May 13, 1930. H. E. HOFFMAN 1,758,042

LOOM ATTACHMENT

Filed Nov. 23, 1928 2 Sheets-Sheet 1

Fig. 1.

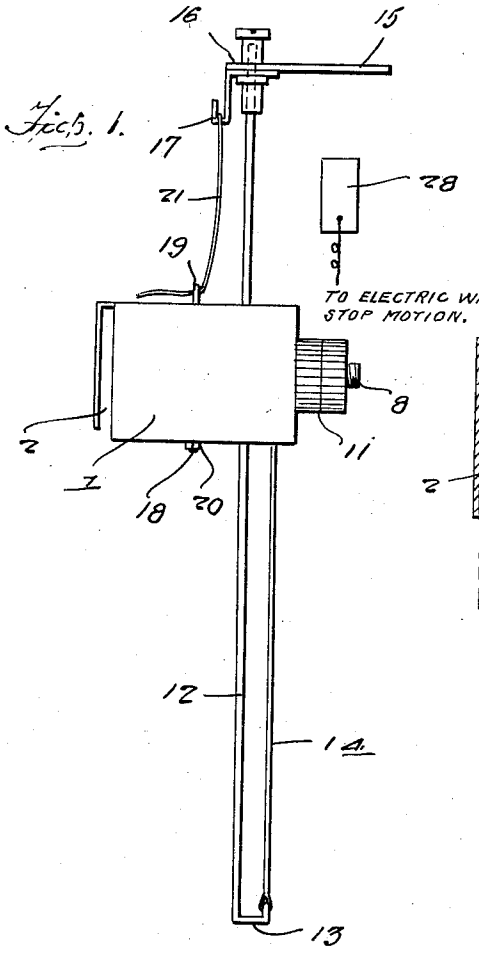
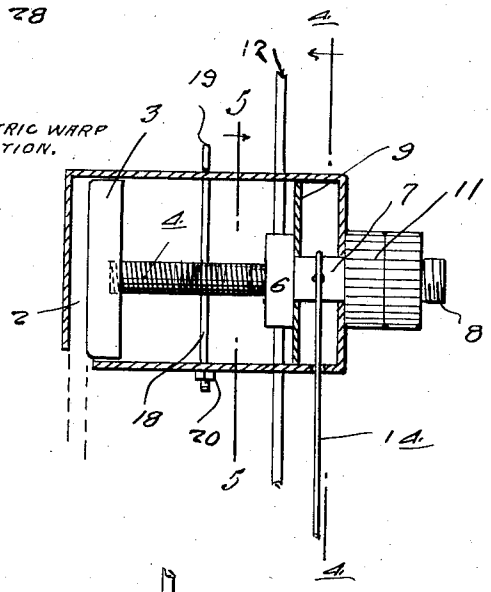


Fig. 3.



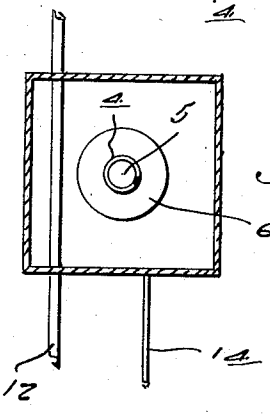
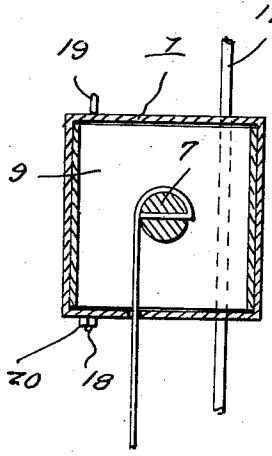


Fig. 5.

Fig. 4.



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LOOM ATTACHMENT

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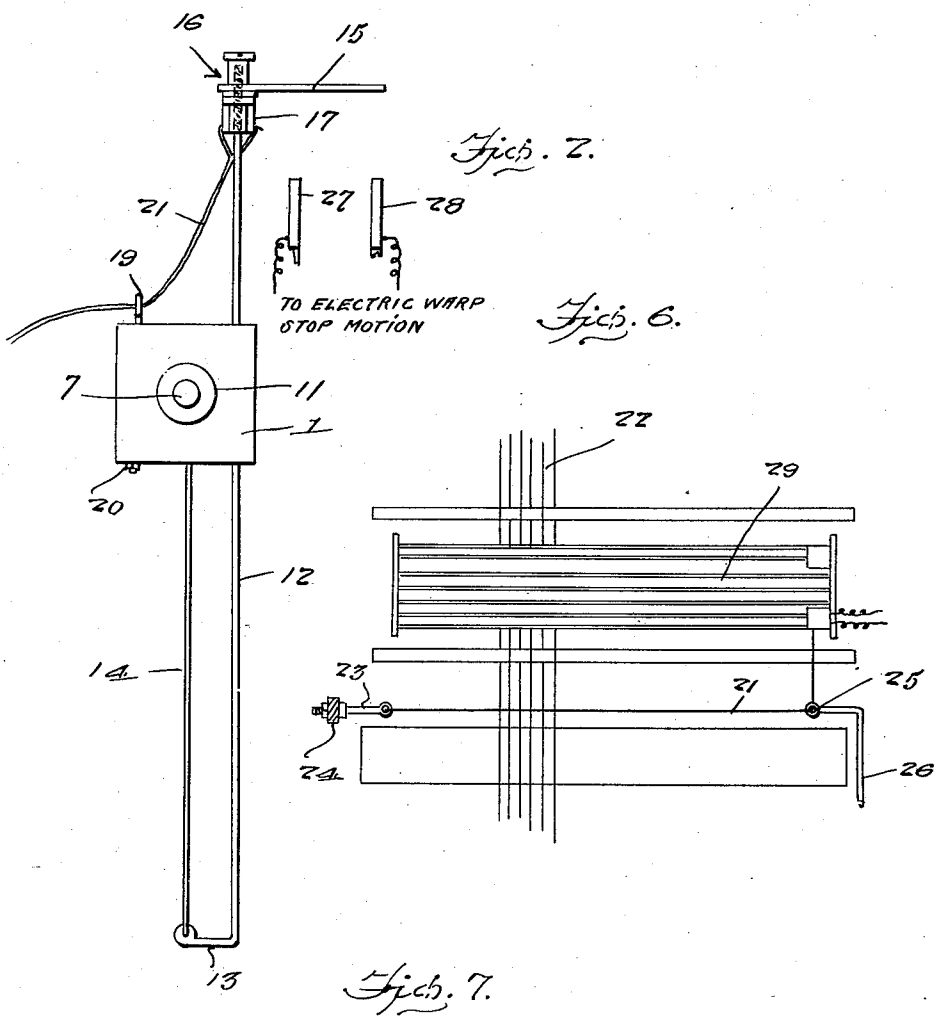
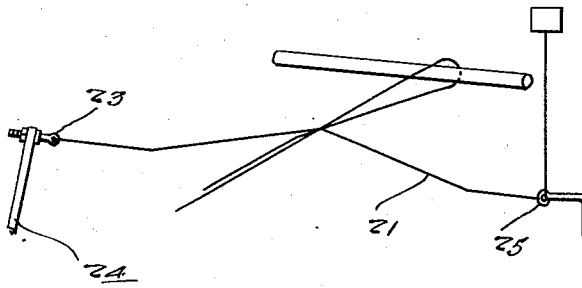


Fig. 7.



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Patented May 13, 1930 1,758,042

UNITED STATES PATENT OFFICE

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LOOM ATTACHMENT

Application filed November 23, 1928. Serial No. 321,399.

The present invention relates to improvements in attachments for looms and more particularly has reference to a device for stopping the loom when the warp threads become entangled.

When the warp threads become crossed, a pull is exerted on the other thread with the result that the threads break and the loom stops. The operator must necessarily loosen the threads and during this operation, other threads may possibly break and as a consequence, a bad mark is formed in the cloth that is being woven.

It is therefore one of the principal aims of the present invention to provide a device that will stop the loom immediately upon the pulling action caused by the entanglement of threads so that the loom will be stopped before the threads have had an opportunity to break.

Another object is to provide a loom attachment that includes a circuit closer for closing the circuit to a conventional electric warp stop motion that is associated with the loom, said circuit closer being normally disposed in an inoperative position and being adapted to be moved to an operative position when the warped threads become entangled and a pull is exerted on a cord that is connected with the pull rod of the circuit closer.

Still a further object is to provide a loom attachment of the above mentioned character that will at all times be positive and efficient as well as automatic in its operation, the device being of such construction as to permit the same to be readily and easily attached on a loom without necessitating any material alterations.

Still a further object is to provide a loom attachment of the above mentioned character which is simple in construction, inexpensive, strong and durable and further well adapted to the purposes for which it is designed.

Other objects and advantages will become apparent during the course of the following description.

In the accompanying drawing, forming a part of this specification, and in which like numerals indicate like parts throughout the same:

Figure 1 is an elevational view of the loom attachment showing the normal position of the circuit closer,

Figure 2 is an end elevation thereof,

Figure 3 is a sectional view through the casing showing the position of the various elements therein,

Figure 4 is a sectional view taken approximately on the line 4—4 of Figure 3,

Figure 5 is a similar section taken upon the line 5—5 of Figure 3 looking in the opposite direction,

Figure 6 is a top plan view showing diagrammatically, the relation of the pull cord with respect to the warp threads and the drop wires,

Figure 7 is a diagrammatic view illustrating the manner in which the entangled warp threads exert a pull on the cord for moving the circuit closer to an operative position.

In the drawings wherein for the purpose of illustration is shown the preferred embodiment of my invention, the numeral 1 designates a substantially rectangular shaped casing that is open at one end at the bottom and sides thereof to provide the slotted portion 2 for accommodating the frame of a loom on which the casing is to be attached.

The casing is held in position on the loom by means of a frame engaging block 3 that is arranged for slidable movement within the casing and the inner face of the central portion of the slot is formed with a socket to accommodate the forward end of an expansible coil spring 4. The other end of this coil spring encircles a boss 5 that projects from the front face of the circular head 6 carried by the forward end of a shaft 7 which shaft extends through the adjacent end of the casing and is threaded at its outer end as at 8.

A channel shaped plate 9 is arranged within the rear end portion of the casing 1 for engagement with the rear end of the casing and this plate is formed with a central opening to accommodate the shaft 7. The rear face of the circular head 6 is maintained in engagement with the adjacent face of the plate 9 by means of the coil spring 4 as is apparent in the construction disclosed in Figure 3. The spring 4 serves to urge the block 3 against the

frame for maintaining the device in a position so that it may be readily detached from the loom for the purpose of repair or replacement. The plate 9 serves as a support for the shaft 7 as is clearly apparent in Figure 3.

Suitable nuts 11 are threaded on the outer threaded end of the shaft 7 for cooperation with the outer face of the rear end portion of the casing whereby to adjust the shaft longitudinally with respect to the casing thus regulating the tension of the coil spring 4, and also the tension of the rubber band 14.

Extending vertically through the rear end portion of the casing 1 and adapted for slidable movement is the pull rod 12. The lower end of this pull rod is formed with a hook 13 to which is secured the lower end of a rubber band 14, the upper end of this rubber band extending through an opening provided therefor in the bottom of the casing and being connected to the shaft 7 for rotation therewith as shown in Figures 3 and 4.

The purpose of this rubber band 14 is to normally hold the pull rod 12 in its raised position and the tension of this rubber band may be adjusted by rotating the shaft and holding the same in its adjusted position by means of the lock nuts 11.

Carried by the upper end of this pull rod 12 and properly insulated therefrom is the horizontally disposed contact bridging plate 15, this plate being detachably secured on the upper end of the pull rod through the medium of the securing means as shown generally at 16 in Figures 1 and 2.

Also carried by the upper end portion of the pull rod below the bridging plate 15 is the hook 17, the purpose of which will be presently described. An eye bolt 18 extends vertically through the casing 1 as shown in Figure 3 and the eye portion 19 is disposed on the top of the casing while the nut 20 that is threaded on the lower end of this eye bolt engages with the bottom of the casing. The eye bolt is furthermore located at one side of the coil spring 4 so as not to interfere with the functioning of the spring.

The invention further comprehends the provision of a pull cord 21, that is disposed transversely across the warp threads 22 in such a manner as to lie between the upper and lower flights of said warp threads, which is attached to an eye bolt 23 and is carried by the upper end of a bar 24 which bar is attached to frame of the loom.

The cord 21 extends through a guide eye 25 formed on an angular rod member 26 also attached to the loom and a cord then passes through the eye 19 of the eye bolt 18 and is connected at its other end to the hook 17 in the manner as clearly indicated in Figures 1 and 2.

A pair of spaced contacts 27 and 28 are disposed directly below the bridging plate 15 and these contacts close the circuit to the electric warp stop motion not shown, when the contacts are bridged by the plate 15 to stop the loom. The contacts 27 and 28 are operatively connected with the drop wires 29.

In operation, the parts are normally disposed in the manner as shown in Figures 1 and 2.

However should the warp threads become entangled as indicated in Figure 7, a pull will be exerted upon the cord 21 and this cord will in turn exert a downward pull on the rod 12 against the tension of the rubber band 14 whereby to move the plate 15 into engagement with the contacts 27 and 28 and when this plate bridges the contacts, the circuit to the electric warp stop motion will automatically be closed by stopping the loom before the pull on the warp threads causes the breaking of said threads.

The entangled threads may then be straightened out and the loom again is operated in the weaving of the cloth and no imperfection will be noticeable in the woven cloth.

As soon as the warp threads have been untangled, the rubber band 14 will automatically remove the parts to their normal position whereby to open the circuit to the electric warp stop motion.

The provision of a loom attachment of the above mentioned character will permit the loom to be stopped before the warp threads have had a chance to break thus enabling the woven cloth to be manufactured without any noticeable markings being present in the cloth such as frequently results when the warp threads have become stuck.

Also the present device is of such construction as to permit the same to be readily and easily attached on the conventional loom without necessitating any alterations. Furthermore the circuit closer will at all times be positive and efficient in its operation and will furthermore function automatically.

While I have shown the preferred embodiment of my invention, it is to be uderstood that various changes in the size, shape and arrangement of parts may be resorted to without departing from the spirit of the invention and the scope of the appended claims.

Having thus described my invention, what I claim as new is:

1. In a loom attachment, a casing, means for securing the casing on the loom, a rotatably adjustable shaft extending horizontally through one end of the casing, a vertically movable pull rod slidable through the casing, a contact bridging plate carried by the upper end of the rod, resilient means connecting the lower end of the pull rod with said shaft for normally urging the rod upwardly to maintain the contact bridging plate in a raised inoperative position, and a pull cord adapted for disposition across and between

the warp threads and operatively connected with the pull rods for moving the same downwardly and dispose the bridging plate in an operative position when a pull is exerted on the cord by entangled warp threads.

2. In a loom attachment, a casing, means for securing the casing on the loom, a rotatably adjustable shaft extending horizontally through one end of the casing, a vertically movable pull rod slidable through the casing, a contact bridging plate carried by the upper end of the rod, resilient means connecting the lower end of the pull rod with said shaft for normally urging the rod upwardly to maintain the contact bridging plate in a raised inoperative position, and a pull cord adapted for disposition across and between the warp threads and operatively connected with the pull rods for moving the same downwardly and dispose the bridging plate in an operative position when a pull is exerted on the cord by entangled warp threads, and means for adjusting the upper end of the resilient member with respect to the shaft to regulate the tension of said resilient member.

3. In an attachment for looms for closing the circuit to the usual electric warp stop motion when the warp threads become entangled, a vertically movable rod, a contact bridging plate carried by the upper end of the rod and normally disposed in an inoperative position, resilient means associated with the lower end of the rod for normally urging the rod upwardly to its inoperative position, and a pull cord connected at one end to the loom and extending across and between the warp threads, the other end of the cord being connected with the rod for urging the same downwardly to dispose the contact bridging plate in an operative position when the warp threads become entangled and the same exerts a pull on the adjacent portion of the cord.

4. In an attachment for looms for closing the circuit to the usual electric warp stop action when the warp threads become entangled, a vertically movable rod a contact bridging plate carried by the upper end of the rod and normally urging the rod upwardly to its inoperative position, and a pull cord connected at one end to the loom and extending across and between the warp threads, the other end of the cord being connected with the rod for urging the same downwardly to dispose the contact bridging plate in an operative position when the warp threads become entangled and the same exerts a pull on the adjacent portion of the cord, and means for regulating the tension of said resilient means.

In testimony whereof I affix my signature.

HARRY EDWARD HOFFMAN.