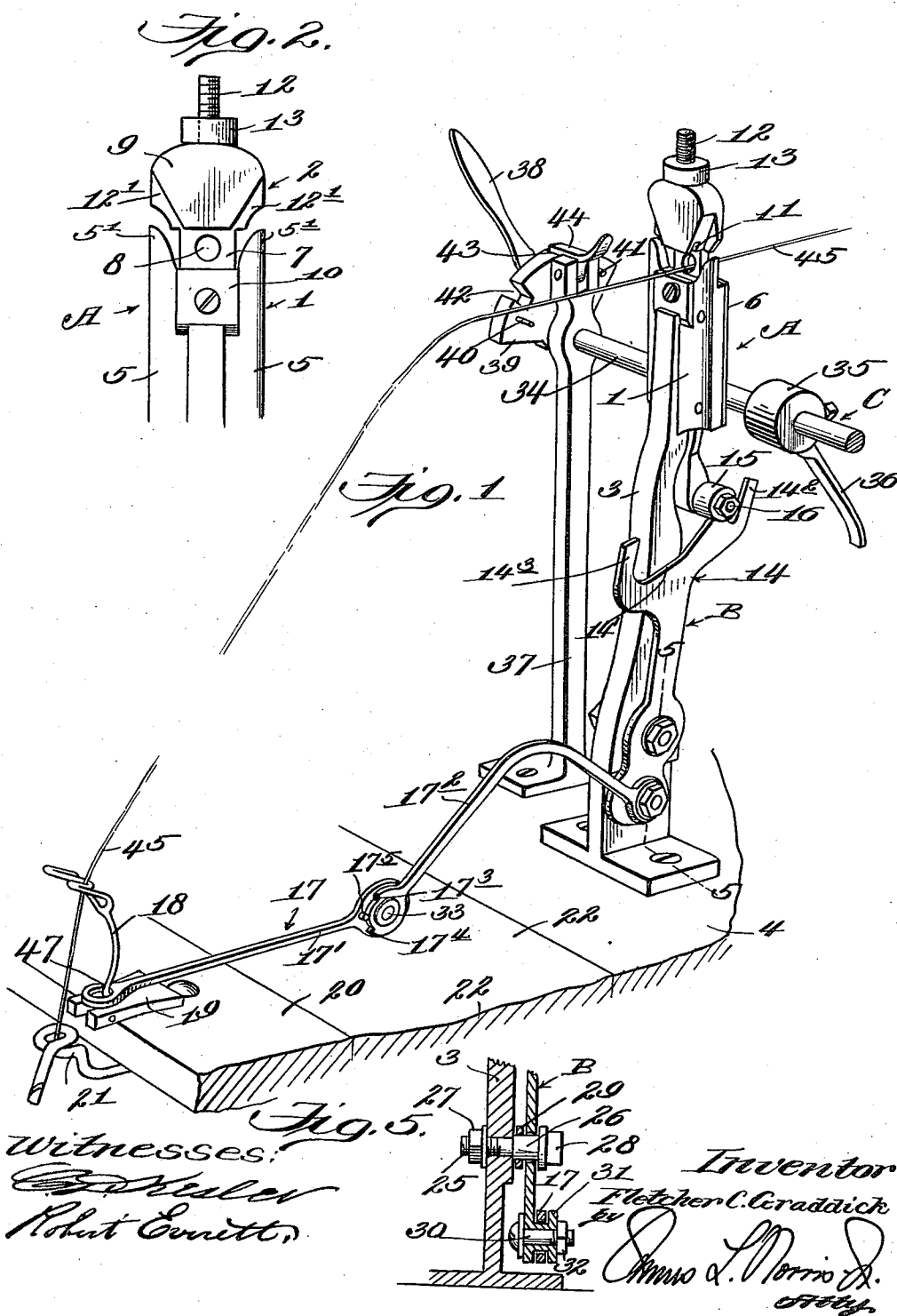


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 ROVING CLAMP.
 APPLICATION FILED APR. 15, 1911.

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2 SHEETS-SHEET 1.

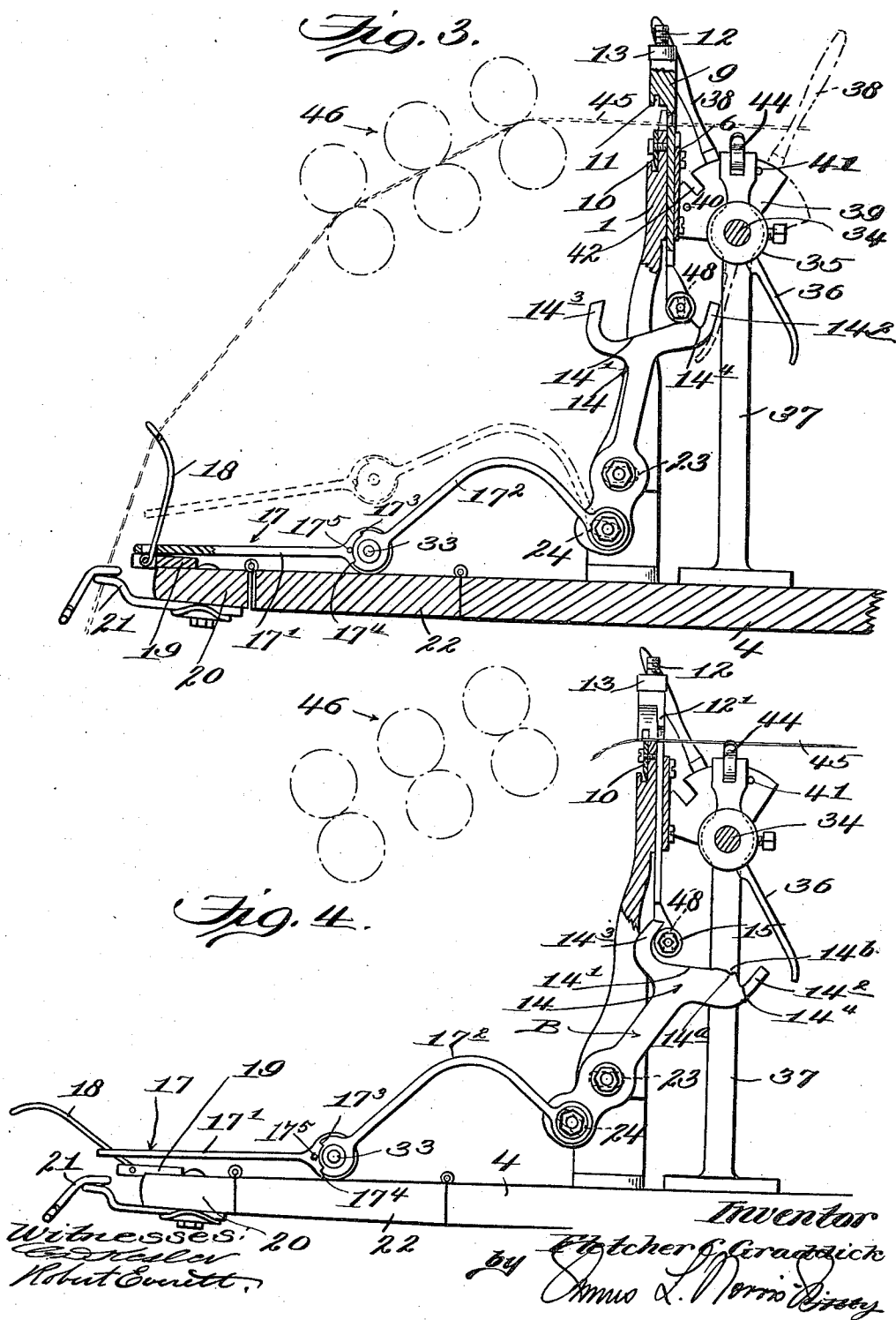


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UNITED STATES PATENT OFFICE.

FLETCHER C. GRADDICK, OF ALBEMARLE, NORTH CAROLINA.

ROVING-CLAMP.

1.023,638.

Specification of Letters Patent.

Patented Apr. 16, 1912.

Application filed April 15, 1911. Serial No. 621,318.

To all whom it may concern:

Be it known that I, FLETCHER C. GRADDICK, a citizen of the United States, residing at Albemarle, in the county of Stanly and State of North Carolina, have invented new and useful Improvements in Roving-Clamps, of which the following is a specification.

This invention has reference to improvements in or relating to spinning or twisting frames wherein provision is made for effecting a second breakage, at the receiving side of the drawing rolls, of a roving or thread which has previously broken at the delivery side of said rolls.

It comprehends, primarily, a device for automatically clamping the roving and terminating the feed thereof by the rolls when the first breakage occurs, said device presenting certain improvements in the construction and arrangement both of its component members and of the trigger with which the movable member is directly associated, whereby these parts may be adjusted to render them more or less sensitive in operation and to regulate their action with relation to each other and to the roving.

It further resides in the employment of a special device for shifting the trigger in one direction to raise the movable clamping member into operative position and to engage the same with said member at the proper point, and, in connection with said device, the provision of retaining means for locking the aforesaid member in the position specified.

Finally, it covers improvements in the construction of the connecting rod between the feeder and the trigger, which rod serves to actuate the latter element when the first breakage takes place.

A structural embodiment of the invention is illustrated in the accompanying drawings, whereof—

Figure 1 is a perspective view; Fig. 2 is a fragmental elevation of the clamp proper; Figs. 3 and 4 are side elevations, partly in section, showing the two positions which the main operating elements assume; and Fig. 5 is a vertical section on the line 5—5 of Fig. 1.

In said drawings, A indicates generally the clamp proper comprising the fixed and movable members 1 and 2, B the trigger with which the latter member is operatively associated, and C the trigger shifting and

locking device, these three elements presenting the most important features of the invention.

The fixed member 1 of the clamp proper is preferably constituted by an enlargement of the upper end of a standard 3 which is mounted upon the frame beam 4. This member is provided with a pair of spaced vertical guides 5 to whose front faces is secured a cover plate 6, between which guides is slidably fitted the flat stem portion 7 of the movable clamping member 2, said stem having sufficient length to project an appreciable distance below the lower end of the fixed member, as shown. Toward its upper end, said stem is formed with a guide eye 8 for the thread or roving, above which point the stem is enlarged to produce the head 9, the lower end face of said head and the adjacent portion of the upper end face of the fixed member constituting the two cooperating clamping surfaces. To increase the area of the clamping surface of the fixed member 1 that member may be, and preferably is, provided with a plate 10 whose top edge lies in the plane of said surface; this plate may, however, be reversed so as to bring its normally lower beveled edge uppermost when a thick twist is being run through the machine, said edge, in such instance, being designed to project into a groove 11 formed in a lower end face of the head.

In order to increase the weight of the movable member, its head is provided with a threaded projection 12 upon which a weight or weights 13 may be fixed, according to the particular roving or thread being treated. The said movable member is normally held in raised or operative position by means of the trigger B. This element, in its preferred form, comprises a rocking lever pivoted at or adjacent its central point to the standard 3 and provided at its upper end with a U-shaped head 14, which latter has a direct connection with said member through the medium of a roller 15 mounted on a lateral pin 16 secured to the enlarged lower end of stem 7. Roller 15 is designed to travel along the base portion 14' of said head when the trigger is actuated, and between the two arms 14² and 14³ which it connects, the said base being formed with an upstanding lug or projection 14^a whose apex is notched, as indicated by the character 14^b and whose side edges are inclined.

This lug is located nearer the arm 14² than the arm 14³, and, in consequence, one of its said inclined side edges is correspondingly shorter than the other. The arrangement of the trigger with relation to the movable clamping member is such that when the former is set, or occupies its operative position, as hereinafter described, the notch 14^b in the aforesaid lug 14^a will engage the roller 15.

At its lower end, the trigger is connected by the actuating rod 17 to the feeler 18, the latter being pivotally mounted upon a plate 19 attached to the usual rail 20 to which the guide or pig-tail 21 is secured, said rail being hinged, as is customary, to the board 22 that is hinged, in turn, to frame 4. To provide for an adjustment of the trigger both to the standard and to the actuating rod, the standard is formed with an arcuate slot 23 and the lower end of the trigger with a similar slot 24. Through the former of these slots and a registering perforation in the trigger is passed the threaded pivot bolt 25, which bolt carries a flanged sleeve 26 that acts as the fulcrum for the trigger and likewise passes through said perforation, said bolt being retained in adjusted position in its slot by a nut 27 and said sleeve in place thereon by a nut 28 and washer 29. The pivot bolt 30 which connects the trigger and actuating rod together passes through slot 24 in the former and a registering perforation in the latter and carries a flanged sleeve 31 that also passes through said slot and is held in place by a nut 32, the said rod being directly connected to the sleeve, as shown in Fig. 5.

The actuating rod itself preferably consists of two sections 17¹ and 17² whose mutually-adjacent inner ends are pivotally connected together by a bolt 33, both ends of each section being enlarged to form eyes. This arrangement enables the rail 20 to be swung upward and backward upon its hinges during the doffing operation, as will be understood, the front section 17¹ of the rod swinging in a similar manner at such time. In the construction shown, provision is also made for limiting the movement of the said section 17¹ relative to the other section 17², this being effected by forming the inner eye of the latter section with a pair of shoulders 17³ and 17⁴ which are interchangeably engaged by the lateral pin 17⁵ provided upon the corresponding eye of the first-named section, said pin engaging the lower shoulder 17⁴ when the rail 20 is moved in the manner above described, and engaging the upper shoulder 17³ when said rod is raised into the position shown in dotted lines in Fig. 3, to permit the frame, beam and rail to be cleaned.

To rock or set the trigger, and also lock the same against operation, the device or

mechanism C is provided. This device may advantageously comprise a horizontally-disposed shaft 34 provided with an adjustable collar 35 upon which is formed an arm 36, said collar being positioned directly opposite and adjacent to the arm 14² of the trigger head. In actual practice, a bank or series of spinning or twisting machines is employed, each machine having its individual clamp associated therewith; in consequence, the shaft 34 will extend along the entire row of machines and will be suitably supported at the proper points, only one of such supports, namely, the standard 37, being, however, illustrated. The end of said shaft adjacent this standard is provided with an operating member, here shown as in the form of a handle 38 rigidly secured to a sector 39; when said handle is turned in one direction, it will have the obvious effect of rocking the shaft in its bearings, thereby causing arm 36 to engage the aforesaid trigger arm 14² and swing said trigger upon its pivot in a counter-clockwise direction until the roller 15 seats on the notched apex of the lug 14^a, during which movement the movable clamping member is gradually raised into its operative position. It is intended that the operating shaft shall have a movement sufficient merely to bring its arms 36 from one of the two positions shown in Fig. 3 to the other; accordingly, the sector 39 is provided with a pair of stops 40 and 41 designed to contact with the upper end of standard 37. Adjacent these stops, the sector is formed with a pair of notches 42 and 43 in which a catch 44 pivoted to the top of the standard is adapted to seat itself, thus enabling the shaft to be locked at the limit of its rotary movement in either direction.

To insure an accurate movement of the movable clamping member with relation to the fixed member, and to hold the former member firmly in place when occupying its lowered or inoperative position, its head 12 is tapered at its sides, as shown in Fig. 2, and its side faces are formed with lateral wings 12¹. The inner faces of these wings are designed to abut against the adjacent faces of a pair of upstanding guards 5¹ constituted by integral extensions of the guides 5 on the fixed clamping member, the inner side edges of said guards being curved or inclined to admit of their coaction with the tapered side faces of said head.

The operation is substantially as follows: The movable clamping member is raised as above described until its roller 15 engages the notched lug 14^a on the trigger head, after which the roving or thread 45 is led from its source of supply through the eye 8, passed between the usual drawing rolls 46, (here shown merely diagrammatically), and, after being led successively through the loop

or eye portions of the feeler and pig-tail, is engaged with the bobbin in the usual manner, the tension of the said roving or thread serving to maintain the feeler in the position shown in Figs. 1 and 3 and the trigger set. When a break occurs between the spinning point and the delivery side of the rolls, the tension upon the feeler will be released, whereupon the feeler will fall into the position shown in Fig. 4, during which movement it will occasion an endwise forward movement of the actuating rod and, consequently, the tripping of the trigger. The last-mentioned element by reason of its particular mounting, then swings in a clockwise direction, and thus permits the movable clamping member to drop, the roller 15 riding along the edge of the base 14¹ until it engages the lefthand arm 14³. As the said member drops, the roving or thread will be firmly clamped between its head and the adjacent edges of the fixed member and its plate 10 and the tension exerted thereupon by the rolls will effect the desired second breakage; on the other hand, if thick twist is being run through the machine, and the plate 10 is reversed to bring its knife edge into play, the twist will be cut instead of snapped, as will be understood. As further regards the trigger, it may be stated that the location of the lug 14^a in close proximity to the arm 14² has the effect of producing a locking seat 14⁴ for roller 15 between the points specified, since the engagement of said roller against the abrupt adjacent side edge of said lug and also against said arm serves to counteract the tendency of the trigger toward clockwise rocking movement, the introduction of the roller into this seat being obtained by merely rocking the trigger manually in a counterclockwise direction from its position shown in Fig. 3. When the roller is so engaged, the movable jaw will be maintained in operative position, owing to the fact that the seat in question is but little lower than that formed by the notch 14^b in the lug.

When the rock shaft arm 36 occupies its inoperative position shown in full lines in Fig. 3, the trigger may either be actuated in the manner above described, or may be shifted to bring the roller 15 into engagement with seat 14⁴, but when said arm is in its dotted line position, it prevents actuation of the trigger, and the latter can only be shifted slightly to the left, to effect the engagement of said roller in the locking seat. The same results are present for all the machines in the bank or row; that is to say, any or all of the corresponding clamps may be operated when the shaft arms are in the position just described, and all of the clamps are locked against operation when said arms are in the second position. If desired, the eye at the front end of the for-

ward section 17' may be split, as indicated by the numeral 47, to permit its complete disengagement from the feeler 18, and the lower end of the stem 7 of the movable jaw may be slotted vertically as at 48, to provide an adjustment of the roller 15 with reference to the trigger head.

I claim as my invention:

1. The combination, with a roving clamp comprising fixed and movable members and a support therefor; of a rocking trigger provided with a U-shaped head, along the base portion of which the lower end of the movable clamping member is arranged to travel when said trigger is actuated, said base being formed with a notched lug adapted to normally engage the movable clamping member, for supporting the same in elevated position; and means for actuating said trigger.

2. The combination, with a roving clamp comprising fixed and movable members and a support therefor; of a rocking trigger provided with a U-shaped head, along the base portion of which the lower end of the movable clamping member is arranged to travel when said trigger is actuated, said base being formed with a lug having a notched apex adapted to normally engage the movable clamping member for holding the same in elevated position, and inclined side edges of unequal lengths; and means for actuating said trigger.

3. In a roving clamp, the combination of a standard; a fixed clamping member connected thereto and provided with a pair of spaced guides having upstanding guards at their upper ends; and a clamping member comprising a stem slidable vertically between said guides and provided with a guide eye for the roving, and a tapered head located upon the upper end of said stem, said head having its opposite side faces arranged to engage the adjacent side edges of said guards and formed with wings arranged to engage the adjacent faces of said guards.

4. The combination, with a roving clamp, a frame on which the same is mounted, and a trigger operatively associated with said clamp; of an element hinged to said frame for swinging movement in a vertical plane; a feeler pivotally connected to said element; and an actuating member loosely connected at one end with said feeler and at the other end with said trigger and extending above and across said frame and said element, said member consisting of a pair of sections pivoted together at their mutually-adjacent ends, whereby said member may be raised bodily when said element is to be cleaned, and the front section may be raised independently of the rear section during doffing.

5. The combination, with a roving clamp, 130

a frame on which the same is mounted, and a trigger operatively associated with said clamp; of an element hinged to said frame for swinging movement in a vertical plane; 5 a feeler pivotally connected to said element; and an actuating member loosely connected at one end with said feeler and at the other end with said trigger and extending above and across said frame and said element, said 10 member consisting of a pair of alining sections pivoted together at their inner ends, whereby said member may be raised bodily when said element is to be cleaned, and the front section may be raised independently 15 of the rear section during doffing, the inner end of one of said sections being provided with a pin, and that of the other section with a pair of stops interchangeably engaged by said pin, to limit the movements 20 of said front section relative to the rear section.

6. In a roving clamp, the combination of a standard; a fixed clamping member connected thereto and provided with a pair of 25 spaced vertical guides; a vertically movable clamping member comprising a stem slidable between said guides, and a head located upon the upper end of said stem, said head having its lower end face formed with 30 a longitudinal groove; and a plate secured to the fixed member and having a beveled edge arranged to enter said groove when the movable member is in its lowered position.

7. In a roving clamp, the combination of a standard; a fixed member connected to 35 said standard, having its upper end face constituting a clamping surface, said member being provided with a pair of spaced vertical guides having guards at their upper ends projecting above said clamping sur- 40 face; a vertically movable member comprising a stem slidably fitted between said guides, and a tapered head located upon the upper end of said stem and having its lower end face constituting a clamping surface 45 arranged to coöperate with the first-named clamping surface and formed with a longitudinal groove, the opposite side faces of said head being arranged to engage the adjacent side edges of said guards; and a re- 50 versible plate connected to the fixed member and having one of its edges flat and arranged to lie flush with said first-named clamping surface when the plate is in one position, to form a continuation of that sur- 55 face, and its opposite edge beveled and arranged to enter said groove when the position of said plate is reversed and the movable member is lowered.

In testimony whereof I have hereunto set 60 my hand in presence of two subscribing witnesses.

FLETCHER C. GRADDICK.

Witnesses:

D. C. KLUTZ,
G. M. LIFE.