Jan. 15, 1924. 1,480,916

N. PROVENCHER

FLY FRAME

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Fig.1.

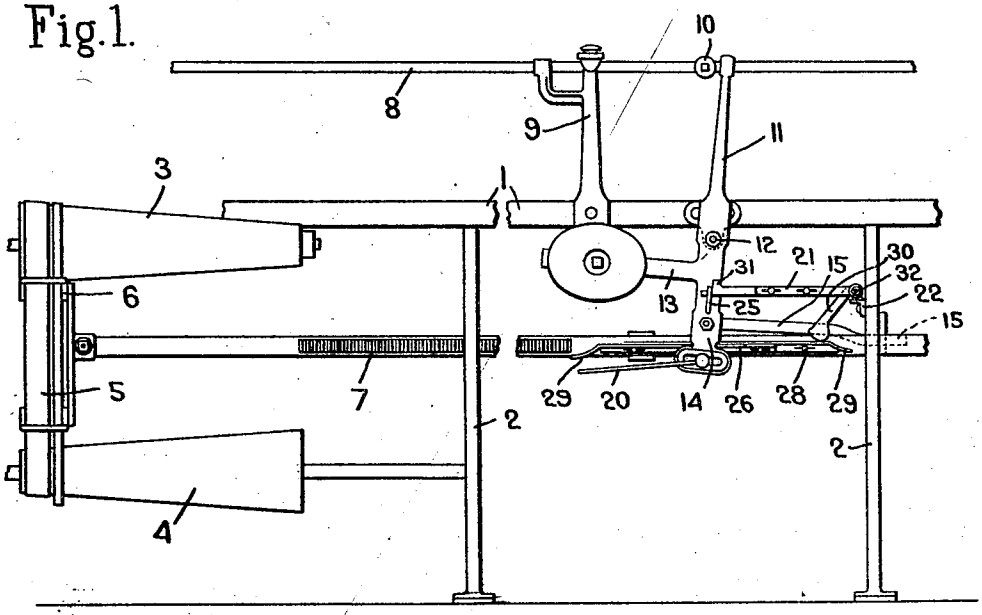
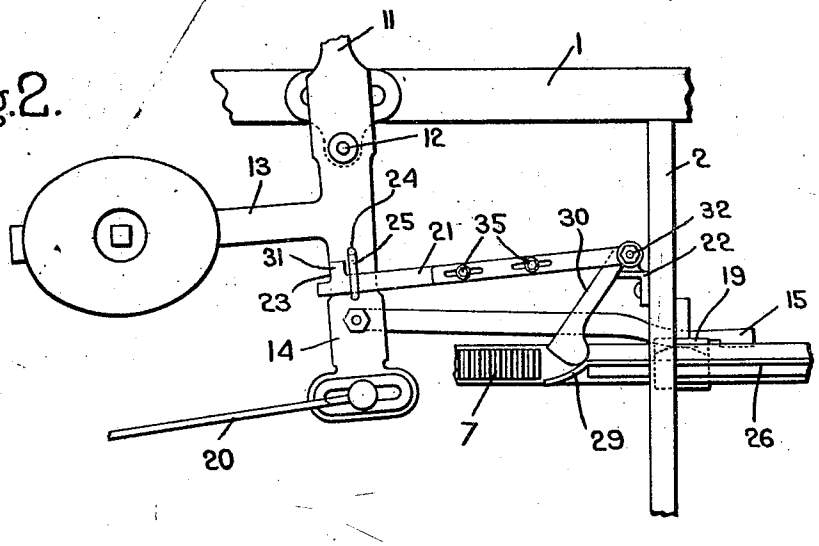


Fig.2.



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Fig.3.

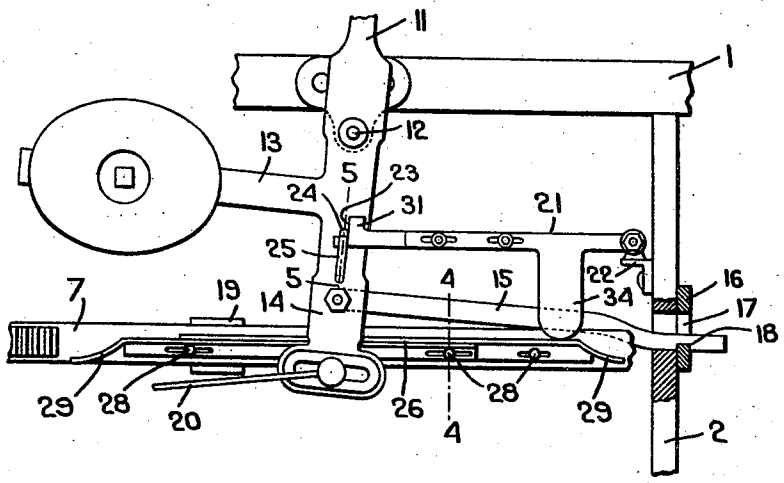


Fig.4.

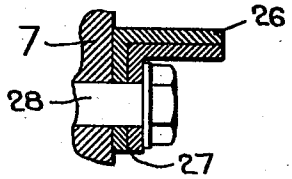
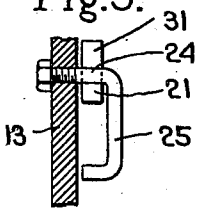


Fig.5.



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UNITED STATES PATENT OFFICE.

NORVEN PROVENCHER, OF LOWELL, MASSACHUSETTS.

FLY FRAME.

Application filed October 11, 1921. Serial No. 507,046.

To all whom it may concern:

Be it known that I, NORVEN PROVENCHER, a citizen of the United States, residing at Lowell, county of Middlesex, State of Massachusetts, have invented an Improvement in Fly Frames, of which the following description, in connection with the accompanying drawing, is a specification, like characters on the drawing representing like parts.

This invention relates to roving frames, such as fly frames, and it has for its object to provide an improvement by which the tension gears are locked during the operation of the machine and are only released when the bobbins are full. The advantage of this construction is that it makes it impossible for the operator to adjust the tension gears while the frame is operating.

In order to give an understanding of my invention, I have illustrated a selected embodiment thereof in the drawings, which will now be described, after which novel features will be pointed out in the appended claims.

In the drawings, Fig. 1 is a fragmentary view of a portion of a roving frame showing my improvements.

Fig. 2 is a detailed view showing the position of the parts at the time that the winding of the bobbins is completed.

Fig. 3 is a view similar to Fig. 2, but showing a different form of the invention.

Fig. 4 is an enlarged section on the line 4—4, Fig. 3.

Fig. 5 is an enlarged section on the line 5—5, Fig. 3.

1 indicates a portion of a roving frame, and 2 indicates the Sampsons on which the frame is supported. 3 and 4 indicate the cone pulleys by which the speed of the bobbins is controlled, 3 being the driving cone and 4 the driven cone from which the bobbins are driven. These cones are connected by the usual belt 5, the position of which is determined by a belt shipper 6, to which is connected a rack 7 that is gradually moved during the winding of the bobbins by the usual mechanism, which however is not shown, as it forms no part of the present invention.

8 indicates the shipper rod which extends the length of the machine, and by which the driving belt is thrown from the fast to the loose pulley. This shipper rod is shown as slidably mounted in a support 9, and as having a button 10 thereon, which co-operates with a knockoff lever 11, that is pivoted to the frame at 12. This knockoff lever is of the usual construction, and is provided with a weighted arm 13, which functions to swing the knockoff lever to the left, thereby to throw the belt from the fast to the loose pulley when the bobbins are completely wound. This knockoff lever 11 extends below its pivot 12, and the extension 14 thereof has pivotally connected thereto a latch 15, which co-operates with a keeper 16 secured to one of the Sampsons 2 for the purpose of holding the knockoff lever in its inoperative position, shown in Fig. 1. The keeper 16 has an opening 17, through which the latch extends, and the latch is provided with a notch 18 to engage the keeper, thereby to lock the knockoff lever in the position shown in Fig. 3.

The latch is released at the end of the spinning operation by the usual dog 19, which is adjustably carried by the rack bar 7.

Figs. 1 and 3 show the parts at the beginning of the spinning operation, and by the time the bobbins are filled, the rack bar 7 has moved to the right sufficiently to bring the dog 19 into engagement with the latch 15, thereby lifting the latter and disengaging it from the keeper 16. As soon as this occurs, the weighted arm 13 operates to shift the knockoff lever automatically.

The knockoff lever also has a rod 20 connected thereto, which extends to the tension gears (not shown), which prevents said gears from being adjusted or shifted except when the knockoff lever is in its released position.

The parts thus far described are or may be all as usual in roving frames, and form no part of my present invention, which relates to a locking device separate from and in addition to the latch 15 for locking the knockoff lever in the position shown in Figs. 1 and 3.

My invention is constructed so that it will positively lock the knockoff lever from movement while the frame is operating, but will automatically release said knockoff lever when the bobbins are filled. With my invention, therefore, it will be impossible for the operator to make any adjustment in the tension gears while the frame is in opera-

tion, and it will only be possible to effect such adjustment when the machine is not in operation.

In the illustrated embodiment of my invention, this locking of the knockoff lever is accomplished by a locking member 21, which is pivoted to a bracket 22 carried by one of the Sampsons 2, said locking lever having a shoulder 23, adapted to engage a projection 24 extending from the knockoff lever. This projection 24 is herein shown as formed by one leg of a loop 25, secured to the knockoff lever, and the end of the locking lever 21 extends through the said loop, the latter forming a guide for said locking lever, but being of sufficient dimensions to permit the locking lever to have a vertical movement sufficient in extent to withdraw the shoulder 23 from the projection 24. So long as the shoulder 23 is in engagement with the projection 24, the knockoff lever will be locked from movement, but when the locking lever is depressed to withdraw the shoulder 23 from the projection 24, then the said locking lever is inoperative so far as locking the knockoff lever is concerned.

I have provided herein means associated with the rack bar 7 for locking or holding the locking lever 21 in its operative position, except when the rack bar is at the extreme limit of its movement in either direction. In other words, I have provided means associated with the rack bar 7 for holding the locking lever 21 in its operative position except when the bobbins are completely filled or when the machine has been reset preparatory to starting the winding operation.

This means comprises a track 26 carried by the rack bar 7, and arranged to engage an arm or projection extending from the locking lever 21. This track or flange 26 may be formed integrally with the rack bar 7, or may be on a separate part secured thereto. In the construction shown, it is on a separate part or member 27, adjustably secured to the rack bar by means of clamping bolts 28. The track is formed at each end with an inclined portion 29. In the construction shown in Fig. 2, the locking latch 21 has rigid therewith an arm 30, which bears on the track 26, and the parts are so constructed that so long as the arm is in engagement with the main portion of the track, as illustrated in Fig. 1, the locking latch 21 is held in its raised position with its shoulder 23 in engagement with the projection 24. When the rack bar 7 is at either limit of its movement, then one of the inclined portions 29 is located beneath the arm 30, so that the locking lever is permitted to move downwardly, thereby to release the shoulder 23 from the projection 24, as illustrated in Fig. 2. When this occurs, the locking lever 21 is inoperative.

The parts will be so adjusted that when the bobbins are filled and just before the dog 19 releases the latch 15, the inclined portion 29 at the left of the track will pass under the arm 30, thereby releasing the locking lever 21, so that when the latch 15 is released, the knockoff lever is free to swing into the position shown in Fig. 2, thereby to stop the machine.

When the machine is wound back to return the rack bar 7 and belt shipper 6 to the position shown in Fig. 1, the locking lever 21 will be raised while the track 26 is passing beneath the arm 30, but at this time the knockoff lever 11, is in the position shown in Fig. 2, and the projection 21 is at the right of the extension 31 on which the shoulder 23 is formed. The locking lever, therefore, can be raised in its dotted line position Fig. 2, while the rack bar is being reset. When the rack bar is at the extreme limit of its movement to the left, then the incline 29 at the right hand end of the track will be under the arm 30, thus allowing the locking lever to again assume its lowered position. At this time the knockoff lever 11 is free to be moved into the position shown in Fig. 1, thereby to start the machine. As soon as the machine starts, the rack bar 7 begins to move to the right, thereby bringing the raised portion of the track beneath the arm 30, as shown in Fig. 1, and raising the locking lever 21 into its operative position. When the locking lever is thus raised, it will positively lock the knockoff lever from movement until the bobbins are filled, and the incline 29 at the left end of the track is brought under the arm 30.

In the construction shown in Figs. 1 and 2, the arm 30 is fast on a rock-shaft 32, to which the locking lever 21 is also fast.

In the construction shown in Fig. 3, the locking lever 21 has integral therewith a lateral extension 34 which functions in the same way as the arm 30.

The track 26 will preferably be made adjustable to its length so as to provide for winding bobbins of different sizes. This is accomplished by making said track in two parts, which are adjustably secured together by means of the clamping bolts 28. The locking lever 21 will also preferably be made adjustable as to its length by making it in two sections, which are adjustably clamped together by the clamping bolts 35.

I claim—

1. In a roving frame having the usual cone pulleys and the rack bar by which the belt is shifted on the pulleys as the thread mass increases on the bobbins, and also having the usual knockoff lever with connec-

tions leading to the tension gears, the combination with said rack bar and knockoff lever, of means to lock said knockoff lever from movement, and means associated with the rack bar positively to hold the locking means in operative position during the winding of the roving on the bobbins.

2. In a roving frame having the construction described, the combination with a rack bar controlling the position of the belt on the cone pulleys, of a knockoff lever, a locking lever adapted to engage the knockoff lever and hold the latter from movement, and means associated with the rack bar positively to hold the locking lever in its operative position.

3. In a roving frame having the construction described, the combination with a rack bar controlling the position of the belt on the cone pulleys, of a knockoff lever, a locking lever adapted to engage the knockoff lever and hold the latter from movement, and means associated with the rack bar positively to hold the locking lever in its operative position, said means being constructed to release the locking lever automatically when the bobbins are full.

4. In a device of the class described, the combination with a rack bar for controlling the position of the belt on the cone pulleys, of a knockoff lever, a locking lever adapted to engage the knockoff lever and hold the latter from movement, and means carried by the rack bar to hold the locking lever in its operative position during the movement of the rack bar from one end to the other of its travel, and to release said locking lever at the end of each movement in either direction.

5. In a device of the class described, the combination with a rack bar for controlling the position of the belt on the cone pulleys, of a knockoff lever, a locking lever to hold the knockoff lever from movements, a track carried by the rack bar, said track having its ends depressed, and an arm extending from the locking lever to engage said track, thereby to hold the locking lever in its operative position except when said arm engages the depressed portions of the track, at which time the locking lever is released.

In testimony whereof, I have signed my name to this specification.

NORVEN PROVENCHER.