

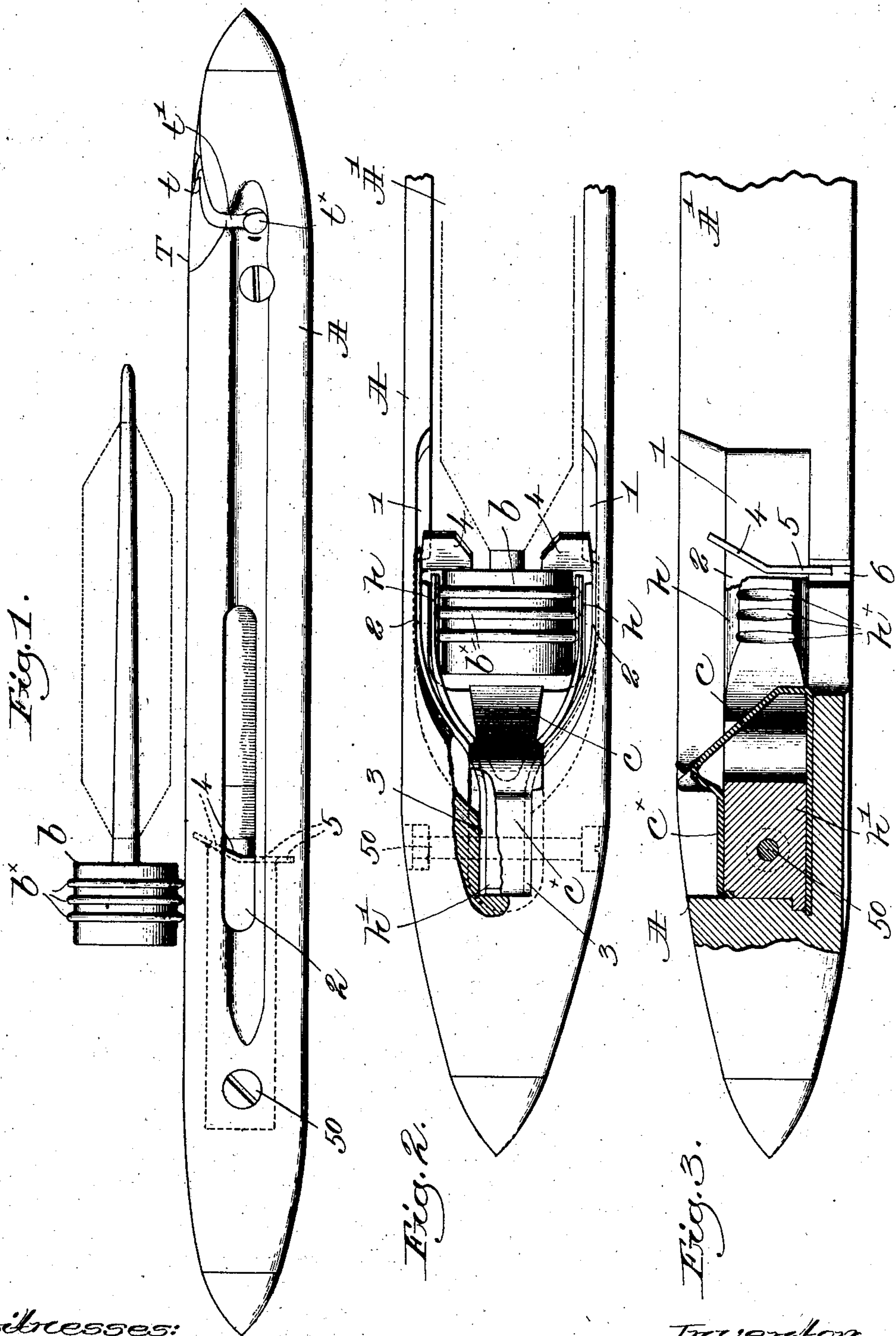
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C. W. FROST.  
SELF THREADING LOOM SHUTTLE.

APPLICATION FILED JUNE 17, 1904.

NO MODEL.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

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## SELF-THREADING LOOM-SHUTTLE.

SPECIFICATION forming part of Letters Patent No. 768,218, dated August 23, 1904.

Application filed June 17, 1904. Serial No. 212,983. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES W. FROST, a citizen of the United States, and a resident of Waterville, county of Kennebec, State of Maine, have invented an Improvement in Self-Threading Loom-Shuttles, of which the following description, in connection with the accompanying drawings, is a specification, like letters and figures on the drawings representing like parts.

This invention relates to shuttles for use in looms wherein a filling-carrier of the cop-skewer type more especially is inserted in the running shuttle to replenish the filling—as, for instance, in looms of the Northrop type, shown in United States Patent No. 529,940.

In using cop-skewers the heads thereof are provided with annular projections or rings to enter upright notches in the inner faces of spring-jaws located within and at one end of the chamber in the shuttle-body provided for the reception of the filling-carrier. At the time the latter is transferred from the feeder to the shuttle the notches in the jaws should be in the paths of the annular projections on the head of the incoming filling-carrier to enable the same to be properly engaged and firmly held by the jaws. Otherwise the head will not be held securely nor in proper position in the shuttle.

When using cop-skewers, it has been found that when the shuttle is stopped in the box the jar sometimes tends to tilt up the tip of the skewer, causing warp breakage when the shuttle is moving through the warp. So, also, when a change of filling is taking place there is sometimes a tendency of the discharged or ejected cop-skewer to throw ahead when struck by the incoming one, and, as a matter of fact, skewers have in this manner been thrown so far ahead as to stick their points or tips into the thread-passage of the threading device.

My present invention has for its object the production of means to effect proper positioning of the shuttle if the jaws thereof are not in correct position to receive the head of an incoming filling-carrier and to prevent tilting up or throwing forward of a filling-carrier of

the cop-skewer type more particularly. It will be manifest, however, that if a bobbin were made with a shoulder like the cop-skewer herein shown it would operate in the same manner, my invention consequently covering such a bobbin as well as a cop-skewer.

The construction to be hereinafter described provides for endwise movement of the shuttle when it is necessary to position the jaws.

Figure 1 is a side elevation of a self-threading loom-shuttle embodying one form of my invention, a cop-skewer being shown above it as about to enter the chamber in the shuttle-body. Fig. 2 is an enlarged plan view, partly broken out and in section, of the holding end of the shuttle and showing the novel features of my invention, a cop-skewer being shown in operative position; and Fig. 3 is a partial longitudinal sectional detail on the line 3 3, Fig. 2, omitting the cop-skewer.

The shuttle-body A, having an elongated chamber A' extended therethrough to receive the filling-carrier; the automatically self-threading block T, Fig. 1, having a head  $t$  overhanging a slot  $t'$ , leading to the delivery-eye  $t^x$  of the shuttle; the spring-acting holding-jaws  $h$ , having upright notches  $h^x$  in their inner faces, Fig. 3, to receive the usual annular projections or rings  $b^x$  on the head  $b$  of the filling-carrier, shown as a cop-skewer; the block  $h'$ , Fig. 3, with which the jaws are connected, its retaining-screw 50, and the metallic plate  $c^x$ , embracing the block and having an inclined portion or guide-bridge  $c$  extended between the jaws near their bases, may be and are all substantially of well-known or usual construction in self-threading shuttles of the specified type.

The inner walls of the chamber A' are recessed opposite the jaws at 1 to permit the insertion of two forwardly-extended forwardly-divergent spring or resilient supports or arms 2, their rear ends 3 passing along the opposite faces of the block  $h'$  and having their upper edges lying flush with the top of the block. The plate  $c^x$  is wide enough to lap over such upper edges, as shown in Fig. 2, and firmly position the arms, the screws



50 passing through the flat portions 3 thereof. The outer end of each of the resilient arms 2 is bent inward and broadened just beyond the free end of the adjacent jaw, as at 4, such broadened portions or wings being upwardly and forwardly inclined or flared to present cam-surfaces which extend higher than the tops of the jaws, as clearly shown in Fig. 3. Each wing is provided with a straight-faced depending part or stop 5, which, as shown in Fig. 3, projects beyond the lower end of the arm and enters loosely an upright recess 6 in the wall of the shuttle-body below the scooped-out portion 1.

15 If when transfer takes place the shuttle is properly positioned, the notches  $h^x$  of the jaws will receive the projections  $b^x$  on the skewer-head  $b$ , and the latter will be properly held in the shuttle, the jaws firmly holding the head, and at such time the stops 5 will bear against the flat inner end of the head at each side of and below its longitudinal axis. Consequently the tip of the skewer cannot by any possibility tilt up when the shuttle is stopped no matter how great the jar or shock due to the stopping of the shuttle. When the head of the incoming skewer hits the head of the one then in the shuttle to discharge or eject it, the stops 5 prevent any forward movement of such discharged skewer, because its head cannot move forward past the stops until the top of the head is moved down beyond their lower ends, and at such instant the skewer is wholly outside the shuttle.

35 It will be manifest that the device herein shown is not adapted to act in conjunction with ordinary bobbins, because there is no sharply-defined flat surface at the inner end of the head, as is the case in a cop-skewer, for the head of the bobbin at its inner end is rounded and tapered off to meet the barrel.

Supposing at the instance of transfer the shuttle is not far enough in the shuttle-box, the jaws cannot properly engage the head of the filling-carrier, as the notches  $h^x$  are not in the paths of the projections  $b^x$ . In such a case the head of the filling-carrier will strike the cam-surfaces or wings 4 as the filling-carrier descends, and the shuttle will be moved to the right viewing Fig. 1 until the notches  $h^x$  are positioned properly to receive the projections and transfer is completed. The cam-surfaces slide along under the head and its projections, and the entrance of the latter into the notches of the jaws is assured. The resiliency of the supporting-arms 2 provides for any requisite slight give or yield laterally during such operation. Should the shuttle be too far in the box, the outer end of the head  $b$  will engage the part  $c^x$  and the latter will slide under the head, causing the shuttle to move to the left, Fig. 1, until the notches are in proper position to receive the projections  $b^x$ . The lower ends of the cam-surfaces or wings

4 are substantially opposite the center of the head and so far distant from the notches  $h^x$  in a horizontal direction that as the incoming head  $b$  approaches the proper point in its descent the inner flat end thereof will wipe or slide over the lower ends of the wings and the upright faces of the stops 5 as the projections enter the notches of the jaws.

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

1. A shuttle-body chambered for the reception of a filling-carrier, holding-jaws located within and at one end of the chamber and adapted to engage and hold the head of the filling-carrier, and means on the shuttle separate from said jaws to cooperate with the head of an incoming filling-carrier and properly position the jaws to receive the head, said means acting against the inner end of the head when held by the jaws to prevent tilting up of the tip of the filling-carrier.

2. A shuttle-body chambered for the reception of a filling-carrier, holding-jaws located within and at one end of the chamber and adapted to engage and hold the head of the filling-carrier, and resilient arms outside the jaws and having rearwardly-inclined cam-surfaces at their free ends projecting above the jaws, to cooperate with the head of an incoming filling-carrier and properly position the jaws to receive the head.

3. A shuttle-body chambered for the reception of a filling-carrier, holding-jaws located within and at one end of the chamber and adapted to engage and hold the head of the filling-carrier, and devices movable with the shuttle and separate from said jaws to cooperate with the inner and outer ends of the head of an incoming filling-carrier and cause longitudinal movement of the shuttle in either direction to properly position the jaws to receive the head.

4. A shuttle-body chambered for the reception of a filling-carrier, holding-jaws located within and at one end of the chamber and adapted to engage and hold the head of the filling-carrier, and yieldingly-sustained means adjacent the free ends of and separate from the jaws to cooperate with the head of an incoming filling-carrier and properly position the jaws to receive the head, said means having depending portions to act against the inner end of the head below its center and prevent tilting of the filling-carrier.

5. A shuttle-body having a chamber for the reception of a filling-carrier, holding-jaws located within and at one end of the chamber to engage and hold the head, and means depending below the free ends of the jaws to engage the inner end of the head of a filling-carrier when held by the jaws, to prevent the same from tilting up, or from being thrown forward when ejected from the shuttle.



6. A shuttle-body having a chamber for the reception of a cop-skewer, holding-jaws located within and at one end of the chamber to engage and hold the head, and means mounted on the shuttle separate from the jaws to engage the inner end of the head of a cop-skewer below and at each side of its longitudinal center when held by the jaws.

7. A shuttle-body having a chamber for the reception of a cop-skewer, holding-jaws located within and at one end of the chamber to engage and hold the head, resilient arms mounted on the shuttle outside the jaws and extended beyond their free ends, upturned and forwardly-flared wings on the ends of the arms to cooperate with the head of an incoming cop-skewer and properly position the jaws to receive the same, and depending stops below the wings to act against the inner end of the head and prevent the cop-skewer from tilting up,

and also to prevent the cop-skewer from throwing forward when discharged from the shuttle.

8. A shuttle-body having a chamber for the reception of a cop-skewer, holding-jaws located within and at one end of the chamber to engage and hold the head, and yieldingly-sustained means mounted on the shuttle to cooperate with the inner end of the head of a cop-skewer when held by the jaws, to prevent tilting up of the cop-skewer when the shuttle is stopped, and to prevent throwing forward of the cop-skewer when discharged from the shuttle.

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

CHARLES W. FROST.

Witnesses:

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C. W. HUSSEY.