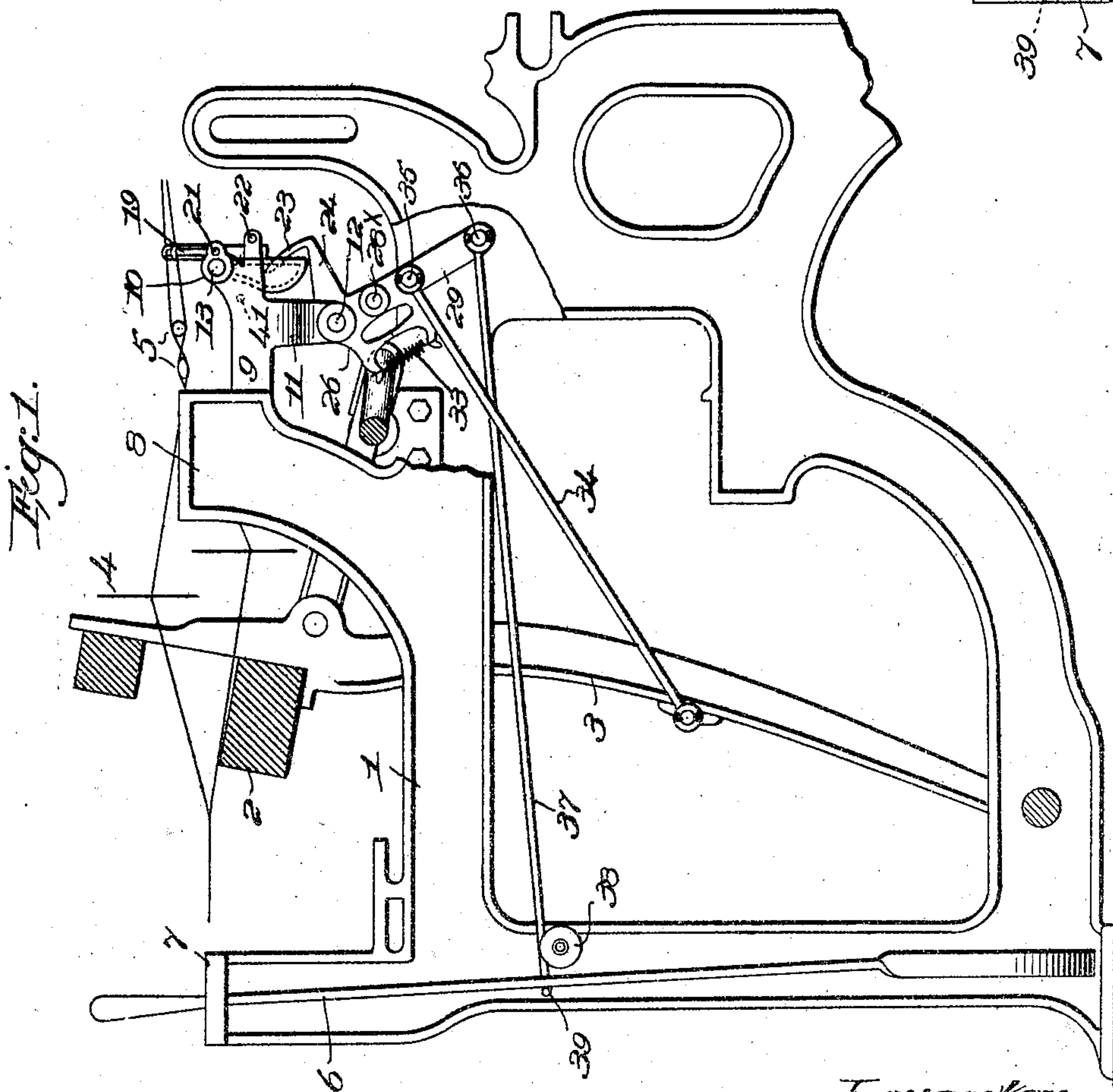
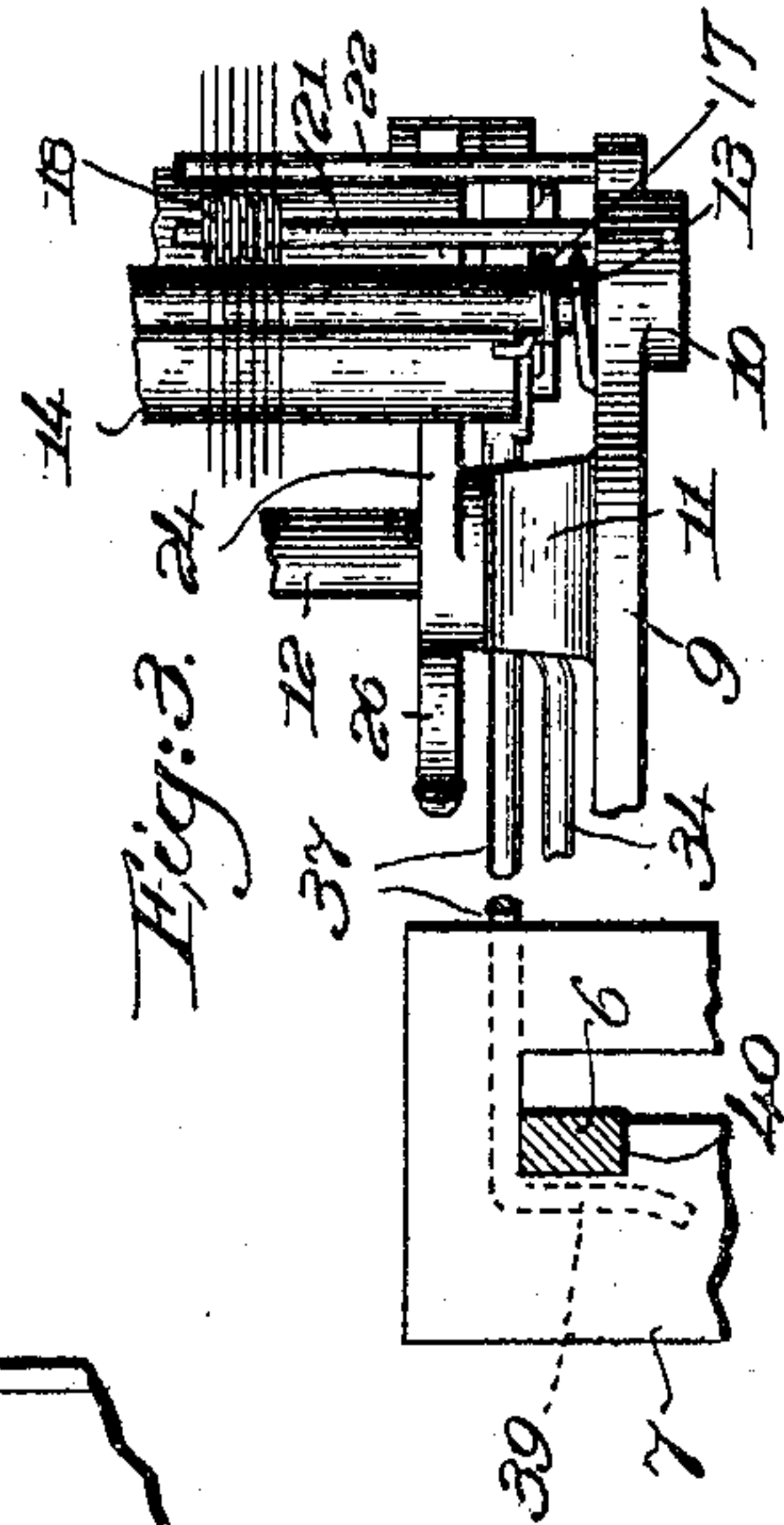
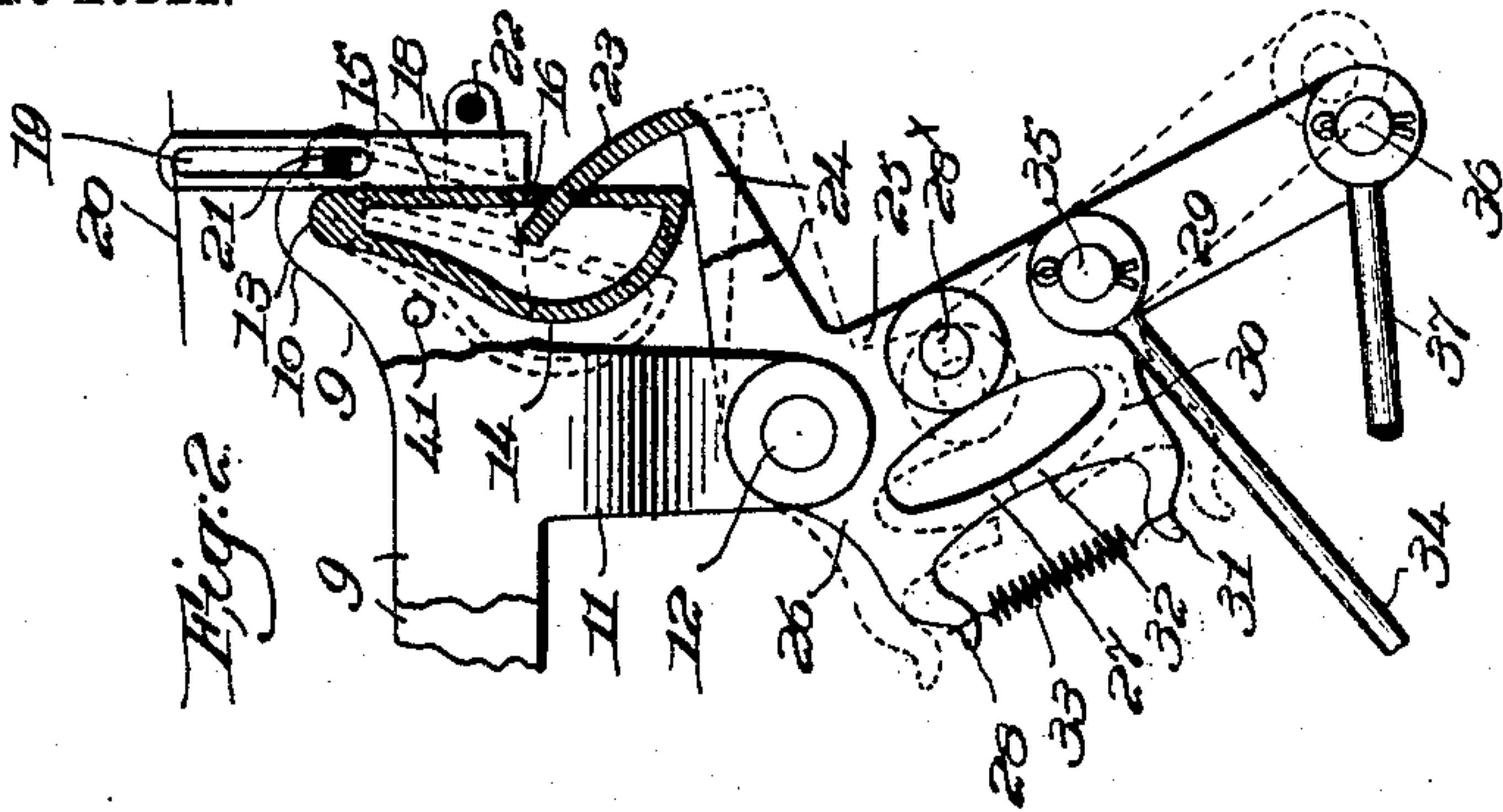


No. 775,452.

PATENTED NOV. 22, 1904.

J. T. MEATS.
WARP STOP MOTION FOR LOOMS.
APPLICATION FILED DEC. 24, 1903.

NO MODEL.



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UNITED STATES PATENT OFFICE.

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WARP STOP-MOTION FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 775,452, dated November 22, 1904.

Application filed December 24, 1903. Serial No. 186,478. (No model.)

To all whom it may concern:

Be it known that I, JOHN T. MEATS, a citizen of the United States, and a resident of Taunton, county of Bristol, State of Massachusetts, have invented an Improvement in Warp Stop-Motions for Looms, of which the following description, in connection with the accompanying drawings, is a specification, like figures on the drawings representing like
10 parts.

This invention has for its object the production of a novel, simple, and efficient warp stop-motion particularly adapted for use on looms for weaving, the leading features of the invention residing in a peculiarly constructed and operating actuator which effects the normal vibration of a feeler and also is arranged to cause the operation of a stopping instrumentality when the feeler coöperates with a
15 released detector and a novel construction and arrangement of parts whereby the bending tendency of a detector when engaged by the feeler is reduced to a minimum.

The various novel features of my invention, one practical embodiment of which is herein shown, will be fully described in the subjoined specification, and particularly pointed out in the following claims.

Figure 1 is a right-hand side elevation of a portion of a loom having one form of my invention embodied therein, the nearer loom side being broken out. Fig. 2 is an enlarged detail, partly in section and partly in elevation, to show more clearly the construction and arrangement of the novel features of the invention; and Fig. 3 is a detail in plan view of the right-hand support for the mechanism shown in Fig. 1 and the shipper-holding plate with the shipper in section.

The loom sides 1, lay 2, usual lay-swords 3, one being shown in Fig. 1, the harnesses 4, and lease-rods 5 may be and are of well-known or usual construction, the shipper 6 and its notched holding-plate 7 being in the present
45 instance shown at the right-hand side of the loom.

I have omitted the belt-shifting mechanism operated by the shipper, as the same forms

no part of my invention and may be of any desired or usual form.

Each of the upturned portions 8 of the loom sides on which the arch is sustained is provided with a rearwardly-extended bracket 9 below the warp-threads, said brackets having bearings 10 and depending hangers 11, in which is mounted a rock-shaft 12, extended across the loom.

The bearings 10 receive the journals 13 of a back-rest for the stop-motion-controlling detectors, said back-rest being made as a hollow casting 14, depending below the journals 13 and having a flat rear face 15 provided with a longitudinal slot or opening 16. (See Fig. 2.)

Referring to Fig. 3, a very light spring 17 is coiled around one of the journals 13 and is held at one end by the bracket 9, the other end engaging the back-rest and normally acting to retain the latter in the full-line position, Fig. 2 and as shown in Fig. 1. At such time the face 15 is vertical and adjacent the front edges of drop devices or detectors 18, which may be made of thin flat metal plates longitudinally slotted at 19 to receive the warp-threads 20 and hang suspended therefrom, the lower ends of the detectors then being above the opening 16 in the back-rest. A cylindrical rod 21 passes through the slots below the warp-threads and is held at its ends in extensions of the brackets 9 near the journal-bearings 10, the rod supporting a released detector. Below the supporting-rod 21 a guide rod or bar 22 is attached to the brackets 9, but near the lower ends and rearmost edges of the detectors, to prevent the draft of the warp from tipping said detectors forward on their support 21. A feeler 23, made as a light metallic blade, preferably slightly arched or curved transversely to increase its stiffness, is secured to rocker-arms 24, fast on and extended rearwardly from the rock-shaft 12, Figs. 1 and 3, whereby when the rock-shaft is oscillated the feeler will normally move into and out of the opening 16 in a path below the detectors. One of the arms 24 has a depending extension 25 and a forward extension 26, the latter hav-

ing a downturned lug 27 and a hook-like tip 28. (Clearly shown in Fig. 2.) An actuator is pivotally connected by a fulcrum-stud 28^x with the extension 25, the actuator being shown as a depending arm 29, having a forward extension 30 provided with a hooked end 31 and an upturned lug 32. A spring 33 is secured at its ends to the hooked extremities of the extensions 26 and 30 to thereby draw the lugs 27 and 32 together, (see Figs. 1 and 2,) so that the actuator 29 will swing on the rock-shaft 12 as a fulcrum unless the tension of the spring is overcome. The actuator is rocked or vibrated by any suitable moving part of the loom, and herein I have shown a link 34, pivotally connected at one end with the lay-sword 3 and at its other end having an eye to receive a stud 35 on the actuator or rocker. (See Fig. 1.) As the lay swings back and forth the actuator or rocker 29 and connected arm 24 will swing in unison on the rock-shaft as a fulcrum and vibrating the feeler in a manner readily understood, it being manifest that at such time the feeler and actuator move together as a unit. The actuator or rocker has a second stud, 36, below the stud 35, pivotally connected with a shipper-releasing device, shown as a rod 37, extended forward to the front of the loom side over a guide-roll 38 and bent at its front end, at 39, around the shipper. The length of the rod 37 is such that the normal amplitude of movement of the actuator is insufficient to move the releasing-rod 37 far enough to release the shipper from the holding-notch 40 in the plate 7 (see Fig. 3) on the back stroke of the actuator. When, however, the feeler is arrested by a released detector, an additional or increased movement is given to the actuator, as will be described, and the hook 39 is then moved far enough to cause release of the shipper, the unitary movement of the feeler and actuator then giving place to a movement of one relatively to the other.

Upon release of a detector 18 by failure or undue slackness of its warp-thread it drops down across the opening 16 in the back-rest 14, and as the edge of the feeler 23 engages the rear edge of such detector it causes the back-rest to swing forward into dotted-line position, Fig. 2, the released detector turning with it about the support 21 as a center. Such change in the position of the back-rest brings the edge of the feeler above the opening 16 and opposite a solid part of the rear wall 15, so that the strain upon the detector does not come opposite the opening 16.

The feeler-pressure against the detector is resisted only by the very light spring 17 and the slight weight of the back-rest, an additional pressure about the time the shipper is released being brought to bear only after the back-rest has been swung into dotted-line position, Fig. 2, against a fixed pin or stop 41 on each bracket 9. The risk of bending the

engaged detector is thereby reduced to a minimum.

When the back-rest brings up against its stops 41, the actuator has not reached the end of its rearward stroke, as at such time the lay has not reached its rearmost position, and thereupon the fulcrum of the actuator is shifted from the fixed fulcrum, the rock-shaft 12, to the movable fulcrum, the connecting or pivot stud 28^x, then in dotted-line position, Fig. 2. As the backward stroke of the actuator is completed about the stud 28^x as a fulcrum it will be manifest that the lower end of the actuator will be given an increased or additional movement, and the bent rod 37 will release the shipper to effect stoppage of the loom, the actuator moving relatively to the feeler. By the shift of fulcrum the point on which the actuator rocks is brought much nearer the point of connection between the actuator and link 34, and inasmuch as the latter has a fixed stroke the amplitude of movement of the actuator is increased, such abnormal movement thereof being made effective to cause the operation of the stopping instrumentality. Herein the shipper is released when the lay is practically on back center; but by reversing the parts so that the feeler is moved rearward on its feeling stroke it will be manifest that the shipper could be released when the lay reached front center. In that case the lugs 27 and 32 would be behind the extension 25 and the actuator, while the rocker-arms 24 would extend forward from the rock-shaft 12. When the arrest of the feeler, as described, prevents further turning of the rock-shaft and the actuator is rocked on the stud 28^x, the spring 33 is stretched, while the lugs 27 and 32 separate, contraction of the spring causing reengagement of the lugs, which normally serve to maintain the proper relative position of rock-shaft and feeler to the actuator when the loom is running under normal conditions, and to cause the normal movement of the feeler and actuator as a unit.

I have shown one very simple and direct form of releasing device for the shipper, the same acting by direct engagement with the shipper; but my invention is not restricted to such precise construction and arrangement nor to other details of construction illustrated and described, as the same may be varied or modified in different particulars by those skilled in the art without departing from the spirit and scope of my invention.

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

1. In a loom, warp-stop-motion-controlling detectors movable into operative position by failure or undue slackness of their warp-threads, a rocking actuator adapted through a change in its fulcrum to effect the operation of a stopping instrumentality, a direct con-

nection between the actuator and a moving part of the loom, a feeler, and means operative by or through engagement therewith by a released detector to change the fulcrum of the actuator.

2. In a loom, warp-stop-motion-controlling detectors movable into operative position by failure or undue slackness of their warp-threads, an actuator directly connected with and vibrated by a moving part of the loom and adapted through abnormal vibration to effect the operation of a stopping instrumentality, a feeler to cooperate with a released detector, and means operative by or through such cooperation to cause abnormal vibration of the actuator.

3. In a loom, warp-stop-motion-controlling detectors movable into operative position by failure or undue slackness of their warp-threads, an actuator directly connected with and vibrated by a moving part of the loom and adapted through additional movement to effect the operation of a stopping instrumentality, a feeler to cooperate with a released detector, and means acting upon such cooperation to impart additional movement to the actuator.

4. In a loom, warp-stop-motion-controlling detectors movable into operative position by failure or undue slackness of their warp-threads, a feeler mounted to rock on a fixed fulcrum, an actuator movable with the feeler as a unit and also adapted to rock relatively thereto to cause the operation of a stopping instrumentality, and a connection between the actuator and a moving part of the loom, cooperation of the feeler with a released detector causing the actuator to rock relatively to the feeler and independently of the fulcrum thereof.

5. In a loom, an actuator directly connected with and vibrated by a moving part of the loom, fixed and movable fulcrum for said actuator, a shipper, releasing means therefor operated by said actuator, and means operative by or through failure or undue slackness of a warp-thread to shift the movement of the actuator from the fixed to the movable fulcrum and cause release of the shipper.

6. In a loom, a movable actuator directly and positively connected with and operated by or through a moving part of the loom and adapted through increased movement to cause the operation of a stopping instrumentality, and means operative upon failure of a warp-thread to effect increased movement of the actuator.

7. In a loom, detectors maintained inoperative by normal warp-threads, a feeler to cooperate with a released detector, a shipper and a releasing device therefor, and a vibrating actuator operatively connected with said device and the feeler and having two fulcrum, the actuator and feeler normally moving as a unit, engagement of the feeler with a released detec-

tor causing the center of vibration of the actuator to be changed from one to the other fulcrum to operate the releasing device, said actuator at such time moving relatively to the feeler.

8. In a loom, detectors maintained inoperative by normal warp-threads, a pivotally-mounted, cooperating feeler, an actuator vibrated by a moving part of the loom and pivotally connected with the feeler eccentric to its fulcrum, a spring to normally cause the actuator and feeler to rock as a unit on the fulcrum of the latter, a shipper, and a releasing device therefor connected with the actuator, engagement of a feeler with a released detector causing the actuator to rock on its pivotal connection and relatively to the feeler, to thereby operate the releasing device.

9. In a loom, detectors maintained inoperative by normal warp-threads, a cooperating feeler mounted to rock on a fixed fulcrum, a vibrating actuator, a pivotal connection between it and the feeler eccentric to the fulcrum of the latter, yielding means to cause the feeler and actuator to rock normally as a unit on the fixed fulcrum of the feeler, and a shipper-releasing device operatively connected with the actuator, engagement of the feeler with a released detector causing the actuator to rock on its pivotal connection independently of and relatively to the feeler and thereby operate said releasing device.

10. In a loom, a series of detectors maintained inoperative by intact warp-threads, a pivotally-mounted back-rest adjacent the detectors and having a feeler-opening, a feeler normally movable into and out of said opening below the detectors, a released detector engaging the feeler and causing the back-rest to swing, whereby upon stoppage of the feeler it engages the detector above the opening in the back-rest, a stop to limit movement of the latter, and shipper-releasing means operated by or through such arrest of the feeler.

11. In a loom, a series of detectors maintained inoperative by intact warp-threads, a longitudinally-slotted, spring-controlled back-rest adjacent the detectors, a rocking feeler normally movable below the latter into and out of the slot, an actuator vibrated by a moving part of the loom and pivotally connected with the feeler eccentric to its fulcrum, a spring connecting the feeler and actuator to cause them to normally rock in unison on the feeler-fulcrum, a shipper-releasing device operatively connected with the actuator, and a stop for the back-rest, engagement of the feeler with a released detector swinging the back-rest against its stop and moving its slot out of the feeler-path, arresting the feeler and thereby causing the actuator to rock on its pivotal connection and actuate the shipper-releasing device.

12. In a loom, a series of detectors main-

tained inoperative by intact warp - threads, a longitudinally - slotted, spring - controlled back - rest adjacent the detectors, a rocking feeler normally movable below the latter into
5 and out of the slot, and adapted when arrested to cause the operation of a stopping instrumentality, and a fixed stop for the back - rest, engagement of the feeler with a released detector swinging the back - rest against its stop,
10 arresting the feeler and moving the slot of said back - rest out of the feeler - path, whereby the back - rest supports the detector with a minimum bending tendency.

13. In a loom, a series of detectors maintained inoperative by intact warp - threads, a
15 back - rest and a vibrating feeler, mounted on separate, fixed fulcra, said back - rest having an opening normally in the feeler - path below the detectors, arrest of the feeler by engagement with a released detector being adapted
20 to cause the operation of a stopping instrumentality, and a fixed stop to limit movement of the back - rest, coöperation of a detector and feeler swinging said back - rest against its stop
25 and moving its opening out of the feeler - path, to firmly support the detector opposite its point of engagement with the feeler.

14. In a loom, a series of longitudinally - slotted detectors maintained inoperative by intact
30 warp - threads, a pivotally - mounted back - rest adjacent the detectors, a detector - support extended through the detector - slots and fixedly sustained, the back - rest having a feeler - opening below the detectors, and a normally vi-

brating feeler movable into and out of the 35 opening and adapted when arrested to operate a stopping instrumentality, and a fixed stop to limit movement of the back - rest, coöperation of a detector and feeler swinging said back - rest against its stop and moving its 40 opening out of the feeler - path, to firmly support the detector opposite its point of engagement with the feeler.

15. In a loom, detectors maintained inoperative by normal warp - threads, a feeler to co- 45 operate with a released detector, a rock - shaft having arms on which the feeler is mounted, and a depending arm, an actuator fulcrumed thereon and vibrated by a moving part of the loom, lugs on the rock - shaft and actuator on 50 the side of the former opposite the feeler, a spring to normally maintain the lugs in engagement, and a shipper - releasing device connected with the actuator, the latter and the feeler normally vibrating in unison, engage- 55 ment of the feeler by a released detector stopping the rock - shaft and causing the actuator to rock on the depending arm to operate the shipper - releasing device, the spring stretching to permit separation of the lugs at such 60 time.

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

JOHN T. MEATS.

Witnesses:

JOHN C. EDWARDS,

ELIZABETH R. MORRISON.