

Nov. 8, 1932.

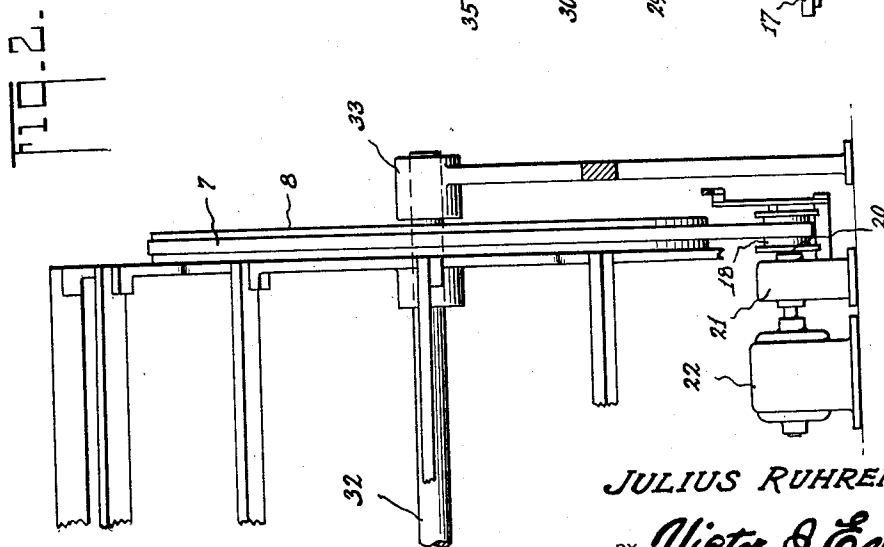
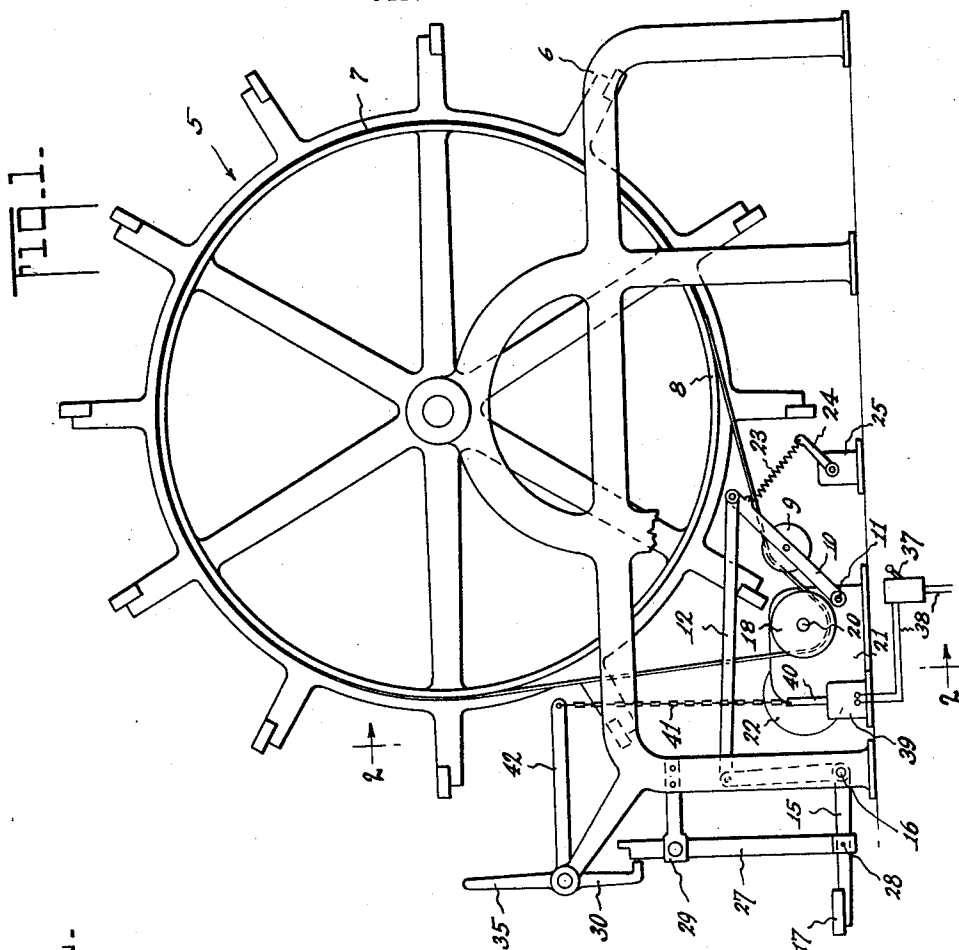
J. RUHREN

1,887,433

WARPING MACHINE DRIVE AND CONTROL THEREFOR

Filed Oct. 5, 1931

2 Sheets-Sheet 1



JULIUS RUHREN
INVENTOR

BY *Victor J. Evans*
ATTORNEY

WITNESS:
J. Mank

Nov. 8, 1932.

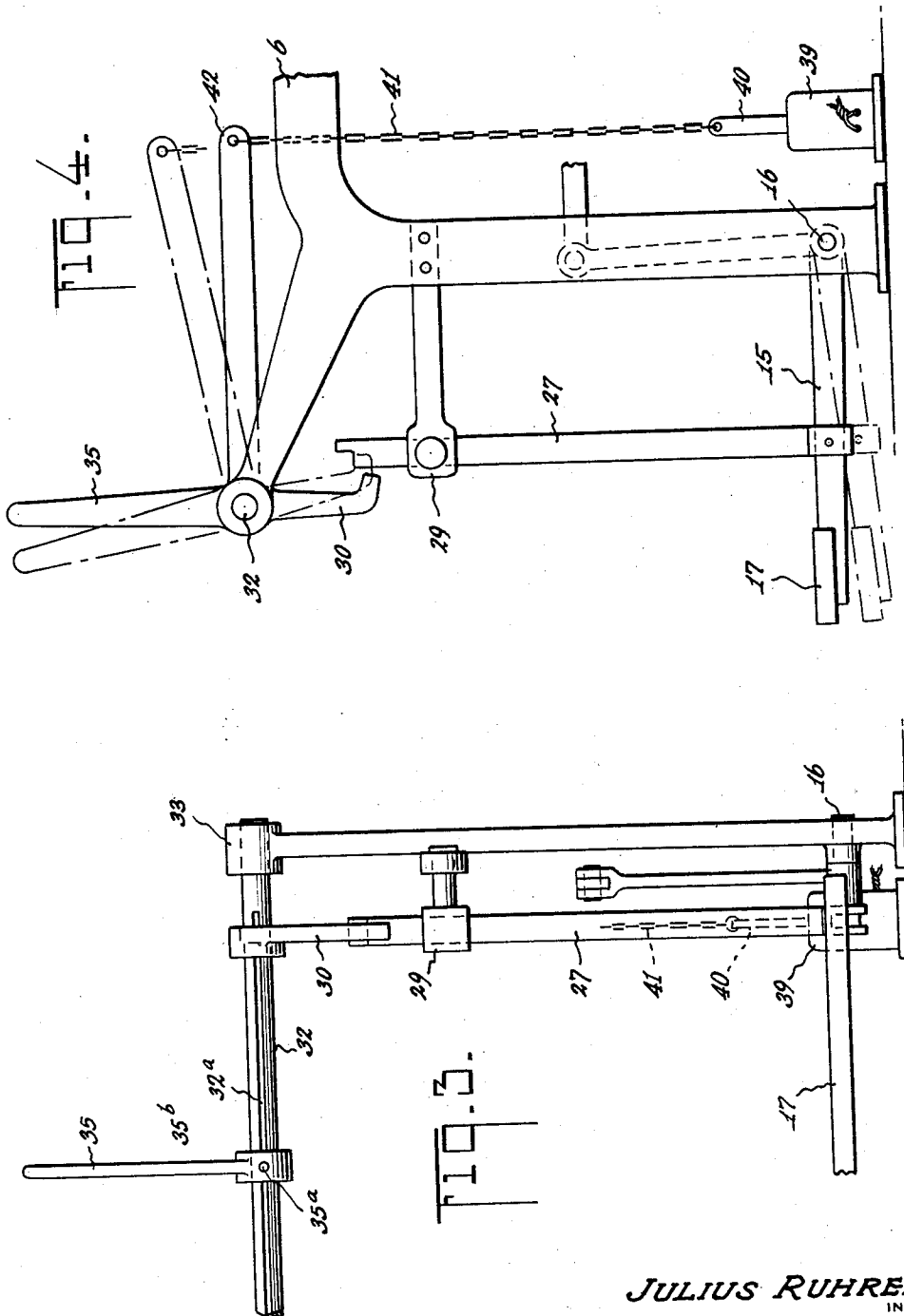
J. RUHREN

1,887,433

WARPING MACHINE DRIVE AND CONTROL THEREFOR

Filed Oct. 5, 1931

2 Sheets-Sheet 2



JULIUS RUHREN
INVENTOR

INVENTOR

B'

Victor J. Evans

ATTORNEY

WITNESS:

WITNESS:
X J. Mank

UNITED STATES PATENT OFFICE

JULIUS RUHREN, OF WEST NEW YORK, NEW JERSEY

WARPING MACHINE DRIVE AND CONTROL THEREFOR

Application filed October 5, 1931. Serial No. 567,008.

This invention relates to warping machine drives and controls for the same.

One of the objects of the invention is to provide a novel drive for a warping machine to the ends that less power than heretofore required may be sufficient to drive one of said machines and that such a machine may be driven with a minimum of vibration without any jars or jerks, to prevent yarn wound on a machine of the type mentioned from being broken and to allow the yarn to be wound on the machine at a uniform tension.

A further object of the invention is to provide control means for a warping machine that will enable the operator to stop it should he be at some remote point, as attending to the spools, when the stopping operation becomes necessary.

Other objects of the invention will be appreciated from a reading of the following specification.

The invention will be fully and comprehensively understood from a consideration of the following detailed description when read in connection with the accompanying drawings which form part of the application, with the understanding, however, that the improvement is capable of extended application and is not confined to the exact showing of the drawings nor to the precise construction described and, therefore, such changes and modifications may be made therefrom as do not affect the spirit of the invention nor exceed the scope thereof as expressed in the appended claims.

In the drawings:

Fig. 1 is an end elevation of a warping machine to which the mechanism of my invention is applied.

Fig. 2 is a fragmentary front elevation of the mechanism shown in Fig. 1 and taken approximately on the line 2—2 of Fig. 1, parts of the mechanism shown in Fig. 1 being omitted for the sake of clearness.

Fig. 3 is a front view of Fig. 4; and

Fig. 4 is a detailed view of parts of the mechanism shown in Fig. 1.

Referring to the drawings for a more detailed description thereof, the numeral 5 indicates a rotatable spider on which yarn is

wound, said spider being mounted on a frame 6. In order to drive the mentioned spider at a uniform or steady rate, I place a belt 7 on a flange 8, mounted on the spider, and tighten said belt by means of an idler pulley 9 mounted on a lever 10, which is pivotally mounted at 11, said pulley being adapted to tighten the mentioned belt when pulled to the left by means of a link 12 pivotally secured at one end to the lever 10 and at its other end to a bell crank lever 15 pivotally mounted at 16, said bell crank lever being adapted to be actuated by a treadle 17 running the width of the machine. The mentioned driving belt 7, in addition to running on the idler pulley 9, runs on the pulley 18 mounted on a shaft 20 associated with reduction gearing which is housed in a casing 21, said reduction gearing being adapted to be driven by an electric motor 22. A helical spring 23 is secured to the lever 10 and to an end of a lever 24, which connects at its other end with an oil switch 25 adapted to open and close the circuit of the motor 22. Downward pressure on the treadle 17 is effective to close the switch 25 in order to start the motor 22, a further downward movement of said treadle being required to move the idler pulley 9 into such position that it tightens the belt 7 sufficiently to drive the spider 5, this feature enabling the motor to pick up before it assumes the load. A release of pressure on the mentioned treadle is effective to allow the idler pulley 9 to drop so that the belt is loosened to the point where it is ineffective to drive the spider.

A vertical bar 27 is pivotally connected at its lower end to the bell crank lever 15, as indicated by the numeral 28, and said bar is adapted to slide in accordance with movements given it by the mentioned bell crank lever, through a retaining member 29 attached to the frame 6 of the machine. A depression of the treadle 17 sufficient to cause the belt 7 to drive the spider, is effective to depress the vertical bar 27 so that a dog 30 may engage the upper end portion of the mentioned bar to hold the same depressed, the depressed bar being effective to hold the treadle and its connected bell crank lever depressed to the position required for tightening the belt to the

point where the latter drives the spider. The means just described for retaining the treadle in depressed position is an improvement over the prior art in which it was necessary for the operator of the machine to keep the treadle depressed in order to keep the machine running, this having been necessary in the prior art in order to enable the operator to stop the machine from any position he might be at in operating the machine, it being remembered that the mentioned treadle extends substantially from one end of the machine to the other. It has of course been necessary, and still is necessary to provide means whereby the operator may stop the machine in any position he may be, but instead of using mechanism requiring him to keep his foot on the treadle in order to keep the machine running I have provided mechanism whereby the treadle is kept depressed and whereby the operator may stop the machine in any position where he may be located at the front of the machine. This mechanism comprises the bar 27 and dog 30.

The dog 30 is fixedly mounted on a shaft 32, mounted in bearings 33 and extending substantially through the width of the machine. Said shaft is adapted to be rocked by a control handle 35 which is slidable on the shaft so that the operator of the machine may move the handle when he walks from one position to another. The operator therefore always has the control handle within reach so that he may stop the machine in any position he may be, it being readily seen that by pushing the mentioned control handle toward the spider the dog 30 may be disengaged from the vertical lever 27 to allow the treadle to rise and the idler pulley 9 to fall to such a position that the belt is slackened sufficiently so that the belt cannot drive the spider. The connection of the control lever 35 to the rock shaft 32 is best shown in Fig. 3, it being there shown that the mentioned shaft is provided with a longitudinal groove 32a into which extends a pin 35a secured to the hub 35b of the control handle.

I have also invented means whereby a warping machine may be attended to by the operator, and stopped if necessary, if the operator be at the back of the machine attending the spools. Said means is a remote control means and comprises a switch 37 in an electric power circuit 38 adapted to allow current to flow through a solenoid 39 provided with a vertically movable core 40, the upper end of which is attached to a chain 41, the latter being connected at its upper end to an arm 42 rigidly connected to the rock shaft 32. When the switch 37 is closed, the solenoid 39 is energized and the core 40 is drawn downwardly into the same, by which action the shaft 32 is rocked in a direction to cause the dog 30 to be disengaged from the vertical bar 27, the latter then being free to

rise with the result that the idler pulley 9 drops to slacken the belt 7 and become ineffective to drive the spider.

What is claimed as new is:

1. A warping machine, driving means for said machine, means including a treadle control for rendering said driving means effective and ineffective to drive said machine, and means for holding said treadle control in effective position, and remote control means for releasing said holding means.

2. A warping machine, a driving belt for said machine, and movable means for adjusting the tension of said belt to render the same effective or ineffective to drive said machine, an electric motor for driving said belt, a switch for controlling the motor circuit and operated by said movable means, said movable means including a treadle and releasable means for holding said treadle in a position effective to tighten said belt on said machine, said remote control means comprising a solenoid and a movable core therein, a circuit connected to said solenoid and a switch in said circuit remote from said machine.

3. A warping machine, driving means for said machine, means including a treadle control for rendering said driving means effective and ineffective to drive said machine, and means for holding said treadle control in effective position, and electrically operated means for releasing said holding means.

4. A warping machine, driving means for the same, a foot treadle extending the length of the machine for operatively connecting it with its driving means when said treadle is depressed, latching means for maintaining the treadle in depressed position, and manual means for releasing the latch, said manual means being shiftable along the machine for easy reach by the operator in the progress of his work across the machine.

5. A warping machine, driving means for the same, a treadle extending the length of the machine for depression to operatively connect the machine with the driving means, a latch for holding the treadle in depressed position, a manual means for releasing said latch, and a remotely controlled means for said latch independent of said manual means.

6. A warping machine, driving means for the same, a treadle extending the length of the machine for depression to operatively connect the machine with the driving means, a latch for holding the treadle in depressed position, a manual means for releasing said latch, and a remotely controlled means for said latch independent of said manual means and comprising a long-range electro-magnet having a flexible connection with said latch.

7. A warping machine, driving means for the same, means for operatively connecting the machine with the driving means, a latch for holding the last said means in operative position, and a release for said latch com-

prising a lever shiftable to any point in the length of the machine and operable thereat upon movement to release said latch.

8. A warping machine, driving means for
5 the same, means for operatively connecting the machine with the driving means, a latch for the last said means, a rock shaft spanning the machine and operatively connected with said latch, and a hand lever mounted on
10 said rock shaft and slidable axially thereof to preclude it from angular movement relative to said rock shaft, whereby the hand lever may be positioned convenient to the operator to release the latch at any point along the
15 machine at which it may be stationed.

In testimony whereof I hereby affix my signature.

JULIUS RUHREN.

20

25

30

35

40

45

50

55

60

65