March 8, 1932. W. J. SCOTT 1,848,667

STOP MOTION FOR DRAWING FRAMES

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Fig. 1.

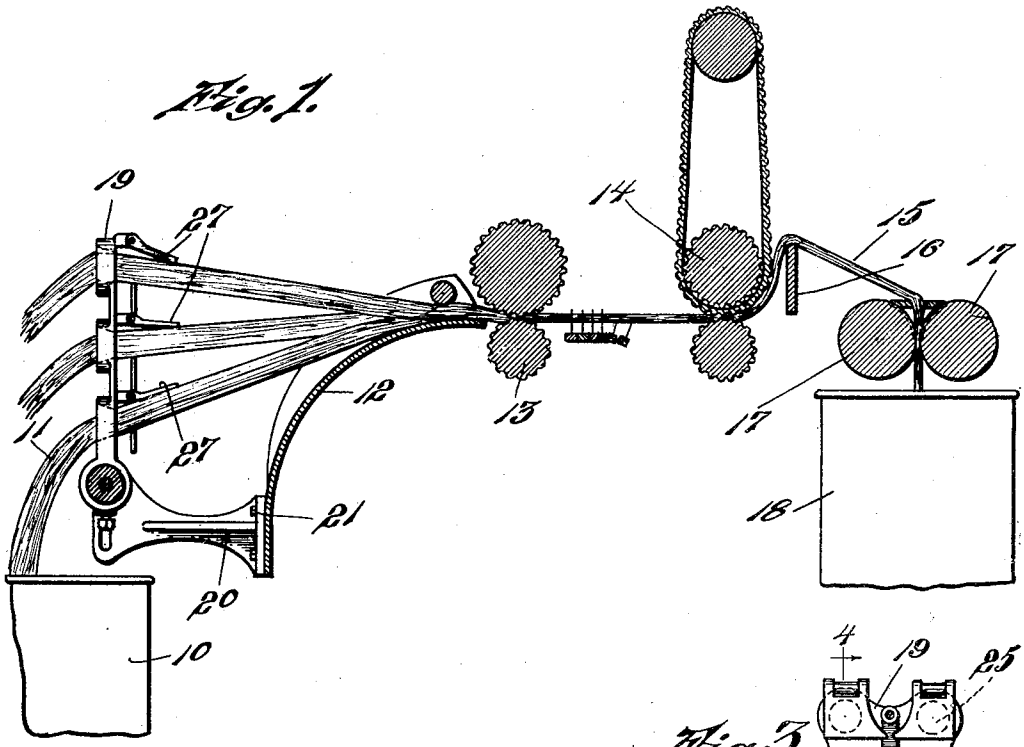


Fig. 3.

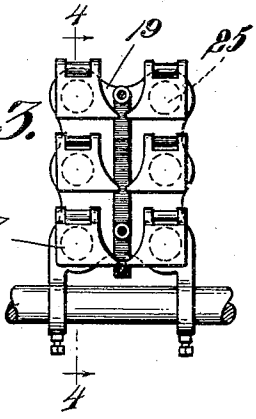
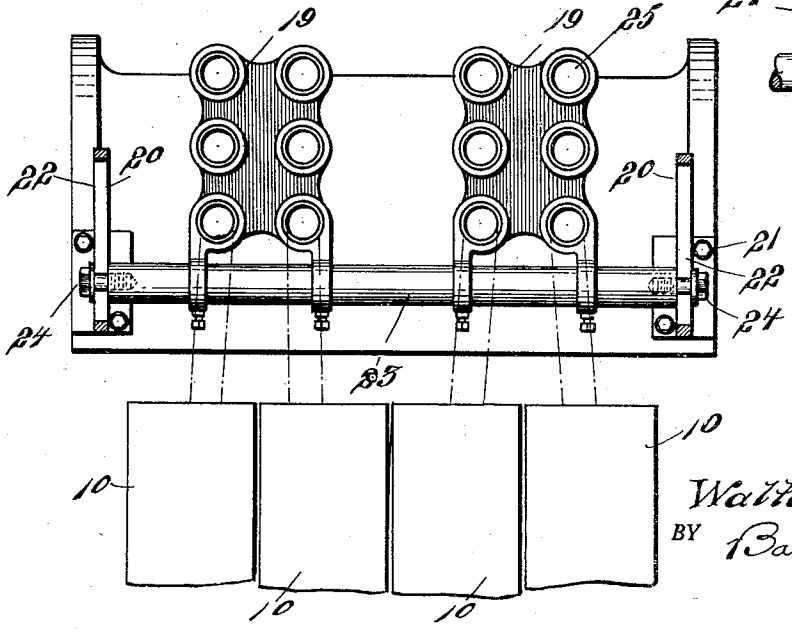


Fig. 2.



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Fig. 4.

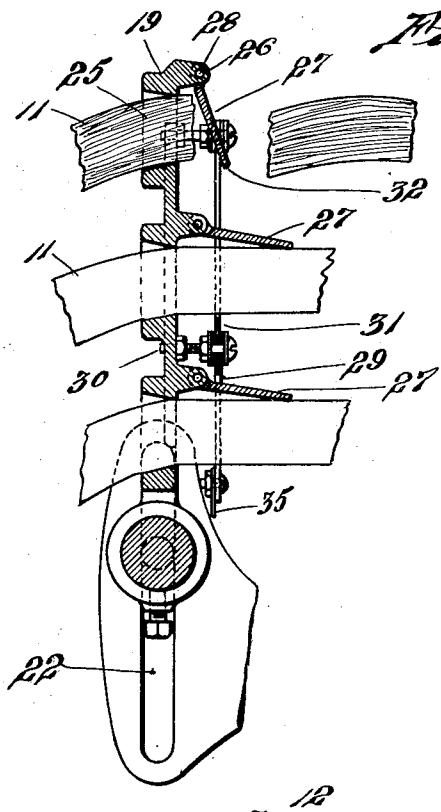


Fig. 5.

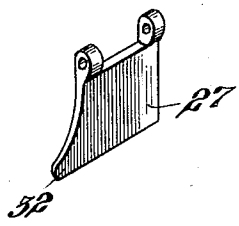


Fig. 6.

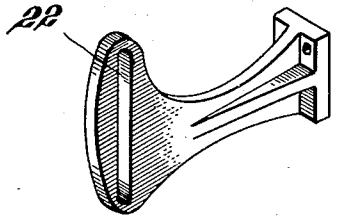
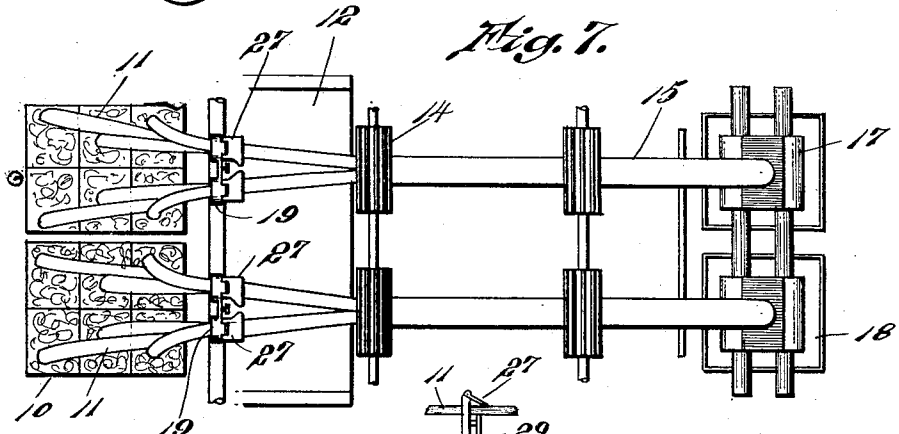


Fig. 7.



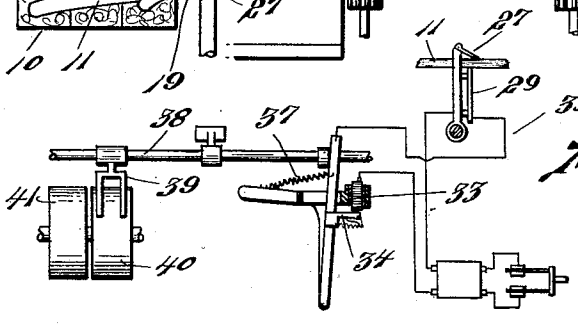


Fig. 8.

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Patented Mar. 8, 1932

1,848,667

UNITED STATES PATENT OFFICE

WALTER J. SCOTT, OF WOONSOCKET, RHODE ISLAND

STOP MOTION FOR DRAWING FRAMES

Application filed May 29, 1930. Serial No. 458,292.

This invention relates to an improved stop motion for drawing frames and the like; and has particular reference to an electrically operated stop motion which is positioned between the draft rolls and the sliver supply. The object of this invention is to provide a stop motion which will operate whenever a sliver breaks, or its tension is slackened to a predetermined degree.

A further object of the invention is to provide a sliver guide plate which is provided with a plurality of sliver guiding openings, each opening having a cooperating closing device maintained out of circuit-closing position by the sliver traveling thru its opening, the closure member to be released when its individual sliver breaks or slackens to a predetermined degree to close the circuit and stop the machine.

With these and other objects in view, the invention consists of certain novel features of construction, as will be more fully described, and particularly pointed out in the appended claims.

In the accompanying drawings:

Fig. 1 is a view partially in section illustrating the travel of the slivers and the general arrangement of my stop device relative to the operating mechanism.

Fig. 2 is a front view showing a pair of my improved stop plates as applied to one form of drawing frame.

Fig. 3 is a view of the discharge side of one of these plates, showing the circuit closing gates hinged to the guide plate.

Fig. 4 is a section on line 4—4 of Fig. 3, showing some of the circuit-closing feeler gates as being supported on the traveling slivers and one that has been permitted to drop and close the circuit by the breaking of the sliver.

Fig. 5 is a perspective view of one of the feeler gates detached.

Fig. 6 is a perspective view of one of the brackets in which the sliver guide plate is adjustably mounted.

Fig. 7 is a top view showing the general arrangement of the drawing frame in which six tops are being drafted and blended together into a single sliver.

Fig. 8 is a diagrammatic view illustrating the electrical mechanism arranged to stop the machine when one of the feeler gates drops into engagement with the contact.

It is found in the operation of gill boxes or other similar drawing frames that where a plurality of slivers or tops, say six (more or less), are led from cans or other source of supply thru a set of draft rolls to be blended together into a single sliver and then delivered to a receiving can or wound upon a spool, that one of these six separate slivers often breaks down leaving a thin place in the stock causing a considerable waste of valuable material. To obviate this difficulty, I have built a guide plate having guiding openings for all of these separate tops or slivers which are employed to form the set that are blended into a single sliver; and I have provided a feeler gate or member arranged to guard each of these openings by riding upon its sliver as it passes thru the opening and if one of these slivers should break or become slackened to a predetermined degree, its particular feeler member would drop into engagement with an electrical contact member to complete an electric circuit and stop the machine and so prevent further feeding action of the machine until after the slivers have been properly pieced up. Also in order to obtain the required tension on the running slivers or tops, each of which is a rope of loosely laid fibers, I form the openings in the plate of a size a little smaller than this rope so that the draft rolls in drawing the same thru these openings places the rope under a certain amount of tension which supports the feeler gate that rides thereon and holds it out of engagement with the electrical contact so long as this tension is maintained, but when this tension slackens by excessive drawing out, or breaking of the traveling sliver than this feeler is permitted to drop and complete the circuit to stop the machine; and the following is a detailed description of the present embodiment of my invention and showing one arrangement of parts of stop device as applied to a gill box or other drawing frame by which these advantageous results may be accomplished:—

With reference to the drawings, 10 designates the delivery cans from which the slivers 11 are drawn over the sliver guiding apron 12.

A set of these tops, often six in number, is drawn from as many different cans and are advanced by means of the rear draft rolls 13 and the forward draft rolls 14. These six tops or slivers are blended into a single sliver 15 which is then led from the forward draft rolls over the sliver bar 16 and advanced by the press rolls 17 into the receiving can 18 or wound upon a spool or other receiving means (not shown).

If any one of these six slivers should break down or become accidentally drawn out to an excessive degree and this result were not discovered by the operator, thin places would be formed in the stock which would then become waste. To obviate the forming of these thin places in this stock, I have provided a stop device for each set of slivers or tops, one form of which, as herein shown, comprises a plate 19 which is supported on the brackets 20 from the apron 12 to which the brackets are bolted as at 21. These brackets are preferably provided with a vertically disposed slot 22 and a bar 23 extends across between the brackets, which is bolted to the brackets thru the slot by means of bolts 24 whereby this bar with its plates 19, may be adjusted vertically to best accommodate the feed of the different slivers to the rear draft rolls.

This guide plate 19 is provided with a set of holes 25, one for each of the slivers or ropes, which holes taper toward the delivery face of the plate, the smaller diameter of the hole being preferably of a size a little less than the size of the loose fibers in the rope or sliver 11 which extends therethrough to be engaged by the draft rolls, which exerts a slight friction or drag on each sliver or rope as it is pulled thru these openings thus exerting a predetermined tension between the delivery plate and the draft rolls.

On the delivery side of this plate and over each of these sliver guiding openings, I have formed a boss 26 in which a feeler plate or gate 27 is hingedly mounted on a hinge pin 28. The free edge of this feeler is arranged to ride upon the upper surface of the sliver while it is under tension and when any one of these slivers breaks or becomes unduly slack its feeler gate is naturally permitted to drop into engagement with the contact bar 29, which bar is in the electric circuit, presently described.

This contact bar 29 is supported from the plate 19 by means of bolts 30 and by adjusting these bolts in and out the bar may be adjusted towards and from the plate to the desired position and this bar 29 is insulated from the plate by means of suitable washers 31 on these bolts 30.

These feeler gates 27 are each provided with a laterally-extending portion 32 which when released and permitted to fall by the slackening of the slivers, will engage the bar 19 and complete the circuit, or if for any reason it is desired to run a number of these slivers less than the number of guiding openings in the plate, the unused feeler member may be turned back or supported in raised or inoperative position during the running of this lesser number of slivers than a full set.

One means of connecting up this stop device with the electric circuit is illustrated in Fig. 8, in which a solenoid 33 is arranged to control a release latch 34 on the shipper rod 38, whereby when the feeler 27 is permitted to fall into engagement with the contact bar 29 the circuit is closed thru the wire 35 to operate the solenoid 33 to release the latch 34 and permit the shipper under action of the tension spring 37 to throw the shipper rod 38 and thru the belt fork 39 the belt (not shown) is moved from the tight pulley 40 on to the loose pulley 41 to stop the machine.

My improved stop motion is very simple and inexpensive in construction, is very effective in its operation and by its use the machine will stop if any one of a plurality of slivers of a set should break or become excessively slack and so prevent thin places in the stock.

The foregoing description is directed solely towards the construction illustrated, but I desire it to be understood that I reserve the privilege of resorting to all the mechanical changes to which the device is susceptible, the invention being defined and limited only by the terms of the appended claims.

I claim:

1. In a drawing frame, an electric circuit, a stop motion in said circuit, sliver supply means, sliver receiving means, draft rolls intermediate said supply and receiving means, said stop motion including a sliver guide located intermediate the draft rolls and the supply means, a plate having guiding openings for each of a plurality of traveling slivers, and movable members mounted on said plate adjacent said openings, each movable member being affected in its action by the running tension of the sliver thru its opening for closing the circuit and stopping the machine when the tension of the sliver slackens a predetermined degree.

2. In a drawing frame, an electrc circuit, a stop motion in said circuit, sliver supply means, sliver receiving means, draft rolls for the sliver intermediate said supply and receiving means, said stop motion including a sliver guide plate located intermediate said draft rolls and supply means, said plate having a guiding opening for each of a plurality of traveling slivers, and a movable member for each opening mounted in said plate and affected in its action by the breaking of

the sliver to close the circuit and stop the machine.

3. In a stop motion for drawing frames, an electric circuit, a guide member in said circuit having openings thru which the different traveling slivers are guided on their way thru the machine, a feeler gate mounted on said guide member above each opening and supported in raised position on the sliver traveling through said opening while under tension, and an electrical contact on said member, said gates being released upon slackening of the supporting sliver to drop into engagement with said contact to close the circuit and stop the machine.

4. In a stop motion for drawing frames, an electric circuit, a guide member in said circuit having a plurality of openings, said openings being of a size to exert a tension on the slivers in being drawn therethrough, a feeler gate mounted in said guide member above each opening and supported in raised position on the traveling sliver while under tension, and an electrical contact on said guide member, said gates being released upon slackening of the supporting sliver to drop into engagement with said contact to close the circuit and stop the machine.

5. In a stop motion for drawing frames, an electric circuit, a guide plate in said circuit having openings thru which different slivers are guided, a feeler gate hinged on the delivery side of said plate above each of said openings; each having its free edge supported in raised position on the traveling sliver while under tension, and an electrical contact on said plate, said gates being released upon slackening of the supporting sliver to drop into engagement with said contact to close the circuit and stop the machine.

6. In a drawing frame, an electric circuit, a stop motion in said circuit, sliver supply means, sliver receiving means, said stop motion including a sliver guide plate located intermediate said draft rolls and supply means, said plate having a guiding opening for each of a plurality of traveling slivers, a movable member mounted on said plate adjacent each opening carried by said plate and moved upon the breaking of the sliver passing through its opening to close the circuit and stop the machine, and means for adjustably mounting said plate on said frame.

7. In a stop motion for drawing frames, an electric circuit, a guide plate in said circuit having openings thru which different slivers are guided, a feeler gate hinged on the delivery side of said plate above each of said openings, each having its free edge supported in raised position on the sliver traveling through its opening while under tension, an electrical contact on said plate, said gates being released by the slackening of their supporting slivers to drop into engagement with said contact to close the circuit and stop the machine, and means for adjusting said contact on said plate.

8. In a drawing frame, an electric circuit, a stop motion in said circuit, sliver supply means, sliver receiving means, draft rolls intermediate said supply and receiving means, said circuit including a fixed contact member and a movable contact member engageable therewith, said contact members being independent of said rolls, said fixed contact member being mounted below the traveling sliver, and said movable contact member being mounted above said traveling sliver and normally resting thereon, whereby said movable contact member is normally supported upon said traveling sliver and out of engagement with said fixed contact member.

9. In a drawing frame, an electric circuit, a stop motion in said circuit, sliver supply means, sliver receiving means, draft rolls intermediate said supply and receiving means, said circuit including a fixed contact member and a swinging contact member engageable therewith, said fixed contact member being mounted below the traveling sliver, and said swinging contact member being independent of and spaced from said rolls and mounted above said traveling sliver and normally resting thereon, whereby said swinging contact member is normally supported upon said traveling sliver and out of engagement with said fixed contact member.

10. In a drawing frame, an electrical circuit, a stop motion in said circuit, sliver supply means, sliver receiving means, draft rolls intermediate said supply and receiving means, said circuit including a fixed contact member and a movable contact member engageable therewith, said contact members being independent of said rolls, said fixed contact member being mounted on one side of the traveling sliver, and said movable contact member being mounted on the other side of said traveling sliver and tending to move towards said fixed contact member and resting against the sliver, whereby said movable contact member is normally held out of engagement with said fixed contact member by said traveling sliver.

In testimony whereof I affix my signature.

WALTER J. SCOTT.