

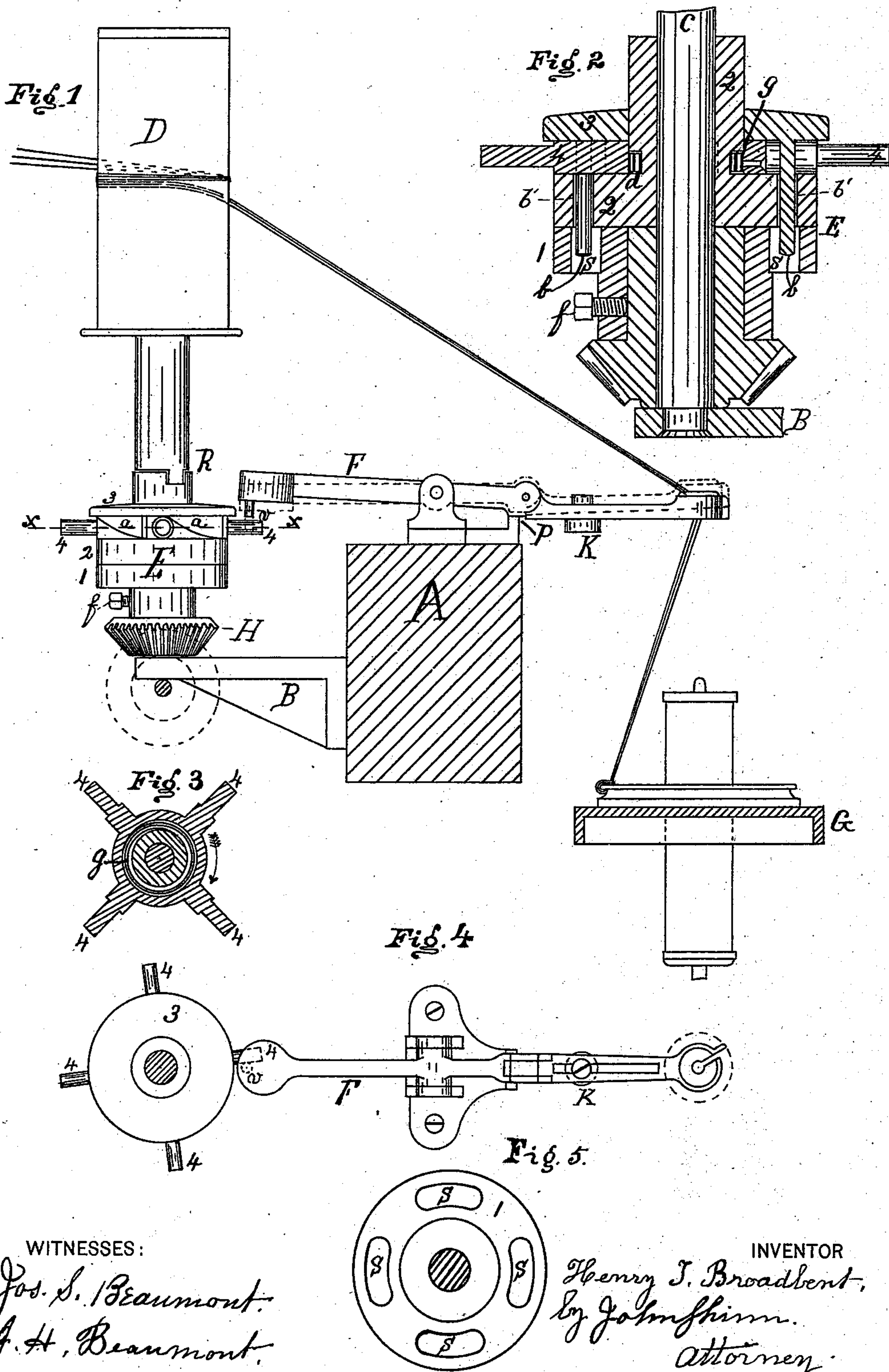
(No Model.)

H. T. BROADBENT.

STOP MOTION MECHANISM FOR DOUBLING AND TWISTING MACHINES.

No. 377,881.

Patented Feb. 14, 1888.



WITNESSES:

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UNITED STATES PATENT OFFICE.

HENRY T. BROADBENT, OF PHILADELPHIA, PENNSYLVANIA.

STOP-MOTION MECHANISM FOR DOUBLING AND TWISTING MACHINES.

SPECIFICATION forming part of Letters Patent No. 377,881, dated February 14, 1888.

Application filed September 23, 1887. Serial No. 250,459. (No model.)

To all whom it may concern:

Be it known that I, HENRY T. BROADBENT, a subject of the Queen of Great Britain, but has declared his intention to become a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Stop-Motion Mechanism for Doubling and Twisting Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to machines for doubling two or more threads together and twisting the same into one cord.

It consists in the combination, substantially as hereinafter described and claimed, with the delivering-roller of a twisting-machine, a self-acting clutch-box, and a balanced guide-finger, so arranged that if one of the single ends breaks or runs out the delivery-roll will stop, and thereby prevent the delivery of single yarn and the making of waste. I attain these objects by mechanism illustrated in the accompanying drawings, in which—

Figure 1 is an elevation showing my improvements and such parts of a doubling and twisting machine as are required to show the connection therewith. Fig. 2 is a vertical central section of the clutch-box. Fig. 3 is a cross-section in line *x x* of Fig. 1. Fig. 4 is a top view of parts of Fig. 1. Fig. 5 is a top view of a part of the clutch-box.

Similar letters refer to similar parts throughout the several views.

The parts shown in the drawings are old and well known, except that part representing the "clutch-box," the form of construction of which is plainly shown in Figs. 2 and 5; and I will confine myself, principally, to describing the construction of the clutch-box and such other parts as are required to connect it with the operating parts of the machine.

A is a beam to which is fixed, by bracket B, a dead-spindle, C. (See Fig. 2.) Upon this spindle is mounted the delivery-roll D and clutch-box E.

F is the balanced guide-finger, and G is the ring-rail.

The clutch-box E is made in five parts, including the spring *g*. The part marked 1, and

shown by a top view in Fig. 5, is constructed with four slots, S, and is made fast to the driving-wheel H by a set-screw, *f*. The part 2 is made with two holes, *b' b'*, through which pass freely the studs *b b*. In part 2 is turned a recess at *d*, and in this recess is coiled a flat steel spring, *g*. (Shown in Figs. 2 and 3, in Fig. 2 by the heavy lines.) One end of this spring is fastened to part 2 of the clutch, and the other end to part 4. (Shown in section, Fig. 3.) The part 2 extends up through part 3 and connects to and drives the roller D by a clutch, R. (See Fig. 1.) The part 3 is constructed with two stud-pins, *b b*, and four inclined cams, *a a*, two of which are shown in Fig. 1. The part 4 is made in the form shown in Fig. 3, having four arms, and is mounted loose on the hub of part 2 and between parts 2 and 3.

The guide F, ring, and ring-rail G are of the usual form of construction.

The operation of my improvements is as follows: The threads or yarn to be doubled and twisted are lapped once around the roller D, and the doubled thread is passed through the eye of guide F to the twisting-ring and bobbin in the usual manner. The balancing-weight K is so adjusted that the "drag" on the doubled thread will keep the guide down on the rest P. If one of the threads breaks or becomes exhausted, the drag is not sufficient to keep down the guide end of lever F, and it will rise at that end and lower the other end. This brings the pin *v* down so as to engage one of the arms of part 4, and stopping them so as to cause the cams *a a* to rise on the arms and lift the pins *b b* out of the slots S S of the part 1 of the clutch-box, stopping the roller D, and causing the single end to break, preventing the delivery of single yarn and the making of waste. While the roller D is disconnected and stopped, the driving-wheel and lower part of the clutch are permitted to revolve free on the spindle C. When the end is "pieced up," the drag on the yarn will lift the pin *v*, so as to allow the coiled spring *g* to revolve back the arms of part 4 and allow the cams *a a* and pins *b b* to drop, so that the pins will engage in the slots S S, drive the roller D, and deliver yarn until one of the ends or threads is detached, when the delivery-roller will be stopped, as before described.

The drawings show the twisting as done by

a "ring-traveler;" but it is obvious the twisting may be done by a cap or flier. The delivery-roller D is shown as driven by a toothed wheel. It may be driven by a "band," as is shown in Patent No. 142,374 of September 2, 1873.

What I claim as my invention is—

A clutch-box having a part, 1, with slots S S, a part, 2, with recess *d*, coiled spring *g*, and 10 holes for pins *b b*, a part, 3, with stud-pins *b b*

and cams *a a*, a part, 4, with four arms, and connected with part 2 by the coiled spring *g*, in combination with the delivery-roller D, balanced guide F, and a twisting device, as shown, described, and for the purpose specified.

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Witnesses:

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