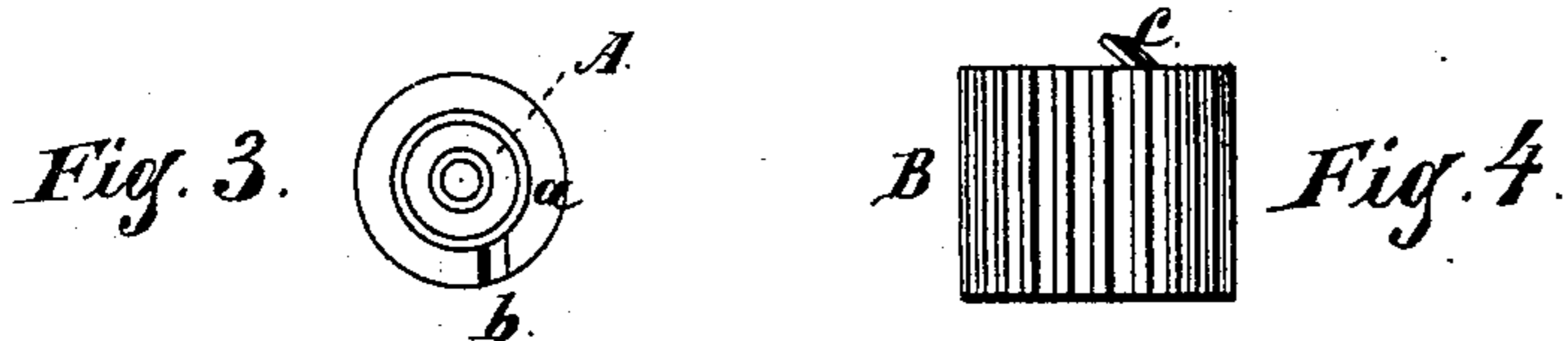
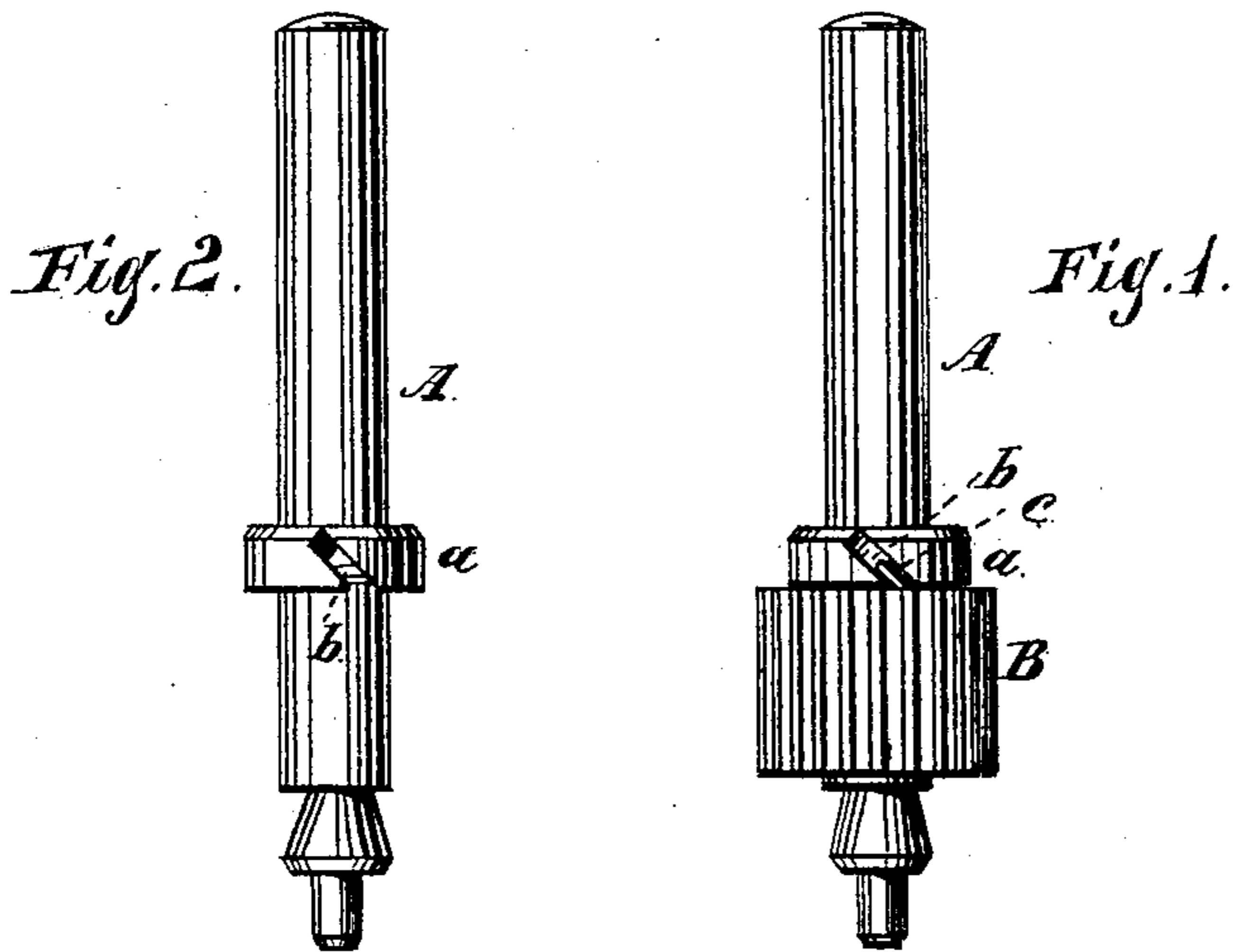


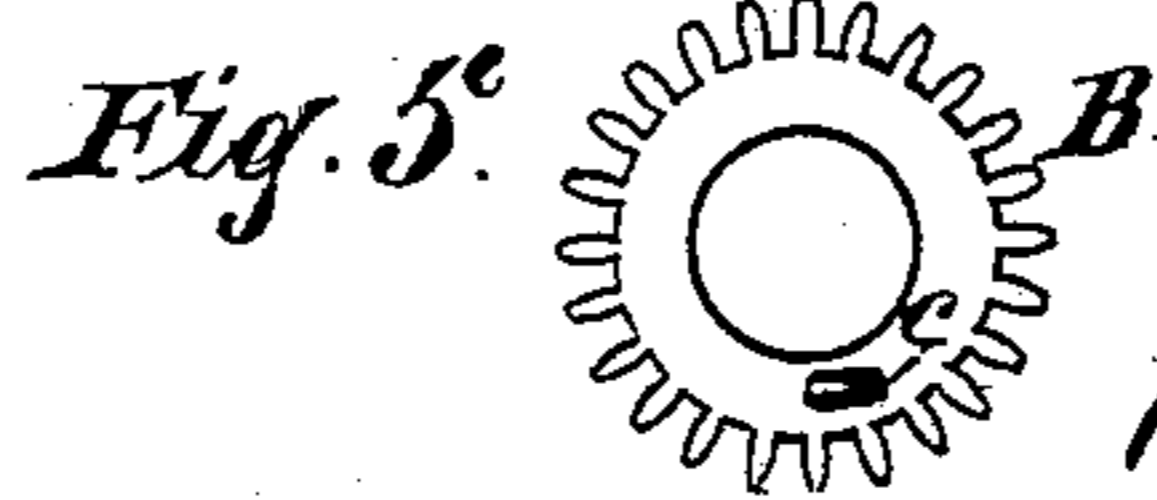
B. F. STONER.
Safety-Wheel for Watches.

No. 202,601.

Patented April 16, 1878.



Witnesses:
O. W. Bond.
J. F. Burns



Inventor:

Benjⁿ F. Stoner.
By W. H. Bond,
Atty.

UNITED STATES PATENT OFFICE.

BENJAMIN F. STONER, OF ROCKFORD, ILLINOIS, ASSIGNOR TO ROCKFORD WATCH COMPANY, OF SAME PLACE.

IMPROVEMENT IN SAFETY-WHEELS FOR WATCHES.

Specification forming part of Letters Patent No. **202,601**, dated April 16, 1878; application filed March 11, 1878.

To all whom it may concern:

Be it known that I, BENJAMIN F. STONER, of Rockford, Winnebago county, State of Illinois, have invented a new and useful Improvement in Watches, of which the following is a full description, reference being had to the accompanying drawing, in which—

Figure 1 is an elevation, showing the center-wheel, arbor, and the pinion; Fig. 2, an elevation of the arbor; Fig. 3, a top or plan view of the arbor; Fig. 4, a side elevation of the pinion; Fig. 5, an end view of the pinion.

The devices, as shown, are enlarged, and the arbor or staff, as shown, has but one journal or bearing completed; the metal of the bar from which it is to be severed is still attached in the figures.

The object of this invention is to so connect the center-pinion, or the pinion which engages with the barrel-gear of a watch-train, with its arbor that in case of a reverse movement of the barrel or main gear from any cause the pinion will be disengaged from its connection with its arbor and turn freely thereon, thereby preventing damage to the train from such reverse movement; and its nature consists in providing the end of the pinion with an inclined pin, projecting in the direction in which the pinion travels when in position in the train, and arranged to engage with a correspondingly-inclined slot or opening in a shoulder or collar of its arbor, so that when the watch is running properly the pinion and its arbor will engage; but in case of a reverse movement of the pinion from any cause such movement will withdraw the pin from its slot, and leave the pinion free to revolve on its arbor without communicating motion thereto.

In the drawings, A represents an unfinished arbor, carrying the center-wheel and pinion of a watch-train; B, the pinion; *a*, the shoulder on the arbor; *b*, the slot or opening; *c*, the engaging-pin.

A watch-movement is not shown, as it may be of the usual construction of movements, in which the train is driven by a going-barrel.

The arbor A may be of any form of construction suitable for carrying the center-wheel and a loose center-pinion. It is to be provided with a shoulder, *a*, so located as to

leave a sufficient space between it and the plate for the pinion, the location of the shoulder being such as to leave a sufficient space to receive the pinion, and allow it to have a slight vertical movement on the arbor to permit of the disengagement of the pinion from the arbor or staff.

The pinion B is made of the ordinary size, and is provided with suitable leaves or cogs to engage with the barrel or main wheel. It is made cylindrical, its bore or hollow fitting the staff or arbor closely, but sufficiently loose to revolve freely thereon when disengaged. The end which is in contact with the shoulder or collar of the staff or arbor is provided with a hooked or inclined projection or pin, *c*, which is made a part thereof, or is permanently attached thereto when made of a separate piece. A corresponding slot or opening, *b*, is made in the shoulder *a*, so that when the train is moving in its proper direction the pinion will be strongly hooked or locked to the shoulder of the arbor, so that it cannot rise or become displaced, as power applied in the proper direction of the movement of the train will cause them to adhere closer and more strongly by reason of the incline or undercut of the connection; but if from any cause the barrel or main wheel should have a reverse movement given it, the force will be exerted on the pinion on the opposite direction, and will instantly disengage the pin *c* from the slot *b*, disconnecting the pinion and arbor, so that the pinion can revolve freely in the arbor, and so that no damage can occur to the train by reason of such reverse movement.

By using a slot and pin, each having an inclined position, it will be seen that the pinion can be more quickly connected from the shaft or arbor, as such inclination permits the easy withdrawal of the pin by a less travel of the pinion, and as the pin may loosely fit the slot or opening there is less liability of becoming stuck by lubricants hardening by reason of long use without reverse action.

I am aware that hollow center-pinions have been heretofore used in watch-trains for preventing injury to them in case a reverse movement is given by breaking the mainspring,

or from other cause, and that such pinions have been connected to their arbors by interior screw-threads, and by a round pin on the arbor fitting an interior inclined groove in the pinion; but my device has several advantages peculiar to it. A better fit between the staff or arbor and pinion can be made, the connection being made at the end of the pinion; it is further from the center and stronger; both pin and slot being inclined, a better, stronger, and a locking connection is made; it requires but a slight end movement of the pinion on the staff; the connection is or may be in sight when the pinion is in place; it is more easily put in position when displaced, and is less liable to stick.

For a cheap watch-movement the slot or

opening *c* may be made in the hub or central part of the center-wheel, so as to dispense with a separate shoulder or collar on the staff or arbor.

What I claim as new, and desire to secure by Letters Patent, is—

The pinion B, provided with the inclined end pin *c*, in combination with the staff or arbor A, provided with a shoulder or hub having an inclined slot or opening, *b*, for interlocking the parts, substantially as and for the purpose specified.

BENJAMIN F. STONER.

Witnesses:

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