

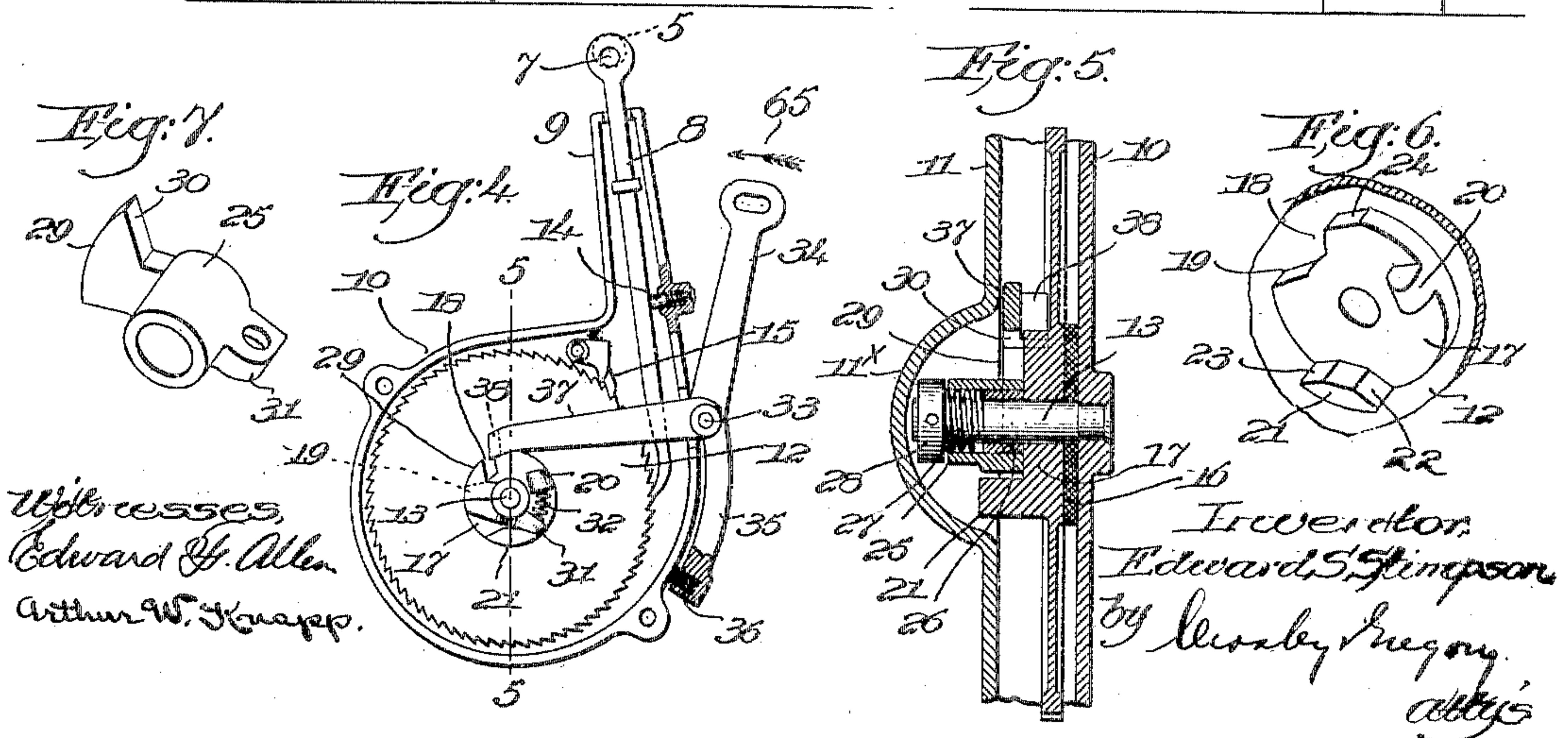
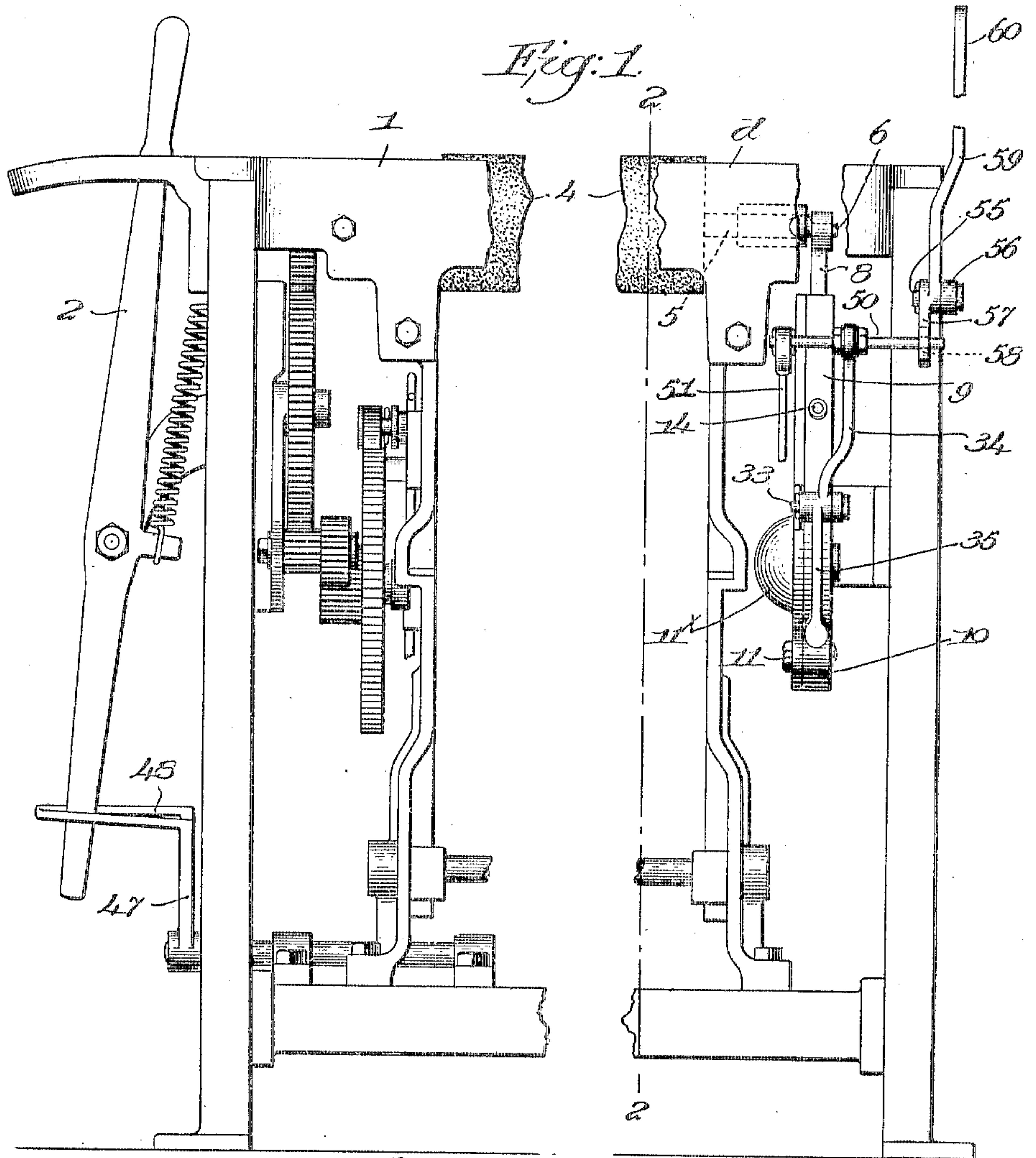
No. 793,964.

PATENTED JULY 4, 1905.

E. S. STIMPSON.
STOPPING MEANS FOR LOOMS.

APPLICATION FILED FEB. 18, 1905.

2 SHEETS—SHEET 1.



Witnesses,
Edward H. Allen
Arthur W. Knapp.

Inwitness whereof
Edward S. Stimpson
by Lewis Sugony
attys

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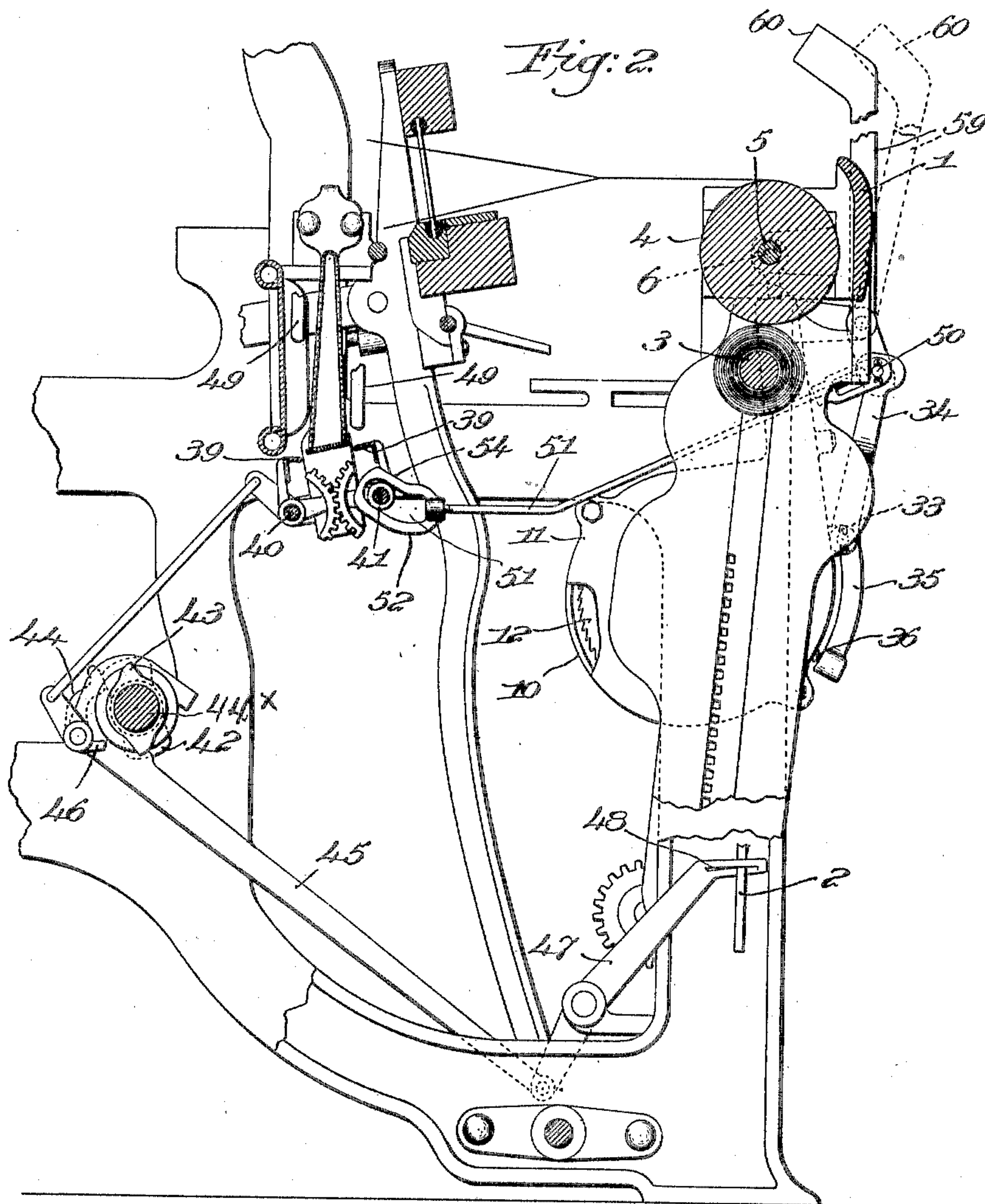
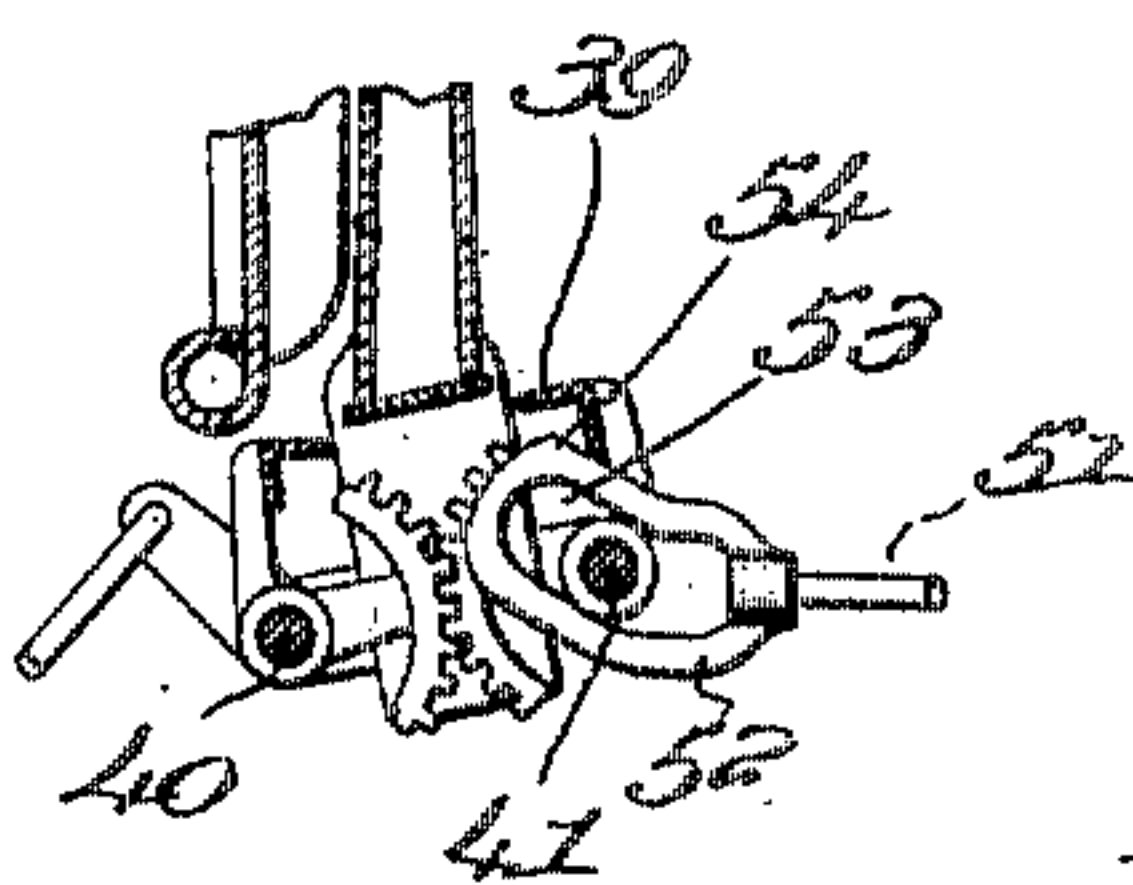


Fig. 3.



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UNITED STATES PATENT OFFICE.

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STOPPING MEANS FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 793,964, dated July 4, 1905.

Application filed February 18, 1905. Serial No. 246,236.

To all whom it may concern:

Be it known that I, EDWARD S. STIMPSON, a citizen of the United States, and a resident of Hopedale, county of Worcester, State of Massachusetts, have invented an Improvement in Stopping Means for Looms, of which the following description, in connection with the accompanying drawings, is a specification, like numerals on the drawings representing like parts.

This invention has for its object the production of means to effect automatically the stoppage of a loom when a predetermined length or "cut" of cloth has been woven and taken up by the take-up mechanism, means being also provided to indicate or signal to the weaver that the loom has stopped for that particular reason.

It is common practice to place one weaver in charge of a number of looms, particularly when the latter are provided with automatic warp stop-motion and filling-replenishing mechanisms, the number of looms in a group running from sixteen upward.

By providing means to stop a loom automatically when a predetermined length of cloth has been woven the weaver can give her general attention to all of the looms in her charge, knowing that no loom can weave more than the desired cut without stopping. To facilitate still further the work of the weaver, the signal or indicator is provided to indicate when a loom stops that the stoppage is due to the fact that the desired length of cloth has been woven.

The various novel features of my invention will be fully described in the subjoined specification, and particularly pointed out in the following claims.

Figure 1 is a front elevation, centrally broken out, of a sufficient portion of a loom to be understood with one embodiment of my invention applied thereto. Fig. 2 is a transverse section thereof on the line 2 2, Fig. 1, looking toward the right, a portion of the warp-stop-motion mechanism being shown. Fig. 3 is a detail of one part of the device which effects the actuation of the stopping

instrumentality when the cut has been woven. Fig. 4 is an inner side elevation of the cloth-measuring means shown at the right, Fig. 1, the nearer side of the casing being removed. Fig. 5 is an enlarged sectional detail thereof on the line 5 5, Fig. 4. Fig. 6 is a perspective face view of the measuring member and a portion of the attached actuating-ratchet, and Fig. 7 is a perspective view detached of the yielding abutment, which coöperates with the measuring member in a manner to be described.

The breast-beam 1, shipper 2, the cloth-roll shaft 3, on which the cloth is wound as taken up, the take-up or sand roll 4, and the mechanism for operating the latter, may be and are all of well-known construction and need not be described in detail, the take-up mechanism being shown as substantially that forming the subject-matter of United States Patent No. 610,636, granted to J. H. Northrop September 13, 1898.

In the present embodiment of my invention one end of the take-up-roll journal 5 is provided with an eccentric stud 6, Figs. 1 and 2, which enters loosely an eye 7, Fig. 4, of a depending elongated pawl 8, which enters the upturned neck 9 of a circular casing 10, secured to the loom side and provided with a removable cover 11. The pawl coöperates with a ratchet 12, rotatably mounted on a stud 13, secured to the back of the casing, a spring-controlled plunger 14, Fig. 4, bearing on the pawl and maintaining it in engagement with the ratchet, while a suitable detent-pawl 15 prevents retrograde movement of the ratchet.

As shown in Fig. 5, a washer 16 is interposed between the ratchet and the back of the casing, and secured to or forming a part of the ratchet on its opposite face a measuring member is provided, shown as a disk 17, having a peripheral notch 18, having its rear side flared to form a cam 19 for a purpose to be described. A spring-seat 20 and an abutment-stop 21 are formed on the face of the measuring member, as clearly shown in Fig. 6, the stop having oppositely-beveled faces 22 23.

The periphery of the member 17 is slabbed off or cut away at 24 adjacent the front or leading side of the notch 18. (Best shown in Fig. 4.) A sleeve-like hub 25 is slipped
 5 loosely onto the stud 13 and against the face of the disk 17, surrounding a bushing 26, Fig. 5, against which bears a spring 27, coiled around the stud and held in place by a nut 28, pinned or otherwise secured to the stud, the
 10 spring acting through the bushing to form a friction-detent for the measuring member 17 and prevent too free movement thereof. The cover 11 of the casing is bulged out at 11^x to provide room for the stud and the hub 25.

15 Referring now to Fig. 7, the hub 25 is provided with a radially-extended segmental abutment 29, having a non-radial face 30, the curved end of the abutment corresponding with the curvature of the disk 17. (See Fig.
 20 4.) A lug 31 on the hub is socketed to receive one end of a spring 32, the other end resting in the spring-seat 20 on the disk, as shown in Fig. 4, the spring normally holding the lug 31 against the stop-face 22. At such
 25 time the face 30 of the abutment is substantially parallel to the leading side of the notch 18, the cam side 19 being covered by the abutment. (See dotted lines, Fig. 4.) As the take-up roll 4 rotates the pawl 8 will be re-
 30 ciprocated, and by coöperation with the ratchet 12 the measuring member 17 will be slowly rotated step by step, each revolution of the roll 4 imparting one complete stroke to the pawl. Outside of the case, and on the
 35 front portion thereof, is mounted a horizontal stud 33, on which is fulcrumed a three-armed lever comprising an upturned indicator and stop-motion controlling arm 34, a depending
 40 arm 35 pressed outward by the action of a spring 36, Fig. 4, and an intumed arm or tripping-lever 37 projecting into the casing. This tripping-lever extends parallel and ad-
 45 jacent the face of the measuring member 17 and at its free end is provided with a lateral toe 38, which normally rests on and travels upon the periphery of said member, the lever being
 50 located in the plane of the abutment 29. The spring 36 keeps the toe pressed against the periphery of the member 17 and snaps it into the notch 18 when the latter in the rotation
 55 of the said member 17 is brought beneath the toe.

Referring to Fig. 2, a sufficient portion of a well-known warp-stop-motion mechanism is
 55 shown including two oppositely-vibratable feelers 39, mounted on rock-shafts 40 41, connected by segmental gears, a feeler-cam 42, and a tappet-cam 43, both mounted on the cam-shaft 44^x of the loom, a follower 44, and
 60 connections between it and the rock-shaft 40 to normally vibrate the feelers. A link 45 carries the follower and a bunter 46, the link being connected with a knock-off arm 47, ful-
 65 crumed on the loom-frame and having a cam-slot 48, through which the lower end of the

shipper 2 extends. Engagement of a feeler with a released detector 49 in its coöperating bank acts to operatively position the bunter 46 with relation to the tappet-cam 43 to move
 70 the link 45 longitudinally, and thereby rock the knock-off arm 47 and release the shipper, effecting stoppage of the loom. Herein I effect stoppage of the loom through such in-
 75 strumentality when the predetermined length or cut of cloth has been woven. To this end the upper end of arm 34 has secured to it a laterally-extended rod 50, pivotally con-
 80 nected at one end with a rearwardly-extended link 51, provided at its rear end with a plate 52, having a cam-slot 53, through which one of the feeler rock-shafts, as 41, passes, Figs.
 85 2 and 3. The plate 52 projects under the lower edge of the adjacent feeler and normally is positioned as shown in Fig. 2, so that the feeler can rock freely. When the arm 34 is
 90 swung to the rear by the cloth-measuring means, as will be explained, the link 51 moves the plate 52 upward and rearward into the position shown in Fig. 3, so that its upper edge
 95 54 engages the lower edge of the feeler and arrests its inward or feeling movement just as if a dropped detector had caused such arrest. As a result the stopping instrumental-
 100 ity is caused to operate, releasing the shipper and bringing the loom to rest. The warp stop-motion is substantially that shown in United States patent to Sawyer, No. 763,119, to
 105 which reference may be had. A stud 55, Fig. 1, secured to the front of the loom-frame, at the right-hand side, has mounted upon it a hub 56, provided with a depending arm 57,
 110 slotted at 58 to receive the outer end of the rod 50, said hub having a second upturned arm 59 extended a suitable distance above the breast-beam and carrying a plate or target 60,
 115 Fig. 2, constituting a visual signal or indicator. Under normal conditions the indicator is held in the position shown; but when the loom is stopped through the operation of the
 120 cloth-measuring means the indicator is moved positively into dotted-line position, Fig. 2, indicating to the weaver that the cut has been woven and that the loom has been stopped for that reason.

The operation of the cloth-measuring means
 115 will now be described, and referring to Fig. 4 the parts are shown in position as just about to operate. When the forward movement of the ratchet 12 has brought the toe 38 of the
 120 tripping-lever onto the cut-away part 24 of the measuring member 17, the free end of said lever is thereby lowered into the path of movement of the face 30 of the abutment 29, and as rotation of the ratchet continues the
 125 abutment will be stopped, compressing the spring 32 as the disk 17 continues its forward movement. When such forward movement has been sufficient to carry the toe past the leading side of the notch 18, the spring 36
 130 being the stronger immediately expands and

throws the toe down into said notch, thereby rocking the tripping-lever and the upturned rigidly-connected arm 34, the latter moving rearward in the direction of the arrow 65, Fig. 4. Such movement operates through the rod 50 to operatively position the camplate 52, as shown in Fig. 3, whereby the operation of the stopping instrumentality is effected, and at the same time the arm 57 is swung inward, throwing out the indicator 60 into indicating position, the movement of the indicator being positively effected by the connections hereinbefore described between it and the upturned arm 34. It will be understood that one complete revolution of the ratchet 12 will correspond to a cut of cloth containing a predetermined number of yards, although by setting forward the measuring member 17, as will be explained, a less number of yards can be woven and the loom stopped when such length has been completed. Supposing now that the toe 38 is in the notch 18, the loom having come to a stop, when the cut has been removed and the loom is in readiness to be started the weaver will take hold of the upper end of the arm 34 and pull it forward, thereby lifting the tripping-lever 37, removing its toe from the notch 18, and instantly the spring 32 will throw forward the abutment into its normal position, (shown in Fig. 4;) but such forward movement will carry the periphery of the abutment underneath the tripping-lever. The loom can now be started, and it will not be stopped, so far as the measuring means is concerned, until one complete revolution of the ratchet 12 has been effected. Were it not for the described action of the abutment moving under the tripping-lever it will be manifest that the weaver would have to hold down the arm 34 until the loom had run long enough to carry the notch 18 past the toe of the tripping-lever; but the abutment by the automatic action described operates as a setting and retaining device. If for any reason the weaver desires to turn over the take-up mechanism by or through rotation of the usual pick-wheel without interfering with or operating any other instrumentality of the loom, this can be done and without manually disengaging the tripping-lever from the notch of the measuring member. Such rotation of the take-up mechanism if continued far enough will cause the toe 38 to ride up on the cam side 19 of the notch and onto the periphery of the abutment, the latter thereupon instantly returning to its normal position with relation to the measuring member. The face 23 of the stop 21 limits the movement of the abutment when operated against its controlling-spring 32. If it is desired to weave a shorter length of cloth than is provided by a complete revolution of the measuring member 17, it can be accomplished by the weaver turning forward the ratchet to shorten the length of the pe-

riphery of the disk 17 over which the toe 38 travels before coming opposite to the notch. This, however, could only be done by removing the cover of the casing 10 and would therefore indicate to the overseer any unwarranted attempt of the weaver to shorten the length of the cut. The indicator is positively connected with and at all times under absolute control of the cloth-measuring means and will only be moved into indicating position when the stoppage of the loom is effected by or through the operation of the said measuring means.

My invention is not restricted to the precise construction and arrangement herein shown and described, as the same may be modified or rearranged in various 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, in combination, take-up mechanism, including a take-up roll and cloth-measuring means, including a measuring member, a pawl and ratchet to rotate it, an eccentric stud on one of the take-up-roll journals, the pawl being mounted on and reciprocated by said stud, and a tripping device governed by and normally maintained inoperative by the measuring member, rotation of the latter corresponding to a predetermined length of cloth taken up operating the tripping device, the latter when operated being adapted to effect the actuation of a loom-stopping instrumentality.

2. In a loom, in combination, take-up mechanism, cloth-measuring means, including a rotatable, notched disk, step-by-step actuating connections between it and the take-up mechanism, a tripping device normally maintained inoperative by the disk and rendered operative by entrance into the notch, operation of such tripping device being adapted to effect the actuation of a stopping instrumentality, and means to withdraw automatically said tripping device from the notch by continued rotation of the disk.

3. In a loom, in combination, take-up mechanism, cloth-measuring means, including a rotatable disk notched step by step by or through the take-up mechanism and provided with a peripheral notch, a yielding abutment rotatable with the disk adjacent the notch, a tripping-lever having a toe to travel normally on the periphery of the disk and enter the notch, the end of the lever engaging and pressing the abutment back as the toe enters the notch to rock the lever, and means operated by or through such rocking of the lever to effect the stoppage of the loom, manual withdrawal of the toe from the notch releasing the abutment and permitting it to move forward under the lever and hold it in inoperative position.

4. In a loom, in combination, take-up mechanism, cloth-measuring means, including a disk rotatable step by step by said mechanism and provided with a peripheral notch having
5 a cam side, a tripping-lever having a toe to normally travel upon the periphery of the disk and enter the notch, entrance of the toe into the notch rocking said lever, and means operated thereby to effect automatically the stop-
10 page of the loom, forward rotation of the disk thereafter causing the lever-toe to travel up the cam side and out of the notch.

5. In a loom, take-up mechanism, cloth-measuring means actuated thereby, including
15 a rotating disk having a peripheral notch, a tripping-lever having a toe to normally travel on the periphery of the disk, and a yielding resetting device movable with the disk, combined with a stopping instrumentality for the
20 loom the operation whereof is effected by movement of the lever when its toe enters the notch of the disk, manual withdrawal of the toe from the notch permitting the resetting device to pass under and retain the lever in
25 normal position.

6. In a loom, take-up mechanism, cloth-measuring means actuated thereby, including a rotating disk having a peripheral notch, a
30 spring-controlled tripping-lever having a toe to travel normally on the periphery of the disk, the periphery thereof being cut away

adjacent the leading side of the notch, and a segmental, spring-controlled abutment rotatable with the disk adjacent the notch, combined with a stopping instrumentality for the
35 loom actuated by or through said lever when its toe enters the notch, the cut-away portion of the disk permitting the end of the lever to engage and press back the abutment as the
40 toe enters the notch, subsequent return of the lever to normal position permitting the abutment to pass under the lever and hold the toe out of the notch when the loom is started.

7. In a loom, a stopping instrumentality adapted to be operated by or through a warp
45 fault, take-up mechanism, a visual indicator, controlling means therefor and positively connected therewith and governed by the take-up mechanism, to move the indicator into indicating position and effect the operation of
50 the stopping instrumentality when a predetermined length of cloth has been taken up, and operating connections between the controlling means and the stopping instrumentality.
55

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

EDWARD S. STIMPSON.

Witnesses:

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ERNEST W. WOOD