

973,694.

2 SHEETS—SHEET 1.



Inventor:

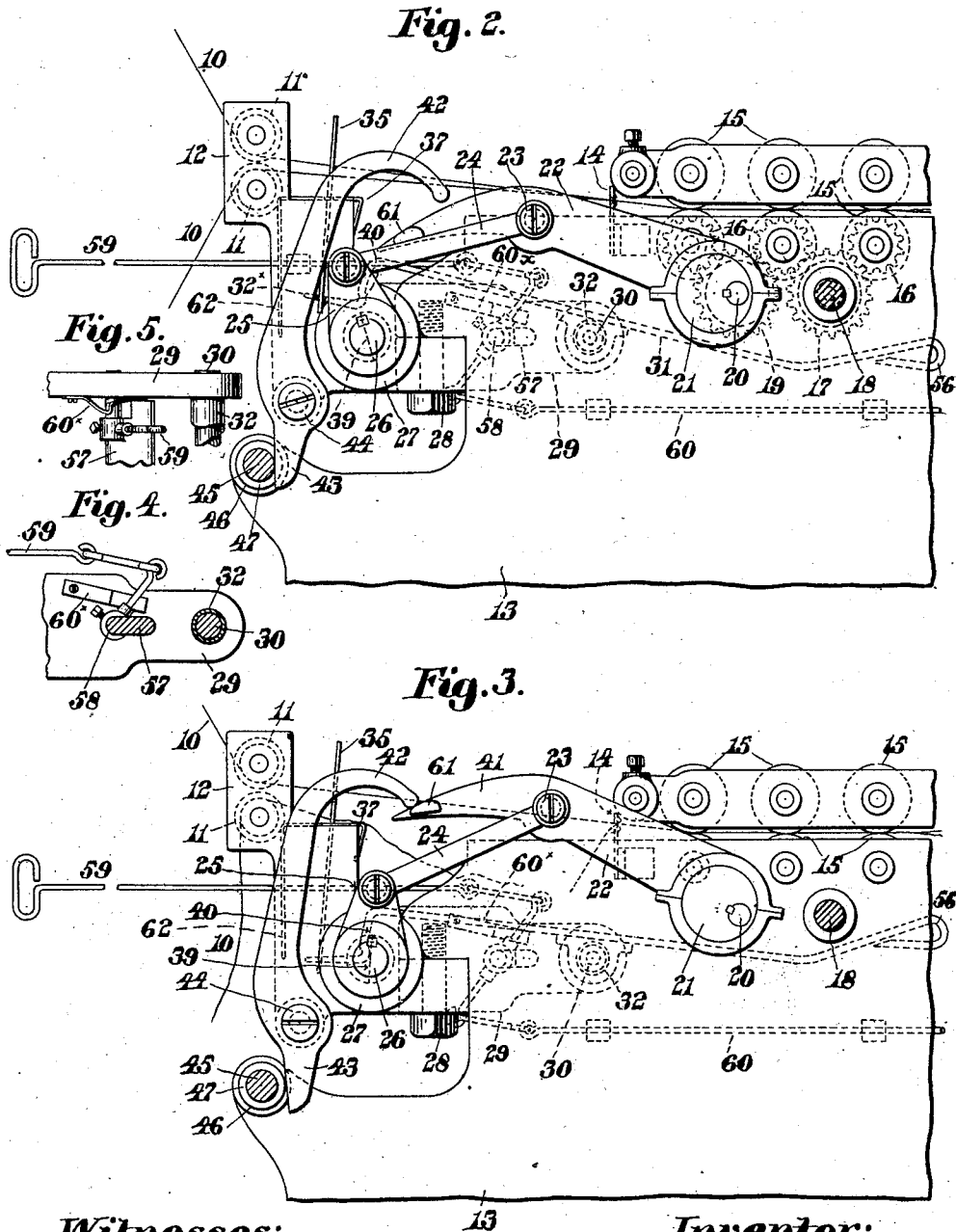
Van R. Paige,
by Walter E. Lombard
Atty.

V. R. PAIGE.
 DEVICE FOR PREVENTING SINGLES IN ROVING AND SIMILAR FRAMES.
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2 SHEETS—SHEET 2.



Witnesses:
 Nathan L. Lombard
 Howard Hanson

Inventor:
 Van R. Paige,
 by Walter E. Lombard,
 Atty.

UNITED STATES PATENT OFFICE.

VAN R. PAIGE, OF HOPKINTON, NEW HAMPSHIRE, ASSIGNOR TO BENTLEY SINGLE-AND-STOP-MOTION COMPANY, OF AUGUSTA, MAINE, A CORPORATION OF MAINE.

DEVICE FOR PREVENTING SINGLES IN ROVING AND SIMILAR FRAMES.

973,694.

Specification of Letters Patent.

Patented Oct. 25, 1910.

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To all whom it may concern:

Be it known that I, VAN R. PAIGE, a citizen of the United States of America, and a resident of Hopkinton, in the county of Merrimack and State of New Hampshire, 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 section through the device for lifting the sliver guides, showing in elevation the means for operating said devices. Fig. 5 represents a plan of one end of said guide lifting mechanism. Fig. 6 represents a section through the support for the sliver guides and the stopping mechanism secured thereto. Fig. 7 represents a longitudinal section through the slotted bar forming a bearing for the sliver guides showing one of the guides therein, and Fig. 8 represents a plan of one end of the weighted arm attached to said sliver guides.

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

In the drawings, 10 represents two slivers passing from any suitable bobbin over and under the rolls 11 revoluble in the bearing 12. These slivers 10 are drawn through eyes in a plate 14 by means of a plurality of drawing rolls 15, the lower series of which

are driven by means of the gears 16, motion being imparted to the front pair of which by means of an intermediate gear 17 on a driving shaft 18. Between the rear pair of gears is an intermediate gear 19 on the shaft 20 of which is secured an eccentric 21. On this eccentric 21 is mounted one part 22 of a pivoted toggle mechanism, the pivot 23 of which is connected by means of the other part 24 to a rocker arm 25 secured to the rocker shaft 26 mounted in suitable bearings 27. These bearings 27 are secured to the standards 13 by means of suitable bolts 28 while each bearing is provided with an extension 29 resting against the inner side face of the standards 13 and having mounted in their outer ends a shaft 30 on which is placed a plurality of weighted arms 31 separated by the collars or sleeves 32. The rear end of each of these weighted arms 31 is flattened as at 32* (see Fig. 8) and provided with side detents 33, the purpose of this flattened end 32* and detents 33 being to permit the end of the weighted arm 31 to be passed through a slot 34 in the lower end of a sliver guide 35 and then turned into the position shown in Fig. 6 to form a loose pivotal connection between the two. Each of the sliver guides 35 extends upwardly through slots 36 in a longitudinal bar 37 interposed between two of the standards 13.

Each sliver guide is provided with an eye 38 through which one of the slivers 10 passes as it is drawn over the rollers 11 to the eye 14. When the drawing rolls 15 are operating upon the slivers to draw them through the eye 14 the slivers 10 are taut and cause the sliver guides 35 to be retained in elevated position as shown in Fig. 2, thus lifting the rear ends of the weighted arms 31 out of the plane of movement of the rocker shaft 26. This shaft is flattened between its two bearings to form a radial shoulder 39, as indicated in Fig. 6, and each of the arms 31 is provided with a downward bend 40 forming a shoulder adapted to co-act with said radial shoulder 39 on the rocking shaft 26 whenever a sliver breaks and the pivoted weighted arm is permitted to drop by its weight into the path of movement of said rocker shaft.

When a sliver breaks and the sliver guide is dropped into the position shown in Figs. 3 and 6 with the shoulder 40 in the path of movement of the rocker shaft 26 it is ob-

vious that the radial shoulder 39 will come into contact with the shoulder 40 and cause a cessation of said rocking movement. Until a sliver has broken and permitted the shoulder 40 to drop into the path of movement of the radial shoulder 39 on the rocker shaft 26 the revolution of the crank 21 will cause a rocking of said shaft through a limited arc. As soon, however, as this rocking movement is prevented by the shoulder 39 coming in contact with the shoulder 40 the two-part toggle mechanism 22 and 24 will be broken about the pivot to cause the pivot 23 to be uplifted into the position shown in Fig. 3 thus causing the toe end 41 to come into contact with the curved arm 42 of the latch 43 pivoted at 44 to the bearing 27, said bearing 27 also having formed in an upward extension therefrom the bearings 12 for the revoluble rollers 11.

The latch 43 is held by the weight of the curved arm 42 in contact with the rod 45 adapted to be reciprocated in bearings in the standards 13. This rod 45 has secured thereon a cone collar 46, the face of the larger end 47 of which is held in contact with the side of said latch 43 by means of a spring 48 surrounding said rod and interposed between the collar 49 secured thereto and one of the bearings 13. A collar 50 secured to one end of the rod 45 and adjustable thereon limits the movement of said rod 45 by coming into contact with a standard 13. The movement of the rod 45 in the opposite direction is limited by the collar 51 coming into contact with the end frame 52 of said machine.

To the extreme outer end of the rod 45 is secured the belt shipper arm 53 which is adapted to shift the driving belt from the fast pulley 54 to the loose pulley 55 when it is desired to stop the machine. It is obvious therefore from the foregoing description that whenever the toggle 22—24 is broken about the pivot 23 by the cessation of the movement of the rocker shaft 26 and the curved arm 42 is lifted so that the latch 43 is moved out of the path of the cone collar 46, the spring 48 will act upon the rod 45 to move the belt from the fast pulley 54 to the loose pulley 55 to stop the machine.

The operation of the machine will be discontinued until the operator repairs the break in the sliver, the particular thread broken being indicated by means of the raised position of the end 56 of the weighted arm 31. When the break has been discovered and it is desired to re-thread the slivers through the eyes 38 of the sliver guides 35, the lifting bar 57 pivoted at 58 may be moved by means of the rod 59 or 60 at either end of said bar to cause all of the weighted members 31 which may have been dropped to be simultaneously raised into their normal position, as indicated in Fig. 2, the lifting

bar 57 being retained in such position by means of the spring 60* until the repairs have been made and the operator returns the bar 57 into the position shown in Fig. 4.

A projection 61 on the toe end 41 of the member 22 coöperates with the link or connector 24 between the pivot 23 and rocker arm 25 to prevent the toggle members 22 and 24 from ever gaining a position in a direct line between the center of the eccentric 21 and the pivotal connection between the link 24 and rocker arm 25 or passing beyond this line, so that the toggle mechanism is always in position to cause the rocking of the arm 25 by the rotation of the eccentric 21 until further rocking of the member 25 is prevented and to break the toggle in the manner hereinbefore described when this cessation of this rocking movement occurs. The slotted bar or member 37 is provided with a downwardly extending shield 62 which serves to cover the working parts of the apparatus and to prevent the slivers from becoming entangled therewith. This makes a very effective stop motion for machines of the class hereinbefore described, which is simple in construction and very effective in its operation.

It is believed that from the foregoing the operation and many advantages of the machine will be fully understood without any further description.

Having thus described my invention, I claim:

1. In an apparatus of the class described, the combination with a plurality of drawing rolls adapted to move and unite a set of slivers passing between the same; of an oscillating shaft provided with a radial shoulder; means operable with the drawing rolls for oscillating said shaft; a vertically movable plate normally retained in raised position by a thread and adapted upon the breaking of said thread to drop; a pivoted member connected to said plate provided with a shoulder adapted to move when said plate drops into the path of said radial shoulder to prevent further oscillation of said shaft; a stop motion; and means for operating said stop motion actuated upon stopping the oscillatory movement of said shaft.

2. In an apparatus of the class described, the combination with a plurality of drawing rolls adapted to move and unite a set of slivers passing between the same; of an oscillating shaft provided with a radial shoulder; means operable with the drawing rolls for oscillating said shaft; a vertically movable plate normally retained in raised position by a thread and adapted upon the breaking of said thread to drop; a pivoted member connected to said plate provided with a shoulder adapted to move when said plate drops into the path of said radial shoulder to prevent further oscillation of

said shaft; a stop motion; means for operating said stop motion actuated upon stopping the oscillatory movement of said shaft; and mechanism for simultaneously raising a plurality of said pivoted members and the plates connected thereto.

3. In an apparatus of the class described, the combination with a plurality of drawing rolls adapted to move and unite a set of slivers passing between the same; of an oscillating shaft provided with a radial shoulder; means operable with the drawing rolls for oscillating said shaft; a vertically movable plate normally retained in raised position by a thread and adapted upon the breaking of said thread to drop; a pivoted member connected to said plate provided with a shoulder adapted to move when said plate drops into the path of said radial shoulder to prevent further oscillation of said shaft; a stop motion; means for operating said stop motion actuated upon stopping the oscillatory movement of said shaft; a pivoted bar beneath said pivoted members; and means for moving said bar about its pivot to lift said members.

4. In an apparatus of the class described, the combination with a plurality of drawing rolls adapted to move and unite a set of slivers passing between the same; of an oscillating shaft provided with a radial shoulder; means operable with the drawing rolls for oscillating said shaft; a vertically movable plate normally retained in raised position by a thread and adapted upon the breaking of said thread to drop; a pivoted member connected to said plate provided with a shoulder adapted to move when said plate drops into the path of said radial shoulder to prevent further oscillation of said shaft; a stop motion; means for operating said stop motion actuated upon stopping the oscillatory movement of said shaft; a pivoted bar beneath said pivoted members; means for moving said bar about its pivot to lift said members; and a spring member adapted to retain said bar when in raised position.

5. In an apparatus of the class described, the combination with a plurality of drawing rolls adapted to move and unite a set of slivers passing between the same; of an oscillating shaft provided with a radial shoulder; means operable with the drawing rolls for oscillating said shaft; a vertically movable plate normally retained in raised position by a thread and adapted upon the breaking of said thread to drop; a pivoted

member connected to said plate provided with a shoulder adapted to move when said plate drops into the path of said radial shoulder to prevent further oscillation of said shaft; a stop motion; means for operating said stop motion actuated upon stopping the oscillatory movement of said shaft; and a roller about which the slivers are adapted to pass before entering the eyes in said plates.

6. In an apparatus of the class described, the combination with a plurality of drawing rolls adapted to move and unite a set of slivers passing between the same; of an oscillating shaft provided with a radial shoulder; means operable with the drawing rolls for oscillating said shaft; a vertically movable plate normally retained in raised position by a thread and adapted upon the breaking of said thread to drop; a pivoted member connected to said plate provided with a shoulder adapted to move when said plate drops into the path of said radial shoulder to prevent further oscillation of said shaft; a stop motion; means for operating said stop motion actuated upon stopping the oscillatory movement of said shaft; and a member provided with a plurality of slots through each of which passes one of said movable plates.

7. In an apparatus of the class described, the combination with a plurality of drawing rolls adapted to move and unite a set of slivers passing between the same; of an oscillating shaft provided with a radial shoulder; means operable with the drawing rolls for oscillating said shaft; a vertically movable plate normally retained in raised position by a thread and adapted upon the breaking of said thread to drop; a pivoted member connected to said plate provided with a shoulder adapted to move when said plate drops into the path of said radial shoulder to prevent further oscillation of said shaft; a stop motion; means for operating said stop motion actuated upon stopping the oscillatory movement of said shaft; and a member provided with a plurality of slots through each of which passes one of said movable plates, said slotted member being provided with a downwardly extending shield.

Signed by me at Hopkinton, N. H. this 12th day of March, 1908.

VAN R. PAIGE.

Witnesses:

MOSES T. CLOUGH,
WILLIAM A. PATTERSON.