(No Model.)

F. A. RICHTER.

SPRING WINDING MECHANISM.

No. 513,532. Patented Jan. 30, 1894.

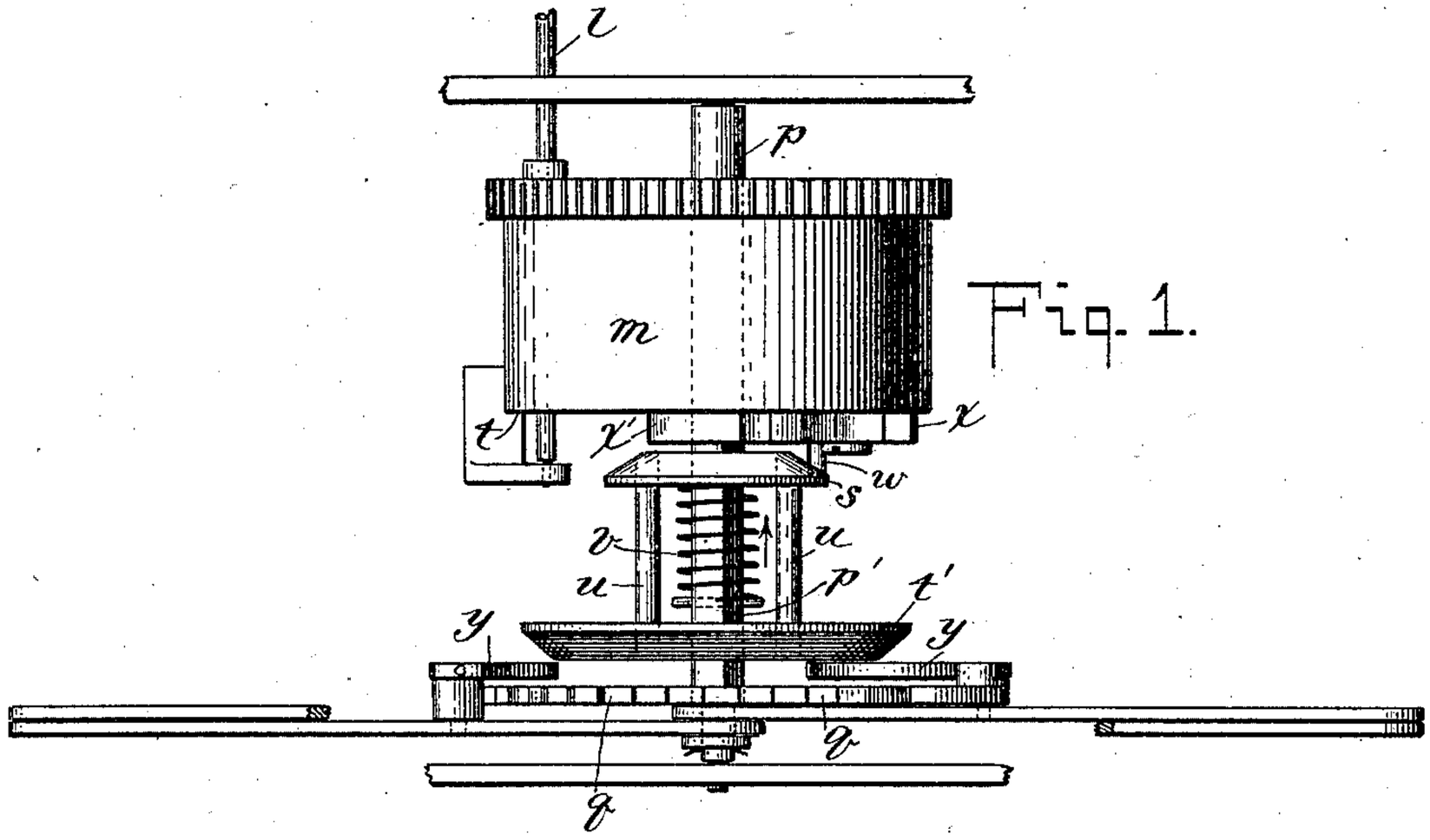


Fig. 1.

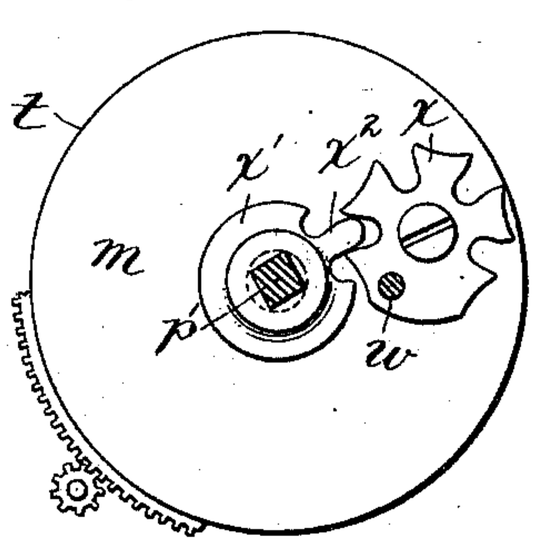
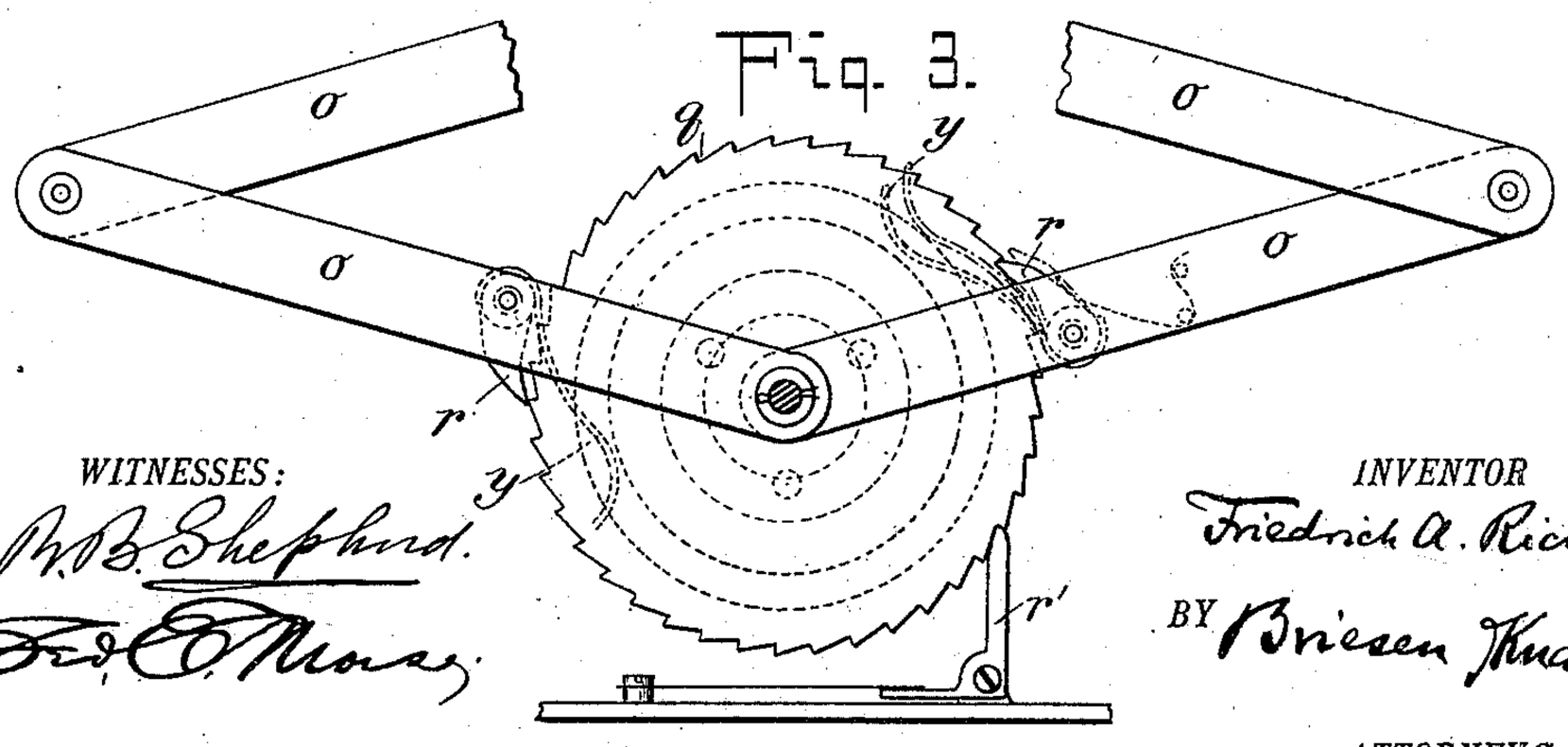


Fig. 2.

Fig. 3.



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FRIEDRICH ADOLF RICHTER, OF RUDOLSTADT, GERMANY.

SPRING-WINDING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 513,532, dated January 30, 1894.

Original application filed March 28, 1893, Serial No. 467,963. Divided and this application filed November 24, 1893. Serial No. 491,848. (No model.)

To all whom it may concern:

Be it known that I, FRIEDRICH ADOLF RICHTER, a subject of the Emperor of Germany, residing at Rudolstadt, Germany, have invented a new and useful Improvement in Winding Mechanism, of which the following is a specification.

My invention relates to winding mechanism, and has for its object to produce a device which will prevent overwinding of springs in winding mechanism.

My invention is capable of use in many relations, but is more especially adapted for use with musical instruments such as described in my application for Letters Patent No. 467,963, filed March 28, 1893, of which this is a division.

I attain the object of my invention by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of one form of my invention. Figs. 2 and 3 are detail views of parts hereinafter described.

In the drawings *m* is a spring barrel of any suitable or ordinary kind, and *p* is its arbor. This spring-barrel *m* meshes with and rotates the arbor *l* which communicates motion to any desired mechanism. The arbor *p* is squared for a portion of its length *p'* and has mounted thereon the wheel *x'* having but a single tooth. Mounted on one face *t* of the spring-barrel *m* is a wheel *x* having thereon a stud *w*. This wheel *x* is in meshing relation with the wheel *x'* and these two wheels together form what is known as a Geneva movement. That is to say that once in every revolution the tooth x^2 on the wheel *x'* will mesh with the wheel *x* and revolve it the space of one tooth, so therefore the wheel *x* will be stepped forward one tooth each time the wheel *x'* is revolved. Mounted also upon the squared portion *p'* of the arbor *p* are two beveled disks *s t'*, rigidly connected by rods *u u u* so as to revolve together. A spring *v* bearing on disk *s* serves to press the joined disks in the direction of the arrow, Fig. 1. Mounted also upon the part *p'* of the arbor *p* is a ratchet *q*. Pawls *r* on arms *o* engage this ratchet and step it around when the arms *o* are rocked. This ratchet *q* when revolved serves to turn the arbor *p' p* and wind the spring in the going barrel *m*; the usual detent *r'* serving as a stop for the ratchet in the usual manner. The pawls *r* have arms or extensions *y* which project into proximity to the disk *t'* in such position that the disk *t'* may be pressed between them and rock them to lift the pawls *r* from the ratchet *q*.

The detailed operation is as follows: When the arms *o* are rocked upon their pivots, the pawls *r* engage with and step the ratchet *q* around, turning also the arbor *p' p* and winding the spring-barrel. Once in every revolution the tooth x^2 of the wheel *x'* engages the wheel *x* and steps it around the space of one tooth. The parts are so proportioned and arranged that when the spring in the barrel has been fully wound the wheel *x* has been rotated far enough to bring the stud *w* against the bevel face of the disk *s*. Any further movement of the arbor *p' p* will therefore force the stud *w* against the disk *s* which will have the effect of moving it together with the connected disk *t'* against the spring *v* in a direction opposite to the arrow. See Fig. 1. As the disk *t'* is thus moved it is pressed between the arms *y* and the bevel face acting on said arms force them outward and rock them on their pivots, thus lifting the pawls *r* from the ratchet *q*. The pawls *r* having been lifted from the ratchet, the arms *o* may be rocked without effecting any revolution of the ratchet. As the barrel *m* revolves during unwinding of the spring, the wheel *x* will be stepped around as before one tooth at each revolution of the barrel, but the revolution of the wheel *x* will be in a reverse direction to its movement while the spring was being wound. This will have the effect of removing the stud *w* from engagement with the disk *s* and disengaging the disk from the arms *y*, which will re-engage the pawls with the ratchet *q*. The arms *o* may now be rocked to effect the winding of the spring, the releasing devices acting on the pawls *r* as before at the proper time to prevent over-winding of the spring.

I do not herein claim all devices for preventing the over-winding of spring barrels, nor do I limit myself to the precise construc-

tion and arrangement herein shown as the device may be greatly varied without departing from the spirit of my invention.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a winding mechanism, the combination of a spring-barrel, pawl and ratchet mechanism for winding said spring-barrel, a stud carried by the spring-barrel, a releasing device consisting of a pair of connected beveled disks actuated by the stud and operating when displaced to lift the pawls from the ratchet to prevent over-winding of the spring-barrel, substantially as described.

2. In a winding mechanism, the combination of a spring-barrel, pawl and ratchet mechanism for winding said spring-barrel, a wheel x' on the arbor of said spring-barrel engaging a wheel x carrying a stud w, a releasing device actuated by the stud and operating when actuated to disengage the pawl mechanism from the ratchet to prevent over-winding of the spring-barrel, substantially as described.

3. In a winding mechanism, the combination of a winding drum m, an arbor $p'p$ therefor, having a ratchet q mounted thereon, pawls r, r, engaging said ratchet, a spring pressed releasing device consisting of connected beveled disks s t' a spring acting thereon, and a stud w on the winding drum for displacing the disks against the pressure of the spring, whereby the releasing device is moved to disengage the pawls r r from the ratchet q to prevent overwinding of the spring-barrel, substantially as described.

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Witnesses:
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