No. 806,120. PATENTED DEC. 5, 1905.

W. DONNER.

LOOM CONTROLLING MECHANISM.

APPLICATION FILED APR. 14, 1905.

Fig. 1.

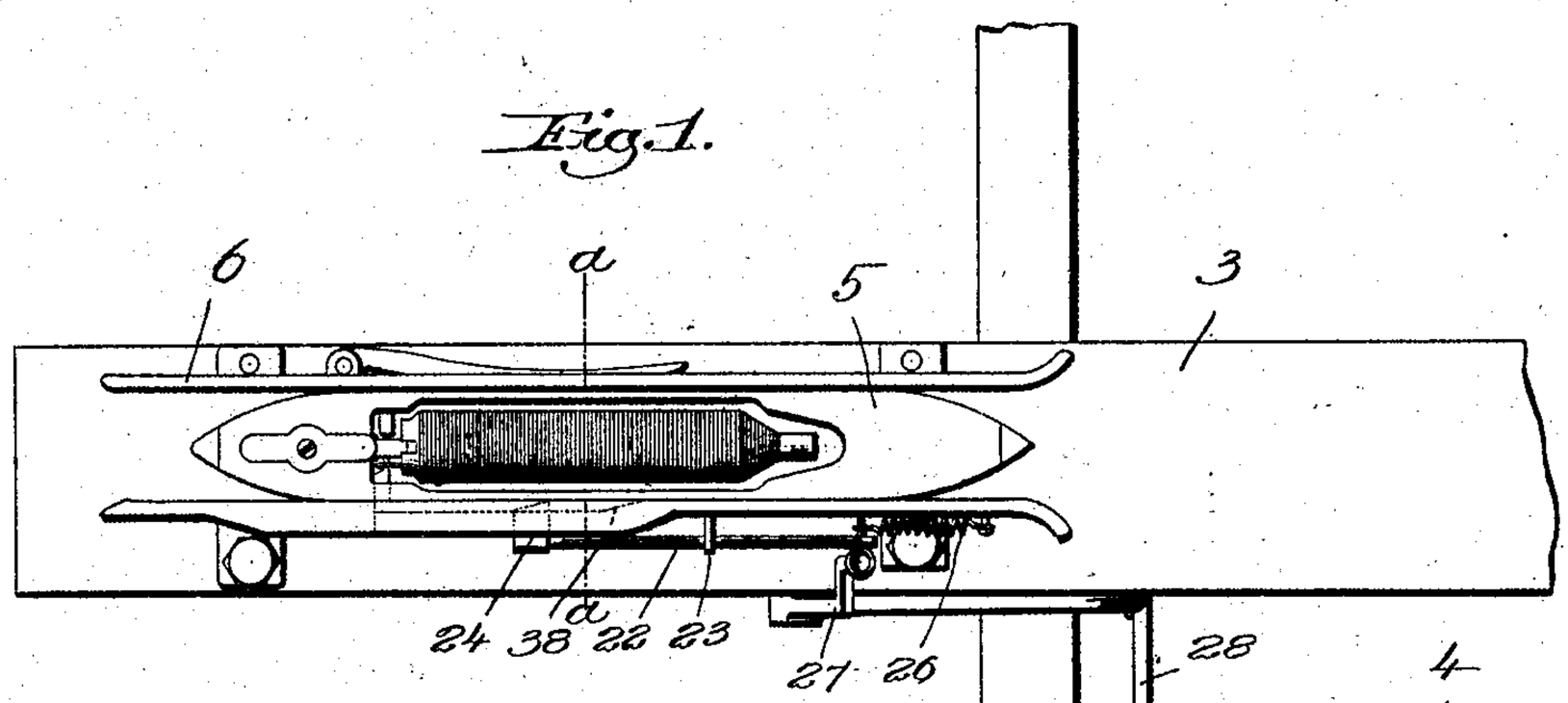


Fig. 8.

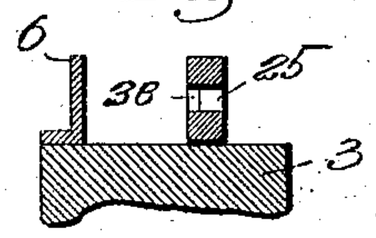


Fig. 2.

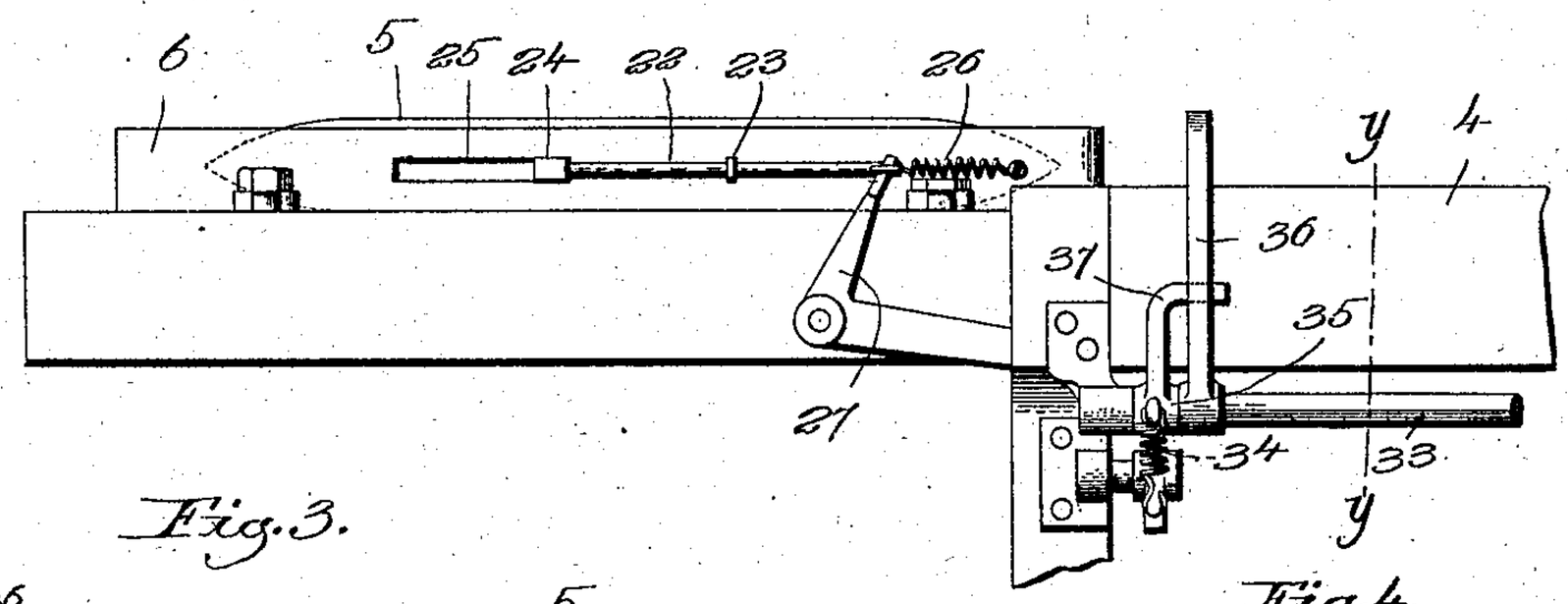


Fig. 3.

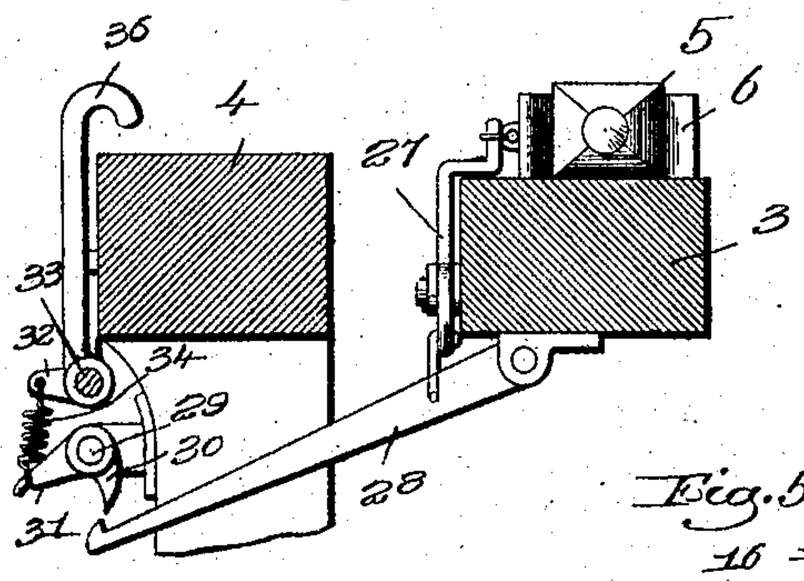


Fig. 4.

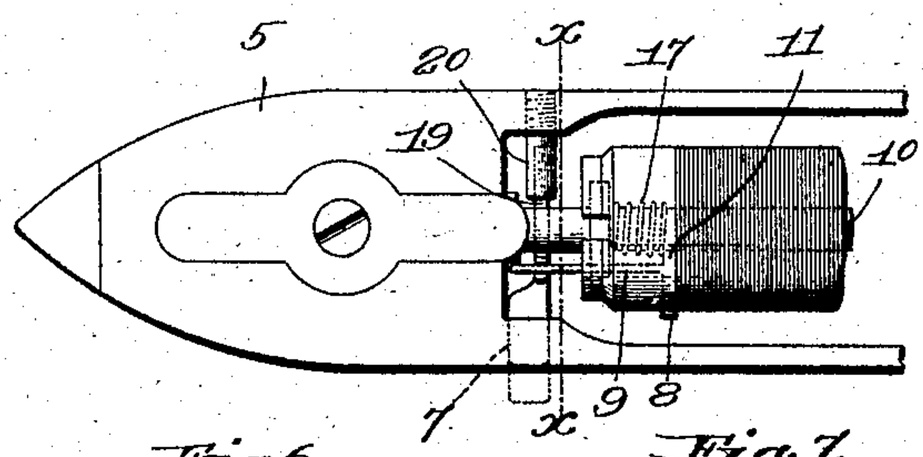


Fig. 5.

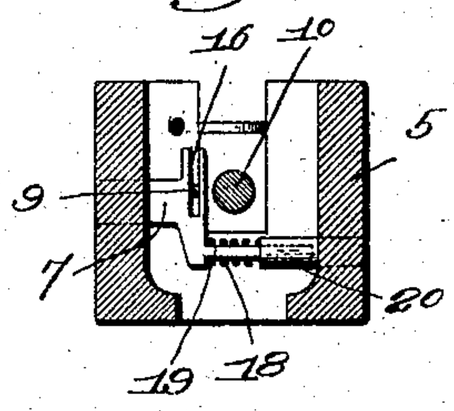


Fig. 6.

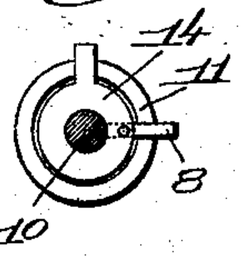
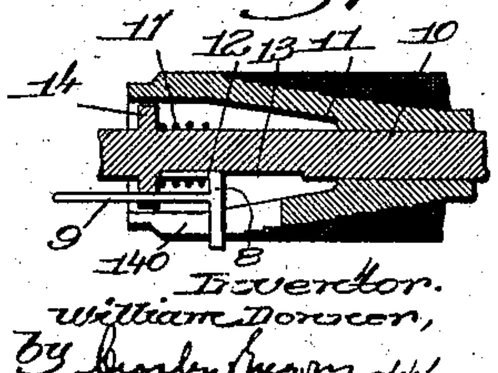


Fig. 7.



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UNITED STATES PATENT OFFICE.

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LOOM-CONTROLLING MECHANISM.

No. 806,120. Specification of Letters Patent. Patented Dec. 5, 1905.

Application filed April 14, 1905. Serial No. 255,494.

To all whom it may concern:

Be it known that I, WILLIAM DONNER, a citizen of the United States, residing at Binghamton, county of Broome, and State of New York, have invented an Improvement in Loom-Controlling Mechanism, 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 to provide a novel loom-controlling mechanism governed by the amount of weft or filling in the shuttle, which is adapted either to stop the loom or supply fresh filling thereto whenever the filling in the shuttle in use has been exhausted to a predetermined extent and before said filling is entirely exhausted.

My invention comprises an actuator carried by the shuttle, a weft-controlled retainer to hold said actuator normally in its inoperative position, whereby when the weft is nearly exhausted said retainer releases the actuator and automatically-operative means to act on the released actuator and throw it into operative position, in which position it acts on and actuates the loom-controlling mechanism as the shuttle enters the box.

The particular features wherein my invention resides will be more fully hereinafter described and then pointed out in the claims.

Figure 1 is a top plan view of one end of the lay of a loom having my invention applied thereto. Fig. 2 is a front view of Fig. 1. Fig. 3 is a section on the line *y y*, Fig. 2, looking toward the left. Fig. 4 is a top plan view of one end of a shuttle, showing my improved actuator applied thereto. Fig. 5 is a section on the line *x x*, Fig. 4. Fig. 6 is an end view of Fig. 7. Fig. 7 is a longitudinal section through a bobbin, showing my invention used in connection with the spindle; and Fig. 8 is a section through the shuttle-box on line *a a*, Fig. 1.

3 designates the lay of the loom; 4, the breast-beam; 5, the shuttle, and 6 the shuttle-box. These parts may be of any suitable or usual construction and form no part of my present invention.

According to my invention I mount in the shuttle an actuator 7, which preferably is in the form of a pin playing in an opening through the side of the shuttle, and I employ a retainer to hold normally the actuator in its retracted position, as shown in Fig. 5.

The retainer is controlled in turn by the amount of weft or filling on the bobbin, so that when the weft becomes nearly exhausted the retainer releases the actuator-pin and allows the latter to be thrown outwardly into the dotted-line position, Fig. 4, by suitable automatically-operative mechanism. When in such operative position, the actuator is in position to operate the loom-controlling mechanism when the shuttle enters the box.

The retainer herein shown is slidably mounted on the shuttle-spindle, on which the bobbin 11 is mounted, as usual. Said retainer comprises a body portion 12, which fits and slides in a groove or recess 13 in the spindle, and a head portion 8, which projects laterally into and plays in the slot 140 in the bobbin, and a tail 9, which projects rearwardly from the head 8. The tail 9 preferably passes through an aperture in the collar 14 on the spindle, by which collar said tail is guided, and said tail is adapted to pass through a slot or aperture 16 in the head of the actuator-pin, thereby to hold said pin in its retracted or inoperative position, as shown best in Fig. 5.

The retainer is acted upon by automatically-operative means—such, for instance, as a spring 17—which tends normally to throw it forward, thereby to disengage the tail from the actuator-pin.

Under normal conditions—that is, when the bobbin has a supply of filling thereon—the retainer is held in its operative position by the engagement of the projecting head 8 with the body of filling on the bobbin. When, however, the filling is nearly exhausted, it is not sufficient to counteract the action of the spring 17, and therefore the latter forces the retainer to the right, Fig. 7, and in so doing withdraws the tail 9 from engagement with the actuator 7. When this occurs, said actuator is thrown forward or into its operative position by suitable automatically-operative means—such, for instance, as a spring 18—and when in such forward or operative position it operates on the loom-controlling mechanism, presently to be described, when the shuttle enters the box 6. The spring 18 is herein shown as coiled about a stem 19, projecting from the head and entering or play-

ing in a guiding-sleeve 20, carried by the shuttle. Said guiding-sleeve is out of alinement with the pin 7, as will be observed from Fig. 5, and therefore serves to hold the pin from turning.

Any suitable loom-controlling mechanism may be employed, that herein shown comprising a slide 22, slidably mounted in bearings 23, carried by the shuttle-box, and having a nose 24, which projects through a slot 25 in the shuttle-box into position to be engaged by the actuator when the latter is in its operative position. The slide 22 is normally retracted by a suitable spring 26 and has connected to one end an elbow-lever 27, pivoted to the lay, one arm of which is connected to a hook 28, also pivoted to the lay.

29 designates a rock-shaft mounted on the lay and having fast therewith an arm or nose 30, adapted to be engaged by the hook 28 when the latter is raised, and another arm 31, which is connected by a flexible or yielding connection 34 with the arm 22, projecting from a hub 35, which is loose on the rock-shaft 33. This shaft 33 may be that by means of which the filling-changing mechanism is operated in automatic looms or may be that by means of which the loom is stopped. Said shaft is shown as having an arm 36 fast thereto, and the hub 35 is also shown as having fast thereto an arm 37, provided with an offset end to engage the arm 36.

The nose 24 of the slide 22 plays in a slot in the side of the shuttle-box, as shown in Fig. 8, and therefore so long as the actuator-pin is held in its retracted position the shuttle can freely enter or leave the box without affecting the loom-controlling mechanism. Whenever the filling is nearly exhausted, however, the retainer becomes automatically disengaged from the actuator-pin, and the latter is thrown into its operative position, as shown in dotted lines, Fig. 4, by means of the spring 18. When the shuttle enters the box with the pin in this position, the latter is at first thrown inwardly by contact with the side of the box, and as the shuttle completely enters the box said actuator-pin rides down the inclined portion 38 of the groove in the shuttle-box and engages the nose 24 of the slide.

The momentum of the shuttle operates through the actuator and nose 24 to move the slide 22 to the left, Figs. 1 and 2, and thereby rocks the elbow-lever 27 to raise the hook 28. As the lay beats up after this operation said hook 28 engages the dog or nose 30, and when the lay moves backwardly the rock-shaft 29 is rocked and through the connection 34 rocks the hub 35, and thereby actuates the shaft 33, thus either setting the filling-replenishing mechanism in operation or stopping the loom, as the case may be.

By means of my invention the loom may either be stopped or new filling may be supplied thereto before the filling in the active shuttle becomes completely exhausted.

While I have herein illustrated the preferred embodiment of my invention, I do not care to be limitted to the construction shown, as the latter may be changed in various ways without departing from the invention.

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

1. A shuttle, an actuator slidably mounted in the side thereof, a filling-controlled retainer slidably mounted on the shuttle-spindle and operating to hold normally said actuator in its inoperative position, and automatically-operative means to move the actuator into its operative position when the retainer is released by the exhaustion of the filling.

2. A shuttle, an actuator-pin movably mounted in the side of the shuttle, a filling-controlled retainer to hold said actuator-pin retracted, said retainer being slidably mounted on the shuttle-spindle and automatically-operative means to throw said actuator-pin into operative position when it is disengaged from the retainer.

3. A shuttle, an actuator-pin slidably mounted in the side thereof, a retainer slidably mounted on the shuttle-spindle, said retainer being held in engagement with the actuator-pin by the filling in the shuttle thereby to hold the actuator-pin in its inoperative position, and automatically-operative means to throw the actuator-pin into its operative position when released from the retainer.

4. In a shuttle, an actuator-pin slidably mounted in the shuttle, and a spring-pressed retainer slidably mounted on the shuttle-spindle and having a tail to engage the actuator-pin and hold it in its inoperative position, said retainer being held in engagement with the actuator-pin by the filling in the shuttle.

5. In a loom, a shuttle-box, loom-controlling mechanism including a slide carried by the shuttle-box, a shuttle, an actuator carried by the shuttle, a filling-controlled retainer to hold the actuator in its inoperative position, said retainer being slidably mounted on the shuttle-spindle and automatically-operative means to throw the actuator into position to engage the slide when the filling is nearly exhausted.

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

WM. DONNER.

Witnesses:
EDW. MURPHY,
FRANK M. HAYS.