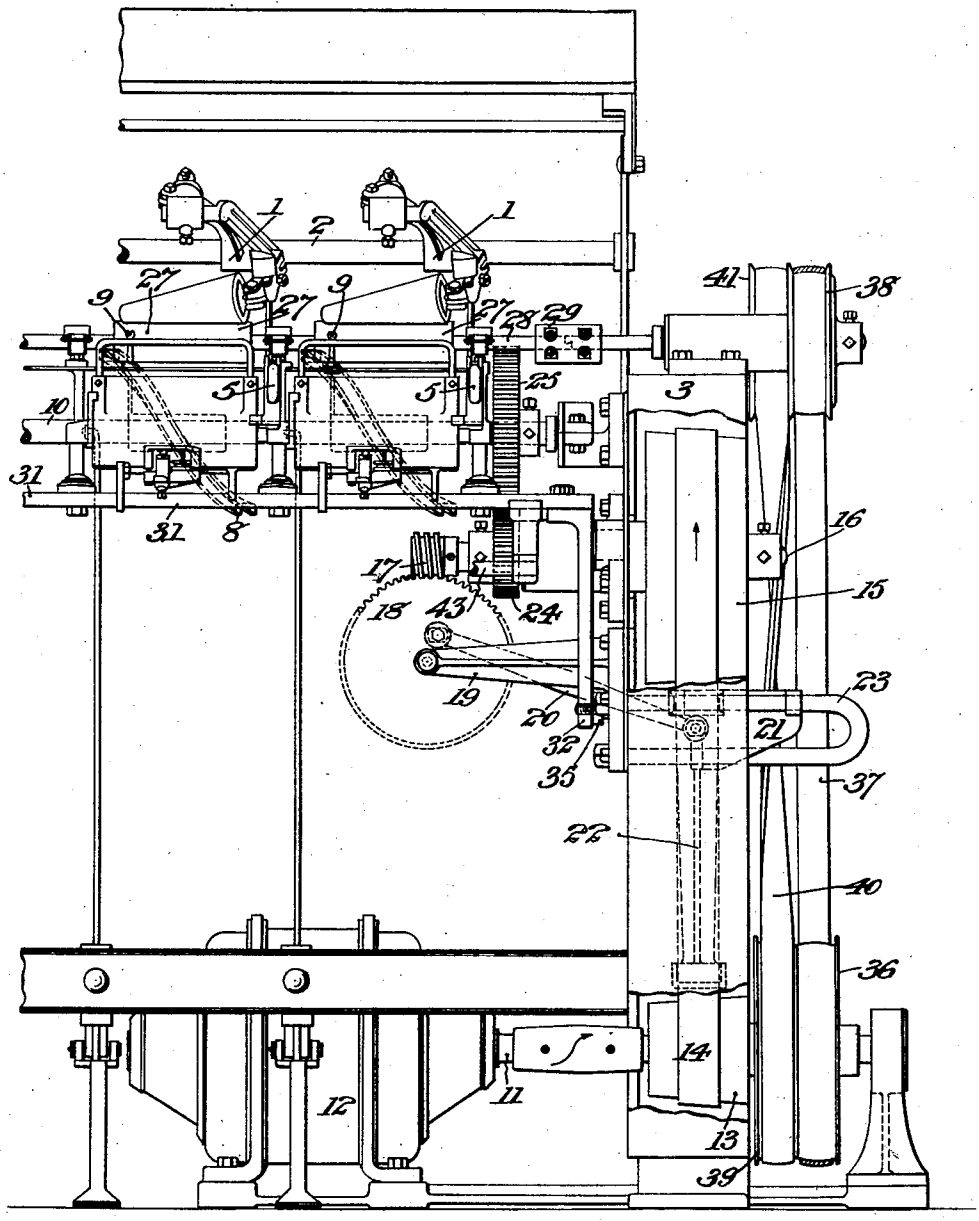
June 30, 1925. 1,544,257

J. O. McKEAN

WINDING MACHINE

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Fig. 1.



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Fig. 2.

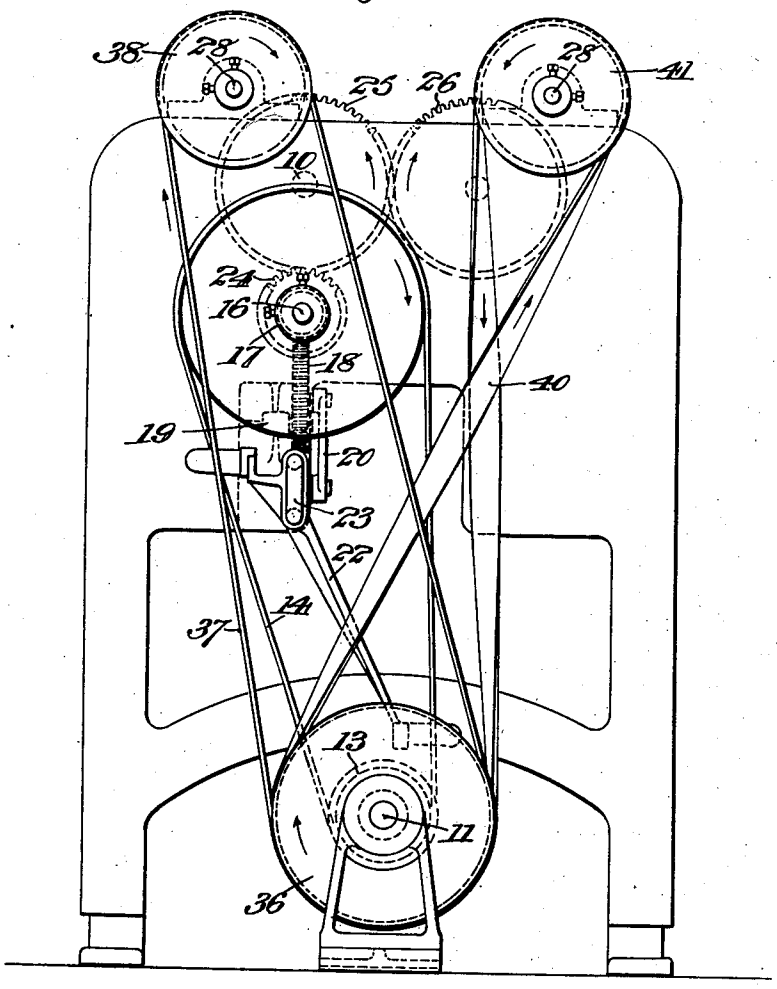


Fig. 5.

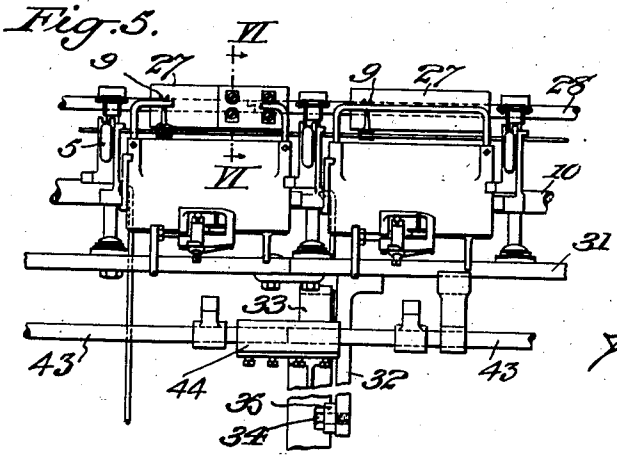
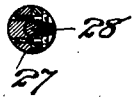


Fig. 6.



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WINDING MACHINE

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Fig. 3.

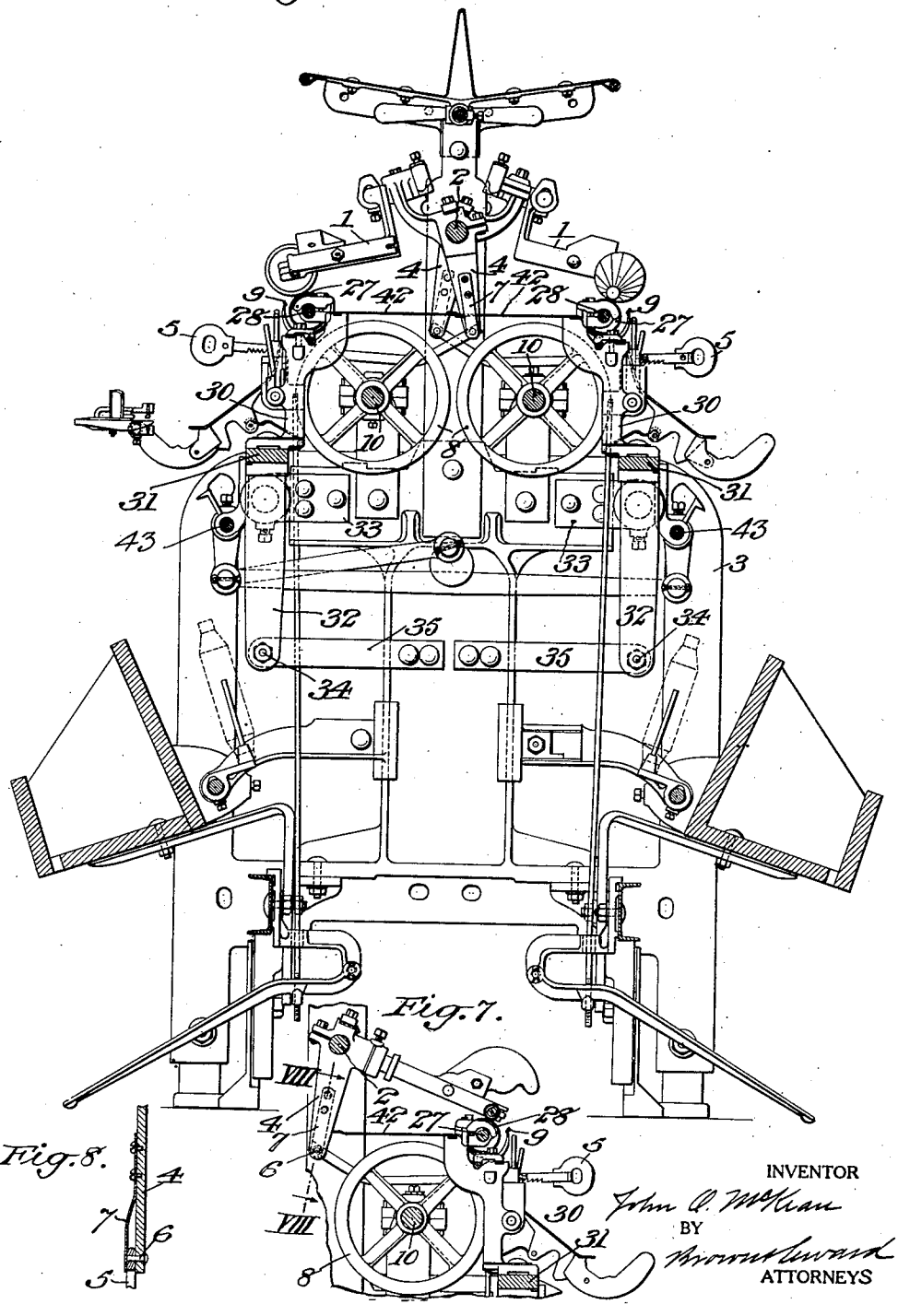


Fig. 7.

Fig. 8.

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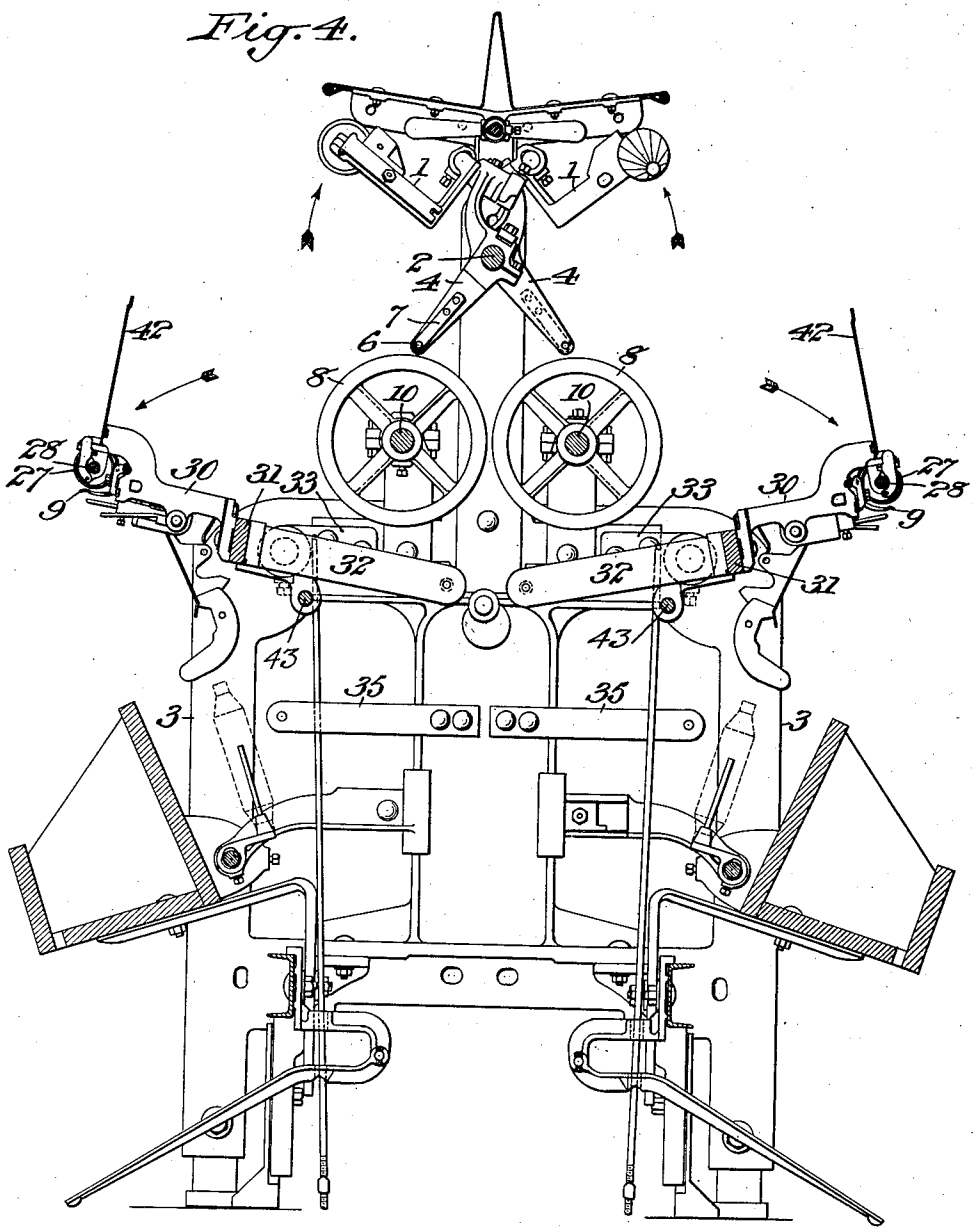
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4 Sheets-Sheet 4

Fig. 4.



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UNITED STATES PATENT OFFICE.

JOHN O. McKEAN, OF WESTFIELD, MASSACHUSETTS, ASSIGNOR TO FOSTER MACHINE COMPANY, OF WESTFIELD, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

WINDING MACHINE.

Application filed November 20, 1924. Serial No. 751,017.

To all whom it may concern:

Be it known that I, JOHN O. McKEAN, a citizen of the United States, and resident of Westfield, in the county of Hampden and State of Massachusetts, have invented a new and useful Improvement in Winding Machines, of which the following is a specification.

One object of my invention is to provide means whereby ready access may be obtained to the traverse mechanism cams and cam shafts without dismantling the machine, said means comprising cop holders independently manually movable beyond their normal inoperative position and auxiliary frames carrying the cop driving rolls also independently manually movable, out of the way.

Another object is to provide means whereby the driving roll shaft is driven at a constant speed and the traverse mechanism cam shaft is driven at a variable speed.

My invention more particularly includes a winding machine in which the auxiliary frames each carry a rail section, a kicker shaft section, a driving roll shaft section, a plurality of driving rolls, their roll stands and a plurality of stop motions and their rack bars, which rack bars are detachably secured to their respective cop holders and which driving roll shaft sections are detachably coupled together, the movement of the cop holders and the auxiliary frames, out of the way of the cams and cam shaft being permitted by detaching the rack bars from their cop holders, uncoupling the driving roll shaft sections and kicker shaft sections and unfastening the auxiliary frames from the main frame.

A practical embodiment of my invention is represented in the accompanying drawings, in which—

Fig. 1 represents in side elevation so much of a winding machine as will illustrate my improvements.

Fig. 2 represents a detail end view of the machine, showing the drive for the several parts.

Fig. 3 represents a vertical cross section through the machine, with the parts in the positions they assume when starting the winding operation.

Fig. 4 represents a similar view with the cop holders and auxiliary frames swung out of the way for gaining ready access to the traverse mechanism cams and shafts.

Fig. 5 represents a detail view showing an intermediate coupling for the cop driving roll shaft.

Fig. 6 represents a cross section on the line VI—VI of Fig. 5.

Fig. 7 represents a detail vertical cross section showing a tube holder, as distinguished from the cone holder, illustrated in the other figures.

Fig. 8 represents a detail section taken in the plane of the line VIII—VIII of Fig. 7.

In the present instance I have shown the machine as provided with two rows of cop holders 1, of usual construction, independently mounted to rock on the bar 2 extending lengthwise of the main frame 3. Each of these cop holders 1 is provided with the usual depending arm 4, to which arm is removably attached the usual stop motion rack bar 5 as, for instance, by providing the free end of the depending arm 4 with a pin 6, arranged to enter a hole in the inner end of the rack bar 5, a flat spring 7, carried by the arm 4, serving to hold the inner end of the rack bar 5 on its pin 6. This construction will permit the ready detachment and removal of the rack bar 5.

The usual traverse mechanism cams 8 for reciprocating the thread guides 9 are carried by the cam shafts 10, rotatably mounted in the main frame 3, and means are provided for rotating these cam shafts at a variable speed, as distinguished from a constant speed, as hereinbefore common, which means is constructed, arranged and operated as follows:

The main drive shaft 11, herein shown as driven from an electric motor 12, carries a cone pulley 13 which drives through a belt 14 an opposed cone pulley 15, carried by a shaft 16 suitably mounted in the main frame. This shaft 16 carries a worm 17 which meshes with a gear 18, carried by an arm 19 projecting from the main frame. A pitman rod 20 connects the gear 18 with the slide 21 of a belt shifter, which belt shifter is provided with an arm 22, engaging the belt 14. The slide 21 is mounted to reciprocate on a suitable bracket support 23 of the main frame. A train of gears 24, 25, 26 connects the worm shaft 16 with the cam shafts 10, 10.

This arrangement causes a variable speed

to be imparted to the cam shafts 10, 10, from the drive shaft 11, by the shifting of the belt 14 along the oppositely coned pulleys 13, 15, through the pitman rod connection 20 between the gear 18 and belt shifter slide 21.

The usual cop driving rolls 27, along each side of the machine, are carried by a sectional driving roll shaft 28. Each end of each shaft section is removably attached to its adjacent alined section by a coupling 29, certain of the couplings 29 being provided for by dividing the cop driving rolls, as shown in Figures 5 and 6. Each driving roll shaft section also carries several of the driving rolls 27 and it is rotatably mounted in the usual roll stands 30, uprising from a rail section 31, forming part of an auxiliary frame, the depending arms 32 of which are pivoted near the rail section to brackets 33, carried by the main frame 3. To hold these auxiliary frames in their operative position the free ends of the depending arms 32 are bolted or otherwise secured at 34 to fixed bracket arms 35, carried by the main frame.

These auxiliary frames carry the usual stop motion mechanisms including the rack bars 5, hereinbefore described and the kicker shaft sections 43, each attached to its adjacent alined section by the coupling 44.

One of the sectional driving roll shafts 28 is driven at a constant speed from the drive shaft 11, through the pulley 36, belt 37 and pulley 38. The other sectional driving roll shaft 28 is driven at a constant speed from the drive shaft 11, through the pulley 39, cross belt 40 and pulley 41.

Divided cam covers 42, 42 are carried by their respective auxiliary frames with their edges interlocked when the parts are in their operative positions.

When, for any reason, it is desired to gain access to the traverse mechanism cams and cam shafts the desired rack bars 5 are detached from their cop holders 1, the desired cop driving roll shaft sections are uncoupled, the desired stop motion kicker shaft sections are uncoupled and the depending arms 32 of the auxiliary frames are unfastened from their bracket arms 35. The released cop holders may then be swung upwardly beyond their normal inoperative position, out of the way. The auxiliary frames may then be swung outwardly, out of the way, taking with them their cam covers. These positions of the cop holders and auxiliary frames are shown in Fig. 4 of the drawings, where it will be seen that very ready access may be obtained to the cams and cam shafts without dismantling the machine, as has heretofore been necessary.

It is evident that various changes may be resorted to in the construction, form and arrangement of the several parts without departing from the spirit and scope of my invention; hence, I do not intend to be limited to the particular embodiment herein shown and described, but

What I claim is:

1. In a winding machine, a main frame, a thread guide reciprocating cam shaft carried thereby, an auxiliary frame, and a cop driving roll shaft section carried thereby, said auxiliary frame being movable out of the way, for gaining ready access to the cam shaft.

2. In a winding machine, a main frame, a thread guide reciprocating cam shaft carried thereby, a plurality of auxiliary frames and interconnected cop driving roll shaft sections carried thereby, said auxiliary frames being independently movable out of the way, for gaining ready access to the cam shaft.

3. In a winding machine, a main frame, a thread guide reciprocating cam shaft carried thereby, cop holders, auxiliary frames, and interconnected cop driving roll shaft sections carried thereby, said auxiliary frames and cop holders being each independently movable out of the way, for gaining ready access to the cam shaft.

4. In a winding machine, a main frame, a thread guide reciprocating cam shaft carried thereby, a cop driving roll carrying auxiliary frame locked to the main frame, said auxiliary frame being movable out of the way, when unlocked, for gaining ready access to the cam shaft.

5. In a winding machine, a main frame, a thread guide reciprocating cam shaft carried thereby, and a plurality of cop driving roll carrying auxiliary frames independently locked to the main frame, said auxiliary frames being independently movable out of the way, when unlocked, for gaining ready access to the cam shaft.

6. In a winding machine, a main frame, a thread guide reciprocating cam shaft carried thereby, a cop driving roll carrying auxiliary frame hinged to the main frame, and means for locking the auxiliary frame to the main frame, said auxiliary frame being movable out of the way, when unlocked, for gaining ready access to the cam shaft.

7. In a winding machine, a main frame, a thread guide reciprocating cam shaft carried thereby, a plurality of cop driving roll carrying auxiliary frames hinged to the main frame, and means for locking the auxiliary frames to the main frame, said auxiliary frames being independently movable out of the way, when unlocked, for gaining ready access to the cam shaft.

8. In a winding machine, a main frame, a thread guide reciprocating cam shaft carried thereby, a cop holder and a stop motion rack bar detachably secured thereto, said cop holder being movable beyond its normal inoperative position, out of the way, when de-

tached from the rack bar, for gaining ready access to the cam shaft.

9. In a winding machine, a main frame, a thread guide reciprocating cam shaft carried thereby, a plurality of cop holders, and stop motion rack bars detachably secured thereto, said cop holders being independently movable beyond their normal inoperative position, out of the way, when detached from their respective rack bars, for gaining ready access to the cam shaft.

10. In a winding machine, a main frame, a thread guide reciprocating cam shaft, a plurality of auxiliary frames hinged to the main frame and locked thereto, and a rail section, a kicker shaft section, a cop driving roll shaft section and a plurality of cop driving rolls, all carried by each auxiliary frame and movable therewith out of the way, to gain ready access to the cam shaft, when the frame is unlocked.

11. In a winding machine, a main frame, a thread guide reciprocating cam shaft and a plurality of cop holders carried by the main frame, a plurality of auxiliary frames hinged to the main frame and locked thereto, and a rail section, a kicker shaft section, a cam cover section, a cop driving roll shaft section, a plurality of cop driving rolls and stop motion rack bars, all carried by each auxiliary frame, the rack bars being detachably secured to their respective cop holders; the auxiliary frames and cop holders being each movable out of the way, to gain ready access to the cam shaft when the rack bars are detached from their cop holders and the auxiliary frame is unlocked.

In testimony, that I claim the foregoing as my invention, I have signed my name this 25th day of June, 1924.

JOHN O. McKEAN.