A. IMBACH.

WEFT SEVERING DEVICE FOR AUTOMATIC LOOMS.

APPLICATION FILED MAY 14, 1915.

1,157,397. Patented Oct. 19, 1915.

Fig. 1.

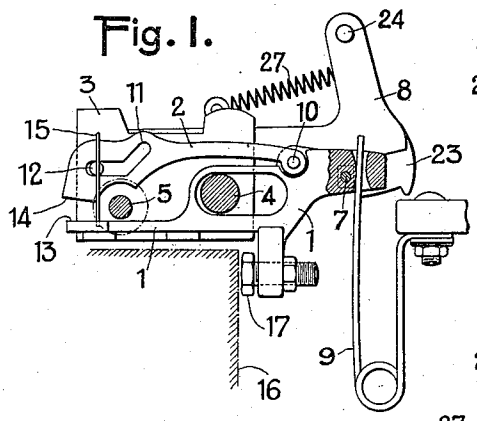


Fig. 2.

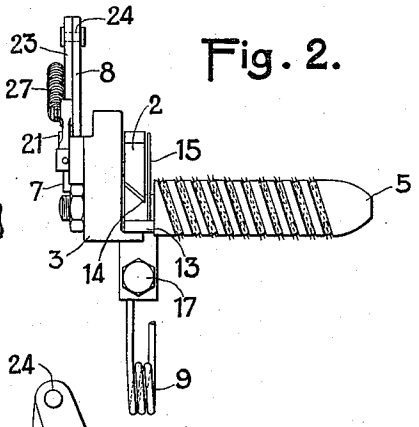


Fig. 3.

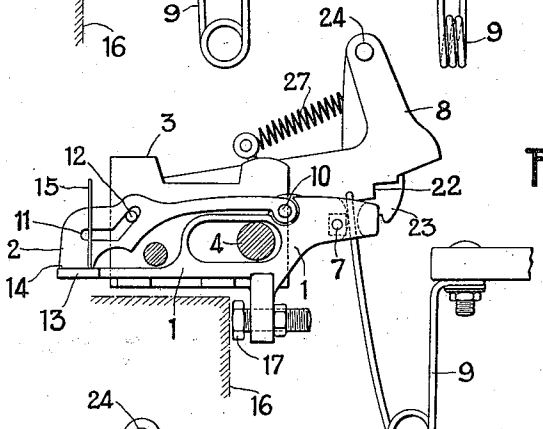


Fig. 4.

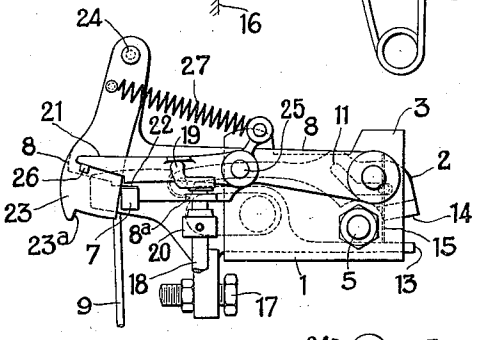


Fig. 5.

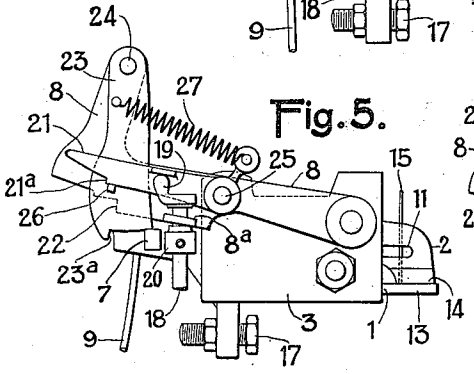
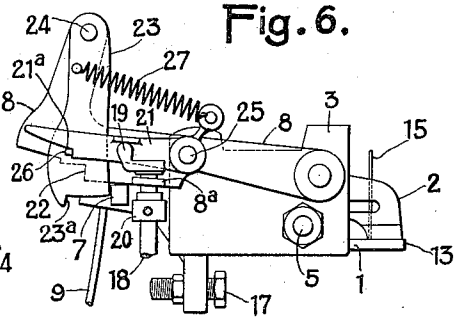


Fig. 6.



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WEFT-SEVERING DEVICE FOR AUTOMATIC LOOMS.

1,157,397. Specification of Letters Patent. Patented Oct. 19, 1915.

Application filed May 14, 1915. Serial No. 28,007.

To all whom it may concern:

Be it known that I, AUGUST IMBACH, a citizen of the Swiss Republic, and resident of Arlen-Rielasingen, Baden, Germany, have invented new and useful Improvements in Weft-Severing Devices for Automatic Looms, of which the following is a full, clear, and exact specification.

This invention relates to improvements in weft severing devices for automatic looms.

The known devices for cutting the weft thread ends on bobbin changing in automatic looms possess the disadvantages that they easily become displaced in operation and only work efficiently when they receive attention every day, that the thread ends remaining on the cloth are for the most part relatively long, and further, that the wear of the individual parts is too rapid so that the up-keep is very costly. To obviate these disadvantages it has already been proposed, instead of cutting through the thread, to sever it by means of a hammer. This hammering of the thread can only result in complete severance when it is effected suddenly and with impetus. If the hammer is controlled in dependence upon the batten as in the proposed manner, that is to say, so that it strikes the anvil when the batten changes its direction of movement and, consequently, when the velocity of the latter is approximately nil, the blow is so weak and slow that the weft thread, which is of itself soft, is frequently not severed. The device according to this invention obviates this disadvantage. In this case the control of the thread severing hammer is also partially dependent upon the batten, but the said strongly built hammer together with the anvil is shot forward by a spring tension mechanism and the hammer is brought hard against the anvil, the said mechanism, for the first movement of the hammer and anvil, being released by the bobbin changing mechanism and for the second movement by the batten. The employment of such a spring tension mechanism is known in connection with shears, but its application to a thread severing hammer constitutes a real advantage, since an efficient severing of the thread is rendered possible in this way only. The thread severing hammer is preferably chamfered or beveled at the head in such a manner that its thread cutting edge lies as near as possible to the edge of the cloth so that the thread is separated immediately at the said edge.

The drawing illustrates one form of construction according to the invention.

Figures 1 and 2 show the hammer in the position of rest, Fig. 1 being partially a side elevation, partly a vertical section and Fig. 2 a front view; Fig. 3 illustrates by a similar view to that of Fig. 1 the hammer in the position in which the thread is struck, and Figs. 4, 5 and 6 are side elevations of a form of releasing mechanism for the usual operation of the hammer in different positions of the parts, said side elevation being taken from the opposite side to that of Figs. 1 and 3.

The whole device is fitted to a carrier 3 which is secured to the temple carrier 4. The temple 5 itself is likewise screwed to the carrier 3.

The proper thread severing device consists of two parts, that is to say, the slide 1 adjustable relatively to the loom batten and the hammer 2 which is pivoted upon the said slide and is strongly constructed. The said slide 1 is retained in its withdrawn position or position of rest by the engagement of a pin 7 secured to it with a latch 8 which is pivotally mounted in the carrier 3 (Fig. 4).

In the operation of bobbin changing, the latch 8 is raised in the known manner and the slide 1 is driven against the loom batten by means of the tension spring 9. The weft thread end of the bobbin being ejected from the shuttle thus comes between the anvil piece 13 on the slide 1 and the severing edge 14 of the hammer and is carried with it by means of the pin 15 on the slide 1, while finally, the hammer 2, which is carried by the pivot 10 on the slide, by reason of the special form of a slot 11 formed therein and in which there engages a pin 12 secured to the carrier 3, is driven downward with considerable velocity. The thread is thus severed by the resulting blow of the hammer upon the anvil 13. The strongly constructed hammer 2 is so beveled at its broad head end (Fig. 2) that its thread severing edge 14 lies as near as possible to the edge of the

fabric, whereby the thread is severed quite close to the said fabric edge. In its return movement toward the breast beam the batten 16 brings the slide 1 with the hammer 2 back into its original position by means of the adjustable stop 17, whereby the hammer 2 is again raised. By a further device described below the latch 8 is first prevented from retaining the slide 1, so that the latter on the change of direction of motion of the batten is again shot forward and consequently strikes the end of the weft thread of the new spool in the described manner. The batten subsequently brings the slide again into the initial position where it is now retained by the latch 8.

Fig. 4 shows the releasing mechanism for the hammer in the position of rest in which it is retained by means of the pin 7 of the slide 1 through the medium of the latch 8. At the beginning of the operation of bobbin exchanging a small rod 18 is raised by means of a system of levers (not shown). The collar 20 secured upon the said small rod then lifts the latch 8, with which it engages at 8^a, to such an extent that its notch 22 releases the pin 7, the result of which is that the slide above described is shot in front of the batten and the hammer can sever the remainder of the weft thread.

The latch 8 carries a pawl 23 pivoted upon the axis 24 which in the position of rest is pressed against the pin 7 by means of the spring 27. The said spring 27 also presses a lever 21, which is mounted upon the pivot 25 on the latch 8, against a pin 26 which is secured to the pawl 23. By the above described upward motion of the small rod 18, in addition to the latch 8, the lever 21 is raised by means of the cam 19 so that the pawl 23, as soon as the slide 1 with the pin 7 is in the first time brought against the batten, assumes the position shown in Fig. 5 and comes to rest above the pin 7. By this means the pawl 23, on the first return of the slide, prevents the latch 8, from dropping to lock the pin 7 by the engagement of its notch 22 with the said pin. The slide thus remains unlocked and can again move toward the batten so that the hammer can for the second time strike the thread, in this case the end of the weft thread of the new bobbin. On the first return the slide 1, by the impact of its pin 7 against the nose 23^a of the pawl 23, has brought the latter into such a position that its pin 26 now lies within reach of the stop 21^a of the lever 21 (Fig. 6). The latter therefore, on the second operation of the slide, holds back the pawl 23 and the pin 7 can slide forward under the said pawl 23 in order to assume, relatively with the latter, the position shown in Fig. 6, so that the latch 8 can drop on to the pin 7, whereby its notch 22, on the second return of the slide, engages with the said pin and locks the slide. The device is thus again in the position of rest.

What I claim is:

1. In automatic looms, a device for severing weft thread ends on bobbin exchange, comprising a thread severing hammer, a movable carrier for said hammer, an anvil on said carrier opposite to said hammer, a spring tension mechanism for rapidly shifting forward said carrier with its hammer and anvil, means for striking the hammer upon the anvil on the shifting or operative movement of the carrier, locking means for retaining the carrier in a position of rest and releasing means under the control of the bobbin exchange to release said locking means for a first operative movement of the carrier and to maintain said locking means released for a second operative movement of the carrier, substantially as described.

2. In automatic looms, a device for severing weft thread ends on bobbin exchange, comprising a thread severing hammer, an anvil opposite to said hammer, a spring tension operating mechanism for striking the hammer upon the anvil, controlling means under the control of the bobbin exchange to set said operating mechanism into operation on bobbin exchange, said hammer having a broad beveled head end so arranged as to have its thread severing edge immediately in proximity of the fabric edge, substantially as described.

3. In automatic looms, a device for severing weft thread ends on bobbin exchange, comprising a thread severing hammer with a broad beveled head end having its thread severing edge close to the fabric edge, a movable carrier for said hammer, an anvil on said carrier opposite to said hammer, a spring tension mechanism for rapidly shifting forward said carrier with its hammer and anvil, means for striking the hammer upon the anvil on the shifting or operative movement of the carrier, locking means for retaining the carrier in a position of rest and releasing means under the control of the bobbin exchange to release said locking means for a first operative movement of the carrier and to maintain said locking means released for a second operative movement of the carrier, substantially as described.

4. In automatic looms, a device for severing weft thread ends on bobbin exchange, comprising a thread severing hammer, a movable carrier for said hammer, an anvil on said carrier opposite to said hammer, a spring tension mechanism for rapidly shifting forward said carrier with its hammer and anvil, means for striking the hammer upon the anvil on the shifting or operative movement of the carrier, a locking pin on the latter, a latch for engaging with said

pin to retain the carrier in a position of rest, means under the control of the bobbin exchange for disengaging said latch, a spring actuated pawl combined with said latch for preventing the latter from operative engagement with said locking pin on the first return movement of the carrier to subsequently allow of a second forward movement thereof, and means for rendering said pawl inoperative on the second forward movement of the carrier to allow the latch to take again its operative locking position relatively to the pin of the carrier in order to lock the latter after its second return movement, substantially as described.

In witness whereof I have hereunto signed my name this 24th day of April 1915, in the presence of two subscribing witnesses.

AUGUST IMBACH.

Witnesses:
ARNOLD ZUBER,
AMAND RITTER.

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