

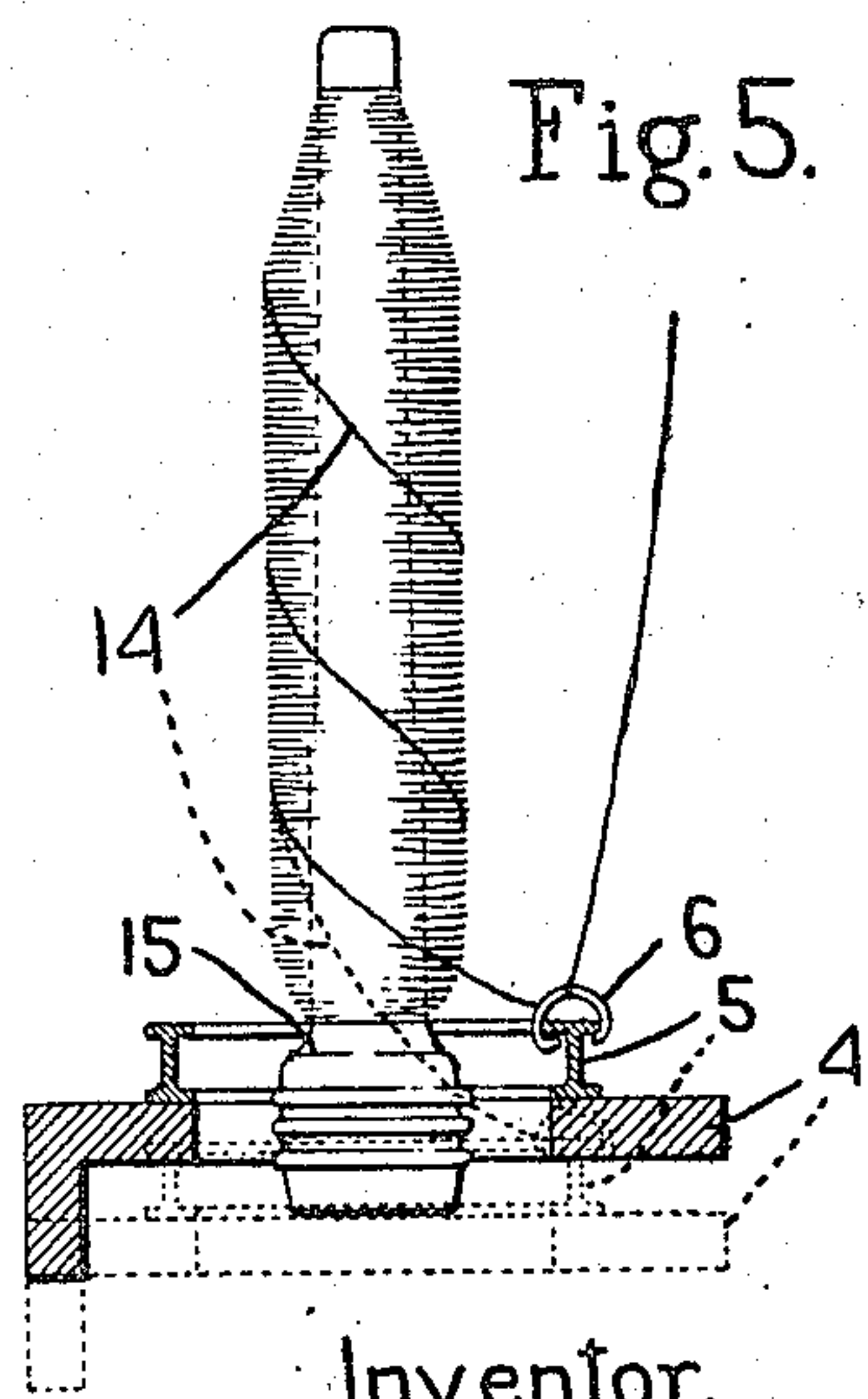
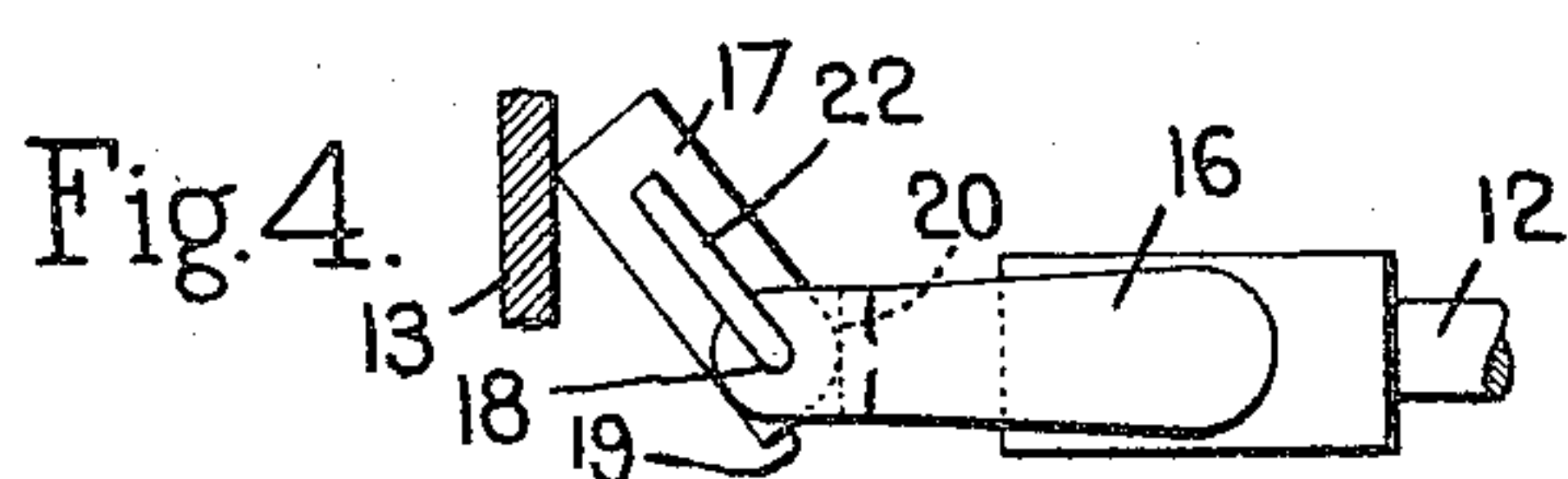
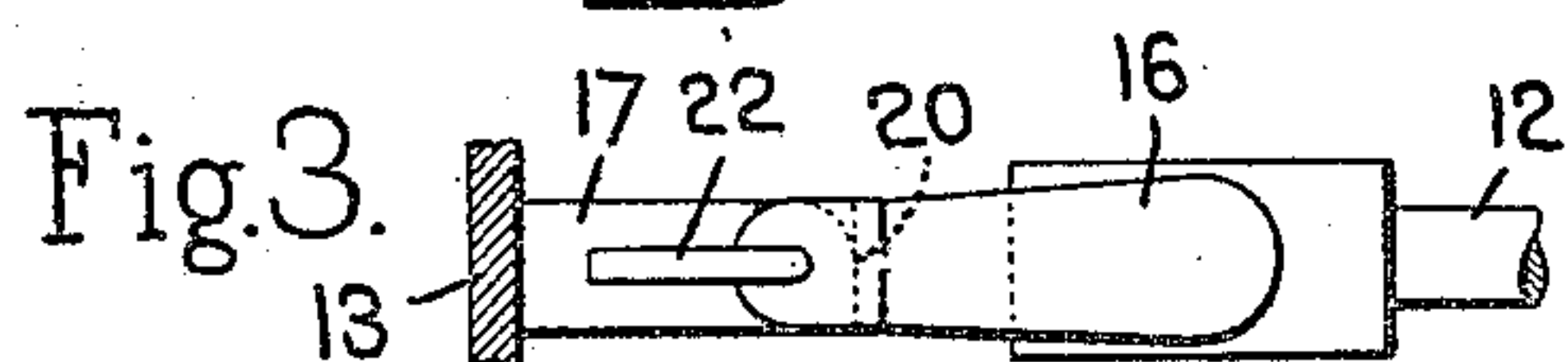
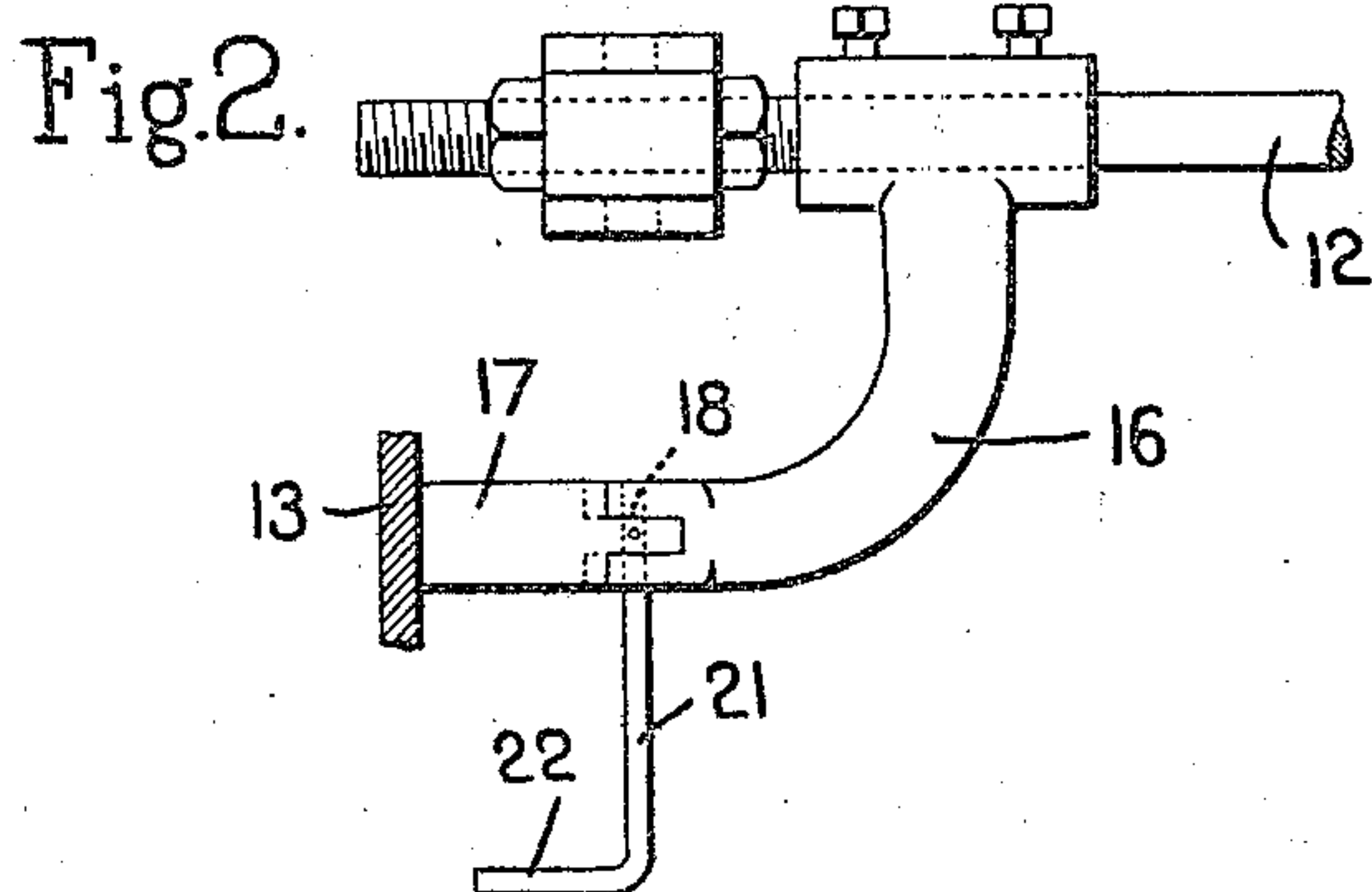
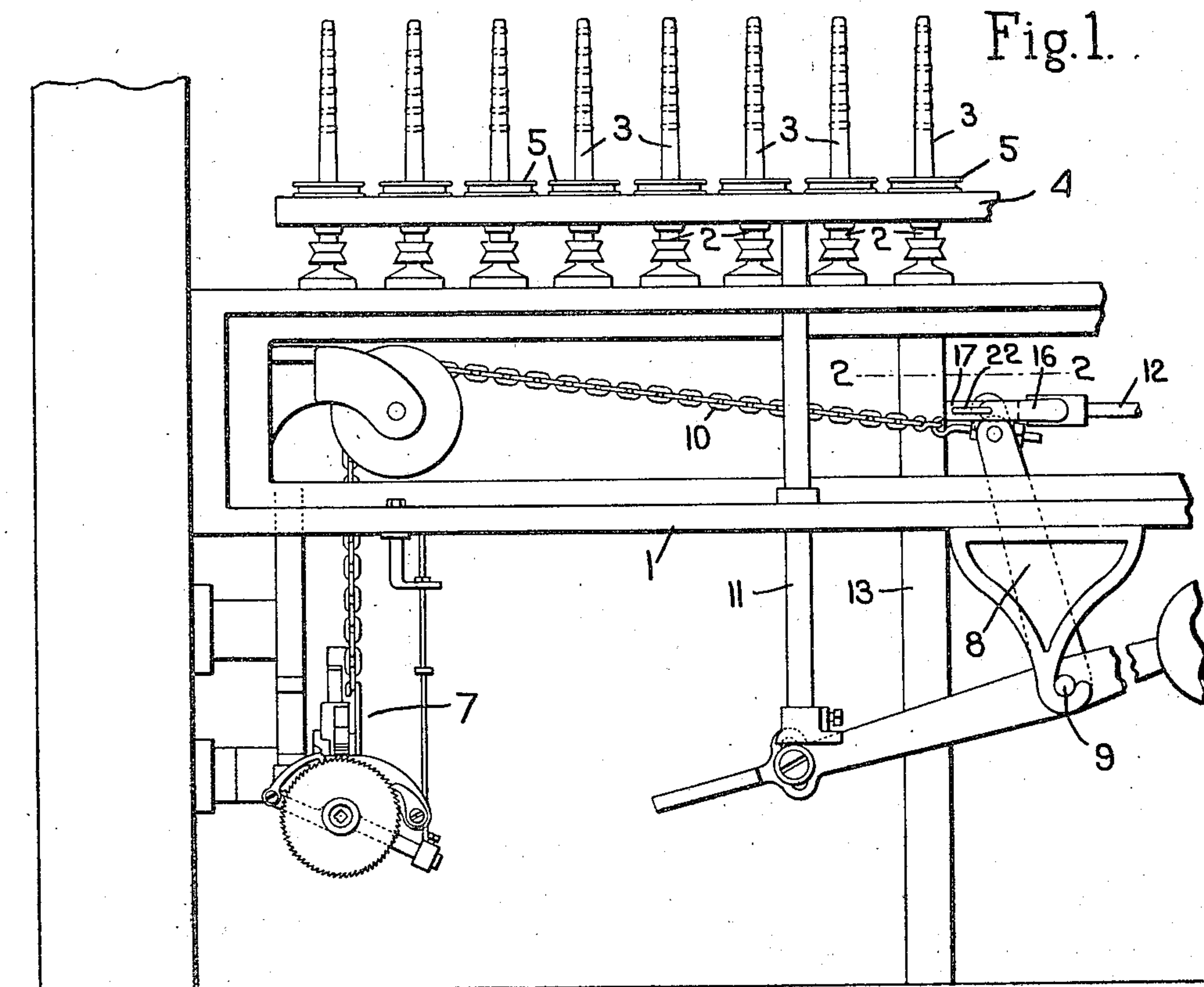
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1,459,251

C. A. PIERCE

SPINNING FRAME

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Attys.



## UNITED STATES PATENT OFFICE.

CLARENCE A. PIERCE, OF LOWELL, MASSACHUSETTS.

## SPINNING FRAME.

Application filed June 3, 1921. Serial No. 474,665.

*To all whom it may concern:*

Be it known that I, CLARENCE A. PIERCE, a citizen of the United States, and resident of Lowell, county of Middlesex, State of Massachusetts, have invented an Improvement in Spinning Frames, of which the following description, in connection with the accompanying drawing, is a specification, like characters on the drawing representing like parts.

This invention relates to spinning frames and particularly to a device designed to assist the operator to doff the filled bobbins without danger of breaking the yarn.

In the operation of a spinning frame when it becomes necessary to doff the filled bobbins it is the usual practice for the operator to lower the ring rail to the lower limit of its movement which brings the traveller to a point just above the heel of the bobbin, and when the ring rail is in this position and the machine has been brought to rest the filled bobbin is withdrawn from the spindle and an empty bobbin replaced thereon.

During the operation of lifting a filled bobbin from the spindle the last one or two turns of yarn about the bobbin will be drawn off the heel end thereof and will be wound about the bare spindle, the yarn from the bobbin being broken at a point between the latter and the spindle after the bobbin has been entirely removed from the spindle. This leaves the yarn which has been drawn through the traveller wound about the spindle once or twice so that when the empty bobbin is placed on the spindle the end of the yarn will be confined between the bobbin and spindle and will thus be held so that when the spinning frame is started up the yarn will be automatically wound onto the bobbin.

It sometimes happens that when the bobbin is withdrawn from the spindle the yarn which is drawn off from the heel of the bobbin becomes caught on the shoulder at the front end of the heel in which case the length of yarn necessary to permit the bobbin to be removed from the spindle will be drawn through the traveller instead of from the bobbin. When this condition arises

the removing of the bobbin from the spindle will cause the yarn to be broken at some point between the traveller and the drawing rolls and therefore when a fresh bobbin is replaced on the spindle it becomes necessary to piece up this broken end.

The object of my invention is to provide an improved stop device for limiting the downward movement of the ring rail which stop device can be adjusted to allow the ring rail to be carried below the heels of the bobbins when the latter are to be doffed thereby so relatively positioning the bobbins and ring rail that the latter can be lifted from the spindles without danger that the yarn will become caught on the heel of the bobbin thus eliminating danger of broken ends.

In order to give an understanding of the invention I have illustrated in the drawings a selected embodiment thereof which will now be described after which the novel features will be pointed out in the appended claims.

Fig. 1 is a portion of a spinning frame embodying my invention.

Fig. 2 is an enlarged section on the line 2—2, Fig. 1 showing my improved stop.

Fig. 3 is a side view of the stop showing it in the position it occupies during the spinning of the yarn and while the bobbin is being filled.

Fig. 4 shows the position of the stop during the doffing of the bobbins.

Fig. 5 is a view showing the two positions of the ring rail corresponding to the two positions of the stop.

In the drawings 1 indicates a spinning frame of any suitable or usual construction, the latter having a plurality of spindles 2 which carry the usual bobbins 3. 4 indicates the ring rail carrying a spinning ring 5 for each bobbin, each spinning ring having the usual traveller 6. The ring rail is given its rising and falling movement by means of the usual builder motion indicated generally at 7, said builder motion being connected by the chain 10 to a weighted bell crank lever 8 pivoted to the frame at 9, said lever acting on a post 11 secured to the ring rail 4.



There are usually several of these bell crank levers which are connected together by a connection or rod 12.

The parts thus far described are, or may be, all as usual in spinning frames and form no part of my present invention and as their operation is well known to those skilled in the art it is not necessary to further describe them.

The bell crank lever 8 is usually provided with a suitable stop adapted to engage the portion 13 of the frame, (which portion is usually referred to as a samson) for the purpose of limiting the downward movement of the ring rail, this stop being so adjusted as to prevent the ring rail from being lowered to a point where the yarn will be wound on the heel of the bobbin. In fact the stop is usually adjusted so that the ring rail cannot be lowered below the point indicated by full lines Fig. 5.

When the bobbins are filled and are ready to be doffed the operator lowers the ring rail as far as the stop will permit which, in spinning machines now commonly used, will bring the ring rail into the position shown in full lines Fig. 5. When the machine is at rest the operator then lifts the bobbin from the spindle and in doing this the last turn or two of yarn indicated at 14 in Fig. 5 will be drawn off from the heel end of the bobbin and will naturally assume a position making one or two turns about the bare spindle. When the bobbin has been entirely removed from the spindle, then a fresh bobbin is placed on the spindle and this operation breaks the yarn between the spindle and the filled bobbin, and at the same time the end of the yarn which is wound about the spindle will be confined between the fresh bobbin and the spindle.

As stated above it sometimes happens that in removing the filled bobbin from the spindle the last turn or two of yarn on the bobbin indicated at 14, Fig. 5, will become caught on the shoulder 15 of the bobbin heel, thus preventing the yarn from being pulled off from the bobbin, in which case the length of yarn necessary to permit the bobbin to be removed from the spindle will be drawn through the traveler 6.

This drawing of the yarn through the traveller will cause the yarn to break at some point between the traveller and the drawing rolls, thus producing a broken end which requires to be pieced when the spinning frame is started again.

I have provided herein a stop which normally prevents the ring rail from moving downwardly any further than the full line position Fig. 4 and which therefore functions during the spinning operation as the ordinary stop, but which may be adjusted to permit the ring rail to be depressed into

the dotted line position Fig. 5 when the bobbins are to be doffed. The carrying of the ring rail into this lowered position below the heel of the bobbin brings the traveller into such relation to the heel that the bobbin can be removed from the spindle without danger that the portion 14 of the yarn will be caught on the shoulder 15 as it is drawn off from the bobbin. With this device therefore which enables the ring rail to be depressed into the dotted line position during doffing, it is possible to doff the bobbins quickly and without danger of producing any broken ends.

The stop device comprises an arm 16 which is fast on the rod 12 and is shaped to engage the samson 13 when the connection 12 moves to the left. The end 17 of this arm is pivotally connected to the body thereof as shown at 18 so that it can be swung into or out of operative position. The pivotal connection is in the form of a kunckle joint, that is, the pivoted end 17 of the member is provided with a square face 19 which is adapted to engage the square face 20 of the arm 16 when the member 17 is in line with the arm 16, said square face 19 limiting the swinging movement of the end 17 in one direction. When the part 17 is adjusted into the position shown in Fig. 3 the stop will co-operate with the samson 13 to limit the downward movement of the ring rail when the latter reaches the full line position Fig. 5. When, however, the part 17 of the stop is swung into the position shown in Fig. 4, then the ring rail will be permitted to be further depressed into the dotted line position Fig. 5. When the spinning frame is running the stop will be in the position shown in Fig. 3 and when it is time to doff the bobbins the stop will be adjusted into the position shown in Fig. 4 so that when the ring rail is depressed it may be carried into the dotted line position Fig. 5. The bobbins are then doffed while the rail is in the dotted line position and as stated above this operation can be carried out without danger of breaking the yarn. After the bobbins have been doffed and fresh bobbins have been placed on the spindles the ring rail is raised and the stop adjusted into the position shown in Fig. 3, in which position it will remain until the bobbins are ready for doffing again.

Any suitable means for adjusting the stop from one position to the other may be employed. I have herein shown the part 17 as having a pivot pin 18 rigid therewith, said pivot pin being loosely mounted in the arm 16 and being extended laterally toward the front of the spinning frame as shown at 21, the end of the extension being bent as shown at 22 to form a handle by which the part 17 may be turned about its pivot.

While I have illustrated herein one em-



bodiment of my invention I do not wish to be limited to the constructional features shown.

I claim:

5 1. In a spinning frame, the combination with spindles adapted to support bobbins, of a ring rail carrying spinning rings, a stop device having a pivoted stop arm which in one position is operative to limit the down-  
10 ward movement of the ring rail during the spinning operation and in another position permits the ring rail to drop lower during the doffing of the bobbins.

2. In a spinning frame, the combination  
15 with spindles adapted to support bobbins, of a ring rail carrying spinning rings, a stop device having an adjustable stop arm, said stop arm when in one position being operative to limit the downward movement  
20 of the ring rail and in another position being inoperative for this purpose.

3. In a spinning frame, the combination with a frame having a samson, of spindles carried thereby, bobbins on the spindles, a

ring rail, spinning rings on the ring rail, and 25 a stop to engage the samson and limit the downward movement of the ring rail during spinning operation, said stop being adjustable to permit the ring rail to have a further downward movement during doffing 30 of the bobbin.

4. In a spinning frame, the combination with a frame having a samson, of spindles carried by the frame, bobbins on the spindles, a ring rail, spinning rings on the 35 ring rail, a bell crank lever associated with the ring rail, a stop arm connected to said lever and adapted to engage the samson to limit the downward movement of the ring rail, the end of the stop arm being pivoted 40 so that it may be into or out of operative position and when out of operative position permitting the ring rail to drop below the heels of the bobbins.

In testimony whereof, I have signed my name to this specification.

CLARENCE A. PIERCE.