

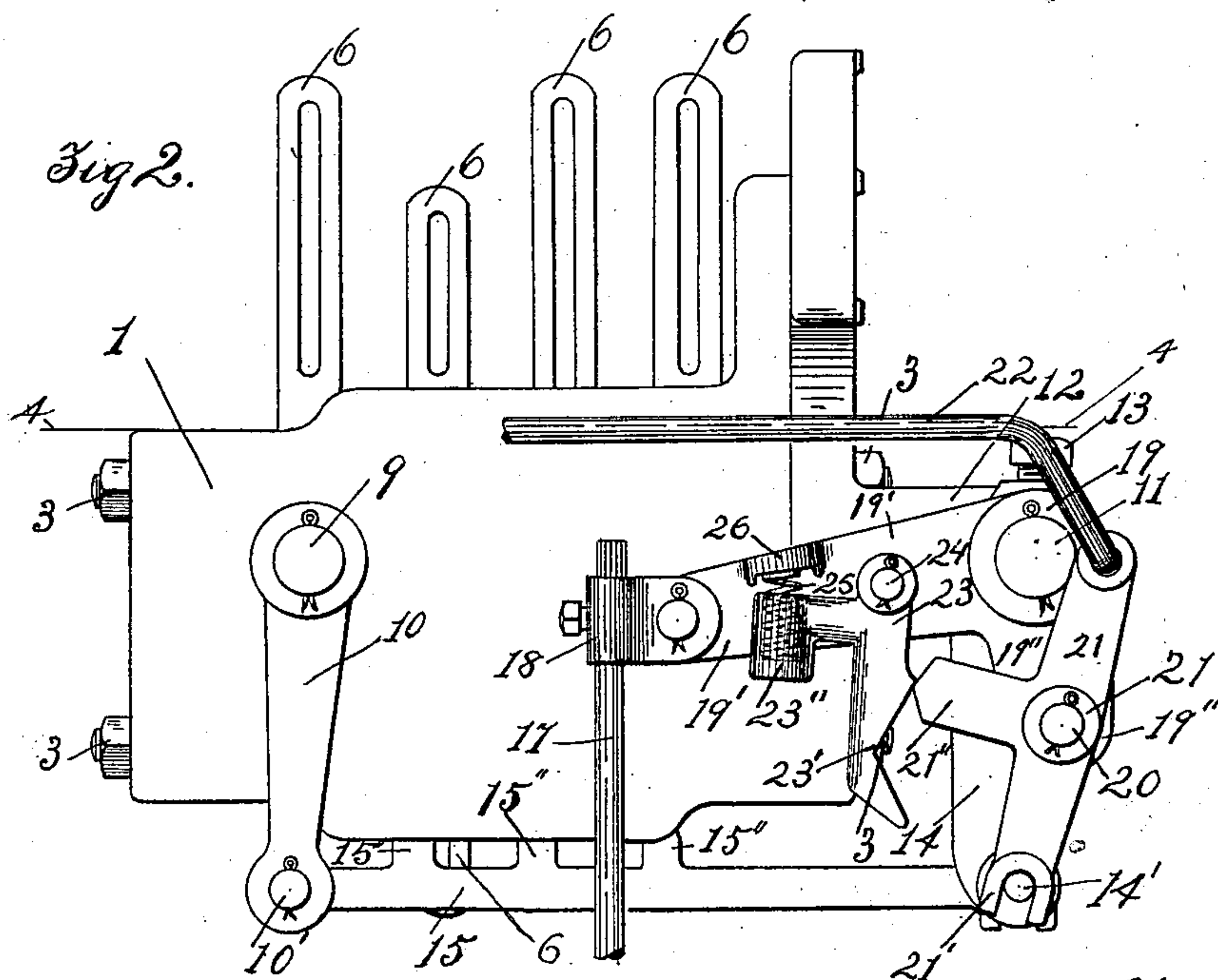
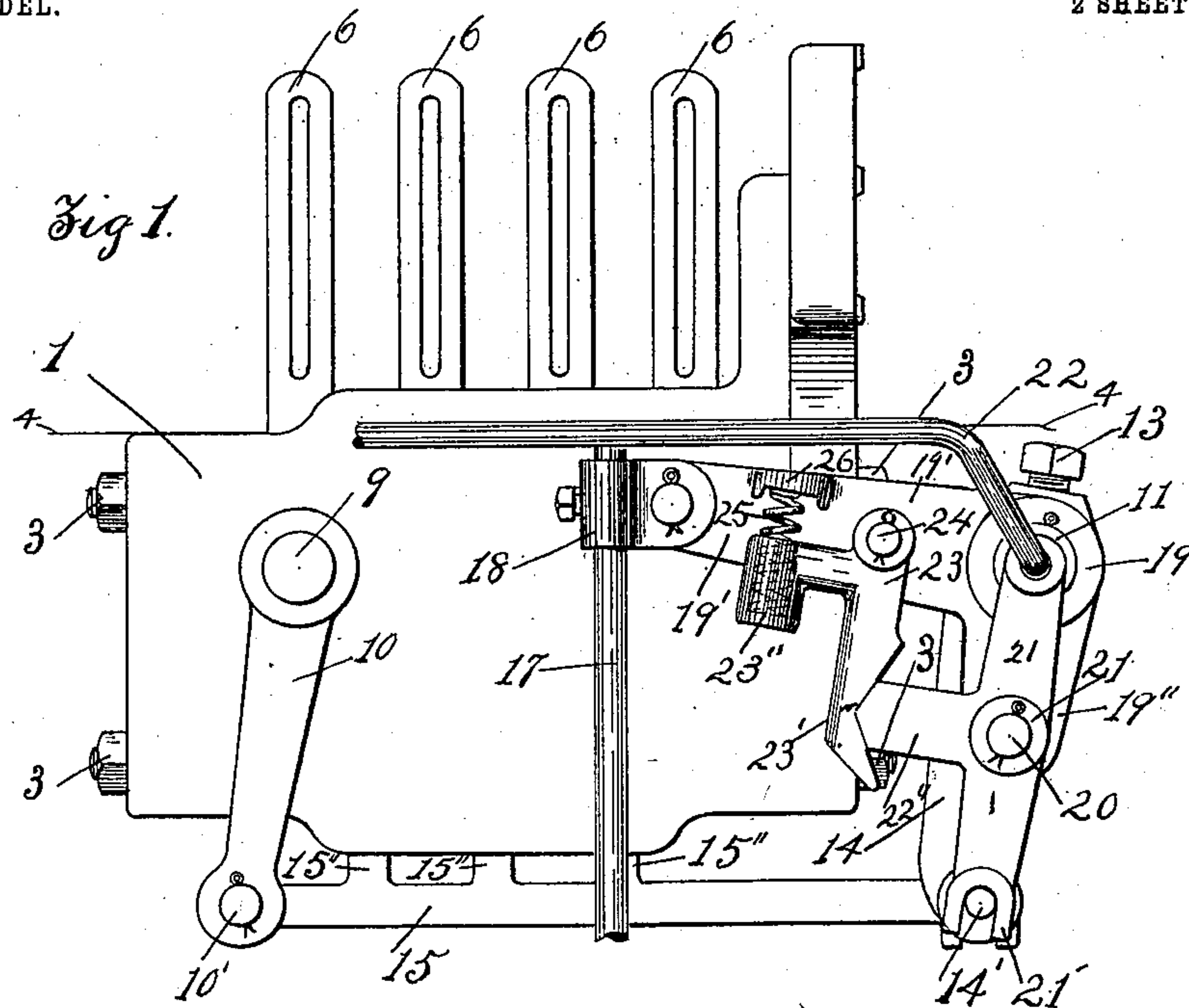
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PATENTED MAR. 17, 1903.

J. T. CYR.  
WARP STOP MOTION FOR LOOMS.  
APPLICATION FILED FEB. 17, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses  
H. M. Rugg  
J. A. Kinsley

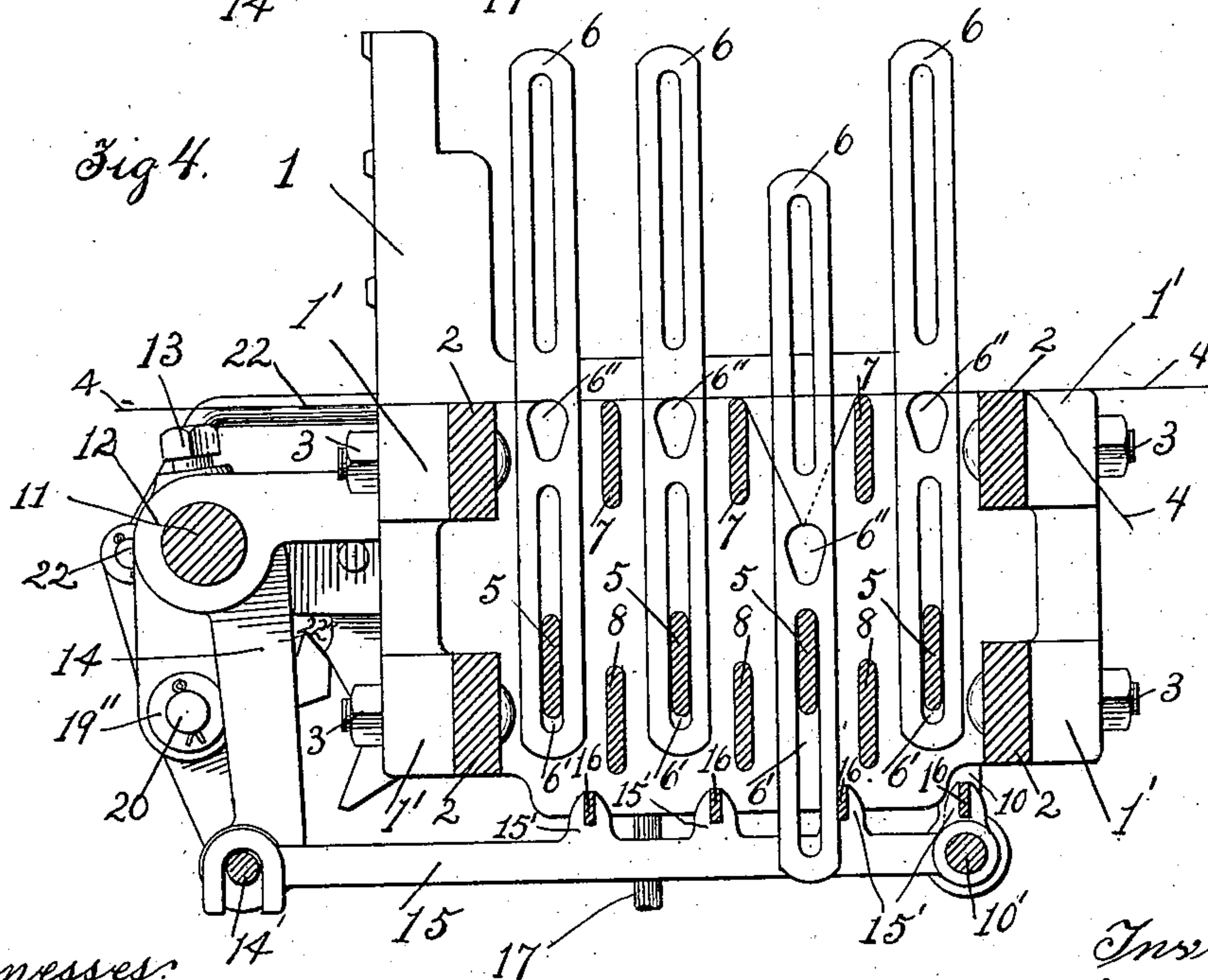
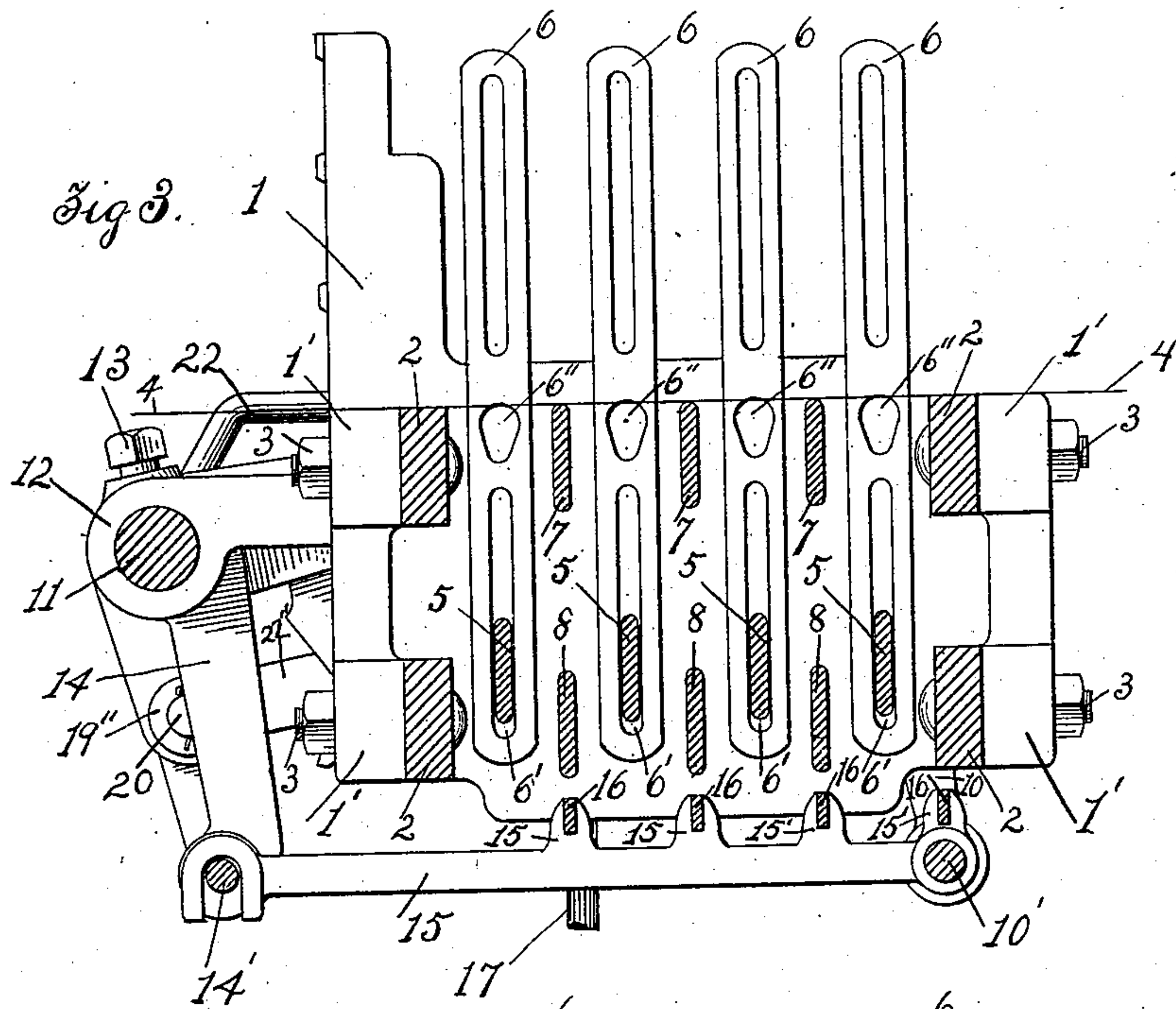
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Inventor:

*Joseph T. Cyr*

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# UNITED STATES PATENT OFFICE.

JOSEPH T. CYR, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO CROMPTON & KNOWLES LOOM WORKS, OF WORCESTER, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

## WARP STOP-MOTION FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 722,818, dated March 17, 1903.

Application filed February 17, 1902. Serial No. 94,370. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH T. CYR, 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 for Looms, of which the following is a specification.

My invention relates to warp stop-motions for looms, and more particularly to a mechanical warp stop-motion in which two or more sets of drop bars or wires are used, extending in parallel rows across the loom and each drop-bar supported on a warp-thread and held in its normal raised position by the intact warp-thread.

In the usual construction and operation of the feeler or detector blade, which extends below the drop-bars in a warp stop-motion and is adapted to be engaged by a drop-bar in its lowered position and through coacting mechanism operate to stop the loom, the feeler has a reciprocating or rocking motion in the arc of a circle. If two or more rows of drop-bars are used, it is necessary for the drop-bars in the outer rows to drop lower to be engaged by the feeler near the end of its rocking movement.

The object of my invention is to provide feeler or detector blades having a reciprocating movement in a substantially horizontal plane and means for moving the feelers, so that all the drop-bars will have the same distance to drop to extend in the path of the feelers.

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

Referring to the drawings, Figure 1 is an end view of portions of a warp stop-motion having four rows of drop-bars embodying my improvements. Fig. 2 corresponds to Fig. 1, but shows one of the drop-bars in its lowered position to engage one of the detector-blades and stop the movement thereof and through coacting mechanism (not shown) stop the loom. Fig. 3 is a transverse section through the warp stop-motion shown in end view in Fig. 1 looking in direction of said end, and Fig. 4 is a transverse section through the

warp stop-motion shown in end view in Fig. 2 looking in the direction of said end.

In the accompanying drawings, 1 is a casting or plate forming one end of the frame of the warp stop-motion. 2 denotes four transverse parallel bars secured at one end, by bolts 3 or otherwise, to lugs or ears 1' on the end plate 1 and at their other ends (not shown) to a corresponding end plate. (Not shown.) The upper pair of transverse bars 2 serve as rests or supports for all the warp-threads 4.

Extending between the end plate 1 and the other end plate (not shown) are in this instance four guide-bars 5 for four rows of drop-bars 6, having in this instance oblong openings or perforations 6' in their lower portions, through which guide-bars 5 extend.

The drop-bars 6 have openings or warp-eyes 6'', through which the warp-threads 4 pass, to support the drop-bars thereon when the warp-threads are intact in the usual way.

Extending between the rows of drop-bars 6 and secured to the end plates of the frame are the three parallel bars 7, extending, preferably, in the same horizontal plane as the upper pair of bars 2 and forming warp rests or supports for the warp-threads 4 between the rows of drop-bars 6. Also extending between the rows of drop-bars 6 at their lower ends and secured to the end plates of the frame are in this instance the three parallel guide-bars 8.

I will now describe the feeler or detector-blade mechanism, to which my improvements more particularly relate. In this instance there are four feeler or detector blades, one for each row of drop-bars 6. On a stud 9 on the outer side of the end plate 1 is pivotally mounted the upper end of a swinging arm 10. On a rock-shaft 11, mounted in a bearing at the end of an arm 12, secured to or forming part of the end frame 1, is fast, by a bolt 13, the upper end of the swinging arm 14. It will be understood that at the other end (not shown) of the frame there are two swinging arms, corresponding to the swinging arms 10 and 14, and also a bar corresponding to the bar 15, which extends in a horizontal plane and is pivotally mounted on rods 10' and 14', carried in the lower ends of the swinging arms



10 and 14. The bar 15 has in this instance four transverse parallel blades 16, secured at their ends in extensions 15' on the bar 15, one blade 16 for each row of drop-bars 6. The blades 16 extend in a horizontal plane below the drop-bars 6 when said bars are held in their normal raised position by intact warp-threads 4 (see Fig. 3) and in a plane above the lower ends of the drop-bar 6 when they are in their lowered positions (see Fig. 4) by reason of a broken warp-thread. The bar 15 and the blades 16 have a continuous reciprocating motion in a substantially horizontal plane during the operation of the loom as long as the intact warp-threads support the drop-bars 6 in their normal raised positions; but if any one of the drop-bars 6 drops by reason of the breaking of the warp-thread on which it is supported the reciprocating motion of the bar 15 and blades 16 is prevented by the engagement of one of the blades 16 with the lowered drop-bar, (see Fig. 4,) in which case through coacting mechanism the loom is stopped. A reciprocating motion is communicated to the bars 15 and blades 16 from a cam (not shown) on some driven shaft of the loom through a rod or connector 17, which is attached at its upper end to a link 18, pivoted on the end of one arm 19' of an angle-lever 19, loosely mounted on the rock-shaft 11. The other arm 19'' of the angle-lever 19 carries a stud 20, on which is pivotally mounted a three-arm lever 21. The lower arm of the lever 21 has a forked end 21' thereon, which engages the projecting end of the rod 14', connecting the lower ends of the swinging arms 14. The upper arm of the lever 21 is pivotally connected with the bent end of a rod or connector 22 at a point in line with the axis of rotation of the angle-lever 19. The other end (not shown) of the connector 22 is connected with mechanism (not shown) for stopping the loom. The side arm 21'' of the lever 21 is beveled at its free end and is adapted to engage a beveled recess 23' in a latch 23, pivoted on a stud 24 on the arm 19' of the angle-lever 19. The latch 23 has a projection 23'' thereon, recessed to receive a spiral compression-spring 25, the upper end of which bears against an ear 26 on the arm 19' of the angle-lever 19.

The spring-actuated latch 23 acts as a give-way connection or a yielding lock to lock or hold the lever 21 yieldingly in position relative to the angle-lever 19 during the normal operation of the loom, so that the lever 21 will move with the lever 19, which is actuated by the connector 17 and through its connection at its lower forked end 21' with the end of the rod 14' will communicate a swinging motion to the swinging arms 10 and 14 and a reciprocating movement in a substantially horizontal plane to the bars 15 and blades 16. The point of attachment of the connector 22 to the lever 21 being in line with the axis of rotation of the angle-lever 19, the connector

22 will be stationary during the reciprocating movement of the bars 15 and blades 16.

In case of a warp-thread breaking and allowing a drop-bar 6 to drop into the path of one of the reciprocating blades 16 to be engaged thereby and to stop the reciprocating movement of the bars 15 and the blades 16 the continued rocking movement of the angle-lever 19, loose on the rock-shaft 11 and operated by the connector 17, will cause the stud 20, on which the lever 21 is pivoted, to move to the right or left. (To the right, as shown in Fig. 2.) The lever 21, held at its lower slotted end 21' by engagement with the end of the rod 14', (the reciprocating movement of the blades 16 being blocked by the lowered drop-bar,) will be released from the locking or holding latch 23, and its upper end, by reason of its lower end being held on the end of the rod 14', will be moved to the right or left (in Fig. 4 shown to the right) to move the connector 22 and operate the mechanism (not shown) to stop the loom in the usual and well-known way.

In case a blade 16 engages a drop-bar 6 upon the opposite edge to that shown in Fig. 4 the operation of the lever 21, above described, will be repeated, except that the lever 21 will be moved to the left, instead of to the right and will move the connector 17 to the left instead of to the right, as shown in Fig. 4.

It will be understood that the details of construction of my improvements may be varied, if desired, and any equivalent mechanism for communicating a substantially horizontal reciprocating motion to the bar 15 and the blades 16 may be substituted for the mechanism shown and described. Also any equivalent mechanism may be substituted for the give-way connection between the angle-lever 19 and the lever 21.

I have shown in the drawings and described four rows of drop-bars; but a greater or less number of rows of drop-bars may be used. The guide-bars 5 for the drop-bars 6 are shown in the drawings below the plane of the warp-threads, but they may be above the plane of the warp-threads, if preferred, and extend through the perforations in the upper part of the drop-bars, as is customary, in which case there will be a clear space or opening at the lower ends of the drop-bars, and the guide-bars 8 will act as stops for the lower edges of the drop-bars to bear against when engaged by the blades 16.

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

1. In a warp stop-motion for looms, the combination of drop-bars, a series of feeler or detector blades, swinging arms supporting said blades to move in a substantially horizontal plane, means for swinging said arms comprising a loosely-mounted angle-lever, a three-arm lever pivotally mounted on said angle-



5 lever and connected to one of the swinging arms, a connector attached to one of the arms of said three-arm lever, and a yielding latch to cause the angle-lever and three-arm lever to move in unison during normal condition of the warp-threads and permit different movements of said levers upon the breaking of a warp-thread.

10 2. In a warp stop-motion for looms, the combination of drop-bars, a series of feeler or detector blades, swinging arms supporting said blades to move in a substantially horizontal plane, means for swinging said arms comprising a loosely-mounted angle-lever, a three-  
15 arm lever pivotally mounted on said angle-lever and connected to one of the swinging arms, a connector attached to one of the arms of said three-arm lever, and a spring-controlled latch mounted on the angle-lever and  
20 adapted to engage the three-arm lever to cause the angle-lever and three-arm lever to move in unison during normal condition of the warp-threads and permit different movements

of said levers upon the breaking of a warp-thread.

25 3. In a warp stop-motion for looms, the combination of drop-bars arranged in rows, a series of feeler or detector blades, means for moving said detector-blades in substantially a horizontal plane, said means comprising an  
30 angle-lever, a three-arm lever pivotally mounted on said angle-lever, connections between said three-arm lever and the feeler or detector blades, a connector attached to one arm of said three-arm lever, a yielding latch  
35 having a beveled recess to engage an arm of said three-arm lever to cause the angle-lever and three-arm lever to move in unison during normal condition of the warp-threads and permit different movements of said levers  
40 upon breaking of a warp-thread.

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Witnesses:

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