

Nov. 18, 1924.

1,515,651

H. G. BEEDE

SPINNING OR TWISTING FRAME

Filed Feb. 3, 1922

3 Sheets-Sheet 1

Fig. 1.

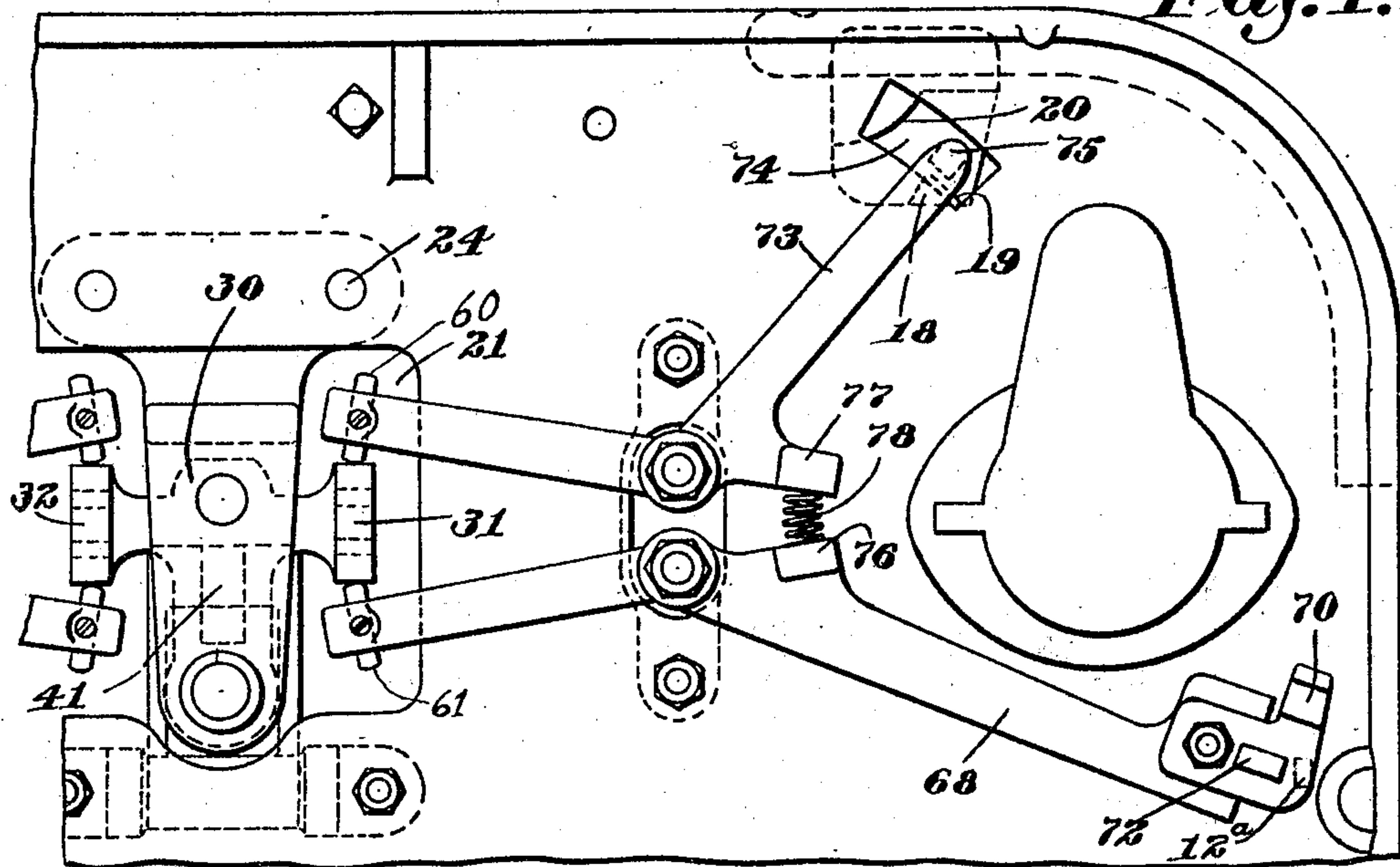
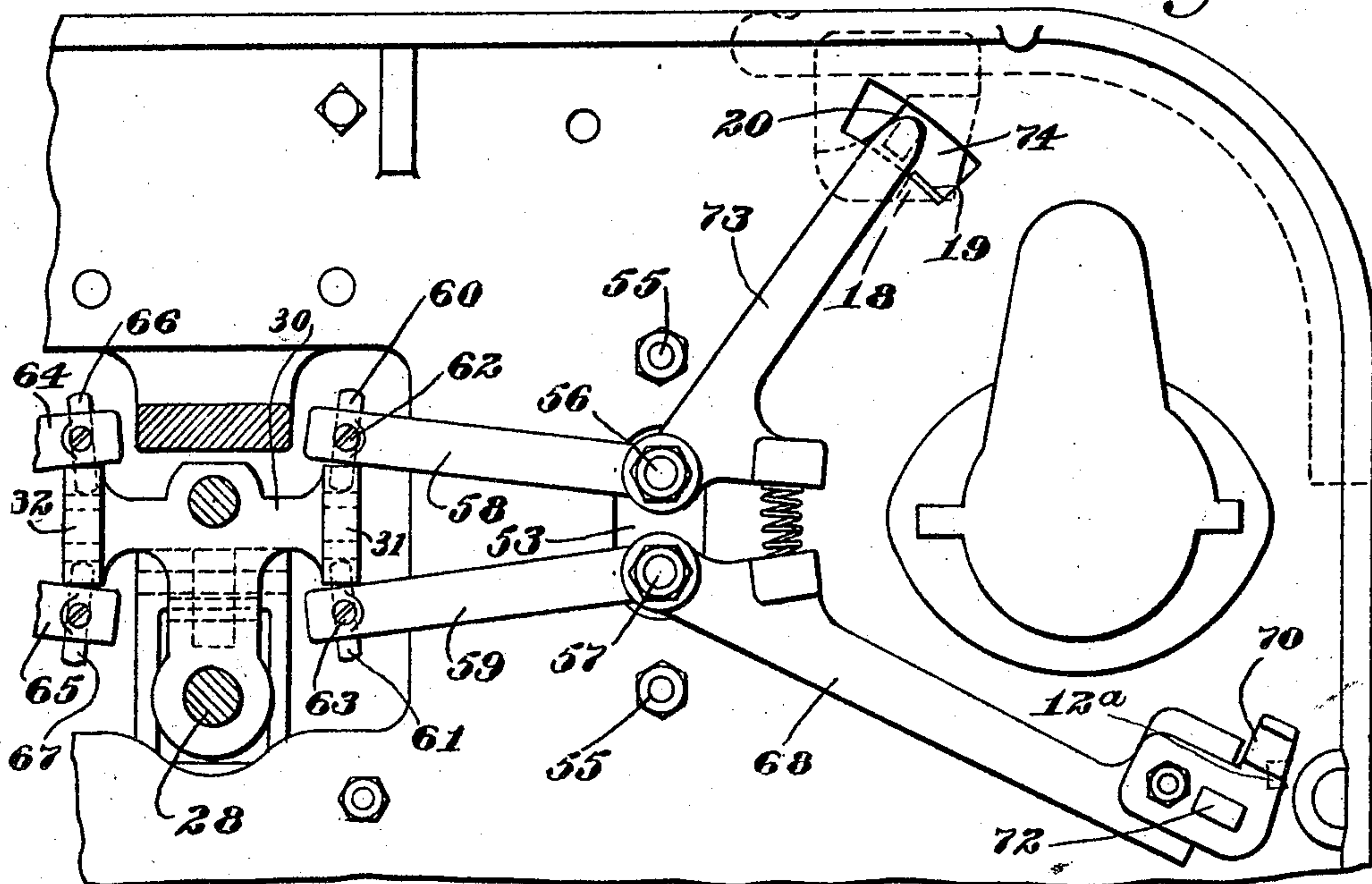


Fig. 2.



Inventor
Herbert G. Beede
by Robert Robert & Co.
his Attorneys

Nov. 18, 1924.

1,515,651

H. G. BEEDE

SPINNING OR TWISTING FRAME

Filed Feb. 3, 1922

3 Sheets-Sheet 3

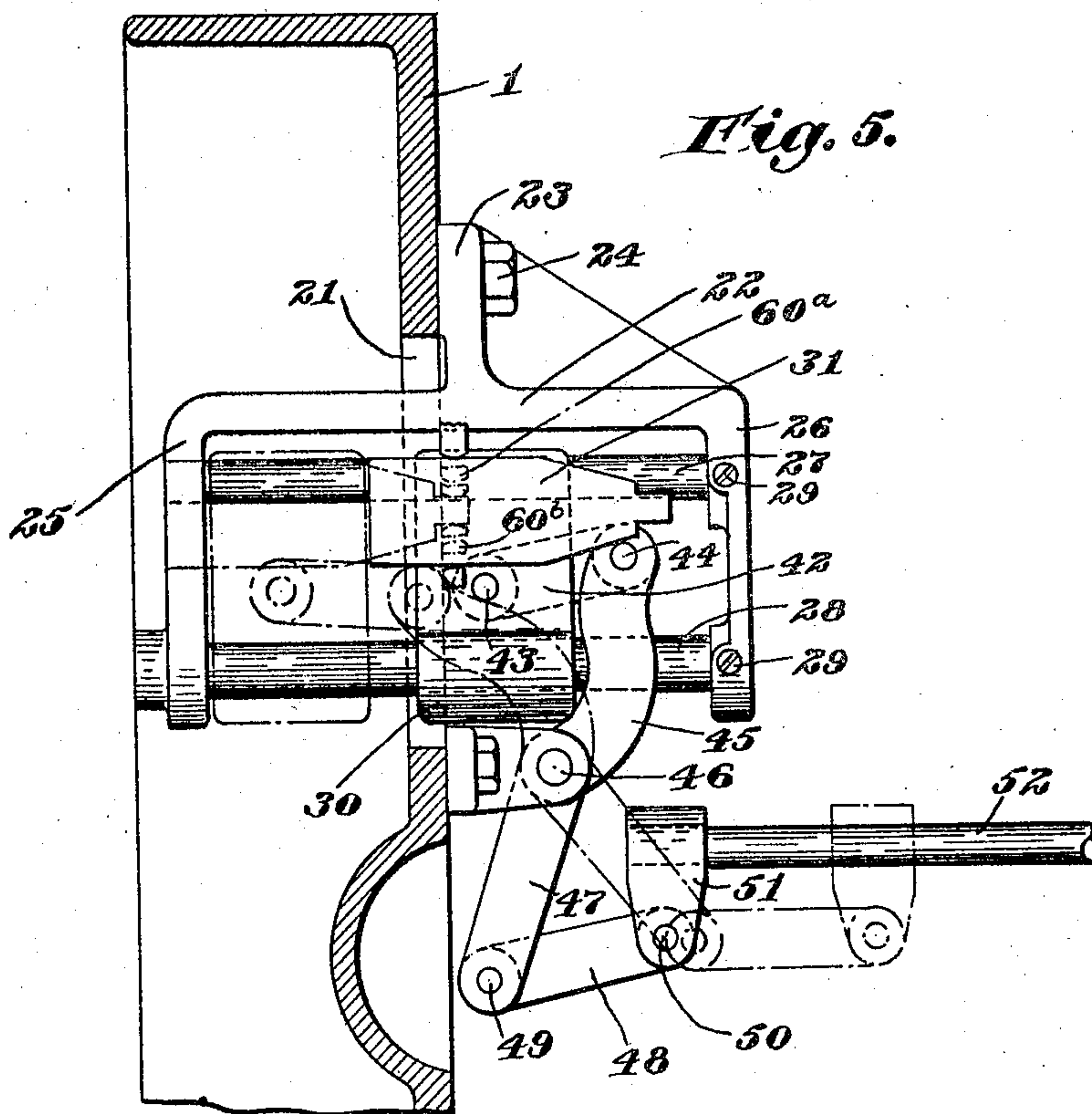


Fig. 6.

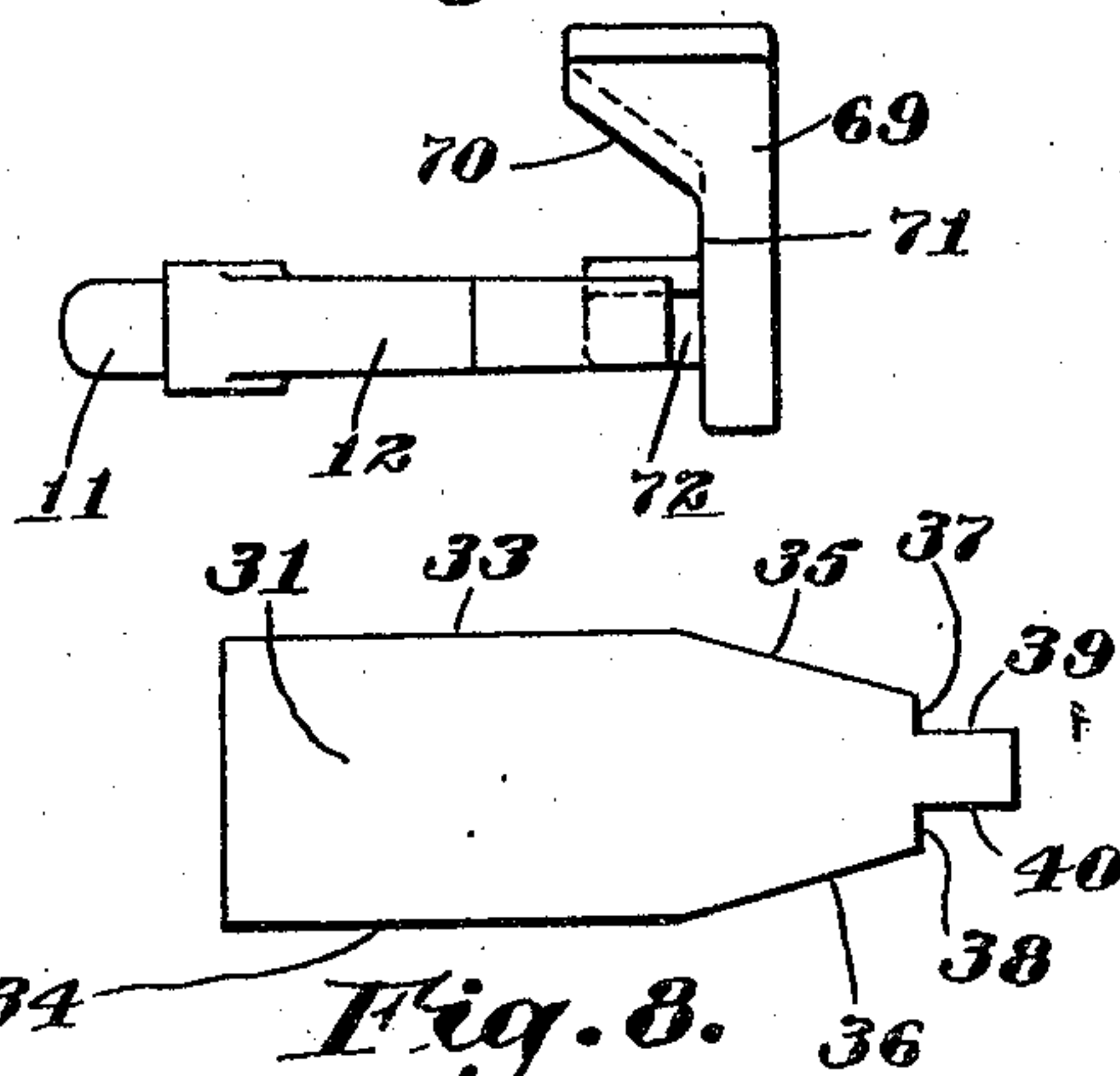


Fig. 7.

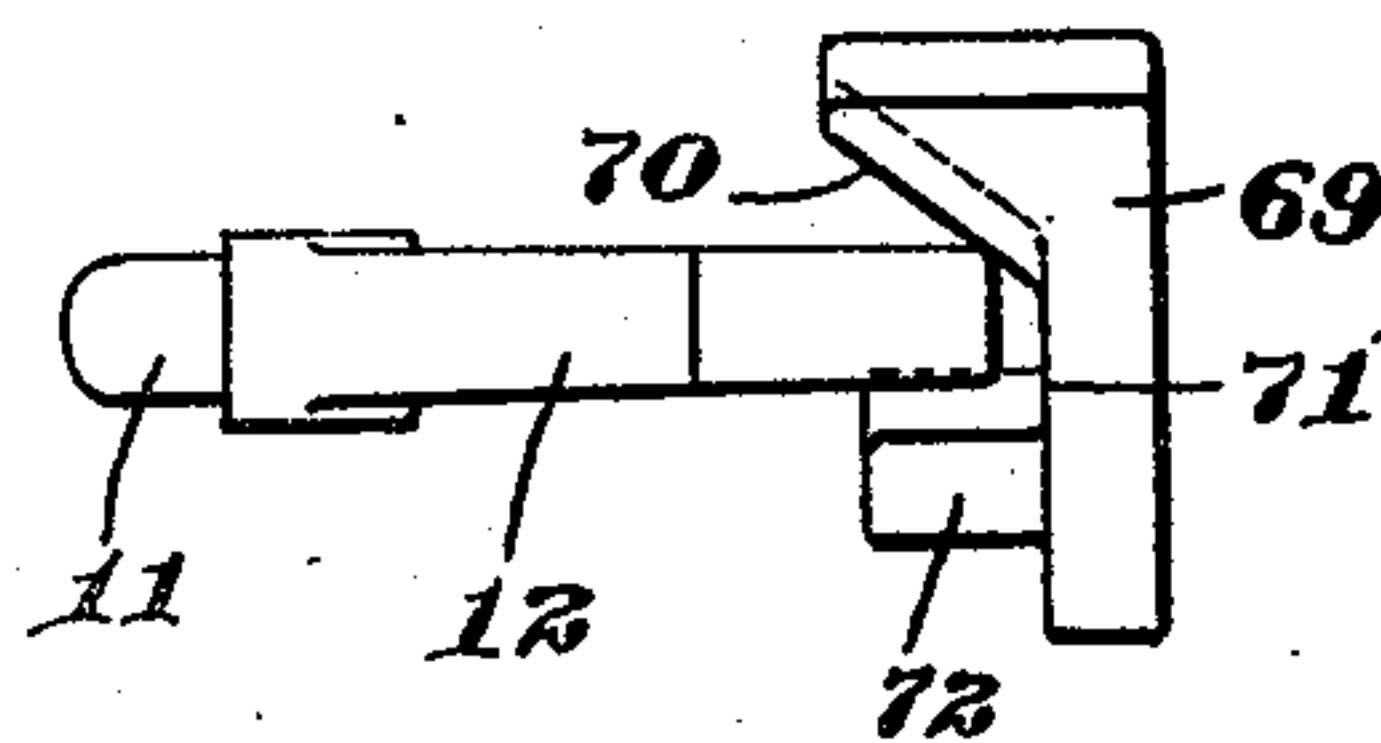


Fig. 8.



Inventor
Herbert G. Beede
by Robert R. Roberts & Co. Attorneys

UNITED STATES PATENT OFFICE.

HERBERT G. BEEDE, OF PAWTUCKET, RHODE ISLAND.

SPINNING OR TWISTING FRAME.

Application filed February 3, 1922. Serial No. 533,797.

To all whom it may concern:

Be it known that I, HERBERT G. BEEDE, a citizen of the United States of America, and resident of Pawtucket, in the county of Providence and State of Rhode Island, have invented new and useful Improvements in Spinning or Twisting Frames, of which the following is a specification.

This invention concerns spinning or twisting frames and relates more particularly to safety locking mechanism for the head end doors and draft gearing bonnets of such frames, whereby the opening of such doors and bonnets is positively prevented during the normal operation of the frame.

The device of the present invention is intended as an improvement upon the mechanism disclosed in the patent to Beede, 1,064,281, June 10, 1913, and the object of the invention is to provide a simplified mechanism having fewer parts than that of the above patent, but without sacrificing any of the advantages of the patented device, and which at the same time shall be thoroughly reliable in action, relatively cheap to construct, and easy to install.

In the accompanying drawings there is illustrated, by way of example, one embodiment of means suitable for carrying the above object into effect, and in such drawings:—

Fig. 1 is a fragmentary side elevation of the head end of a spinning frame, the head end door being removed to show the interior construction and the parts being shown as occupying the position which they assume during operation of the machine;

Fig. 2 is a view similar to Fig. 1 but showing the parts as positioned when the machine stops;

Fig. 3 is a similar view but illustrating the parts in the position which they assume when the machine is stopped and the head end door and the draft gearing bonnet are open;

Fig. 4 is a plan view partly in section of the device as shown in Fig. 1;

Fig. 5 is a fragmentary vertical cross section on a line such as 5—5 of Fig. 3;

Figs. 6 and 7 are side elevations of a latch device and stop therefor employed in holding the head end door closed, such views being taken in the direction indicated by the arrow C of Fig. 4, Fig. 6 showing the latch in operative position and Fig. 7 show-

ing the latch as disengaged from its holding lug; and

Fig. 8 is a side elevation of a controlling cam employed in the device.

Referring to the drawings the numeral 1 indicates a portion of the head end of the frame of the spinning machine, one of the head end doors being indicated at 2, such door being pivotally mounted at the point 3. A second door is indicated at 4, such door being pivoted at 5. The draft gearing bonnet 6 is provided with ears 7 and 8 by means of which it is hingedly secured to the frame. Each of the head end doors is provided with a depression, as 9, adjacent to which a latch device is pivoted at the point 10. This latch device takes the form of a bell crank lever comprising the curved arm 11 constituting a handle, and the arm 12 provided with a latch shoulder 13 which normally engages the surface 14 of the lug projecting from the flange 15 of the frame. A spring 16 normally serves to hold the latch in locking position, but by inserting the fingers in the recess 9, behind the handle element 11, the latter may be drawn forwardly to release the latch.

The draft gearing bonnet 6 is provided with a depending flange 17 having a laterally extending lug 18 providing the stop element 19. A second lug, spaced from the lug 18, is furnished with a curved cam surface 20 for a purpose hereinafter to be described.

At a point substantially opposite the pivotal connections of the doors 2 and 4 to the frame, the latter is provided with an opening 21 through which extends a guide housing 22 (Fig. 5) having a flange 23 through which pass bolts 24 for securing it to the face of the frame. This guide housing is furnished with spaced vertical flanges 25, 26 between which extend parallel guide rods 27, 28 respectively, such rods being secured in position by means of screws 29. Slidably mounted upon the rods 27, 28 is a cam carrier 30 (Fig. 2), such cam carrier having projecting from its opposite side faces the cams 31, 32 respectively. These cams are of duplicate construction, the cam 31 being shown in detail in Fig. 8. As therein shown this cam has the upper and lower substantially parallel cam faces 33, 34, such faces having the inclined continuations 35, 36 converging toward each other. These inclined faces terminate in abrupt shoulders

37, 38 respectively, from which extend the parallel surfaces 39, 40. The cam carrier is provided with a central vertical slot 41 into which projects a link 42 pivoted to the carrier at 43 and pivotally connected at its opposite extremity at the point 44 to the upper arm 45 of the lever device pivoted at 46. The lower arm 47 of this lever device has a link 48 pivotally connected thereto at the point 49, such link in turn being pivotally secured at the point 50 to a lug or bracket 51 secured to the end of the shipper rod 52. With this arrangement it is evident that upon movement of the shipper rod from the full line position of Fig. 5 to the dotted line position thereof, the cam carrier 30 will also be moved from the full line position to the dotted line position of said figure.

The frame is further provided with an opening 53 over which extends a cover plate 54 secured in position by means of bolts 55. This cover plate serves to support a pair of shouldered bolts 56, 57 which serve respectively as the pivots for a pair of bell crank levers comprising arms 58, 59 respectively. These arms extend in the same general direction, diverging somewhat from their pivotal points and at their outer extremities are furnished with adjustable pins 60, 61 secured in position by means of set screws 62, 63. These pins constitute cam followers engaging the opposite cam faces of the cam 31. A similar pair of levers, the end portions 64, 65 only of which are herein shown, are also provided, such levers having the cam followers 66, 67 engaging the opposite cam faces of the cam 32. The bell crank lever, of which the member 59 constitutes one arm, is provided with a second arm 68 to the extremity of which is secured a bracket 69. This bracket is provided with an inclined cam face 70, a substantially vertical surface 71 in continuation thereof, and with a lug 72 outstanding from such vertical surface. This lug 72 when the parts are in running position as shown in Fig. 1, lies in the path of movement of the arm 12 of the latch device hereinbefore described, the normal position of the end of such latch being indicated by the dotted rectangle 12^a in Fig. 1. The parts are also shown in a similar position in Fig. 6 wherein the lug 72 is indicated as lying behind the arm 12. In this position of the parts it is manifestly impossible to swing the arm 12 about its pivot 10 to an extent sufficient to disengage the shoulder 13 from the element 14 so that with the parts so disposed the head end door can not be opened.

The bell crank lever of which the member 58 constitutes one arm is provided with a second arm 73 which extends upwardly in an inclined direction toward an opening

74 through the frame. At its extremity the arm 73 is provided with a finger 75 which projects transversely through the opening 74 and which normally overlies the stop surface 19 of the lug 18 hereinbefore described. The lever arms 68 and 73 are provided with lugs 76, 77 respectively having a compression spring 78 disposed therebetween. This compression spring normally tends to swing the arms 68 and 73 in opposite directions, such movement however, being limited by the engagement of the pins 60, 61 with the cam surfaces of the cam 31.

When the parts occupy the positions shown in Figs. 1 and 6, and in full lines in Fig. 5, the cam 31 is so disposed that the pins 60, 61 engage the cam surfaces 33, 34 thereof, it being understood that with the parts in this position the belt shifter has moved the belt onto the fast pulley and the machine is in operation. As previously described, when the parts occupy this position, it is impossible to swing the latch arm 12 in such manner as to permit opening of the head end door, while at the same time the finger 75 which overlies the stop surface of the lug 18 serves to prevent opening of the draft gearing bonnet 6. When the belt shifter rod 52 is actuated to shift the belt onto the loose pulley to bring the machine to rest, the cam carrier 30 is so moved as to carry the cam 31 into the position indicated in dotted lines in Fig. 5. The pins 60 and 61 pass down the inclined faces 35 and 36 of the cam during such movement of the latter until they occupy positions such as indicated in dotted lines at 60^a, 60^b, Fig. 5, the spring 78 acting during the movement of the cam to maintain the pins in contact therewith. During such movement of the pins 60 and 61 the arm 68 and 73 move into the positions indicated in Fig. 2. In the latter figure the lug 72 is shown as having passed downwardly from the plane of movement of the end of the latch arm 12 while the inclined surface 70 of the bracket 69 has been brought into contact with such latch arm (Fig. 7). At the same time the finger 75 has been swung from over the lug 18 and rests against the cam surface 20. The engagement of the finger with this surface, and of the inclined surface 70 with the latch arm 12 serves to prevent the pins 60 and 61 respectively from dropping into contact with the surfaces 39, 40 of the cam 31. When however, the head end door and the bonnet are opened as may now be done freely, the latch arm 12 moves over to the position indicated in dotted lines at 12^b, Fig. 3 thereby permitting the arm 68 to move downwardly to the position shown in Fig. 2. At the same time the movement of the bonnet upwardly causes the cam surface 20 to move from behind the finger 75 thus

permitting the arm 73 to move upwardly to a further extent. Such movement of the lever devices permits the pins 60 and 61 to drop behind the shoulders 37, 38 of the cam 31. In this position of the parts, movement of the cam by means of the belt shifter rod 52 is positively prevented so that any movement of the belt shifter such as would carry the belt onto the fast pulley for starting the machine is impossible. When however, the head end door and the bonnet are closed the movement of the latch arm 12 under the impulse of the spring 16 serves, by engagement with the cam surface 70, to lift the arm 68 slightly and likewise the cam surface 20 moves the finger 75 and the arm 73 back to the position of Fig. 2. These movements lift the pins 60 and 61 from behind the shoulders 37 and 38 of the cam 31 whereby it is made possible to move the belt shifting rod 52 to carry the belt onto the driving pulley. During the initial part of this movement, the pins 60 and 61 travel up the inclined surfaces 35 and 36 of the cam 31 until they rest in running position upon the parallel surfaces 33, 34 thereof.

While the specific arrangement of parts as herein shown is provided, it is to be understood that various changes and modifications both in the shape and location of the several elements may well be made without departing from the spirit of the invention.

What I claim and desire to secure by Letters Patent of the United States is:

1. In combination with the head end door of a spinning or twisting frame having a device for stopping its operation, a spring pressed latch carried by said door and normally engaging a fixed element of the frame for holding the door in closed position, a lever having an element normally positioned relatively to said latch to prevent disengagement thereof from said fixed element, and means operative, concomitantly with actuation of the stopping device for moving said lever whereby to permit disengagement of said latch.

2. Locking means for the head end door of a spinning or twisting frame having a stopping and starting device, comprising a manually operable latch member movable relatively to the door, a lever provided with an element normally standing in the path of movement of said latch member, and means movable simultaneously with actuation of the stopping and starting device to stop the spinning or twisting frame for actuating said lever whereby to remove said element from the path of the latch to permit manual unlocking of the door.

3. In combination with the head end door of a spinning or twisting frame having a stopping and starting device, a bell crank

lever pivoted to said door and having one arm thereof arranged to serve as an actuating handle, the other arm thereof constituting a latch, spring means normally pressing said latch into engagement with a fixed element of the frame, a lever provided with a lug normally positioned to prevent the bell crank lever from swinging, and means operative, concomitantly with the actuation of the stopping and starting device to stop the frame for swinging said lever whereby to render said lug inoperative.

4. In combination with a spinning or twisting frame having an end door and a stopping and starting device, a movable latch carried by said door and normally engageable with a lug upon the frame to prevent opening of the door, a two armed lever provided with a lug adjacent to the end of one of its arms, said lug normally being so positioned as to prevent movement of said latch to unlock the door, and a cam engageable with the other arm of said lever upon actuation of the stopping and starting device to stop the frame, whereby to remove said lug from its normal position.

5. A spinning frame having a draft gear bonnet and an end door, means for simultaneously locking said bonnet and door comprising a pair of levers each having a stop element normally positioned respectively in the path of movement of elements of the bonnet and door, and a cam device interposed between said levers and having cam surfaces simultaneously and directly engageable with elements of the respective levers whereby so to move said levers as to render inoperative the stop elements thereof.

6. A locking mechanism for the draft gear bonnet and end door of a spinning or twisting frame comprising a pair of bell crank levers pivoted to swing about fixed axes, a cam follower carried by one arm of each lever, a slidable cam having cam surfaces directly engageable with the respective cam followers, and means carried by the other arms of the respective levers, normally operative to restrain the bonnet and door against movement.

7. Locking mechanism for the draft gear bonnet and end door of a spinning or twisting frame of that type characterized by the provision of a belt shipper rod for use in stopping it and starting it, comprising a cam carrier, guide means for said carrier, means for transmitting movement to said carrier from the belt shipper rod of the frame, a cam mounted upon said carrier, levers disposed upon opposite sides of the cam and having cam engaging elements, and elements carried by the respective levers and normally operative to prevent opening of the bonnet and end door respectively.

8. Locking mechanism for the draft gear bonnet and end door of a spinning or twist-

ing frame provided with a shipper rod comprising a slidable cam carrier, means for connecting such carrier to the shipper rod of the spinning or twisting frame, a cam mounted upon said carrier and having oppositely inclined, converging surfaces terminating in abrupt shoulders, a pair of levers having adjustable cam followers engageable with the respective cam surfaces, and elements carried by the respective levers and normally operative to prevent opening of the bonnet and door respectively.

9. Locking mechanism for draft gear bonnets and end doors of spinning or twisting frames comprising a cam having substantially parallel cam surfaces, inclined, converging surfaces in continuation of the respective parallel surface, said inclined surfaces terminating in abrupt shoulders, and

means for guiding said cam for sliding movement.

10. Locking mechanism for draft gear bonnets of spinning or twisting frames of that type in which a shipper rod is employed for stopping and starting the frame comprising a cam carrier, vertically spaced guide rods for supporting said carrier for sliding movement, cams mounted upon said carrier at opposite sides thereof, each of said cams having upper and lower cam surfaces, cam followers engaging the several surfaces, and link means for connecting the cam carrier with the shipper rod of the frame.

Signed by me at Pawtucket, Rhode Island. this thirty-first day of January, 1922.

HERBERT G. BEEDE