

No. 712,822.

Patented Nov. 4, 1902.

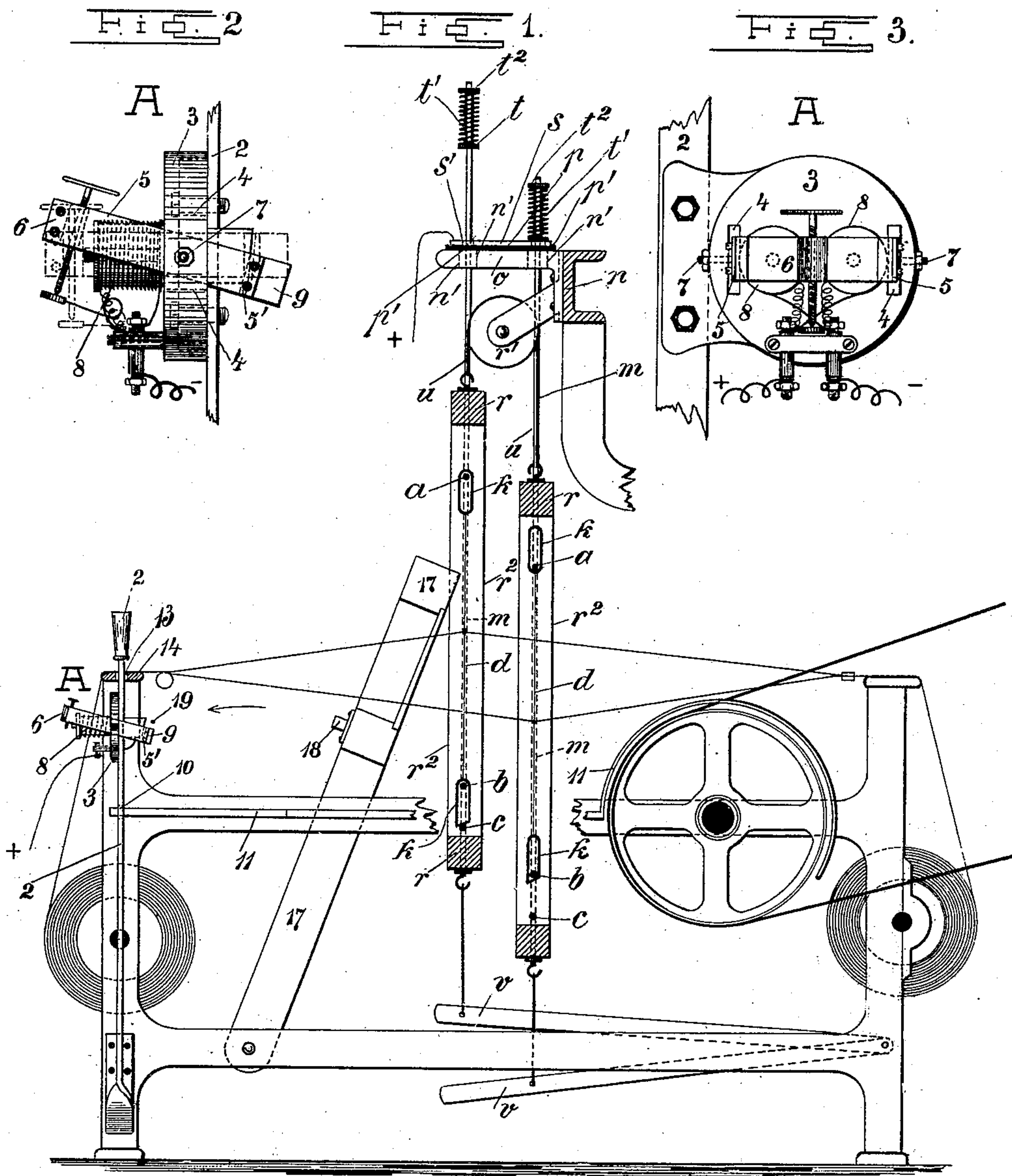
V. MACKU.

ELECTRICAL WARP STOP MOTION.

(Application filed Jan. 12, 1901.)

(No Model.)

4 Sheets—Sheet 1.



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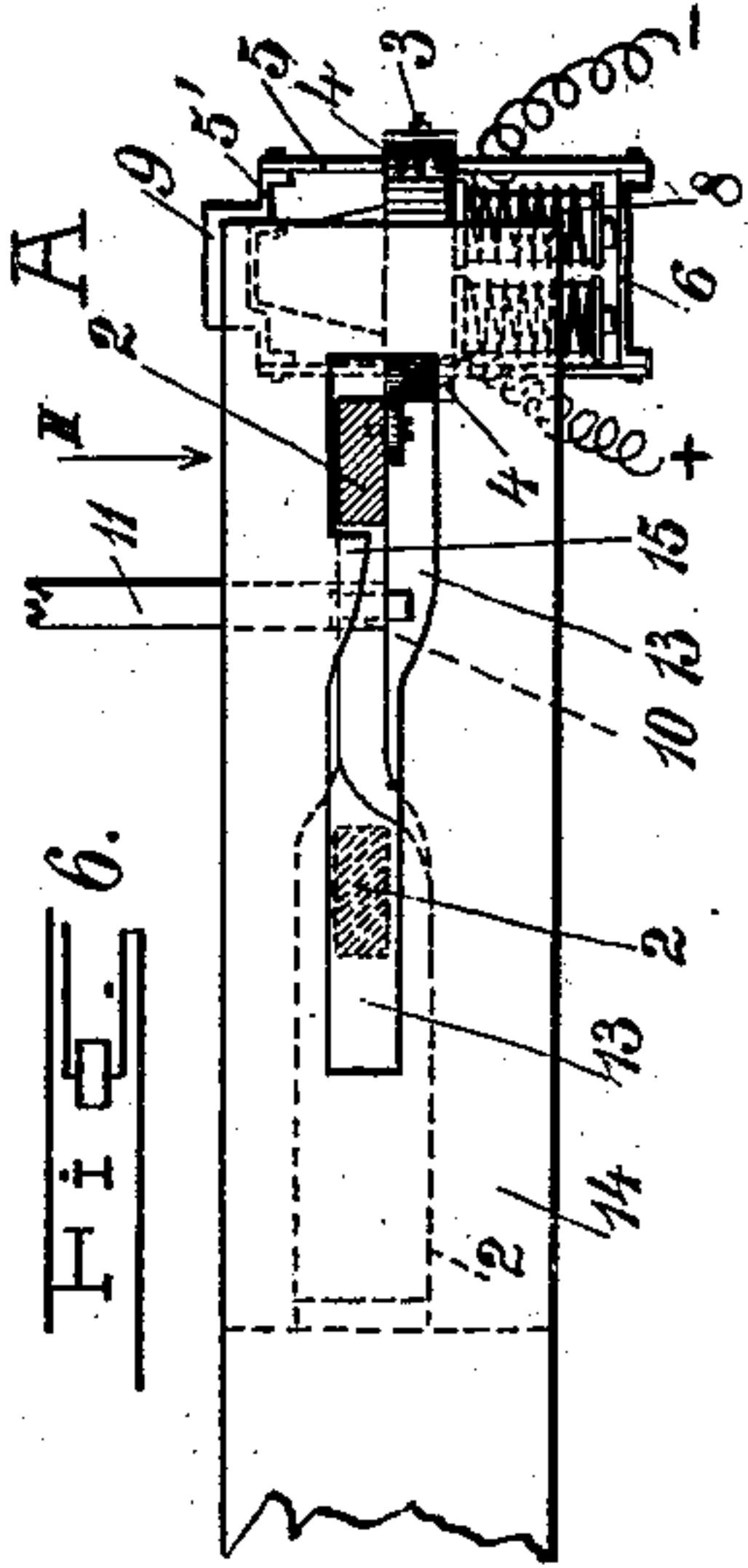


Fig. 5.

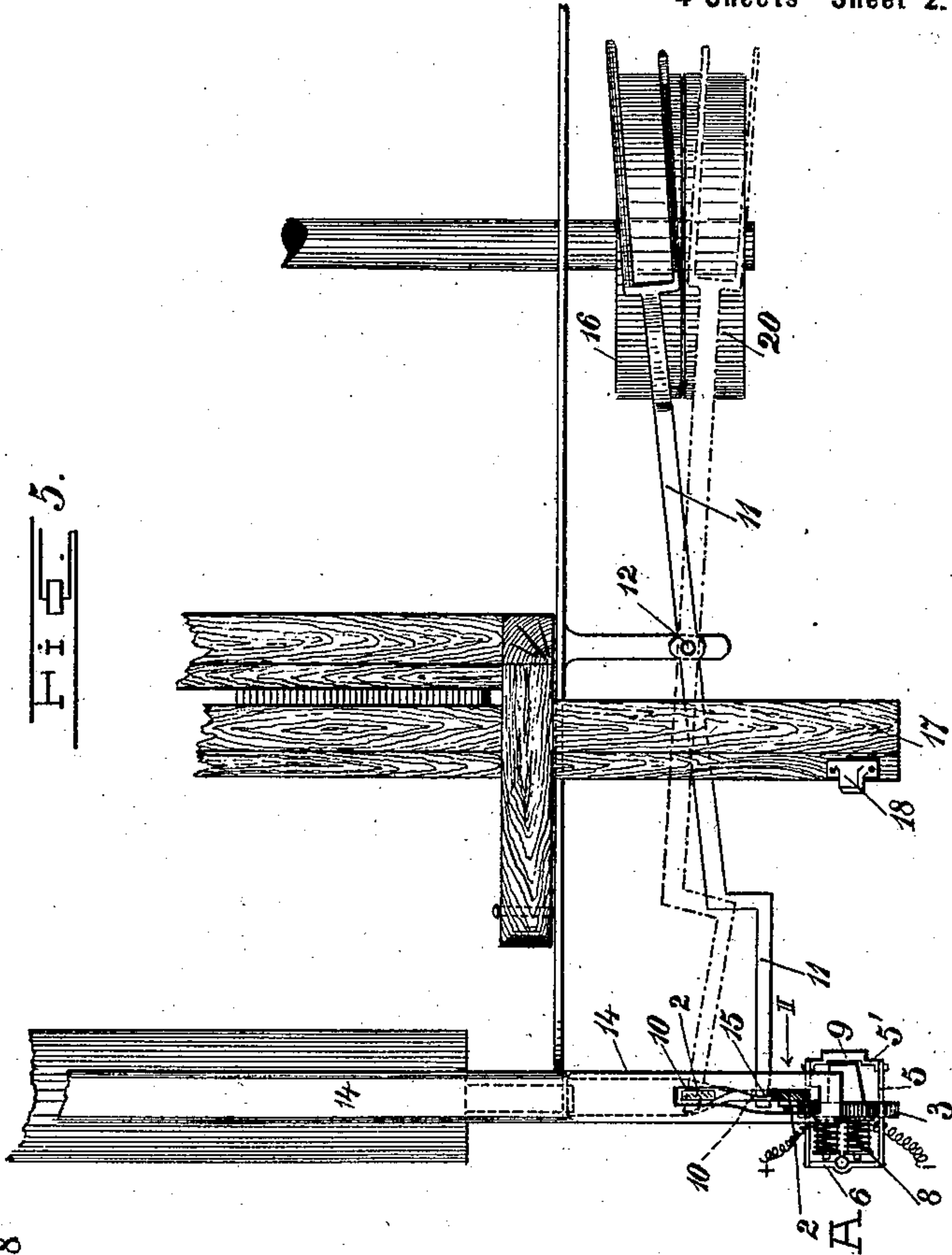
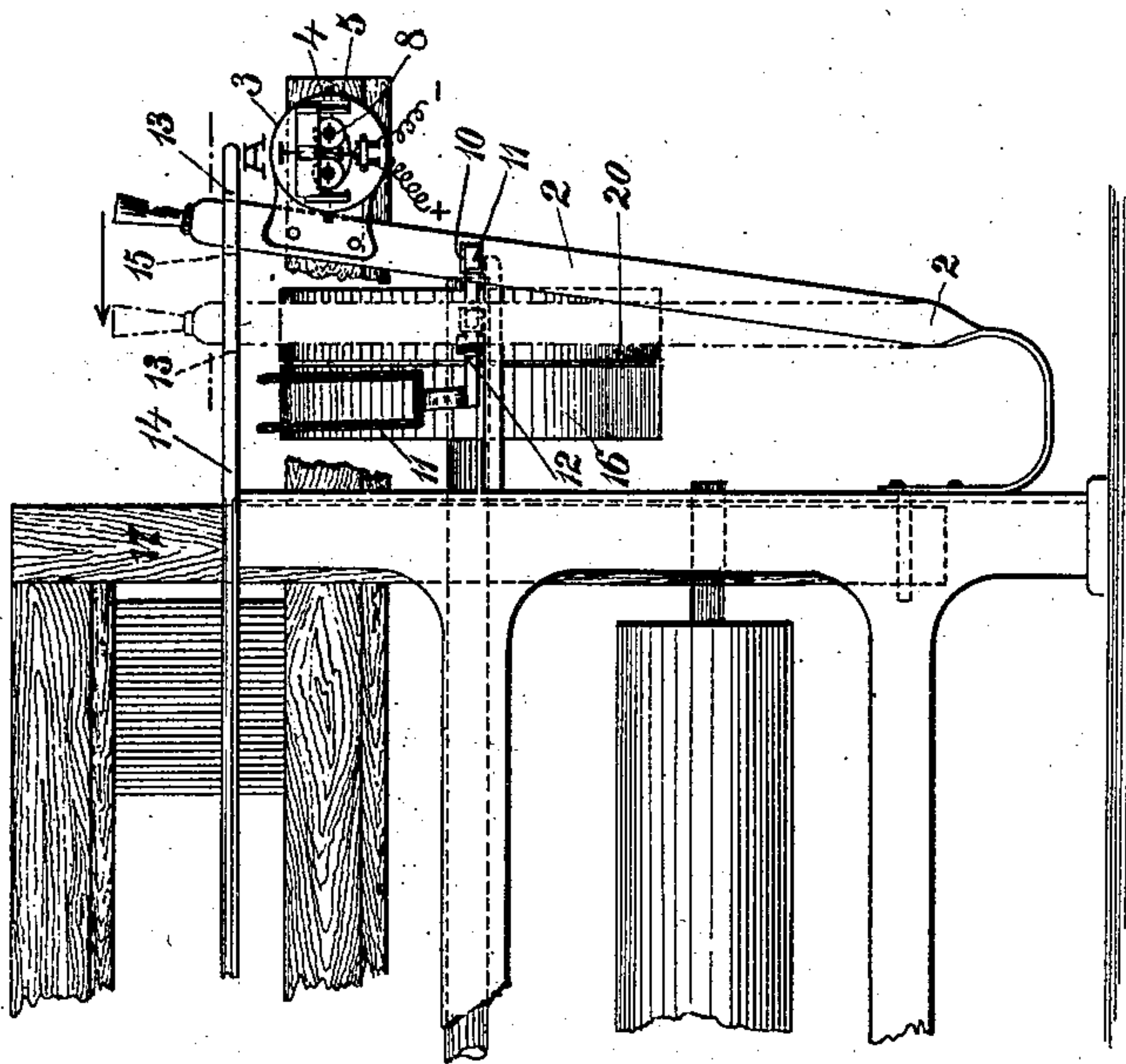


Fig. 4.



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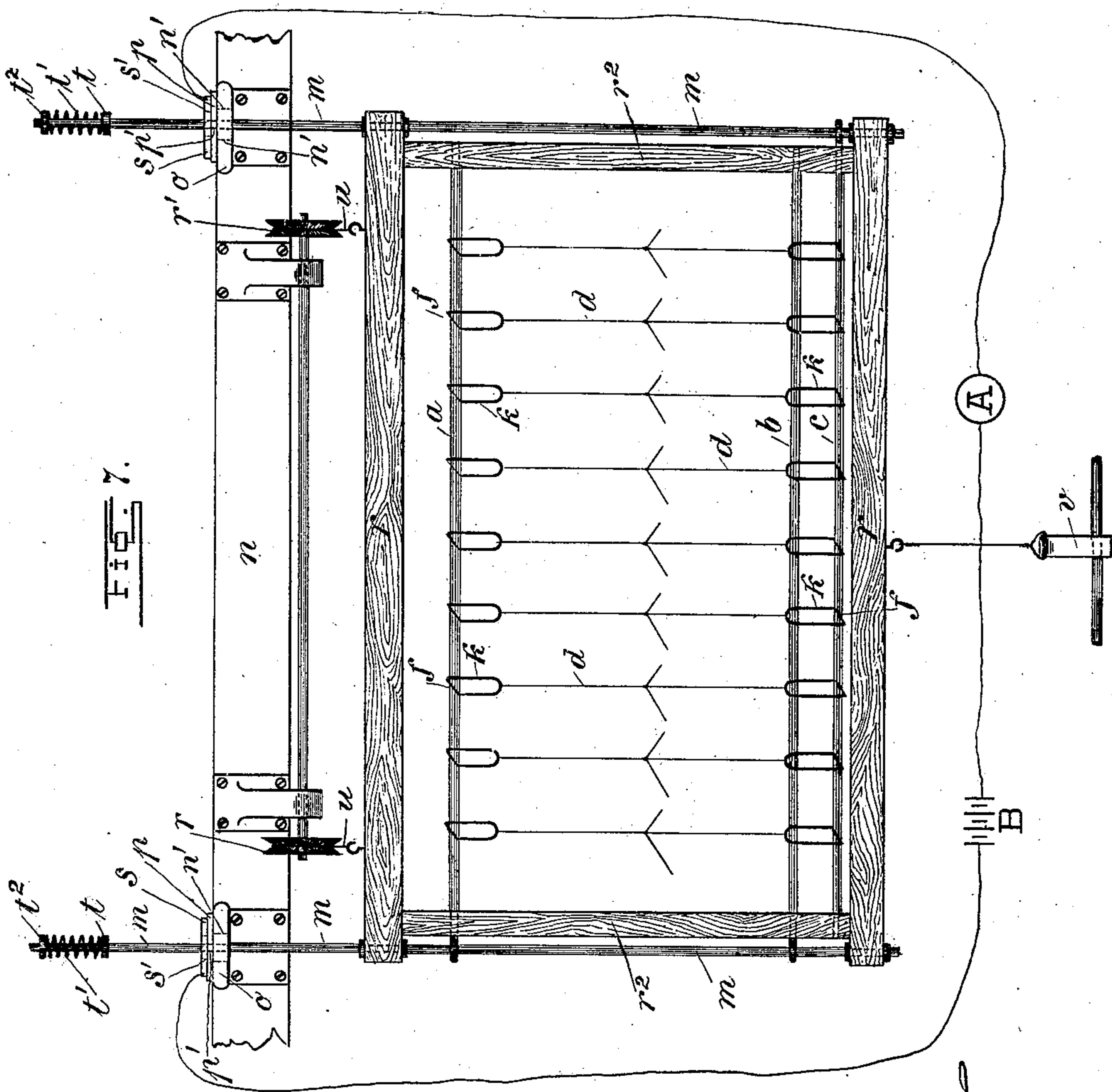


Fig. 7.

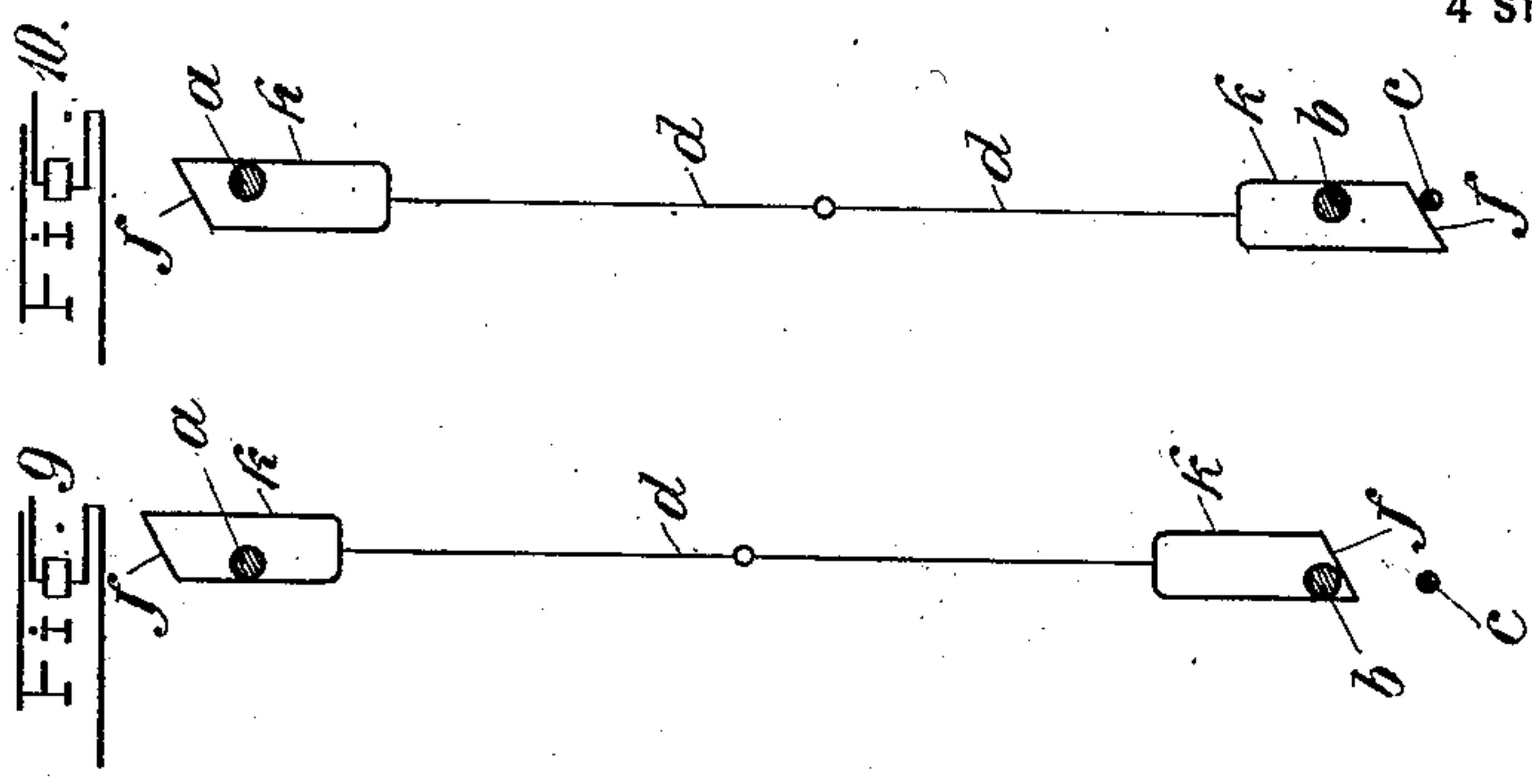


Fig. 9.

Fig. 10.

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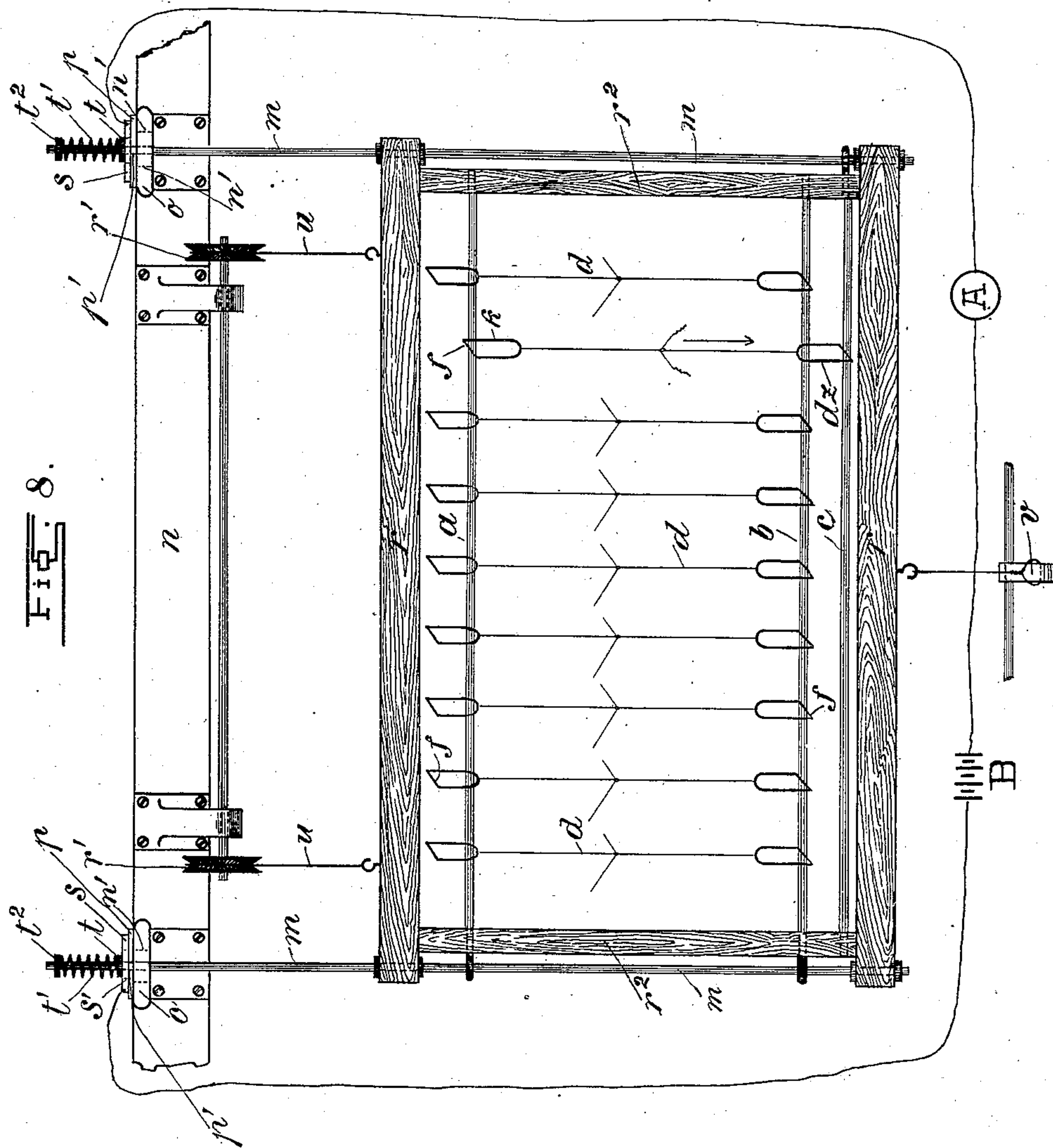
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4 Sheets—Sheet 4.



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UNITED STATES PATENT OFFICE.

VINCENZ MACKU, OF BRÜNN, AUSTRIA-HUNGARY.

ELECTRICAL WARP STOP-MOTION.

SPECIFICATION forming part of Letters Patent No. 712,822, dated November 4, 1902.

Application filed January 12, 1901. Serial No. 43,059. (No model.)

To all whom it may concern:

Be it known that I, VINCENZ MACKU, engineer, residing at Neugasse 113, Brünn, in the Empire of Austria-Hungary, have invented
5 new and useful Improvements in Electrical Warp Stop-Motions; and I do hereby declare the following to be a full, clear, and exact description of the same.

The present invention relates to an electric
10 warp controlling device for looms characterized by a peculiar construction of the heald-heads and by the arrangement of auxiliary bars below and above the shaft-bars, while the remainder of the construction thereof is
15 well known. In the accompanying drawings a loom provided with such warp-controlling device is shown, wherein—

Figure 1 is a front view thereof; Fig. 2, a view, on an enlarged scale, of the apparatus
20 A eventually influenced by the current; Fig. 3, a front view of Fig. 2; Fig. 4, a front view of part of the loom; Fig. 5, a diagram of the apparatus A, of the lathe, and of the strap-fork; Fig. 6, a detail of Fig. 5, on an enlarged
25 scale; Figs. 7 and 8, the heald-frames in two different positions; Fig. 9, a profile view of a heald and of the shaft-bars and the auxiliary bar in the position they are in when the warp-thread is whole; and Fig. 10, the same
30 view in the position when the warp-thread is broken or slack, when the heald rests against the shaft-bars and at the same time against the auxiliary bar.

The apparatus A (shown in Figs. 2 and 3
35 on an enlarged scale) is fixed to the disengaging-fork 2. It consists of a round disk 3, provided with two slots 4. Through these two slots pass the lateral shanks of an armature 6. The latter is journaled pivotally
40 around the screws 7, which pass through its lateral shanks and cross through the slot, and when the armature-coils 8 are not energized it assumes the position shown in full lines in Figs. 1 and 2; because of the fact that
45 the rear shank 5' is provided with a reinforcement 9, the weight of which forces the armature into an inclined position. The free end of the band-fork 11 passes through the slot
50 10 of the disengaging-fork 2, which is rotatable around a bolt 12, arranged in the frame in the well-known manner. The disengaging-fork 2 is guided in the slot 13 of the plate 14,

and in that slot is arranged a catch 15, against which the disengaging-fork 2 rests. While the fork 2 rests against the catch, (see Figs. 55 5 and 6,) the position of the band-fork 11 is such that the driving-band presses upon the solid pulley 16, so that the loom works.

As can be seen from Fig. 1, a pin 18 is fixed upon the lathe 17. At each beat of the lathe 60 17 the pin 18 assumes a position above the inclined armature 6, reaching as far as the point indicated by the figure 19. When the coils 8 are energized by an electrical current, the armature 6 is attracted and brought in the
65 position shown by dotted lines in Fig. 2. For clearness sake this horizontal position is not shown in Fig. 1. The result is that under these circumstances the pin 18 strikes the reinforcing-piece of the rear shank 5' of the armature 6, thereby forcing the latter to the
70 left relatively to the position shown in Fig. 1. As the armature is rigidly connected with the disengaging-fork 2, the latter will move at the same time in the direction of the arrow II, 75 Figs. 5 and 6. Thereby the disengaging-fork will slip from the catch 15 and by its spring-power be brought as far as the second extremity of the slot 13. The end of the band-fork 11, which is journaled in the slot 10 of
80 the disengaging-fork 2, follows that motion, so that the said band-fork turns around the bolt 12 and with its other fork-shaped extremity pushes the band from the solid pulley upon the loose pulley, thereby causing the
85 loom to stop.

From the above description it will be seen that when the armature-coils 8 are energized by the current, and thereby the armature attracted or brought in the position shown in 90 dotted lines in Fig. 2, the loom stops. Now the present invention relates to an arrangement of the healds and heald-frames of looms whereby when the warp breaks or gets slack an electric current is closed, which causes a
95 current to flow through the armature-coils 8. To this effect the healds *d* have heads *k*, which finish in a point at one side, while their upper and lower sides form straight surfaces *f*. The heald-frames *r* have besides the two usual 100 shaft-bars *a* and *b* and auxiliary bar *c* under the latter, *b*. Moreover, next to the lateral shanks *r*² of the heald-frames *r* iron wires *m* are fixed to the frame *r*. The shaft-bars *a*

and *b* are connected with the left-hand wire *m* and the auxiliary bar *c* with the right-hand wire by means of a conducting metallic piece. It is obvious that this could be inverted. I mean that the shaft-bars *a* and *b* could be connected with the right-hand wire and the auxiliary bar *c* with the left-hand wire. The wires *m* are suitably prolonged at the top and pass through holes *n'* of an angular piece *o*, fixed to the upper edge *n* of the loom-frame. On the upper part of the angular piece *o* is fixed an insulating-plate *p* and on top of the latter an iron plate *s*. Both these plates are pierced with holes *p' s'*, through which the wires *m* pass also. It should be noted that the diameter of the holes *n'* and *s'* is much greater than that of the wire *m*, so that these wires *m* do not come in contact with the plate *s* or the angular pieces *o*, while the holes *p'* have the same diameter as the wire *m*, so that the latter is guided in the holes *p'* of the plate *p*. Electric conducting-wires are attached to the plates *s*, the other ends of which (see Figs. 1, 7, and 8) are connected with a battery B. The apparatus A, with the armature *g*, is inserted in this circuit. To the free ends of the wires *m*, which pass through the holes *n' p' s'*, loose disks *t* are attached, which are suspended on the springs *t'*, fixed to the reinforcements *t''* of the wires *m*. The heald-frames *r* are suspended from bands *u*, running over rollers *r'*, and are moved up and down by means of the treadle *v*. These are all well-known devices and need therefore no further description. When the heald-frame is in the upper shed, Fig. 7, the circuit is never closed, because the wires *m* are not in contact with the plates *s*, and the current is interrupted between *m* and *s*. If the heald-frame comes in the lower shed, Fig. 8, there will again be no closed circuit provided no warp-thread be broken, notwithstanding the circuit is closed between *m* and *s*, because in the lower shed position the healds do not touch the auxiliary bar; but if a warp-thread should be torn and the

frame *r* is in the lower shed the corresponding heald will not be held upward by the warp-thread, but will drop (see *d r*) and rest against the auxiliary bar *c*, sliding with its inclined side *f* (see Figs. 9 and 10) along the latter, so that a positive contact is established between the heads *k* and the shaft-bars *a* and *b*, whereby the circuit is completely closed, as the shaft-bars *a b* come in contact with one pole and the auxiliary bar *c* with the other pole of the battery.

Having thus described my invention, what I claim is—

1. A heald for looms, comprising two parallel main bars, leash-wires for the warp-threads having open heads engaging with said main bars and having beveled ends, an auxiliary bar below the lower main bar, a source of electric current having its terminals connected respectively with said main bars and auxiliary bar, and an electrical stop-motion in circuit therewith.

2. A heald for looms, comprising two parallel main bars, leash-wires for the warp-threads having open heads engaging with said bars, said heads having beveled ends inclined in the same direction, an auxiliary bar below the lower main bar and in line with the lower head, a source of electric current whose terminals are connected respectively with the main and the auxiliary bars, and an electrical stop-motion in circuit therewith, whereby when a warp-thread breaks, the beveled ends of the heads will force them sidewise when the leash drops, and insure a good contact between the lower head and the main and auxiliary bars.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

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Witnesses:

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