No. 879,853. PATENTED FEB. 25, 1908.

J. CORZILIUS.

WARP STOP MOTION FOR LOOMS.

APPLICATION FILED AUG. 10, 1906.

2 SHEETS—SHEET 1.

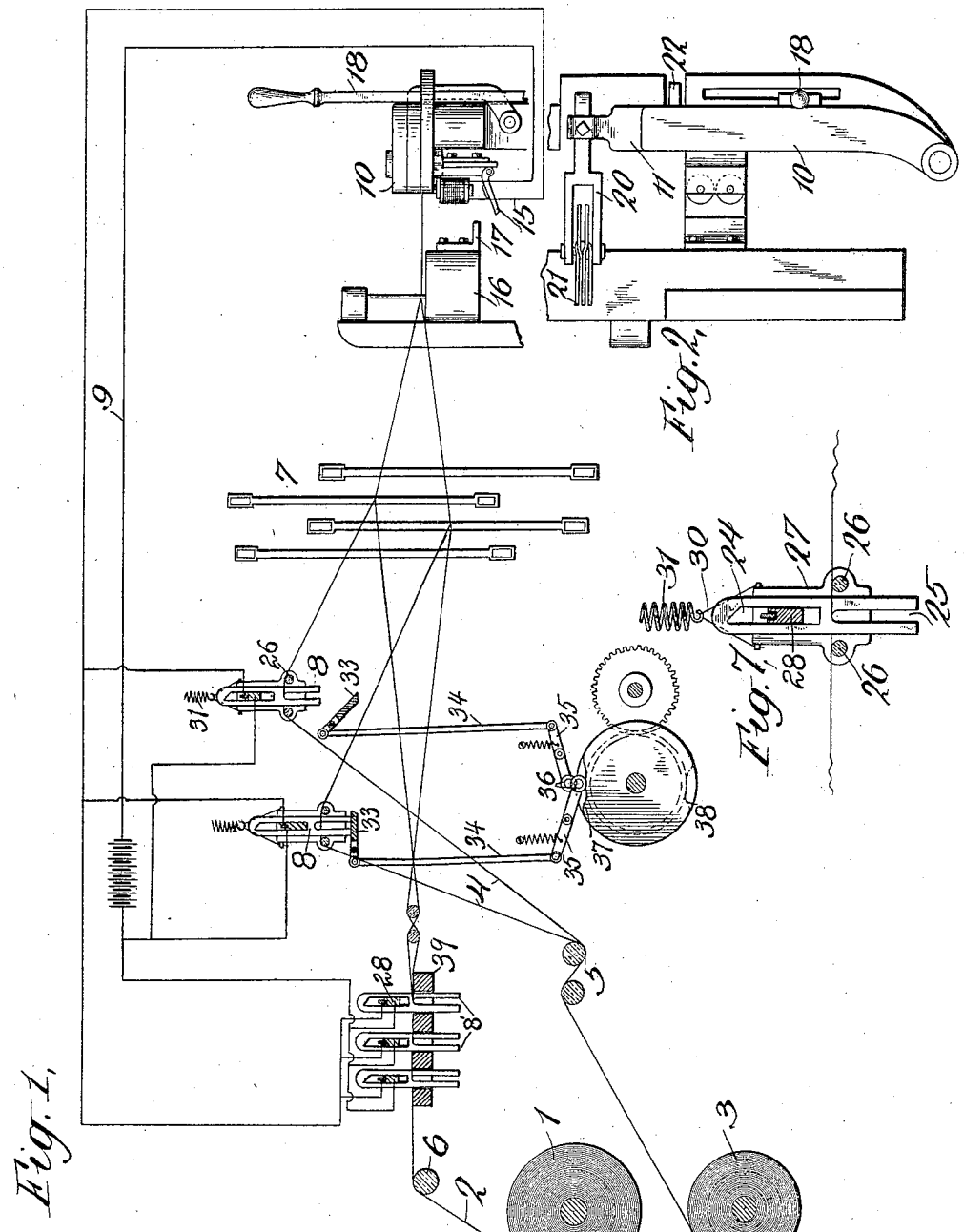

Fig. 1.

Fig. 2.

Fig. 7.

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2 SHEETS—SHEET 2.

Fig. 6.

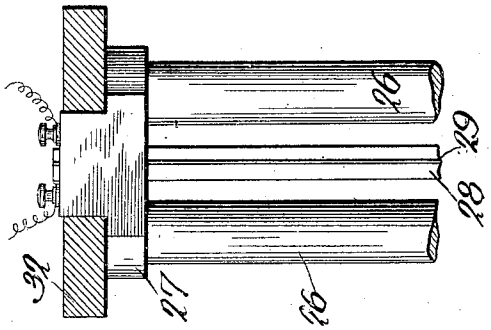


Fig. 5.

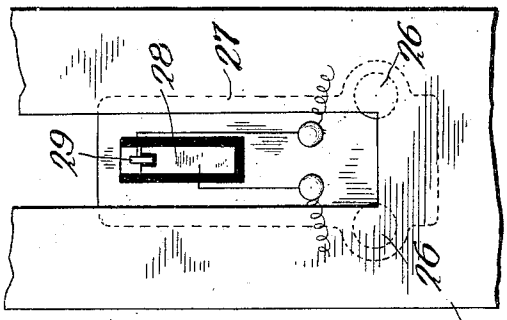


Fig. 3.

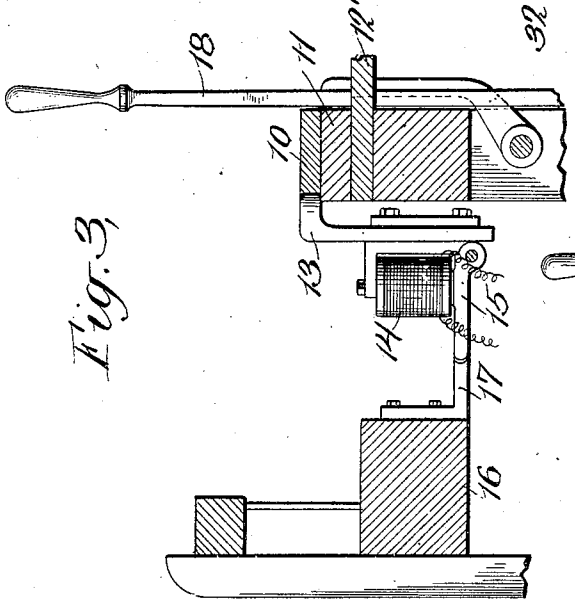
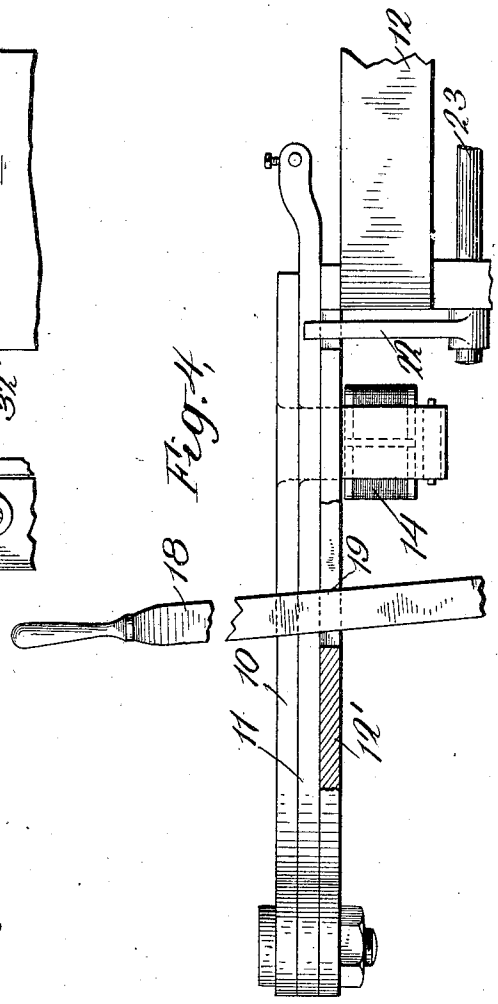


Fig. 4.



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WARP STOP-MOTION FOR LOOMS.

No. 879,853. Specification of Letters Patent. Patented Feb. 25, 1908.

Application filed August 10, 1906. Serial No. 330,008.

To all whom it may concern:

Be it known that I, JOSEPH CORZILIUS, a citizen of the United States, residing at South Manchester, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Warp Stop-Motions for Looms, of which the following is a specification.

The present invention relates to a warp stop motion for a pile fabric loom in which the pile warps support a series of metallic drop devices during the normal running of the loom, said drops being adapted when a pile warp breaks or becomes unduly slack, to close a controlling circuit for setting in operation the knock-off mechanism.

The object of the invention is to provide means to intermittently raise the drops from the pile warps to permit the latter to momentarily pass free of the drops for the purpose fully set forth in the following specification.

In the accompanying drawings Figure 1 is a side view partly diagrammatic of a pile fabric loom embodying the invention; Fig. 2 a plan view of the loom stopping mechanism shown at the right in Fig. 1; Figs. 3 and 4 are enlarged detail views of the loom stopping mechanism; Fig. 5 a side view and Fig. 6 a plan view of the easing bars or rods for the pile warps, and Fig. 7 a detail view of an easing bar or rod for the pile warps with a drop device in normal position.

Similar reference numerals indicate similar parts in the several views.

I will first describe the general parts of the loom and the knock-off or stopping mechanism which may be of any well known construction.

Referring to the drawings the numeral 1 designates the main warp beam; 2 the main or back warps; 3 the pile warp beam; 4 the pile warps; 5 the let-off rolls for the pile warps; and 6 the whip roll. The warps are led through the usual harness mechanism indicated at 7 for the formation of the sheds, the pile warps being carried up through the back warps to easing rods and let off intermittently to float between the two back warps of the fabric in the usual and well known manner. The pile warps carry metallic drops 8 and the back warps similar drops 8′, these drops being adapted when a warp breaks, and by this is meant to include not only an actual severance of the warp but any abnormal slackness thereof, to close a controlling circuit 9 for the loom stopping mechanism. This mechanism may be of any known type and for the purpose of illustration I have selected one which comprises an auxiliary knock-off lever 10 which rests upon the main knock-off lever 11, both of said levers being pivoted on a bracket 12′ extending from the breast beam 12. Secured to a lever 10 is a bracket 13 which carries an electro magnet 14 included in circuit 9. The armature 15 of said magnet projects toward the lay 16 on which is fixed a tappet 17. The magnet 14 is normally deënergized so that its armature is out of the path of tappet 17 on the beat up of the lay, but when a back or pile warp breaks the controlling circuit 9 is closed thereby energizing said magnet and positioning its armature in the path of said tappet on the next beat up of the lay. When tappet 17 impinges against armature 15 auxiliary lever 10 will be shifted and thus act on shipper lever 18 to release it from its retaining shoulder 19 to stop the loom. The main knock-off lever 11 is connected at its free end to the slide 20 which carries the weft fork 21, the latter coöperating with the weft hammer (not shown) in the usual manner to release the shipper lever upon the exhaustion or failure of the filling. A let-off lever 22 fixed on a rock shaft 23 is adapted, when impinged upon by the knock-off lever 11, to lift the back pawl of the take-up ratchet. This construction is well known and requires no further description.

To effect the closing of circuit 9 to energize magnet 14 for the purpose above stated I may employ metallic drop devices 8, 8′, of any well known type. The form shown is provided with a closed slot 24 in the upper part thereof, and an open ended slot 25 in the lower part thereof, the latter serving as a thread aperture, as clearly indicated in Fig. 7. Referring more particularly to Figs. 1, 5, 6 and 7, the pile warps 4 pass over and are supported by two parallel easing rods 26 fixed at their ends in plates 27, one only of said plates being shown. Plates 27 have mounted in them a compound terminal comprising a bar 28 and a blade 29 set into the upper edge thereof, said bar and blade being insulated from each other and connected to the respective terminals of circuit 9. The bar 28 is insulated from the supporting plates 27 as indicated in Fig. 5. This form of ter-

minal is well known. As shown in Fig. 1 the drop devices 8 are supported on the short lengths of the pile warps 4 which latter extend across and bridge the space between the easing rods 26. In the present embodiment of the invention the compound terminals extend through the closed slots 24 of the drops 8 above the point of suspension of said drops on the pile warps. Plates 27 which support the easing rods are connected by wires 30, in which are springs 31 to serve as a cushion or easement, to the usual mechanism adapted to take up the slack warp. The end plates are guided in their up and down movements in slots in brackets 32 fixed to the loom frame.

The operation of the mechanism so far described will be readily understood. During the normal running of the loom the drop devices will be supported on the warps out of contact with the blade 29 of the compound terminal. When, however, either a back or a pile warp breaks the corresponding drop will be released and falling upon the blade 29 of said terminal will close circuit 9, it being understood that the drop devices are always in contact with bar 28 of said terminal. The magnet 14 being thus energized the knock-off mechanism will be set in operation to stop the loom.

The application of circuit closing drop devices to a pile fabric loom has been successfully made in substantially the manner above described. It has been found in practice, however, that when using a pile warp of soft, fluffy material an appreciable quantity of lint is thrown off which collects in balls in front of the drops and is ultimately carried into the fabric. The cleaning of the drops at stated intervals to prevent this is apt to be neglected by operatives, and furthermore the close assemblage of the drops renders such cleaning unhandy and troublesome to accomplish, besides resulting in loss of time due to the necessary stopping of the loom. In order to prevent the accumulation of an undesirable quantity of lint and thus obviate the presence of bunches in the fabric, and to do away with the necessity of manually cleaning the drops, I have provided means for automatically raising the drops from the pile warps at frequent intervals during the normal running of the loom.

The mechanism devised by me to accomplish the above result is illustrated in Fig. 1 and comprises a pivoted stop plate 33 extending across the loom below each series of pile warp drops. These plates are connected at each end by links 34 to levers 35. Said levers carry followers 36 which engage cams 37 and 38, the cams at one side of the loom only being shown. Cams 37 and 38 are so timed relatively to the rising and falling movements of the drops that the corresponding plate 33 will be normally out of the path of the drops. In the construction shown the plates 33 are held in an inclined position indicated at the right hand series of drops by the high point of the cam until immediately before the normal completion of the downward movement of the drops. At such time the low point of the cam acting through its corresponding lever and connecting link will swing its plate 33 to a substantially horizontal position so that it will lie across the path of the descending drops. The drops will then contact with the plate and be raised from the supporting pile warps during the period that the follower is on the low point of the cam. This continues until the drops are picked up by the warps on the upward movement of the easing rods when plate 33 will be moved to its normal position. Instead of pivoting the stop plates so that they will swing in an arc of a circle they may be mounted on guides and moved in horizontal planes into and out of the path of the drops.

The cams for operating the stop plates 33 will be timed relatively to each other so that as each series of drops is moved downwardly with the easing rods a plate 33 will be properly positioned for the described purpose. The cams may also be timed to raise the drops at each downward movement, or on each alternate descent, or otherwise as may be desired.

The drawings show the cams 37 and 38 disposed diametrically opposite to each other so that they act alternately to raise the corresponding series of drops. Such temporary release of the drops from the supporting pile warps will either prevent the accumulation of lint or only such an insignificant amount as not to be noticeable in the fabric. Care should be observed in placing the plates 33 and in providing a slot 24 in the drop of sufficient length as to permit of the desired movement of the drop to free it from the warp without causing the drop to engage the blade 29 of the compound terminal. That is, the distance between the lower side of the bar 28 of said terminal and the lower end wall of slot 24 of the drop should be such as to permit the drop to rise a sufficient distance to clear its supporting warp thread; and on the other hand, when the easing rods are raised the warp thread should engage the end wall of slot 25 of the corresponding drop before opportunity is given the blade 29 to engage the upper end wall of slot 24 which would effect the knocking off of the loom.

The drops of the left hand series in Fig. 1 are shown in contact with their plate 33 to permit the escape of lint if any has accumulated, while the drops of the right hand series are shown in their uppermost position and supported on the corresponding pile warps. Should a pile warp happen to break while the corresponding drop is on its plate 33, circuit 9 will be closed when the compound terminal

in its upward movement picks up the fallen drop.

The drop devices 8′ on the back warps 2 are similar to those above described. These warps pass over and are supported on a fixed plate 39 (Fig. 1) which is slotted to serve as a guide for the drops. The compound terminal is also similar to that above described except that it is secured to a fixed plate in the usual manner and not to a movable plate as with the terminals which coöperate with the pile warp drops.

What I claim and desire to secure by Letters Patent of the United States is:—

1. In a warp stop motion for a pile fabric loom the combination of loom stopping mechanism, a controlling circuit for said mechanism, drop devices adapted to close said circuit when a pile warp breaks, said drops being carried by the unbroken pile warps as they rise and fall with the easing rods, a stop plate extending transversely of the loom, and means for moving said plate into position to receive the drops on their downward movement to temporarily release them from the supporting warps.

2. In a warp stop motion for a pile fabric loom the combination of loom stopping mechanism, a controlling circuit for said mechanism, drop devices adapted to close said circuit when a pile warp breaks, said drops being carried by the unbroken pile warps as they rise and fall with the easing rods, a pivoted stop plate normally out of the path of the rising and falling drops, and a cam for moving said plate into position to receive the drops on their downward movement to temporarily release them from the supporting warps..

3. In a warp stop motion for a pile fabric loom the combination of loom stopping mechanism, a controlling circuit for said mechanism, a series of drop devices for each pile warp adapted to close said circuit when a pile warp breaks, said drops being carried by the unbroken warps as they rise and fall with the easing rods, a stop plate for each series of drops extending transversely of the loom, and means for alternately moving said plates whereby as a given series of drops approaches its lowermost position the drops will be temporarily released from their supporting warps.

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

JOSEPH CORZILIUS.

Witnesses:
HARRY M. BURKE,
CATHERINE M. BURKE.