May 27, 1930. E. F. HATHAWAY ET AL 1,760,831

WEFT NEEDLE

Filed Nov. 4, 1927

Fig. 1.

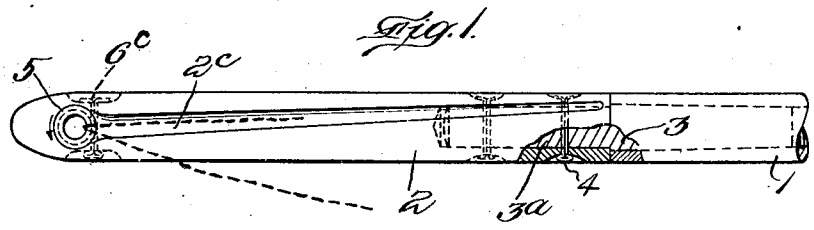
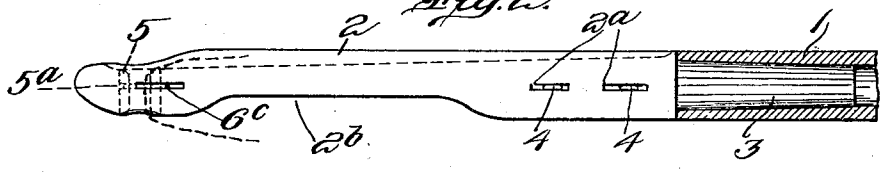


Fig. 2.



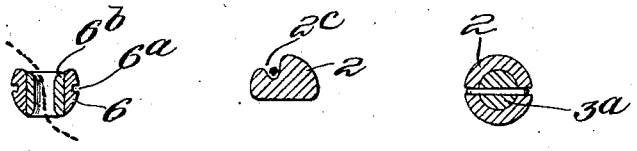


Fig. 5. Fig. 3. Fig. 4.

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UNITED STATES PATENT OFFICE

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WEFT NEEDLE

Application filed November 4, 1927. Serial No. 231,048.

This invention relates to weft needles such as are used in Axminster looms and other looms for carrying the weft threads to and fro through the yarn shed formed by the shifting of the sets of warp threads and is intended to provide a construction permitting quick substitution of different needle heads or eye members without disassembling or disconnecting the shank end of the needle from its operating mechanism. It also permits the substitution of new yarn guiding heads in case of injury to the one previously in use on the needle shank.

In general, the invention comprises a weft needle embracing a tubular shank to which is secured a head attaching member and a removably attached eye-piece for head constructed and arranged to be detachably secured to the connecting member so as to permit its ready removal and replacement. Another feature of the invention consists in the use of a removable thread eye in the head or eye-piece, which is preferably so arranged as to permit the thread eye to turn or rotate under frictional stress while still retaining its proper operative position in the eye of the eye-piece.

In the accompanying drawings we have illustrated a simple and convenient construction embodying the principles of this invention in which Figure 1 is a plan view showing the assembled parts comprising the invention.

Figure 2 is a side elevation thereof.

Figure 3 is a cross sectional view through the eye-piece at a short distance to the right of the thread eye.

Figure 4 is a transverse sectional view on the plan of one of the attaching cotter pins.

Figure 5 is a cross sectional view of a modified construction of thread eye.

The tubular shank member, which is the member connected with the needle actuating devices in accordance with any known or suitable practice, has inserted in its forward end and tightly secured thereto an attaching member 3 telescoping snugly into the interior of the tube and brazed, soldered or welded there for permanent connection.

At its forward end the connecting member 3 has a tapered projection for the attachment of the eye-piece or head 2. This eye-piece or head is recessed, as shown at 2^b, on its under side to form a recess over which the lower bight of the yarn is stretched so as to leave space between the yarn and the needle head for the passage of the shuttle which carries the longitudinal weft threads that interlock with the looped end of the weft thread which is shot through the warp shed by means of the weft needle.

The rear end of the head piece 2 is formed with a socket adapted to closely fit over the forward projection or extension 3^a of the attaching member and the parts that telescope together in this fashion are transversely bored, preferably at two spaced points to receive cotter pins 4, which when inserted prevent the removal of the head 2 and also prevent its rotation with relation to its carrying shank.

At the forward end of the head is inserted a tubular thread eye 5 which is externally grooved intermediate of its upper and lower ends so that said groove aligns with a cotter pin 6^c inserted in a transverse bore, thus positively locking the removable thread eye in correct position. This arrangement not only locks the thread eye against accidental removal, but it permits a circumferential creep or slow rotation in order to distribute the wear of the yarn on the entire surface that is engaged by the yarn passing through it.

The head 2 is also provided with a longitudinal thread groove 2^c on its upper surface forming a thread receiving and guiding channel which protects the warp threads as well as the weft against mutual rubbing as the weft is shot to and fro through the shed formed by the warp threads.

In Figure 5 we have shown a modified confistruction of thread eye in which the external tubular member 6 is made of metal, in which is firmly secured a porcelain tubular eye member 6^b, the inner and outer tubular members forming a single unit for service and the outer member is provided with the annular locking groove 6^a for engagement with the fastening cotter pin 6^c.

What we claim is:

1. A weft needle embracing in its construction, an elongated hollow shank, a separable eye piece having telescopic connection with said shank and provided with a thread eye in its forward end and having its underside recessed to provide for the passage of a selvage thread between the eye piece and the yarn carried thereby and removable fastening devices penetrating both the shank and the eye piece transversely to permit removal of the eye-piece while preventing its rotation in relation to the shank member.

2. A weft needle for weaving embracing in its construction an elongated hollow shank member, a separable eye piece member provided at its forward end with a thread eye, a connecting dowel tightly inserted in the adjacent ends of the shank and the eye piece members and removable means transversely penetrating one of said members and the inserted portion of the dowel to detachably hold the eye piece against longitudinal and rotative displacement.

3. A weft needle for weaving embracing in its construction an elongated hollow shank member, a separable hollow end eye piece member and a connecting dowel firmly inserted in the adjacent hollow ends of both members, detachable transverse locking means penetrating the dowel and the surrounding portion of one of said members to lock them against longitudinal and transverse displacement.

4. A weft needle for weaving embracing in its construction an elongated shank member, an eye piece firmly but detachably secured to said shank member and a tubular yarn guide eye located in the forward end of the eye piece and a releasable retaining member for said guide eye permitting the substitution of different eyes in the eye piece said retaining member being positively anchored against accidental release

5. In a weft needle for weaving the combination with a needle shank and its forwardly extending eye member of a tubular thread eye having a peripheral groove inserted in said eye member and a locking device penetrating the eye member transversely and engaging said groove thereby permitting the rotation of said thread eye to distribute wear.

6. A thread eye for a weft needle embracing in its construction an externally and circumferentially grooved tubular eye member and an internal tubular member of wear resisting material secured inside said grooved member to protect the latter from cutting by the yarn.

In witness whereof, we have subscribed the above specification.

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