

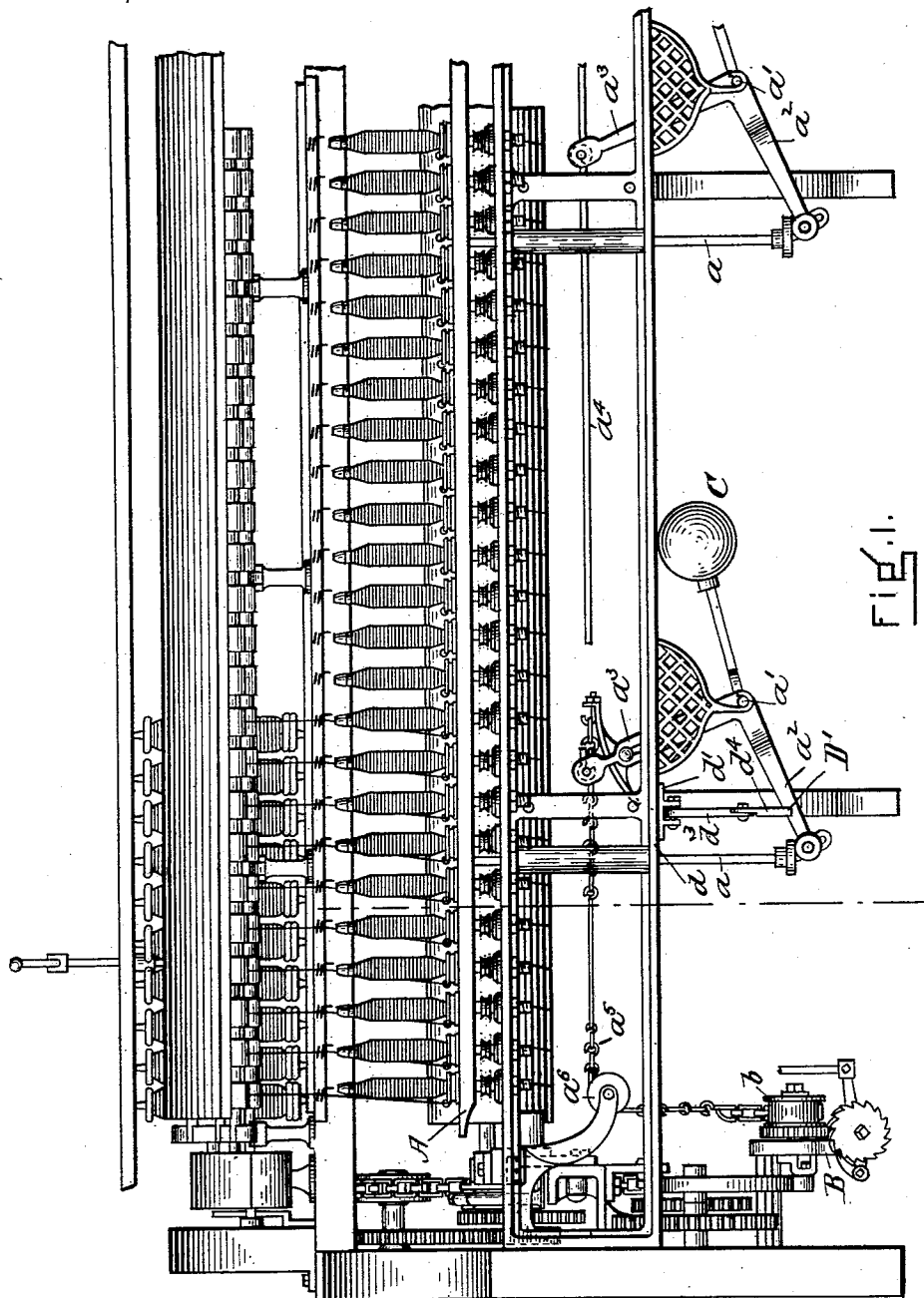
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3 Sheets—Sheet 1.

J. GREGSON & C. J. MURRAY.
SPINNING AND TWISTING FRAME.

No. 573,649.

Patented Dec. 22, 1896.



WITNESSES

J. W. Dolan.
H. T. Butler.

INVENTORS

John Gregson
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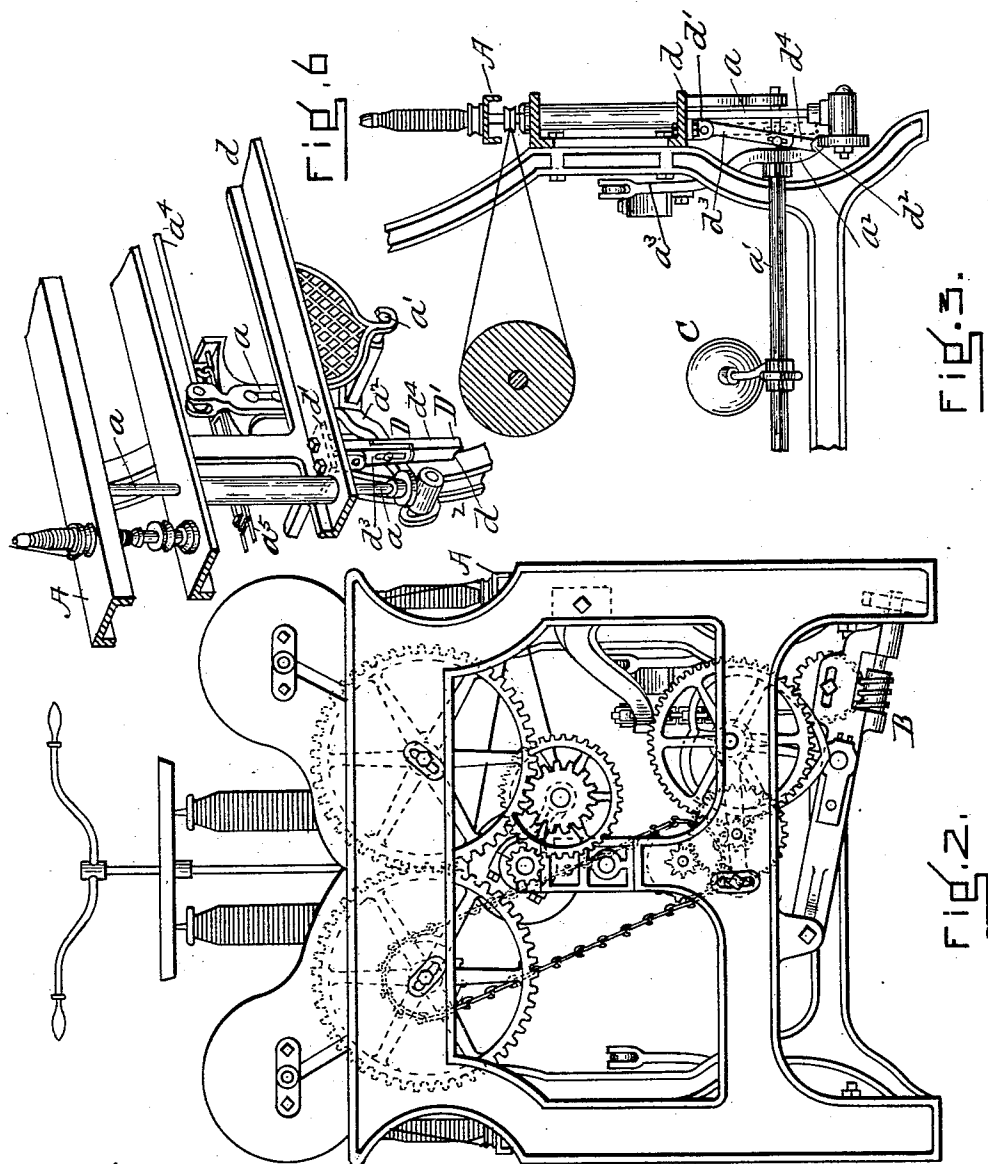
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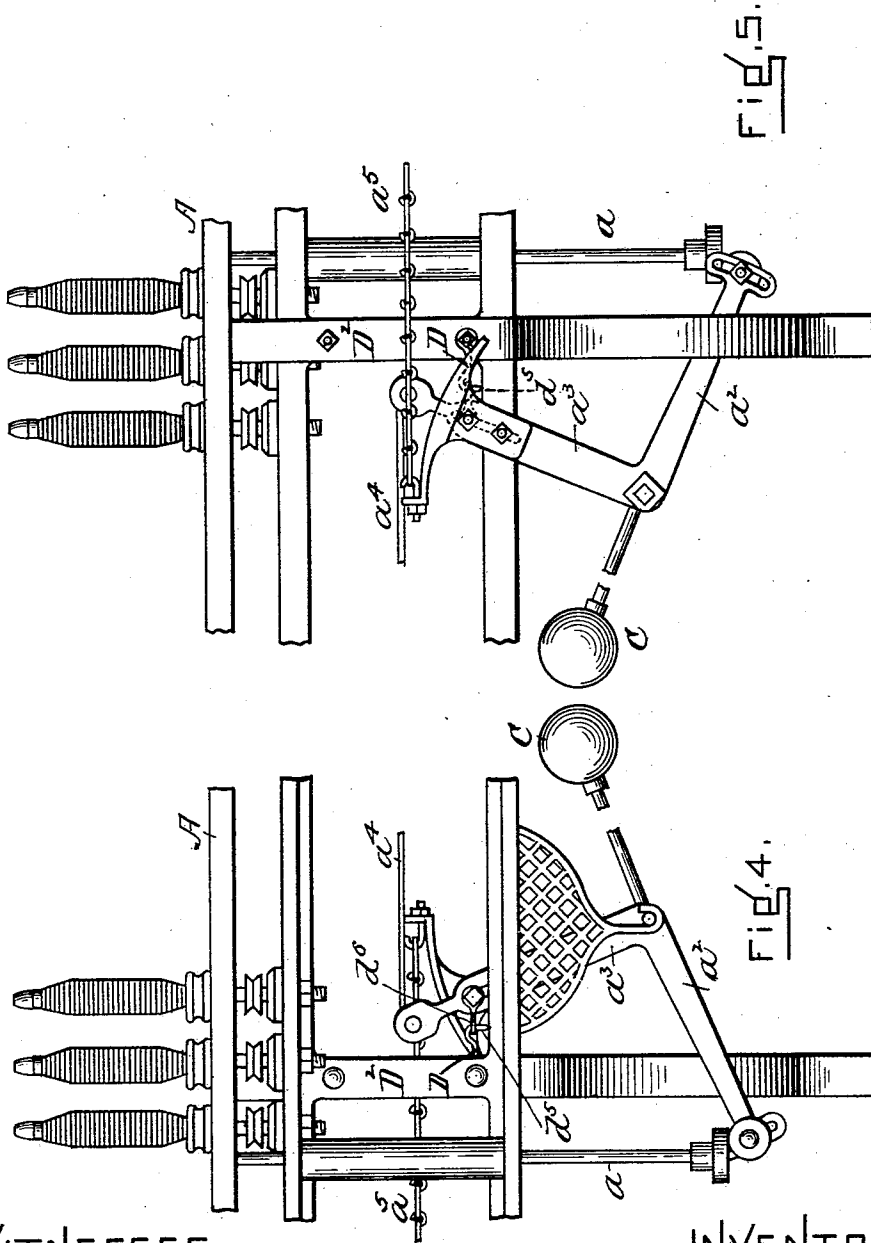
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UNITED STATES PATENT OFFICE.

JOHN GREGSON AND CHARLES J. MURRAY, OF FALL RIVER, MASSACHUSETTS,
ASSIGNORS TO THE WHITIN MACHINE WORKS, OF WHITINSVILLE, MASSACHUSETTS.

SPINNING AND TWISTING FRAME.

SPECIFICATION forming part of Letters Patent No. 573,649, dated December 22, 1896.

Application filed January 22, 1896. Serial No. 576,386. (No model.)

To all whom it may concern:

Be it known that we, JOHN GREGSON and CHARLES J. MURRAY, citizens of the United States, residing at Fall River, in the county of Bristol and State of Massachusetts, have invented a new and useful Improvement in Spinning and Twisting Frames, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, in explaining its nature.

The invention relates to that class of spinning and twisting frames in which the ring-rail carrying the travelers is provided with a vertical movement upward and downward in relation to the spindles; and it consists in means for holding the ring-rail in its lowest position against the stress of the overbalancing-weights which move it upward for the purpose of permitting the removal from the spindles of the bobbins when they have been filled, or "doffing," as it is called.

It should be understood that when the frame is stopped for the purpose of doffing the ring-rail may become stationary at any height in respect to the spindles and bobbins, and that it is not possible to remove the bobbins from the spindles unless the ring-rail or some connection thereof be forced down by hand or by the foot to its lowest position, where it must either be held by hand or foot during the doffing or else must be wedged down by anything which may come handy, and which may be placed anywhere to effect the desired result. Commonly an empty bobbin is used for this purpose.

Our invention consists in means connected with the frame of the machine located in operative relation to the ring-rail or some part of its operative mechanism and adapted to be moved into engagement therewith when the ring-rail has been moved downward to a doffing position, whereby the correct position of the rail for doffing is indicated, the rail held down during doffing against the tendency of the overbalancing-weights to lift it, and the weights held in their elevated position.

We will now describe our invention in detail in connection with the drawings, wherein—

Figure 1 is a view in front elevation of a ring-spinning frame containing our improvement. Fig. 2 is a view in end elevation thereof. Fig. 3 is a detail view in vertical section upon the dotted line 1 1 of Fig. 1 and in elevation of parts beyond said line. Figs. 4 and 5 are detail views representing a modified form of our invention. Fig. 6 is a view in perspective representing the normal position of the safety-holder shown in Figs. 1 to 3.

In order to understand the use and operation of our invention, it is necessary to describe the mechanism for providing the ring-rail with its vertical travel.

The ring-rail A is mounted upon a number of vertical rods a , which are suitably supported, and to which vertical movements are imparted by the rock-shafts a' , each rock-shaft having an arm a^2 , which is connected with the lower end of a rod a and an arm a^3 . These latter arms a^3 , with the exception of the one nearest the operating devices, are connected with each other by a long bar a^4 . (See Fig. 1.) That one of the arms a^3 nearest the operating devices is connected with the builder-lever B by the chain a^5 , which passes about the roll a^6 to the take-up roll b of the builder-lever. This lever is operated by a cam in the usual way, and the take-up thereon is also operated in the usual manner, and the lever serves to move the ring-rail downward and in opposition to the overbalancing-weights C, with one of which weights each rock-shaft a' is connected, the overbalancing-weights serving to lift the ring-rail when the builder-lever cam permits an upward movement to be imparted to the said lever and the ring-rail.

It will be seen from what we have said that the ring-rail may always be moved downward by hand from any position above its lowest by moving or drawing downward the vertical rods a or the outer ends of the arms a^2 , by pressing downward the rail itself, or by moving horizontally toward the builder-lever the connecting-bar a^4 . By so doing the draw-chain a^5 will become slack and cease to support or hold the overbalancing-weights C and the stress of the said weights will be entirely upon the part laid hold of in depressing the

rail and will be borne by it until it has been released, and the weights when so held, if suddenly let go, snap upward the ring-rail and its connection with sufficient force to damage some part. It is therefore very desirable that there shall be some secure means for holding the weights in their lifted position and the ring-rail in its lowermost. The make-shift heretofore employed for this purpose very often accidentally slipped or was forced from place, suddenly releasing the weights, permitting them to fall with great force, lifting the ring-rail with a snap, and bringing stress upon the chain, take-up, and building-lever, which often broke or injured some of its operative parts.

In Fig. 1 we have represented our invention as applied in the form of a safety-arm D', which not only serves to locate the ring-rail in proper position for doffing, but also to securely hold the weights in their elevated position. It is attached at its upper end to the under surface of the stationary rail d by a hanger d' , bolted to the rail and having ears to which said upper end of the arm is pivoted. These ears are so shaped as to allow the lower end D' of the arm to have a swinging movement inward and outward from the front of the machine. The hanger is also so located upon the under surface of the said rail that the said lower end of said safety-arm can be moved upon the upper edge of the arm a^2 of one of the rock-shafts a' when the said arm is in its lowest position; and when the safety-arm can thus be moved to a position over said arm a^2 it indicates that the ring-rail is in its lowest position or the position to which it should be moved for doffing, and it at the same time serves to hold all the weights C in their elevated position and to hold them so elevated during the doffing operation.

We prefer that the safety-arm be so located in relation to the arm a^2 that in its normal or inoperative position it will hang free from said arm or at one side thereof, as represented in dotted lines in Fig. 3 and in perspective in Fig. 6, and so that the said arm may travel upward and downward at one side of it without coming into contact with it, and also so that it will require a positive action by the operator to move it into its holding relation with said arm. We also prefer that it be so located as to engage the said arm a^2 near its outer end, (see Fig. 1,) as the strain upon it will not be so great as it would be if near the shaft a . But one of these safety-arms will be needed for one entire side of the spinning-frame, the rock-shafts being connected with each other by the bar a^4 , so that the downward movement of one arm a^2 will cause the downward movement of all the others and the upward movement of all the weights.

We prefer to apply the safety-arm to the portion of the machine nearest the builder-lever and to operate in connection with the arm a^2 which is nearest it. (See Fig. 1). We also prefer that the lower end of the safety-

arm have a curved recess d^2 , into which the upper edge of the arm a^2 may close and thereby be more securely held.

It is desirable, for preventing expense in fitting and for the purposes of adjustment, that the safety-arm be made extensible, and we have represented as one means for so doing the construction shown in Figs. 1 and 3, where it is represented as made in the two parts or sections d^3 d^4 , the contiguous ends of which overlap each other and are connected by a clamping-bolt which passes through a slot in one or both ends, whereby the lower section may be moved upward or downward in relation to the upper section, as desired, and then be rigidly fastened thereto in such position.

In Figs. 4 and 5 we have represented the safety-arm D as pivoted to a samson D² instead of to the stationary rail d , and its outer end is provided with a movement upon a vertical arc instead of with a movement upon a horizontal arc, as in Fig. 1, and instead of engaging the arm a^2 of the rock-shaft a' it engages the arm a^3 of said rock-shaft. We prefer that this engagement be effected by means of an extension of the arm downwardly, as at d^5 , (see Fig. 4,) which enters an eye, cavity, or holder d^6 , secured to or integral with the said arm a^3 . In Fig. 4 the safety-arm and the eye are separate parts and the arm is attached to the samson by a separate bolt, which will permit of its swinging movement, or by means of a bolt already employed in connecting the samson with some other part of the machine. The eye is secured to the arm a^3 by a bolt or in any other desired way. This modification accomplishes the purpose of the form of our invention as described and in practically the same way. It serves, upon the lowering of the ring-rail, to fix its lowermost position and hold it therein, and it also acts to hold all the overbalancing-weights in their highest position and precludes the possibility of any accidental release thereof whereby damage may be done the machine. It is preferably located to engage the arm a^3 , which is nearest the builder-lever, and engagement with but one arm of a spinning-frame side is necessary.

The invention is adapted to be easily applied not only to new frames, but to frames which are now in use.

In use the operation of the spinning-frame is stopped and the ring-rail is moved downward to doffing position by hand, thereby lifting the weights C, slackening the chain a^5 , and until the safety-arm can be moved by hand to a position to engage some part of the ring-rail operative mechanism, which has been moved by said downward movement of the ring-rail; and when this engagement can be had it indicates that the ring-rail is in doffing position, and the engagement permanently holds the ring-rail in such position during the doffing and also holds the weights in their elevated position. This position of the parts is maintained until doffing is com-

pleted, when the operator releases the ring-rail and the weights by the removal of the safety-arm, thereby permitting the ring-rail to be moved upward until the slack has been taken from the chain a^5 and the weights C to move downward.

It will be seen that the safety-arm may be located upon other parts of the frame and make engagements with other parts of the ring-rail or its operative devices without departing from the essential spirit of the invention.

Having thus fully described our invention, we claim and desire to secure by Letters Patent of the United States—

1. In a spinning-frame, the combination with the ring-rail, and its traversing mech-

anism, including a rock-shaft furnished with a locking portion, of a locking device mounted in the machine and adapted to engage said locking portion to lock the rock-shaft.

2. In a spinning-frame, the combination with the ring-rail, and its traversing mechanism, including a lever-arm, of a combined safety-arm and ring-rail positioner pivotally mounted in the machine, and comprising members which are adjustably connected, whereby said arm may be adjusted in length as described.

JOHN GREGSON.
CHAS. J. MURRAY.

In presence of—

ANDREW BORDEN,
EDWIN P. KERSHAW.