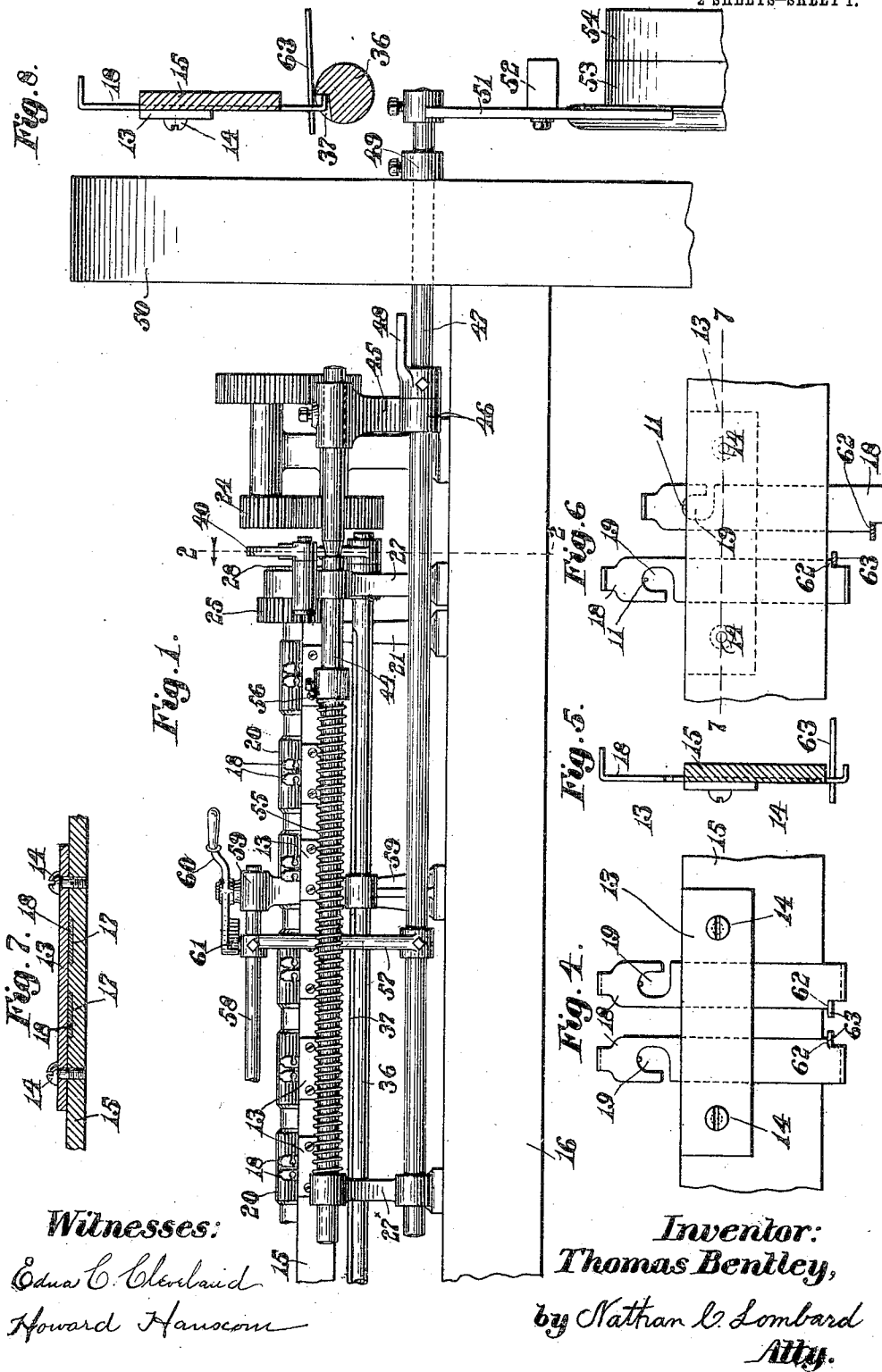


T. BENTLEY.
 DEVICE FOR PREVENTING SINGLES IN ROVING AND SIMILAR FRAMES.
 APPLICATION FILED APR. 6, 1908.

971,963.

Patented Oct. 4, 1910.

2 SHEETS—SHEET 1.



Witnesses:
 Edwin C. Clelland
 Howard Hanson

Inventor:
 Thomas Bentley,
 by Nathan C. Lombard
 Atty.

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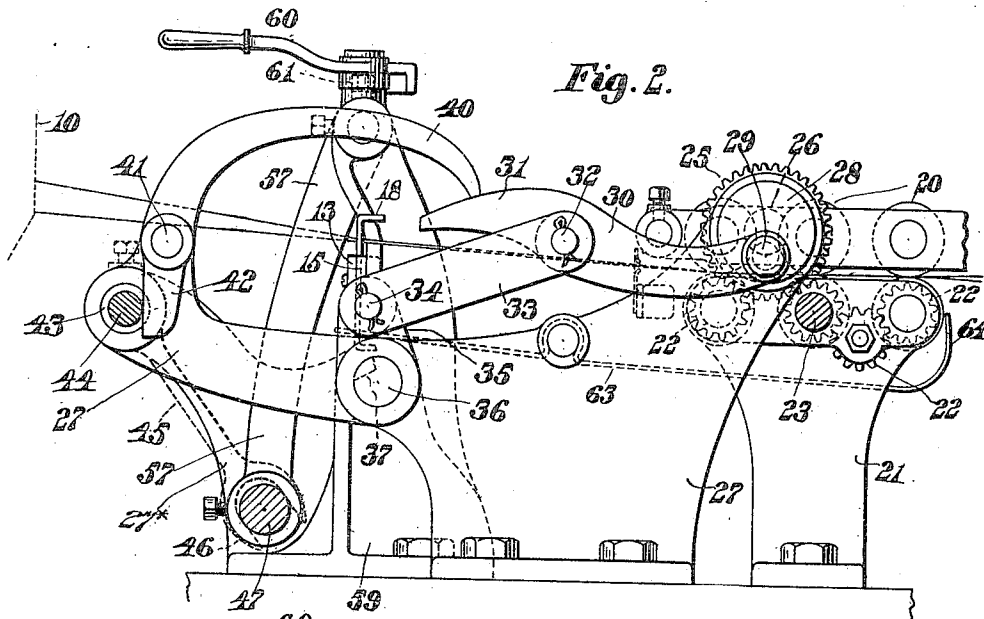


Fig. 2.

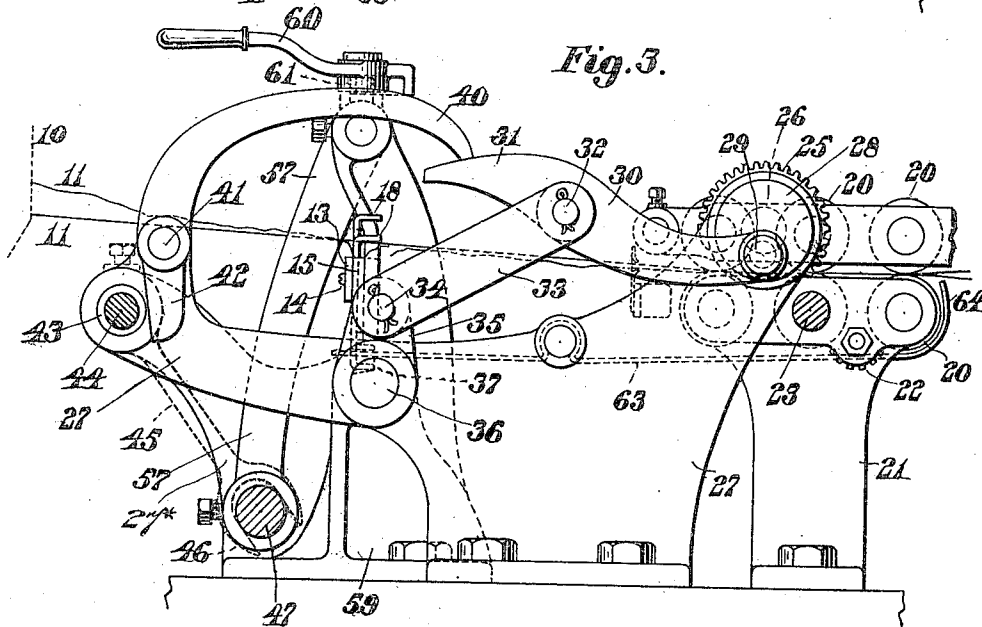


Fig. 3.

Witnesses:

Edna C. Cleveland
 Howard Hanson

Inventor:

Thomas Bentley,
 by Nathan L. Lombard
 Atty.

UNITED STATES PATENT OFFICE.

THOMAS BENTLEY, OF DRACUT CENTER, MASSACHUSETTS, ASSIGNOR TO BENTLEY SINGLE-AND-STOP MOTION COMPANY, OF AUGUSTA, MAINE, A CORPORATION OF MAINE.

DEVICE FOR PREVENTING SINGLES IN ROVING AND SIMILAR FRAMES.

971,963.

Specification of Letters Patent.

Patented Oct. 4, 1910.

Application filed April 6, 1908. Serial No. 425,555.

To all whom it may concern:

Be it known that I, THOMAS BENTLEY, a citizen of the United States of America, and a resident of Dracut Center, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Devices for Preventing Singles in Roving and Similar Frames, of which the following is a specification.

This invention relates to roving frames and similar apparatus in which a plurality of slivers are led through suitable guides and united into one roving by suitable drawing rolls and it relates particularly to the stopping mechanism therefor whereby the operation of the apparatus will be stopped upon the breaking of any one of the slivers passing through said guides.

The invention consists in certain novel features of construction and arrangement of parts which will be readily understood by reference to the description of the drawings and to the claims hereinafter given.

Of the drawings: Figure 1 represents a rear elevation of a portion of a roving or similar frame equipped with devices embodying the features of this invention. Fig. 2 represents a transverse section of the same on line 2—2 on Fig. 1, looking in the direction of the arrow. Fig. 3 represents a similar section showing the same parts in the position which they assume when a sliver has been broken. Fig. 4 represents a rear elevation of a pair of sliver guides and the supports therefor. Fig. 5 represents a vertical section through the guide supporting bar showing an edge view of the vertically moving sliver guides. Fig. 6 represents a front elevation of the same parts one of the sliver guides being shown in the position it assumes when a sliver has been broken. Fig. 7 represents a horizontal section of the same, the cutting plane being on line 7—7 on Fig. 6, and Fig. 8 represents a section similar to Fig. 5 showing the position which a sliver guide assumes when a thread has been broken and its connection with the oscillating shaft which operates the stopping mechanism.

Similar characters designate like parts throughout the several figures of the drawings.

In the drawings, 10 represents in dotted lines a portion of a series of bobbins from

which the slivers 11 are drawn. A plate 13 is secured by screws 14 to a bar 15 extending longitudinally of the apparatus parallel to the main frame 16 of the apparatus.

The rear face of the bar 15 has cut therein a plurality of grooves 17 in each of which is mounted a guide plate 18 provided near its upper end with an eye 19 through which a sliver 11 passes on its way to the drawing rolls 20. These drawing rolls 20 are of any usual construction and are mounted in a support 21 in two rows in the usual manner, the rolls in the lower row being driven by means of a plurality of gears 22 meshing with one another as clearly shown in Fig. 2, one of the shafts, as 23 of said rolls, being extended beyond the frame 21 and driven by means of the usual differential gearing 24 as indicated in Fig. 1.

Meshing with two of the gears 22 is an intermediate gear 25 on one end of a short shaft 26 having a bearing in the standard 27, the opposite end of said shaft 26 having formed upon its outer end a disk member 28 to which is secured by means of a stud 29 a member 30 provided at its free end with a lifting toe 31. To this member 30 is pivoted at 32 a link 33, the opposite end of which is secured by means of a pin 34 to a rocker arm 35 secured to a shaft 36 mounted in bearings in the supports 27 and 27* and extending longitudinally of the frame.

It is obvious from an inspection of the drawings that the rotation of the disk 28 will cause to be transmitted to the shaft 36 an oscillatory movement of said shaft by means of the toggle members 30 and 33, the weight of the members 30 and 33 being sufficient under normal conditions to provide a suitable connector between the disk 28 and arm 35 to effect this movement.

Cut into the upper portion of the shaft 36 and extending longitudinally thereof is a depression 37 one wall of which provides a suitable radial shoulder adapted to contact with one of the sliver guides 18 when it has been dropped by the breaking of a sliver into the plane of movement of said shoulder.

It is obvious that when a plate 18 has been thus dropped by its own weight upon the breaking of a sliver into the position shown in Fig. 8 the lower flanged end thereof will contact with the radial shoulder of the depression 37, thus preventing any fur-

ther oscillation of said shaft 36. The discontinuance of the oscillatory movement of the shaft 36 while the disk 28 continues to revolve will cause the toggle members 30 and 33 to break, thereby raising the pivot 32 as shown in Fig. 3, this breaking movement causing the lifting toe end of the member 30 to be elevated to such a degree as to move the arm 40 pivoted at 41 to be moved about said pivot 41 a sufficient distance to disengage the latch end 42 from the notch 43 in a rod 44 mounted in bearings in the supports 27 and 27*.

The outer end of the rod 44 has secured thereto an arm 45 which is provided with a bifurcated end 46 straddling the belt shifting rod 47 mounted in suitable bearings in the standards 27* and the end frame 50 of the machine. Secured to the rod 47 are collars or stops 48 and 49 adapted to limit the movement of said rod 47 in either direction, these collars 48 and 49 coacting with the end frame 50 to secure this limitation of the movement.

To the outer end of the rod 47 is secured an arm 51 having mounted thereon a member 52 adapted to engage with the driving belt (not shown) and cause a shifting thereof from the fast pulley 53 to the loose pulley 54 when the rod is moved endwise in a direction to the right of Fig. 1. It is obvious that when the rod 47 is moved in the opposite direction the belt will be shifted by means of the member 52 from the loose pulley 54 to the driving pulley 53 and the apparatus will again be put in operation. This end movement of the rod 47 is obtained by the action of the arm 45 against the collar 48 when the latch 42 is released from the notch 43 thus permitting the spring 55 surrounding the rod 44 to act upon the collar 56 secured to said rod to move the same longitudinally in its bearings in the supports 27—27*.

The rod 47 is connected by means of the member 57 to a rod 58 extending longitudinally of the apparatus and movable in bearings in standards such as the standard 59. To the upper end of the standard 59 is pivoted a manually-operated device 60 which is adapted to coact with a projection 61 extending from the upper end of the connecting member 57 which pivoted device, when moved about its pivot, is adapted to act upon said projection 61 to move the belt shifting rod 47 to shift the belt from the fast pulley 53 to the loose pulley 54 to stop further operation of the apparatus this movement being made without affecting the movement of the rod 44.

It is obvious, however, from the foregoing description, that whenever a sliver breaks and the plate 18 which is supported by said sliver is permitted to drop by its own weight into the path of the shoulder on the oscil-

lating rod 36, thereby effecting a disengagement of the latch 42 from the notch 43, the spring 55 will act upon the collar 56 to automatically stop the machine by shifting the belt onto the loose pulley, as heretofore described.

Each of the plates 18 is provided near its lower end with a shoulder 62 which engages with a pivoted indicator 63, the front end of which is upturned as at 64 in front of one of the drawing rolls 20. When the plate 18 drops the shoulder 62 will engage the rear end of the pivoted indicator 63 and cause the front end 64 thereof to be moved upwardly into the position shown in Fig. 3 to indicate which particular sliver has broken and effected the stoppage of the apparatus so that the operator may quickly discover where the break occurred, and mend the same so that further operation of the apparatus may be permitted. This makes a very simple form of stop motion for apparatus of this class which stop motion is adapted to be operated either manually when desired or automatically whenever any particular sliver breaks at any point upon the frame and which provides a simple means for immediately disclosing to the operator the particular point at which the break occurred.

The curved bearing face of the lifting toe 31 is of such form that during the rotation of the disk 28 and the oscillation of the shaft 36, the end of the arm 40 will ride along said curved face without effecting any movement of the arm about the pivot 41 to disengage the latch 42 from the notch 43 in the shaft 44.

It is obvious from the foregoing that whenever a sliver is broken the apparatus will be stopped before the broken sliver reaches the drawing rolls and a splice may be made therein intermediate said drawing rolls and the sliver guides before the apparatus is again started. It is evident therefore that this means of operation will effectively prevent the singles which seriously impair the manufactured article.

It is believed that from the foregoing the operation of the invention and the many advantages of an apparatus such as has herein been described will be thoroughly understood without further description.

Having thus described my invention, I claim:

1. In an apparatus of the class described, the combination with a stopping mechanism therefor; of a rocker shaft; an arm thereon; a revoluble disk upon a gear in mesh with the drawing roll gears; a two-part pivoted connector one part of which is pivoted to said arm and the other part is eccentrically connected to said disk adapted normally to impart a rocking movement to said shaft but also adapted to break whenever the

movement of said shaft is limited; means for limiting the movement of said shaft operable by the breaking of a thread; and means interposed between said pivoted con-
 5 nector and said stopping mechanism for operating the latter by the abnormal movement of the former.

2. In an apparatus of the class described, the combination with a stopping mechanism
 10 therefor; of a rocker shaft; an arm thereon; a revoluble disk upon a gear in mesh with the drawing roll gears; toggle mechanism, the two ends of which are respectively piv-
 15 otally connected to said arm and disk, adapted normally to impart a rocking movement to said shaft but also adapted to break whenever the movement of said shaft is limited; means for limiting the movement
 20 of said shaft operable by the breaking of a thread; a spring-pressed rod for operating said stopping mechanism; a latch pivoted to a fixed member in substantially the same plane with said toggle mechanism and nor-
 25 mally engaging and locking said rod; and means for moving said latch about its pivot by the breaking of said toggle mechanism.

3. In an apparatus of the class described, the combination with a stopping mechanism
 30 therefor; of a rocker shaft; an arm thereon; a revoluble disk upon a gear in mesh with the drawing roll gears; a toggle mechanism, the two ends of which are respectively piv-
 35 otally connected to said arm and disk, adapted to impart a rocking movement to said shaft but also adapted to break whenever the movement of said shaft is limited; means for limiting the movement of said
 40 shaft operable by the breaking of a thread; a spring-pressed rod for operating said stopping mechanism; an extension to one part of said toggle mechanism; and a latch
 45 pivoted to a fixed member in substantially the same plane with said toggle mechanism and normally engaging and locking said rod, said latch having an arm co-acting with
 50 said extension and adapted to be moved thereby to move said latch about its pivot when said toggle mechanism is broken.

4. In an apparatus of the class described, the combination with a stopping mechanism
 50 therefor; of a rocker shaft; an arm thereon; a revoluble disk upon a gear in mesh with the drawing roll gears; a toggle mechanism, the two ends of which are respectively piv-
 55 otally connected to said arm and disk, adapted to impart a rocking movement to said shaft but also adapted to break whenever the movement of said shaft is limited; means for limiting the movement of said
 60 shaft operable by the breaking of a thread; an extension to one part of said toggle mechanism; a spring-pressed rod for operating said stopping mechanism having a peripheral
 65 notch; and a latch pivoted to a fixed member in substantially the same plane with

said toggle mechanism and normally engaging said locking rod, said latch having an
 arm co-acting with said extension and adapted to be moved thereby to move said latch
 about its pivot when said toggle mechanism 70 is broken.

5. In an apparatus of the class described, the combination with a stopping mechanism
 therefor; of a rocker shaft; an arm thereon; a revoluble disk upon a gear in mesh with
 75 the drawing roll gears; toggle mechanism, the two ends of which are respectively piv-
 otally connected to said arm and disk; a spring-pressed rod for operating said stop-
 80 ping mechanism provided with a peripheral notch; a latch in substantially the same plane with said toggle mechanism pivoted to a fixed member and normally engaging said
 85 notch; means for disengaging said latch from said notch by the breaking of said toggle mechanism; a member retained nor-
 mally in raised position by a thread; and means adapted upon the breaking of said
 90 thread to permit said member to engage with said rocker shaft and limit the move-
 ment thereof.

6. In an apparatus of the class described, the combination with a stopping mechanism
 therefor; of a rocker shaft; an arm thereon; a revoluble disk upon a gear in mesh with
 95 the drawing roll gears; toggle mechanism, the two ends of which are respectively con-
 nected to said arm and disk; a spring-pressed rod for operating said stopping
 100 mechanism provided with a peripheral notch; a latch in substantially the same plane with
 said toggle mechanism pivoted to a fixed member and normally engaging said notch;
 105 means for disengaging said latch from said notch by the breaking of said toggle mechanism; a member retained normally in raised
 position by a thread; means adapted upon
 110 the breaking of said thread to permit said member to engage with said rocker shaft and
 limit the movement thereof; and an indi-
 cator operated by the movement of said
 member upon the breaking of a thread.

7. In an apparatus of the class described, the combination with a stopping mechanism
 therefor; of a rocker shaft; an arm thereon; 115
 a revoluble disk upon a gear in mesh with the drawing roll gears; toggle mechanism, the two ends of which are respectively piv-
 otally connected to said arm and disk; a spring-pressed rod for operating said stop- 120
 ping mechanism provided with a peripheral notch; a latch in substantially the same
 plane with said toggle mechanism pivoted to a fixed member and normally engaging said
 125 notch; means for disengaging said latch from said notch by the breaking of said
 toggle mechanism; a member retained nor-
 mally in raised position by a thread; means
 adapted upon the breaking of said thread to
 130 permit said member to engage with said

rocker shaft and limit the movement thereof; and a weighted indicator adapted to be moved about a pivot by said member whenever a thread breaks.

5 8. In an apparatus of the class described, the combination with a stopping mechanism therefor; of a spring-pressed rod for operating said stopping mechanism; a latch pivoted to a fixed member and normally
10 locking said rod and latch, having a lifting toe engaging arm; a rocker shaft; an arm thereon; a revoluble disk upon a gear in mesh with the drawing roll gears; a two-
15 part pivoted connector, one part of which is pivoted to said arm and the other part is eccentrically connected to said disk and has an extension beyond the pivotal connection

to the other part provided with a curved surface adapted to be engaged by the end of said latch arm, which normally moves over 20 said curved surface without moving said latch about its pivot; means for limiting the movement of said shaft operable by the breaking of a thread and thus effecting a break of said pivoted connector and the lift- 25 ing of said extension and thereby moving said latch about its pivot.

Signed by me at 7 Water st., Boston, Mass., this 31st day of March, 1908.

THOMAS BENTLEY.

Witnesses:

EDNA C. CLEVELAND,
WALTER E. LOMBARD.