

April 25, 1933.

R. ROSSMANN

1,906,185

LOOM

Filed June 4, 1930

2 Sheets-Sheet 1

Fig. 1

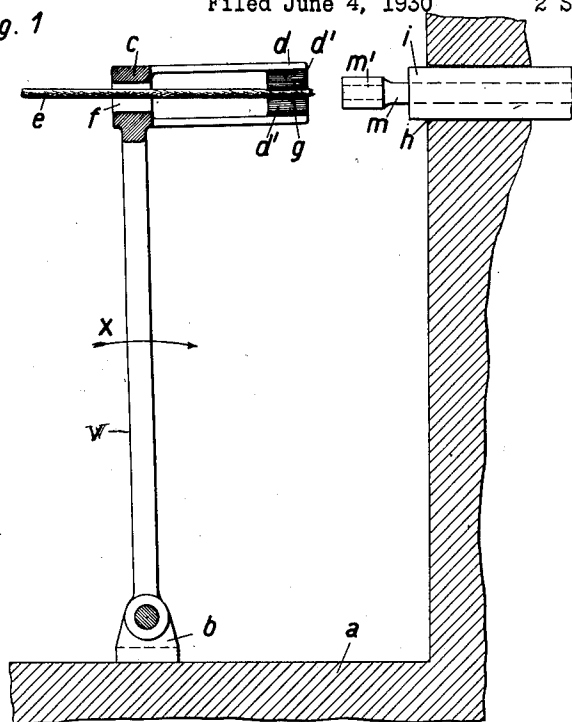


Fig. 11

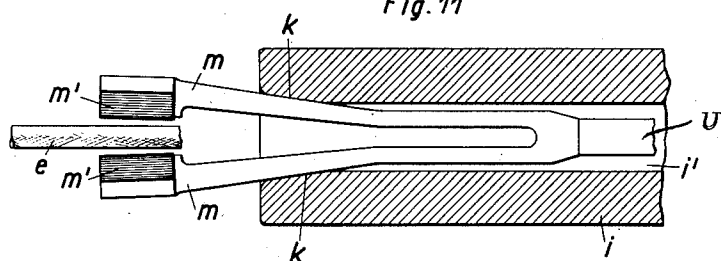
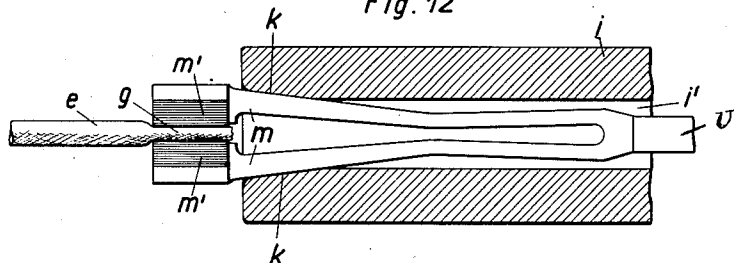


Fig. 12



Inventor
Rudolf Rossmann,
By Henry Orth Jr. atty.

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Fig. 2

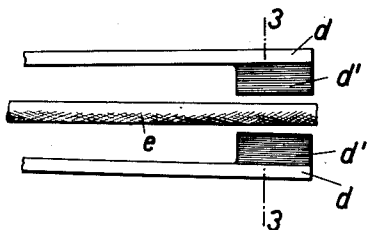


Fig. 3

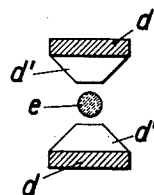


Fig. 4

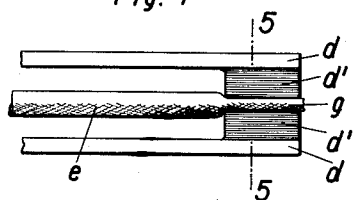


Fig. 5

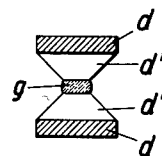


Fig. 6

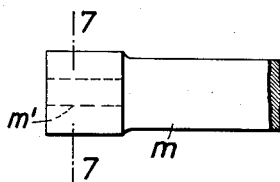


Fig. 7

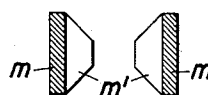


Fig. 8

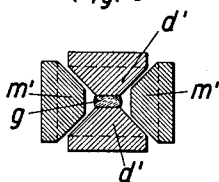


Fig. 9

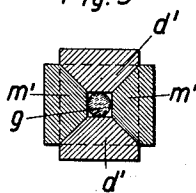
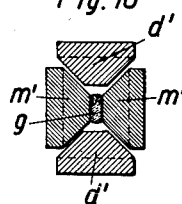


Fig. 10



Inventor,
Rudolf Rossmann,
By Henry Orth Jr. atty.

UNITED STATES PATENT OFFICE

RUDOLF ROSSMANN, OF MUNICH, GERMANY, ASSIGNOR TO TEFAG TEXTIL FINANZ
A. G. ZURICH, OF ZURICH, SWITZERLAND, A CORPORATION OF SWITZERLAND

LOOM

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My invention relates to improvements in looms and more particularly in looms in which the weft thread is taken from a stationary weft bobbin by a member carrying the same to the shuttle, which member will be described hereinafter as the carrier. The object of the said carrier is to grip the end of the weft thread and to release the same after transmitting the same to the shuttle, and in some cases to produce a certain braking action. At the end of the shot the weft thread is cut in the usual way, beaten up etc., whereupon the end of the thread is immediately gripped again by the carrier.

In the operation of the carrier and the shuttle cooperating therewith it is important, that the weft thread be securely attached to the shuttle before the beginning of the shot, and such gripping is difficult for the reason that the end of the weft thread projects freely from the holding member of the carrier, and that therefore the projecting end never has a definite position, the inner tension of the twisted fibres having the tendency to separate from one another and to bend the end of the thread after cutting.

The object of the improvements is to provide a carrier which is operated without any loss of yarn, and which can be operated at high velocity, and with this object in view my invention consists in constructing the apparatus for transmitting the weft thread from the bobbin to the shuttle in the form of a clamping member mounted on the carrier and adapted to grip the end of the thread and carry the same to the shuttle and a second clamping member connected with the shuttle and having its clamping jaws disposed angularly to the jaws of the gripper, the said clamping member connected with the shuttle being adapted to enter between the jaws of the clamping member connected with the carrier and to clamp the thread at the same part of its length as soon as it is released by the clamping member mounted on the carrier.

For the purpose of explaining the invention an example embodying the same has been shown in the accompanying drawings in which the same reference characters have

been used in all the views to indicate corresponding parts. In said drawings:

Fig. 1 is a diagrammatical sectional elevation showing the carrier and the shuttle,

Fig. 2 is an elevation showing the clamping member mounted on the carrier, the jaws of the clamping member being disengaged from the thread,

Fig. 3 is a sectional elevation taken on the line 3—3 of Fig. 2,

Fig. 4 is an elevation of the clamping member of the carrier showing the jaws in clamping position,

Fig. 5 is a sectional elevation taken on the line 5—5 of Fig. 4,

Fig. 6 is an elevation showing a part of the clamping member connected with the shuttle,

Fig. 7 is a sectional elevation taken on the line 7—7 of Fig. 6.

Fig. 8 is a sectional elevation on an enlarged scale showing the cooperating clamping members mounted respectively on the carrier and the shuttle, the clamping member mounted on the carrier being in clamping engagement with the thread and the clamping member of the shuttle being out of clamping position.

Fig. 9 is a similar sectional elevation showing the clamping member of the carrier in the position in which it has just released the thread, and the clamping member of the shuttle in the position in which it is about to clamp the thread,

Fig. 10 is a similar sectional elevation showing the clamping member of the shuttle in clamping engagement with the thread,

Fig. 11 is a sectional elevation showing the clamping member of the shuttle out of clamping engagement with the thread and

Fig. 12 is a similar sectional elevation showing the said clamping member in clamping engagement with the thread.

To the frame *a* of the loom, which has been diagrammatically shown in Fig. 1, a bearing *b* is secured in which a carrier lever *v* is rockingly mounted which is adapted to be rocked in the direction of the arrow *x* by suitable mechanism (not shown). A thread carrier *c* is mounted at the top of lever *v*. The carrier *c* is provided with a pair of elas-

tic clamping arms d which are formed at their outer ends with jaws d^1 having wedge shaped opposing faces, the said jaws being movable in a vertical plane. The weft thread e taken from the weft bobbin (not shown) is passed through guide loops p and p' the thread brake q , the thread tensioner r and to a bore f of the carrier c , and its end g is clamped between the jaws d^1 . In front of the said jaws and the end g of the thread the shuttle i is guided in a bore h of the frame a of the loom, and the said shuttle is formed with a bore i^1 having an outwardly flaring end portion k , as is shown in Figs. 11 and 12. In the said bore a clamping member u is located which comprises two elastic arms m carrying wedge shaped jaws m^1 at their outer ends, the said jaws being located in a horizontal plane. Thus the jaws d^1 , d^1 and m^1 , m^1 are angularly displaced with relation to each other. The clamping member u is adapted to be shifted within the bore i^1 of the shuttle so as to move the jaws m^1 , m^1 into clamping engagement with the thread e and to spread the jaws d^1 , d^1 apart, as has been shown in Fig. 10.

While the end of the thread end is clamped between the jaws d^1 , d^1 , as is shown in Figs. 4, 5 and 8, the jaws m^1 , m^1 of the clamping member u are open, as is shown in Figs. 7, 8 and 11. When rocking the carrier lever c to the right and towards the shuttle i the jaws d^1 , d^1 pass between the open jaws m^1 , m^1 and so far that they slightly extend with their right hand ends beyond the jaws m^1 , m^1 while at the left hand end of the jaws m^1 , m^1 extend slightly beyond the jaws d^1 , d^1 . For the present the jaws d^1 , d^1 are still in clamping engagement with the end g of the thread, as is shown in Fig. 8. Now the clamping member u is by suitable means slightly shifted to the right and into the flaring portion k of the bore of the shuttle i , until both pairs of jaws are disposed with their inner and outer end faces respectively in the same planes. By thus slightly shifting the clamping member u to the right the flaring portion k forces the jaws m^1 , m^1 towards each other and towards the thread g . Thereby the jaws d^1 , d^1 are forced apart. Now the end g of the thread is temporarily out of clamping engagement with each pair of jaws m^1 , m^1 and d^1 , d^1 . But immediately after being released from the jaws d^1 , d^1 it is again clamped between the jaws m^1 , m^1 , as is shown in Fig. 10. The jaws m^1 , m^1 are located exactly between the jaws d^1 , d^1 and therefore the end g of the thread is gripped by the jaws m^1 , m^1 at the same part of its length and therefore without any loss of thread, and when transmitting the thread from the jaws d^1 , d^1 to the jaws m^1 , m^1 it is clamped by the jaws m^1 , m^1 at right angles as compared to the clamping position of the jaws d^1 , d^1 . The jaws m^1 , m^1 and d^1 , d^1 are

simultaneously brought respectively into and out of clamping engagement and without providing special operating means.

After the weft thread has been carried through the warp shed by the shuttle, it is cut adjacent the carrier clamps d in a manner well known in the art. The clamps d have been closed in the meantime and the carrier is swung back into the position shown in Fig. 1. After beating the weft thread into place the jaws m^1 , m^1 are again opened by shifting the clamping member m outwardly and the shuttle is returned to its initial position whereupon the operation is repeated.

While in describing the invention reference has been made to a construction in which wedge shaped clamping jaws are provided, I wish it to be understood that I do not limit myself to this construction, and that clamping jaws of other form may be provided if separate means are provided for throwing the jaws apart.

I claim:

1. In a loom, the combination with a shuttle, of a carrier for transmitting the end of a thread to the shuttle, a clamping device on said carrier, a clamping device on said shuttle, means for bringing said clamping devices into positions for clamping engagement with the same part of the thread by either of said devices, and means for simultaneously forcing one of said clamping devices into and the other out of clamping engagement with the thread.

2. In a loom, the combination with a shuttle, of a carrier for transmitting the end of the thread to the shuttle, a clamping device on said carrier, a clamping device on said shuttle, means for bringing said clamping device on the carrier and said clamping device on said shuttle into positions for clamping engagement with the same part of the thread by either of said devices, and means for forcing said clamping device on said shuttle into clamping engagement with said thread, the said clamping devices on the shuttle and the carrier being constructed in such a manner that the clamping device on the carrier is opened by the clamping device on the shuttle moving into clamping engagement with the thread.

3. In a loom, the combination with a shuttle, of a carrier for transmitting the end of a thread to the shuttle, a clamping device on said carrier, a clamping device on said shuttle, means for bringing said clamping device on the carrier and said clamping device on the shuttle into positions for clamping engagement with the same part of the thread by either of said devices, and means for forcing said clamping device on said shuttle into clamping engagement with said thread, said clamping device on the carrier being formed with wedge shaped clamping jaws adapted

to be spread apart by the clamping device of said shuttle engaging the wedge shaped faces thereof.

4. In a loom, the combination with a shuttle, of a carrier for transmitting the end of a thread to the shuttle, a clamping device on said carrier, a clamping device on said shuttle, means for bringing said clamping devices on the carrier and the shuttle into positions for clamping engagement with the same part of the thread by either of said devices, and means for forcing said clamping device on said shuttle into clamping engagement with said thread, said clamping devices on the carrier and on the shuttle being formed with wedge shaped clamping jaws displaced angularly with relation to each other and adapted for engagement with each other.

5. In a loom, the combination with a shuttle, of a carrier for transmitting the end of a thread to the shuttle, a thread clamping device on said carrier, a tubular member on said shuttle, a clamping device having outwardly flaring clamping arms in said tubular member, said arms being movable toward each other upon axially shifting said arms in said tubular member, said clamping devices in the carrier and shuttle adapted to be positioned for transmitting a thread held by the carrier to said shuttle, means for operating said carrier, and means for moving said device within said tubular member.

6. The combination with a shuttle, a thread carrier arm movable towards and away from the shuttle, spaced spring arms carried by the carrier, wedge shaped gripping blocks carried by said spring arms and adapted to grip opposite sides of a thread end and move said thread end towards the shuttle, a member slidably mounted in the shuttle, oppositely disposed spring arms carried by said member, wedge shaped gripping members carried by said last named spring arms and in a plane at a right angle to the gripping members carried by the carrier arms and means carried by the shuttle and cooperating with the spring arms movable therein whereby said members carried by said last named gripping arms will be forced together and cooperating with the gripping members of the carrier for forcing them out of engagement with the thread end.

7. The combination with a thread transfer carrier, a shuttle, of spring actuated gripping jaws carried by the carrier and wedge shaped, spring actuated wedge shaped gripping jaws carried by the shuttle and adapted to interengage with the gripping jaws of the carrier, a member slidably mounted in the shuttle, spring arms carried by said member and on which the gripping jaws of the shuttle are mounted and cam engaging surfaces carried by the member in the shuttle and the shuttle whereby upon longitudinal movement of the member in the shuttle,

the gripping jaws thereof will be forced into a gripping engagement with a thread simultaneously with the release of the thread in the carrier jaws by the cooperation of the shuttle jaws therewith.

8. In a loom, a stationary weft bobbin for carrying the supply of weft thread, a shuttle, a pivoted reciprocating carrier for transporting the thread from the said bobbin to the shuttle, said carrier having a plurality of cooperating, spring-actuated clamping jaws for gripping the weft thread, a plurality of co-operating spring actuated clamping jaws on said shuttle, means for inserting the closed jaws of the carrier between the open jaws of the shuttle and means for simultaneously closing the jaws of the shuttle and opening the jaws of the carrier.

9. In a shuttle threading device, a shuttle, a thread carrier, means for moving said thread carrier towards said shuttle, resilient arms on said carrier, gripping members on said resilient arms, a member having oppositely disposed resilient arms slidably mounted in said shuttle, gripping members on said last-named resilient arms movable in a plane at an angle to the movement of the first-named gripping members, said resilient arms actuated by sliding in said shuttle, said shuttle gripping members adapted to grip the same portion of thread held by said carrier gripping members and releasing the thread from said carrier gripping members.

In testimony whereof, I hereunto affix my signature.

RUDOLF ROSSMANN.