

Dec. 16, 1947.

H. R. YATES

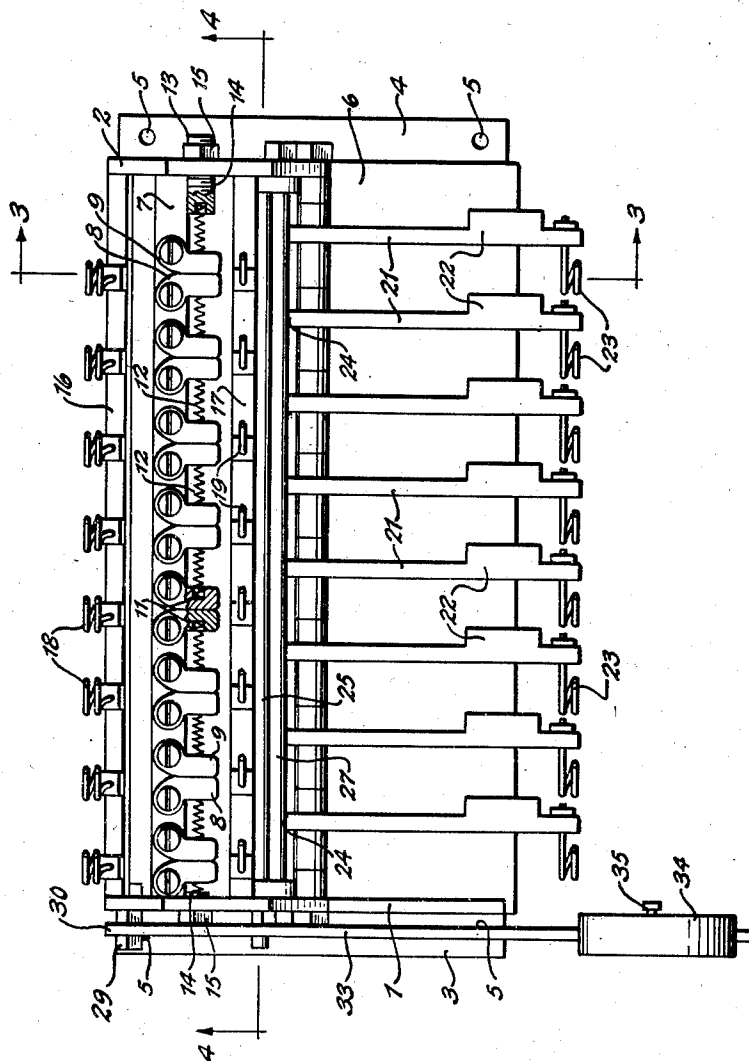
2,432,960

MECHANICAL TENSION AND STOP MOTION

Filed Oct. 16, 1946

2 Sheets-Sheet 1

Fig. 1.



Inventor

Harry R. Yates.

By

Clarence A. O'Brien
and Harvey B. Jacobson
Attorneys

Dec. 16, 1947.

H. R. YATES

2,432,960

MECHANICAL TENSION AND STOP MOTION

Filed Oct. 16, 1946

2 Sheets-Sheet 2

Fig. 2.

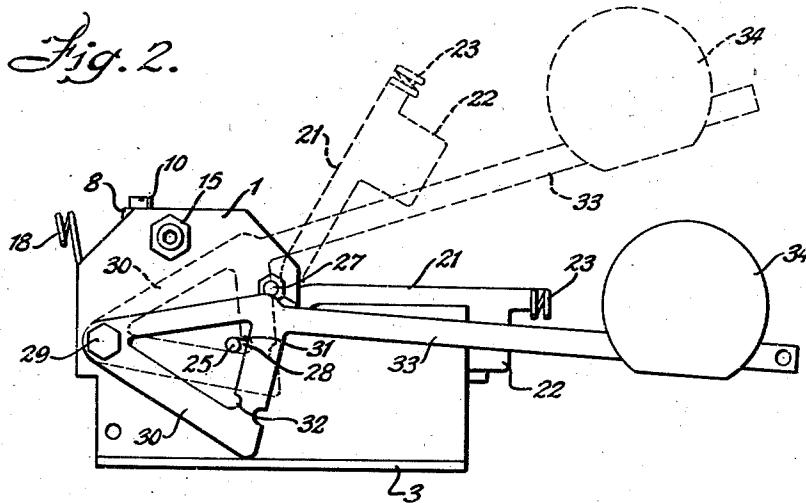


Fig. 3.

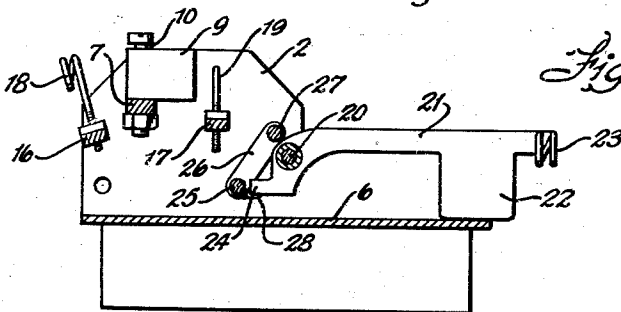
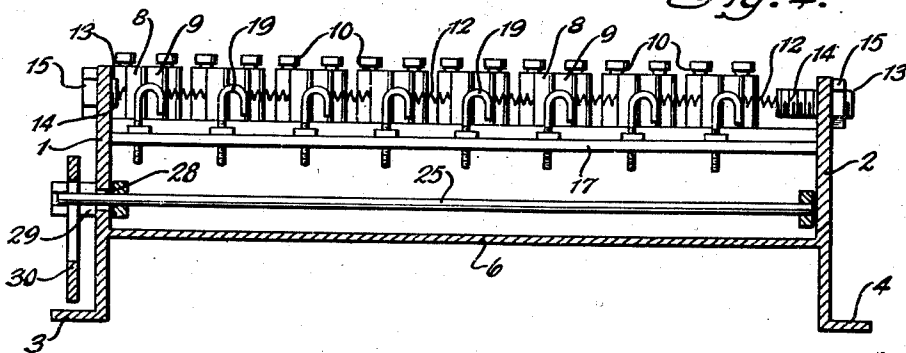


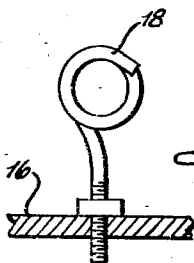
Fig. 4.



Inventor

Harry R. Yates.

Fig. 5.



By

Clarence A. O'Brien
and Harvey B. Jacobson
Attorneys

UNITED STATES PATENT OFFICE

2,432,960

MECHANICAL TENSION AND STOP MOTION

Harry R. Yates, Pawtucket, R. I.

Application October 16, 1946, Serial No. 703,609

6 Claims. (Cl. 87-18)

1

This invention relates to improvements in tension and stop motion devices.

An object of the invention is to provide an improved tension and stop motion device for braiders which will be adjustably tensioned to provide the desired tension between cooperating pairs of tension fingers between which the rubber or yarn passes prior to its being braided, whereby the breakage of any rubber strand or yarn strand will instantly cause the stop lever associated therewith to drop to release the raised weight bar which will be connected by means of a rope or cable to the carrier stop lever (not shown) to disengage the clutch (not shown) of the braider to stop the same.

Another object of the invention is to provide an improved adjustable tension and stop motion for a braiding machine which will hold the rubber or yarn threads at the desired even tension between cooperating tension fingers, each pair of tension fingers being similarly tensioned by means of a single adjusting means, whereby a stop lever which is held in raised position when the thread or yarn is taut, will drop when said thread or yarn breaks, to release a raised weight arm to disconnect the clutch (not shown) of the braider to stop the operation of the same.

Another object of the invention is to provide an improved mechanical tension and stop motion mechanism for braiding machines which will be highly efficient in operation and relatively inexpensive to manufacture and produce.

Other objects will appear as the description proceeds.

In the accompanying drawings which form a part of this application,

Figure 1 is a plan view of the improved mechanical tension and stop motion mechanism;

Figure 2 is an end view of the improved mechanical tension and stop motion mechanism showing the position of an associated stop lever and weight lever in released position, and in dotted lines being shown in set or operative position;

Figure 3 is a sectional view taken on the line 3-3 of Figure 1;

Figure 4 is a view partly in section taken on the line 4-4 of Figure 1, and

Figure 5 is a detailed view of one of the rubber or yarn strand guide loops.

Like characters of reference are used throughout the following specification and the accompanying drawings to designate corresponding parts.

In carrying out the invention, there is provided an improved form of tension and stop motion mechanism having longitudinally spaced side frame members 1 and 2, the same being formed with the laterally and outwardly extending supporting flanges 3 and 4 which are apertured at

2

5 to receive suitable fastening means such as bolts (not shown). A connecting web 6 is formed integrally with the side frame members 1 and 2, and connects the same together as a unit.

A transversely extending tension finger supporting bar 7 is secured between the spaced side members 1 and 2, and supports cooperating pairs of arcuate tension fingers 8 and 9 being pivotally mounted on the vertical bearing pins 10 supported by said bar 7. The outer face of each tension finger 8 and 9 is recessed to form a socket 11 to receive and support one end of a coil tension spring 12 whose opposite end is received in a correspondingly formed socket in the adjacent face of the next tension finger. The outermost springs 12 have their outer ends supported in sockets in the tension adjusting screws 13 which are threaded at 14 through the side frame members 1 and 2, and are held in any desired adjustment by the locking nuts 15.

Longitudinally extending bars 16 and 17 are connected between the side frame members 1 and 2, and respectively support the guide loops 18 and guide hooks 19 at the rear and front of the pairs of tension fingers 8 and 9 to guide the rubber or yarn threads from the supply spools or tubes (not shown) to and between said tension fingers.

Disposed forwardly of said bar 17 upon which the guide hooks 19 are supported, is a transversely extending shaft 20 connected between the side frame members 1 and 2, for pivotally supporting the stop levers 21, one of which is provided for each pair of tension fingers 8 and 9. The stop levers 21 are weighted at 22 adjacent their outer ends, and each supports a laterally extending thread or yarn guide loop 23 at its extreme end, which aligns with the guide hooks 19, tension fingers 8 and 9, and the guide loops 18. Rearwardly extending shoulders 24 are formed on the inner ends of the stop levers 21 and are adapted to engage the transversely extending pivoted locking bar 25 supported at its opposite ends by the links 26 upon the transversely extending bar 27 fixed between the side frame members 1 and 2. The opposite end of said locking bar 25 is extended through the slot 28 formed through the side frame member 1, and cooperates with a pivoted weight rod hereinafter described in detail.

A threaded stub shaft 29 is connected to the side frame member 1 below said tension fingers 8 and 9 and at the rear thereof, and pivotally supports a triangular shaped frame 30 exteriorly of the side frame member 1 in which spaced arcuate seats 31 and 32 are formed. A forwardly extending weight arm 33 is formed integrally with the triangular shaped frame 30 and supports the weight 34 which is held in the desired adjustment by the set screw 35. The outer end of the locking bar 25 is adapted to be received in the arcuate seat 32 when the stop levers 21 and the

3

weight arm 33 are held in raised position, as indicated in dotted lines in Figure 2 of the drawings, at which time all of the threads or strands will be properly tensioned and the braider will be in operation.

As soon as any strand or thread breaks, the stop lever associated therewith drops, causing its inner end or shoulder 24 to engage said locking bar 25 to release the same from the seat 32 in the frame 30 upon which the weight supporting arm 33 is formed, thereby permitting said arm 33 to drop and disengage the clutch (not shown) of the braider, thus immediately stopping the operation of the braider. After the breakage of the strand or thread has been repaired, the stop arm and weight arm are again elevated and set, to be in position to stop the braider if and when another strand or thread becomes broken.

From the foregoing description, it will be apparent that their has been devised and provided a highly efficient form of mechanical tension and stop motion mechanism for braiders which will be positive in action, and relatively inexpensive to manufacture and produce.

While the preferred embodiment of the instant invention has been illustrated and described, it will be understood that it is not intended to limit the scope of the invention thereto, as many minor changes in detail of construction may be resorted to without departure from the spirit of the invention.

Having thus described my invention what I claim as new and desire to secure by Letters Patent of the United States is:

1. A tension and stop motion mechanism for braiders comprising a supporting frame having side members at the ends thereof, a tension finger supporting bar connected between said side members, spaced cooperating pairs of tension fingers pivotally supported on said bar, resilient means for simultaneously tensioning all of said tension fingers, stop levers associated with said tension fingers, means for guiding thread or yarn to and between said tension fingers, a pivoted locking bar, and a pivoted weight arm operably connected therewith being operable upon the breaking of a thread to stop the operation of said braider.

2. A tension and stop motion mechanism for braiders comprising a supporting frame having side members at the ends thereof, a tension finger supporting bar connected between said side members, spaced cooperating pairs of tension fingers pivotally supported on vertical axes on said bar having sockets formed in their outer faces, coil springs in said sockets between adjacent pairs of tension fingers, means for simultaneously tensioning of all said tension fingers, pivoted stop levers associated with said tension fingers, means for guiding thread or yarn to and between said tension fingers, a pivoted locking bar, and a pivoted weight arm operably connected therewith being operable upon the breaking of a thread to stop the operation of said braider.

3. A tension and stop motion mechanism for braiders comprising a supporting frame having side members at the ends thereof, a tension finger supporting bar connected between said side members, spaced cooperating pairs of tension fingers pivotally supported on vertical axes on said bar having aligned sockets in their outer faces, coil springs disposed between the sockets in adjacent tension fingers, means for simultaneously tensioning all of said fingers, locking means therefor,

4

pivoted weighted stop levers associated with said tension fingers, means for guiding thread or yarn to and between said fingers and to said stop levers, a pivoted locking bar, and a pivoted weighted arm operably connected therewith being operable upon the breaking of a thread to stop the operation of said braider.

4. A tension and stop motion mechanism for braiders comprising a supporting frame having side members at the ends thereof, a tension finger supporting bar connected between said side members, spaced cooperating pairs of tension fingers pivotally supported on vertical axes on said bar having aligned sockets in their outer faces, coil springs disposed between the sockets in adjacent tension fingers, means for simultaneously tensioning all of said tension fingers, locking means therefor, pivoted weighted stop levers associated with said tension fingers, means for guiding thread or yarn to and between said fingers and to said stop levers, a pivoted locking bar operable by the downward movement of any of said stop levers upon the breaking of a thread, and a pivoted weight arm having spaced seats formed therein engageable by said locking bar when said stop levers are raised in set position and held by the tension of said thread.

5. A tension and stop motion mechanism for braiders comprising a supporting frame having side members at the ends thereof, a tension finger supporting bar connected between said side members, spaced cooperating pairs of tension fingers pivotally supported on vertical axes on said bar having aligned sockets in their outer faces, coil springs disposed between the sockets in adjacent tension fingers, means for simultaneously tensioning all of said tension fingers, locking means therefor, pivoted weighted stop levers associated with said tension fingers, means for guiding thread or yarn to and between said fingers and to said stop levers, a pivoted locking bar operable by the downward movement of any of said stop levers upon the breaking of a thread, a pivoted weight arm having spaced seats formed therein engageable by said locking bar when said stop levers are raised in set position and held by the tension of said thread, and a weight adjustably supported on the end of said pivoted weight arm.

6. A tension and stop motion mechanism for braiders comprising a supporting frame having side members at the ends thereof, a tension finger supporting bar connected between said side members, spaced cooperating pairs of tension fingers pivotally supported on vertical axes on said bar having aligned sockets in their outer faces, coil springs disposed between the sockets in adjacent tension fingers, means for simultaneously tensioning all of said tension fingers, locking means therefor, pivoted weighted stop levers associated with said tension fingers, aligned means for guiding thread or yarn to and between said fingers and to said stop levers, a locking bar operable by the downward movement of any of said stop levers upon the breaking of a thread, a pivoted weight arm having spaced seats formed therein engageable by said locking bar when said stop levers are raised in set position and held by the tension of said thread, a weight slidably and adjustably supported on the end of said pivoted weight arm, and means for locking said weight in the desired adjusted position.

HARRY R. YATES.