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LOOM FEELER MECHANISM

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2 Sheets-Sheet 1

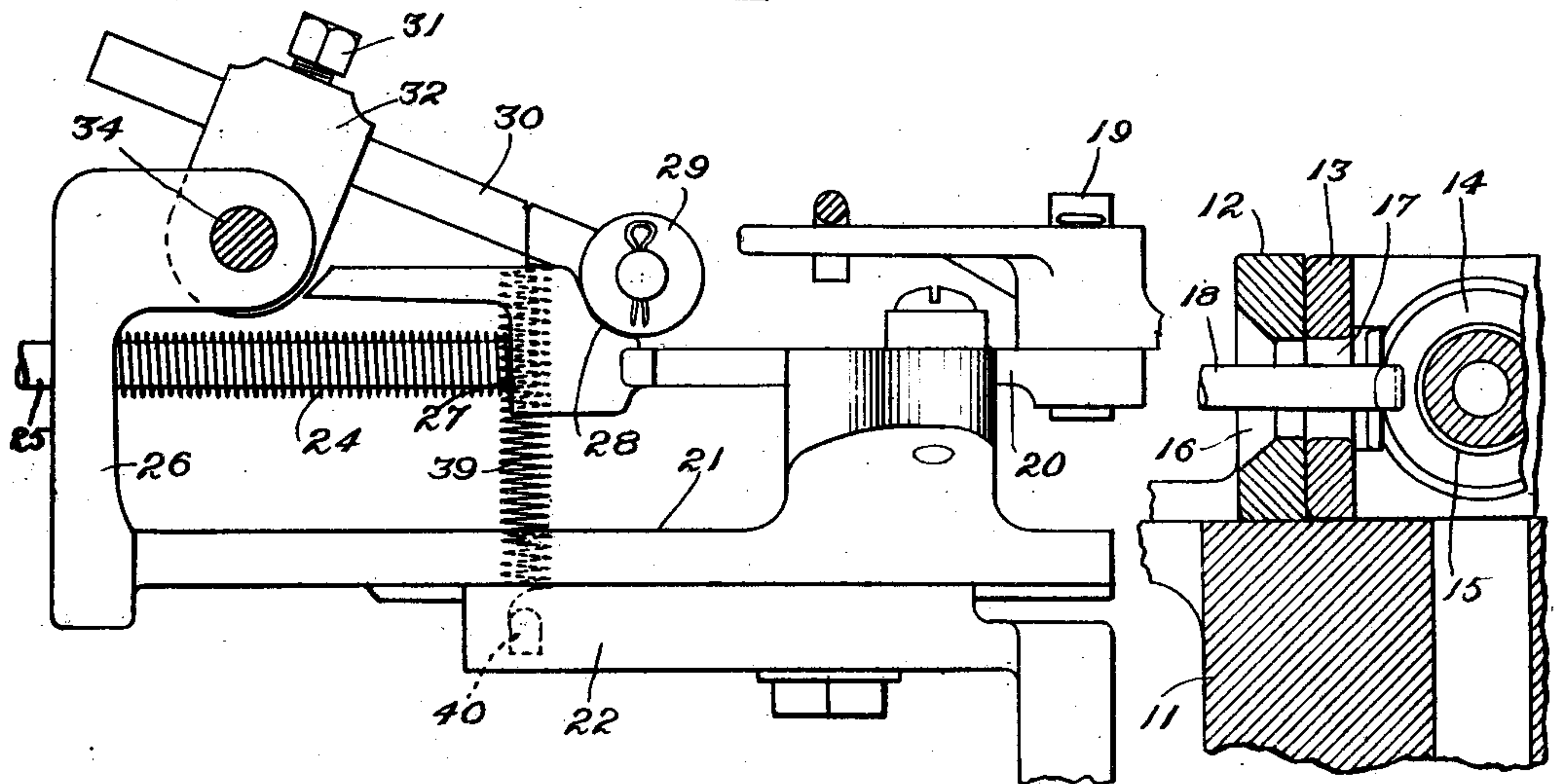
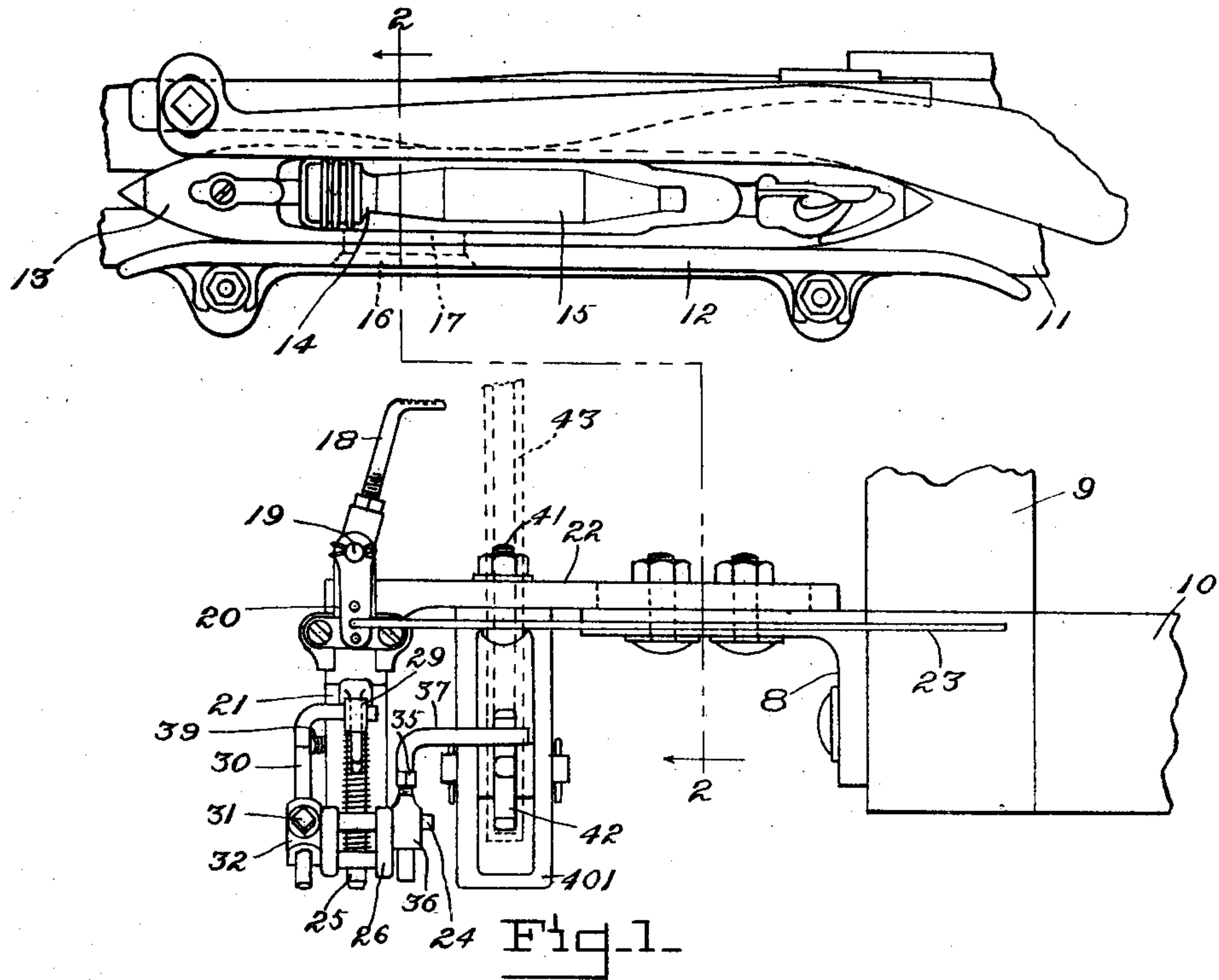


Fig. 4-

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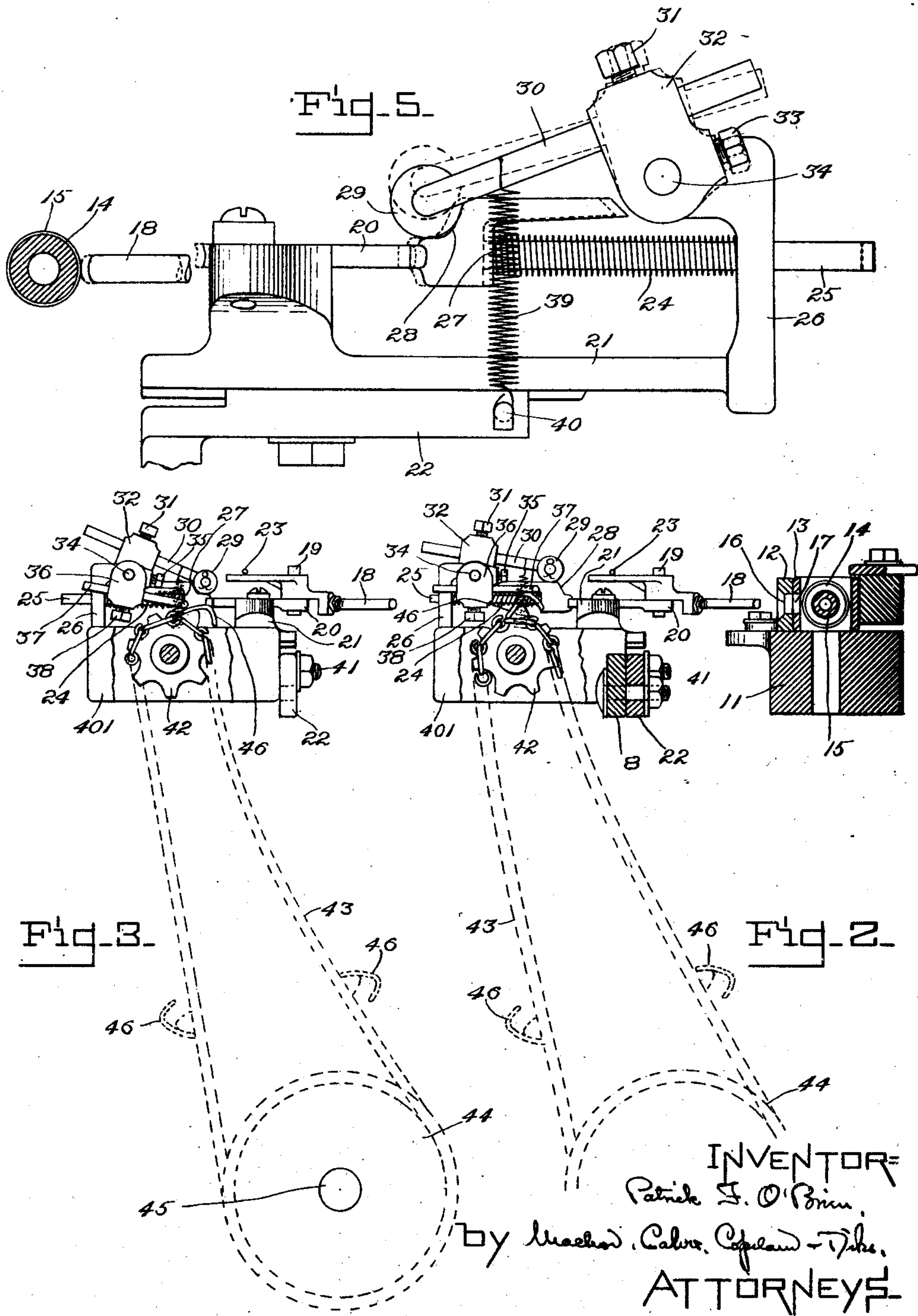
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## LOOM FEELER MECHANISM

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2 Sheets-Sheet 2





## UNITED STATES PATENT OFFICE.

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## LOOM FEELER MECHANISM.

Application filed September 23, 1925. Serial No. 58,067.

This invention relates to feeler mechanisms for looms, and especially to feeler mechanisms of the intermittent type in which the feeler cooperates with the filling only at periodic intervals, being at other times locked in a retracted inoperative position in order to prevent undue wear of the filling by unnecessary engagement of the feeler therewith.

The invention has for its object to provide, in a feeler mechanism of this type, improved and simplified means for positively withdrawing the feeler from cooperative relation with the filling, this movement being in excess of that imparted to the feeler by the filling itself, in order to provide a clearance between the filling and feeler and further insure the effective accomplishment of the object of this type of mechanism, namely that of preventing undue wear of the filling by the feeler. In carrying out this object of the invention, provision is made whereby the detent which locks the feeler in inoperative position itself operates, upon its locking movement, to effect the further withdrawal of the feeler, thereby doing away with the complicated devices heretofore specially provided for this purpose. Another object of the invention is to provide improved tripping mechanism for periodically releasing the feeler from the detent in order to permit it to cooperate with the filling, this mechanism being of such a character that the length of the periods of inactivity of the feeler may be of substantially any desired length and are in nowise limited by the design of the apparatus, as has heretofore usually been the case, and being so arranged that the withdrawal of the detent is only momentary, thereby permitting the feeler to cooperate with the filling at a single pick or beat only (unless the filling be substantially exhausted), said feeler being again immediately retracted and locked after a single engagement with the filling.

The foregoing and other objects of the invention, together with means whereby the latter may be carried into effect will best be understood from the following description of one application and embodiment thereof illustrated in the accompanying drawings. It will be understood, however, that the particular construction, arrangement and adaptation described and shown

have been chosen for illustrative purposes merely, and that the invention, as defined by the claims hereunto appended, may be otherwise embodied and used without departure from the spirit and scope thereof.

In said drawings:

Fig. 1 is a fragmentary plan view of a portion of a loom having feeler mechanism constructed and arranged in accordance with the invention.

Fig. 2 is a section taken substantially on the line 2—2, Fig. 1, showing the feeler in its operative position.

Fig. 3 is a similar view showing the feeler in its retracted or inoperative position.

Figs. 4 and 5 are enlarged side elevations, looking from opposite sides respectively, of the feeler and detent.

The invention is herein shown as applied to a loom having the usual frame 9, breast beam 10, lay 11, shuttle box 12, shuttle 13, and bobbin 14, the latter being wound with the usual filling 15. The shuttle box 12 and shuttle 13 are formed at suitable points with slots 16 and 17 through which the feeler may be periodically inserted to engage the filling 15. The parts thus far referred to may be of any suitable or usual construction well-known in the art, as may also the feeler which as herein shown is of the type fully disclosed in the patent to Jackson, No. 1,501,012, July 8, 1924. Said feeler comprises a finger 18 pivoted at 19 to a slide 20 guided in a feeler stand 21 carried by a bracket 22 secured to a bracket 8 on the loom frame 9, the finger 18 being connected by the usual transmitter 23 with the usual filling replenishing mechanism or stop mechanism as the case may be. The feeler is normally urged rearwardly, or in the direction of the lay, as by means of a spring 24 which surrounds a reduced forwardly extending portion 25 of the slide 20, said portion 25 being guided in an upright portion 26 of the feeler stand 21, and said spring being interposed between said upright portion 26 and a shoulder 27 on the slide.

In accordance with the present invention, the feeler slide 20 is formed with a cam element in the form of an inclined shoulder 28 which is engaged by a cooperating cam element in the form of a roller 29 carried by the detent. Said detent as herein shown comprises an angular finger 30 by which



the cam roller 29 is carried, said finger being adjustably secured, as by a set screw 31, in an arm 32 adjustably secured, as by a set screw 33, to a rock shaft 34 journaled in the upright portion 26 of the feeler stand.

The finger 30 is eccentrically mounted in the arm 32 relative to the shaft 34 to give an increased leverage to the finger thereby causing a positive front forwardly movement of the feeler when the cam roller 29 engages the cam surface 28. Adjustably secured, as by a set screw 35, to the shaft 34 is a second arm 36 in which is adjustably secured an angular trip finger 37, as by a set screw 38. The roll 29 is normally urged toward the slide 20, and particularly toward the shoulder 28, by a spring 39 connecting the detent finger 30 with a stud 40 on the bracket 22, Fig. 5.

It will be noted that the detent is offset from the path of movement of the feeler and that its axis is also transverse to the movement of the feeler. Therefore, when the spring 39 exerts a pull upon the finger 30 the detent roller 29 will have imparted to it a downward component of movement and likewise a frontward component of movement, the former causing the roller 29 to engage the inclined shoulder 28, and the latter to move the feeler in a frontward direction. The parts remain in this relationship until the trip mechanism is brought into play to release the detent from engagement with the feeler.

Journalled in a support 401 secured, as by a bolt 41, to the bracket 22, is an idler sprocket 42 located adjacent the angular end of the trip finger 37. The sprocket 42 is connected by a chain 43 with a sprocket 44 which is driven at a relatively low speed from some convenient moving part of the loom. To this end the sprocket 44 may conveniently be mounted on the takeup shaft 45. The sprocket chain 43 carries one or more trips in the form of angular lugs 46 adapted, as they pass about the idler sprocket 42, to engage the angular end of the finger 37.

In operation, it will be understood that at the first feeling pick of the loom, the forward movement of the lay 11 causes the feeler to enter the slots 16 and 17 and engage the filling 15. If there is an adequate supply of the latter, the forward movement of the lay causes the feeler to be retracted or pushed forwardly from the position shown in Fig. 2 toward that shown in Fig. 3 against the tension of the spring 24. This causes the cam shoulder 28 to be carried past the cam roller 29 into or beyond the position shown in broken lines in Fig. 5. The spring 39 thereupon draws the detent finger 30 downwardly, or in a direction transverse to the direction of movement of the feeler into the position shown in Figs. 3 and 4 and in full lines in Fig. 5. Continued engage-

ment of the roller 29 with the cam shoulder 28 during this movement causes a further retractive movement of the feeler, thereby withdrawing the latter completely from cooperative relation with the filling, so that, upon succeeding picks, it will not engage the same. As the operation of the loom proceeds, the trip or trips 46 are periodically brought into engagement with the angular end of the trip finger 37, as shown in Fig. 3, lifting the latter, withdrawing the detent from locking engagement with the feeler, and therefore releasing the latter from the former, whereupon the feeler is again moved rearwardly by the spring 24 into operative position, so that, upon the next feeling pick, it will be engaged by the filling and, in the event that there is still an adequate supply of the latter, the operation above described is repeated. Should the filling be substantially exhausted, the feeler is operated, in accordance with the principle of operation of the particular feeler employed, to set into operation the mechanism for stopping the loom or the mechanism for replacing the exhausted bobbin with a full one, as will be understood without further explanation.

It will be noted that when a trip 46 engages the trip finger 37, as shown in Fig. 3, the slight resistance of the latter to the movement of the trip will momentarily arrest the latter, so that the normal slack of the chain 43 will be taken up in that reach toward which the trip is moving and will all be thrown into the opposite reach, as shown in said figure. Thereafter the movement of the trip will continue until the highest point thereon is under the trip finger, and the detent fully withdrawn from locking engagement with the feeler. Immediately thereafter the tendency of the chain to equalize the slack therein between the two reaches thereof will cause the trip 46 to be automatically moved beyond and out of engagement with the trip finger 37, thereby restoring the detent to the influence of the spring 39, so that, upon the next succeeding feeling pick, the detent will again be engaged with the feeler and the latter withdrawn from cooperative relation with the filling and locked in inoperative position. In this way each period of activity of the feeler prior to the approach of substantial exhaustion of the filling is limited to a single feeling pick.

It will also be seen that the use of the sprocket chain 43 connecting the sprockets 42 and 44 provides for a wide latitude of variation in the length of the periods of inactivity of the feeler mechanism. The sprocket 44 being located at a point where its size will not render it inconvenient, it may be provided with substantially any desired number of teeth, and the chain 43, which is of considerable length, is moved



through its entire length only after a large number of picks. It will, therefore, be seen that by properly choosing the number of trips 46 and by properly distributing them  
5 along the length of the chain, the period of operation of the tripping mechanism may, practically speaking, be varied almost indefinitely, as distinguished from similar mechanisms heretofore employed in which  
10 the period depends upon a ratchet whose size is closely limited by considerations of practical design and by the position in which said ratchet must necessarily be located.

It will furthermore be observed that the  
15 mechanism above described for withdrawing the feeler from cooperative relation with the filling and locking the same in its retracted inoperative position is of an extremely simple though effective character, both func-  
20 tions being effected by a single movement of the detent in one direction transverse to the direction of movement of the feeler, so that the locking movement of the detent serves also to cause the further retractive  
25 movement of the feeler, thereby eliminating the complicated mechanisms heretofore specially provided for accomplishing the latter result.

Adjustment of the detent and trip fingers  
30 30 and 37 in the arms 32 and 36, and of said arms on the rock shaft 34, permits adaptation of the mechanism to a wide variety of working conditions, it being noted, however, that the substantial retraction of  
35 the feeler by the detent permits considerable variation in the size of bobbins or in the amount of filling thereon without the necessity of readjustment of the parts or, in fact, any very delicate adjustment thereof  
40 at any time.

Having thus described my invention, I claim:—

1. In an intermittent feeler mechanism for looms, in combination, a feeler having an inclined cam shoulder, and a detent having a roller engaging said shoulder when the feeler is in retracted position to lock the same in inoperative position and to impart  
50 to said feeler an additional retractive movement.

2. In an intermittent feeler mechanism for looms, in combination, a feeler having an inclined cam shoulder, a detent having a roller engaging said shoulder when the feeler  
55 is moved into retracted position by engagement with the filling to impart to said feeler an additional retractive movement and to lock the same, a spring for operating said

detent, and a trip mechanism for periodical-ly releasing the feeler from the detent. 60

3. In an intermittent feeler mechanism for looms, in combination, a feeler, a detent for locking said feeler in a retracted inoperative position, said detent comprising a locking  
65 finger, an arm by which said finger is carried, a rock shaft on which said arm is mounted, a second arm on said rock shaft, a trip finger carried by said second arm, and a trip periodically engaging said trip finger to rock said shaft and disengage said detent  
70 from locking engagement with the feeler.

4. In an intermittent feeler mechanism for looms, in combination, a feeler, a detent for locking said feeler in a retracted inopera-  
75 tive position, said detent comprising a locking finger, an arm by which said finger is adjustably carried, a rock shaft on which said arm is mounted, a second arm on said rock shaft, a trip finger adjustably carried by said second arm, and a trip periodically  
80 engaging said trip finger to rock said shaft and disengage said detent from locking engagement with the feeler.

5. In an intermittent feeler mechanism for looms, in combination, a feeler, a shiftable  
85 support for said feeler, a detent finger, and a roller carried by said finger engageable with said feeler support when retracted to lock the feeler in inoperative position and withdraw the same from engagement with  
90 the filling.

6. In an intermittent feeler mechanism for looms, in combination, a feeler, a shiftable support for said feeler, a detent finger, and a roller carried by said finger engageable  
95 with said feeler support when retracted to lock the feeler in inoperative position and withdraw the same from engagement with the filling, said roller being mounted to swing about a center located more remote  
100 from the feeler than said roller.

7. In an intermittent feeler mechanism for looms, in combination, a feeler, a shiftable support for said feeler, a detent member en-  
105 gageable with said feeler support when retracted to lock the feeler in inoperative position and withdraw the same from engagement with the filling, said detent being mounted to swing about a center located more remote from the feeler than the detent,  
110 and a sprocket chain having a plurality of trip devices mounted thereon for engaging said detent and periodically withdrawing it from locking engagement with said feeler.

In testimony whereof I affix my signature.

PATRICK F. O'BRIEN.