

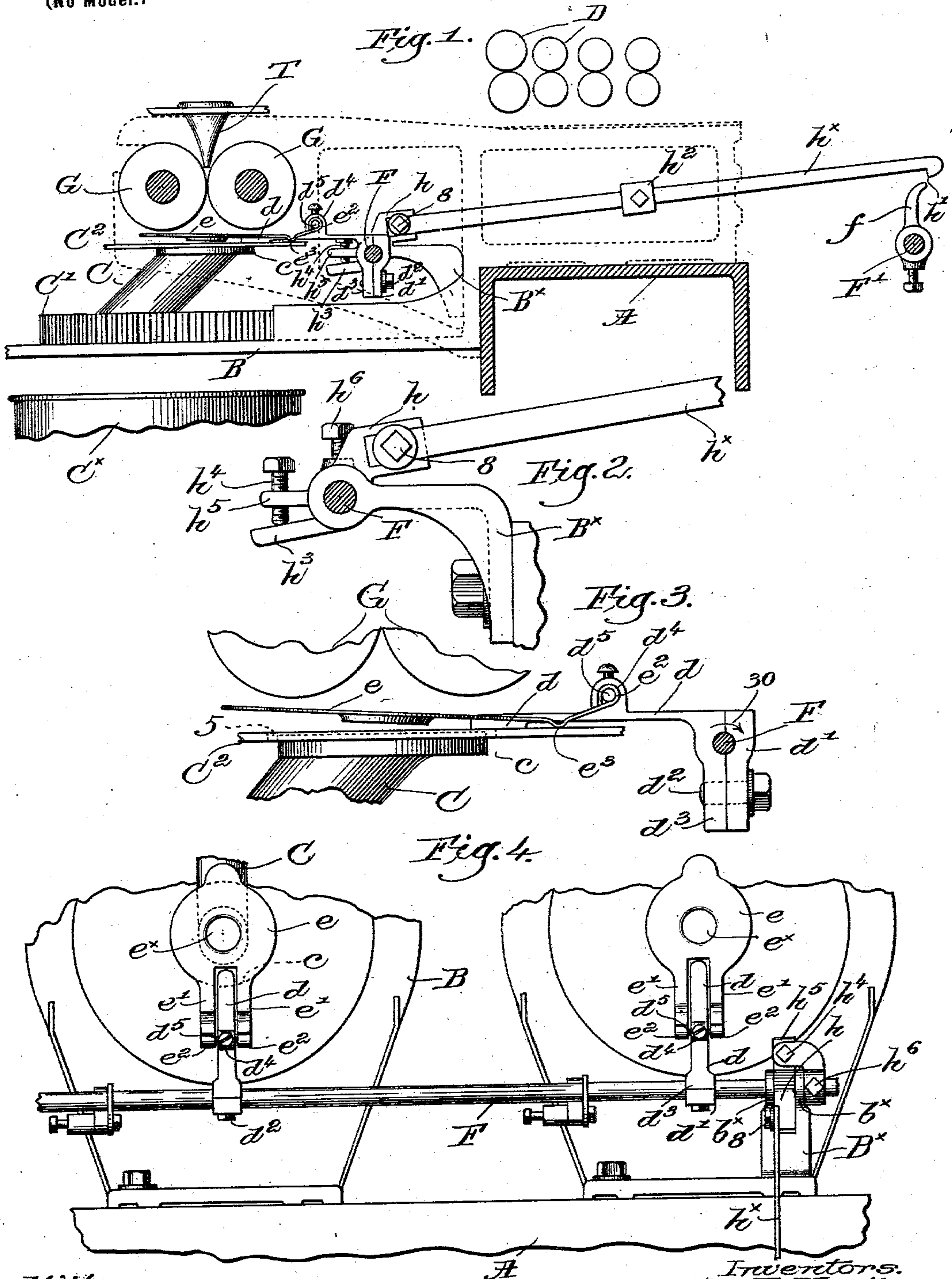
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Patented July 15, 1902.

J. T. MEATS & C. R. MCGOWAN.  
STOP MOTION FOR DRAWING MACHINES.

(Application filed Mar. 23, 1901.)

(No Model.)



Witnesses.  
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# UNITED STATES PATENT OFFICE.

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## STOP-MOTION FOR DRAWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 704,704, dated July 15, 1902.

Application filed March 23, 1901. Serial No. 52,515. (No model.)

*To all whom it may concern:*

Be it known that we, JOHN T. MEATS and CHARLES R. MCGOWAN, citizens of the United States, and residents of Taunton, county of Bristol, State of Massachusetts, have invented an Improvement in Stop-Motions for Drawing-Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters and numerals on the drawings representing like parts.

This invention relates to apparatus for drawing fibrous material; and it has for its object the production of novel controlling means for the stop-motion to effect the operation of the latter when the can becomes full enough to raise the coiler and also when by breakage or by lapping on the calender-rolls the sliver accumulates above the coiler. In either case the apparatus is stopped by the operation of the stop-motion, preventing waste of sliver and breakage of the apparatus.

Various novel features of our invention will be hereinafter described, and particularly pointed out in the following claims.

Figure 1 is a transverse section and part elevation of a drawing-frame and parts of a well-known form of stop-motion with one embodiment of our invention in coöperation therewith. Fig. 2 is an enlarged detail, in side elevation, of the device for setting the hooked arm of the controlling-lever on the front shaft of the stop-motion. Fig. 3 is an enlarged side elevation of a portion of the controlling means shown in Fig. 1 more clearly illustrating the parts thereof which are actuated when the coiler rises and when sliver accumulates, and Fig. 4 is a top or plan view of the controlling means shown in Fig. 3 and also showing the setting device in plan.

Referring to Fig. 1, a portion of a drawing-frame is shown. The roller-beam A, the coiler-plate B, bolted thereto, the coiler C, and the coiler-gear C', resting upon and revolvable on the coiler-plate, the drawing-rolls, (indicated at D,) the calender-rolls G, and the trumpet T are and may be all of usual or well-known construction, the sliver passing from the trumpet between the calender-rolls

and being laid in the coiler-can C<sup>x</sup> by the coiler in usual manner.

Of the drawing-frame stop-motion we have only shown the front and back rock-shafts F F', respectively, the latter being provided with an upturned finger f, constituting a vibrator, the rock-shaft F' being normally rocked so long as the frame is running properly. The coiler-cover C<sup>2</sup> is partly shown in Figs. 1 and 3, the flange c at the upper end of the coiler extending into the usual opening 5 in the cover, (see dotted lines, Fig. 3,) and to the front shaft F of the stop-motion we have secured a series of lever-arms d, which are clamped upon the shaft by means of a clamp-plate d' and a bolt d<sup>2</sup>, extended into a depending portion d<sup>3</sup> of each lever-arm, (see Fig. 3,) the outer end of each lever-arm—that is to say, the end extended toward the front of the frame—normally resting on the coiler-cover C<sup>2</sup>, with its extremity projecting above the top of the coiler and in the path of movement of the latter when moved upward, as will be the case when the can becomes full. Each lever-arm between its fulcrum and its outer end is herein shown as provided with an upturned lug d<sup>4</sup>, through which is extended a cross-pin d<sup>5</sup>, and an auxiliary lever is pivotally connected with the lever-arm by means of the pin.

Referring now to Fig. 4, the auxiliary lever is shown as a substantially circular plate e, having an opening e<sup>x</sup> therein for the passage of the sliver and provided with two parallel radial extensions e', which straddle the lever-arm d, the ends of the extension being bent over to form eyes e<sup>2</sup>, loosely surrounding the projecting ends of the pin d<sup>5</sup>. The outer end of the auxiliary lever, and, in fact, its main portion, extends beneath the calender-rolls and above the coiler, as clearly shown, and the extensions e' are downwardly bent between the body portion e of the lever and the eyes e<sup>2</sup>, as at e<sup>3</sup>, to form rounded fulcra, which rest upon the coiler-cover C<sup>2</sup>, the auxiliary lever being bent in the direction of its length, as shown best in Fig. 3, so that under normal conditions the outer end of the lever is maintained lifted.



When the can becomes so full as to raise the coiler C, the top flange *c* of the coiler is brought into contact with the under side of the coöperating lever-arm *d* and raises it, turning the rock-shaft F in the direction of the arrow 30, by means to be described, the operation of the stop-motion being effected thereby to stop the machine. On the other hand, the construction and location of the auxiliary lever *e* are such that any accumulation of sliver above it will exert a downward pressure upon the free end of such auxiliary lever and rock it on its fulcrum *e*<sup>3</sup>, elevating the inner end of the lever, and through the hinged connection with the lever-arm *d* the latter will be rocked, as has been before described, to turn the shaft F in the direction of the arrow 30 to stop the frame.

The accumulation of sliver between the calender-rolls and the auxiliary lever may be caused by breakage of the sliver or by its lapping upon the calender-rolls. In either case the effect will be to stop the machine, preventing waste of sliver and breakage of the apparatus.

It will be noted that normally the fulcrum of the auxiliary lever and the outer end of the lever-arm *d* rest upon the coiler-cover, and these two members, in connection with a hooked lever-arm, to be described, and also mounted on the rock-shaft F, constitute controlling means for the stop-motion, a downward pressure upon the controlling means, due to sliver breakage or lapping on the calender-rolls, effecting the operation of the stop-motion, while an upward pressure on the controlling means, due to a full can, also effects the operation of the stop-motion.

One of the supporting-brackets B<sup>x</sup> for the front rock-shaft F is bifurcated, as at *b*<sup>x</sup>, Fig. 4, to receive a casting *h*, having secured to it in suitable manner, as by a bolt 8, a lever *h*<sup>x</sup>, having at its end a downturned hook *h*<sup>1</sup>, adapted to at times move into the path of and arrest the movement of the vibrator *f*, said hooked lever-arm having adjustably mounted upon it a counterbalancing-weight *h*<sup>2</sup>, Fig. 1.

The casting *h* is provided with a toe *h*<sup>3</sup>, projecting below the rock-shaft and beyond it oppositely to the lever-arm *h*<sup>x</sup> to engage a stop *h*<sup>4</sup>, shown as a screw threaded into a finger *h*<sup>5</sup>, rigidly but adjustably attached to the rock-shaft F by a set-screw *h*<sup>6</sup>.

By turning the stop *h*<sup>4</sup> in one direction or the other the angle between the toe *h*<sup>3</sup> and finger *h*<sup>5</sup> can be changed to thereby set the lever-arm *h*<sup>x</sup> in such a position relative to the vibrator *f* that the slightest movement of said lever-arm will operate to bring its hook into engagement with and to arrest the vibrator, it being understood that such arrest of the vibrator effects the operation of the stop-motion in well-known manner.

The casting *h*, it is to be understood, is loosely mounted on the rock-shaft F, and the counterbalance *h*<sup>2</sup> is adjusted upon the lever-arm *h*<sup>x</sup> to almost counterbalance the weight

of the several lever-arms *d*, projecting from the rock-shaft F toward the front of the frame.

The lever-arm *h*<sup>x</sup> and any one of the lever-arms *d*, connected as they are with the rock-shaft F, may be termed a "full-can stop-motion," and the plate-like lever *e*, operated by accumulation of the sliver above it, may be termed an "auxiliary" lever.

By means of the construction herein shown and described, in connection with the adjustable setting device for the hooked lever-arm, a very fine and nice adjustment of the parts may be effected, so that the full-can stop-motion will operate upon an exceedingly slight rise of the coiler, and the auxiliary lever operates the main stop-roll promptly upon an accumulation of sliver.

Our invention is not restricted to the precise construction and arrangement shown and described, as the same may be modified without departing from the spirit and scope of our invention.

Having fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a drawing-frame, a stop-motion therefor, calender-rolls, the coiler, and controlling means for the stop-motion operative by downward pressure upon accumulation of sliver below the calender-rolls and upon said controlling means, and by upward pressure when the can is full.

2. The combination, with the vibrator of a drawing-frame stop-motion, the calender-rolls and the coiler, of a pivoted stop-lever adapted to be rocked by or through the coiler when the can is full, to arrest the motion of the said vibrator, and an auxiliary lever having its free end interposed between the said rolls and the coiler and operative by downward pressure due to accumulation of sliver upon its free end to rock said stop-lever and effect its coöperation with the vibrator.

3. The combination, with the vibrator of a drawing-frame stop-motion, the calender-rolls and the coiler, of means interposed between the said rolls and the coiler, and operative by downward pressure, due to accumulation of sliver directly above said means, and by upward pressure from the coiler when the can is full, to arrest the motion of the vibrator.

4. In a drawing-frame, a stop-motion therefor, the coiler, calender-rolls, a pivotally-mounted full-can stop-lever movable by elevation of the coiler to effect the operation of the stop-motion, and an auxiliary lever connected with the stop-lever between its fulcrum and the coiler, and having its free end extended below the calender-rolls, accumulation of sliver upon the free end of said auxiliary lever acting to depress it and thereby to rock the stop-lever into position to effect the operation of the stop-motion.

5. In a drawing-frame, a stop-motion therefor, the coiler, calender-rolls, a stop-lever having a fixed fulcrum and having its outer end projecting in the upward path of movement



of the coiler, and an auxiliary lever fulcrumed between its ends and pivotally connected at one end with the stop-lever near the fulcrum thereof, the outer end of the auxiliary lever 5 extending beneath the calender-rolls, between the latter and the coiler, whereby upward movement of the coiler, or depression of the outer end of the auxiliary lever, by accumulation of sliver thereupon will operate to elevate the outer end of the stop-lever and thereby effect its coöperation with the stop-motion. 10

6. In a drawing-frame, the coiler, a stop-motion for the frame, and controlling means 15 for the stop-motion, said means including two independently-fulcrumed levers pivotally connected between their fulcra, direct rocking of one of said levers, upon elevation of the coiler, or indirect rocking of such lever, due to rocking of the other lever by an accumulation of sliver above and upon the same, operating to effect the operation of the stop-motion. 20

7. In a drawing-frame, a stop-motion therefor, the coiler, and coiler-cover, a stop-lever adapted to be rocked to coöperate with said stop-motion, the outer end of the lever normally resting on the coiler-cover in the vertical path of the coiler, and an auxiliary lever 30 fulcrumed on said coiler-cover and at one end pivotally connected with the stop-lever, the other end of the auxiliary lever being depressed by accumulation of sliver, to rock the stop-lever.

8. In a drawing-frame, the combination 35 with the vibrator of a stop-motion, and a series of coilers, of a rock-shaft having a series of lever-arms each adapted to coöperate with and be lifted by upward movement of a coiler, a lever pivotally connected with each lever-arm and adapted when depressed at its free 40 end to raise the outer end thereof, and rock said shaft upon accumulation of sliver above the coiler and upon the free end of the lever, and a hooked lever-arm mounted on said 45 rock-shaft and brought into engagement with the vibrator to arrest the same when the rock-shaft is rocked.

9. The combination, with the front shaft and the vibrator of a drawing-frame stop-motion, and the coiler, of a hooked lever-arm 50 loosely fulcrumed on the shaft and having a forwardly-extended toe, a finger fast on the shaft, an adjustable stop carried by the finger and engaging the toe, to regulate the setting of said lever-arm, and means to rock the 55 shaft by upward pressure of the coiler, or by downward pressure due to sliver accumulation above the coiler, to effect coöperation of the lever-arm and the vibrator. 60

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

JOHN T. MEATS.

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Witnesses:

JOHN C. EDWARDS,

JOHN J. MCGAREGILL.