Aug. 9, 1938. F. KLEIN 2,125,927

WINDING MACHINE

Filed Sept. 26, 1936 2 Sheets-Sheet 1

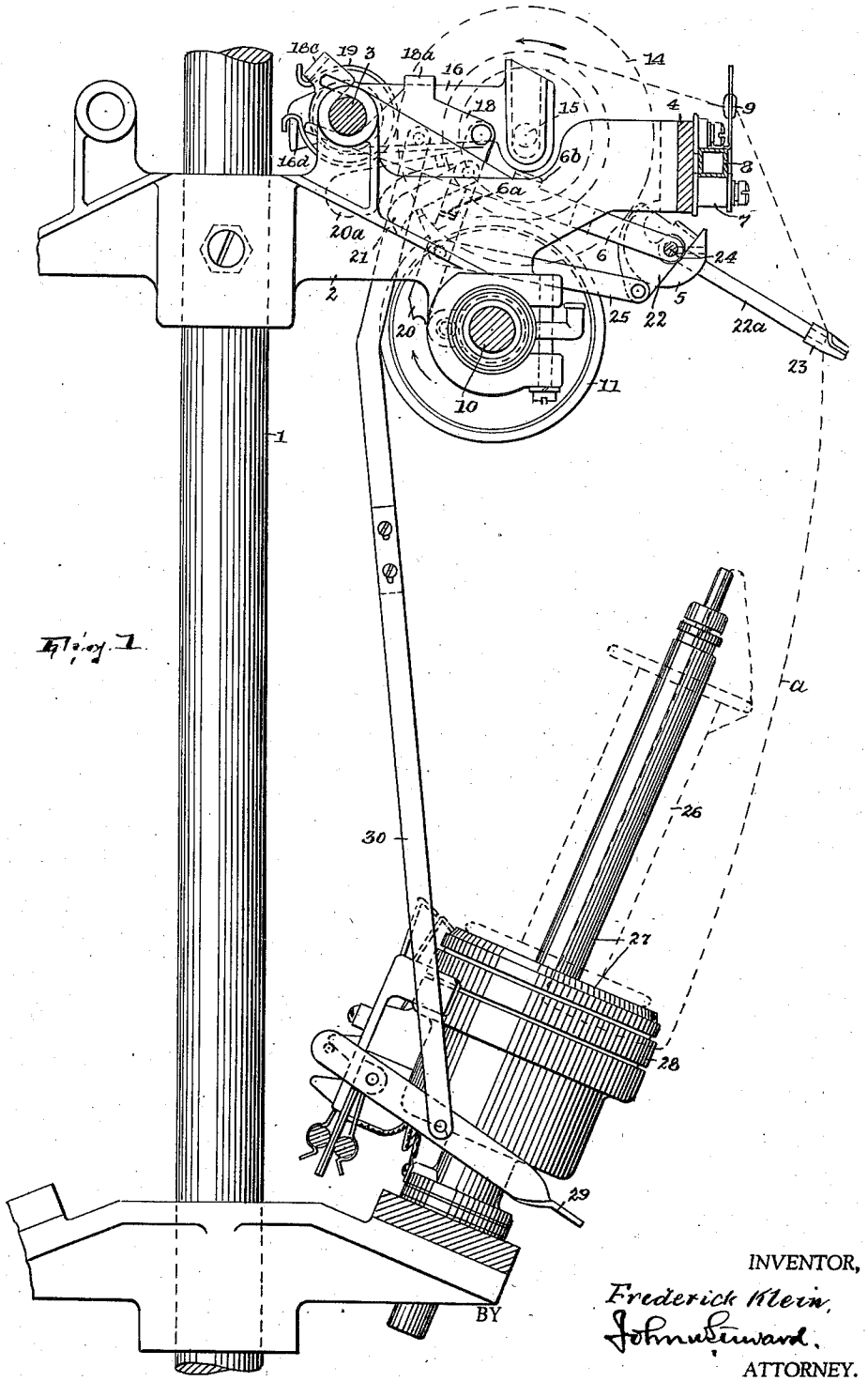


Fig. 1.

INVENTOR,
Frederick Klein,
Johnston & Seward.
ATTORNEY.

Aug. 9, 1938. F. KLEIN 2,125,927

WINDING MACHINE

Filed Sept. 26, 1936 2 Sheets-Sheet 2

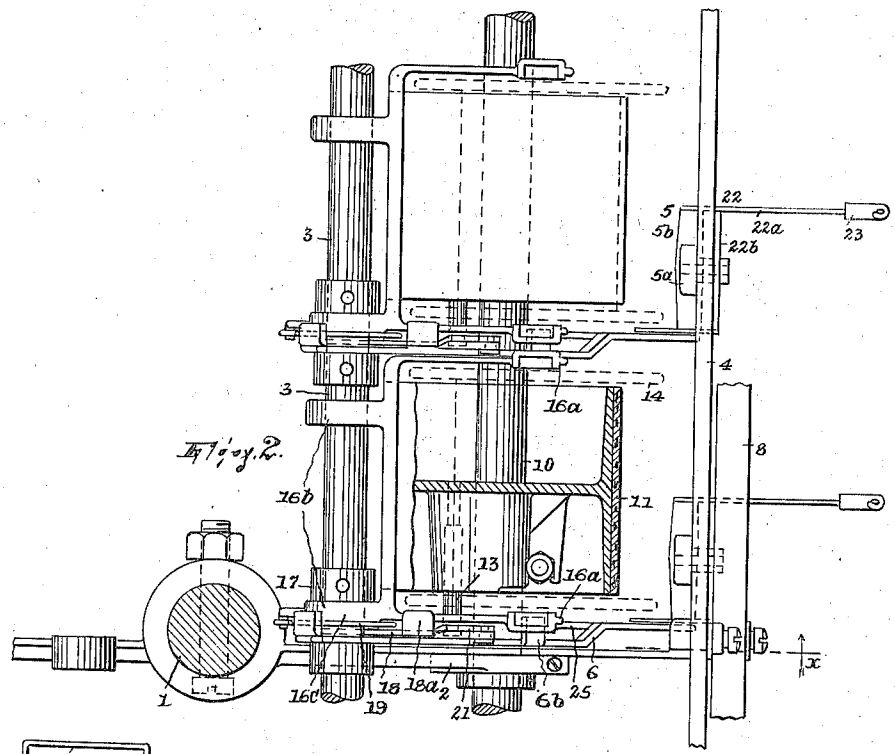


Fig. 2.

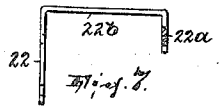


Fig. 7.

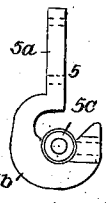


Fig. 4.

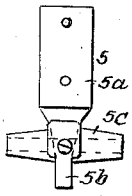


Fig. 5.

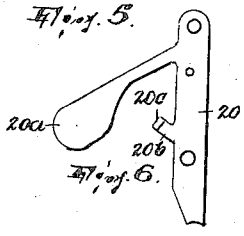


Fig. 6.

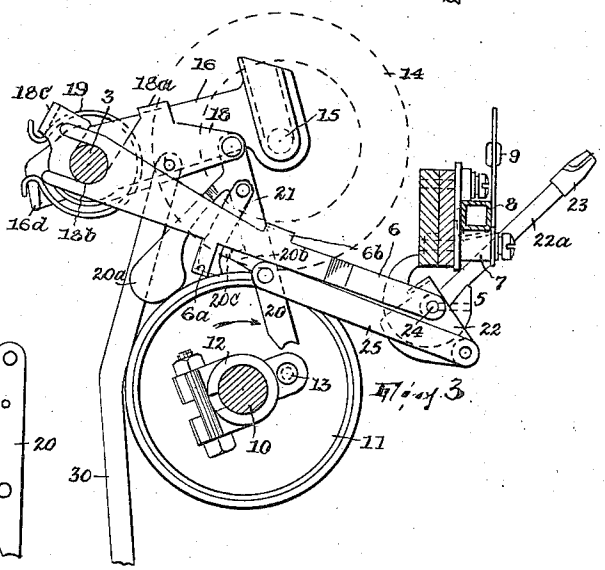


Fig. 3.

INVENTOR,
Frederick Klein,

BY Johnston Ward,

ATTORNEY.

Patented Aug. 9, 1938 2,125,927

UNITED STATES PATENT OFFICE

2,125,927

WINDING MACHINE

Frederick Klein, Glen Rock, N. J., assignor to Sipp-Eastwood Corporation, Paterson, N. J., a corporation of New Jersey

Application September 26, 1936, Serial No. 102,793

4 Claims. (Cl. 242—36)

This invention relates to yarn-winding mechanisms in which the yarn mass, while actually being formed, is supported with its periphery in contact with that of some rotary means for rotating the mass having its axis of rotation substantially horizontal. If the yarn breaks or becomes exhausted it is desirable to shift the mass clear of said means since, if it remains engaged therewith, especially for a considerable time, the outer windings are likely to become flattened, abraded or otherwise marred as the mass continues to be rotated by said means.

The principal object of this invention is to construct the mechanism so that on failure of the yarn in either of the respects indicated, or it may be because of undue slackness therein, the wound mass may be shifted clear of said rotary means. To accomplish this purpose in the example herein set forth I provide a wound-mass shifter and obtain its displacement or shifting movement from an eccentric projection on the rotary means, as a pin or equivalent on the shaft whose pulley is directly engaged by and so rotates the wound mass, through means which is normally urged into the orbit of the projection but is on the other hand normally held from such movement by the yarn being wound. The supporting structure and latter means are in the best form coactive to maintain such means, in the position to which it is shifted, and hence the wound mass clear of said rotary means.

In the drawings,

Fig. 1 is a side elevation of a system embodying a spinning unit and the improved winding mechanism, showing the wound mass depressed or in position to be rotated;

Fig. 2 is a plan of said mechanism, with one of the two driving pulleys shown partly broken away;

Fig. 3 is a section on approximately the line *x*, Fig. 2;

Figs. 4 and 5 are side and rear elevations of the bracket **5**;

Fig. 6 is a side elevation of element **20**; and

Fig. 7 a front elevation of member **22**.

The uprights **1** of the machine frame have affixed thereto brackets **2**, only one upright and one bracket appearing, and in the brackets is supported a fixed horizontal shaft **3** and to them is affixed a horizontal rail **4**, the shaft being near the uprights and the rail at the ends of the brackets. Affixed to the rear side of the rail near said bracket is another bracket designated generally by character **5** but shown in Figs. 4 and 5 as comprising a plate **5***a* by which the bracket is secured to the rail, a depending hook portion **5***b*, and a horizontal bearing **5***c*. There is also a strut **6** which is forked at its inner end to straddle shaft **3** and supported at its other end by a pin **24** (to be referred to) in the bearing **5***c* and having a depending seat **6***a* and a lateral lug **6***b*. So much constitutes what I term supporting structure.

The rail may be equipped, as usual, with roller-bearings **7** for a suitably traversed yarn-guide rail **8**, in turn equipped with yarn-guides **9**, one for each mass to be wound, of which only two are shown in Fig. 2.

The usual constantly driven rotary means or rotor for rotating the wound masses, journaled with its axis horizontal or so as to rotate in an upright plane, is provided, here consisting of shaft **10** and its cork-periphery pulleys **11**, affixed thereto, one for each wound mass. According to the invention a crank **12** is secured to this shaft and has an eccentric projection, as a pin, **13**.

The wound mass to be rotated and so built up here comprises a bobbin **14** and the windings of yarn of such mass wound thereon, said mass being equipped with suitable means affording axial trunnions, as a spindle **15** extending through the bobbin.

There is a shifter for the wound mass here constructed and arranged as follows:

One part of the shifter is a lever-like bracket designated generally by the character **16** and having (Fig. 3) two forward arms **16***a* and two rearward arms **16***b*, the latter having bearings on the shaft and the bracket being held from endwise movement along the shaft by bracket **2** and collar **17**, or it may be two such collars as shown. The mechanism is here adapted to support the mass to be wound with its periphery in contact with a peripheral surface of the rotary means **10**—**11** (as the periphery of pulley **11**) by providing the bracket arms **16***a* with the usual sockets, as shown, in which the ends of the spindle **15** are received. Another part of the shifter is a plate-like member **18** having a lug **18***a* overhanging the adjoining arm of bracket **16**, being forked at **18***b* so as to have a bearing on the shaft **3**. A third part of the shifter is a spring **19** extending around a hub **16***c* of bracket **16** and having its ends in hooked engagement with lugs **18***c* and **18***d* of said bracket and member and normally holding the latter with its lug **18***a* bearing against the top of the bracket. The reason for forming the shifter of two spring-connected parts will appear.

20 is an element in the form of a pawl freely

pivoted to and depending from member 18 of the shifter, it having its lower end notched to seat securely on the pin 13 and having a rearward upper weighting arm 20*a* and a rearward lower arm 20*b* formed with a lateral lug 20*c* (Fig. 6) to serve as an abutment. Pivoted to element 20 and adapted by gravity normally to bear against the abutment is a detent or latch 21 adapted to support the shifter by coming to rest on seat 6*a*.

The shifter is normally supported by its bracket 16 resting on lug 6*b*.

If element 20 is permitted to move, by gravity, from its position in Fig. 1, or to the right, so that its notched lower end will then be in the orbit of the projection 13 the latter will then act to elevate the shifter (and hence the wound mass clear of the pulley), said element moving around its pivot and coming to the position of Fig. 3 where it coacts with the supporting structure, as will appear, to maintain the wound mass in its lifted position. Otherwise stated, said element may assume three positions: that of Fig. 1, where it is clear of said orbit; an intermediate position to which it is normally urged by gravity and in which it is in said orbit; and that of Fig. 3 to which it is moved by said projection 13. As will appear, the yarn *a* being wound, in the absence of failure thereof, opposes movement of said element from the first to the intermediate position.

Said element is adapted to dog the supporting structure, thus to maintain the shifter and hence the wound mass in the elevated position, by its latch 21 (which tends normally to bear against abutment 20*c* of said element) being trippable over to come to rest on the seat 6*a*.

Element 20 forms a part of means movable on the supporting structure and shifter and normally urged into the orbit of said projection 13 whereby to be moved thereby and transmit displacement to the shifter but being normally held from movement into said orbit by the yarn, the remainder of which means is here as follows: A yarn-controlled control lever comprises a plate 22 bent to inverted U-shape (Fig. 7) so as to straddle the bearing 5*c* and having an arm 22*a* equipped with a yarn-guide 23, its pivot being the pin 24 (on which strut 6 is supported). The bridge portion 22*b* of this lever has its movement limited in each direction by the hook portion 5*b*, receiving it, of bracket 5. Connecting an eccentric point of this lever with element 20 is a link 25.

Operation.—In Fig. 1 the shifter is supported on the fixed structure by engagement of bracket 16 with lug 6*b*, its element 20 being held out of the orbit of projection 13 by the yarn which is acting through control lever 22 and link 25; if the yarn fails said element will fall into the orbit of said projection which latter will, as described, elevate the shifter and leave it supported by seat 6*a*, over which latch 21 trips during the lifting motion, so that the parts now stand in the positions of Fig. 3 in which the wound mass is clear of the pulley. If the lever be now depressed it will act through the link 25 to disengage element 20 from the seat 6*a* (abutment 20*c* pushing the latch off the seat) so that the shifter means falls and so returns the wound mass to rest on the pulley, the operator depressing the lever of course far enough so that element 20 assumes its first-named position, clear of the orbit of projection 13, and will remain held in such position by the yarn, assuming the condition which was responsible for its failure has been meanwhile repaired.

The shifter may be moved to and from its elevated position by the operation of the control element of a spinning or other yarn supply unit, also imposing tension on the yarn. The unit shown is that of my application for patent for a spinning unit Serial No. 102,792. The yarn *a* to be wound into said mass comes from a supply bobbin 26 arranged on a yarn-holder 27 which is held (as by weighting it, not shown) against rotation with the rotor 28 of some motor, as an electric motor having a fulcrumed control element 29 which when moved down, or to the position shown, starts the motor and when elevated stops the same. A link 30 pivotally connects this element with the shifter means, to wit, plate 18 of the shifter.

If by the operation of element 29 or otherwise the shifter is suddenly lifted the shock is absorbed by the spring 19.

Having thus fully described my invention what I claim is:

1. Mechanism of the class described including, with supporting means, rotary means journaled therein with its axis substantially horizontal, said mechanism supporting the mass to be wound with its periphery normally in contact with a peripheral surface of said means, a device movable to shift the mass clear of said rotary means, means movable to move said device, said device and second-named means being coaxially pivoted on the supporting means, and elastic means interposed between the last-named means and said device.

2. Mechanism of the class described including, with supporting structure, a rotor journaled therein on a substantially horizontal axis and having an eccentric projection, said mechanism supporting the mass to be wound with its periphery normally in contact with a peripheral surface of the rotor, a shifter movable on said structure and in the direction to shift said mass clear of the rotor and reversely, and means, coupled with the shifter to move therewith in said direction and also reversely and movable on said structure independently of the shifter into the path of said projection, for transmitting movement in said direction from the projection to the shifter, said means being normally urged to move independently of the shifter, into said path but being normally held from such movement directly by the yarn being wound.

3. The mechanism set forth in claim 2 characterized by said means being pivotally movable in said structure.

4. The mechanism set forth in claim 2 characterized by said structure having an abutment to support said means, on movement thereof with the shifter in said direction, against reverse movement.

FREDERICK KLEIN.