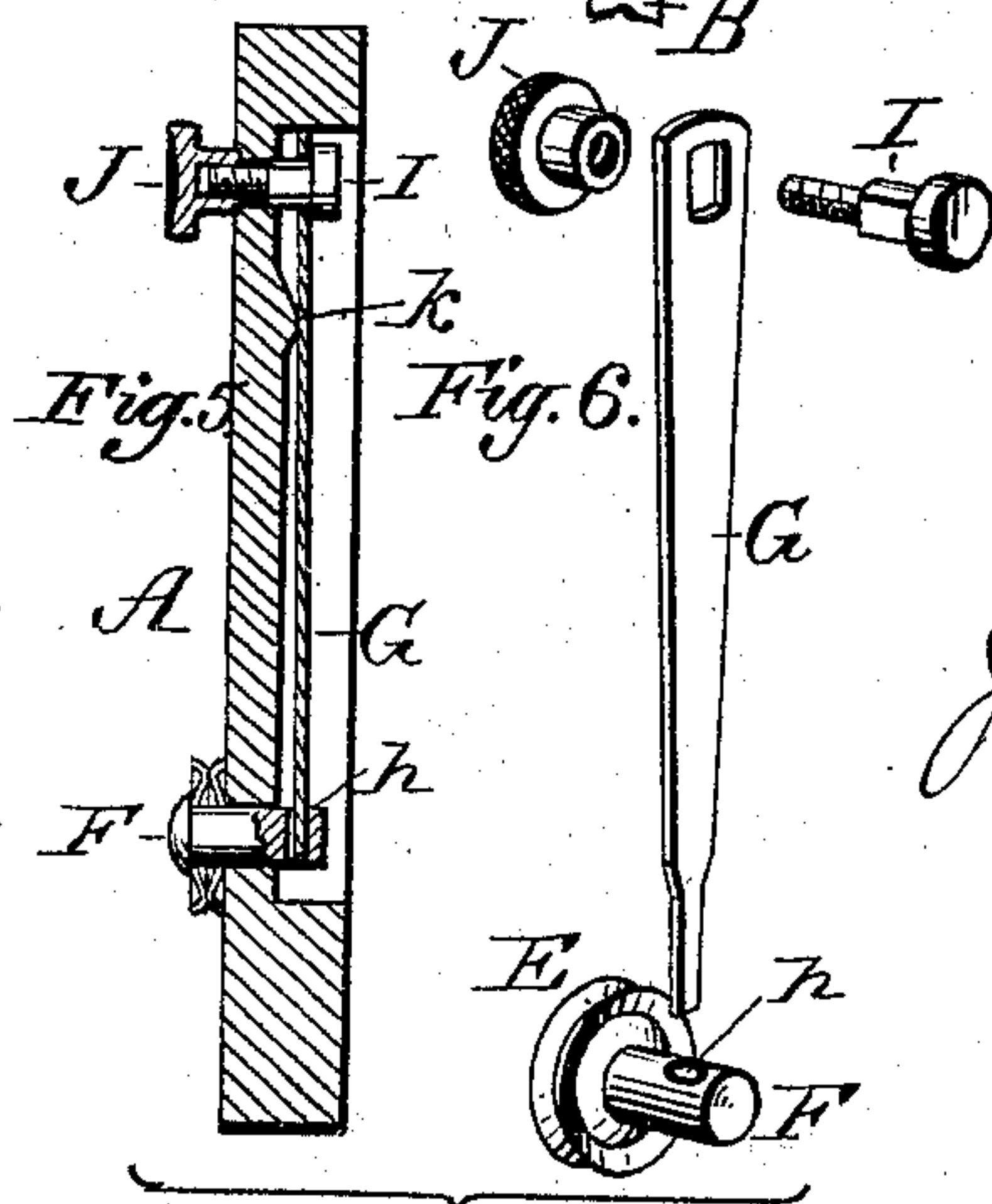
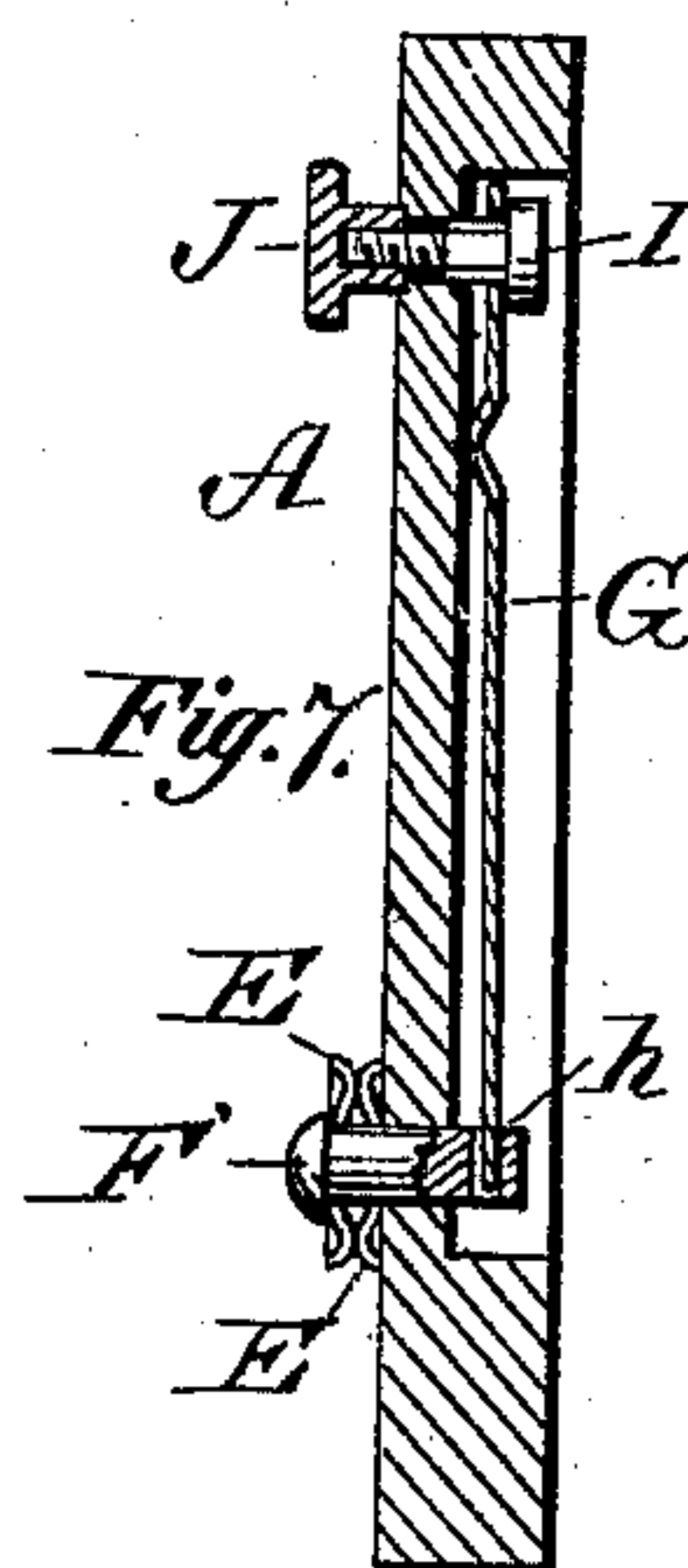
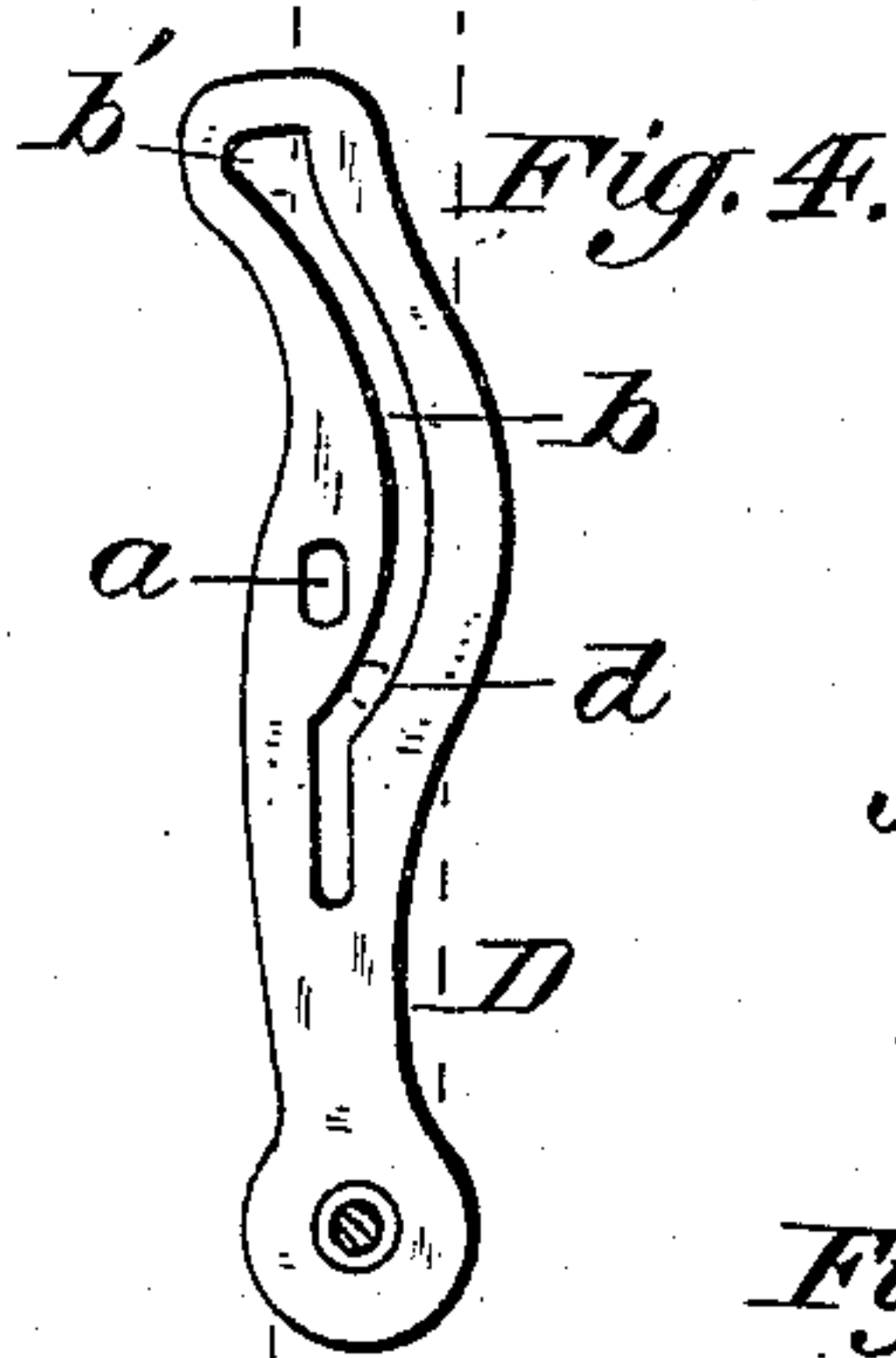
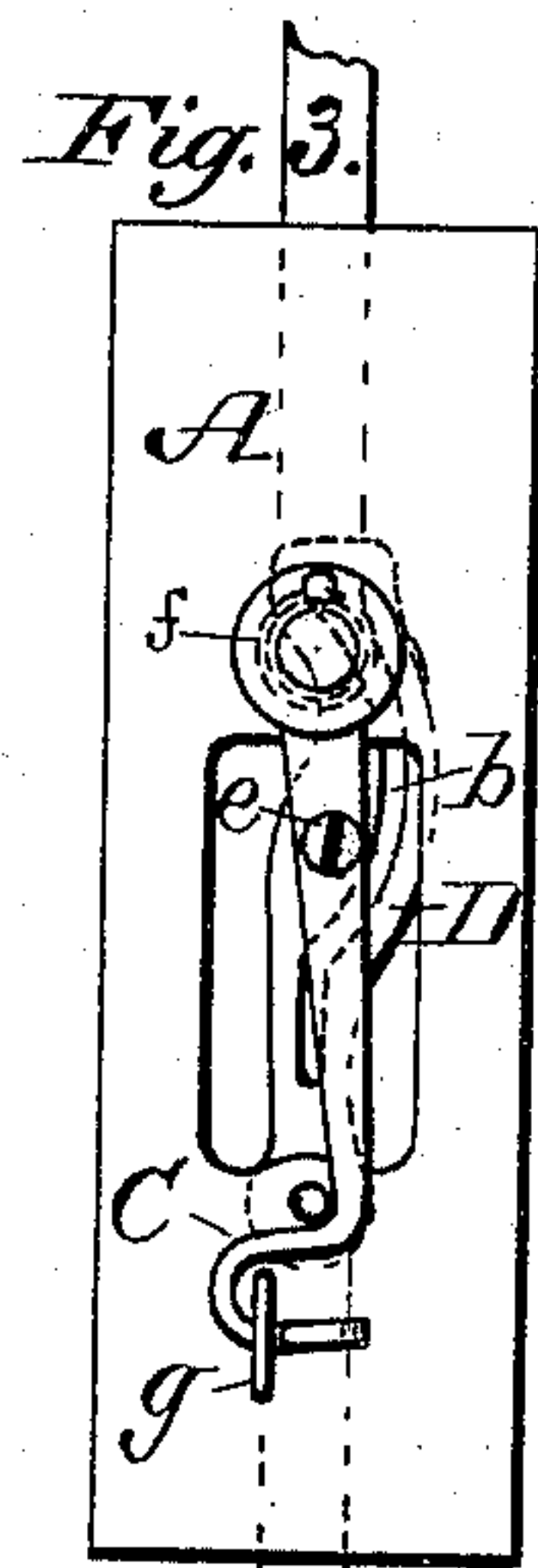
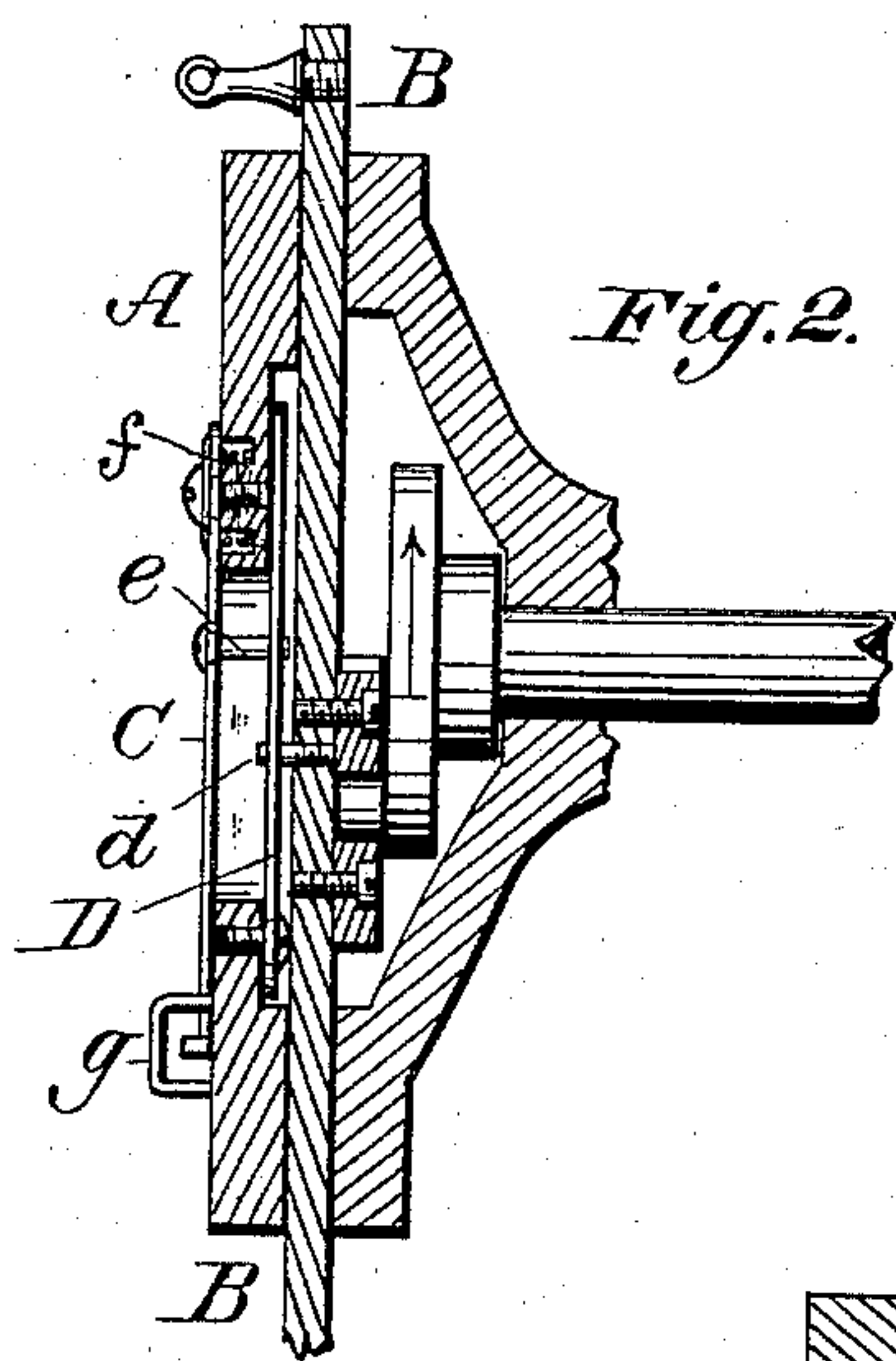
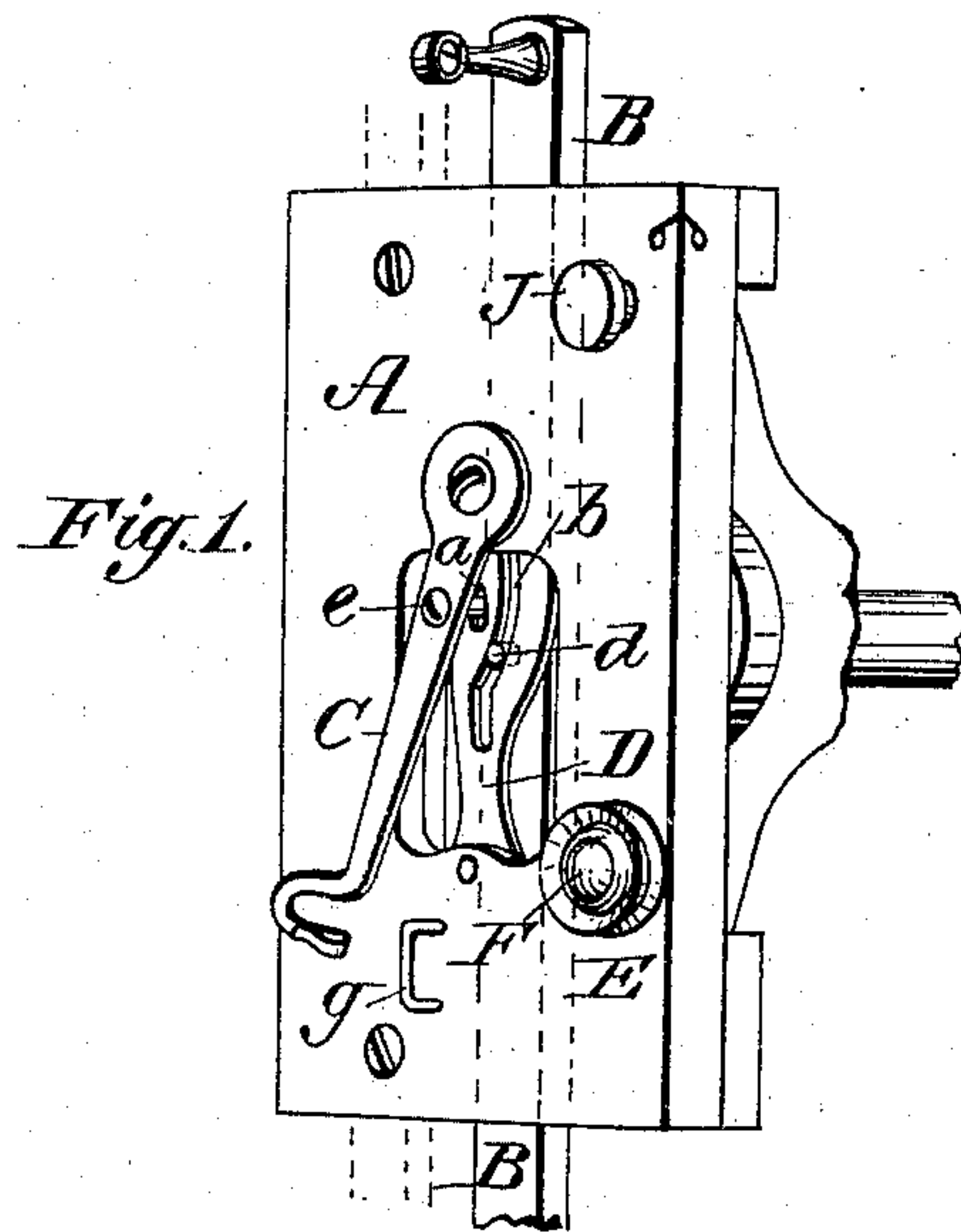


J. HOEFLER.
Take-up and Tension Device for Sewing Machines.
No. 241,660.
Patented May 17, 1881.



Witnesses:
Donn P. Twitchell.
William W. Dodge.

Inventor:
John Hoefler
By Dodge & Co.
Attys.

UNITED STATES PATENT OFFICE.

JOHN HOEFLER, OF ILION, NEW YORK.

TAKE-UP AND TENSION DEVICE FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 241,660, dated May 17, 1881.

Application filed November 21, 1879.

To all whom it may concern:

Be it known that I, JOHN HOEFLER, of Ilion, in the county of Herkimer and State of New York, have invented certain Improvements in
5 Take-Up and Tension Devices for Sewing-Machines, of which the following is a specification.

My invention relates to the take-up and tension devices; and it consists in an intermediate vibrating lever, of peculiar form and arrangement, to transmit motion from the needle-bar to the take-up lever, in a peculiar form of cam-slot therein to facilitate the insertion of the thread into the hook of the take-up lever, and in a peculiar manner of constructing and arranging the spindle, screw, and spring
10 by which the frictional tension-disks are held.

Figure 1 is a perspective view of the head or needle-bar support and the attendant parts, including my improved devices; Fig. 2, a vertical central section of the same; Fig. 3, a face view of the same, showing the needle-bar at its highest elevation and the take-up arm drawn forward for threading; Fig. 4, a face view of
20 the intermediate arm or lever by which the take-up is actuated; Fig. 5, a vertical section through the head, the friction-disks, their spring and screw; Fig. 6, a perspective view, showing said parts detached and separated; Fig. 7,
25 a sectional view, showing a slightly-modified form of spring.

Vibrating take-up arms or levers have hitherto been made in various forms and actuated in various ways from the needle-bar, the usual
35 plan being to provide the needle-bar with a pin acting in a slot in the take-up arm, or against a cam-surface on the edge of the same. It has also been proposed to actuate a take-up lever by means of a lever arranged at right angles thereto and connected with a vibrating arm
40 which drove the needle-bar. These arrangements are objectionable on account of the difficulty of securing a proper action, and on account of the peculiarities of construction which
45 they necessitate in the other parts. These objections I overcome by the arrangement shown in the drawings, in which—

A represents the head or frame, B the needle-bar, C the take-up arm or lever, and D my
50 intermediate lever.

The lever D is made in the form shown in

Fig. 4, with a short slot, *a*, and a long sinuous slot, *b*, and is pivoted at its lower end within the head A, close to the front face of the needle-bar, which is provided with a pin, *d*, extending into the slot *b* in the lever D, as shown
55 in Figs. 1 and 2, and in dotted lines in Fig. 4.

The take-up lever C is pivoted at its upper end to the outer side of the head A, and is provided near its fulcrum with a stud, *e*, extending inward and entering the slot *a* in the lever D, as shown in Figs. 1 and 2. As the needle-bar rises and falls its pin *d* vibrates lever D, and the latter, in turn, through stud *e*, actuates the take-up, giving the lower end of the same
60 a much greater movement than that of lever D.

The lower end of the take-up has a curve or bend to allow it to enter a staple, *g*, which serves to retain the main thread as the take-up draws outward.
70

In order to facilitate the insertion of the thread into the eye or hook of the take-up lever D the upper end of the slot *b*, by which its movements are produced, is formed with a slight enlargement, *b'*, to one side, as more
75 clearly shown in Fig. 4, thus permitting the curved end of the take-up lever to be pushed forward through the staple *g* when the needle-bar is at the upper end of its stroke, as shown in Fig. 3, in which position the thread may be
80 conveniently inserted. A light coiled spring, *f*, serves to hold the take-up arm back at the termination of the stroke, except when pressed forward by hand, as above mentioned.

The remaining feature of my invention, the
85 tension devices, will be clearly understood by reference to Figs. 5, 6, and 7. E E are two frictional disks or washers, between which to pass the thread, as usual. They are mounted on a headed pin or spindle, F, which is passed
90 inward through the head A, and provided at the inner end with a transverse hole, *h*.

G represents a long flat spring, terminating at the lower end in a small neck or stem, and provided in the upper end with a small elongated hole or slot, as shown in Fig. 6. The spring has its lower end seated in the hole in the spindle, and near its upper end is seated against a raised rib or fulcrum, *k*, formed on the inside of head A.
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Through the upper end of the spring there is inserted a screw, I, flattened on its sides to
100

prevent rotation in the spring, and extended outward through the head to receive a thumb-nut, J.

It will be seen that the spring holds the spindle, and that the screw and nut, in turn, hold the spring, and that by tightening up the nut the spring may be strained and caused to draw the disks together with any required degree of pressure.

10 Instead of forming the rib or fulcrum *k* on the inner face of the head, the spring may be formed with a rib or bend, as represented in Fig. 7, to form the fulcrum. This arrangement is considered preferable, for the reason that
15 the entire length of the spring is brought into action and a more elastic tension secured, which is a feature of importance, as the length of the spring is necessarily limited.

I am aware that the combination of the disks, a spring, and an adjusting-screw is, broadly considered, old, and that said elements have been made and arranged in various forms.

The special advantage of my construction and arrangement of the spring lies in the simplicity, cheapness, and durability. No special
25 means of fastening is needed. Advantage is taken of the elasticity of the spring throughout its entire length. As the spring has no holes or openings in the middle portion there
30 is little danger of breakage during or subsequent to the tempering operation. This is of itself an important feature.

Referring to my arrangement of the intermediate lever to actuate the take-up, it will be
35 noticed that the take-up and the lever vibrate in parallel planes, and that the intermediate lever is located within the supporting-head, whereby it is concealed and protected from dirt and injury. By connecting the lever directly to the needle-bar, as shown, I reduce
40 the working joints between the take-up and its driving device to the smallest number possible, and establish a close and direct connection between the needle and take-up, thus insuring
45 harmony of action between the parts and avoiding play or looseness on the part of the take-up.

Having thus described my invention, what I claim is—

1. The combination of the vertically-moving 50 needle-bar provided with a stud, a pendent take-up lever, and an intermediate slotted lever pivoted at its lower end, connected near its upper end to the take-up, and provided with a sinuous slot into which the stud on the needle-bar is extended, said parts being arranged
55 side by side, as shown, whereby compactness is secured and lost motion avoided.

2. In combination with the pendent take-up pivoted to the head of the machine, and the 60 vertically-moving needle-bar, each provided with a stud, a lever, D, located in a vertical plane between the needle-bar and take-up, pivoted at its lower end and provided with the two upright slots *a* and *b*, to receive the studs of
65 the needle-bar and take-up, whereby motion is imparted from the former to the latter.

3. In combination with the swinging take-up lever, the spring, the needle-bar, and the intermediate lever having the sinuous slot enlarged at one end. 70

4. The combination of the head or support, the vertical needle-bar, the pendent take-up located upon the head at the side of the needle-bar, and the intermediate lever located 75 within the head, and forming a constant connection between the take-up and needle-bar, and arranged to vibrate in a plane parallel with that in which the take-up moves.

5. In combination with the vertical needle- 80 bar provided with a stud, the levers C D, connected substantially as described, arranged in upright positions by the side of the needle-bar, pivoted to swing in parallel planes, and operated by the stud on the needle-bar, as set forth. 85

6. The combination of the head A, the spindle, the spring arranged to bear at a point between its ends, and the single screw, serving both to apply the tension to the spring and to keep the spring in place in the machine.

JOHN HOEFLER.

Witnesses:

JAMES M. BELLINGER,
H. H. BENEDICT.