

J. NORTHROP.  
FILLING REPLENISHING LOOM.

APPLICATION FILED JAN. 5, 1903.

NO MODEL.

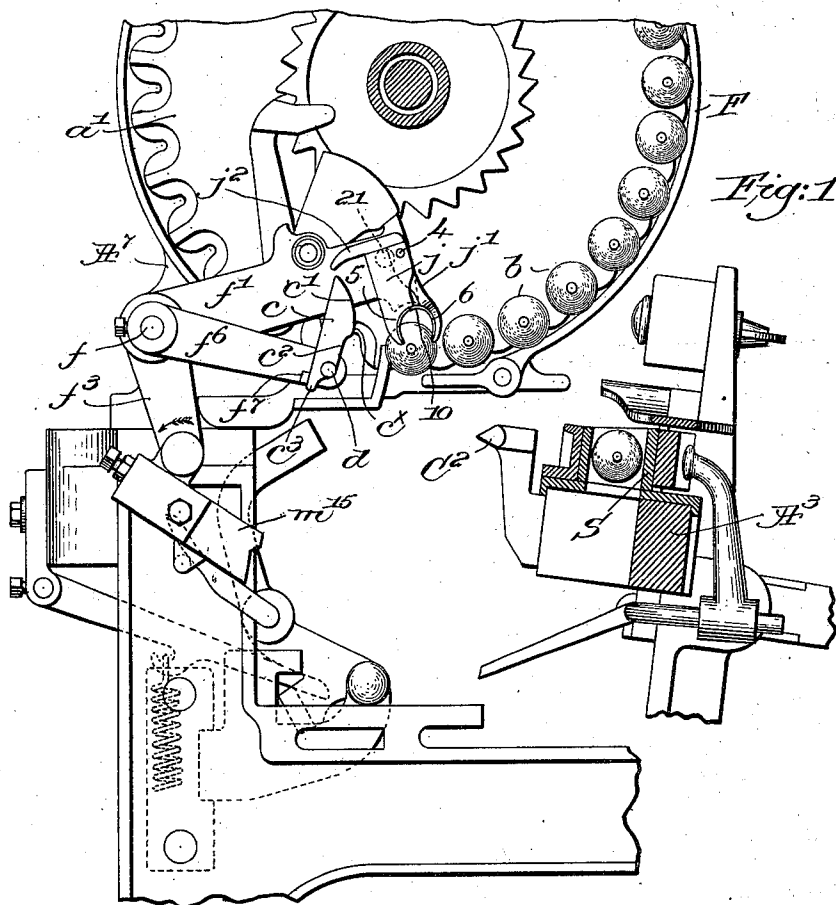


Fig. 1.

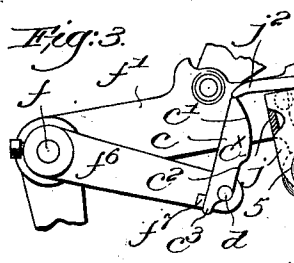


Fig. 2.

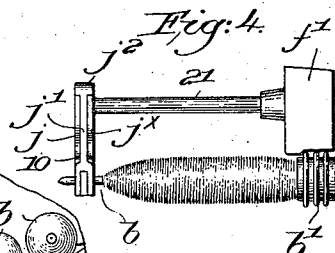
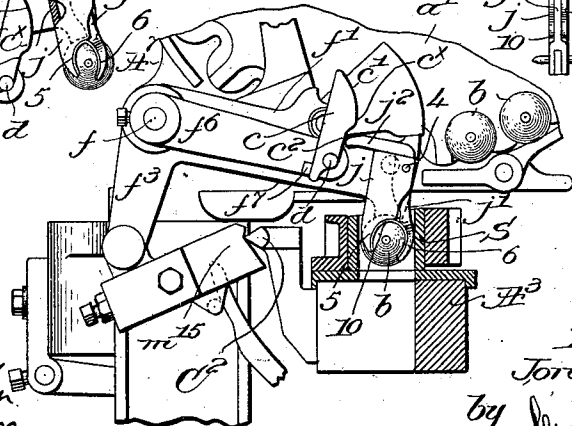
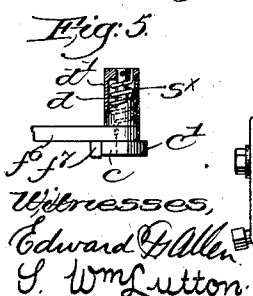


Fig. 4.



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# UNITED STATES PATENT OFFICE.

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## FILLING-REPLENISHING LOOM.

SPECIFICATION forming part of Letters Patent No. 724,121, dated March 31, 1903.

Application filed January 5, 1903. Serial No. 137,925. (No model.)

*To all whom it may concern:*

Be it known that I, JONAS NORTHROP, a sub-  
ject of the King of Great Britain, and a resi-  
dent of Hopedale, county of Worcester, State  
of Massachusetts, have invented an Improve-  
ment in Transferring Mechanism for Auto-  
matic Filling-Replenishing Looms, of which  
the following description, in connection with  
the accompanying drawings, is a specification,  
like characters on the drawings representing  
like parts.

In looms provided with mechanism for  
transferring automatically a fresh supply of  
filling to the running-shuttle the filling-car-  
rier, such as a bobbin or cop-skewer, is rap-  
idly transferred from a hopper or feeder to  
the shuttle. The tip or head of the filling-  
carrier is engaged by a rocking arm or trans-  
ferrer at such time, and United States Patent  
No. 647,918 shows and describes means for  
positively holding or grasping the tip of the  
filling-carrier in order to cure certain defects  
in operation when the tip is not so held.

This invention has a similar object in view—  
namely, to provide means for grasping firmly  
the tip of the bobbin or cop-skewer during  
transfer and to obviate a very common fault,  
the snapping of the tip down, so as to bring  
extra and undesirable tension on the taut  
filling-thread leading from the filling-carrier  
to the hopper or feeder. Owing to the force  
of the blow and for other reasons the filling-  
carrier is often inclined, with its tip con-  
siderably below the bottom of the shuttle.  
When the shuttle is picked out of the shut-  
tle-box, the tip is of course snapped up into  
place, but meanwhile it has very probably  
broken its thread. Again, the filling-carriers  
sometimes get out of position laterally while  
entering the shuttle, so that their tip ends  
will strike the sides of the shuttle.

My present invention prevents both of such  
faults, as the tip of the filling-carrier is po-  
sitively grasped and held during transfer and  
until the filling-carrier is properly positioned  
in the shuttle.

An important feature of my invention is  
the release of the tip before the transferrer  
begins its return movement to normal posi-  
tion.

In former devices employing a positive grip  
for the tip the quick return of the transferrer  
sometimes will pull the filling-carrier up more  
or less out of the shuttle, notwithstanding the  
very rapid release of the tip.

In my present invention the release is gov-  
erned positively, and it is effected surely and  
accurately before the transferrer begins its  
return movement.

The various novel features of my inven-  
tion will be described hereinafter in the speci-  
fication and particularly pointed out in the  
following claims.

Figure 1 is a cross-sectional view of a por-  
tion of a loom, taken between the end plates or  
disks of the feeder or hopper and illustrat-  
ing one embodiment of my invention, the  
transferring mechanism being shown in normal  
position. Fig. 2 is a detail view showing  
the filling-carrier just inserted in the shut-  
tle with the tip-grasping means released  
and the transferrer just ready to return to  
normal position. Fig. 3 is a detail view, in  
side elevation, of the transferrer on its trans-  
ferring stroke and the tip-grasping means  
just about to act on the tip of the filling-car-  
rier. Fig. 4 is a view of the parts shown in  
Fig. 3 looking toward the left; and Fig. 5 is  
a top view, partly broken out, of the con-  
troller for the tip-grasping means.

The lay  $A^3$ , having one of its shuttle-boxes  
slotted at the bottom for the passage of the  
ejected filling-carrier, the self-threading shut-  
tle  $S$ , the hopper or filling-feeder  $F$ , the inner  
disk  $a'$  thereof being shown in Figs. 1 and 2,  
the fixed stud  $f$  on the stand  $A^7$ , and the trans-  
ferrer  $f'$ , mounted to rock thereon, may be  
and are all substantially as in United States  
Patent No. 664,790, dated December 25, 1900,  
the transferrer having a depending arm  $f^3$ ,  
carrying a notched dog  $m^{15}$ , to be engaged by  
a bunter  $C^2$  on the lay when a change of fill-  
ing is to be effected. As in said patent, the  
transferrer has a lateral arm 21 secured rig-  
idly thereto, the outer end of the arm being  
enlarged and downturned, as at  $j$ , and bifur-  
cated or slotted, as at  $j^x$ , Fig. 4, the lower end  
of said part, which constitutes a jaw, being  
concaved at its rear edge at 5. Within the  
slot  $j^x$  is inserted the upper end of a relatively

movable jaw  $j'$ , fulcrumed on a pin 4 and having its prong-like lower end concaved on its forward edge at 6 opposite to the concave portion 5 of the opposed jaw. A bow-shaped piece of leather, rubber, or other resilient and preferably non-metallic material 10 is inserted between and secured to the concaved portions of the jaws, as clearly shown in the drawings, this bow-shaped piece tending to separate or open the jaws and engaging the tip of the filling-carrier  $b$  when the jaws are closed. The upper end of the jaw  $j'$  is enlarged and extended forward above the top of the slotted jaw  $j$ , as at  $j^2$ , and projects beyond the front upright edge thereof, as shown in Figs. 1, 2, and 3, the weight of such enlargement acting as a counterbalance to hold the jaw  $j'$  open, this tendency being assisted by the resiliency of the bow-shaped piece 10.

In the Patent No. 647,918 referred to the arm  $f^6$ , fixedly secured to the stud  $f$ , sustains a yieldingly-mounted tip-support; but herein I have dispensed with such tip-support and utilize the arm to sustain means for controlling the opening and closing of the jaws. A pin  $d$ , extended loosely through the arm, has secured to its inner end a short sleeve  $d'$ , inclosing a spring  $s^x$ , Fig. 5, surrounding the pin and fast at one end to the sleeve, the other end of the spring being secured to the arm. On its opposite or outer end the pin has secured to it an elongated upturned cam  $c$ , having a curved edge  $c'$ , gradually rising to the high part  $c^x$  and then suddenly dropping to the low part  $c^2$ . The spring  $s^x$  is so wound as to normally retain the cam in the position shown, with its depending tail  $c^3$  against a stop  $f^7$  on the arm  $f^6$ . Normally the extension  $j^2$  is just above the upper end of the cam; but when a change of filling is effected the transferrer  $f'$  swings downward to engage the head  $b'$  of the filling-carrier, and the extension  $j^2$  just about engages the cam  $c$  as the jaws  $j$  and  $j'$  straddle the tip, as shown in Fig. 3. As the transferrer continues to descend the cam-face  $c'$  acts to quickly turn jaw  $j'$  on its fulcrum 4 in the direction of arrow 2, Fig. 3, thereby closing the jaws and compressing the bow 10 upon the tip of the filling-carrier, firmly grasping it. The face  $c'$  is long enough to hold the jaws closed upon the tip until the filling-carrier is inserted in the shuttle, the lower or grasping ends of the jaws entering the shuttle. Just before the transferrer has fully completed its active or transferring movement, however, the extension  $j^2$  passes off the high point  $c^x$  of the cam and drops into relative normal position when opposite the low part  $c^2$  of the cam, the weight of the extension and the bow 10 immediately opening the jaws and freeing the tip, as in Fig. 2. The tip is thus freed before the transferrer begins its retrograde movement to normal position, and hence there is no possibility of the tip being lifted by such movement. As the transferrer rises the end of the extension  $j^2$  wipes over the cam

edge and swings the cam on its fulcrum-pin  $d$  against the action of the spring, the cam thereby yielding to permit the return of the extension with the transferrer, and, as will be seen from Fig. 1, the parts are then in readiness for the next transfer of filling.

The opening and closing of the jaws is entirely independent of the filling-carrier, and the controlling device or cam is also mounted independent of the transferrer, as will be manifest from the foregoing.

My invention is not restricted to the precise construction and arrangement herein shown and described, as the same may be modified or changed in different particulars by those skilled in the art without departing from the spirit and scope of my invention.

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

1. In a loom provided with automatic filling-supplying mechanism, a transferrer, means mounted thereon to grasp the tip of a filling-carrier, and a controller independent of the transferrer to cause said means to grasp and release the tip automatically.

2. In a loom provided with automatic filling-supplying mechanism, a transferrer having jaws to engage and hold the tip of a filling-carrier during transfer, and means independent of the transferrer and the filling-carrier to effect automatically the closing and opening of the jaws.

3. In a loom provided with automatic filling-supplying mechanism, a transferrer, means mounted thereon to grasp the tip of a filling-carrier, and a controlling-cam mounted independently of the transferrer, to cooperate with and cause said means to grasp and release the tip automatically.

4. In a loom provided with automatic filling-supplying mechanism, a transferrer, means mounted thereon to grasp the tip of a filling-carrier, and a controller to cause said means to grasp the tip during transfer and to release the tip as the transferring movement of the transferrer is completed.

5. In a loom provided with automatic filling-supplying mechanism, a transferrer having jaws to engage and hold the tip of a filling-carrier during transfer, and a controller to close the jaws automatically as transfer begins and to effect opening of the jaws and release of the tip prior to return movement of the transferrer.

6. In a loom provided with automatic filling-supplying mechanism, a transferrer having jaws to engage and hold the tip of a filling-carrier during transfer, and means mounted independently of the transferrer to close the jaws automatically during transfer and to effect their opening to release the tip as the transferrer completes its transferring movement.

7. In a loom provided with a feeder to hold a supply of filling-carriers, a rocking transferrer having a fixed tip-holding jaw and a co-

operating, relatively movable jaw, and a controller mounted independently of the transfer-  
ferrer to engage and close the movable jaw  
upon the tip of a filling-carrier to be trans-  
ferred and to retain it closed during transfer,  
and to effect opening of the movable jaw be-  
fore the transferer begins its return move-  
ment.

8. In a loom provided with automatic filling-  
supplying mechanism, a transferer having  
jaws to engage and hold the tip of a filling-  
carrier during transfer, and a cam mounted  
independently of the transferer, to close the  
jaws automatically at the beginning of trans-  
ferring movement of the transferer and to ef-  
fect their opening as such movement ceases,

the closing and opening of the jaws being ef-  
fected independently of the filling-carrier.

9. A transferer for automatic looms, hav-  
ing tip-grasping jaws mounted upon it, and  
means independent of the transferer and op-  
erating independently of the filling-carrier to  
close the jaws upon the tip of the latter dur-  
ing transfer and to open them prior to retrac-  
tion of the transferer.

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

JONAS NORTHROP.

Witnesses:

GEORGE OTIS DRAPER,  
ERNEST W. WOOD.