March 2, 1943. F. B. KELLIHER 2,312,558

KNOCK-OFF MECHANISM FOR DRAWING FRAMES

Filed June 24, 1942 2 Sheets-Sheet 1

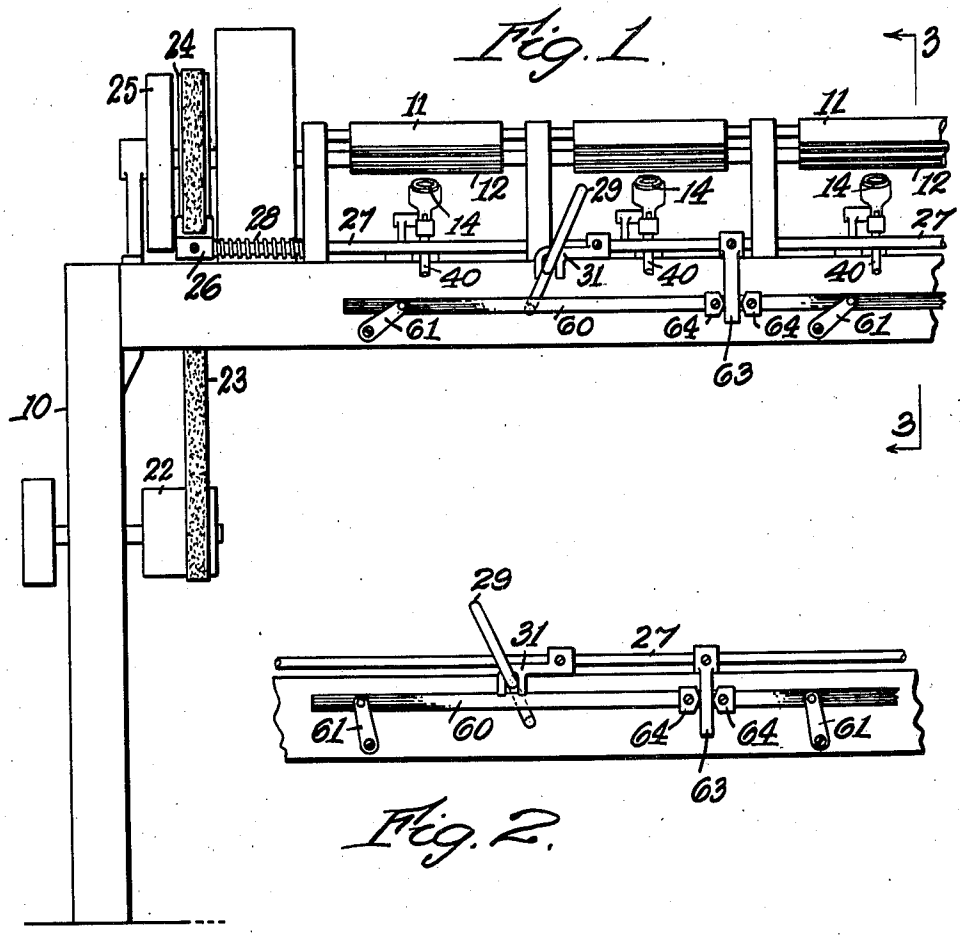


Fig. 1.

Fig. 2.

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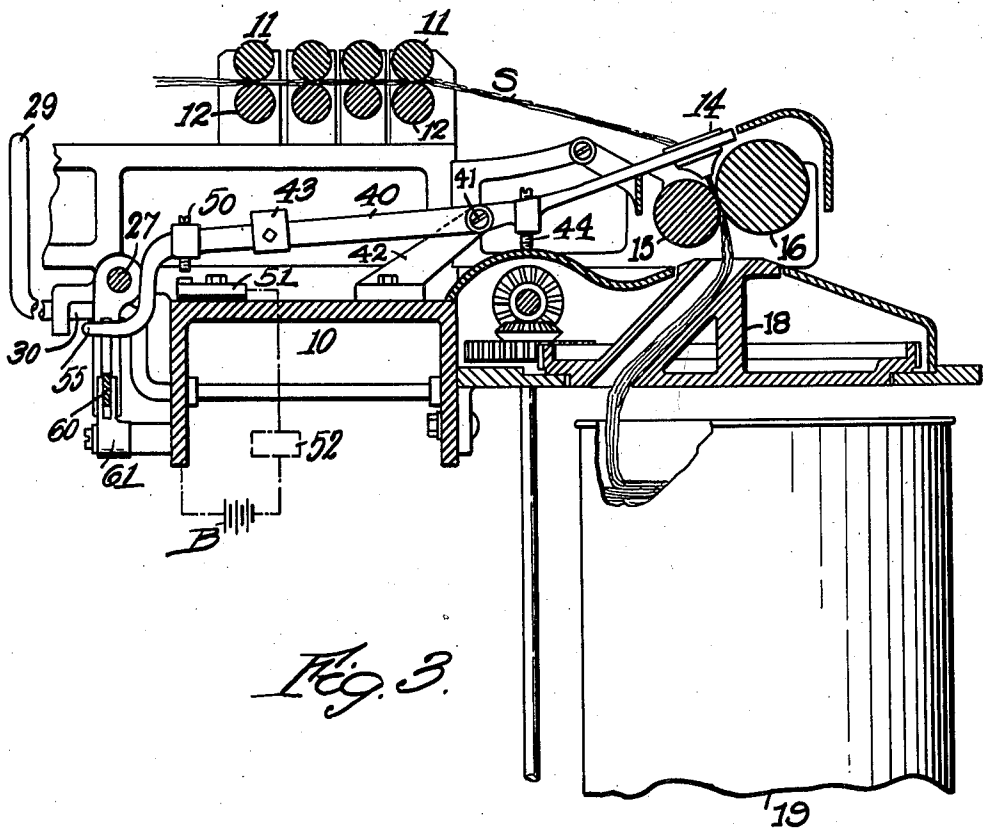


Fig. 3.

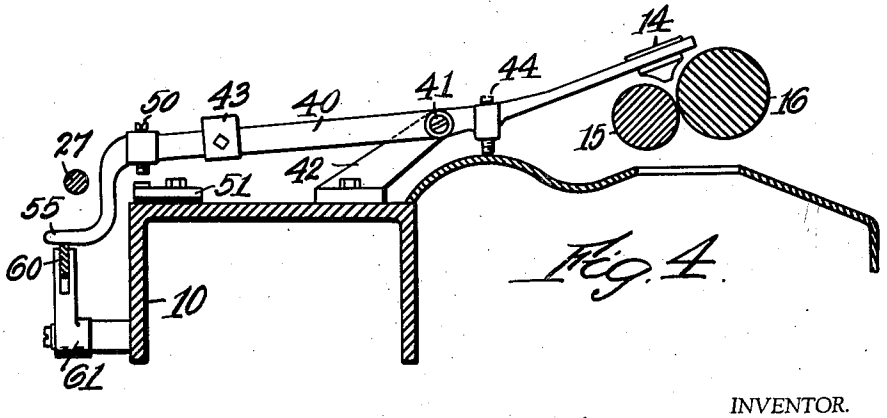


Fig. 4.

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KNOCK-OFF MECHANISM FOR DRAWING FRAMES

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Application June 24, 1942, Serial No. 448,251

5 Claims. (Cl. 19—168)

This invention relates to drawing frames in which cotton or other textile fibers are drawn to form a sliver of reduced weight. In such drawing frames, each single or double drawn sliver is commonly passed through a movably mounted trumpet or guide as it approaches the delivery or calender rolls, and changes in the vertical position of said trumpet control the operation of the drawing frame through a suitable stop motion device.

Each trumpet is commonly mounted on a pivoted lever which is counterweighted to apply a light lifting force to the trumpet. Each trumpet is held in its lower or operative running position by the tension of the sliver passing therethrough during normal operation of the machine, but the trumpet rises to render the knock-off device operative to stop the drawing frame if a sliver breaks, runs too thin, or runs out.

It has been found that when a drawing frame remains idle or inoperative for any considerable period, the slivers may be stretched by the continued unbalanced upward pull of the trumpets and this stretching may be sufficient in extent to permit one or more of the trumpets and trumpet levers to move to stopping position. When an attempt is thereafter made to start the machine, the machine will be immediately stopped a second time by operation of the knock-off device, and such stopping and restarting is commonly attended by sliver breakage.

It is the general object of my present invention to provide means to prevent such movement of the trumpets and trumpet levers to stopping positions while a drawing frame is inoperative.

To the attainment of this object, I preferably provide a construction by which the knock-off device positively locks all of the trumpet levers in normal running position whenever said knock-off device operates to stop the machine.

My invention further relates to arrangements and combinations of parts which will be hereinafter described and more particularly pointed out in the appended claims.

A preferred form of the invention is shown in the drawings, in which

Fig. 1 is a partial front elevation of a drawing frame embodying my improvements;

Fig. 2 is a detail front elevation, showing certain parts in a different position;

Fig. 3 is an enlarged sectional side elevation, taken along the line 3—3 in Fig. 1; and

Fig. 4 is a sectional side elevation showing a trumpet lever locked in running position.

Referring to the drawings, I have shown parts of a drawing frame of a usual commercial type and comprising a frame-work 10 on which a set of upper drawing rolls 11 (Fig. 3) and lower drawing rolls 12 are rotatably mounted. The slivers S are delivered from the drawing rolls 11 and 12 through trumpets 14 and pass between calender rolls 15 and 16 and through the usual coiler heads 18 to cans 19.

Suitable driving mechanism is provided for the drawing rolls, calender rolls and coiler heads, and as shown herein this power is supplied from a driving pulley 22 (Fig. 1) through a belt 23 and tight pulley 24. A loose pulley 25 is mounted adjacent the tight pulley 24, and the belt 23 is guided by a shipper fork 26 on a slidable shipper rod 27. A spring 28 tends to shift the belt to the loose pulley 25 to stop the machine whenever the shipper rod 27 is left free to move.

The rod 27 may also be shifted manually by use of the shipper handle 29, an offset portion 30 (Fig. 3) of which extends through a notched block 31 mounted on the shipper rod.

Each trumpet 14 is mounted on a trumpet lever 40 (Fig. 3), pivoted at 41 on a bracket 42 and having an adjustable counterweight 43. A stop screw 44 limits the down movement of the trumpet 14 toward the calender rolls 15 and 16. When the trumpet moves upward from the position shown in Fig. 3, the usual knock-off devices will be rendered operative.

Both mechanical and electrical knock-off devices are well known in the trade and are accordingly not shown in detail herein, but I have shown in Fig. 3 certain parts adapted for use with an electrical knock-off device. For this purpose, I provide a contact screw 50 which engages an insulated plate 51 when the trumpet 14 rises and by such engagement completes a grounded circuit through a battery B and solenoid 52 by which an electrical knock-off mechanism may be rendered operative.

The parts thus far described are or may be of usual commercial construction and in themselves form no part of my present invention, which relates specifically to the provision of a device to retain the trumpets 14 and trumpet levers 40 in the running position shown in Figs. 3 and 4 whenever the machine is not in operation.

For this purpose, I provide each trumpet lever 40 with a downwardly offset extension 55, and I provide a locking bar 60 (Figs. 1 and 2) mounted on arms 61 pivoted to the back of the frame-work 10. An arm 63 is fixed to the shipper rod 27 and

extends downward between collars **64** on the bar **60**.

When the parts are shifted to the running position shown in Fig. 1, the arm **63** will move the bar **60** to the right and will thus cause the bar to move downward to the inoperative position shown in Figs. 1 and 3. Movement of the shipper rod **27** to the left or to knock-off position, however, will shift the locking bar **60** to the left and will also raise it to the operative position shown in Figs. 2 and 4, in which position the bar **60** underlies the extensions **55** of all of the trumpet levers **40** and thus prevents them from moving downward and raising the trumpets **14** from running position. When the shipper rod is again moved to the right to start the drawing frame in operation, the locking bar **60** will be depressed, thus releasing the trumpets and trumpet levers for effective operation.

By this extremely simple construction, I thus cause each trumpet and trumpet lever to be locked in operative or running position whenever the drawing frame is brought to rest and these parts remain thus locked until the machine is again started in operation. Consequently, there is no upward lift of the trumpets on the slivers while the machine is at rest, and no force tends to stretch the fibers and make them more liable to breakage when the machine is again started.

Having thus described my invention and the advantages thereof, I do not wish to be limited to the details herein disclosed, otherwise than as set forth in the claims, but what I claim is:

1. In a drawing frame having drawing rolls, calender rolls, a knock-off device, and a plurality of movably mounted trumpets interposed between said drawing rolls and said calender rolls and each controlling said knock-off device, that improvement which comprises normally inoperative means to prevent said trumpets from moving out of normal running position, and a device controlled by said knock-off device and rendering said latter means operative when said knock-off device operates to stop the drawing frame.

2. In a drawing frame having drawing rolls, calender rolls, a knock-off device, and a plurality of movably mounted trumpets interposed between said drawing rolls and said calender rolls and each controlling said knock-off device, that improvement which comprises means to lock said trumpets in normal running position, and an operative connection between said knock-off device and said locking means through which said trumpets will be locked when said knock-off device operates to stop the drawing frame.

3. In a drawing frame having drawing rolls, calender rolls, a knock-off device, and a plurality of movably mounted trumpets interposed between said drawing rolls and said calender rolls and each controlling said knock-off device, that improvement which comprises a lever supporting each trumpet and through which said knock-off device may be rendered operative, a locking member movable to lock said trumpet levers from movement out of normal running position, and a connection between said knock-off device and said locking member effective to shift said member to locking position when said knock-off device operates to stop the drawing frame.

4. In a drawing frame having drawing rolls, calender rolls, a knock-off device, and a plurality of movably mounted trumpets interposed between said drawing rolls and said calender rolls and each controlling said knock-off device, that improvement which comprises a lever supporting each trumpet and through which said knock-off device may be rendered operative, each lever having an extended portion at the end opposite the trumpet, a locking bar underlying all of said extended portions, and means actuated by said knock-off device and effective to raise said bar and hold all of said levers raised and all of said trumpets in normal running position when said drawing frame is at rest.

5. In a drawing frame having drawing rolls, calender rolls, a knock-off device including a shipper rod, and a plurality of movably mounted trumpets interposed between said drawing rolls and said calendar rolls and controlling said knock-off device, that improvement which comprises a lever supporting each trumpet and through which said knock-off device may be rendered operative, a bar movable to lock said trumpet levers from movement out of normal running position, and an arm on said shipper rod engaging said bar and effective to shift said bar to locking position when said shipper rod is moved to stop the frame.

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