

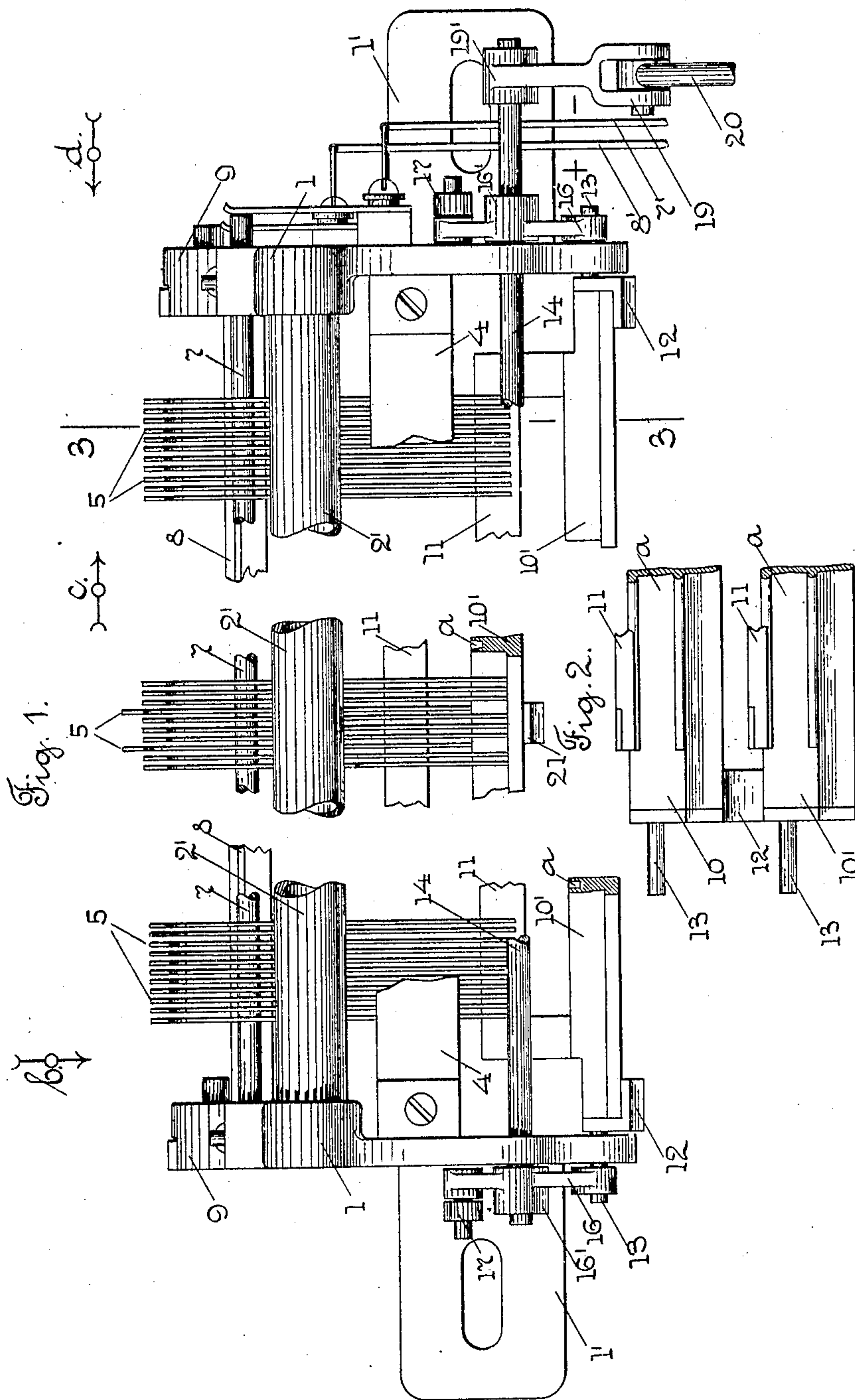
No. 869,643.

PATENTED OCT. 29, 1907.

B. F. McGUINNESS.
WARP STOP MOTION.

APPLICATION FILED DEC. 29, 1905.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

Fig. 3.

Fig. 4.

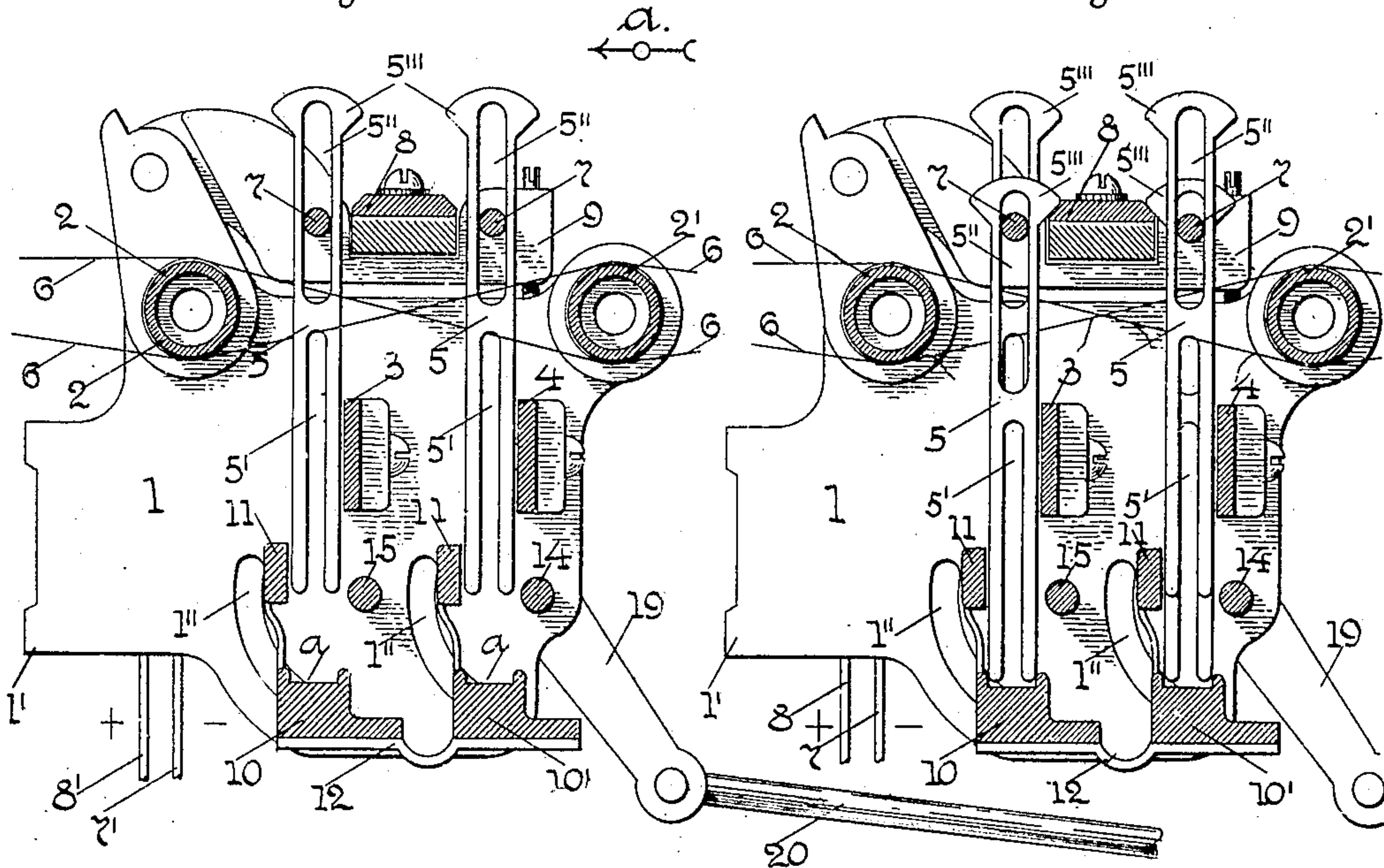
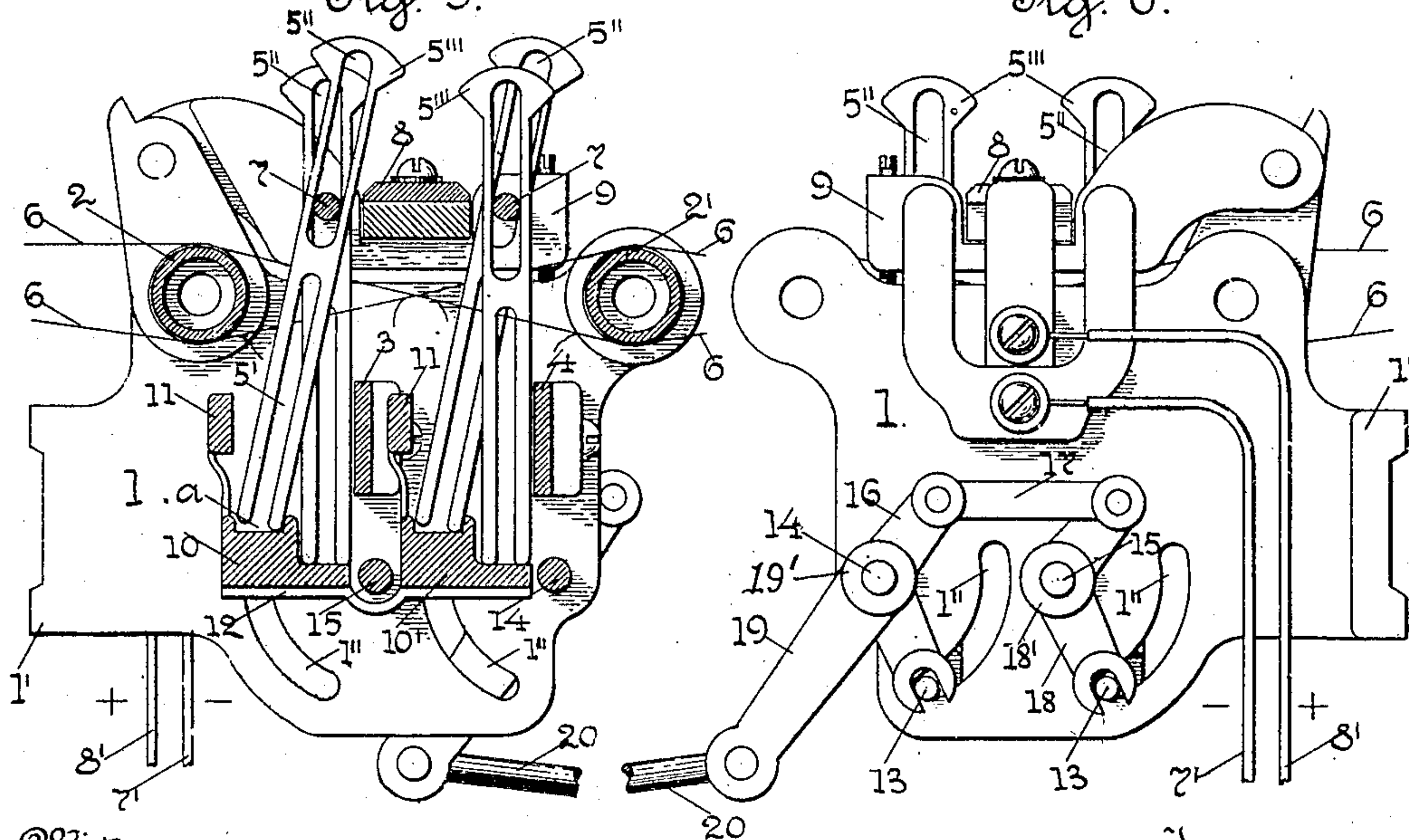


Fig. 5.

Fig. 6.



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UNITED STATES PATENT OFFICE.

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WARP STOP-MOTION.

No. 869,643.

Specification of Letters Patent.

Patented Oct. 29, 1907.

Application filed December 29, 1905. Serial No. 293,711.

To all whom it may concern:

Be it known that I, BENJAMIN F. McGUINNESS, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Warp Stop-Motions, of which the following is a specification.

My invention relates to improvements in warp stop motions, and particularly to improvements in electric warp stop motions, in which one or more sets of drop devices are used, supported on the warp threads, and in case the warp threads remain intact, the electric circuit is open, but in case of the breaking of a warp thread and the lowering of the drop device thereon, the circuit is closed, and through connections to the shipper lever, the loom is automatically stopped, in the usual and well known way.

The object of my invention is to provide a supplemental mechanism, adapted to be combined with a warp stop motion of the class referred to, by means of which, after the breaking of a warp thread, the drop device, lowered by reason of such breaking, will be raised above the plane of the other drop devices, and thus indicate where the broken thread is, and assist the operator to readily find the broken thread.

My invention consists in certain novel features of construction of my improvements, as will be hereinafter fully described.

I have shown in the drawings portions of a warp stop motion of the class referred to, of well known construction, with my improvements combined therewith, sufficient to enable those skilled in the art to understand the construction and operation thereof.

Referring to the drawings:—Figure 1 is a front view of a warp stop motion with my improvements combined therewith, looking in the direction of arrow *a*, Fig. 3; said warp stop motion is broken out through the central part, and a detached portion of the motion is shown therein, with the indicating mechanism in its raised position, and two drop devices in their indicating position. Fig. 2 is a plan view of one end of the supplemental indicating mechanism detached, looking in the direction of arrow *b*, Fig. 1. Fig. 3 is a vertical section, on line 3, 3, Fig. 1, looking in the direction of arrow *c*, same figure, showing the parts in their normal position. Fig. 4 corresponds to Fig. 3, but shows two of the warp threads broken, and the two drop devices thereon in their lowered position. Fig. 5 corresponds to Fig. 4, but shows the two lowered drop devices, and the indicating mechanism, in their raised position, and, Fig. 6 is an end view of the warp stop motion shown in Fig. 1, looking in the direction of arrow *d*, same figure.

In the accompanying drawings, 1 are the stands or

end frames of the warp stop motion, adapted to support the several parts of the warp stop motion, and having in this instance the projections 1' thereon, adapted to be secured to the loom frame.

2, and 2' are transverse warp supporting and lease rods, extending between the two end frames, and secured thereto. 3, and 4 are transverse bars extending between the two end frames 1, and secured thereto, said bars 3, and 4 act as guides for one side of the lower ends of the drop devices 5. The drop devices 5 are in this instance arranged in two series, one series supported on the lower plane of one-half of the warp threads 6, and the other series supported on the lower plane of the other half of the warp threads 6, in the usual way. The drop devices 5 are in this instance of the ordinary shape, with an open end slot 5' in their lower portion to receive a warp thread 6, which supports the drop device in its normal raised position, and an elongated opening 5'' in their upper part, through which extends a rod 7, forming in this instance one terminal of an electric circuit. The other terminal 8 of the electric circuit extends between the two sets of drop devices 5. In this instance the two terminals 7 of one pole, and the intermediate terminal 8 of the other pole, are supported at each end on a frame or bracket 9, which in this instance is pivotally mounted at one end on an end frame 1, so that the bracket 9 and the terminal supported thereon may be raised if desired, to give access to the warp threads.

The two terminals 7 of one pole, as negative, are connected by a wire 7' with a magnet, not shown, and the terminal 8 of the other pole, as positive, is connected by a wire 8' with a magnet, not shown.

In case of the breaking of a warp thread 6, a drop device 5 supported thereon will be lowered, and the contacting projection 5''' thereon will engage with the intermediate terminal 8, to close the electric circuit, and through co-acting mechanism, not shown, operate the shipper lever and stop the loom, in the usual and well known way.

All of the above mentioned parts may be of the usual and well known construction in the class of warp stop motions referred to, and are particularly shown and described in U. S. Letters Patent, No. 806,725.

I will now describe my improvements.

Extending in a horizontal plane below and in alignment with the lower ends of the two sets of drop devices 5, are in this instance two transverse parallel bars 10, and 10', forming in this instance the indicating mechanism. Each bar 10, and 10' has its upper engaging surface preferably in two horizontal planes, one plane higher than the other, and the higher plane preferably has a central groove or depression *a* therein. The higher plane is adapted to engage the lower ends

of a lowered drop device 5, and the lower plane the lower ends of the drop devices 5 supported on the warp threads, and in their normal position.

A transverse bar 11 extends in a plane above each bar 10, and 10', and acts as a guide for the lower ends of the drop devices 5, and is secured at each end to the bar 10 and 10', intermediate the end frames 1, see Fig. 1. The ends of the bars 10, and 10' are supported upon and secured to a plate 12, see Fig. 2, which extends within the end frames 1, see Fig. 1. Each end plate 12 has thereon two projecting pins 13, each of which extends loosely through two curved or cam shaped slots or openings 1'' in each end plate 1. To raise and lower the pins 13 in the curved or cam shaped slots 1'' in the end plates 1, to cause the bars 10, and 10' to be simultaneously raised and lowered, I provide in this instance the mechanism shown in Fig. 6, consisting of two rock shafts 14, and 15, which extend transversely through the warp stop motion, and have bearings in the end frames 1. On each end of one shaft, as 14, is fast a hub 16' of an angle lever 16. One arm of the angle lever 16 has an open end slot therein, to receive one of the pins 13 on the end plate 12; the other arm of the angle lever 16 is connected by a link 17 with one arm of a second angle lever 18, the hub 18' of which is fast on the other shaft 15; the other arm of the angle lever 18 has an open end slot therein, to receive the other pin 13 on the end plate 12, see Fig. 6.

On one end of the shafts 14, or 15, in this instance the shaft 14, is fast the hub 19' of an arm 19; the other end of the arm 19 is made yoke or fork shaped, see Fig. 1, and is pivotally attached to a connector 20; the connector 20 is preferably connected with the shipper handle, not shown.

A transverse plate 21 see Fig. 1, in this instance extends between the bars 10 and 10', intermediate their ends, to hold them in proper relative position.

The operation of my improvements in indicating mechanism, in connection with the warp stop motion shown and described, will be readily understood by those skilled in the art.

In case of the breaking of a warp thread 6, the drop devices 5 thereon will be lowered, as shown in Fig. 4, and the lower end thereof will extend into the recessed portion *a* in the upper plane of the bar 10, or 10'. The lowering of the drop device 5 will close the electric circuit, and cause mechanism to operate to move the shipper lever and stop the loom, in the usual and well known way.

The movement of the shipper lever, through the connector 20, will operate the angle levers 16, and 18, at each end of the warp stop motion, and through the pins 13 on the end plates 12, cause the bars 10, and 10' to be

simultaneously raised from their lowest position, shown in Fig. 4 to their highest position, shown in Fig. 5. The raising of the bars 10, and 10', will raise a drop device 5, supported on the upper plane thereof, above the other drop devices, and thus indicate where the warp thread is broken. The raising of the bars 10, and 10', through the engagement in this instance of the bar 10' with the lower ends of the other drop devices supported on the intact threads, will raise said drop devices slightly, as indicated in Fig. 5, to jar the same, and shake off any dust or lint thereon.

When the shipper lever is pulled on to start the loom, the connector 20 will be moved, and through the angle levers 16 and 18, the pins 13 on the end plates 12, will be moved down in the slots 1'' in the end stands 1, to lower the bars 10, and 10' into their normal position, and allow the drop devices 5 to return to their normal position, and be supported on the warp threads.

It will be understood that the details of construction of my improvements may be varied if desired, and they may be adapted to be combined with a warp stop motion of any usual and well known construction, having one, or more series of drop devices.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. In a warp stop motion, the combination with drop devices normally supported on the warp threads, of means for raising any drop device, lowered by the breaking of a warp thread, above the other drop devices, to indicate the position of the broken warp thread, said means comprising a bar extending under the drop devices, and actuating means for raising said bar to engage the lower end of the lowered drop device.

2. In a warp stop motion, the combination with drop devices normally supported on the warp threads, of means for raising any drop device lowered by the breaking of a warp thread, above the other drop devices, to indicate the position of the broken warp thread, said means comprising a bar extending under the drop devices, and having engaging surfaces thereon in two different planes for the drop devices, the upper plane to engage and raise the lowered drop device above the other drop devices, and the lower plane to engage and raise the normally positioned drop devices.

3. In a warp stop motion, the combination with drop devices normally supported on the warp threads, of means for raising any drop device, lowered by the breaking of a warp thread, above the other drop devices, to indicate the position of the broken warp thread, said means comprising a bar extending under the drop devices, and having engaging surfaces thereon in two different planes for the drop devices, the upper plane to engage and raise the lowered drop device above the other drop devices, and the lower plane to engage and raise a normally positioned drop device, and means for raising and lowering said bar.

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