

No. 735,975.

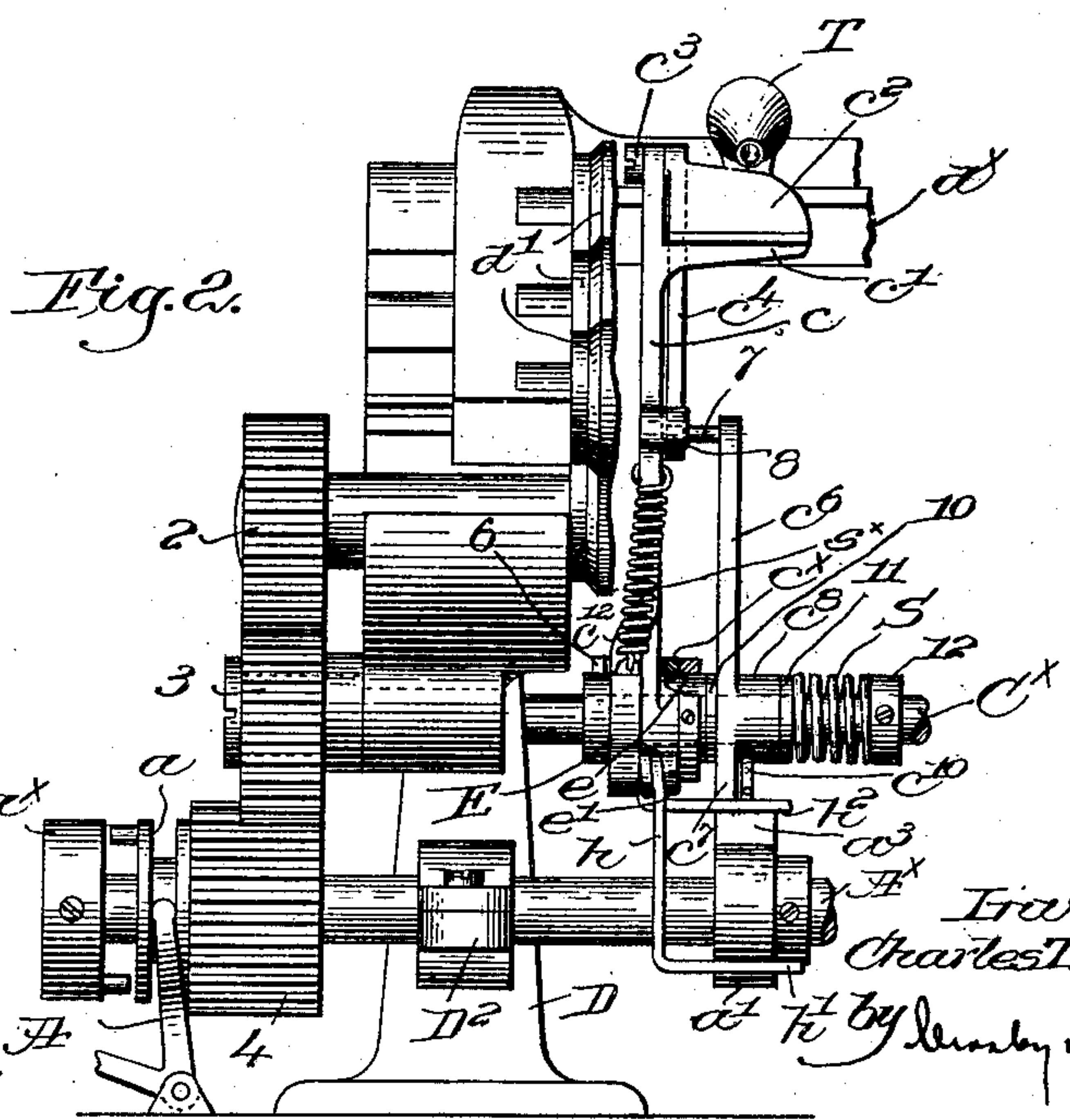
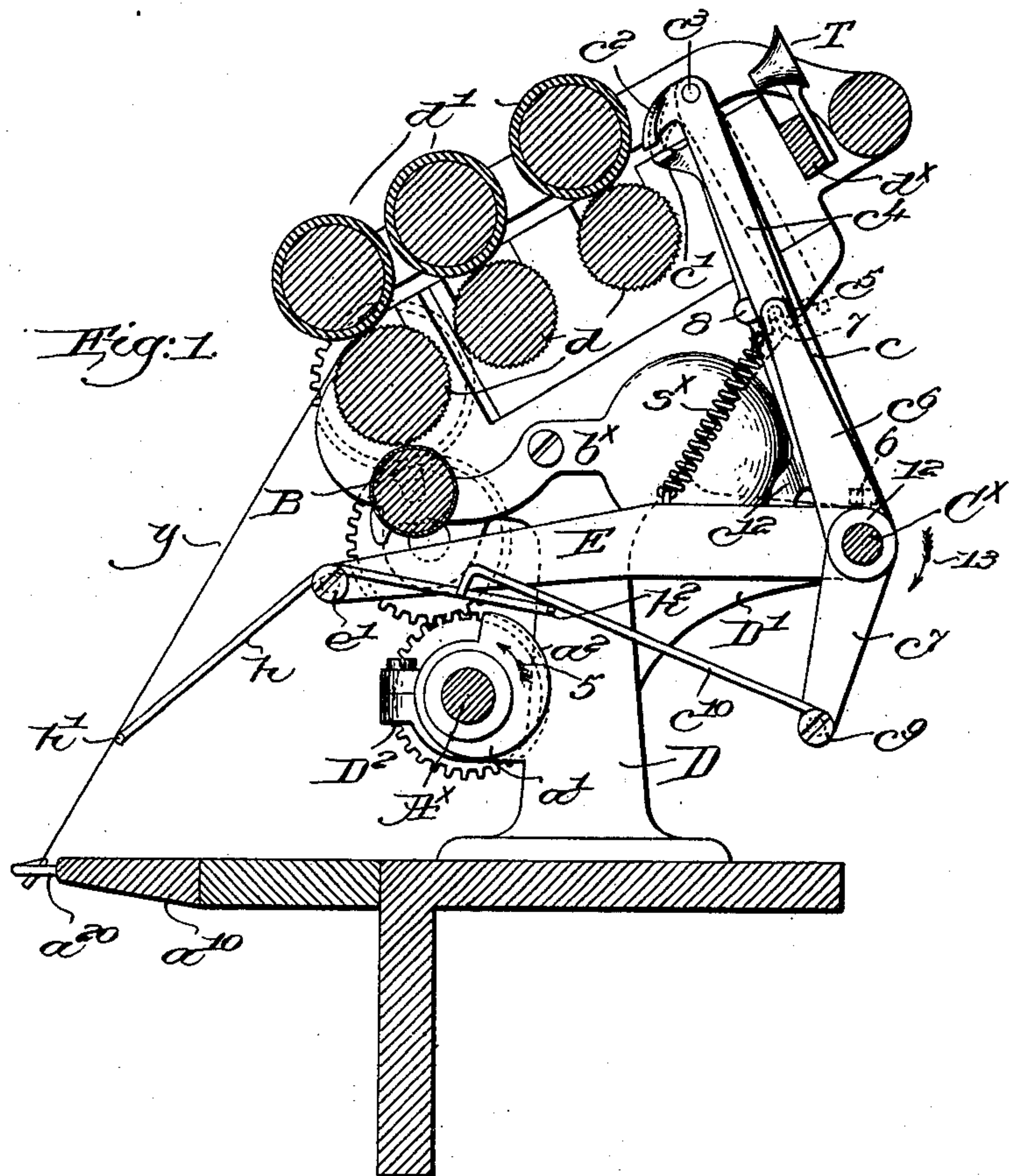
PATENTED AUG. 11, 1903.

C. T. HAWLEY.
ROVING CLAMP.

APPLICATION FILED APR. 11, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



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ROVING-CLAMP.

SPECIFICATION forming part of Letters Patent No. 735,975, dated August 11, 1903.

Application filed April 11, 1903. Serial No. 152,150. (No model.)

To all whom it may concern:

Be it known that I, CHARLES T. HAWLEY, a citizen of the United States, and a resident of Gardner, county of Worcester, State of Massachusetts, have invented an Improvement in Roving-Clamps, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

10 This invention relates to spinning and roving machines; and it has for its object the production of novel means for clamping the roving behind or at the receiving side of the drawing-rolls upon the occurrence of an abnormal condition of the yarn or roving, as
15 breakage or undue slackness thereof at the delivery side of the rolls. When the roving is thus clamped, the pull of the rolls thereupon acts to sever or break it between the
20 rolls and the clamp in a manner well known to those skilled in the art.

In my present invention the roving is first clamped positively and completely and the clamping device is then moved bodily away
25 from the bite of the rolls and so retained until the attendant is ready to piece up the broken end.

The various novel features of my invention will be described in the subjoined specification and particularly pointed out in the following claims.

Figure 1 is a partial side elevation and transverse section of the upper part of a spinning or roving frame with one embodiment of my invention applied thereto, the roving-clamp and parts cooperating therewith being illustrated in normal position. Fig. 2 is a part front elevation of the mechanism shown in Fig. 1, the drawing-rolls being broken off for the greater portion of their
35 length. Fig. 3 is a view similar to Fig. 1 of a modification of my invention, to be described; and Fig. 4 is a front elevation, partly broken out, of the modified form of apparatus.

45 In both of the embodiments of my invention herein shown the roll-stands D, drawing-rolls d , top rolls d' , the laterally-reciprocating traverse-bar d^x , provided with trumpets, one of which is shown at T, the guide-board a^{10} , having pigtails a^{20} , and the clearer-

roll B, mounted in rocking arms b^x , may be and are all of well-known construction and operate in the usual manner. The stands D are provided with rearwardly-extended brackets D' to sustain a supporting-rod C^x , which
55 extends longitudinally of the frame below and back of the drawing-rolls, (see Figs. 1 and 3,) and on the front of the stands are mounted bearings D^2 for a shaft A^x . A gear 2 on the front drawing-roll, Figs. 2 and 4, meshes with
60 an intermediate gear 3, the latter in turn meshing with a gear 4, loosely mounted on the shaft A^x and having attached to it one member a of a clutch. The other clutch member a^x is secured to the shaft, and by
65 means of a suitable shifter A the shaft can be operatively connected with the gearing 2 3 or disconnected therefrom for a purpose to be described. A series of actuators are secured to the shaft A^x equaling in number the
70 spindles, each actuator being shown as a cam a' , having a high part a^2 and a sharp drop or shoulder a^3 , and when the machine is in operation the shaft A^x and the actuators will be continuously rotating in the direction of
75 arrows 5.

In the embodiment of my invention shown in Figs. 1 and 2 each roving-clamp is mounted upon the rod C^x and operates upon the roving at the receiving side of the rolls. To
80 this end the hub c^x of a rocking upturned support c is mounted loosely on a sleeve-hub e , forming a part of an elongated arm E, extended forward below the clearer-roll and above the shaft A^x , said arm E being rigidly
85 secured to the rod C^x by a suitable set-screw 6, Fig. 2. The upper end of the support c is provided with a laterally-elongated fixed clamping-jaw c' , over which the roving travels under normal conditions, the length of
90 the jaw permitting the usual traverse. A cooperating jaw c^2 , also elongated laterally, is pivotally mounted at c^3 on the support c , said jaw having a rigidly-connected depending branch c^4 , preferably notched at c^5 at its lower
95 end. (See dotted lines, Fig. 1.) A bell-crank $c^6 c^7$ has its hub c^8 loosely mounted on the rod C^x , the upturned arm c^6 having a stud 7 to enter the notch c^5 , while the lower arm c^7 has pivotally connected with it at c^9 a hooked
100

and forwardly-extended rod c^{10} , and, as shown best in Fig. 1, the parts c^6 and c^4 form a toggle device. A spring s^x is attached at one end to the arm E, and at its other end it is secured to the rocking support c , the stress of the spring holding the rocking support or jaw-carrier c in the position shown in Fig. 1, with a stop-lug c^{12} thereon in engagement with the arm E. Normally the toggle device $c^6 c^4$ occupies the position shown in full lines, Fig. 1, the branch c^4 resting against a stop 8 on the rocking support c , and is retained in such position by means to be described.

Referring to Fig. 2, a friction-washer 10 is interposed between the sleeve e and the adjacent face of the bell-crank hub c^8 , and between a second friction-washer 11 at the outer face of the latter and a collar 12 on the support C^x , I interpose a spring S. This spring bears with sufficient force against the hub to hold the bell-crank by friction assisted by the friction action of the washers 10 and 11 in any angular position it may be placed, the frictional force being greater than the strength of spring s^x , and normally the bell-crank is thus held in the position shown in Fig. 1. Manifestly when the toggle device $c^4 c^6$ is in such position the jaws c' and c^2 will be held open; but if the bell-crank be rocked in the direction of arrow 13 the branch c^4 will swing to the right and move the jaw c^2 toward the relatively fixed jaw c' . If now such rocking of the bell-crank be continued after the jaws are closed, the jaws will be moved bodily rearwardly or away from the bite of the drawing-rolls, as after closure of the jaws the rocking of the bell-crank will swing the support c to the right, Fig. 1, stretching the spring s^x . Such retracted position of the jaws will be maintained by the friction or detaining spring S described. At its front end the arm E has a lateral stud e' , forming a fulcrum for a detector or drop-wire h , transversely bent at its front end at h' to rest against the yarn or thread y between the rolls and the pigtail. The rear end of the drop-wire is bent at h^2 beneath the hooked rod c^{10} and normally holds the latter lifted and above the path of the actuator a' . If the thread or yarn breaks, the drop-wire is released and the hooked rod c^{10} is permitted to drop and be engaged by the shoulder a^3 of the actuator, the rotation of the latter drawing the rod c^{10} forward and rocking the bell-crank $c^6 c^7$. As has been described, such operation of the latter first clamps the roving between the jaws $c' c^2$ and the pull of the rolls breaks the roving. Then the retraction of the jaws takes place, the clamped end of roving being drawn back from the bite of the rolls, and at this time the high part a^2 of the actuator engages the rod c^{10} and lifts its hooked end, so that the shoulder a^3 can move on. This lifting of the rod is repeated at each revolution of the actuator, the detaining-spring S holding the jaws retracted, and they will be so held until the operator is ready to piece up. At such time the operator moves

the support c forward to the position shown in Fig. 1 by swinging the bell-crank $c^6 c^7$, thereby presenting the end of roving to the bite of the rolls and unclamping it to permit it to be drawn forward by the drawing-rolls, the spring s^x maintaining the pressure on the roving until the jaws are moved forward.

Referring now to the structure shown in Figs. 3 and 4, an arm G is mounted on the rod C^x and secured rigidly to it by a set-screw 15, the arm extending forward beneath the clearer-roll and having at its end a lateral stud g^x , on which is fulcrumed the drop-wire g . The latter is bent laterally at its outer end at g' to bear against the yarn or thread y , and the rear end of the drop-wire is bent transversely at g^2 . A bell-crank $k k'$ is fulcrumed at g^5 on the arm G, the depending arm k' having pivotally connected with it a hooked rod k^2 , extended forward above the path of the actuator a' and normally resting upon the bent end g^2 of the drop-wire and held thereby in the position shown in Fig. 3. The upturned arm k of the bell-crank is pivotally connected at k^3 with one end of a link k^4 , the other end of the said link being jointed to the lower end of a depending branch m^3 , secured to or forming a part of a clamping-jaw m^2 . This clamping-jaw is fulcrumed at m^x on the upper end of a rocking support m , mounted on the rod C^x , said rocking support having a relatively fixed jaw m' , forming a part of it.

Referring to Fig. 4, the jaws m' and m^2 are shown as laterally elongated to permit the usual traverse of the roving under normal conditions, the roving passing from the trumpet T to the drawing-rolls. A spring s^5 is attached at one end to the fulcrum-stud g^5 of the bell-crank and at its other end to the lower extremity of the branch m^3 , the spring normally tending to keep the jaws separated and to maintain the toggle device $k k^4$ broken or in the position shown best in Fig. 3. At such time the spring holds the branch m^3 against the back edge 16 of the fixed jaw m' . A collar 17^x , adjustably secured to the rod C^x , has secured to it one end of a spring S^x , the other end of the spring being attached to the rocking support m , the winding of the spring being such as to normally move the said support forward into the position shown in Fig. 3, a stop-lug 17 on the support at such time resting upon the top of the fixed arm G. The bell-crank arm k has an ear 20, and there is a cooperating ear on the link 22.

Under normal conditions the parts are in the positions shown in Figs. 3 and 4; but if the yarn or thread breaks or becomes unduly slack the drop-wire will permit the hooked rod k^2 to descend and be engaged by the actuator a' . The rotative movement of the latter will bring the shoulder a^3 into engagement with the hook, and thereby draw the rod k^2 forward, swinging the bell-crank on its fulcrum g^5 and straightening the toggle members $k k^4$, the ears 20 and 22 co-

operating to prevent movement of the toggle beyond dead-center. As the toggle is straightened stretching the spring s^5 , the branch m^3 is first swung on the fulcrum m^x , closing the jaws $m^2 m'$ upon the roving and clamping it back of the rolls. As the bell-crank continues its swinging movement to straighten the toggle the rocking support m and the branch m^3 will then move in unison and the support will be rocked into dotted-line position, Fig. 3, against the stress of the spring S^x . Of course when the toggle is on center the parts will be locked in dotted-line position, and at such time the high part a^2 of the actuator a' engages the hooked rod h^2 , lifts it, and disengages its hook from the shoulder k^3 . The swinging of the support m into dotted-line position, Fig. 3, draws the clamped end of roving away from the bite of the roll, and so retains it until the operator breaks the toggle by manually swinging the bell-crank far enough to throw the members $k k^4$ thereof off center, the spring s^5 and the spring S^x completing the movement to return the roving-clamp to normal position, the clamped end of roving being thereby presented to the bite of the rolls and unclamped.

In piecing up in either form of my invention the operator usually holds down the drop-wire with a finger of one hand until he has pieced up and slack has been taken up, after which the yarn holds the drop-wire in position to keep the hook k^2 out of the path of the actuator.

A roving-breaker is usually put out of operation when stopping to doff and generally whenever the frame is stopped to prevent the slack or loose yarns causing all of the rovings to be broken when again starting up. Herein I throw all of the roving breakers or clamps out of operation before starting up by operating the shifter A to unclutch the shaft A^x . The strain upon the yarn or thread between the drawing-rolls and the pigtail is only sufficient to keep the drop-wire in position to retain the light hooked rod lifted in inoperative condition, and in both of the embodiments of my invention herein shown the clamping of the roving and the retraction of the clamped end from the bite of the roll are effected positively and promptly.

Various changes may be made in the construction and arrangement herein shown and described without departing from the spirit and scope of my invention.

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

60 1. Drawing-rolls, a roving-clamp, including a movable support, and jaws mounted thereon, normally open and located close to the bite of the drawing-rolls at the receiving side thereof, and means to close positively said jaws upon and thereby clamp the roving, and thereafter to move said support and re-

tract the closed jaws bodily away from the rolls, the pull of the rolls breaking the roving as soon as it is clamped.

2. Drawing-rolls, a roving-clamp, including a movable support, relatively movable and laterally-elongated jaws mounted on said support and located adjacent the receiving side of the rolls, and means operative upon the occurrence of an abnormal condition of the roving to close the jaws upon and positively clamp the roving, and thereafter to move the support away from the rolls, the jaws remaining closed, manual return of the support toward the rolls operating automatically to open the jaws, the pull of the rolls breaking the roving as soon as it is clamped.

3. Drawing-rolls, a laterally-reciprocating trumpet behind them, a roving-clamp, including normally open and laterally-elongated jaws interposed between the rolls and trumpet, the length of the jaws permitting free traverse of the roving between them, and means operative upon breakage of the roving at the front of the rolls to cause the jaws to clamp the roving, and thereafter to move the clamped roving away from the rolls.

4. Drawing-rolls, a roving-clamp located behind them and including normally open and relatively movable jaws between which the roving passes, and a rocking support upon which the jaws are mounted, and means to close the jaws and clamp the roving and thereafter to rock the support and move the closed jaws away from the rolls.

5. Drawing-rolls, a roving-clamp located behind them and including a rocking support having a rigidly-attached jaw, a cooperating jaw movably mounted on the support, and a spring-controlled device to separate the jaws to permit the passage of roving therebetween, and means to close automatically the jaws and clamp the roving and thereafter to rock the support and move bodily the closed jaws away from the bite of the rolls.

6. Drawing-rolls, a roving-clamp located behind them and including normally open and relatively movable jaws between which the roving passes, and a rocking support upon which the jaws are mounted, and means to close the jaws and clamp the roving and thereafter to rock the support and move the closed jaws away from the rolls, combined with a device to retain the support in such position until manually moved therefrom.

7. Drawing-rolls, elongated, relatively movable clamping-jaws located adjacent the receiving side of the rolls, the roving passing normally between the open jaws, an angularly-movable support on which the jaws are mounted, and means operative automatically upon breakage of the roving at the front of the rolls to close the jaws upon the roving and thereafter to move the support to retract the jaws from the rolls.

8. Drawing-rolls, a roving-clamp located behind them and including a rocking support

having a rigidly-attached jaw, a cooperating
jaw movably mounted on the support, and a
spring-controlled toggle device to govern the
relative movement of the jaws, and means to
5 act through said toggle device and close the
jaws and thereafter to rock the support, and
move the closed jaws away from the rolls.

In testimony whereof I have signed my
name to this specification in the presence of
two subscribing witnesses.

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