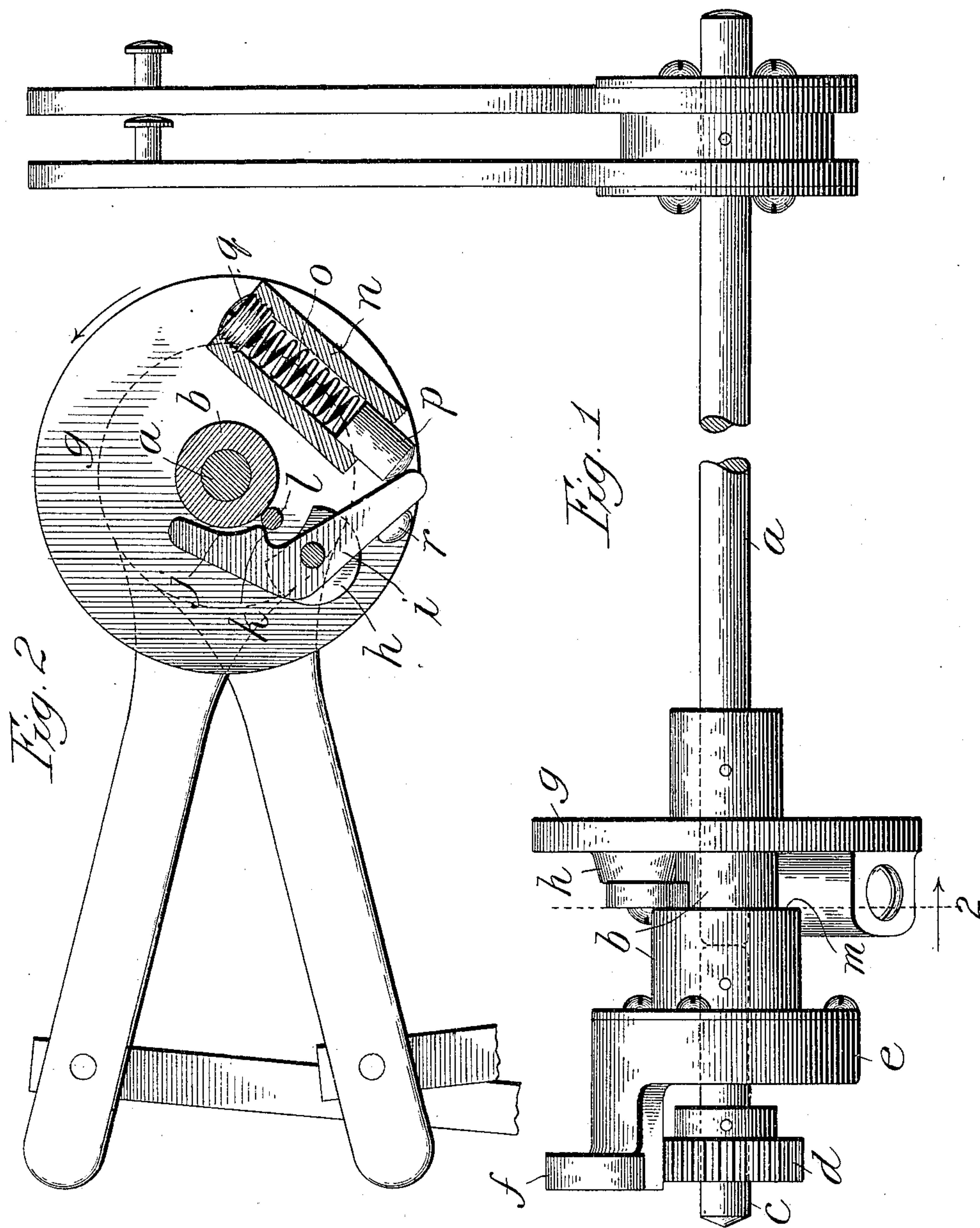


No. 825,323.

PATENTED JULY 10, 1906.

C. JOHNSON.
SAFETY WINDING CLUTCH.
APPLICATION FILED APR. 15, 1904



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UNITED STATES PATENT OFFICE.

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SAFETY WINDING-CLUTCH.

No. 825,323.

Specification of Letters Patent.

- atented July 10, 1906.

Application filed April 15, 1904. Serial No. 203,286.

To all whom it may concern:

Be it known that I, CHRISTIAN JOHNSON, a citizen of the United States, residing at Elgin, in the county of Kane and State of Illinois, have invented certain new and useful Improvements in Safety Winding-Clutches, of which the following is a specification.

This invention relates particularly to safety winding-clutches used in connection with spring-motors for automatic piano-players, and especially to the construction and arrangement of details and parts, as will more fully hereinafter appear.

The principal object of this invention is to provide a simple, economical, and efficient safety winding-clutch for spring-motors.

Other and further objects of the invention will appear from an examination of the drawings and the following description and claim.

The invention consists principally in a safety winding-clutch in which there are combined a disk or similar element, a safety winding-lever pivotally secured thereto, and a spring mechanism for keeping such lever under tension, as will be more fully hereinafter described.

The invention consists, further and finally, in the features, combinations, and details of construction hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a plan view of a safety winding-clutch as it appears when constructed in accordance with these improvements and shown in engagement with a part of the winding mechanism of a spring-motor; Fig. 2, a transverse view, partly in section, taken on line 2 of Fig. 1 looking in the direction of the arrow.

In the art to which this invention relates it is well known that it is very desirable during the winding operations of a spring-motor to provide the winding-clutch mechanism with some means by which such winding operations will automatically cease when the desired tension has been placed on the motor-spring. The principal object, therefore, of this invention is to provide a safety winding-clutch of such construction and arrangement that when the spring of the motor has been wound to a desired amount of tension the winding operations will automatically cease, all of which will more fully hereinafter appear.

In illustrating and describing these improvements I have illustrated the clutch

mechanism in engagement with a portion of the winding mechanism for a spring-motor for piano-players. It will be seen, however, that I have not illustrated the entire spring-motor, this being unnecessary in view of the fact that such motors are well known and understood by those skilled in the art. It will also be understood that this clutch is capable of being used in connection with any kind of a spring-motor either without any change or merely such changes as will involve the exercise of mechanical skill.

In constructing a safety winding-clutch in accordance with these improvements I provide a clutch-arbor *a*, which is adapted to enter the recessed socket portion *b* of a spring-motor for a piano-player, such socket being connected with the shaft *c*, upon which a spur-pinion *d* is rigidly secured. All of these parts are mounted in a bracket *e*, which is adapted to be secured, by means of its foot portion *f*, to the frame of a spring-motor. It will be understood, however, that the spur-pinion *d* is adapted to be engaged with a spur-gear on the winding-arbor of a spring-motor, all of which is well known to those skilled in the art.

Rigidly mounted upon or secured to the clutch-arbor *a* is a disk or circular plate *g*, and pivotally mounted upon a lug *h* on one face of said disk is a movable part, termed a "safety" winding-lever *i*. This safety winding-lever, as shown in Fig. 2, is somewhat L-shaped and provided with a curved portion *j*, arranged adjacent to the socket portion *b* of the spring-motor part. The heel *k* of this safety winding-lever is arranged to engage with a projecting pin *l*, rigidly secured to the shoulder portion *m* of the socket portion *b*. It will be seen that as the key-disk is rotated in the direction indicated by the arrow the heel of the safety winding-lever will engage with the pin *l* and carry the part of the spring-motor around with it, while an opposite rotation of the disk would have no effect upon said pin. It is desirable to keep said winding-lever under safety tension—that is, a tension that will force and carry the pin and motor part around with it until the motor-spring reaches a desired tension or a tension in excess of the spring which is arranged to hold said safety winding-lever under tension. To accomplish this result, the same face of the clutch-disk is provided with a housing *n*, in which is arranged a tension-spring *o*. A movable plug *p* is arranged in the housing, so

as to project therefrom and intermediate the tension-spring and the safety winding-lever. The other end of the housing is provided with an adjusting-screw *q*, arranged to place
 5 the spring mechanism under desired tension. By this arrangement it will be seen that the safety winding-lever can be placed under any desired tension and so as to release the winding mechanism before the spring of the motor reaches a dangerous tension. The clutch-
 10 disk is also provided with a projecting lug *r*, which limits the outward movement of one end of the safety winding-lever—in other words, keeps its curved face portion out of
 15 contact with the socket portion *b*, so as to permit a ready engagement and disengagement of the clutch with the spring-motor.

In the drawings I have shown an intermittent winding mechanism for rotating the
 20 clutch-arbor *a*; but as this forms no particular part of this invention further description of the same is considered unnecessary herein.

In operation in order to wind the motor-spring the arbor *a* with its safety-lever is rotated in the direction indicated by the arrow
 25 in Fig. 2 by operating the levers *w* and *x* alternately or in opposite directions simultaneously. This causes the shoulder of the safety winding-lever *i* to engage the pin *l*, as
 30 shown in Fig. 2, such safety-lever being held yieldingly in engagement with the pin and at the desired tension by means of the spring *o*. When the motor-spring has been wound to a
 35 sufficient tension, so that it overcomes the spring *o*, the pin or stud *l* will press the shoul-

dered portion of the safety-lever, with which it is in contact, outward, and the safety-lever will thus be permitted to rotate past the stud and without turning the shaft *c* until the motor-spring has become unwound to such an
 40 extent that the tension of the spring *o* with the fulcrum provided by the safety-lever is sufficient to again hold the safety-lever yieldingly and removably in engagement with the stud or pin *l*. By this means it will be read-
 45 ily seen that the spring *o* being at the desired tension, which may be regulated by means of the screw-plug *q*, the winding of the motor-spring will at all times cease when such motor-spring has been wound to a sufficient ten-
 50 sion to overcome the spring *o*. The safety of the motor-spring is thus insured.

I claim—

In mechanisms of the class described, the combination of a part to be rotated having a
 55 projection, a disk, a rotatable arbor upon which the disk is mounted, a safety winding-lever pivoted midway of its length to one face of the disk and provided at one end with a
 60 heel portion arranged to contact with the projection on the part to be rotated and a spring bearing against the opposite end of the lever holding the heel of the lever in engagement with the projection, and means for adjusting the tension of the spring.

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