

T. KERSHAW.
Stop-Motion for Doubling and Twisting Machines.

No. 202,550.

Patented April 16, 1878.

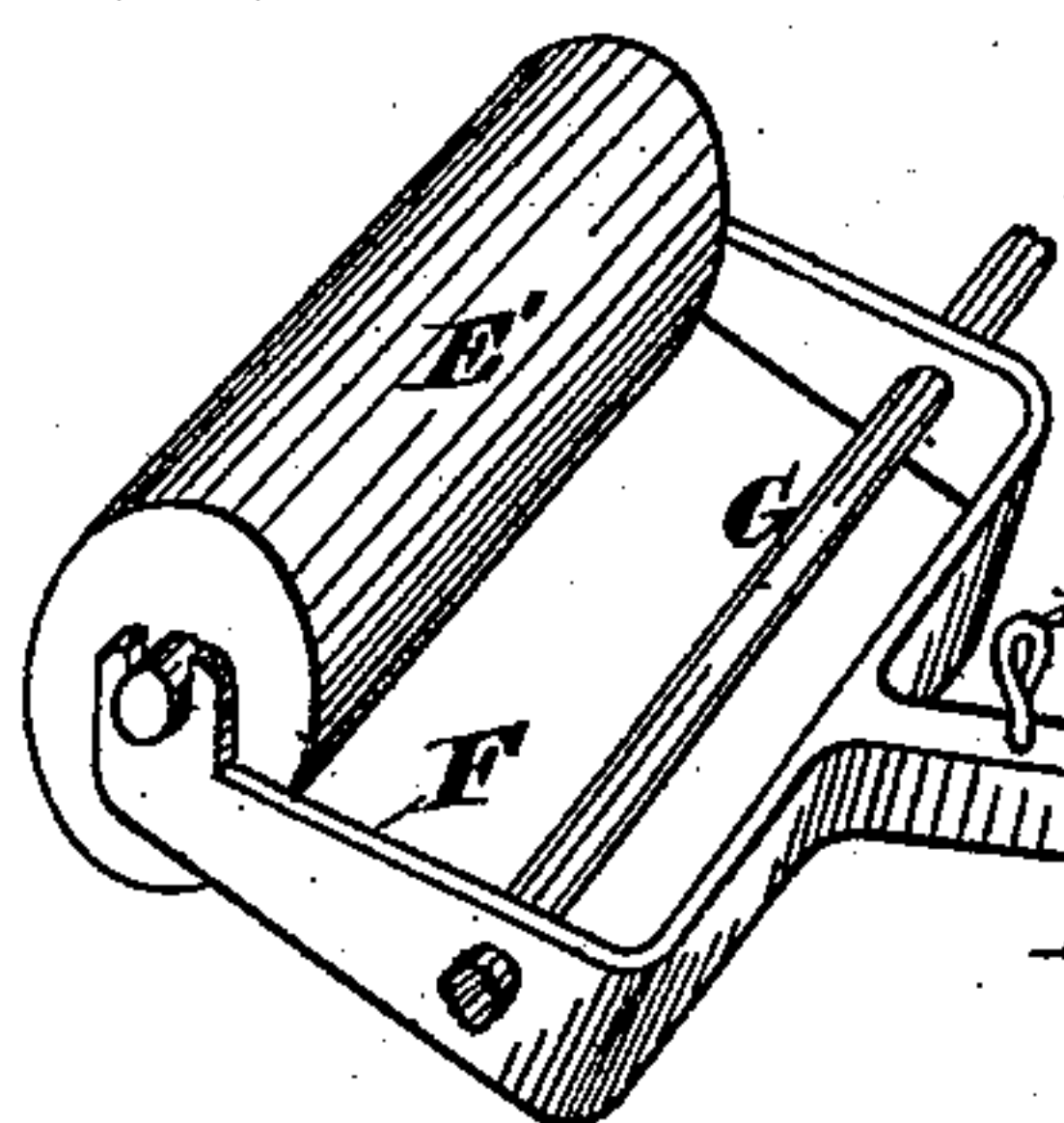
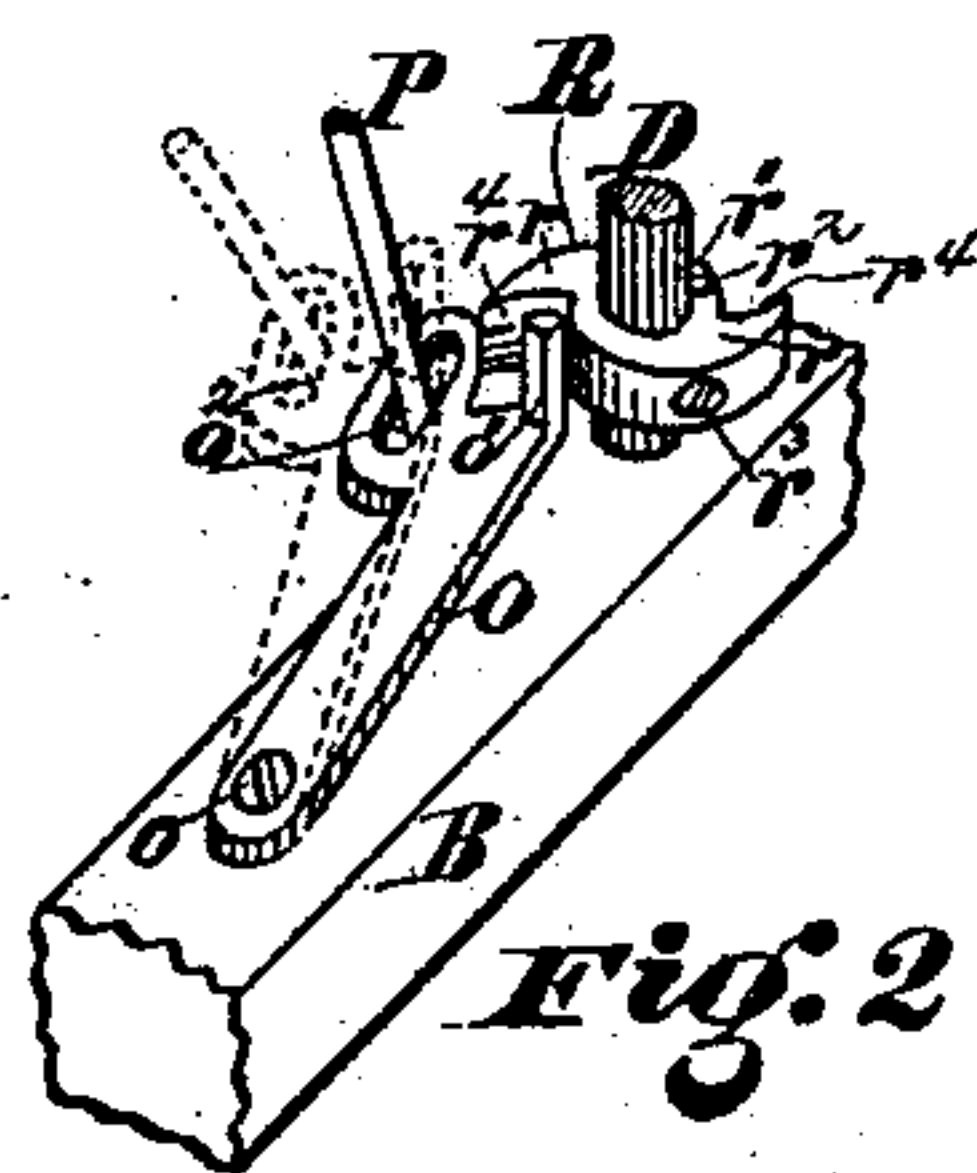
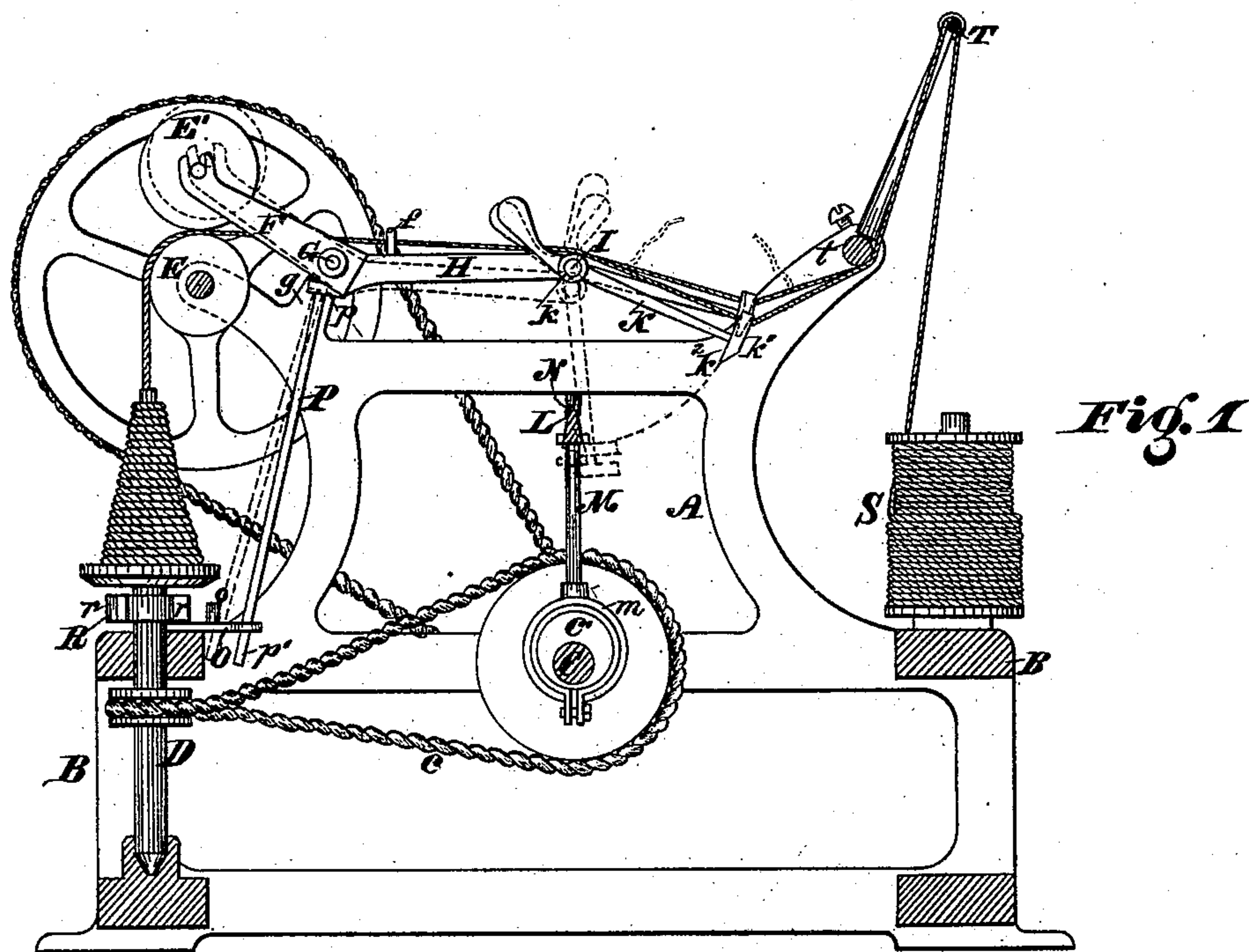


Fig. 3

Fig. 5

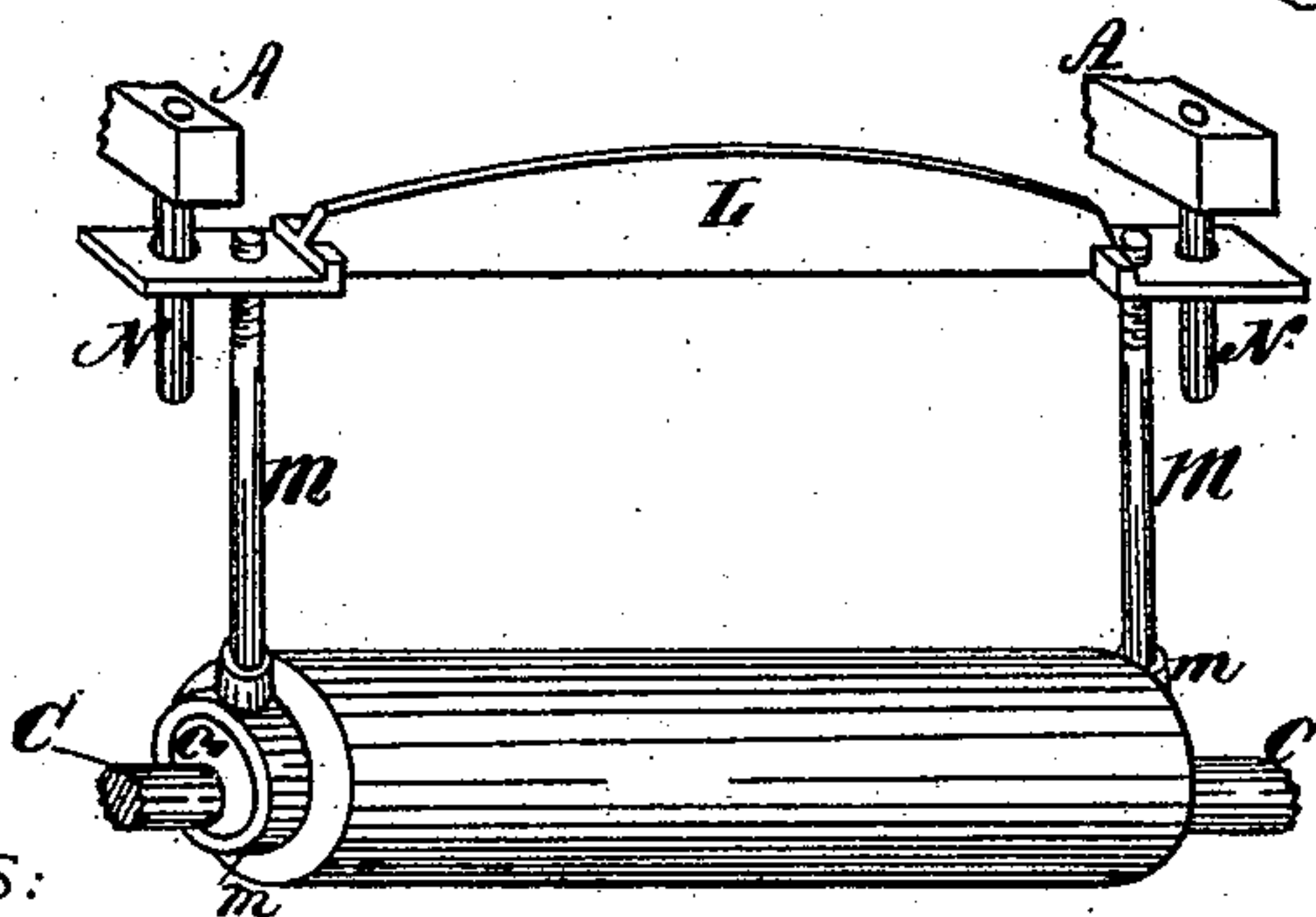
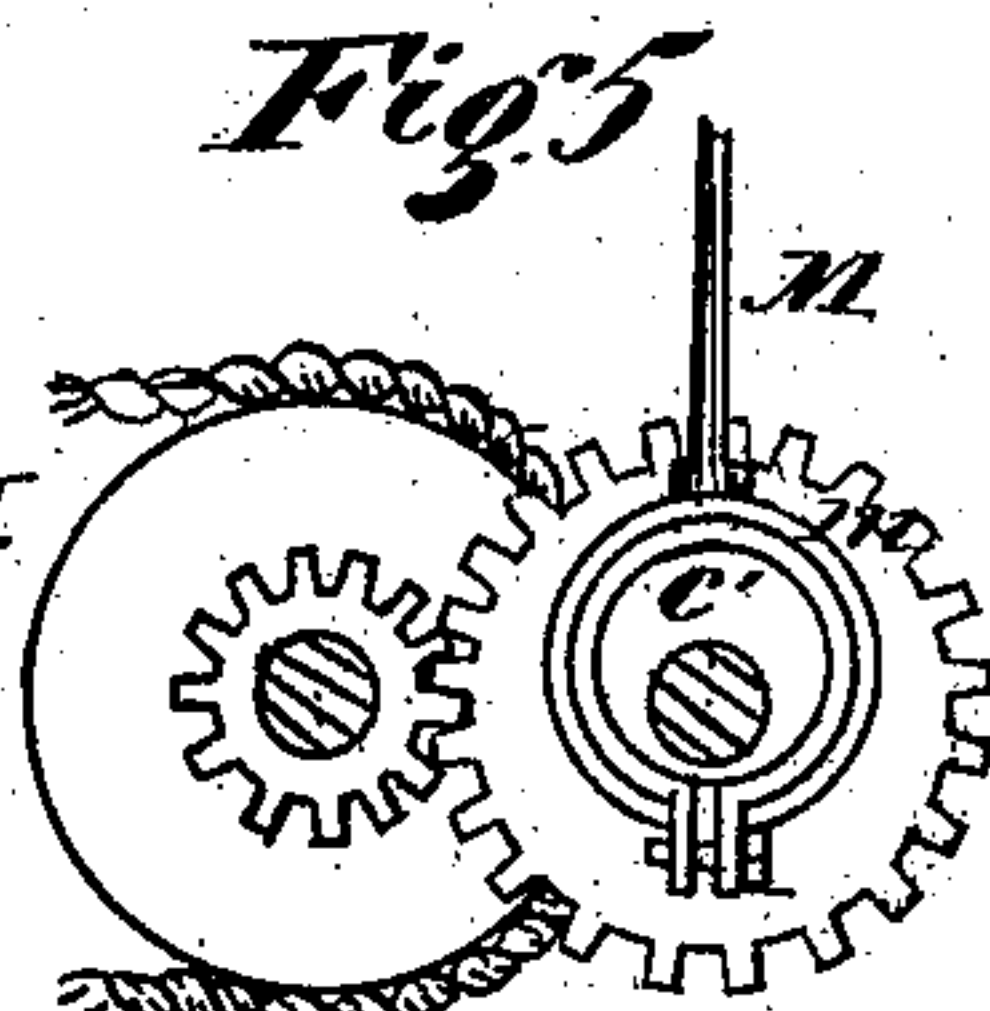


Fig. 4

WITNESSES:

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UNITED STATES PATENT OFFICE.

THOMAS KERSHAW, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN STOP-MOTIONS FOR DOUBLING AND TWISTING MACHINES.

Specification forming part of Letters Patent No. 202,550, dated April 16, 1878; application filed October 12, 1877.

To all whom it may concern:

Be it known that I, THOMAS KERSHAW, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Stop-Motions 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 pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification, in which—

Figure 1 is a longitudinal vertical section of my invention. Figs. 2, 3, and 4 are perspective details of the same. Fig. 5 is a side view, showing modification hereinafter described.

My improvements relate to machines for doubling and twisting fibrous and textile material.

They have for their object to stop the twisting-spindle whenever a strand of the material breaks; and they consist in the peculiar construction and combination of parts hereinafter fully set forth and claimed.

Referring to the accompanying drawing, A A represent the ends, and B B the front and rear bars, of a doubling and twisting frame or machine. C is the driving-shaft, from which pass belts or bands *c* to the twisting-spindles D D. E is the lower, and E' the upper, drawing-roll, the latter being sustained in a frame, F, which is pivoted or swings on a rod, G, having its extremities supported by standards *g g* on the ends A A.

H is a rigid arm, forming part of and extending rearwardly from the frame F, affording support for a rod, I, on which are swung latches K K. Said latches are formed each with an eye, *k*, through which the rod I passes, with a loop, *k*¹, for the passage of a strand of the material to be doubled and twisted, and with a shoulder, *k*², for a purpose presently to be described. L is a bar, sustained upon rods M M, which terminate in collars *m m*, that encircle eccentrics *c' c'* on the driving-shaft C, or, preferably, on another shaft geared with said shaft C, as shown in Fig. 5, in such manner as to turn at a slower rate of speed than the latter.

N N are guide-rods, upon which the bar L moves, said rods being fixed in the ends A A and passing through said bar L. O is a lever or pawl, pivoted at *o* to the bar B, and formed with a stud, *o*¹, and a slot, *o*². P is a rigid arm, secured to the drawing-roll frame F at *p*, its opposite end *p'* passing through the slot *o*² in the pawl O. R is a ratchet or cam secured to the twisting-spindle D, (there being one such ratchet for each spindle,) said ratchet being composed of a central head, *r*¹, from which project teeth or shoulders *r r*. The head *r*¹ is sawed or cut through at *r*², and *r*³ is a screw, which passes through said head tangentially, connecting the sections on either side of the kerf *r*², as shown. The teeth or shoulders *r*, on their inner sides *r*⁴, are curved or hooked, and are thrown slightly away from radii of the head *r*¹.

The operation is substantially as follows: Two or more threads or strands of fibrous or textile material are passed separately from the spools S S over the rod T, under the rod *t*, and thence through the loop *k*¹, passing together through the guide *f* and between the drawing-rolls E E' to the spool or bobbin on the twisting-spindle. Tension being established on said threads or strands by the movement of the drawing-rolls, the latches K K will be held out of a vertical position, as shown in full lines in Fig. 1 of the drawings. When a strand of the thread or yarn breaks, the latch K, through which said strand passed, will instantly drop into perpendicular position, as shown in dotted lines in the drawing, when the reciprocating bar L will meet or strike upon the shoulder *k*² of such latch.

The bar L, in its descent, draws down the latch K, with which it engages, depressing the drawing-roll frame F on its backward part and raising it forwardly, said frame rocking on the rod G. The elevation of the forward end of the frame F has the effect of moving the lower end of the arm P in the direction of the spindle D, swinging the pawl O on its pivot until the stud *o*¹ on said pawl comes into the track of the teeth or shoulders *r r* of the ratchet R. This causes said ratchet to be instantly stopped, and the revolution of the spindle D to be arrested and wholly stopped after making one or two revolutions. The

ratchet R being held on the spindle D merely by frictional contact, or by a slight clamping effected by means of the screw r^3 , said spindle, as suggested, makes one or two revolutions within said ratchet after the latter has been stopped, the object of this being to avoid the shock which would result from the instant and total stoppage of such a fast-moving part as said spindle.

When the ratchet-tooth or shoulder r meets the stud o^1 and engages therewith, it draws the pawl O in the direction of the spindle D, (said pawl swinging on its pivot o), carrying the lower extremity of the arm P in the same direction, and thereby depressing the rear end of the frame F to such extent that the shoulder k^2 on the vertically-hanging latch will be below the downward limit of movement of the reciprocating bar L, so that said bar, which is continually reciprocating, will not further interfere with said hanging latch. The frame F is also held in a stationary position, with the upper roll E' elevated some distance above the lower drawing-roll E, thereby stopping the drawing action of the whole frame until the broken strand has been repaired.

As soon as the broken strand is repaired the parts are restored to their normal position by a slight blow from the operator's hand on the upper drawing-roll E', which has the effect of lowering said roll on the roll E, depressing the forward part of the frame F, and throwing the pawl O out of engagement with the ratchet

R. Tension being restored on the repaired strand, the latch K, through the loop of which it passes, is again elevated out of vertical line, and the operation proceeds, as already described.

What I claim as my invention, is—

1. The combination of pivoted drawing-roll frame F, swinging latches K, bar L, pawl O, arm P, and ratchet or cam R with the twisting-spindle D, substantially as shown and described.

2. In combination with the rocking frame F, twisting-spindle D, cam or ratchet R, held thereon by friction or clamping, and pivoted lever or pawl O, the arm P, secured to said frame and engaging with said lever, substantially as shown and described.

3. The combination of pivoted drawing-roll frame F and twisting-spindle D, having a ratchet or shoulder, with intermediate mechanism attached to said frame, and operating to stop the spindle by being brought into contact with said ratchet or shoulder when the frame is rocked and the drawing-roll raised, substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand this 10th day of October, 1877.

THOMAS KERSHAW.

Witnesses:

SAML. J. VAN STAVOREN,
CHAS. F. VAN HORN.