

No. 644,381.

Patented Feb. 27, 1900.

R. VOEGELIN.
STEM WINDING WATCH.
(Application filed Aug. 2, 1899.)

(No Model.)

FIG. 1 -

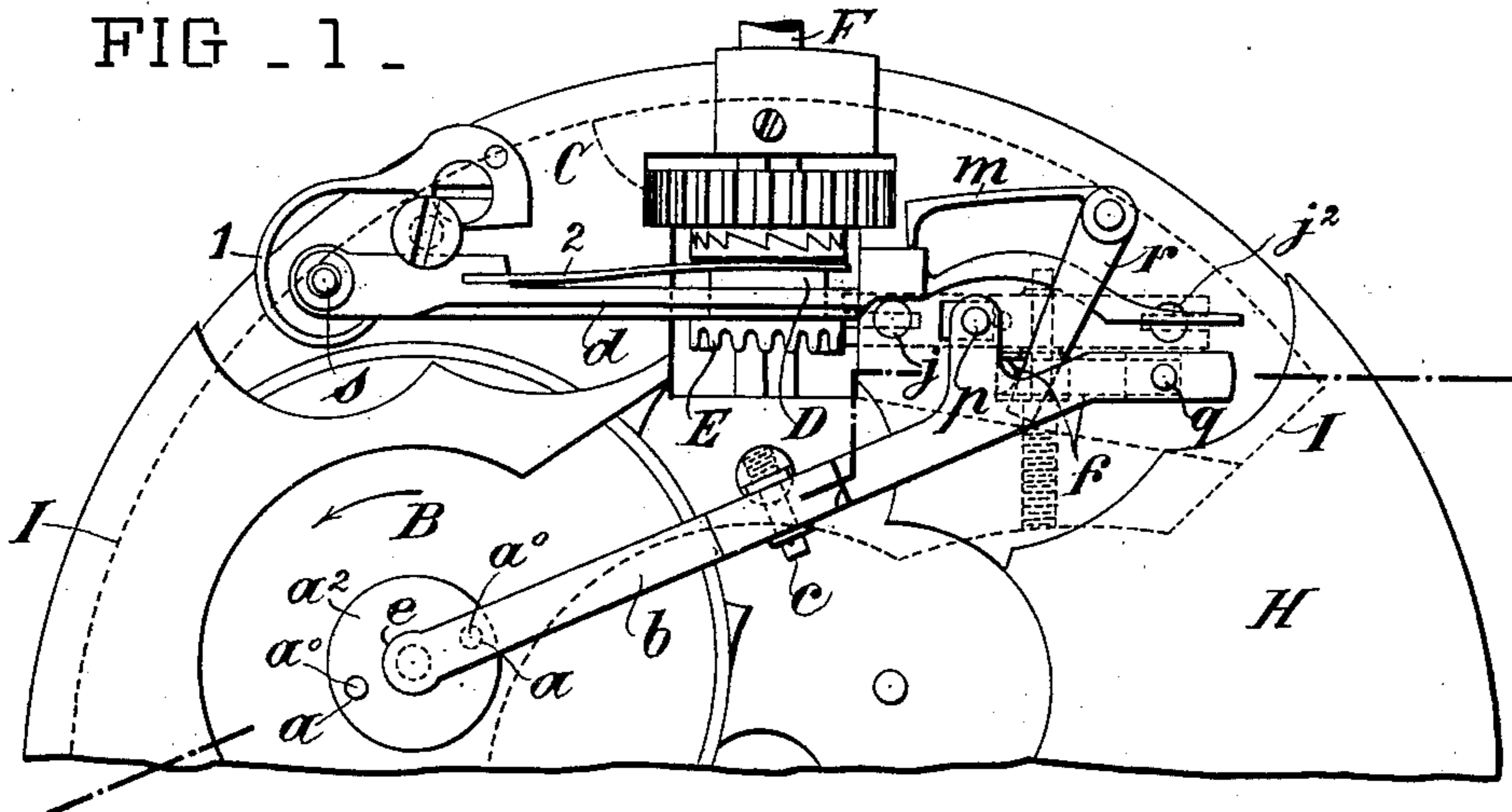


FIG. 2 -

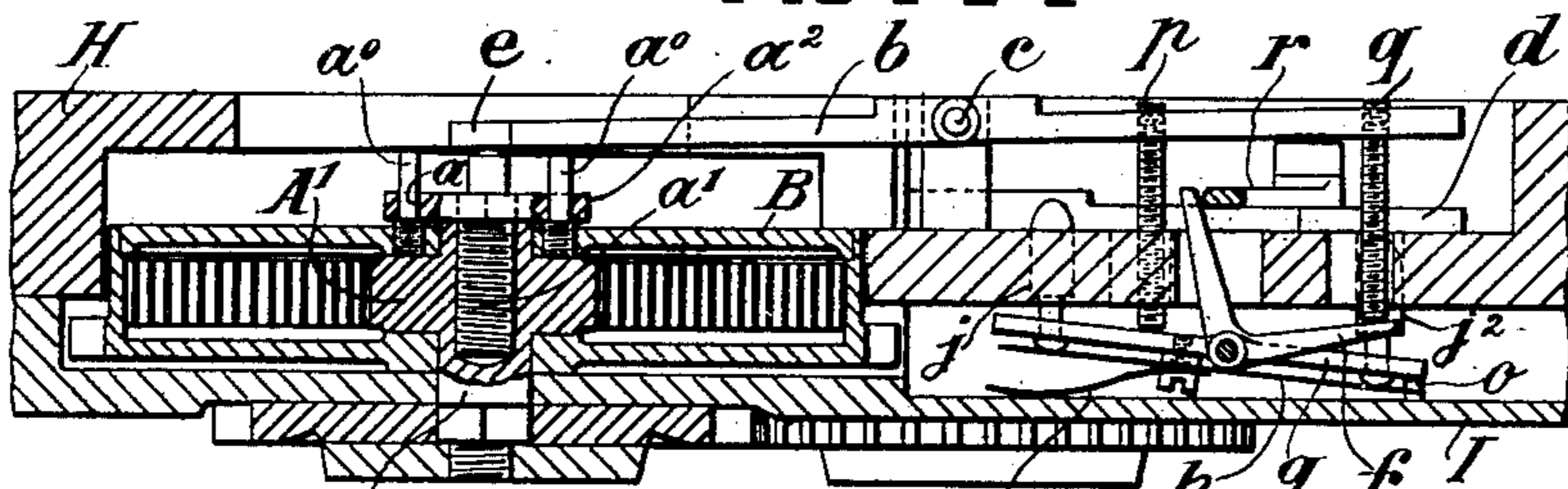


FIG. 3 -

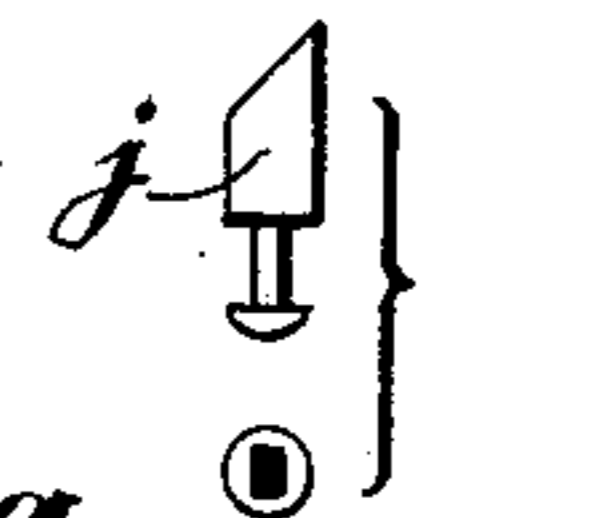


FIG. 2^a -

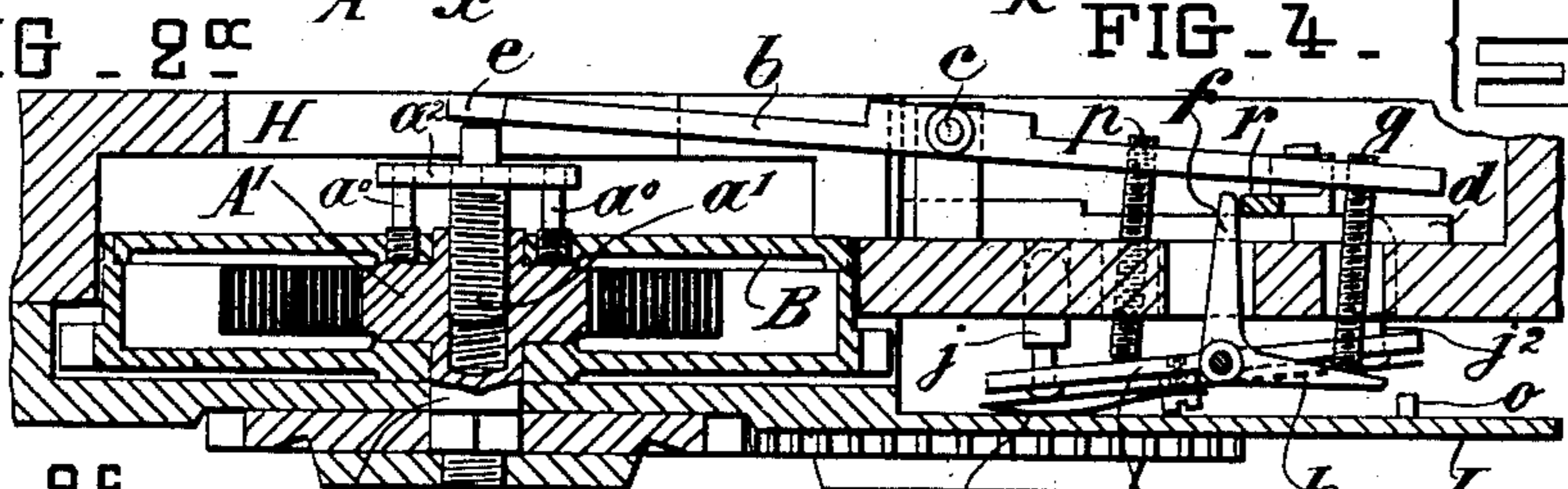


FIG. 4 -

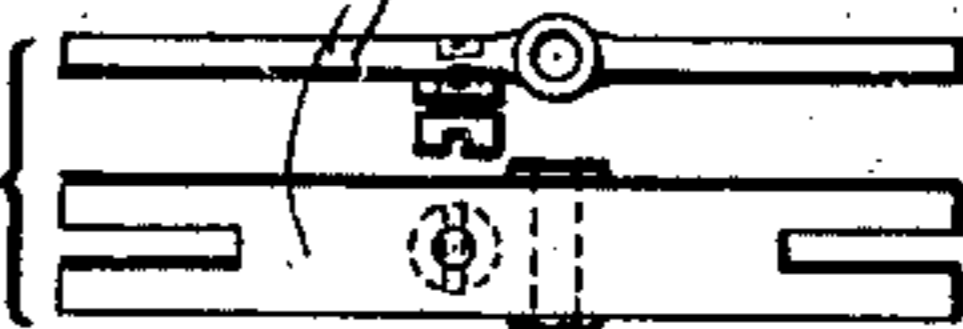


FIG. 2^c -

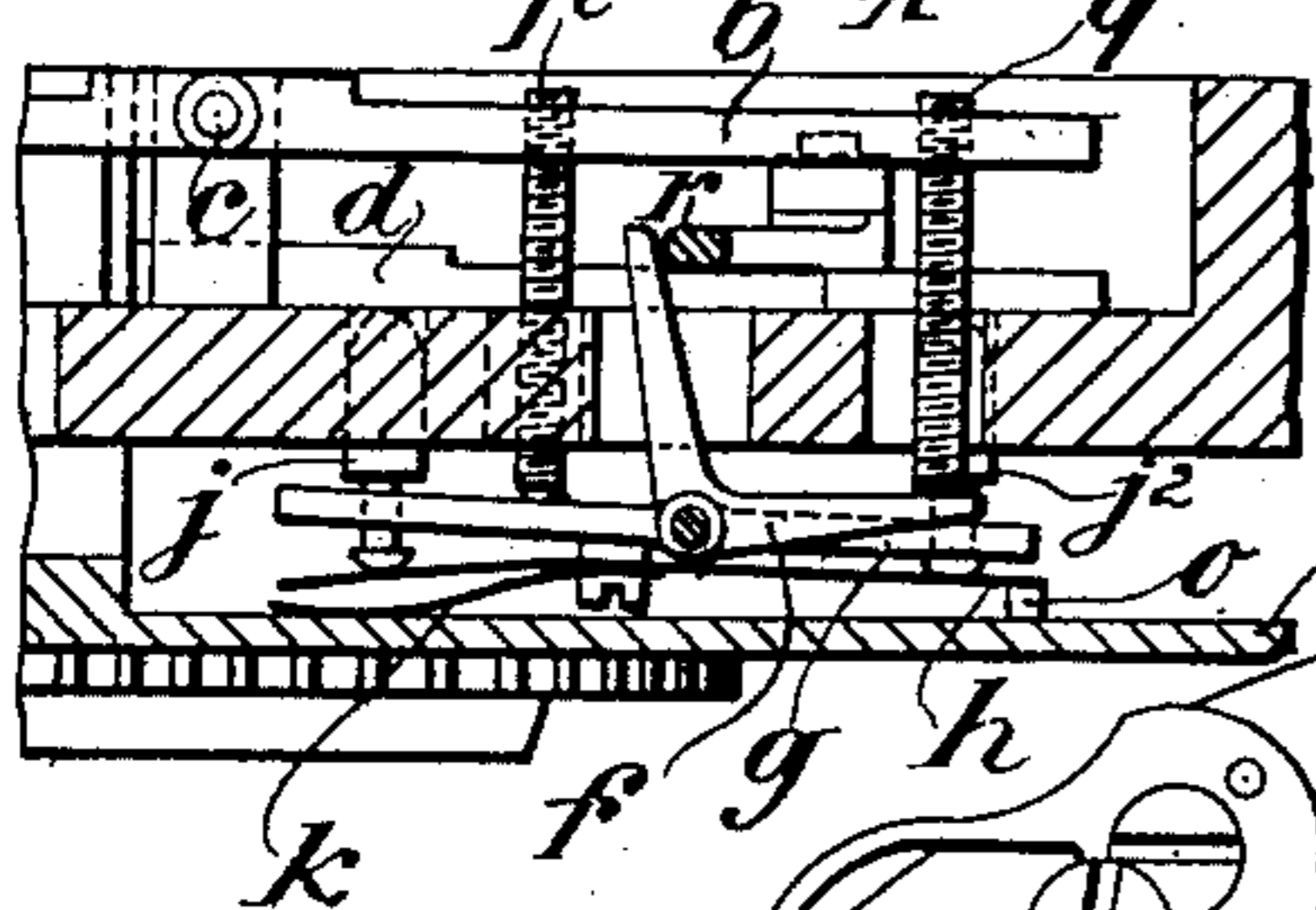


FIG. 5 -

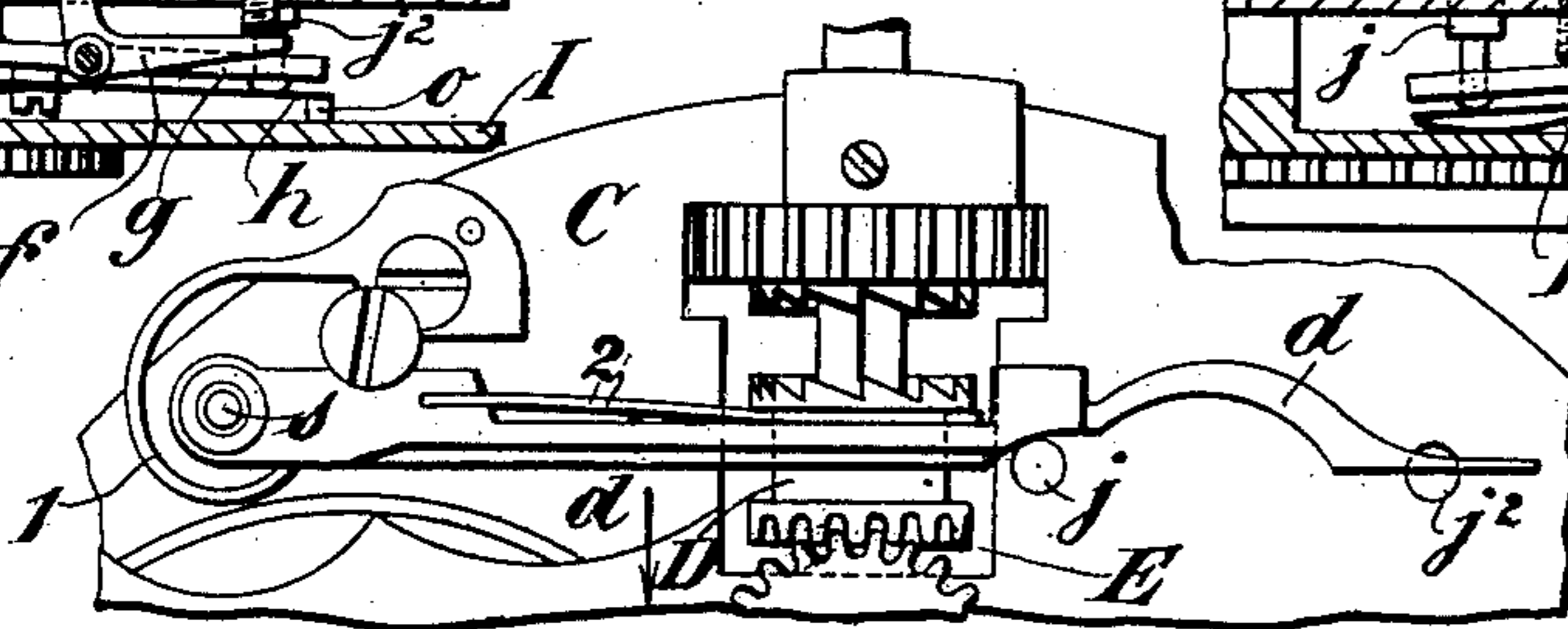
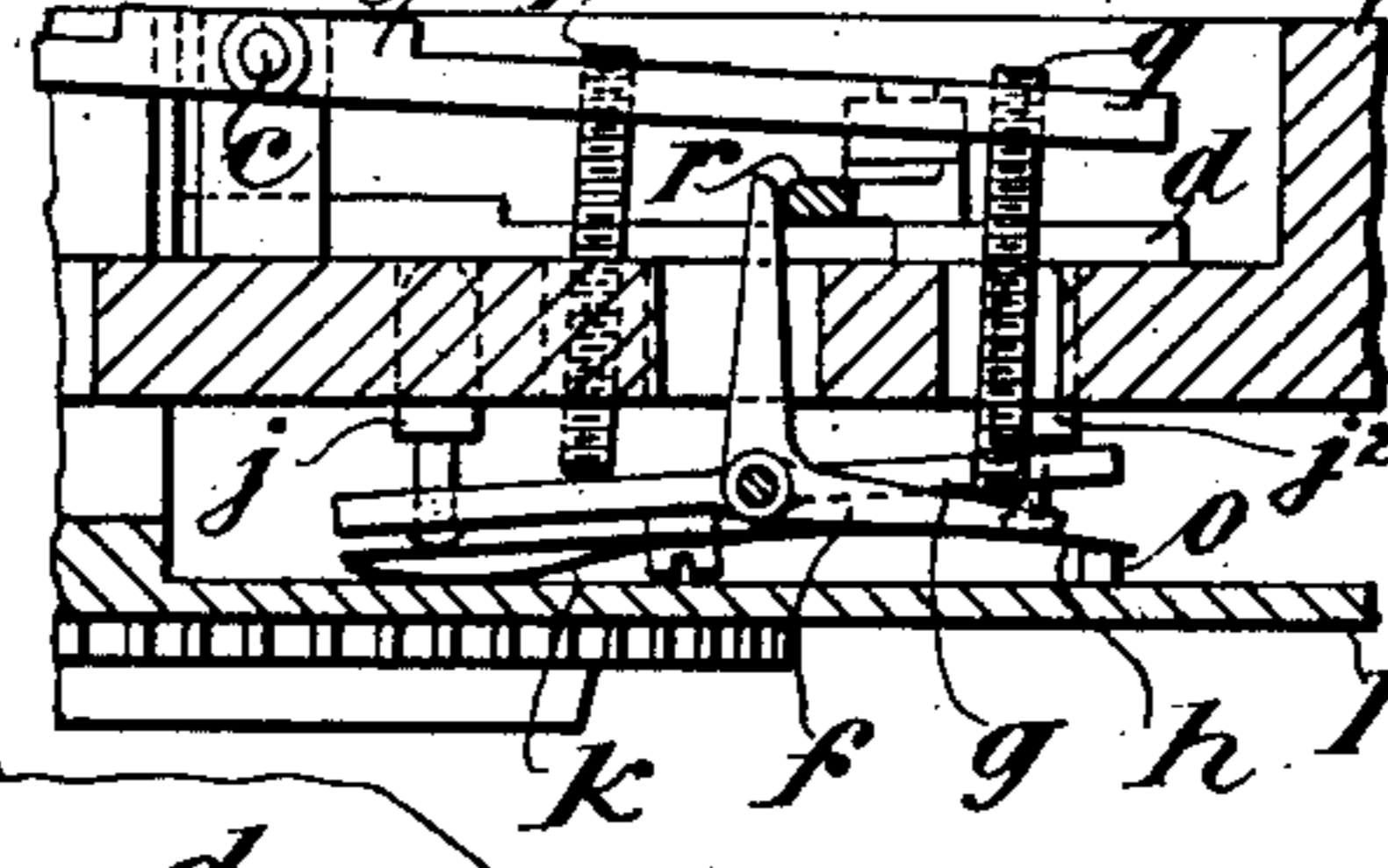


FIG. 2^b -



Witnesses:

J. H. H. H. H.
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Inventor

Rinhardt Voegelin
by Henry Cornett
his Attorney

UNITED STATES PATENT OFFICE.

REINHARDT VOEGELIN, OF SENNHEIM, GERMANY, ASSIGNOR OF TWO-THIRDS TO ADOLF REISSER AND SEBASTIAN SCHIMPF, OF SAME PLACE.

STEM-WINDING WATCH.

SPECIFICATION forming part of Letters Patent No. 644,381, dated February 27, 1900.

Application filed August 2, 1899. Serial No. 725,887. (No model.)

To all whom it may concern:

Be it known that I, REINHARDT VOEGELIN, clockmaker, a subject of the Grand Duke of Baden, and a resident of Sennheim, Alsace, Germany, have invented certain new and useful Improvements in Means to Prevent Overwinding of Watch or Clock Springs, of which the following is a specification.

The present invention relates to a device applicable to watches or clocks by means of which the winding-up mechanism is automatically disconnected as soon as the timepiece is sufficiently wound up—that is, for example, after turning around the spring, say, four times. The winding-crown is then freed and is completely independent of the winding-train, and consequently any overstraining of the mainspring is entirely prevented.

This invention as applied to a watch with a hands-setting pinion upon the winding-shaft is illustrated in the accompanying drawings, wherein—

Figure 1 shows the mechanism in plan with the dial-plate removed and the gears connected. Figs. 2, 2^a, 2^b, and 2^c illustrate the mechanism, partly in section through the axis of the spring-barrel and in its different positions corresponding to particular phases of the operation. Figs. 3, 4, and 5 are detail views.

The shaft A' of the spring-barrel has in it an axial bore or socket extending about half of its whole length and screw-threaded with a left-hand thread. A corresponding left-hand screw a' is screwed into this hole and can be readily driven in and out of the shaft A'. The screw a' has fixed on its upper end a small disk a² of any desired diameter, having two holes a diametrically opposite to each other. Through these two holes are loosely passed two pins a⁰, which are fixed to the cover B of the spring-barrel. The spring-barrel and the screw a' are in this manner so connected that said screw can always be moved in one or the other direction, according to the circumstances. Thus if the watch is to be wound up the shaft A' of the spring-barrel moves toward the right in the direction of the arrow in Fig. 1, and the screw a' will be moved out from the shaft A' in consequence of the left-hand screw-thread, being guided on the pins a⁰, which prevent it

from turning, while when the watch is going the spring-barrel revolving in the direction of the said arrow turns or drives back the screw a' into the shaft A' by means of the two pins a⁰.

On the end of the screw a' rests one end of a bar b, pivoted at c, the other end of which carries two screws p and q. The screw q rests on one arm of a pivoted elbow-lever f, the other arm of which leans or bears against an arm r, fixed to a spring-arm m, so that by turning the lever f in the proper direction the spring m is strained. The free end of this spring m rests against a lever d, pivoted at s, which by means of the usual clutch serves for connecting and disconnecting the winding-pinion C and is located for this purpose in the circumferential groove provided on the tube D, movable along the winding-shaft F between one member of the clutch and the toothed rim of the hands-setting pinion E. This lever d is in combination with springs 1 and 2, of which the weak spring 1 operates on the lever d, while the strong spring 2, connected with the latter, belongs properly to the clutch.

Situated adjacent to the free end of the lever d are two pins j and j², slidably mounted in the plate H. These pins have beveled upper ends, slender necks, and headed lower ends, as seen in Fig. 3, which shows one of them detached. The necks of the pins are square and engage, respectively, slots in the ends of a rocking lever g. (Seen detached in Fig. 4.) This lever g has arms of unequal length and is mounted loosely on the fulcrum-pivot of the lever f. There is secured to the under side of the lever g a thin leaf-spring h, the ends of which take under the heads of the respective pins j and j² and press the latter upward with a yielding pressure. The beveled faces of these pins are turned in opposite directions. Under the longer arm of the lever g is a stiff spring k, which tends to hold this arm elevated, as seen in Figs. 2 and 2^c.

The operation so far as described is as follows: If the watch be wound up, the screw a, being left-handed, is run out from the shaft A' and takes under and elevates the bar b at c, thus depressing its other end. The screw q, carried by the depressed end of the bar b, presses

on one arm of the elbow-lever f , the other arm thereof bearing on the arm r , thus putting the spring m , which bears on the lever d , under tension. The tendency of the spring m is to push the lever d over, (downward in Fig. 1,) and thus disconnect the winding-gear; but the lever d at this moment bears against the upright face of the projecting end of the detent or latch-pin j , so that said lever cannot move or yield. The watch is now nearly wound up. The bar b has depressed the screw q to the full extent and the spring m is under full tension. (See Fig. 2^a.) While the screw q has been acting on the lever f the screw p has been depressing the arm of the lever g , which carries the pin j , and as soon as this pin is drawn down or back far enough to free the lever d the spring m acts and shifts this lever and throws the winding mechanism out of gear. In its movement the lever d , acting on the beveled face of the detent-pin j^2 , wipes over and depresses it, the spring k yielding to permit this pin to be driven back. The pin j^2 rises or protrudes again as soon as the lever d passes over it, and its upright face acts as a stop to prevent the return of the lever d . When the lever d shall have disconnected the gear, as above explained, it is impossible to continue winding up the spring any further. The running of the watch drives the screw a' back into the bore or socket in the shaft A' of the spring-barrel, and the bar b follows it, raising the screws p and q . This permits the spring k to rock the lever g . The pin j is pressed upward against the lever d , its spring h yielding, and the pin j^2 is drawn down so as to again free the lever d . This may occur after about eight hours' running. A stop o limits the movement of the lever g . The spring l now passes, presses the lever d back to its first position, said lever wiping over and depressing the pin j in its movement, as in the case of the pin j^2 . When the watch shall have run down, the mainspring unwinding about four turns, the screw a' will have reached the bottom of the bore in the shaft A' , and this will stop the watch at once. The regulating mechanism hitherto employed is thus rendered unnecessary. When the watch

is run down, it may be wound up again, as above described, and the operation is repeated.

Fig. 5 illustrates the position of the pinion E for setting the hands at the moment when its teeth engage with the first-wheel of the hands-setting train. The lever d is then stopped by the pin j , so that it cannot give way, and by thus moving the tube D only the spring 2 yields. By relaxing the pressure this spring causes the hands-setting pinion to return again to its original position.

It is obvious that this device can also be used in watches provided with other known means for hands-setting and winding up. In this case the disconnecting-lever d would be so constructed that it would permit the disconnection of the winding-up mechanism and also the operation of hands-setting by the means usually employed.

Having thus described my invention, I claim—

In a device for the purpose set forth, the combination with the spring-barrel and its shaft, the latter having in it an axial bore with a left-hand screw-thread, a screw screwed into said bore, means for preventing the rotation of said screw with said shaft, a pivotally-mounted bar b , adjustable by the said screw, and provided with screws p and q , a disconnecting spring-lever d , the spring bearing thereagainst, means between the screw q and the spring m whereby the latter is put under tension by the winding up of the mainspring, the rocking lever g , on one arm of which the screw p bears, the spring k of said lever, the two beveled stop-pins j and j^2 , slidably mounted in the plate H with their bevels facing in opposite directions, said pins being loosely mounted in the respective ends of the lever g , and the springs which bear on the heads of said pins, substantially as set forth.

In witness whereof I have hereunto signed my name, this 20th day of July, 1899, in the presence of two subscribing witnesses.

REINHARDT VOEGELIN.

Witnesses:

GEORGE GIFFORD,
AMAND RITTER.