

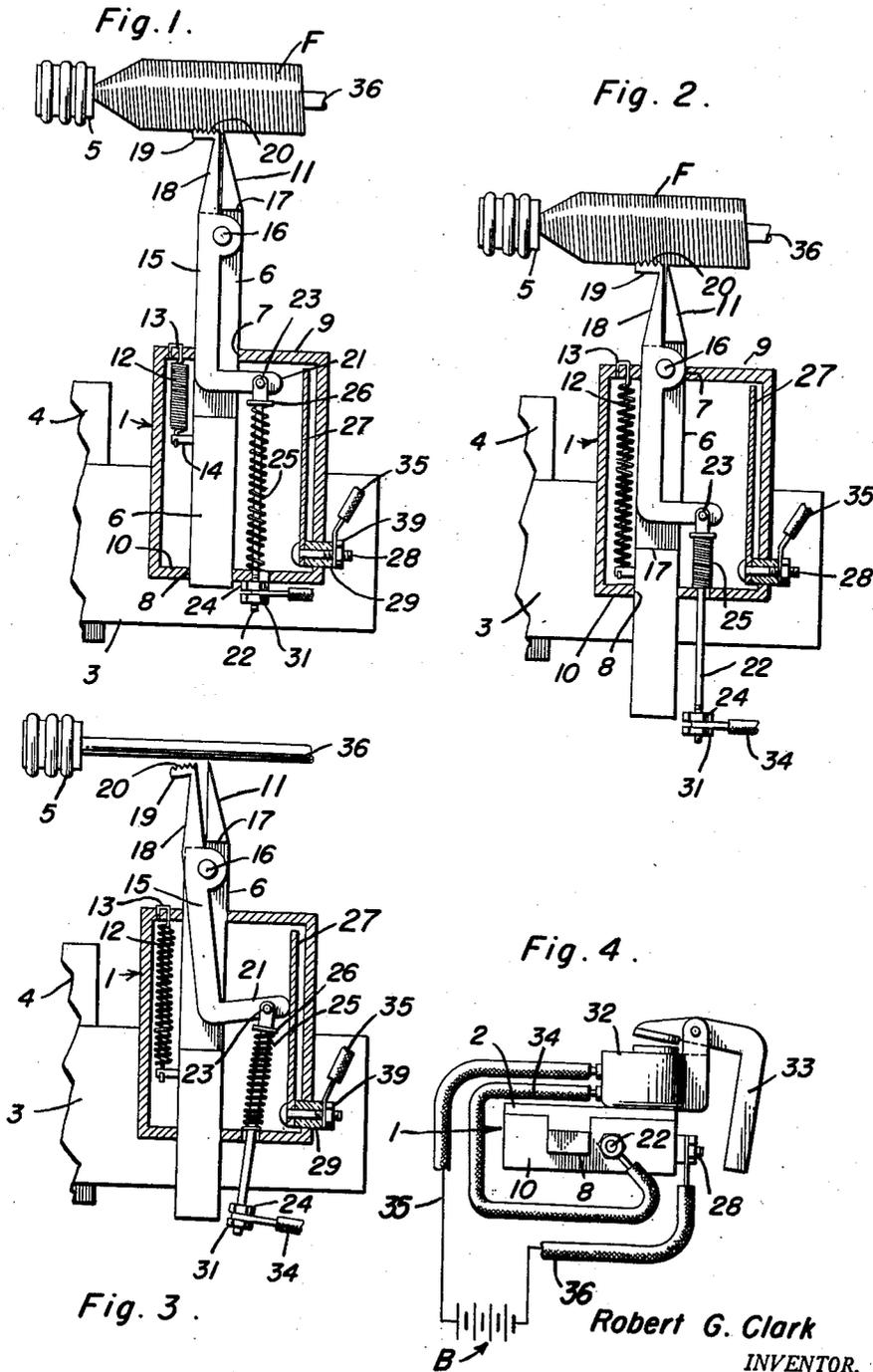
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ELECTRIC FEELER MECHANISM FOR FILLING DETECTION IN LOOMS

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ELECTRIC FEELER MECHANISM FOR FILLING DETECTION IN LOOMS

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My invention relates to improvements in electric feeler mechanism for detecting filling exhaustion in looms.

The primary object of my invention is to provide electric feeler mechanism, of the side slip feeler finger type, but, in which a feeler finger for closing an electric circuit, for a stop motion, or the like, is released when the filling on the bobbin is exhausted for operation to close a circuit without engagement of the finger with the bobbin spindle and whereby frictional locking of the finger against said spindle, with consequent failure in operation of the mechanism, is positively prevented and quicker release of the finger is attained than with similar mechanisms as commonly constructed.

Another object is to provide mechanism of the character and for the purpose above set forth which is simple in construction, comparatively inexpensive to manufacture, and is not liable to get out of order from prolonged use.

To the accomplishment of the above, and subordinate objects presently clearly appearing, a preferred embodiment of my invention has been illustrated in the accompanying drawing, set forth in detail in the succeeding description, and defined in the claims appended hereto.

In said drawing:

Figure 1 is a view partly in plan and partly in horizontal section of my improved electric feeler mechanism in the preferred embodiment thereof with the parts shown in normal position and the contact closing detection feeler finger locked in normal position and fully advanced with the pilot feeler finger;

Figure 2 is a similar view illustrating the pilot feeler finger and the contact closing detection feeler finger fully retracted while the contact closing detection feeler finger is locked in normal position;

Figure 3 is another similar view illustrating the contact closing detection feeler finger unlocked and in contact closing position;

Figure 4 is a view in rear elevation of the mechanism connected to a source of electric energy.

Referring now to the drawing by numerals, my improved electric feeler mechanism, as illustrated, comprises a shallow, preferably rectangular, casing 1 of any suitable material with a suitably secured, detachable, cover plate 2, and which is adapted to be fixed on and insulated from, in any desired manner, a bracket 3 on a loom frame 4 so that said casing is disposed in the path of movement of a bobbin 5 when said

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bobbin is moved by the beat up stroke of the lay, not shown, of said loom.

A pilot feeler finger 6 of bar-like form, and suitable metal, is slidably mounted in front and rear guide recesses 8, 7 in front and rear ends 10, 9 of said casing 1, with a sidewise tapered, reduced, front feeler end 11 adapted to be engaged at its tip with filling F on the bobbin 5 during the driving stroke of the lay. The pilot feeler finger 6 is endwise slidable in said recesses 7, 8 clear of the bottom of the casing 1 for reciprocation to be advanced toward the bobbin 5 and be retracted by engagement of the filling F therewith during said beat up stroke of the lay. A coil spring 12 in the casing 1 with one end attached, as at 13, to the front end 7 of said casing, and with its other end attached to a lateral stud 14 on said feeler finger 6, functions to advance said feeler finger in limited degree and to tension said feeler finger against retraction.

A contact closing, filling detection, feeler finger 15, of bar-like form and any suitable material, is pivoted intermediate its ends, as at 16, in a recess 17 in the pilot feeler finger 6 for endwise reciprocation therewith and for swinging on its pivot 16 into and from a normal position in a plane parallel with that of said feeler finger 6. In the normal position of said detection feeler finger 15, a front end portion 18 thereof, forwardly of the pivot 16, closes on the front feeler end 9 of said feeler finger 6 and establishes the normal position of said detection feeler finger 15. The front end portion 18 is provided with an L-head 19 serrated crosswise, as at 20, to interfit with the thread of the filling 10. The L-head 19 is spaced slightly rearwardly of the tip of the front feeler end 9 of the pilot feeler finger 6, for instance a distance slightly less than the gauge of the thread of the filling F, and for a purpose presently seen. A rear end crank 21 on said detection feeler finger 15 extends in the casing 1 to one side of the pilot feeler finger 6 and forms a movable contact, in a manner presently clear.

A conductor rod 22 is pivoted at a front end thereof, as at 23, to said crank 21 to extend alongside the pilot feeler 6 and is slidably extended out of the front end 10 of the casing 1. A nut 24 on the front end of the conductor rod 22 is adapted to engage said front end 10 when the pilot feeler finger 6 is fully advanced and exert a pull on the crank 21 to swing said detection feeler finger 15 on the pivot 16 into normal position.

A coil spring 25 on the conductor rod 22 is interposed between the front end 10 of said casing 1 and a fixed collar 26 on said rod and ten-

sions said rod against rearward sliding movement.

A leaf spring contact bar 27 in the casing 1 extends along one side thereof for engagement by the crank 21. A bolt 28 passing through one end of said bar 27 and through an insulator 29 fixed in said side of the casing 1 secures said bar 27 in position clear of the casing 1 and has a nut 39 thereon forming with said bolt a binding post. A nut 31 on the rear end of the conductor rod 22 coacts with the nut 24 to form a binding post on said rod.

An electromagnet 32 is suitably fixed on the cover plate 2 with a pivoted right angled armature member 33 thereon. A lead 34 extends from one side of the field of the electromagnet to the rear end of the conductor rod 22. Another lead 35 extends from the other side of said field to one side of a suitable source of electric energy, such as a battery B, from the other side of which a lead 36 extends to the bolt 28.

Referring now to the operation of the invention: As shown in Figure 1, the pilot feeler finger 6 is normally advanced by the coil spring 12 and the contact closing detection feeler finger 15 is normally swung into normal position by the pull of the conductor rod 25 against the crank 21 in the manner previously described so that in the fully advanced position of the pilot feeler finger 6, and the contact closing detection feeler finger 15, said finger 15 is held in normal position. Now, when the bobbin 5 is initially moved by the driving stroke of the lay, and while filling F is on said bobbin 5, the tip of the pilot feeler finger 6 engages said filling F and sinks into the same sufficiently to permit the head 19 of the contact closing detection feeler finger 15 to bite into said filling F and thereby lock said detection feeler finger 15 in normal position during further movement of the bobbin 5 under the driving stroke of the lay. Therefore, during further movement of the bobbin 5 by driving movement of the lay, the pilot feeler finger 6 and said detection feeler finger 15 are retracted in opposition to the springs 12, 25, without said detection feeler finger 15 being swung from normal position, as shown in Figure 2, and, as the bobbin 5 recedes, said pilot and detection feeler fingers 6, 15 are advanced under the conjoint action of said springs 12, 25. However, when the filling F is exhausted from the bobbin 5, the tip of the front feeler end 9 of the pilot feeler finger 6 will engage the empty bobbin spindle 36 in advance of the head 19 of said detection feeler finger 15 so that said head will clear said spindle sufficiently for said detection feeler finger 15 to be unlocked, in a manner which will be clear. As soon as this occurs, the contact closing detection feeler finger 15 is swung from normal position, as the pilot feeler finger 6 is retracted, by pressure of the spring tensioned conductor rod 22 against the crank 21. As said detection feeler finger 15 swings out of normal position, said crank 21 wipingly engages the contact bar 26, as shown in Figure 3, to close circuit to the electromagnet 32 which thereupon attracts the armature 33 which may be arranged either to close a usual loom stop motion circuit, not shown, and/or to operate the usual shipper lever, not shown, for stopping a loom.

The foregoing will, it is believed, suffice to impart a clear understanding of my invention, without further explanation.

Manifestly, the invention, as described, is susceptible of modification, without departing from

the inventive concept, and right is herein reserved to such modifications as fall within the scope of the appended claims.

Having described my invention, what is claimed as new is:

1. In an electric feeler mechanism for detecting filling exhaustion on the bobbin of a loom, a casing mounted on said loom in the path of movement of the bobbin when said bobbin is moved by the driving stroke of the lay, a feeler finger slidably mounted in said casing for advance and retraction and having a tip for engagement by the filling on the bobbin whereby said finger is adapted to be retracted by such movement of said bobbin, spring means yieldingly maintaining said finger advanced, a second feeler finger pivoted on the first feeler finger for advance and retraction thereby and swinging movement thereon from a normal position when the filling on the bobbin is exhausted, an electric contact member in said casing, an electric contact part on said second feeler finger for engagement with said member by swinging of said second finger out of normal position, means in said casing for swinging said second feeler finger out of normal position when said second feeler finger is retracted by the first feeler finger when the filling on the bobbin is exhausted, an electromagnet on said casing with a pivoted armature adapted for connection in a stop motion circuit to close the same, and means for electrically connecting opposite sides of said magnet when said part is engaged with said contact member.

2. In an electric feeler mechanism for detecting filling exhaustion on the bobbin of a loom, a casing mounted on said loom in the path of movement of the bobbin when said bobbin is moved by the driving stroke of the lay, a feeler finger slidably mounted in said casing for advance and retraction and having a tip for engagement by the filling on the bobbin whereby said finger is adapted to be retracted by such movement of said bobbin, spring means yieldingly maintaining said finger advanced, a second feeler finger pivoted on the first feeler finger for advance and retraction thereby and swinging movement thereon from a normal position when the filling on the bobbin is exhausted, an electric contact member in said casing, an electric contact part on said second feeler finger for engagement with said member by swinging of said second feeler out of normal position, means in said casing for swinging said second feeler finger out of normal position when said second feeler finger is retracted by the first feeler finger and the filling on the bobbin is exhausted, an electromagnet on said casing with a pivoted armature adapted for connection in a stop motion circuit to close the same, and means for electrically connecting opposite sides of said magnet when said part is engaged with said contact member, said contact member comprising a leaf spring wipingly engaged by said contact part.

3. In an electric feeler mechanism for detecting filling exhaustion on the bobbin of a loom, a casing mounted on said loom in the path of movement of the bobbin when said bobbin is moved by the driving stroke of the lay, a feeler finger slidably mounted in said casing for advance and retraction and having a tip for engagement by the filling on the bobbin whereby said finger is adapted to be retracted by such movement of said bobbin, spring means yieldingly maintaining said finger advanced, a second feeler finger pivoted on the first feeler finger for

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advance and retraction thereby and swinging movement thereon from a normal position when the filling on the bobbin is exhausted, an electric contact member in said casing, an electric contact part on said second feeler member for engagement with said member by swinging of said second feeler finger out of normal position, means in said casing for swinging said second feeler finger out of normal position when said second feeler finger is retracted by the first feeler finger and the filling on the bobbin is exhausted, electromagnetic means on said casing adapted for connection in a stop motion to operate the same, and means for rendering said

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electromagnetic means effective when said part is engaged with said contact member.

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