No. 860,703. PATENTED JULY 23, 1907.

M. L. STONE.

WEFT CARRIER FOR WEFT REPLENISHING LOOMS.

APPLICATION FILED APR. 1, 1904.

Fig. 1.

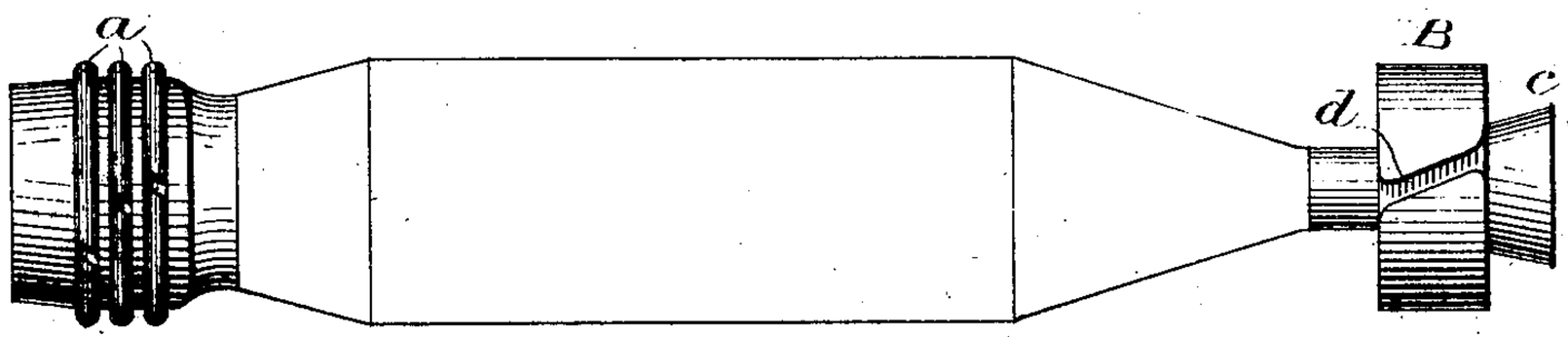


Fig. 2.

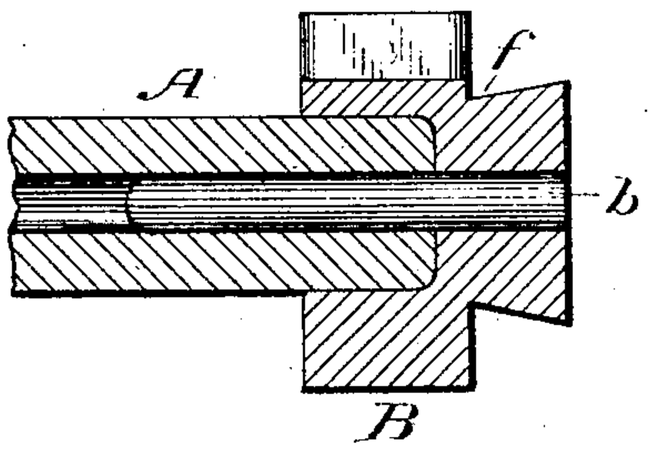


Fig. 3.

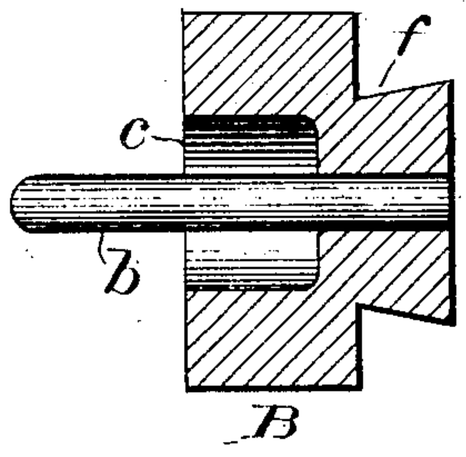


Fig. 4.

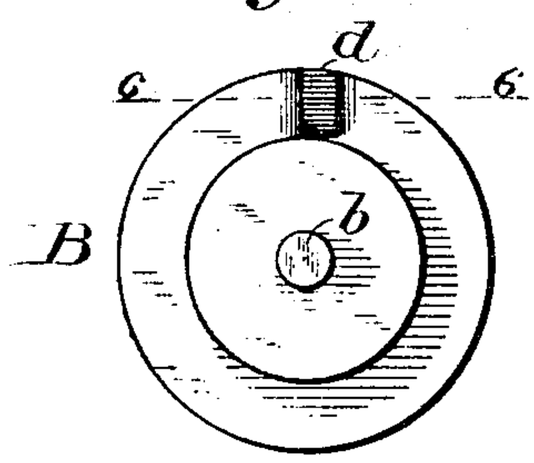


Fig. 5.

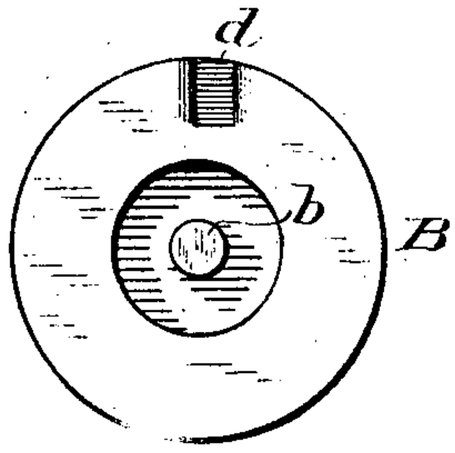


Fig. 6.

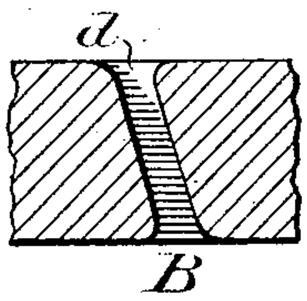
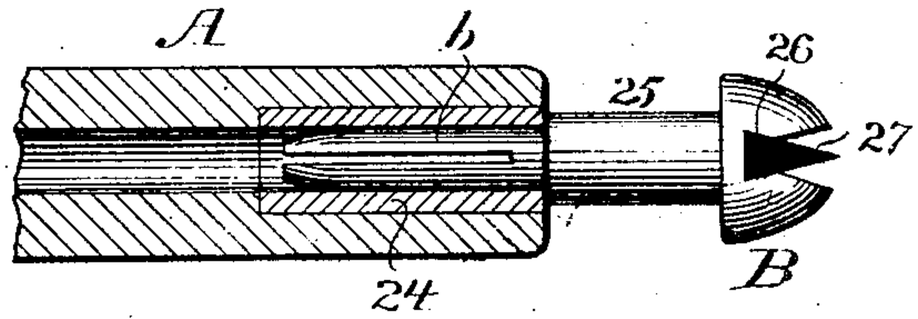


Fig. 7.



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UNITED STATES PATENT OFFICE.

MELVIN L. STONE, OF LOWELL, MASSACHUSETTS, ASSIGNOR TO DRAPER COMPANY, OF PORTLAND, MAINE, A CORPORATION OF MAINE.

WEFT-CARRIER FOR WEFT-REPLENISHING LOOMS.

No. 860,703. Specification of Letters Patent. Patented July 23, 1907.

Application filed April 1, 1904. Serial No. 201,060.

To all whom it may concern:

Be it known that I, MELVIN L. STONE, of Lowell, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Weft-Carriers for Automatic Weft-Replenishing Looms, of which the following is a specification.

In modern automatic weft replenishing looms (such as the well-known Northrop loom, which is sufficiently shown in United States Patent No. 529,940, Nov. 27, 1894) reserve weft-carriers are supported in a suitable magazine, hopper or battery carried by the loom, and are transferred one by one into the running shuttle whenever the condition of the weft renders replenishment expedient or necessary. In such looms the automatic threading of the shuttle is essential and this has heretofore been accomplished by the weaver securing the ends of the threads to a suitable weft stud or holder by hand at the same time that the weft-carriers are placed in the battery. The usual battery of the Northrop loom is a rotary one and this weft stud or holder has been arranged so as to rotate with the battery. As a consequence of this attachment of the ends of the threads, when a weft-carrier is transferred from the battery into the running shuttle the thread reels off from the inserted weft-carrier and the shuttle is automatically threaded, as fully set forth in numerous patents such as the Northrop patent No. 454,810, June 23, 1891. This usual way of securing the ends of the weft-carriers demands that it shall be done at the loom itself and it also frequently results in misthreading when a fresh weft-carrier is inserted into the shuttle, owing to the carelessness of the weaver in leading the end of the thread from the weft-carrier in the battery to the weft-end holder along the prescribed and proper path.

In a companion application for Letters Patent of the United States filed April 1, 1904, Serial Number 201,059, I have set forth an improvement in automatic weft replenishing looms whereby the duty of attention to the filling or weft has been taken away from the weaver and may be attended to away from the loom and outside of the weave room.

This improvement comprises a detachable magazine of large capacity which may be filled with fresh carriers outside of the weave room and the magazine so filled need not be supplied to the loom only at infrequent intervals, say, not oftener than once a day.

This new organization involves the employment of means for holding on to the ends of the threads to secure automatic threading of the shuttle different from the means now employed in the Northrop loom. The means which I have devised for this purpose consist in employing with each weft-carrier a readily detachable and attachable weft-end holder. These weft-end holders are applied to their respective weft-carriers at any convenient time and place, and the thread of each weft-carrier is secured at its end to the attached weft-end holder. The detachable magazine is filled with the weft-carriers with their attached weft-end holders, and the magazine is then placed upon the loom. At the proper time in the operation of the loom the weft-end holder is automatically removed from its weft-carrier carrying the end of the thread with it which then unreels from the carrier, thereby leaving the weft-carrier in condition to be transferred to the running shuttle, while the weft-end holder with the attached thread is maintained in a definite and prescribed place relative to the loom so that the danger of misthreading is minimized.

The weft-carriers with the readily attachable and detachable weft-end holders constitute the subject-matter of the present application and certain embodiments of this improvement are illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of a weft-carrier with a readily attachable and detachable weft-end holder applied thereto. Fig. 2 is a longitudinal section of one end of the weft-carrier and the attached weft-end holder. Fig. 3 is a longitudinal section of the weft-end holder detached. Fig. 4 and Fig. 5 are opposite end views of the weft-end holder detached. Fig. 6 is a cross-section of the weft-end holder in a plane indicated by the line 6—6 in Fig. 4. Fig. 7 is a longitudinal section of a modified construction of weft-carrier and weft-end holder.

The particular weft-carrier shown in the accompanying drawings is a wooden bobbin A which at its head or butt has peripheral rings *a*, *a*, which enable it to be grasped or held by bobbin-holding jaws in the shuttle, as in the United States patent of Northrop, No. 454,807, June 23, 1891. The weft-carrier at its tip end is equipped with a readily attachable and detachable weft-end holder B. This holder is provided with a shank *b* which fits within a central longitudinal aperture in the tip end of the weft-carrier. Preferably, also, the weft-end holder is provided with an annular socket *c* on its inner face surrounding the shank *b* so as to fit over and outside the tip end of the weft-carrier, as clearly shown in the drawings. This manner of detachably securing the weft-end holder to the tip of the bobbin insures the maintenance of the weft-end holder in place, and at the same time permits the weft-end holder to be easily attached to and detached from the bobbin. At its periphery the weft-end holder is provided with an open threading-slot *d*, preferably beveled at both mouths, as clearly shown in Figs. 1 and 6. Beyond the outer end of this threading-slot the weft-end holder has a stud *e* beveled on its inner face where it joins the body of the weft-end holder, so as to form an annular groove *f*. When the magazine is to be filled

with weft-carriers, one of these weft-end holders is put in place on each of the weft-carriers, and the end of the thread is then passed through the threading slot *d* and is wrapped several times around the outer stud *e*, within the beveled groove *f* into which the thread sinks and is gripped sufficiently to maintain the thread securely in place. The weft-carriers thus equipped are then placed in the magazine and, during the filling of the magazine, its transfer to the loom and the greater portion of the time which the bobbins occupy while on the loom, these detachable weft-end holders are maintained in place without any possibility of coming off from the weft-carriers accidentally or otherwise, and without any possible opportunity for the thread to become detached from its weft-end holder.

As set forth in the accompanying and companion application, at the appropriate time in the operation of the loom, the weft-end holder is automatically removed from the weft-carrier while still holding on to the end of the thread, so that the weft-carrier freed of the weft-end holder is then ready to be inserted into the running shuttle; while the removed weft-end holder retains its hold upon the thread so that the shuttle is automatically threaded in the same way as when the thread is held in the Northrop loom by the permanent weft-end holder with which the usual rotary battery is equipped.

The weft-end holder is, preferably, of the same diameter as the head of the bobbin (including the rings *a*, *a*, thereon) so that both ends may be guided in like channels when being fed automatically along in the loom on the way to the shuttle.

A modified weft-carrier and weft-end holder is illustrated in Fig. 7. In this case the weft-end holder has its shank *b* fitting within the outer end of the weft-carrier A, which is provided with a metal bushing 24 to receive it. The shank has an enlarged neck 25, which does not enter this bushing, since its shoulder seats against the outer end of the bushing. The weft-end holder is provided at its outer end with a tapered elastic plug 26 of rubber, which furnishes beveled notches 27 on opposite sides for the reception and holding for the end of the thread. This modified construction is useful when the detachable magazine is employed in connection with the usual rotary battery of the Northrop loom as set forth in my companion application.

The form of the weft-carrier and of the weft-end holder can be modified and changed in many other ways without departing from the spirit of the present invention.

It will be noted that this invention involves a new method of securing a weft-end. Instead of the old method of securing the weft-end to a permanent part of the loom, as in the Northrop loom, in accordance with the present method, the weft-end is secured to the detachable weft-end holder on the weft-carrier.

I claim as my invention:—

1. A weft-carrier for an automatic weft replenishing loom having a detachable weft-end holder.

2. A weft-carrier for an automatic weft-replenishing loom having at its tip end a detachable weft-end holder.

3. A weft-carrier for an automatic weft replenishing loom having a detachable weft-end holder provided with means for holding the end of a thread.

4. A weft-carrier for an automatic weft-replenishing loom having at one end provisions for securing it to a shuttle when automatically inserted therein, and having at its other end a detachable weft-end holder.

5. A weft-carrier for an automatic weft-replenishing loom having a weft-end holder to which the end of the thread on the carrier is fastened.

In witness whereof, I have hereunto signed my name in the presence of two subscribing witnesses.

MELVIN L. STONE.

Witnesses:
FRANK E. DODGE, JR.,
GEORGE OTIS DRAPER.