(No Model.) 2 Sheets—Sheet 1.

W. STELL.

COUPLING MECHANISM FOR DRAW DRUMS OF DOUBLING AND TWISTING MACHINES.

No. 435,528. Patented Sept. 2, 1890.

Fig. 1

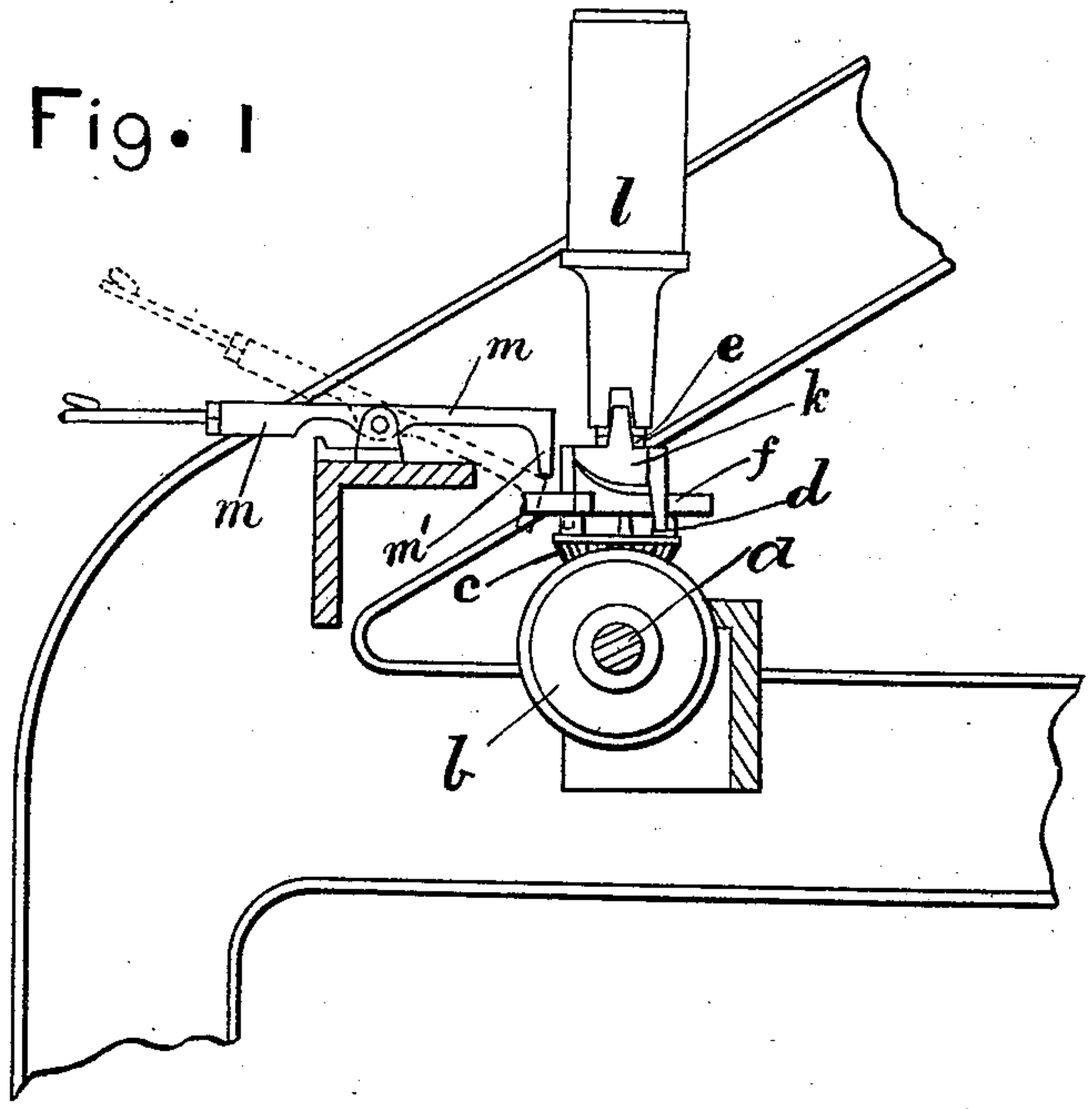
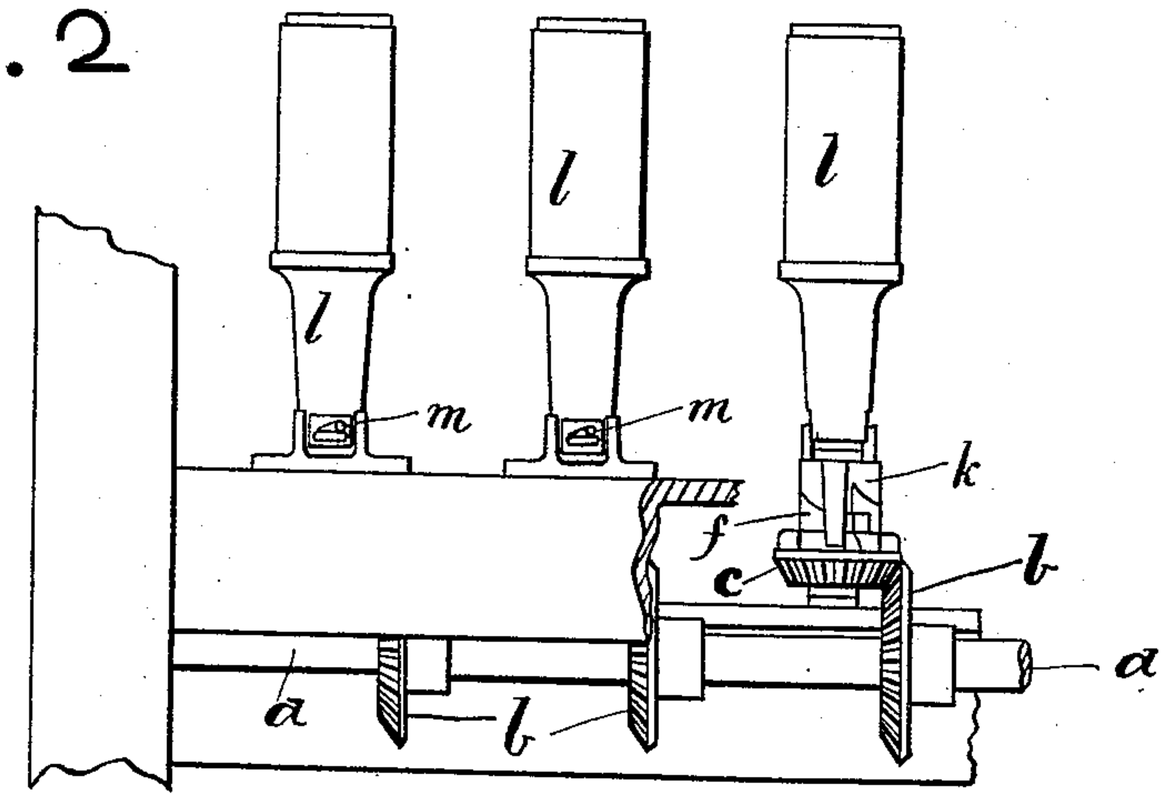


Fig. 2



Witnesses.
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Inventor
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(No Model.)

2 Sheets—Sheet 2.

W. STELL.

COUPLING MECHANISM FOR DRAW DRUMS OF DOUBLING AND TWISTING MACHINES.

No. 435,528. Patented Sept. 2, 1890.

Fig. 5

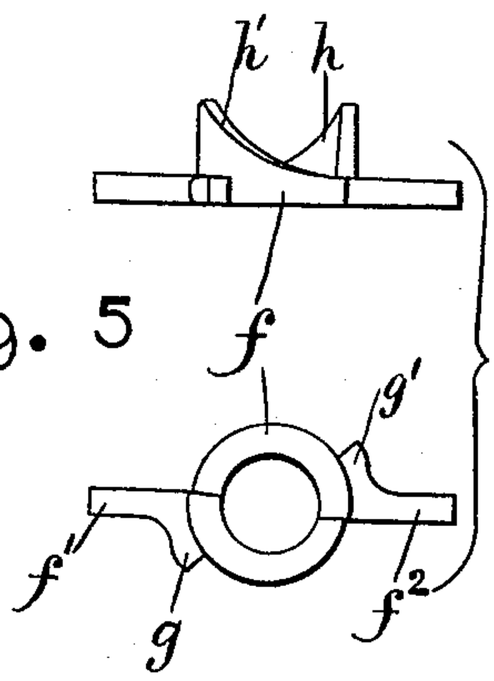


Fig. 4

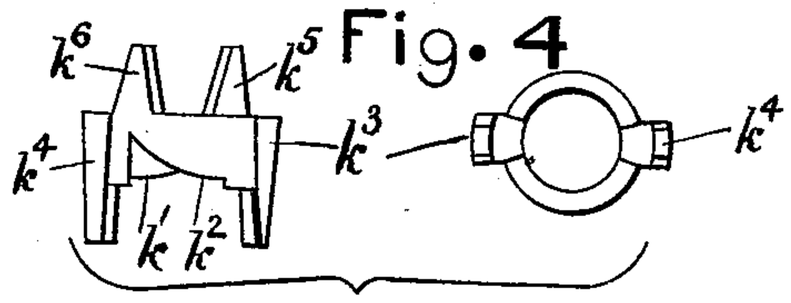


Fig. 3

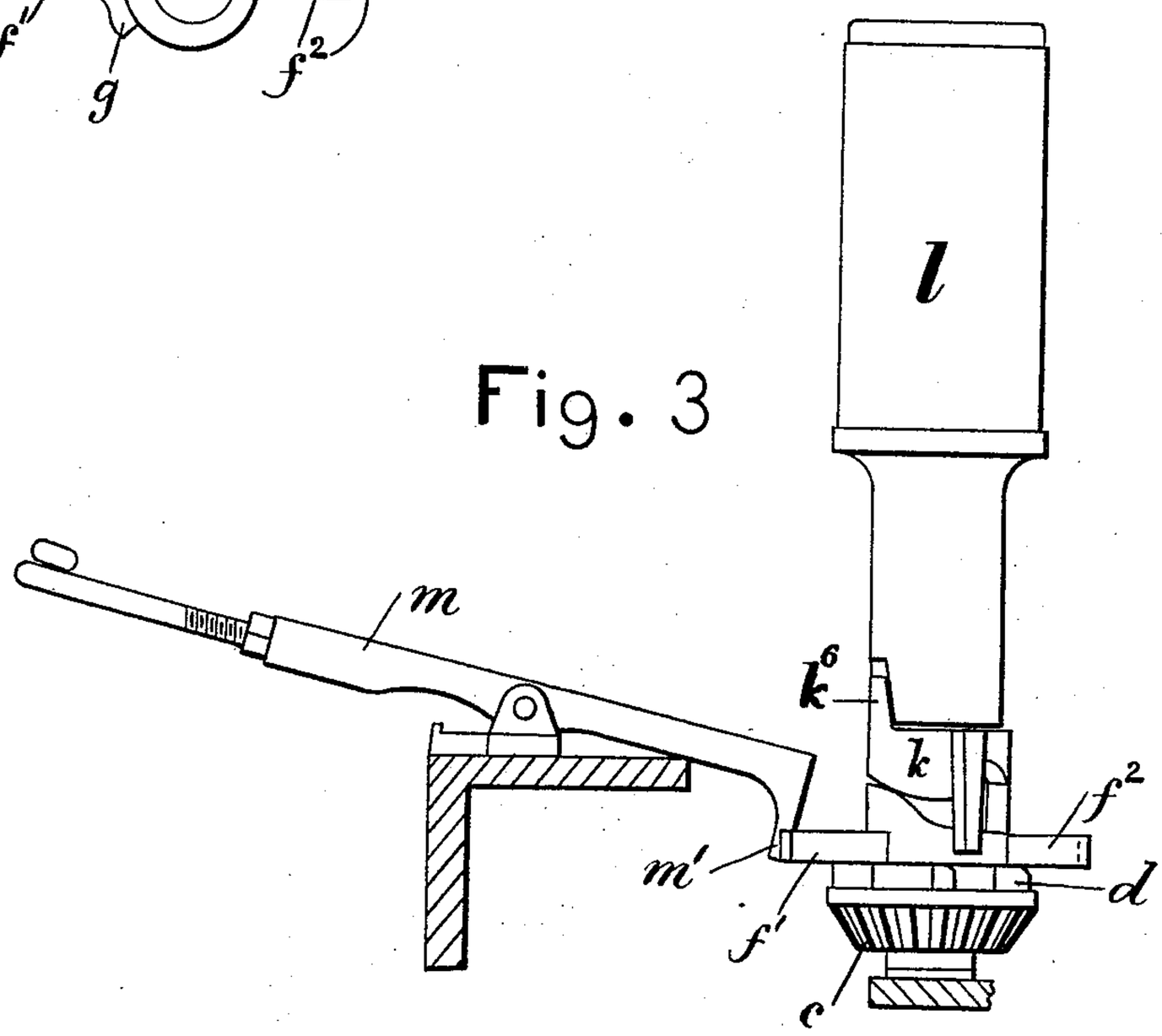
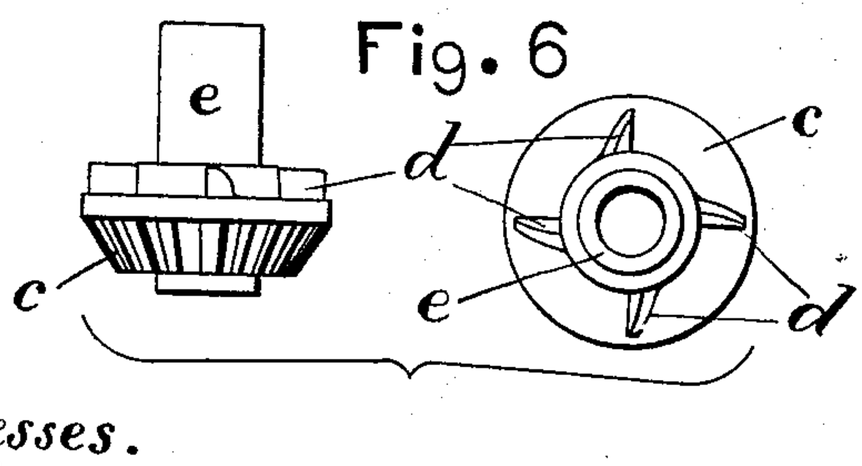


Fig. 6



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UNITED STATES PATENT OFFICE.

WILLIAM STELL, OF KEIGHLEY, ENGLAND.

COUPLING MECHANISM FOR DRAW-DRUMS OF DOUBLING AND TWISTING MACHINES.

SPECIFICATION forming part of Letters Patent No. 435,528, dated September 2, 1890.

Application filed April 22, 1890. Serial No. 349,034. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM STELL, a subject of the Queen of Great Britain, residing at Keighley, in the county of York, England, have invented an Improvement in Coupling Mechanism for Draw-Drums of Doubling and Twisting Machines, of which the following is a specification.

As is well known in connection with machines for doubling or twisting two or more threads or yarns of wool or other fibrous substances together, series of rotary drums arranged to operate vertically are employed for the purpose of drawing or winding the several threads from their respective bobbins, these drums being styled the "draw" or "trap" drums.

The object of this invention is to produce a coupling for these drums, so that by its employment the motion of any one of these draw-drums may be arrested, when one or more of their respective threads is or are broken or fail to be in continuity, by disengaging or throwing the same clean out of gear with its motor, and yet to couple the same, so as to be driven "positively" when in connection with its motor. This object I attain by the novel arrangement and construction of parts hereinafter described, and illustrated by the accompanying drawings, in which—

Figure 1 is a sectional side elevation of a sufficient part of a doubling or twisting machine to show the application of my invention. Fig. 2 is a front view thereof, while Fig. 3 is a drawing, on an enlarged scale, showing the draw-drum and its coupling parts. Figs. 4, 5, and 6 are detail drawings of parts hereinafter referred to.

Similar letters of reference indicate similar parts throughout the several views.

The shaft *a*, upon which is mounted the series of bevel-gears *b*, receives its rotary motion from the prime motor-shaft of the machine to which it is geared, and its said rotary motion is imparted to the bevel-gears *c*, which respectively operate, in connection with the gears *b*, in the common and well-known manner.

The bevel-gears *c* are each mounted loosely upon their respective vertical spindles, and upon the upper face of each gear *c* is or are formed a projecting rib or ribs *d*, (shown in detail by Fig. 6,) which may be one, two, or more in number. Extending vertically beyond these ribs *d* is an elongated boss or pap *e*, formed on or attached to the gear *c*.

Mounted loosely upon the boss *e* is the annular piece *f*, (see detail drawings, Fig. 5,) having the radial arms f' and f^2 and the stop-pieces *g* and g' formed thereon, as also on its upper edge are the cam-surfaces *h* and h'. Again, mounted loosely upon the boss *e* and superposing the piece *f* is the coupling-piece *k*, (shown in detail by Fig. 4,) which has cam-surfaces k' and k^2 formed upon it to operate in connection with the cam-surfaces *h* and h' formed on the piece *f*. Formed upon or attached to the piece *k* are the longitudinally-projecting arms k^3 k^4 and k^5 k^6, the former projecting downward for contact with the arms f' and f^2 of the piece *f* and the ribs *d* of the gear *c*, while the latter project upward for connection with the lower and extending end of the draw-drum *l*, notches being formed in the said drum *l* for the reception of said arms k^5 and k^6, respectively, these notches being sufficiently deep to allow the piece *k* to move vertically without raising the drum *l*. The drum *l* is supported or kept in its elevated position by resting upon the outer end of the boss *e*.

The thread-guide lever *m* is mounted in the usual manner upon the frame-work of the machine. When the winding or doubling of the yarn or the like is being effected in a proper and efficient manner, the lever *m* is held by said yarn in the position shown by full lines in Fig. 1 and clear of the arms f' and f^2, so that the rotary motion of the gear *c* is imparted to the drum *l* by means of the ribs *d* being in contact with the arms k^3 and k^4, while the arms k^5 and k^6 are in contact with the notches in said drum *l*. However, when said yarn breaks or fails to be in continuity the lever *m* assumes by gravity the position shown in broken lines, Fig. 1, and so its inner end m' lies in the path of motion of the arms f' and f^2, so that one or the other of these arms comes in contact with it and is held from rotating, and by the gear *c* continuing in motion the piece *k* is carried or rotated after the stoppage of the piece *f* until, by the action of the cam-surfaces k' and k^2 and *h* and h', formed on said piece *k* and the piece

f, respectively, the coupling-piece *k* is raised, so that its arms k^3 and k^4 are clear of the ribs *d*, the stop-pieces *g* and *g'* preventing said piece *k* from being carried too far, by which means its rotary motion is discontinued, as is also that of the drum *l*, until the breakage or failing of the yarn is again repaired, when, by the lever end *m'* being lifted clear of the arms *f'* and f^2, the parts *k* and *f* assume their proper respective positions and their rotating operations recommence.

I claim—

The bevel-gear *b*, means for operating the same, the gear *c*, having ribs *d* attached thereto, the annular piece *f*, having arms *f'* and f^2, stop-pieces *g* and *g'*, and cam-surfaces *h* and *h'*, as described, the coupling-piece *k*, having arms k^3, k^4, k^5, and k^6, and cam-surfaces *k'* and k^2, as set forth, the drum *l*, and the lever *m*, in combination, the whole of these parts being formed and arranged to operate substantially as herein specified.

WILLIAM STELL.

Witnesses:

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