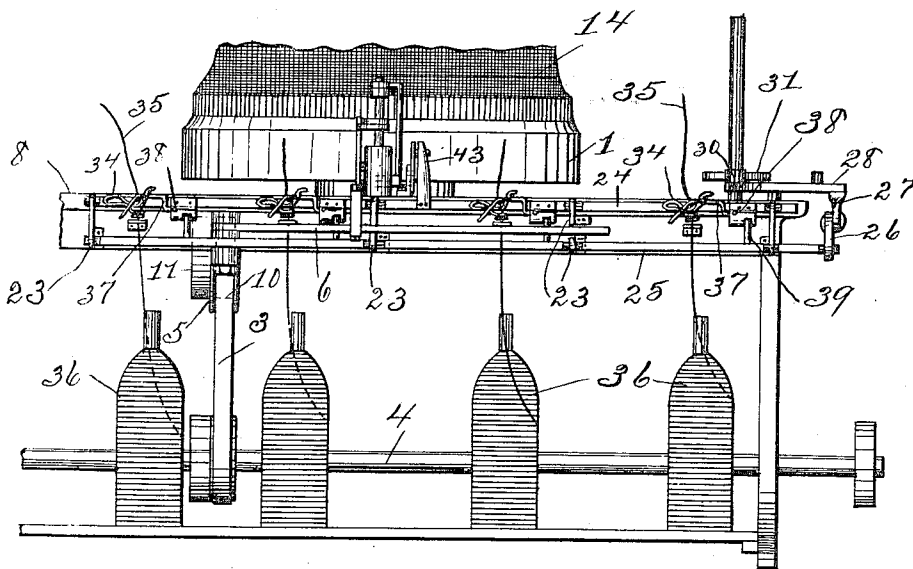
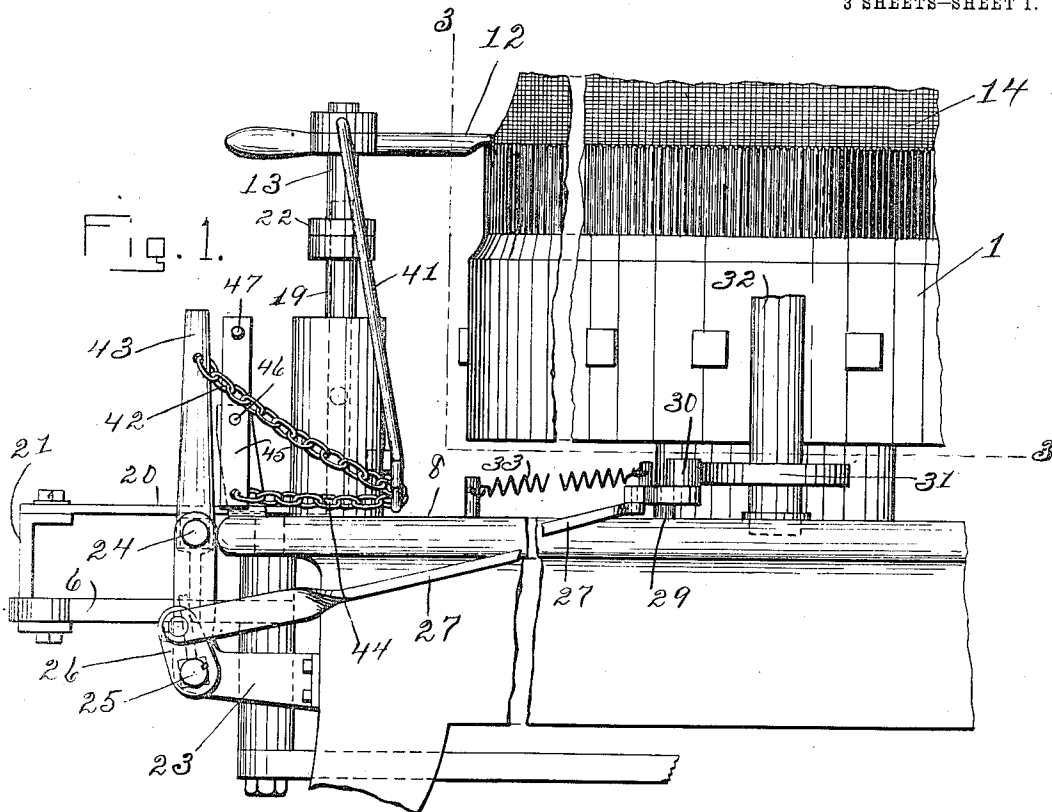


H. McCrudden.
STOP MOTION FOR CIRCULAR KNITTING MACHINES.
APPLICATION FILED JAN. 13, 1911.

1,031,860.

Patented July 9, 1912.

3 SHEETS—SHEET 1.



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Fig. 2.

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Fig. 3.

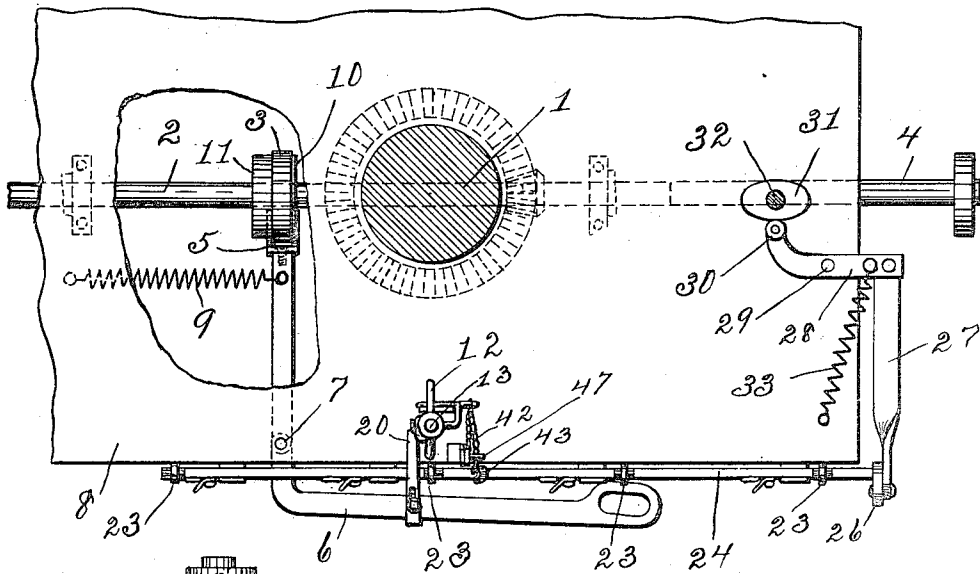


Fig. 4.

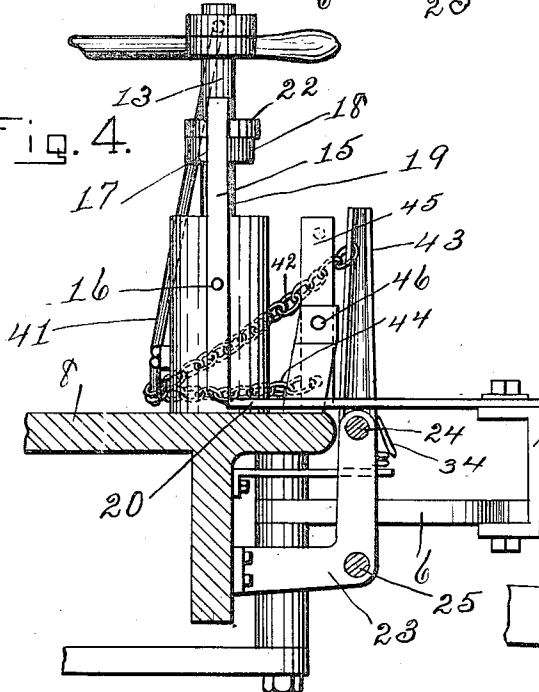
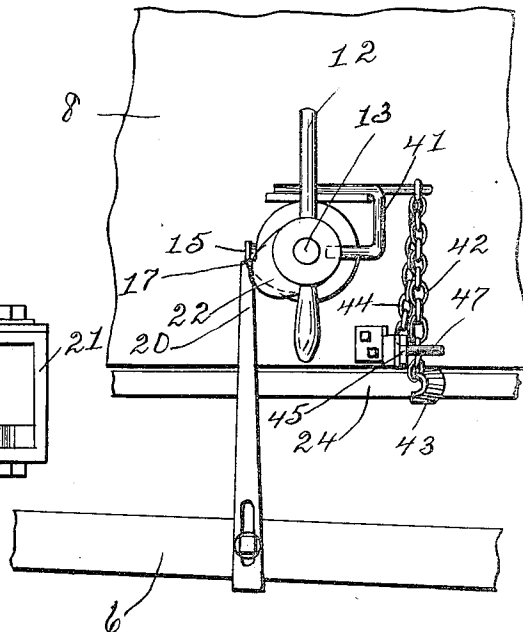


Fig. 5.



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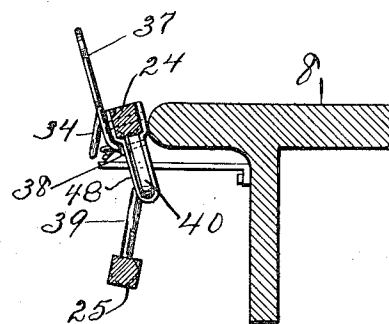
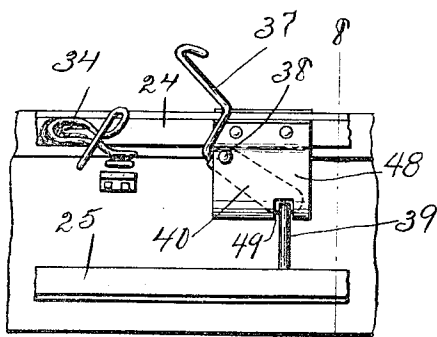
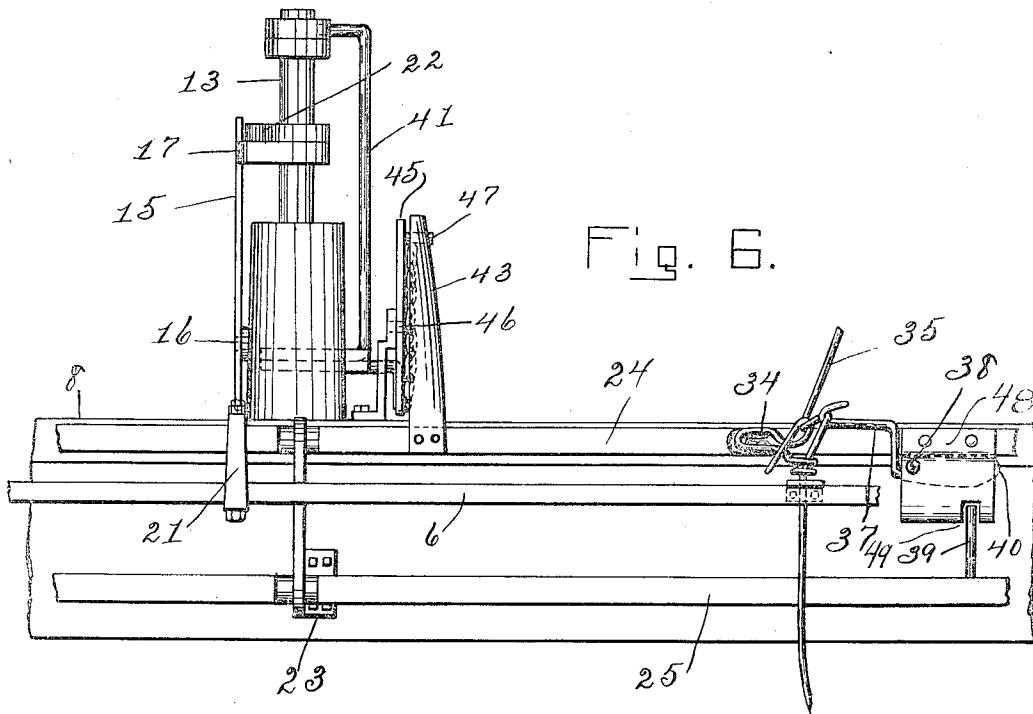
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3 SHEETS—SHEET 3.



WITNESSES:

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UNITED STATES PATENT OFFICE.

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STOP-MOTION FOR CIRCULAR-KNITTING MACHINES.

1,031,860.

Specification of Letters Patent.

Patented July 9, 1912.

Application filed January 13, 1911. Serial No. 602,431.

To all whom it may concern:

Be it known that I, HUGH McCRUDDEN, a citizen of the United States, residing at Cohoes, county of Albany, and State of New York, have invented certain new and useful Improvements in Stop-Motions for Circular-Knitting Machines, of which the following is a specification.

The invention relates to such improvements and consists of the novel construction and combination of parts hereinafter described and subsequently claimed.

Reference may be had to the accompanying drawings, and the reference characters marked thereon, which form a part of this specification. Similar characters refer to similar parts in the several figures therein.

Figure 1 of the drawings is a view in side elevation of a circular spring-needle knitting-machine showing my improved stop-motion applied thereto. Fig. 2 is a view in front elevation of the same on a smaller scale. Fig. 3 is a horizontal section taken on the broken line 3—3 in Fig. 1. Fig. 4 is a vertical cross-section of the table, showing in elevation various parts mounted thereon. Fig. 5 is a top plan view of the same on a smaller scale. Fig. 6 is a view in front elevation on an enlarged scale of part of the mechanism shown in Fig. 2, with the drop shown supported by the yarn. Fig. 7 is a similar view of part of the mechanism shown in Fig. 6, with the drop freed from the yarn. Fig. 8 is a vertical cross-section taken on the broken line 8—8 in Fig. 7.

The principal object of the invention is to insure the prompt stopping of a knitting or other machine upon the breaking of a feed-thread or yarn supplying said machine.

Other objects will appear in connection with the following description.

Referring to the drawings where in the invention is shown in preferred form, 1, is a cylinder of an ordinary circular spring-needle knitting-machine adapted to be rotated from the drive-shaft, 2, in the usual manner by suitable connections not shown in detail in the drawings. The belt, 3, whereby power is supplied to the shaft, 2, from the main shaft, 4, is controlled by a belt-shipper, 5, on one end of an angle-lever, 6, fulcrumed at, 7, upon the top or table, 8, of the machine, and adapted to be moved by the coil-spring, 9, when released, to shift the belt from the fixed pulley, 10, to the idle pulley, 11, to stop the operation of the machine.

The machine is provided with a stop-motion of a known type comprising in part a detector-finger, 12, fixed upon a vertical rock-shaft, 13, which is adapted to be rocked or partly rotated by the movement of the detector-finger, 12, induced by an aperture in the knitted web, 14, or any obstruction on the cylinder along the top line of the needles. A trigger-lever, 15, pivoted at, 16, upon a fixed support, has its upper end adapted to occupy a notch, 17, in the periphery of a head, 18, on the fixed post, 19, upon which post the rock-shaft, 13, is rotatively mounted. When the upper end of the trigger-lever, 15, is seated in the notch, 17, its lower end occupies a position in the path of an arm, 20, fixed upon the angle-lever, 6, by means of a bracket, 21, so as to form a practically rigid construction. When the trigger-lever, 15, is released from the notch, 17, it yields to the movement of the arm, 20, permitting the lever, 6, to yield to the force of the spring, 9, and shift the belt to the idle pulley 11. The rock-shaft, 13, has fixed thereon a cam, 22, which, by a rocking movement of said shaft, is caused to engage and force out of the notch, 17, the upper end of the trigger-lever 15. Whenever the detector-finger, 12, is moved by reason of an aperture in the fabric, or an obstruction on the cylinder, the shifting of the belt from the fixed to the idle pulley will thus be automatically accomplished.

It will be understood that the mechanism above described is one which is already known in the art, and the same forms no part of the present invention.

In carrying out my invention I mount in bearings in brackets, 23, along the front of the table of the machine, an upper rock-shaft, 24, and a lower rock-shaft, 25, each of which shafts is of cylindrical form only at the points where it occupies the bearings in the brackets 23. The lower shaft, 25, has fixed thereon a rocker-arm, 26, connected by a link, 27, with one arm of a lever, 28, fulcrumed at, 29, upon the table of the machine, and having on its other end a cam-follower, 30, adapted to be engaged by a rotary cam, 31, fixed upon a continuously rotating shaft, 32. A coil-spring, 33, tends to hold the cam-follower, 30, against the cam 31. As the shaft, 32, continuously rotates, a to-and-fro rocking motion will be imparted to the shaft 25.

The rock-shaft, 24, has fixed thereon a

plurality of yarn-guides, 34, through which the yarn, 35, passes from the bobbin, 36, to the cylinder of the machine. The shaft, 24, also has mounted thereon a like plurality of drops, 37, severally pivotally mounted thereon, at, 38, each having one end adapted to engage and be supported by the yarn, 35, under tension, whereby its other end is held out of the path of a finger, 39, fixed upon the lower rock-shaft 25. When the drop is released from the control of the yarn, as by the breaking or slackening of the yarn, the weighted end, 40, of the drop will fall into the path of said finger, 39, and be engaged thereby at the next rocking movement of the shaft, 25, and when a finger, 39, so engages one of the lowered drops, 37, a rocking movement will thereby be imparted to the upper rock-shaft, 24, as indicated in Fig. 8, and this without regard to the direction in which the finger, 39, is moving.

For certain purposes of the invention, the upper rock-shaft, 24, may be connected in any known manner with the controlling member of any known form of belt-shifting mechanism. In the preferred form of my invention shown in the drawings, I provide means whereby a rocking movement of the rock-shaft, 24, acts to release the trigger-lever, 15, of the old form of stop-motion with which machines of this character are ordinarily provided. For this purpose I fix upon the rock-shaft, 13, a rocker-arm, 41, the lower end of which is connected by a chain, 42, with an arm, 43, projecting upward from the rock-shaft, 24, whereby a rocking movement of the shaft, 24, in one direction will cause or induce a rocking movement of the rock-shaft, 13; and I also connect the lower end of said rocker-arm, 41, by a chain, 44, with the lower end of a lever, 45, pivoted at, 46, upon a fixed support, and having on its upper end a projection, 47, extending across the path traversed by the upper end of the arm, 43, when the rock-shaft, 24, is rocked in the opposite direction. A rocking movement of the shaft, 24, in either direction is thus transmitted through one or the other of the chains, 42 and 44, to the rocker-arm, 41, serving to rock the shaft, 13, and thus cause or induce the shifting of the belt in the manner above described. The rock-shaft,

24, is provided with a drop, 39, or drop, 37, for each feed of the machine, and the rock-shaft, 25, is provided with a like number of fingers 39. The weighted end of each drop plays in a U-shaped housing, 48, the bottom of which forms a stop for the drop, said housing being notched at, 49, in the path of the finger, 39, as shown more particularly in Figs. 6, 7 and 8.

What I claim as new and desire to secure by Letters Patent is—

1. In a machine of the class described, and in combination, a rock-shaft; belt-shifting mechanism; means whereby a rocking movement of said rock-shaft causes operation of said belt-shifting mechanism; a drop carried by said rock-shaft adapted to be normally supported in raised position by a feed-yarn; a continuously operating counter-shaft; a finger carried by said counter-shaft; and a housing for said drop notched in the path of said finger and adapted to support said drop in the path of said finger when released from the control of the feed-yarn.

2. In a machine of the class described, and in combination, belt-shifting mechanism; a vertical rock-shaft; means whereby a rocking movement of said vertical rock-shaft induces operation of said belt-shifting mechanism; a detector-finger carried by said vertical rock-shaft; a horizontal rock-shaft; a rocker-arm on said vertical rock-shaft; a rocker-arm on said horizontal rock-shaft; a direct connection between said rocker-arms; a lever having a projection extending into the path of the rocker-arm on the horizontal rock-shaft; a connection between said lever and the rocker-arm on the vertical rock-shaft; a drop carried by said horizontal rock-shaft adapted to be normally supported in raised position by a feed-yarn; a continuously operating counter-shaft; and a finger carried by said counter-shaft adapted to repeatedly traverse a path intersected by said drop when released from the control of the feed-yarn.

In testimony whereof, I have hereunto set my hand this 7th day of January, 1911.

HUGH McCRUDDEN.

Witnesses:

F. C. CURTIS,
J. E. DONSBACH.