

A. EMERSON.
 THREADING MACHINE.
 APPLICATION FILED OCT. 26, 1906.

930,653.

Patented Aug. 10, 1909.

4 SHEETS—SHEET 2.

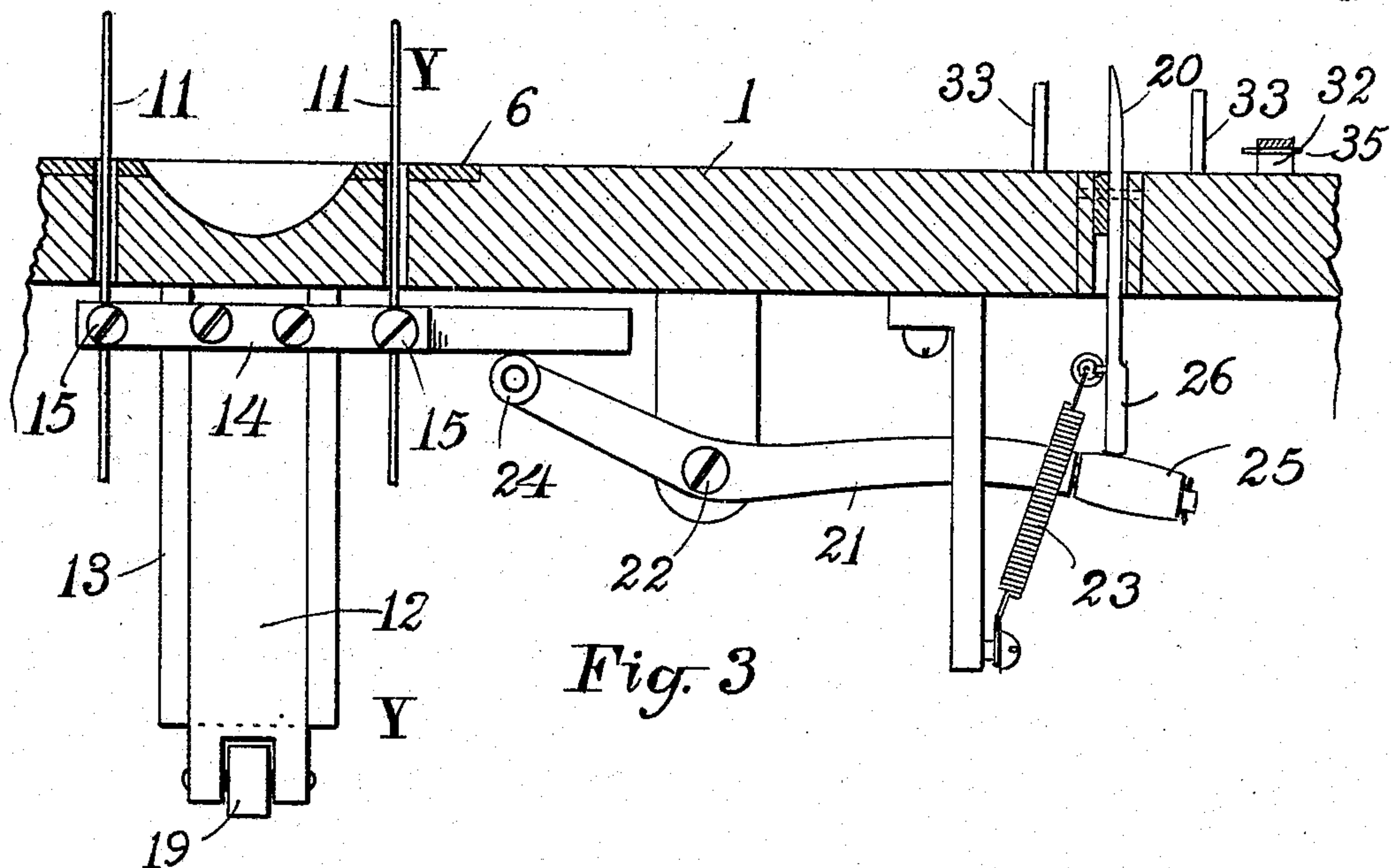


Fig. 3

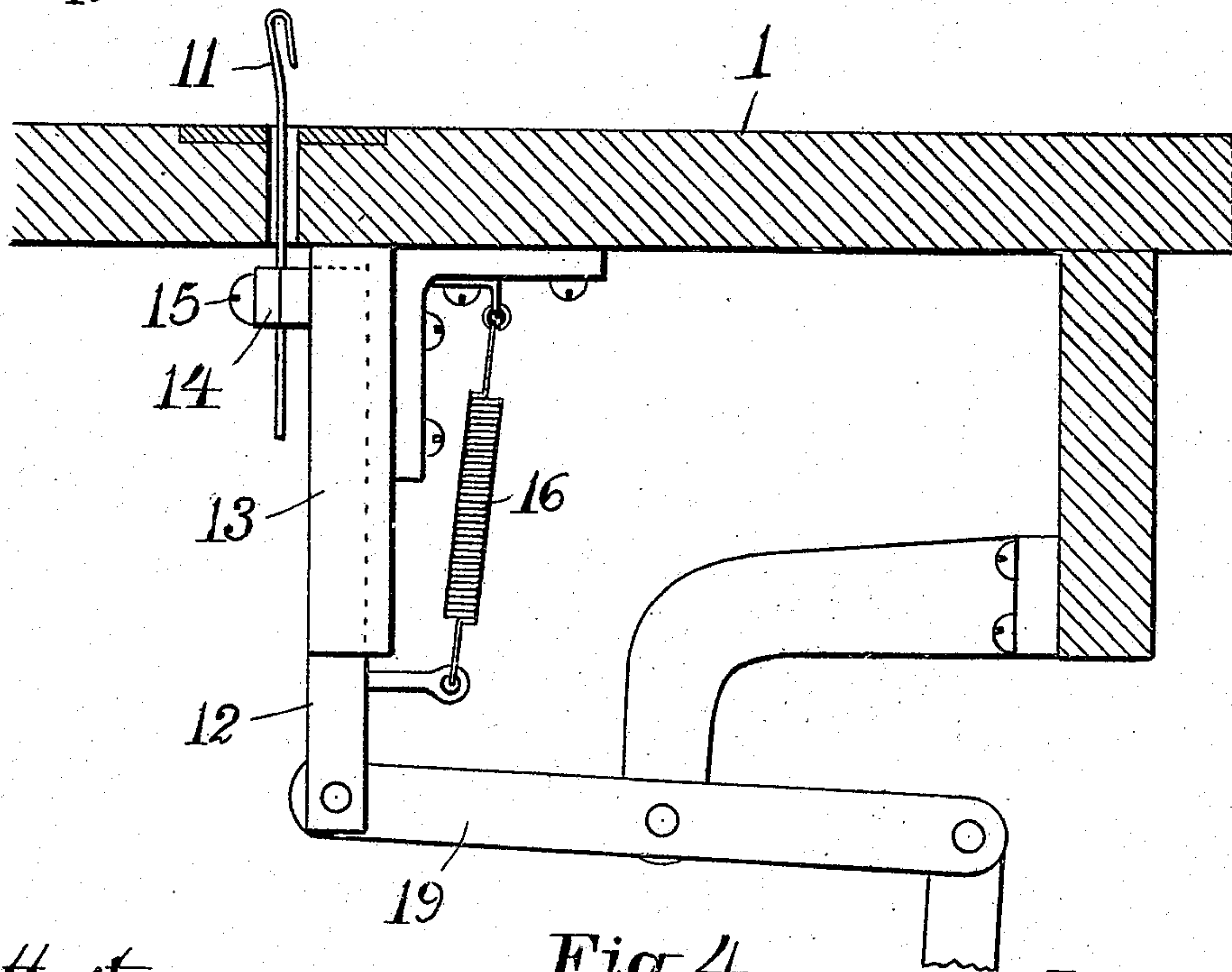


Fig. 4

Attest;

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Fig. 5

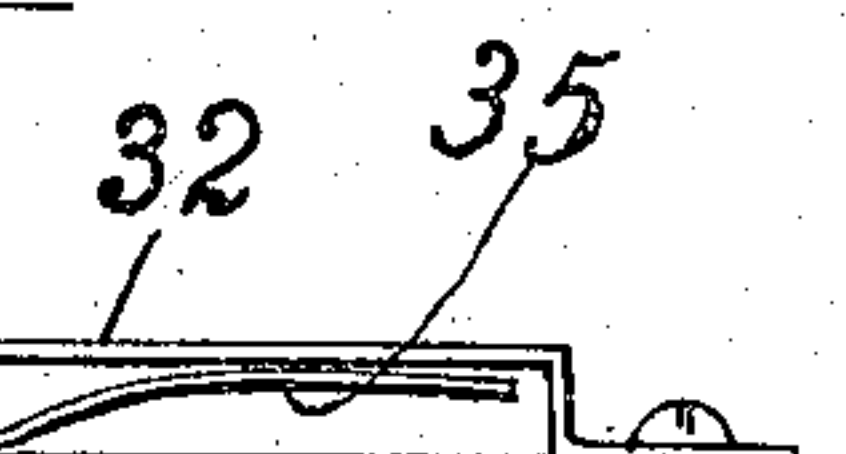
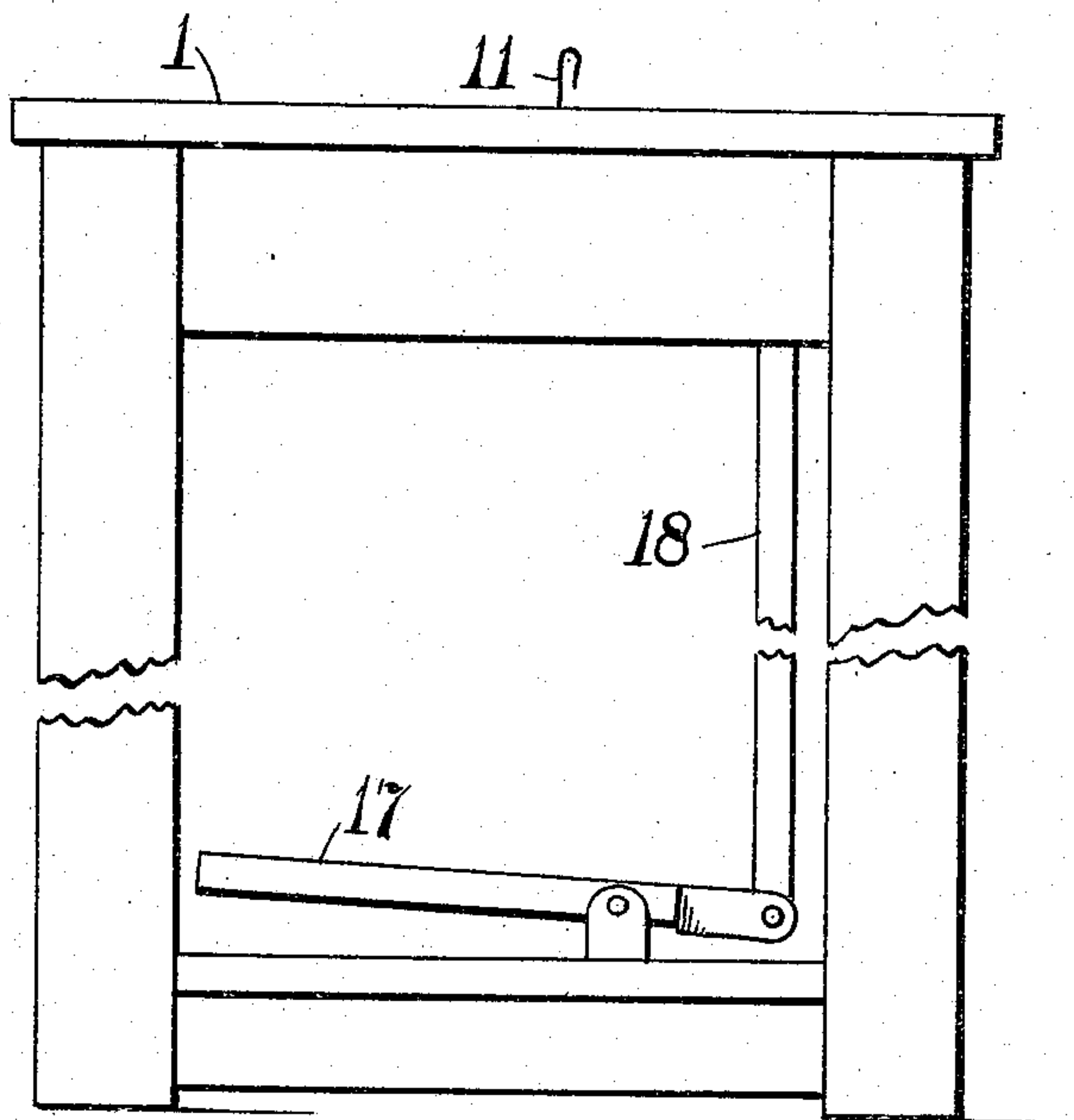


Fig. 7

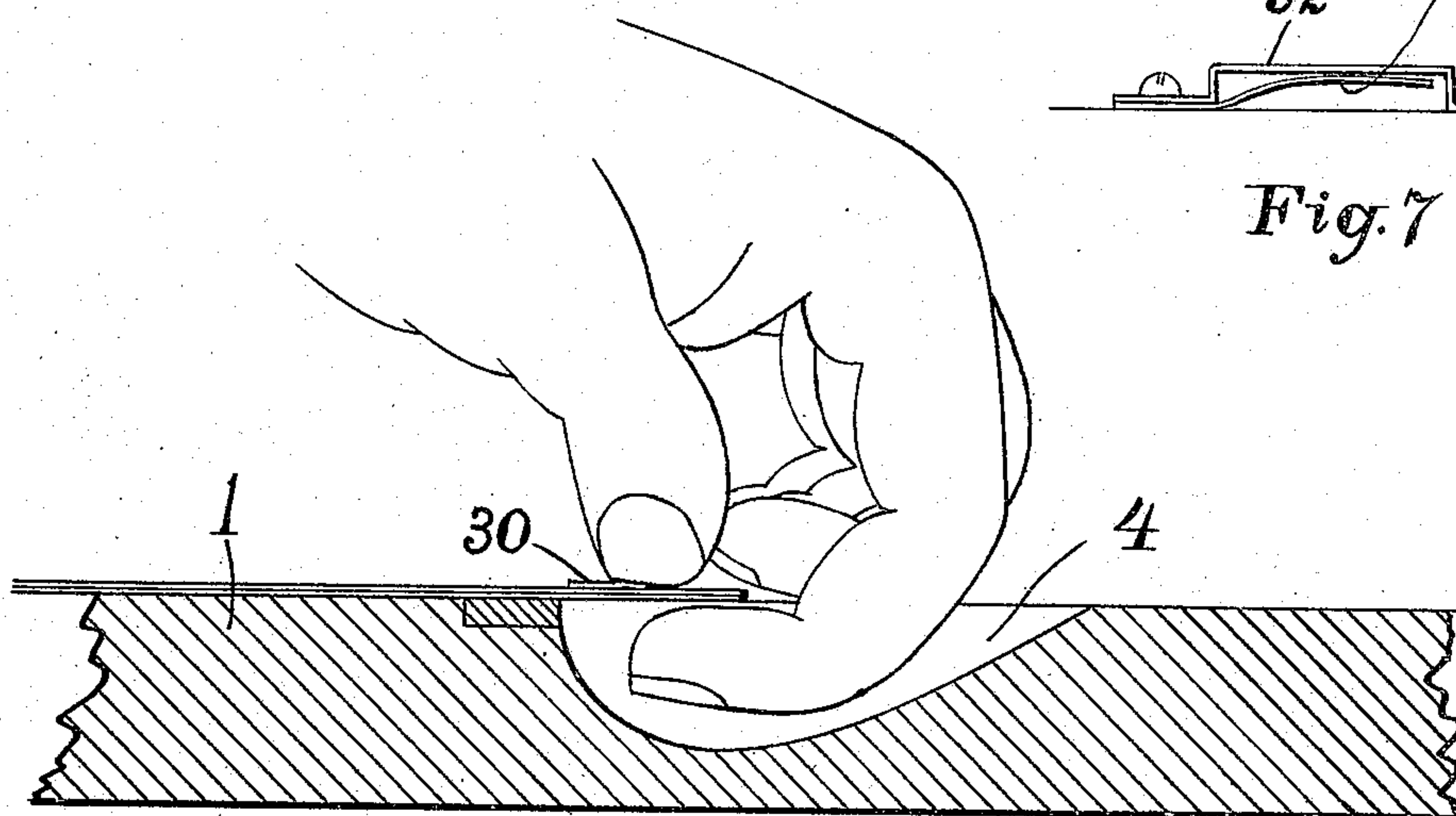


Fig. 6

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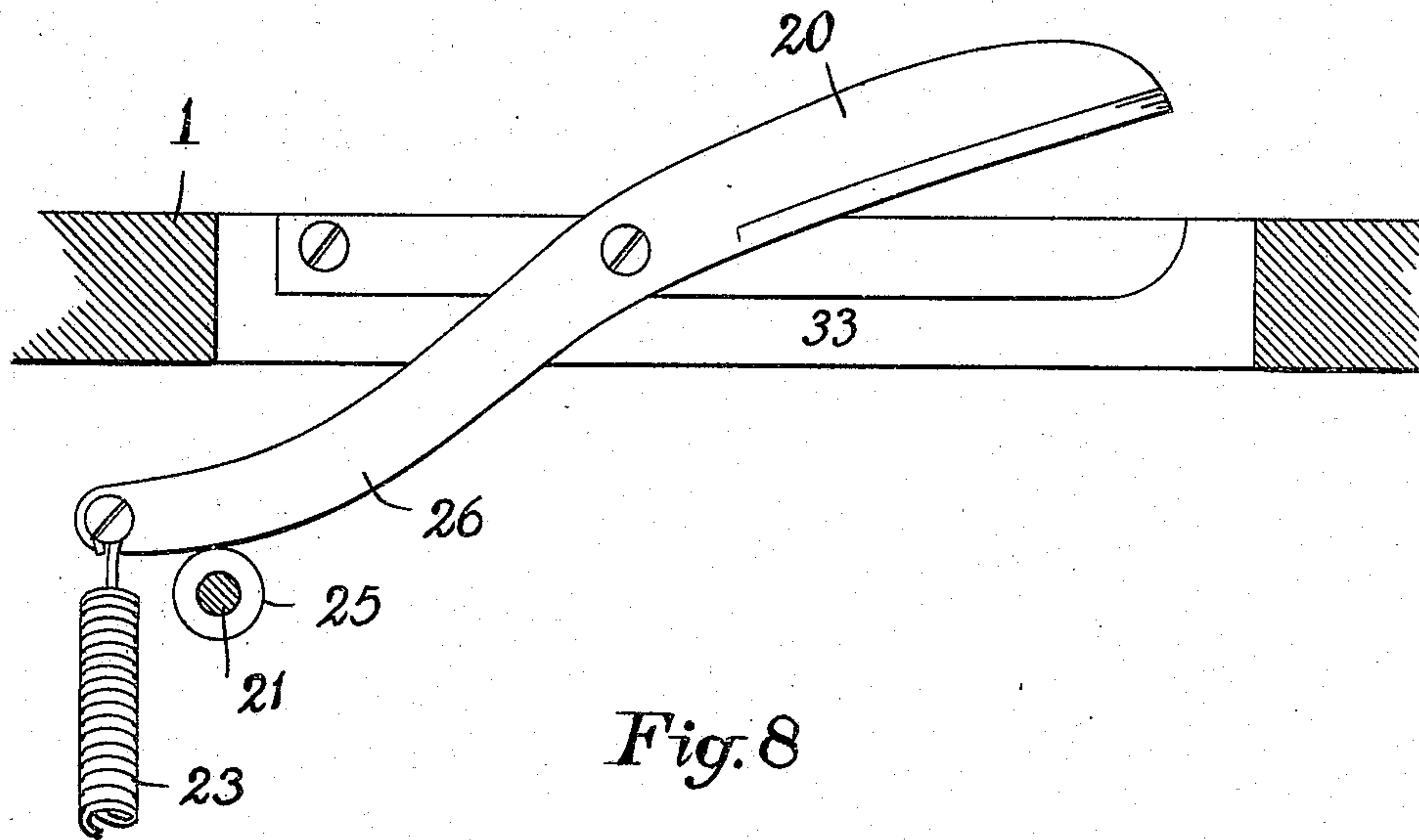


Fig. 8

Witnesses;

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UNITED STATES PATENT OFFICE.

ALBERT EMERSON, OF BOSTON, MASSACHUSETTS.

THREADING-MACHINE.

No. 930,653.

Specification of Letters Patent.

Patented Aug. 10, 1909.

Application filed October 26, 1906. Serial No. 340,643.

To all whom it may concern:

Be it known that I, ALBERT EMERSON, a citizen of the United States, and a resident of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Threading-Machines, of which the following is a full, clear, and exact description.

In many kinds of work it is customary to fasten sheets of card or paper together by means of ribbon, tape or cord inserted through holes therein and tied in fancy knots or bows. Pamphlets and calendars are often bound in this way. The work of inserting such ribbon is, however, quite slow and consequently expensive; and it is the object of this invention to construct a machine by means of which the ribbon, tape or cord can be rapidly inserted and severed, with a saving not only in time, but in material used.

Referring to the drawings forming part of this specification, Figure 1 is a sectional front elevation on the line $x-x$ in Fig. 2, of a machine embodying my invention. Fig. 2 is a plan view of the same. Fig. 3 is a detail sectional elevation nearly full size. Fig. 4 is a detail sectional side elevation nearly full size on the line $y-y$ in Fig. 3. Fig. 5 is a side elevation of the machine but with the instrumentalities on the top of the table not illustrated in this view. Fig. 6 is a sectional view showing the manner in which the leaves of card or paper are removed from the machine after being threaded. Fig. 7 is a detail view of the ribbon-holding eye. Fig. 8 is a detail view of the cutting blades, the showing being on a larger scale and a side sectional elevation.

The frame of this machine consists of a table having suitable supporting legs, and a top 1 carrying the major part of the devices by which the work is accomplished. Up through holes in this table top a pair of hooks 11 are reciprocated, as shown in Figs. 3 and 4. The sheets being laid upon the table top in a position to have their holes coincide with those in said top, and the hooks moved up through the same to a proper distance, the ribbon, cord or tape can be brought into engagement with said hooks, and then pulled down through such holes by lowering these hooks. Gages 2 and 3 are provided for properly locating said sheets, and so reducing this step of the work to a minimum. The devices for operating said hooks consist of the

slide 12 movable in the guides 13, and carrying at its upper end the cross arms 14, between which said hooks are clamped. A tension spring 16 elevates this slide, and its depression is caused by means of the treadle 17 (Fig. 5) acting through the connecting rod 18 and rocking lever 19. When the ribbon is wide, or the pile of sheets thick, the hooks can be raised to increase the distance between their points and the table surface; the screws 15 being loosened and then retightened to permit such adjustment. The second important step in the operation of the machine is the provision of means for automatically severing the ribbon or other material when the desired length has been presented to the threading hooks. For this purpose I provide a pair of scissor-blades 20 located in the table top at a suitable distance from the hooks, and have one blade thereof made to operate by a lever 21 pivotally supported at 22, and also by a retracting spring 23. At one end of said lever is a roll 24 engaged by the extended cross arm 14, for the actuation of the lever as the hooks descend; while at the opposite end of the lever is another roll 25 pressed up against the lower end of said spring-retracted blade. The spring 23 is arranged to give both a downward and a lateral pull to the blade-end 26, and thereby to keep the blades in cutting engagement, as well as to open the same.

The ribbon 30 is unwound from a suitable reel or spool 31 revolubly supported by the table, and passes through an eye 32 and thence in front of the two pins or pegs 33 located at opposite sides of the scissor-blades. The object of said pins is to keep the ribbon, while a sufficient length is being drawn along behind the hooks 11, from bearing against the sharp edges of the scissor-blades and being thereby marred or injured; said pins being located in a vertical plane in front of the point of intersection of the said blades when the shears are wide open.

The operation of the machine is as follows: The operator having first, by the pressure of his feet on the treadle 17, lowered the hooks 11 substantially below the level of the table top, the apertured card or paper sheets are placed in position thereon, and then the treadle released. The hooks immediately rise up through the holes in the card or paper, and as they reach their upper limit, he draws the ribbon-end along toward the left in contact with the rear surface of the stems of

the hooks, and below the points of the hooks. When the ribbon-end reaches that point which experience has shown the operator to provide an ample length for the particular work upon which he is engaged, he presses his foot upon the treadle; and the hooks, as they pass down below the table-top; catch and carry down with them the terminal portions of the ribbon, inasmuch as, simultaneously with the descent of the hooks, the scissor blades have severed the ribbon at the point to give the severed section the length desired. Now, while the hooks and ribbon-length are in this position, either as shown in Fig. 1 or with the hooks not depressed to so low a point, the operator seizes the edge of the sheets and ribbon between his thumb and fingers at a point between the path of the two hooks (see Fig. 6) and draws the same up and away from the machine. As the sheets and ribbon rise, the ends of the latter are drawn along by the hooks until such ends pass out through the holes in said sheets, and hang therefrom all ready for knotting in the usual manner. To make room for the fingers to thus grasp the said sheets, the table is given a recess 4, as represented in Figs. 2 and 6.

To guard the hole 5 from wear, I prefer to sink a metal plate 6 into the table top, as indicated in Figs. 2, 3 and 4.

As I have demonstrated by actual use of this machine, its work is very rapid; the only time consumed consisting of that required for placing the sheets upon the table, and taking them off again; the moment for applying the ribbon being scarcely appreciable.

As shown in Fig. 2, I prefer to form the apertures for the hooks 11 as a single elongated slot; the object being to enable such hooks to be adjusted toward or from each other to accommodate variously apertured sheets. The arms 14 being formed in two parts clamped together by the two screws which fasten them to the slide 12, said hooks can be readily adjusted relative to each other.

A further improvement is that for holding

the ribbon 30 from springing back out of the eye 32 after being severed by the shears or scissors 20. In accomplishing this, I provide such eye with a broad leaf spring 35 whose out-jutting edges permit it to be depressed by the fingers of the operator and so give space for the original insertion of the ribbon-end. Once inserted, the friction between such spring and eye keeps the ribbon in the position left by the shears, while not interfering with its being drawn to the left to present a new length to the machine. Further, by having said spring press the ribbon upward, the latter is supported in a sufficiently elevated position to permit it to be more readily grasped and pulled. Were the ribbon lying flat upon the table-top, it would be much harder to take hold of.

What I claim as my invention and for which I desire Letters Patent is as follows, to wit:—

1. The combination with a table, of ways fixed beneath the top of such table, a slide vertically movable in said ways, cross-arms fixed to the upper part of said slide, long-stemmed hooks held by said cross-arms and rising through holes formed in said table-top, a treadle, and connections between said slide and treadle.

2. The combination with a supporting surface, of ways fixed beneath the same, a slide vertically movable in said ways, elongated cross-arms fixed to said slide hooks carried by said cross-arms, a fixed shear-blade and a movable shear-blade supported in said surface, a spring normally holding the blades apart, and a pivoted lever engaging said movable blade and said cross-arms and disposed to operate the shears by the depression of said slide.

In testimony that I claim the foregoing invention, I have hereunto set my hand this 19th day of October, 1906.

ALBERT EMERSON.

Witnesses:

ANGELA BROWN,
A. B. UPHAM.