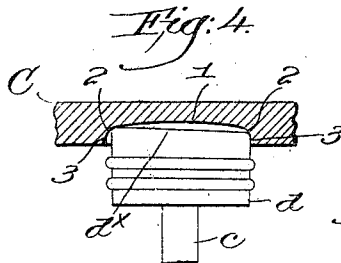
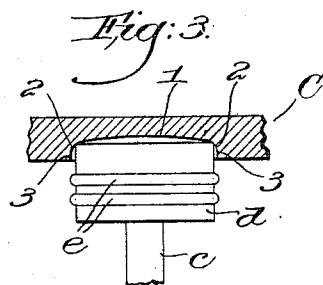
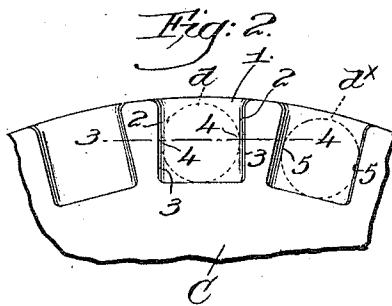
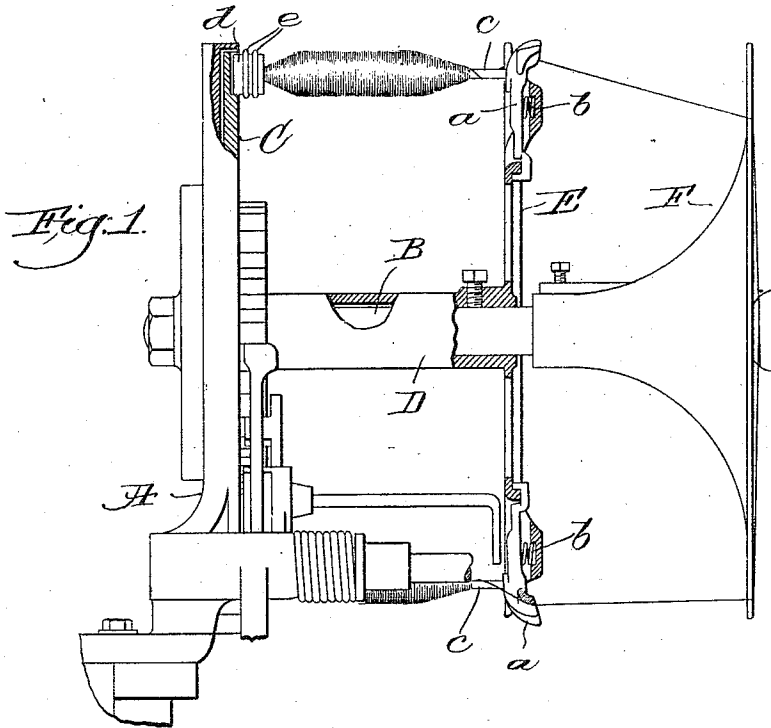


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 FILLING FEEDER FOR AUTOMATIC FILLING REPLENISHING LOOMS.  
 APPLICATION FILED MAR. 26, 1910.

995,290.

Patented June 13, 1911.



Witnesses,  
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# UNITED STATES PATENT OFFICE.

ALONZO E. RHOADES, OF HOPEDALE, MASSACHUSETTS, ASSIGNOR TO DRAPER COMPANY, OF HOPEDALE, MASSACHUSETTS, A CORPORATION OF MAINE.

FILLING-FEEDER FOR AUTOMATIC FILLING-REPLENISHING LOOMS.

995,290.

Specification of Letters Patent. Patented June 13, 1911.

Application filed March 26, 1910. Serial No. 551,645.

*To all whom it may concern:*

Be it known that I, ALONZO E. RHOADES, a citizen of the United States, and resident of Hopedale, county of Worcester, State of Massachusetts, have invented an Improvement in Filling-Feeders for Automatic Filling-Replenishing Looms, of which the following description, in connection with the accompanying drawing, is a specification, like characters on the drawing representing like parts.

This invention relates to looms of the Northrop type wherein the supply of filling in the working shuttle is replenished from time to time by the automatic introduction of a fresh supply of filling to the shuttle, the fresh filling-carriers being held in reserve in a suitable hopper or feeder. Such a structure is shown in United States Patent No. 529,940 granted to Northrop November 27, 1894.

The filling-carrier, which may be either a bobbin or a cop-skewer, is in practice supported at its butt and tip in the feeder, comprising essentially two circular disks connected to be rotated in unison and intermittingly, to bring one carrier after another into position to be transferred to the shuttle.

It is customary to provide a spring-acting holder for either the butt or the tip of the filling-carrier when in the feeder, to not only yieldingly retain the carrier in place but also to exert sufficient pressure axially to prevent rotative motion of the carrier while thus supported, and this non-rotation is readily effected in the case of bobbins, owing to the relatively large surface presented by the end of its tip. The frictional engagement of such surface with the tip-holding device is sufficient to prevent rotation, even if the end of the butt, by reason of wear or otherwise, will not rest squarely against the butt-holding device. When cop-skewers are used, however, a different state of affairs is met, for the tip of the metal blade of the skewer is so small, and usually pointed, that the friction between it and the tip-holder of the feeder is practically negligible. Consequently a great deal of trouble has been experienced in looms of the Northrop type when cops are used, because the cop-skewers rotate axially in the feeder

and disarrange the filling ends. This is particularly true when old skewers are used, having the ends of the butts worn or uneven, so that they cannot bottom firmly on the butt-holder of the feeder.

My present invention has for its object the production of a filling feeder particularly adapted for the use of cop-skewers, so constructed and arranged that the cop-skewer will be firmly and effectively held from axial rotation while in the feeder, thereby overcoming the objections hereinbefore pointed out as found in filling replenishing mechanism now in use.

The various novel features of my invention will be fully described in the subjoined specification and particularly pointed out in the following claims.

Figure 1 is a front elevation of filling-replenishing mechanism of the Northrop type, the rotatable feeder forming a part thereof embodying one form of my present invention; Fig. 2 is an enlarged face view of a portion of the plate or disk constituting the inner end of the feeder, having the seats or pockets for the butts of the filling-carriers; Figs. 3 and 4 are sections, much enlarged, on the line 3—4, Fig. 2, showing how the butt of a cop-skewer is firmly held in the seat, even if the end of the butt be worn or uneven, as shown in Fig. 4.

In Fig. 1, the stand A having a fixed horizontal stud B, the inner end plate C of the feeder, having a hub D rotatably mounted on the stud B and fixedly connected with the outer end plate E of the feeder, and the filling-end holder F are in general of well known construction, the plate E being provided with a circularly-arranged series of tip-holders *a* controlled by springs *b*, said holders receiving and supporting the tips of the cop-skewer blades *c*, said tip-holders being substantially as shown in United States Patent No. 755,252 granted to Stimpson March 22, 1904. The butts *d* of the cop-skewers are shown as provided with annular projections or rings *e*, commonly used in Northrop looms. Usually the inner end plate of the rotatable feeder is provided on its inner face with peripheral seats or pockets having flat backs and parallel side walls which meet the

backs at right angles, forming square corners thereat. If the end of the butt  $d$  of a cop-skewer is true and flat, in a plane at right angles to the blade, as in Fig. 3, it will rest squarely and firmly upon the flat back of the seat in the butt-supporting plate of the feeder, and the annular contact therewith will exert sufficient friction to prevent rotation of the cop-skewer. If, however, the end of the butt is worn or uneven, as at  $d^*$ , Fig. 4, the end cannot abut squarely upon the back of the seat, but on the contrary will engage it at one point only, so that axial rotation of the cop-skewer is set up by the jarring and shaking of the loom. As is well known little or no resistance to such axial rotation is afforded by the engagement of the pointed tip of the skewer and the tip-holder  $a$ , and as the cop-skewer turns axially the filling-end leading therefrom will be unduly tightened or slackened. To prevent this action and provide a firm holding engagement for the butt of a cop-skewer in its seat I form the latter in a peculiar manner, as shown in Figs. 2, 3 and 4. To this end I make the back 1 of each shallow seat or pocket transversely concave, and continue the curvature at the sides at 2 to merge with the parallel, straight side walls 3, so that there are no corners at the junction of the back and the side walls, as clearly shown in Figs. 3 and 4. Thus the seat gradually increases in depth from its sides to its central portion, but only to a slight degree.

Referring to Fig. 3 the end of the butt  $d$  of the cop-skewer is shown as true, in a plane at right angles to the axis of the skewer, and when the butt is inserted in the pocket the circular end thereof will bear against the back 1 at two diametrically opposite points, as 4, 4, Fig. 2, and each contacting portion will be a small segment of the end of the butt, the dotted circle  $d$  indicating the butt of the cop-skewer. The curved surfaces 2 where the back merges into the side walls 3 of the seat act upon the butt to position it equi-distant from each side wall, and as the end of the butt has two opposite portions in contact with the back of the seat axial rotation of the cop-skewer is effectually prevented. Now, if the end of the butt  $d^*$  is uneven, or worn down, as shown in Fig. 4, when the butt is inserted in the seat the butt will be pushed to one side or the other, by the curved surfaces 2 and 1 until both the high and low points of the end  $d^*$  of the butt contact, or find a bearing, and as shown in Fig. 4 the high point engages the back 1 at the left, and the low point is crowded over to the right and engages the merging curve 2, indicated at 5, 5, Fig. 2, the dotted circle  $d^*$

indicating the end of the butt. Thus the butt end is in frictional engagement with the surface of the seat at two separated points, and not only that but the crowding over the butt presses it firmly against one of the side walls 3, to further assist in holding the butt from axial rotation. The frictional engagement is maintained by the tip-holder spring  $b$ , Fig. 1, acting through the blade  $c$  of the cop-skewer. While the frictionally engaging portions of the butt with the seat appear to be of small area, and in actual practice are small in area, the desired result is secured, the concave back of the seat and the merger thereof into the side walls appearing to crowd the end of the butt into a firm and secure holding engagement, preventing axial rotation of the cop-skewer. Should the butt having an uneven end be put into the seat with what may be termed the high point of the end radial to the seat, instead of transversely, (as in Fig. 4) the cop-skewer will turn on its axis less than a quarter revolution and will then seat itself and find a firm bearing practically as shown in Fig. 4, after which it can turn no further.

While the construction herein described is particularly designed for looms using cop-skewers it will be apparent that no trouble will be experienced in using ordinary bobbins, for the action upon the butts thereof will be the same as with cop-skewers. Consequently a feeder embodying my invention can be used for holding either form of filling-carrier, while a feeder arranged for bobbins cannot be successfully used for cop-skewers, for the reasons hereinbefore set forth.

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

1. A filling feeder for looms, comprising two rigidly connected and rotatable plates, a circularly-arranged series of spring-controlled tip-holders mounted on one of the plates, the other plate having in its inner face a series of shallow peripheral seats opposite said tip-holders, each seat having a transversely concave back and straight sides merging into the curved surface of the back, to receive the butts of the filling-carriers, the concave back enabling the butt of a filling-carrier to settle itself thereon and be held from axial rotation while the tip of the carrier is sustained by the tip-holder.

2. A filling feeder for looms, comprising two rigidly connected and rotatable plates, means on one of said plates to support the tips of a series of cop-skewers, and oppositely arranged shallow peripheral seats in the opposed face of the other plate to receive and support the butts of the cop-

skewers, each seat having a transversely  
concave back, and parallel, straight sides  
gradually merging into the concave surface  
of the back, whereby a cop-skewer may turn  
5 partway about its axis and its butt find a  
firm bearing in the seat and be thereby held  
from further axial rotation.

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

ALONZO E. RHOADES.

Witnesses:

FRANK J. DUTCHER,  
J. L. REMINGTON, JR.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,  
Washington, D. C."

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