W. N. EDWARDS.

BRAIDING MACHINE.

APPLICATION FILED FEB. 24, 1908.

917,424. Patented Apr. 6, 1909.

Fig. 1.

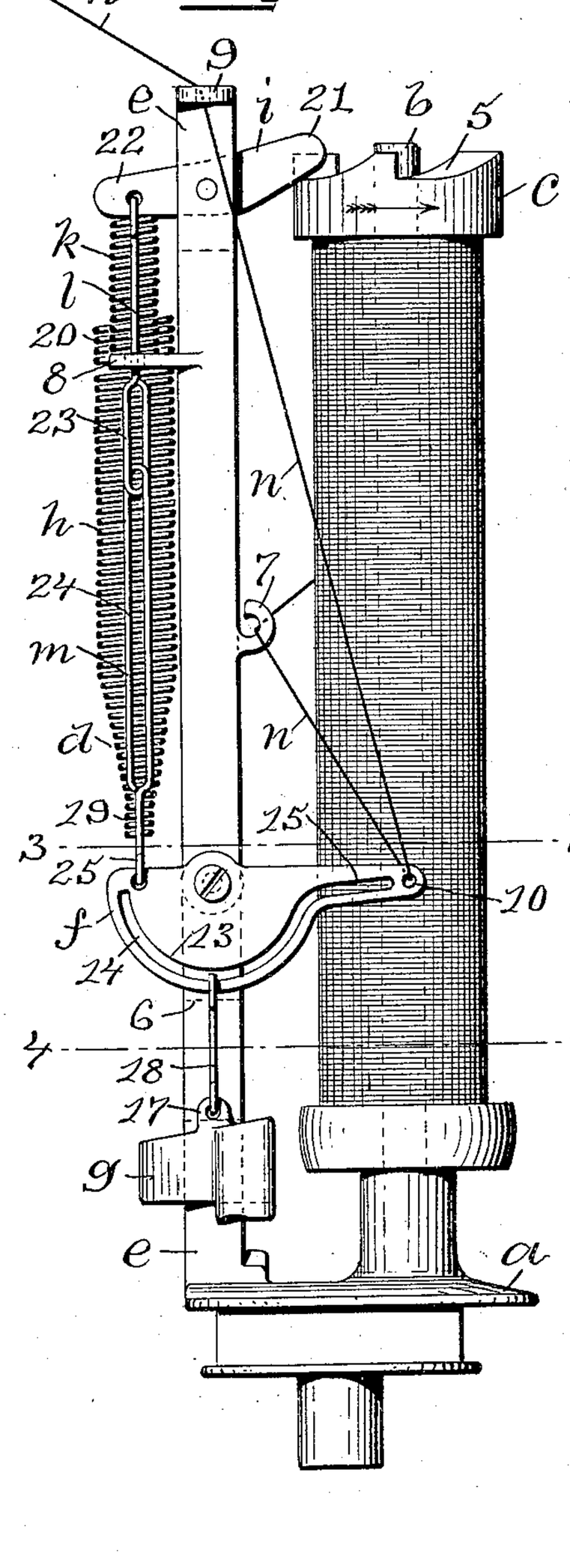


Fig. 2.

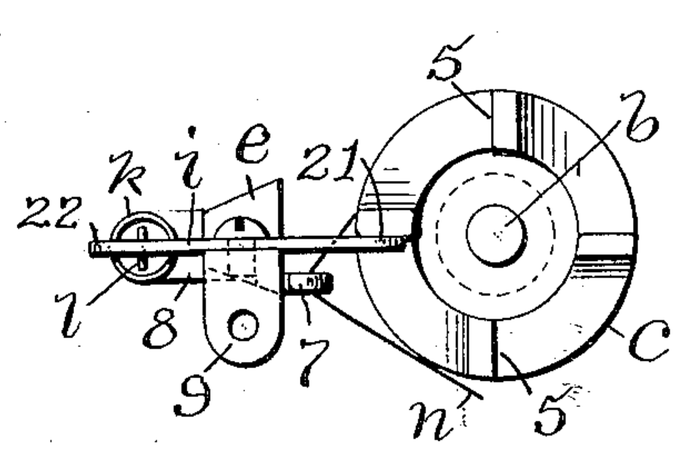


Fig. 3.

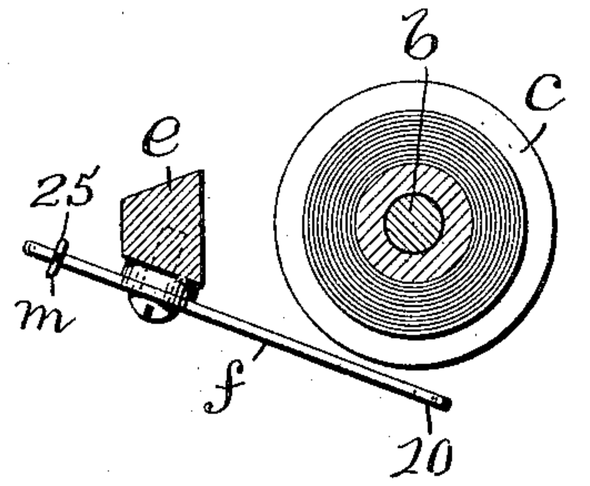
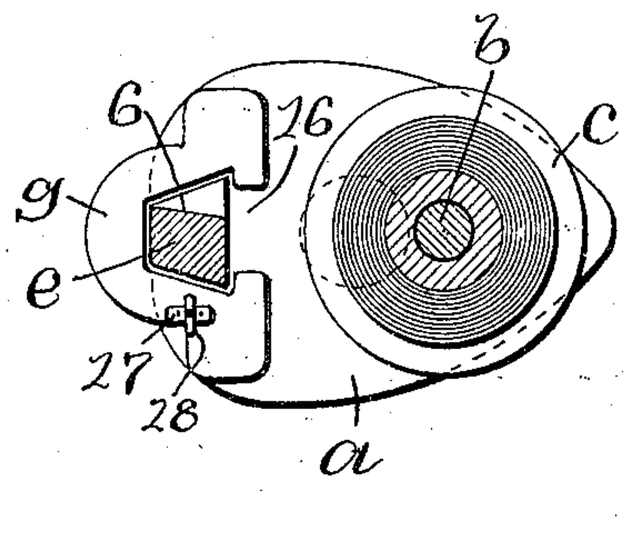


Fig. 4.



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BRAIDING-MACHINE.

No. 917,424. Specification of Letters Patent. Patented April 6, 1909.

Application filed February 24, 1908. Serial No. 417,371.

To all whom it may concern:

Be it known that I, WALTER N. EDWARDS, a citizen of the United States, residing at Providence, in the county of Providence and State of Rhode Island, have invented a new and useful Improvement in Braiding-Machines, of which the following is a specification.

This invention has reference to an improvement in braiding machines and more particularly to an improvement in the automatic thread tension and delivery mechanism on the movable racers of braiding machines.

In movable racers for braiding machines, as heretofore constructed, the tension on the thread is obtained by a sliding weight supported on the thread and having a vertical reciprocating motion on the frame of the racer. In this construction the tension on the thread is un-variable, therefore the tension on the thread cannot be changed when required.

The object of my invention is to improve the construction of a thread tension and delivery mechanism for the movable racers of braiding machines, whereby the tension on the thread may be varied and a more perfect operation of the racer obtained than has heretofore been done.

A further object of my invention is to increase the production of braiding machines by providing the racers with tension mechanisms which can be finely adjusted to give the tension required for the work the machine is required to produce.

My invention consists in the peculiar and novel construction of a thread tension and delivery mechanism for the movable racers of braiding machines, said mechanism having details of construction, whereby the tension on the thread may be varied, as will be more fully set forth hereinafter and claimed.

Figure 1 is a side view of a movable racer for braiding machines, showing the racer provided with my improved thread tension and delivery mechanism, with the mechanism in its normal operative position and the coiled springs in section. Fig. 2 is a top view of the racer, showing the upper guide eye and the latch engaging the teeth on the upper end of the bobbin. Fig. 3 is a transverse sectional view taken on line 3 3 of Fig. 1, showing the tension lever, and Fig. 4 is a transverse sectional view taken on line 4 4 of Fig. 1, showing the slide, the contracted portion of the support and the base of the racer.

In the drawings, *a* indicates the base, *b* the spindle, and *c* the bobbin of a braiding machine racer provided with my improved thread tension and delivery mechanism *d* which consists principally of a vertical support *e*, a tension lever *f*, a slide *g*, a tension spring *h*, a latch *i*, a latch spring *k*, and wire connecting links *l* and *m*. The base *a* and spindle *b* have the usual construction of braiding machine racers. The bobbin *c* has the usual notches 5 5 for the latch *i* in its upper end, as shown in Figs. 1 and 2.

The support *e* is formed preferably integral with the base *a*. It extends vertically parallel with the spindle *b* and is constructed to have the contracted portion 6 adjacent the base *a* for removing the slide *g*, the central guide eye 7, the thin outwardly-extending arm 8, and the upper guide eye 9, as shown in Fig. 1.

The tension lever *f* is pivotally secured to the side of the support *e* at an angle below the guide eye 7, as shown in Figs. 1 and 3, and is constructed to have the guide eye 10 in its inner end and the slot 13 shaped to have the semi-circular concentric portion 14 merging into the straight portion 15 which extends toward the guide eye 10, as shown in Fig. 1.

The slide *g* is shaped to slide on the support *e* and has the opening 16 by which the slide may be removed from the support *e* through the contracted portion 6 of the support and the eye 17, as shown in Figs. 1 and 4. A wire link 18 connects the slide *g* with the slot 14 in the tension lever *f*, as shown in Fig. 1.

The tension spring *h* is in the form of a coiled wire spring contracted at its lower end 19 and secured at its upper end 20 to the support *e* by forcing the thin arm 8 on the support between two of the coils of the spring, as shown in Fig. 1.

The latch *i* is in the form of a lever pivotally secured at its center to the upper end of the support *e* in a position for the inner end 21 of the latch to engage with the notches 5 5 on the end of the bobbin *c* and for the

outer end 22 to extend over the arm 8 on the support *e*, as shown in Fig. 1.

The latch spring *k* is in the form of a coiled wire spring and is interposed between the outer end 22 of the latch *i* and the arm 8 on the support *e*, as shown in Fig. 1.

The wire connecting link *l* is pivotally secured at its upper end to the end 22 of the latch *i*. It extends down through the latch spring *k* and a hole in the lip 8 and has the loop-shaped lower end 23 in the tension spring *h*, as shown in Fig. 1. The end 23 of the link *l* engaging with the arm 8 on the support *e* limits the downward movement of the end 21 of the latch *i*.

The wire connecting link *m* has the elongated loop-shaped upper end 24 looped into the end 23 of the link *l* in the tension spring *h* and the lower end 25 which extends down through the contracted lower end 19 of the tension spring *h* and is pivotally secured to the outer end of the tension lever *f*, as shown in Fig. 1. The contracted lower end 19 of the tension spring *h* engaging with the looped end 24 of the connecting link *m* operatively connects the spring with the link.

In the operation of my improved thread tension and delivery mechanism the thread *n* coming from the bobbin *c* passes through the guide eye 7 on the support *e*, then down through the guide eye 10 in the end of the tension lever *f*, then upward through the guide eye 9 in the upper end of the support *e* to the point where the several threads in the machine are braided together. The first draft of the thread as it comes from the bobbin raises the tension lever *f* against the tension of the spring *h* into its normal horizontal position, as shown in Fig. 1. This movement of the tension *f* lever in turn moves the upper end of the link 18 out of the straight portion 15 into the semi-circular portion 14 of the slot 13 in the tension lever *f* and raises the slide *g* into its normal inoperative position. A further draft on the thread *n* raises the eye end of the tension lever *f* toward a vertical position against the tension of the spring *h*, and the looped end 24 of the link *m* engaging with the looped end 23 of the link *l* raises the end 21 of the latch *i* against the tension of the spring *k*, allowing the bobbin to revolve one tooth. The end 21 of the latch now falls through the tension of the spring *k* and catches the next tooth on the bobbin, and the tension lever *f* assumes its normal position. These operations are repeated indefinitely, delivering a predetermined amount of thread for each release movement of the latch. Should the thread break the spring *h* will operate to move the guide eye end of the tension lever *f* downward, the upper end of the link 18 will move out of the semi-circular portion 14 into the straight portion 15 of the slot 13 and the slide *g* will drop down into its operative position with the shipper mechanism of the machine.

The tension on the thread *n* may be varied by turning the tension spring *h* to the left to increase the tension, which increases or decreases the number of the coils in the upper end 20 of the spring above the arm 8 on the support *e* and gives more or less tension through the link *m* on the tension lever *f*.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:—

1. In a movable racer for braiding machines, a base having a spindle and bobbin, a support on the base, a tension lever pivotally secured to the support and having a guide eye and a cam slot, a slide on the support, a link connecting the slide with the cam groove in the tension lever, a coiled spring operatively connected with the tension lever, and means for varying the tension of the coiled spring on the tension lever by turning the coiled spring.

2. In a movable racer for braiding machines, a base having a spindle and bobbin, a support on the base, a tension lever pivotally secured to the support and having a guide eye and a cam slot, a slide on the support, a link connecting the slide with the cam slot in the tension lever, a coiled spring operatively connected with the tension lever, a latch pivotally secured to the support, means for operatively connecting the tension lever with the latch, and means for varying the tension of the coiled spring on the tension lever by turning the coiled spring.

3. In a movable racer for braiding machines, a base having a spindle, a notched bobbin on the spindle, a support on the base having a central guide eye, an upper guide eye, and a thin outwardly-extending arm, a tension lever pivotally secured to the support and having a guide eye and a cam slot, a slide on the support, a link connecting the slide with the cam slot in the tension lever, a coiled tension spring operatively connected with the thin arm on the support and with the tension lever, a latch pivotally secured to the support in a position to engage with the notches in the bobbin, a coiled spring interposed between the latch and the arm on the support, links operatively connecting the tension lever with the tension spring and with the latch, and means for varying the tension of the tension spring on the tension lever by turning the tension spring

4. In a movable racer for braiding machines, the combination of the following instrumentalities; a base *a*, a spindle *b* on the base, a bobbin *c* on the spindle, a thread ten-

sion and delivery mechanism *d* comprising a vertical support *e* on the base, a tension lever *f* pivotally secured to the support, a slide *g* on the support operatively connected with a cam groove in the tension lever, a tension spring *h* operatively connected with the tension lever, a latch *i* pivotally secured to the support, a latch spring *k*, and connecting links *l* and *m* operatively connecting the tension lever with the tension spring and with the latch, as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WALTER N. EDWARDS.

Witnesses:

ADA E. HAGERTY,

J. A. MILLER.