No. 688,254. Patented Dec. 3, 1901.

A. LAUSTER.

LOOM STOPPING AND AUTOMATIC BELT SHIPPING DEVICE.

(Application filed July 2, 1901.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

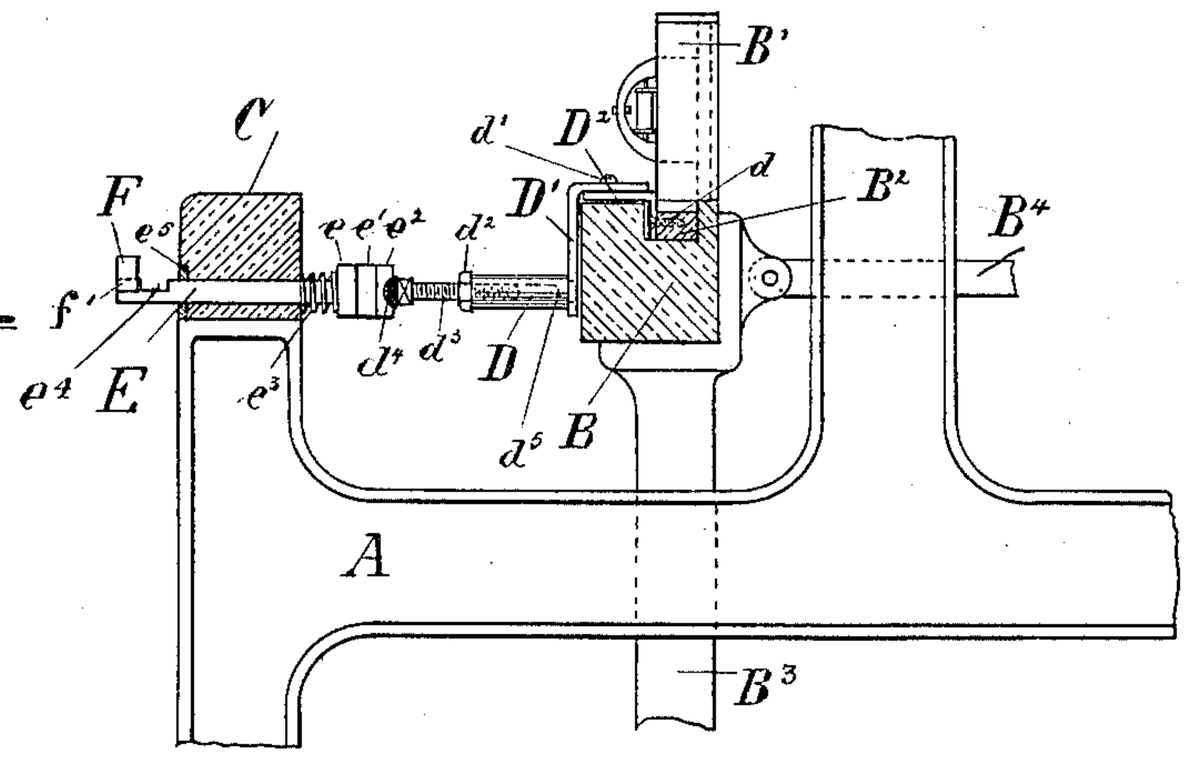

Fig. 2.

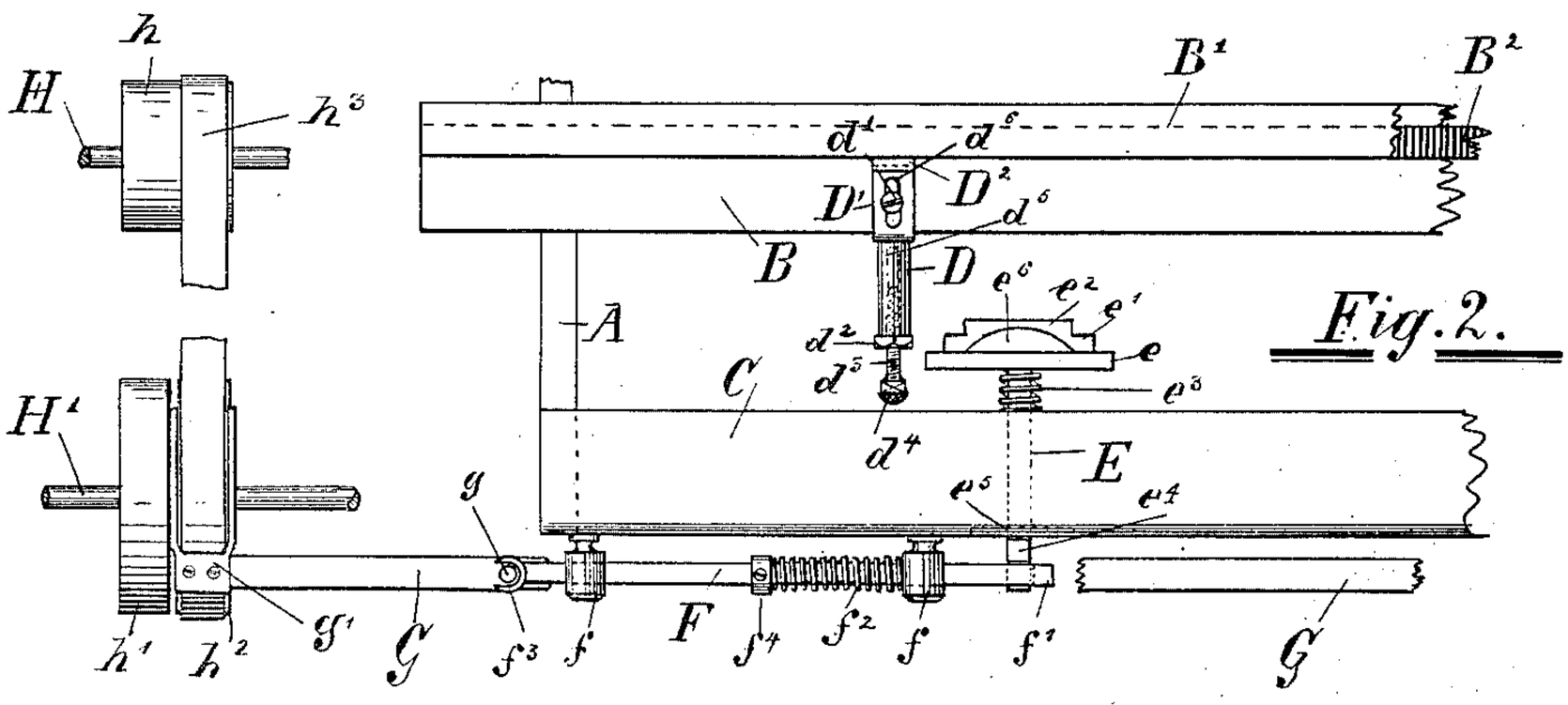

Fig. 3.

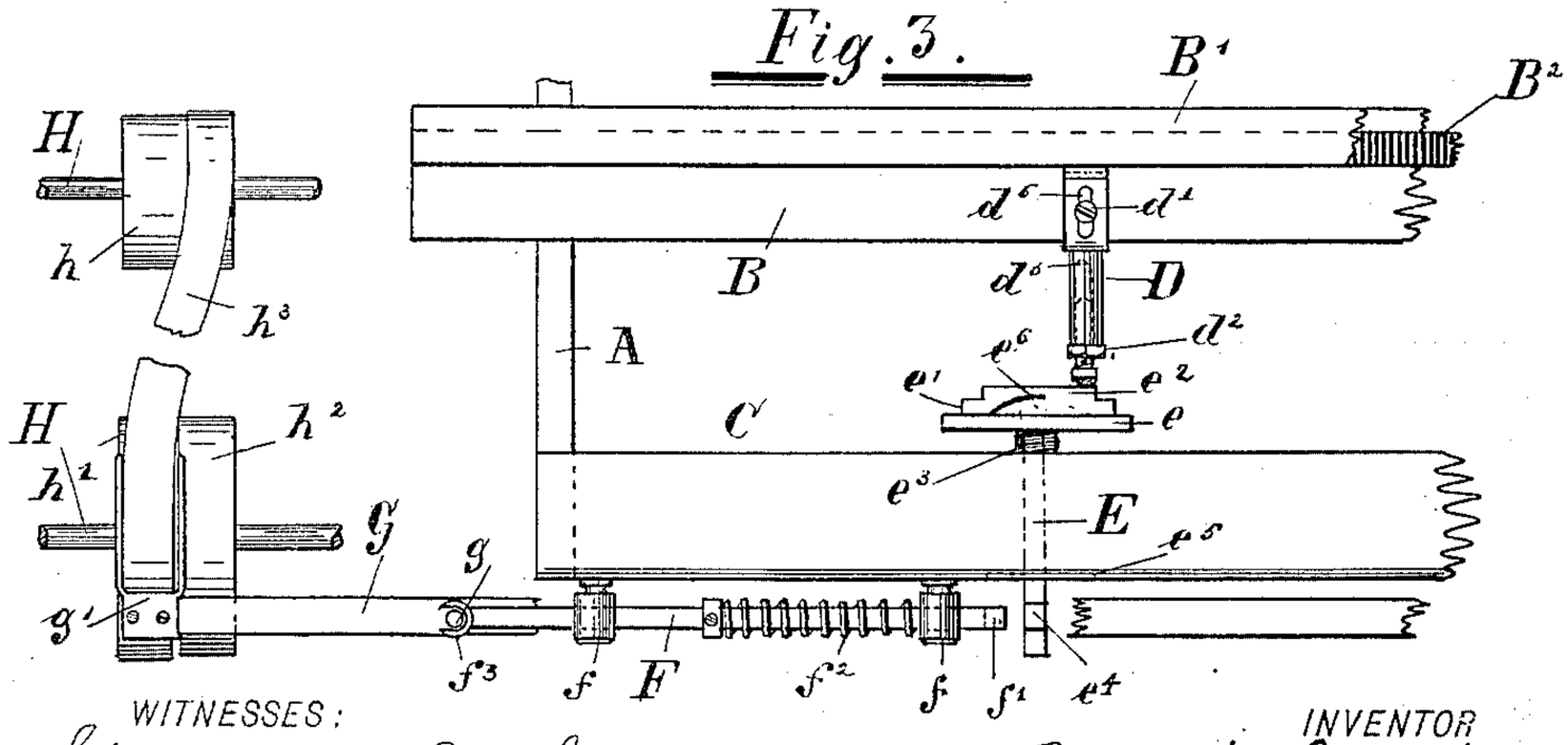

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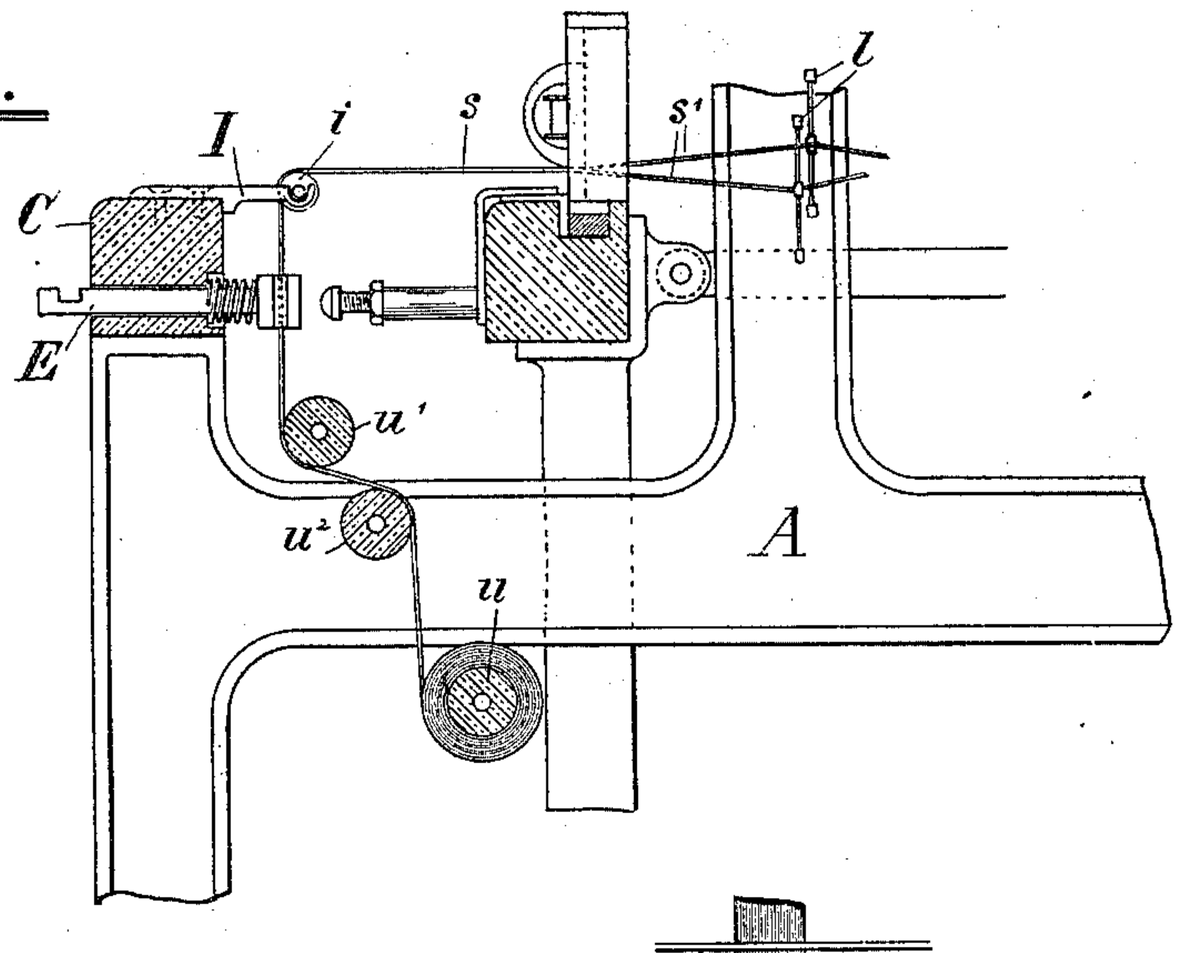
Fig. 4.



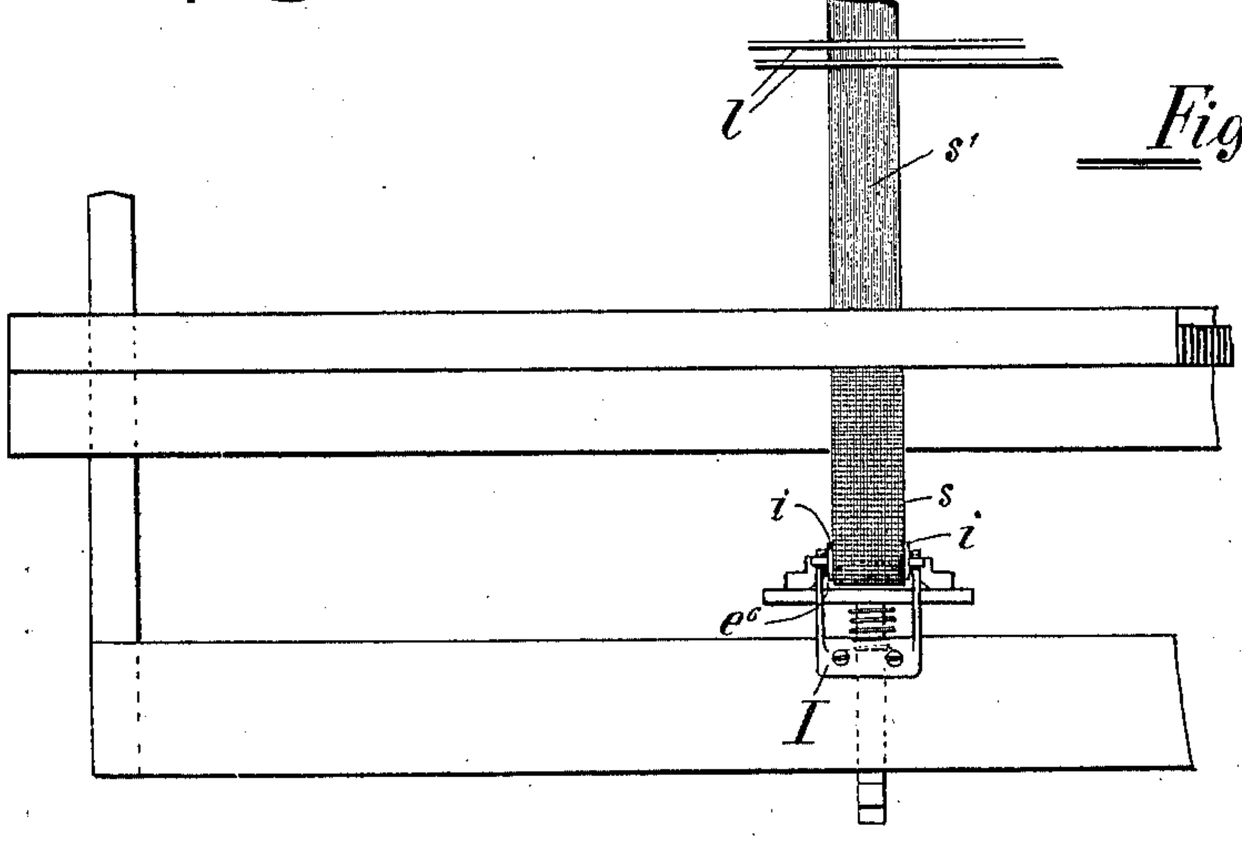


Fig. 5.

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LOOM-STOPPING AND AUTOMATIC BELT-SHIPPING DEVICE.

SPECIFICATION forming part of Letters Patent No. 688,254, dated December 3, 1901.

Application filed July 2, 1901. Serial No. 66,824. (No model.)

To all whom it may concern:

Be it known that I, AUGUST LAUSTER, a citizen of the United States, residing at 113 River street, city of Paterson, in the county of Passaic and State of New Jersey, have invented certain new and useful Improvements in Loom-Stopping and Automatic Belt-Shipping Devices, of which the following is a specification, reference being had therein to the accompanying drawings.

The object of my invention is to provide an adjustable loom-stopping and belt-shipping device for looms, a device which may be applied to German or American looms, a device that will be simple, practicable, durable, and inexpensive, and that will be especially adapted for ribbon-looms of any known description.

A further object is to produce an adjustable device for stopping looms that will render impact between the stopping device and the other parts of the loom practically noiseless, though forceful.

In a ribbon-loom where many shuttles are employed in carrying the weft through the different sets of warps when a break occurs while the shuttles are passing through the sheds the forward movement of the batten causes considerable damage, and the principal object of my invention is to produce a device which will stop the forward movement of the batten simultaneously with the breaking of any part of the loom mechanism, which would result in the damage aforesaid, and to produce a device so adjustable as to regulate the distance from the breast of the loom at which the batten may be stopped. In some instances it may be desired to stop the batten at a point farther from the breast of the loom than might be required in other cases.

The invention consists in the novel construction, arrangement, and combinations of parts hereinafter described, and set forth in the claims.

In the drawings, Figure 1 is a side view of a loom, showing the batten and breast-beam in section to illustrate the arrangement of my device. Fig. 2 is a top view of portion of a loom in running order, parts being broken away, and Fig. 3 is the same as Fig. 2, showing the position of my device when there has been a smash-up or breakdown and my device forcing the belt from the fast to the loose pulley of the loom. Fig. 4 is a side view of a loom, part sectional, showing the device for simultaneously stopping the movement of the batten and shifting the belt and means for protecting the ribbon; and Fig. 5 is a plan view of a portion of a loom with my automatic means for simultaneously stopping the movement of the batten, shifting the belt, and protecting the ribbon applied thereto.

In the drawings, A is the loom-frame; B, the batten; B′, the shuttle-holder and shuttle; B^2, the rack; B^3, the lay-sword; B^4, the connecting-rod between the batten and the crank-shaft of the loom; C, the breast-beam; D, the stopping-arm. D′ and D^2 are the adjustable parts of the braces which connect the arm D and the rack B^2.

H is the driving-shaft, having the pulley h. H′ is the loom-shaft, having the loose pulley h' and a tight pulley h^2. A driving-belt h^3 passes around the driving-pulley on the shaft H and around the tight pulley h^2 on the loom-shaft.

The brace D^2 is secured to the rack B^2 by the screws d. The braces D′ and D^2 are provided with longitudinal slots and are secured together where desired by a screw d', which is part round and part square.

An adjustable stop-screw d^3 is screwed into the arm D, and a stop-nut d^2 around the pin d^3 is screwed up against the arm D^3.

On the end of the stop-screw d^3 is secured a rubber head d^4.

A hole d^5 in the arm D is provided with screw-threads, and there is a slot d^6 in the braces D′ and D^2.

A bar E passes through an opening in the breast-beam C and is provided on its outer and upper face with a transverse slot e^4. To its inner end is secured an impact-receiving member provided with various offsets e, e', and e^2 and with an opening e^6, through which the ribbon being woven is adapted to pass.

On nearly all ribbon-looms there is but a small space between the ribbons being woven. The ribbons pass over rods or rollers, which are held in brackets secured to the inner side of the breast C of the loom and downwardly between friction-rollers to the beam upon which they are wound. It is thus obvious that in that class of looms no stopping device could be operated by the action of the lay

without striking the ribbon passing downwardly over said roller and inside of the loom-breast to the beam upon which it was being wound. For instance, in Fig. 2 of the drawings, if the ribbon were shown it would hide the central portion of the impact-receiving member, as it would pass first over the rod or roller just described, which is located above said impact-receiving member, before it would pass through the opening e^6 in said impact-receiving member, and then to the friction-rollers and to the beam upon which it is wound. The ribbon is not shown in either Fig. 2 or Fig. 3 in order that the impact giving and receiving member and the operation thereof might be clearly shown. Neither is the rod or roller shown over which the ribbon passes prior to its downward passage through the opening e^6 in the impact-receiving member.

It will be observed by reference to Fig. 1 that the impact giving and receiving members are considerably lower than the upper surface of the loom-breast C. The rod over which the ribbon passes is secured to brackets practically in the line with the upper surface of the breast C and a short distance from the inner face of the same, so that the ribbon passes over said rod or roller and between it and the inner face of the breast C, then downwardly and through the opening e^6 in the impact-receiving member, and so on to the beam which receives it.

A break or interference with the rack-operating mechanism is apt to occur during any part of the traverse motion of the rack or during any period in the motion of the shuttle. If the break should occur while the shuttle is in the middle of the warp-shed, it is obvious that the impact-giving member would strike the impact-receiving member about in the center without injury to the ribbon, and as all ribbons on that class of looms pass downwardly, as above described, it would be impossible to have a loom-stopping device of this class that would be practicable unless it had means for protecting the ribbons.

On the bar E between the impact-receiving member and the inside of the breast-beam C is a spring e^3, that tends to force the impact-receiving member a short distance away from the breast-beam, as shown in Figs. 1 and 2. The impact-receiving member is of such a length from extremity to extremity that if a break or disarrangement of the rack-operating mechanism should occur at any time during the traverse movement of the rack or while the shuttle is passing through the warp-shed the stopping-arm D, which is secured to the rack, will also stop in its traverse movement, be impelled forward by the batten, and the rubber end d^4 of the stop-screw d^3 will come into contact with said impact-receiving member as the batten B approaches the breast-beam C. When the loom is in proper working order, the stopping-arm D and its parts partaking of the traverse movement of the rack pass entirely clear of said impact-receiving member on the inner end of the arm E.

A guide-plate e^5 is secured to the breast-beam C, and through an opening therein the outer end of the bar E projects, as shown in the drawings.

A square sliding bar F is supported and adapted to be moved laterally in bearings $f f$, which are screwed into the outer side of the breast-beam C. This lateral movement of the sliding bar F is caused by the tension of the spring f^2, which surrounds said bar F between the fixed collar f^7 and one of the bearings f, as shown in Figs. 2 and 3.

On one end of the sliding bar F is formed a nose f', which is adapted to pass down over the outer end of the bar E, as shown in Figs. 1 and 2, when the impact-receiving member of the bar E is pressed away from the breast-beam C by the expansion-spring e^3.

When the stopper-arm D and its rubber-headed screw strikes the impact-receiving member on the inner end of the bar E, the bar E is forced outwardly through the breast-beam, and the slot e^4 coming opposite the nose f' the nose f' is released from the bar E, and the spring f^2 forces the sliding bar F laterally, and the forked or crescent-shaped member f^3 on the end of the bar F by engaging a pin g on the belt-shipping bar G and the fork g' thereon ships the belt h^3 from the fast pulley h^2 on the loom-shaft H′ onto the loose pulley h' thereon, thus stopping the loom.

It will be seen by reference to Figs. 4 and 5 that the ribbons being woven pass over rollers i, mounted in brackets I, which are secured to the breast-beam C, and thence downwardly between tension-rollers u' and u^2 to take-up rollers u. To avoid the striking of any of these ribbons by a stop device is one of the objects of my invention and is accomplished by having an impact-receiving member provided with means, such as the opening e^6, for protecting said ribbon. Only the ribbon or ribbons which would be so struck by the impact-giving member of a stop device are passed through or protected by the impact-receiving members, as shown in Figs. 5 and 6. The other ribbons would pass in the usual manner over the rollers i to the beam or take-up roller u.

My invention both prevents the forward movement of the batten when a break occurs and simultaneously shifts the belt from the fast to the loose pulley on the loom-shaft.

With this description of my invention, what I claim is—

1. In an automatic loom-stopping device, a rubber-headed screw, an internally-threaded tube adapted to receive said screw, adjustable bands, one secured to said tube, and one adapted to be secured to the rack, in combination with the rack and the batten, substantially as set forth.

2. In a loom, the breast-beam, in combination with an impact-receiving device having an arm passing through the breast-beam and

an impact-receiving member provided with an opening therethrough adapted to surround and protect the ribbon, substantially as set forth.

3. In an automatic loom-stopping device, the rack, the batten, and an impact-giving member partaking of the motion thereof, and impelled thereby, in combination with the breast of the loom, a bar passing transversely through an opening therein, an impact-receiving member secured to the inner end of said bar, and provided with an opening for the passage of a ribbon therethrough, and with offsets thereon, a spiral spring surrounding said bar, forming a cushion between the loom-breast and the impact-receiving member, a sliding spring-actuated bar located in bearings on the breast of the loom, parallel with the belt-shifting bar, and having a forked end, a fixed collar on said sliding bar, the belt-shifting bar adapted to be engaged by the said sliding bar, means for holding said bars in engagement, and adapted to release them from said engagement when the impact-receiving member receives a blow, substantially as set forth.

4. In an automatic loom-stopping device, the breast-beam of the loom, in combination with a bar passing transversely through an opening therein, an impact-receiving member having offsets thereon secured to the inner end of said bar, and having an opening therethrough to permit the passage of, ribbon, a spiral spring surrounding said bar between the breast-beam and the impact-receiving member, the batten, and an impact-giving member impelled thereby, substantially as set forth.

5. In an automatic loom-stopping device, the batten, the breast-beam, and the belt-shipping bar, in combination with the rack-operating mechanism of the loom, an impact-giving member secured to said rack-operating mechanism and participating in its traverse movement as well as in the reciprocatory movement of the batten, a spring-actuated bar passing transversely through the breast-beam, an impact-receiving member secured to the inner end thereof, and having means to protect, and permit the downward passage of, the ribbon being woven, the impact-receiving member being normally out of the path of the impact-giving member, but in the path thereof, and adapted to engage the same upon stoppage of the rack-operating mechanism, and means adapted to operate the belt-shipping bar upon the engagement of the impact-giving and impact-receiving members, substantially as set forth.

6. In an automatic loom-stopping device, the batten, the breast-beam, and the belt-shipping bar, in combination with the rack-operating mechanism of the loom, an impact-giving member secured to said rack-operating mechanism and participating in its traverse movement as well as in the reciprocatory movement of the batten, a spring-actuated bar passing transversely through the breast-beam, an impact-receiving member secured to the inner end thereof, and having means to protect, and permit the downward passage of, the ribbon being woven, the impact-receiving member being normally out of the path of the impact-giving member, but in the path thereof, and adapted to engage the same upon the stoppage of the rack-operating mechanism, a spring-actuated sliding bar adapted to engage the aforesaid bar, and to be released therefrom to engage the belt-shifting bar when the impact-receiving member is struck by the impact-giving member of the rack-operating mechanism, to ship the belt from the tight to the loose pulley, substantially as set forth.

7. In an automatic loom-stopping device, the batten, the breast-beam, and the belt-shipping bar, in combination with the rack-operating mechanism of the loom, an impact-giving member secured to said rack-operating mechanism and participating in its traverse movement as well as in the backward-and-forward movement of the batten, a spring-actuated bar passing transversely through the breast-beam, provided on its inner end with an impact-receiving member, provided with an opening for the passage of the ribbon being woven, which impact-receiving member is normally out of the path of the impact-giving member, but adapted to engage with the same at any part of its traverse movement, upon stoppage of the rack-operating mechanism, in combination with the loom-shaft, the fast and loose pulleys, and the driving-shaft, means for holding said belt on said fast pulley, which means are adapted to engage the outer end of the transverse bar passing through the breast-beam, and to be released from said engagement for the purpose of shipping the belt from the fast to the loose pulley, when the impact-receiving member on the inner end of said transverse bar receives a blow from the impact-giving member secured to the rack-operating mechanism, substantially as set forth.

8. In an emergency stop device for looms, the combination with the batten, the rack, and means for operating the same, of an adjustable extension stop device connected with the rack, and participating in the motion of the batten, and adapted to engage the impact-receiving member of a belt-shifting device inside the breast-beam, upon breakage of any part of the operative mechanism of the loom, and such a belt-shifting device, to thereby simultaneously shift the belt and stop the movement of the batten, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

AUGUST LAUSTER.

Witnesses:
STELLA A. HUGHES,
JOHN F. KERR.