H. WEBSTER & S. ROTHERA.

LOOM.

APPLICATION FILED JULY 17, 1908.

950,358. Patented Feb. 22, 1910.

3 SHEETS—SHEET 1.

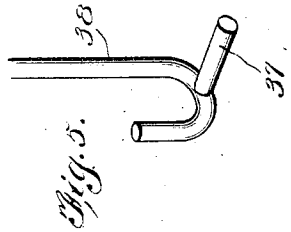


Fig. 5.

Fig. 1.

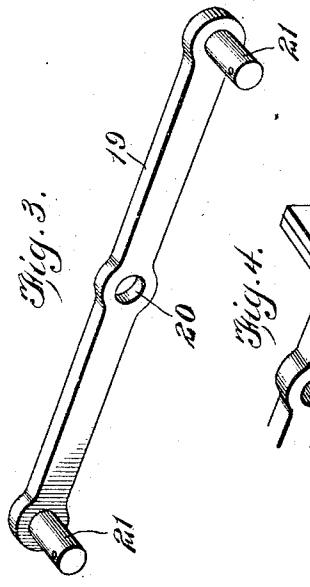


Fig. 3.

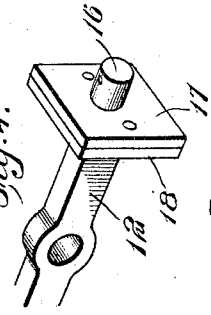
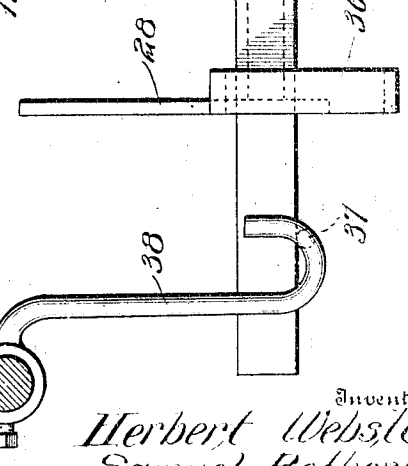


Fig. 4.



Witnesses

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3 SHEETS—SHEET 2.

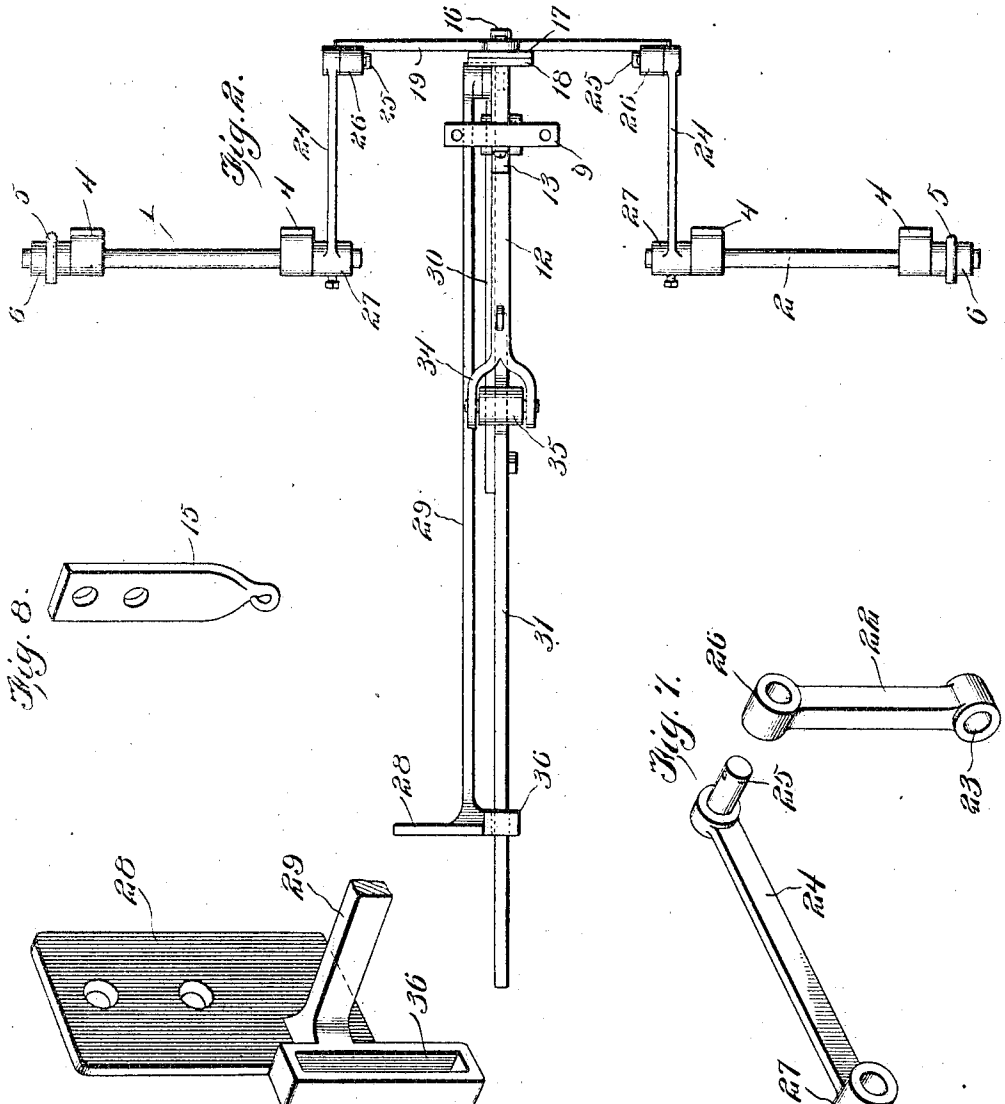

Fig. 2.

Fig. 8.

Fig. 6.

Fig. 7.

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3 SHEETS—SHEET 3.

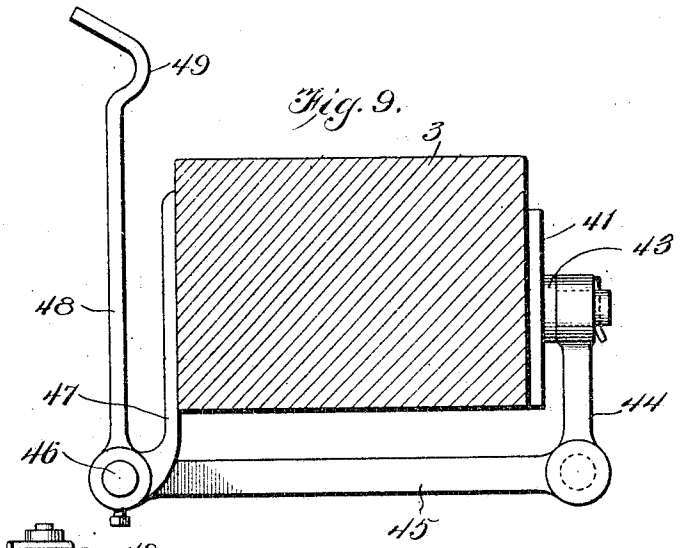

Fig. 9.

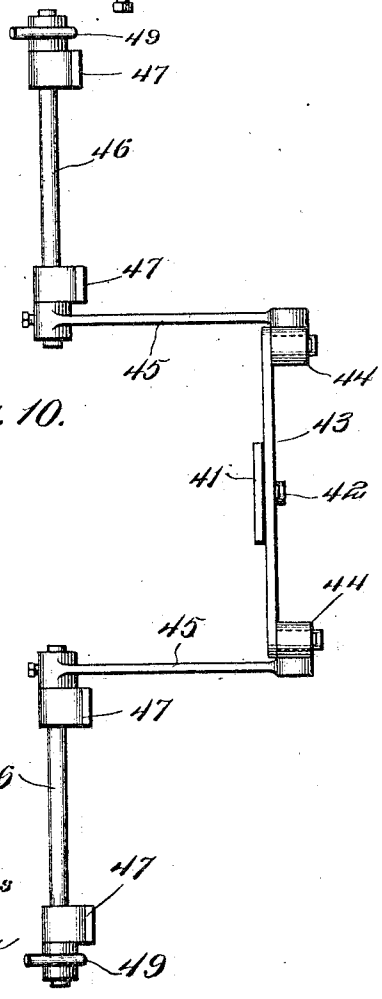

Fig. 10.

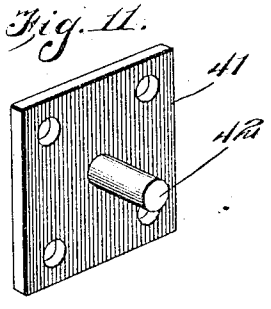

Fig. 11.

Witnesses

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UNITED STATES PATENT OFFICE.

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LOOM.

950,358. Specification of Letters Patent. Patented Feb. 22, 1910.

Application filed July 17, 1908. Serial No. 444,035.

To all whom it may concern:

Be it known that we, HERBERT WEBSTER and SAMUEL ROTHERA, citizens of the United States, residing at Methuen, in the county of Essex and State of Massachusetts, have invented new and useful Improvements in Looms, of which the following is a specification.

The invention relates to an improvement in looms, and is particularly directed to a stop mechanism arranged to be automatically controlled by the shuttles, whereby when any two shuttles are in line for simultaneous operation the stop mechanism will be actuated and the loom stopped.

The main object of the present invention is the provision of duplicate fingers arranged for respective control by the shuttle box binder at each side of the lay, the alternate operation of these fingers in the proper feeding of the shuttles being without effect upon the stop mechanism, while their simultaneous operation by the presence of alined shuttles will induce effective operation of the stop mechanism.

The invention will be described in the following specification, reference being had particularly to the accompanying drawings, in which:—

Figure 1 is a side elevation, illustrating the application and construction of our improvement. Fig. 2 is a plan of the improved mechanism detached. Fig. 3 is a perspective of the rocker lever. Fig. 4 is a perspective of one end of the balance lever. Fig. 5 is a broken perspective of the shipper rod arm. Fig. 6 is a broken perspective, showing the breast beam bridge and a portion of the connection leading therefrom. Fig. 7 is a perspective showing in separated relation the connection between the finger rocker arms and the rocker lever. Fig. 8 is a perspective of the hook plate for connecting the spring for the balance lever. Fig. 9 is an enlarged sectional view illustrating the invention as applied to a plain one shuttle loom. Fig. 10 is a plan of the mechanism shown in Fig. 9. Fig. 11 is a perspective of the pintle plate.

Referring particularly to the drawings, our improved mechanism comprises rock shafts 1 and 2 arranged respectively adjacent opposing ends of the loom lay 3, each of the shafts being supported in bearing brackets 4 depending from the forward face of the lay, so that the shafts are supported in alinement longitudinally of and slightly below the lay. At opposing ends of the respective shafts 1 and 2 there is secured to each shaft a finger 5, designed to be engaged and operated by the shuttle binder, which finger has a collar terminal 6 adapted to encircle the particular rocker shaft and be fixed in desired position thereon by a set screw 7.

Secured to the under side of the lay, adjacent the rear edge thereof, is a hanger arm 8, having a T-head 9 designed to engage and be secured to the lay. The hanger arm is disposed about midway between the proximate ends of the rock shafts 1 and 2 and is formed at its lower end with a bearing head 10, designed to receive a pin 11 on which is movably mounted what we term a balance lever 12. The lever is thus movably secured to the hanger arm 8 and projects in both directions beyond the hanger arm, the forward projection being preferably of greater length than the rearward projection, the relatively upward movement of the forward end of the balance lever being limited by a right angled stop plate 13 adjustably secured to the hanger arm through the medium of a pin and slot connection and having its relatively horizontal portion disposed in the path of movement of the balance lever. The forward end of the balance lever is normally tensioned in an upward direction through the medium of a coil spring 14, secured to the balance lever at one end and at the opposite end to a hook plate 15, secured to the lay bar in an appropriate manner. The relatively rear end of the balance lever is provided with a pivot pintle 16, and for the purposes of economy in construction and use we prefer to provide the pintle pin as an independent element, casting the same integral with a plate 17, which is designed to be screwed or otherwise removably secured to a similar plate 18 on the end of the balance lever, whereby renewal of the pintle 16 is permitted without the necessity of renewing the entire lever.

Pivotally mounted upon the pin 16 is a rocker lever 19, preferably a narrow strip of metal centrally formed with an opening 20 to engage the pin 16 and terminally formed with forwardly projecting pins 21. The mounting of the rocker lever disposes the same at right angles to the direction of the balance lever, and the respective ends of

the rocker lever are engaged by links 22 formed with bearing ends 23 to engage the pins 21, said links being in turn and at their upper ends pivotally connected to levers 24 formed at one end with pins 25 to engage the bearings 26 at the upper ends of the links 22 and at the opposite end with bearings 27 to engage and be secured directly upon the relatively inner ends of the rock shafts 1 and 2. The rocker lever is thus connected at each end with the respective rock shafts 1 and 2, and intermediate said point of connection the rocker lever is fulcrumed or pivoted upon a balance lever, which is without connection with the rocker shafts.

Secured upon the breast beam of the loom is a bridge piece 28, from which projects rearwardly a supporting arm 29, the rear terminal of the arm 29 being arranged below and immediately adjacent the connection of the rocker lever 19 and balance lever 12, as clearly shown in Fig. 1. Pivotally connected to the rear end of the arm 29 is a trip lever 30, which projects toward and underlies the forward end of the balance lever 12, as clearly shown in Figs. 1 and 2. Secured to the trip lever 30 is a trip arm 31, preferably fixed to the said trip lever 30 through the medium of a pin and slot connection 32, whereby the trip arm 31 may be adjusted longitudinally with relation to the trip lever 30. The arm 31 carries a vertically offset or trip projection 33, designed to directly underlie the free end of the balance lever 12, and said balance lever 12 at its free end is branched to provide arms 34, which rotatively support a roller 35 designed, when the parts are in normal position, to bear directly upon the trip projection 33. The trip arm 31 extends forwardly through the bridge piece 28, preferably extending through a guide housing 36 formed integral with the bridge piece, as clearly shown in Fig. 6. Beyond the bridge piece the forward end of the trip arm is designed to rest upon a horn 37 projecting laterally from a hook arm 38 secured to the shipper rod 39 of the loom through the medium of a set screw 40, all as clearly shown in Fig. 1. The arm is so secured upon the shipper rod that the downward movement of the forward end of the trip arm 31 will rock the shipper rod with the effect to stop the loom mechanism.

From the above construction, it will be obvious that as long as the shuttle boxes and shuttles are operating in relation, the mechanism described will not be affected, as the arrangement of the particular box and the movement of the shuttle will cause a successive operation of the fingers 5, which movement simply rocks the rocker lever 19 on its pivotal support and in nowise affects the balance of the mechanism. If, however, from any cause two shuttles are in line in the raceway, both of the fingers 5 will be simultaneously operated. As these fingers are respectively connected through lever mechanism to the respective ends of the rocker lever 19, it is obvious that said lever will be bodily raised. The raising of the lever will force the forward end of the balance lever 12 downward and thereby through the projection 33 on the trip arm 31 will depress said arm on the forward movement of the lay and through the horn 37 rock the shipper rod to stop the loom.

With the mechanism described in position it will be impossible for two shuttles to be simultaneously driven from opposite ends of the lay, as the position of said shuttles for driving will immediately and simultaneously effect both fingers 5 without the effect described. The parts are adjustable so that they may be connected with particular regard to the loom with which they are to be used, and in this connection it is to be understood that there is no limitation as to the size or material of the respective parts.

Referring particularly to Figs. 9 to 11 the invention is shown as applied to a plain one shuttle loom in which the pintle plate 41 is secured directly to the rear side of the lay 3, on the pintle 42 of which plate is pivotally mounted a rocker lever 43 corresponding to the rocker lever 19 of the construction previously described. Secured to the ends of the rocker lever are depending links 44 terminally connected to lever arms 45, which arms extend beneath the lay and are fixed to the relatively inner terminals of rods 46 mounted in bearing strips 47 secured to the relatively forward edge of the lay. The remote or relatively outer ends of the rods project beyond the adjacent bearing strips and carry fingers 48 terminating above the lay in the hook ends 49. In the use of this form of the invention the fingers 48 act alternately under the influence of the moving shuttle, so that when one finger is outwardly disposed with respect to the binder, as when a shuttle is within the box, the opposing finger at the opposite end of the lay is inwardly disposed so as to act as an automatic lock on the binder adjacent that particular finger. Therefore, when a shuttle is in one box the opposite box is locked and a shuttle cannot be inserted in the latter box.

Having thus described the invention what is claimed as new, is:—

1. A stop mechanism for looms including shuttle operated fingers supported by the lay, a balance lever supported by the lay, a rocker lever supported by the balance lever, connections between the rocker lever and the respective fingers, a trip lever, means connected to the breast beam for pivotally supporting the trip lever, a trip arm carried by said trip lever, and a connection between said trip arm and the shipper rod, said arm be-

ing formed with a projection to underlie the operative end of the balance lever.

2. A stop mechanism for looms including shuttle operated fingers supported on the lay, a balance lever pivotally mounted on the lay, a rocker lever pivotally supported on one end of the balance lever, a stop element underlying the opposing end of the balance lever, said element being movably mounted on the breast beam and adapted in operative movement to affect the shipper rod, and connections between the respective fingers and the ends of the rocker lever, whereby in the simultaneous and similar movement of the fingers the element engaging end of the balance lever is moved to a position to operatively influence said element in the movement of the lay.

3. A stop mechanism for looms including an element movably supported on the breast beam and adapted in operative movement to influence the shipper rod, shuttle influenced fingers mounted on the lay, a balance lever movably supported by the lay and adapted in operative movement to be disposed to effect an operative movement of said element, a rocker lever pivotally mounted directly on one end of the balance lever, and connections between the respective fingers and the respective ends of the rocker lever, whereby simultaneous and similar movement of the fingers will similarly effect both ends of the rocker lever and directly operate the balance lever.

4. A stop mechanism for looms including shuttle operated fingers supported by the lay, a balance lever pivotally supported from the lay, a rocker lever pivotally mounted on one end of the balance lever, connections between the respective fingers and the adjacent ends of the rocker lever, an element movably supported on the breast beam and adapted in operative movement to influence the shipper rod, and an offset carried by the element to underlie and be operatively engaged by the balance lever when the opposing ends of the rocker lever are simultaneously and similarly operated by the fingers.

5. A stop mechanism for looms including a lay supported balance lever, shuttle influenced fingers adapted in simultaneous and similar movement to operate the balance lever, an element movably supported on the breast beam and including a trip lever and a trip arm adjustably connected to the lever, means carried by the arm to operatively influence the shipper rod, and an offset carried by the arm adapted to be engaged and operated by the balance lever when the latter is in a position assumed under the similar and simultaneous movement of the fingers.

In testimony whereof we affix our signatures in presence of two witnesses.

HERBERT WEBSTER.
SAMUEL ROTHERA.

Witnesses:
GEORGE MUSSEY,
THOMAS GREEN.