

E. H. BALLOU.
 DROP SHUTTLE BOX MECHANISM OF LOOMS.
 APPLICATION FILED OCT. 14, 1908.

958,688.

Patented May 17, 1910.

2 SHEETS—SHEET 1.

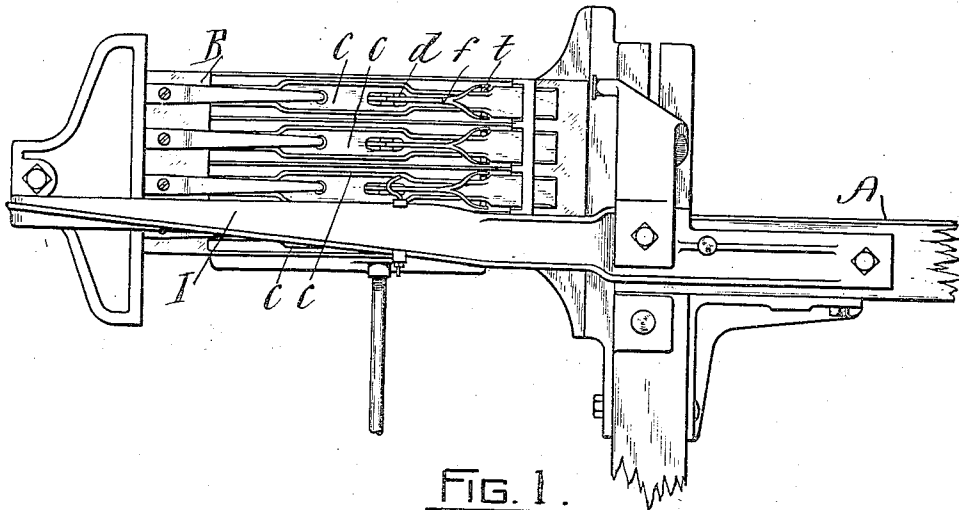


FIG. 1.

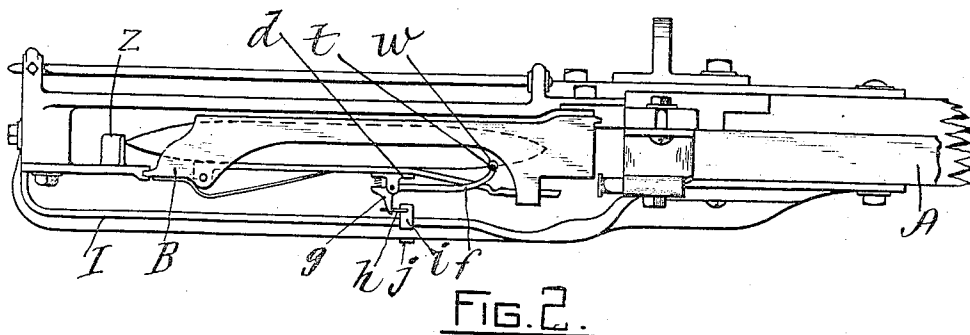


FIG. 2.

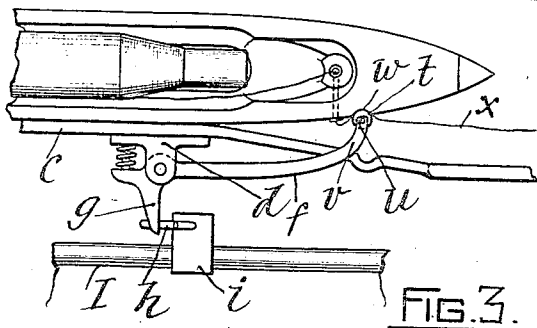


FIG. 3.

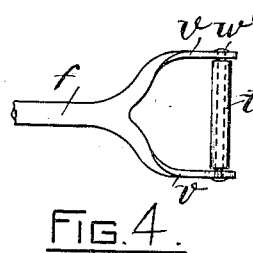


FIG. 4.

WITNESSES.

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2 SHEETS—SHEET 2.

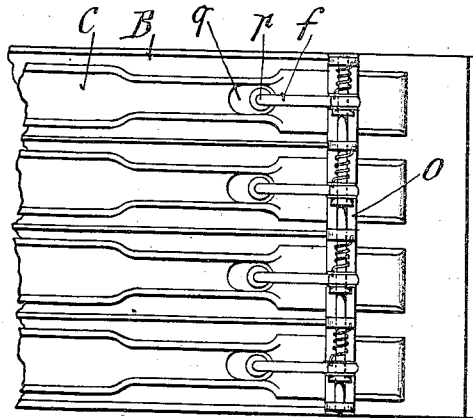


FIG. 5.

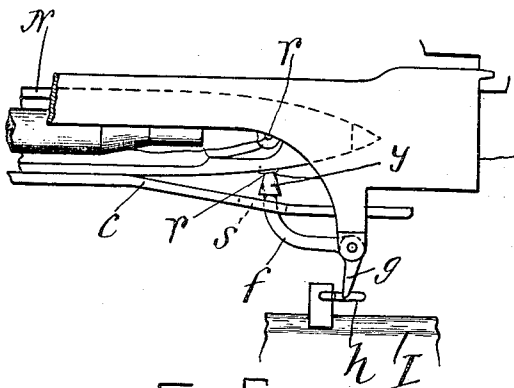


FIG. 6.

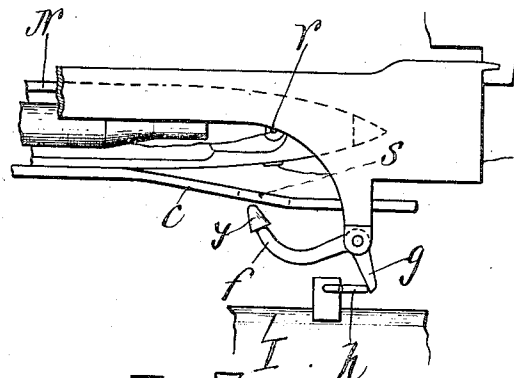


FIG. 7.

WITNESSES.

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DROP-SHUTTLE-BOX MECHANISM OF LOOMS.

958,688.

Specification of Letters Patent. Patented May 17, 1910.

Application filed October 14, 1908. Serial No. 457,728.

To all whom it may concern:

Be it known that I, EUGENE H. BALLOU, a citizen of the United States, residing at Pawtucket, in the county of Providence and State of Rhode Island, have invented a new and useful Improvement in the Drop-Shuttle-Box Mechanism of Looms, of which the following is a specification.

In looms in which drop shuttle boxes are employed, there is a tendency of forward movement in those shuttles which are held at rest in the disengaged boxes, whereby, when a specific shuttle box is brought in line with the shuttle race of the lay, any previous forward movement of the shuttle in its box will cause a diminished effect in the blow of the picker upon the shuttle to throw it through the shed, thus requiring an increase in the driving power of the loom in order to throw the shuttle properly. And furthermore, when the shuttles are allowed to work forward in the boxes when at rest their threads will become slack and caught with each other, so that when one of the shuttles is driven into the shed, the slack of the threads of other shuttles may be carried into the shed with it, thus producing a ragged selvage, and serious imperfection in the woven web. And it is the object of my invention to prevent the forward movement of the shuttle in the shuttle box, and also to prevent the injurious slackening of the thread. And to this end my invention consists in a spring actuated finger connected with the shuttle-box mechanism and engaging with the side of the shuttle to prevent forward movement, whenever the shuttle box is either raised above or lowered below the shuttle race.

It also consists in a means for applying friction to the withdrawn thread of the shuttle, whenever the shuttle is removed from the line of the shuttle race, thus preventing the displacement of the said threads in the continued operation of the loom, and preventing their accidental entrance into the shed.

In the accompanying drawings:—Figure 1 represents the front view of a drop shuttle-box provided with a means for applying friction to the thread coming from the shuttle. Fig. 2 represents a top view of the same. Fig. 3 represents an enlarged top view of the spring-actuated finger for engaging the shuttle and frictioning the thread

of the shuttle. Fig. 4 represents an enlarged side view of the frictional end of the engaging finger. Fig. 5 represents the partial side view of a drop shuttle box in which the operating finger is attached to the box itself instead of to the shuttle binder, and in which the finger is arranged to engage with the thread delivering eye of the shuttle. Fig. 6 represents a top view of the said finger when in engagement with the eye of the shuttle. Fig. 7 represents the same when in disengagement.

In the drawing, A represents the shuttle race of the lay, B the drop shuttle-box, and *c, c, c, c,* the shuttle binders. Upon each of the said shuttle binders is secured a bracket *d*, and to the said bracket is pivoted the shuttle-engaging finger *f*, provided with the outwardly extending arm *g*, which, when the shuttle comes in line with the shuttle race A, engages with the cam arm *h*, which is preferably clamped to the brace I, of the shuttle-box carrying frame, by means of the arms *i* and *j*, and then causes the backward movement of the engaging end of the finger *f*, away from the shuttle N. And this release of the shuttle from the engagement of the finger *f* therewith, will be effected prior to the action of the picker upon the shuttle to throw it through the shed; and so long as the shuttle-box remains in this position, the said shuttle-box will be free of all obstruction either to the entrance or release of the shuttle, and at the same time by reason of the automatic engagement of the engaging fingers with the shuttles in the disengaged boxes, the said shuttles will be effectually prevented from jarring forward by the vibratory action of the loom.

Instead of securing the shuttle-engaging fingers *f* to one of the shuttle binders they may be attached to the shuttle box itself, as shown in Figs. 5, 6 and 7, the said fingers being arranged upon the vertical rib *o*, with their engaging ends *p* passing through the perforation *q* made in the shuttle binder, the engaging end *p* of the said fingers, being preferably made to enter the eye *r* of the shuttle, thus holding the shuttle firmly against forward movement.

Another feature of my improvement consists in employing the finger *f* as a means for frictioning the threads which extend outward from the resting shuttles of the disengaged shuttle boxes so that the said

threads will not become slack and be drawn into the shed with the thread of the thrown shuttle, and thus produce an imperfect selvage as heretofore. And in this case, instead of making a perforation *q* in the shuttle 5 binder to receive the engaging end *l*, of the finger *f*, the said finger is bifurcated at its end as shown in Figs. 1, 2, 3 and 4 to receive the rubber tube *t*, which is held upon 10 the wire *w'* extending between the arms *v*, *v*, which arms are adapted to inclose the shuttle binder *c*, a vertical groove *w* being made in the side of the shuttle to receive the said rubber tube *t*, which serves to friction the 15 thread *x*, which has been previously drawn from the shuttle. And as shown in Figs. 5, 6 and 7, the end of the finger *f* is provided with a rubber cone *y*, which when entering the eye *r* of the shuttle will also 20 serve to friction the thread *x*, and prevent its further withdrawal from the shuttle bobbin, the engaging finger *f* being withdrawn in every case whenever the shuttle-box arrives at its position for having its shuttle 25 thrown through the shed.

In all drop shuttle-box looms in use, the shuttle upon its movement from the line of the shuttle race is brought forward to a uniform position, by means of the guide 30 flange *z* upon the lay frame, as shown in Fig. 2, thereby the end of the finger will be sure to enter the opening in the shuttle.

I claim as my invention:

1. The combination of a drop shuttle-box mechanism, with a distinct shuttle-engaging means carried thereby, for preventing the forward movement of the shuttle in its box whenever the shuttle, in the operation of the loom, is removed out of line with the shuttle race, and at the same time applying friction 40 to the withdrawn thread at the side of the shuttle.

2. The combination of a drop shuttle-box mechanism, with a distinct shuttle-engaging means carried thereby for preventing the forward movement of each of the several shuttles in its own box independently of the others, whenever in the operation of the loom the shuttle is removed out of line with the shuttle race, and at the same time applying friction to the threads of the said shuttle independently of the others to prevent 50 imperfection in the woven web.

3. The combination of a shuttle-box mechanism, with a distinct spring-actuated shuttle engaging means carried thereby, for applying friction to the thread at the side of the shuttle upon the removal of the shuttle from the line of the shuttle race. 55

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Witnesses:

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