(No Model.)

F. HAGGAS.

THREAD BREAKING ATTACHMENT FOR DOUBLING AND TWISTING MACHINES.

No. 332,512. Patented Dec. 15, 1885.

Fig. 6

Fig. 1

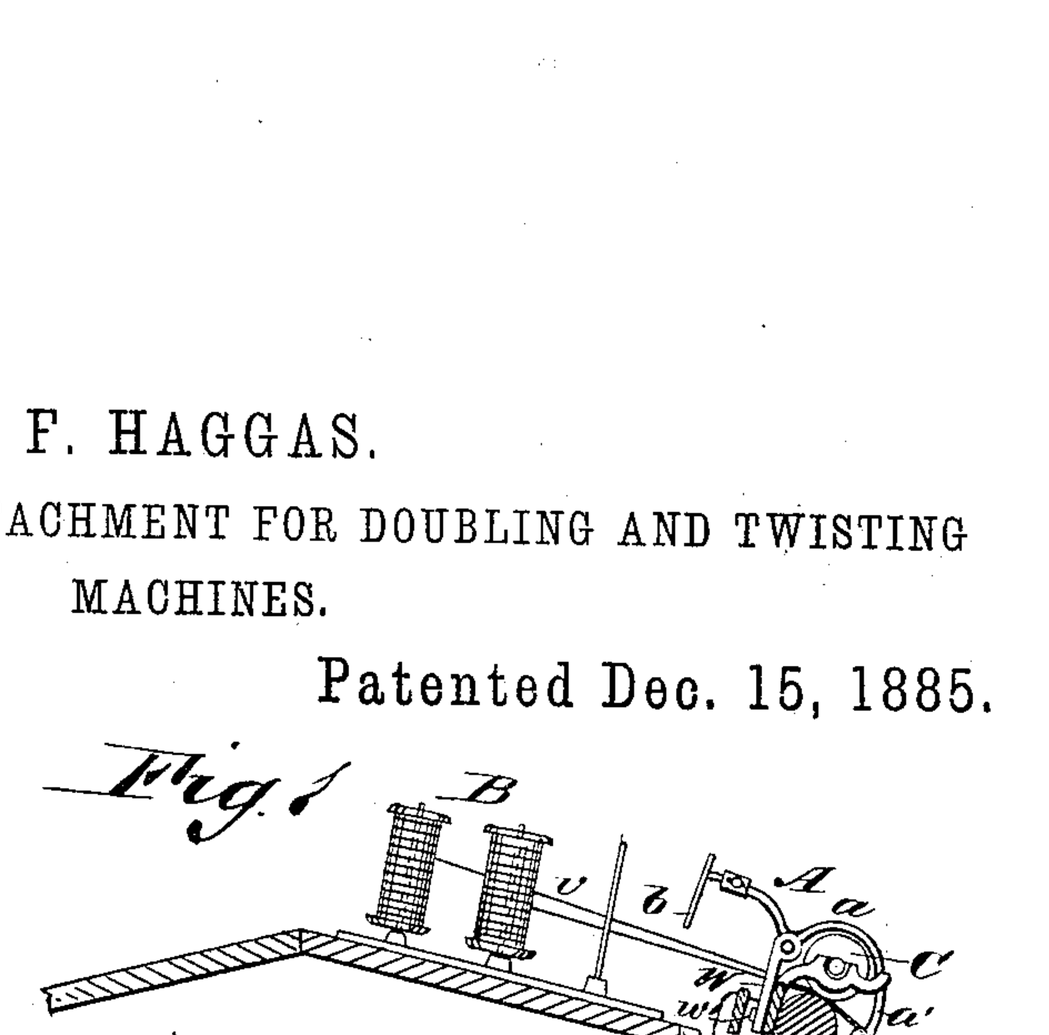

Fig. 2

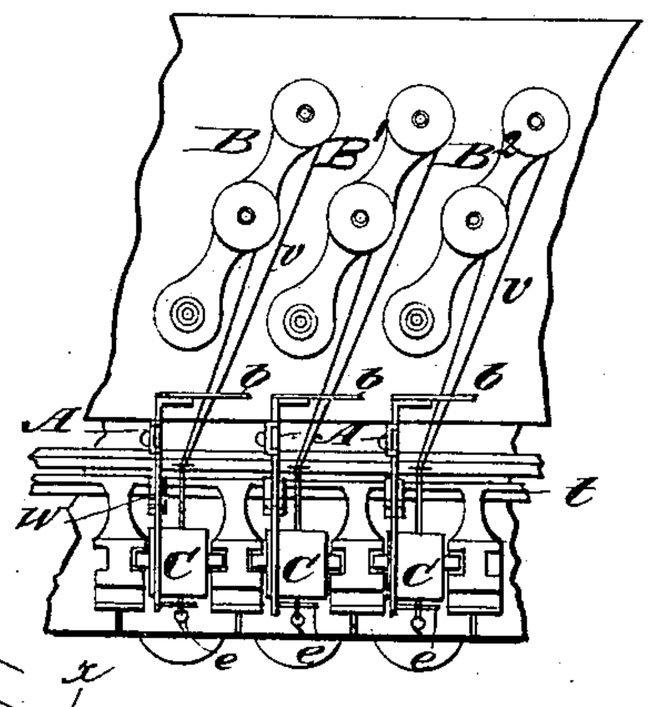

Fig. 3

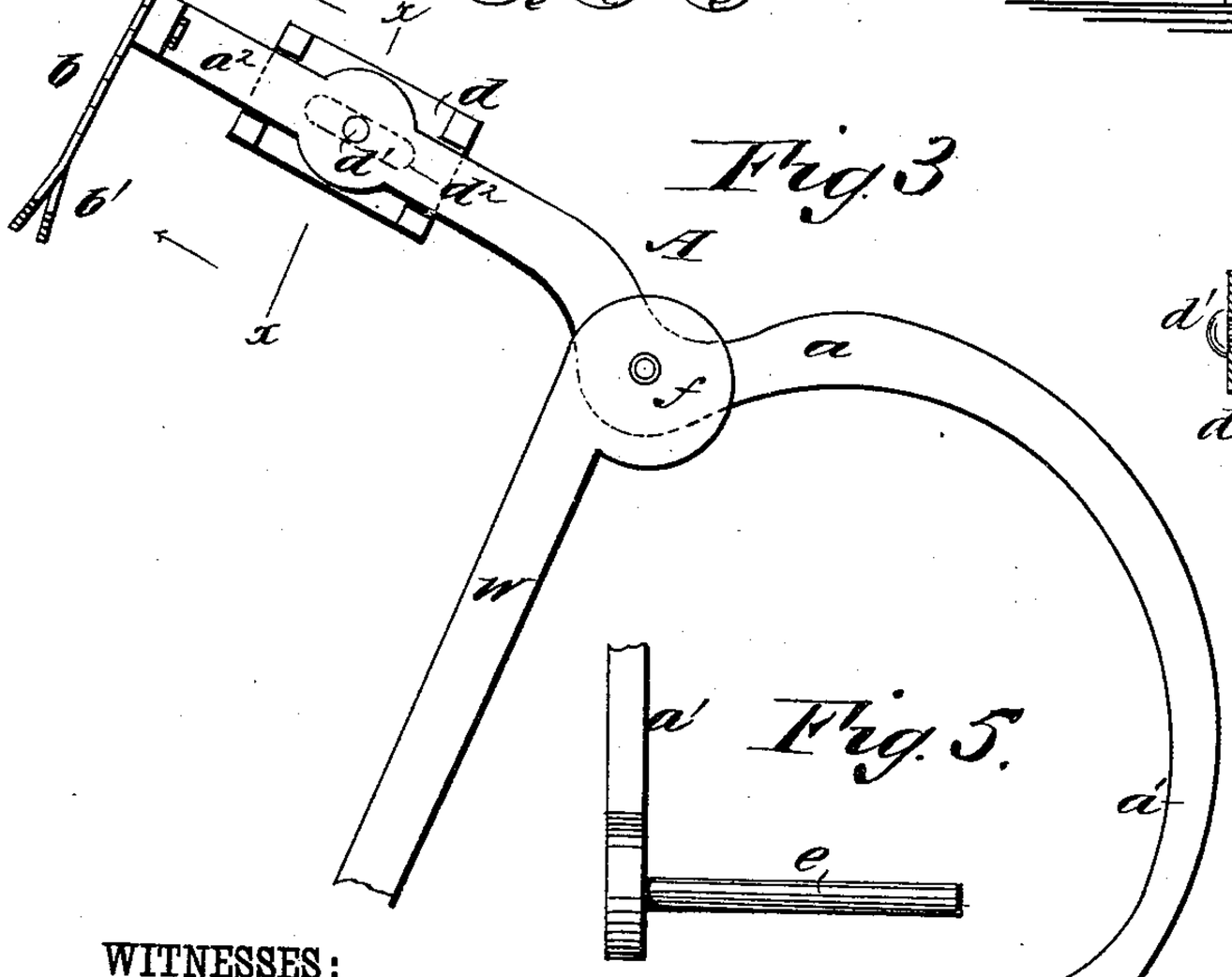

Fig. 4

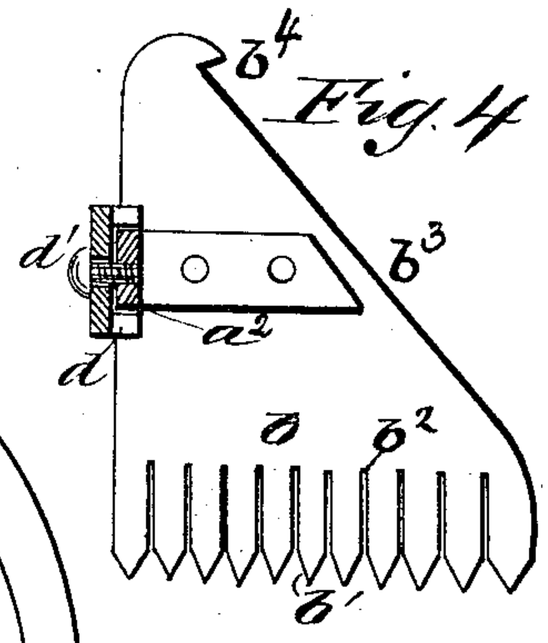

Fig. 5.

WITNESSES:

F. McArdle.

C. Sedgwick

INVENTOR:

F. Haggas

BY

Munn & Co

ATTORNEYS.

UNITED STATES PATENT OFFICE.

FRED HAGGAS, OF NEW YORK, N. Y.

THREAD-BREAKING ATTACHMENT FOR DOUBLING AND TWISTING MACHINES.

SPECIFICATION forming part of Letters Patent No. 332,512, dated December 15, 1885.

Application filed March 3, 1885. Serial No. 157,673. (No model.)

To all whom it may concern:

Be it known that I, FRED HAGGAS, of the city of New York, in the county and State of New York, have invented certain new and useful Improvements in Thread-Breaking Attachments for Doubling and Twisting Machines, of which the following is a full, clear, and exact description.

My invention relates to that class of machines or devices that are adapted to be attached to doubling and twisting machines, to sever both yarns in case one of the yarns breaks or one bobbin runs out sooner than the other, thus preventing waste and the formation of three or four ply yarn; and the invention consists of the special construction of the yarn-holding plate or head and the parts connected therewith, all as hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which like letters of reference indicate corresponding parts in all the figures.

Figure 1 is a transverse sectional elevation of part of a doubling and twisting machine having my invention applied thereto. Fig. 2 is a plan view of a portion of the same. Fig. 3 is a side elevation (enlarged) of the yarn holding or breaking attachment. Fig. 4 is a sectional elevation of the same, taken on the line *x x* of Fig. 3. Fig. 5 is a side elevation of a part of the rear extension of the breaking attachment, and Fig. 6 is a view of the counterbalance-weight removed from the device.

A represents my improved automatic thread-breaking attachment. There is one of these for each set of bobbins B B′ B² and rollers C C′ of the doubling and twisting machine. The attachment is secured to the machine by the arm W, attached by means of screw *w′* or otherwise to a plate or other support, *t*, placed near the lower roller, C′, as shown in Figs. 1 and 2; and the attachment is composed of the said arm W, the double-curved rocking arm *a*, thread retaining or breaking head or plate *b*, counterbalance-weight *d*, and lateral stem or arm *e*. The rocker-arm *a* is pivoted to the arm W by the pin *f*. The extension *a′* of the arm *a* is of a length and is so curved as to reach over the upper roller, C, to hold the lateral arm or stem *e* in line with or preferably a little below the point of contact of the upper roller, C, with the lower roller, C′, so the yarn as it issues from between the rollers may pass over the stem or lateral arm *e* before it passes through the guide-eye, and thence through traveler *r* to the spindle or bobbin *s*. The plate *b* is attached to the extension *a²* of the rocker-arm *a*, as shown clearly in Figs. 3 and 4, and is formed at its lower edge with teeth *b′*, and is adapted to drop down, in case of the breakage of either yarn *v*, so as to catch the yarn in the teeth *b′* and hold it, and thus cause the rollers C C′ to break the yarn at a point between the rollers and the plate *b*. The teeth *b′* of the plate *b* have the slots *b²* formed above and between them, and the teeth are bent alternately out and in, as shown in Fig. 3, so that they will effectually cause the yarn, when the plate drops, to draw between the teeth up into the slots *b²*, where it will be securely held, so there will be no miss or failure in the action of the device.

The counterbalance-weight *d* is made to fit on the side of the extension *a²* of the rocker-arm *a*, and is attached by a set-screw, *d′*, and the weight is made adjustable upon the arm by means of a slot, *d²*, made in the weight, through which the set-screw *d′* passes. In use, after the yarn *v* has been passed between the rollers C C′, over the lateral arm *e*, through the guide-eye, and thence through the traveler *r*, and attached to the spindle-bobbin *s*, in the usual manner, the weight *d* will be properly adjusted upon the extension *a²*. Thus arranged, the yarn will hold the rocker *a* in the position shown in Fig. 1, with the plate *b* elevated above the yarn.

In case one or both of the strands of yarn should break or the yarn of one bobbin should run out and that of the other not, the head *b* will fall (being no longer held by the yarn on the stem *e*) and catch the strands of yarn in the teeth *b′* and retain them back of the rollers C C′, so that the action of the rollers will draw the yarns apart, and thus entirely free the yarns from the rollers, so that there will be no waste, no tangling of the yarns, nor the making of three of four ply yarn on neighboring spindles.

At its upper edge the plate *b* is inclined, as shown at *b³*, Fig. 4, and is notched at its upper point, as shown at *b⁴*. This triangular formation of the plate is advantageous in "running out," as it is termed—that is, in finishing a

bobbin of one set with a bobbin of another set of bobbins, which is always the case where the bobbins are unevenly filled. The two strands thus to be joined for running out (one in set B, the other in set B′, for example) may be passed over the upper edge of the plate *b*, under the hook b^4, thence to the rollers C C′, so that the hook serves to guide the yarn and to hold it in place while being passed between the rollers, saving annoyance and time to the operator. At the time the two yarns from bobbins in different sets are to be joined and run out together at the time the yarn is being passed between the rollers C C′, the rocker-arm *a* will be tilted, so that the yarn can be passed over the plate *b* to the rollers C C′. This is true, also, in starting with full bobbins, and after the yarn has passed between the rollers in either of these instances the arm *a* must be turned back to the position shown in Fig. 1, to lower the stem *e* and elevate the plate *b* above the yarn, ready for action.

In passing from below to a position above the yarn, the plate *b*, if made square at the top, would catch the yarn and cause trouble and delay; but this is entirely avoided by the triangular shape of the plate *b*, which spreads the yarn and permits the plate to pass without any detention and without straining the yarn.

I claim—

1. The rocker-arm *a*, provided at one end with the lateral stem *e*, and at the other with the yarn-holding head or plate *b*, inclined at b^3, notched at b^4, and formed with the series of teeth *b′* and slots b^2, the teeth being alternately bent in opposite directions, substantially as and for the purposes set forth.

2. The yarn-holding head *b*, made triangular in form and provided with teeth at its lower edge, in combination with the rocker-arm *a*, the lateral stem *e*, and the support W, substantially as and for the purposes set forth.

FRED HAGGAS.

Witnesses:
H. A. WEST,
C. SEDGWICK.