

W. MILNER.  
Sash-Balance.

No. 221,247.

Patented Nov. 4, 1879.

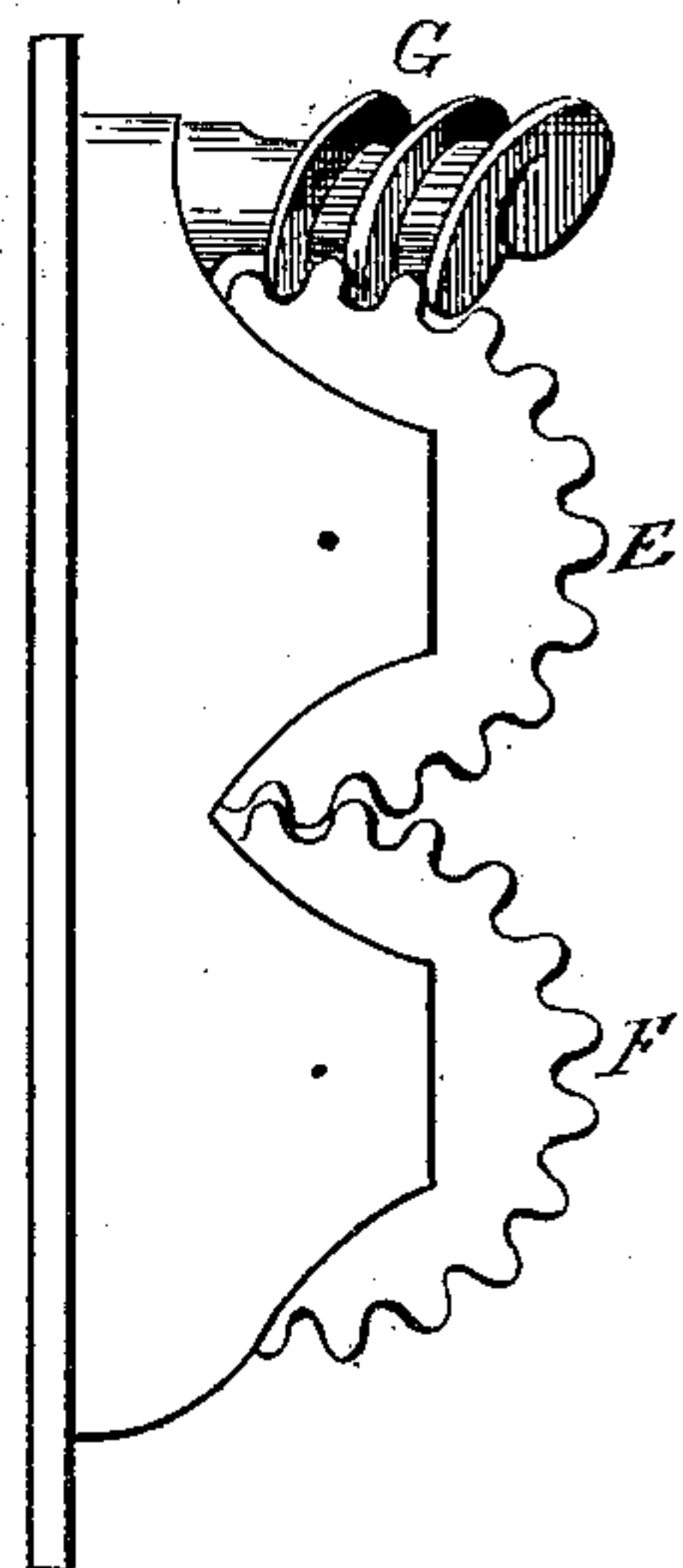


Fig. 1.

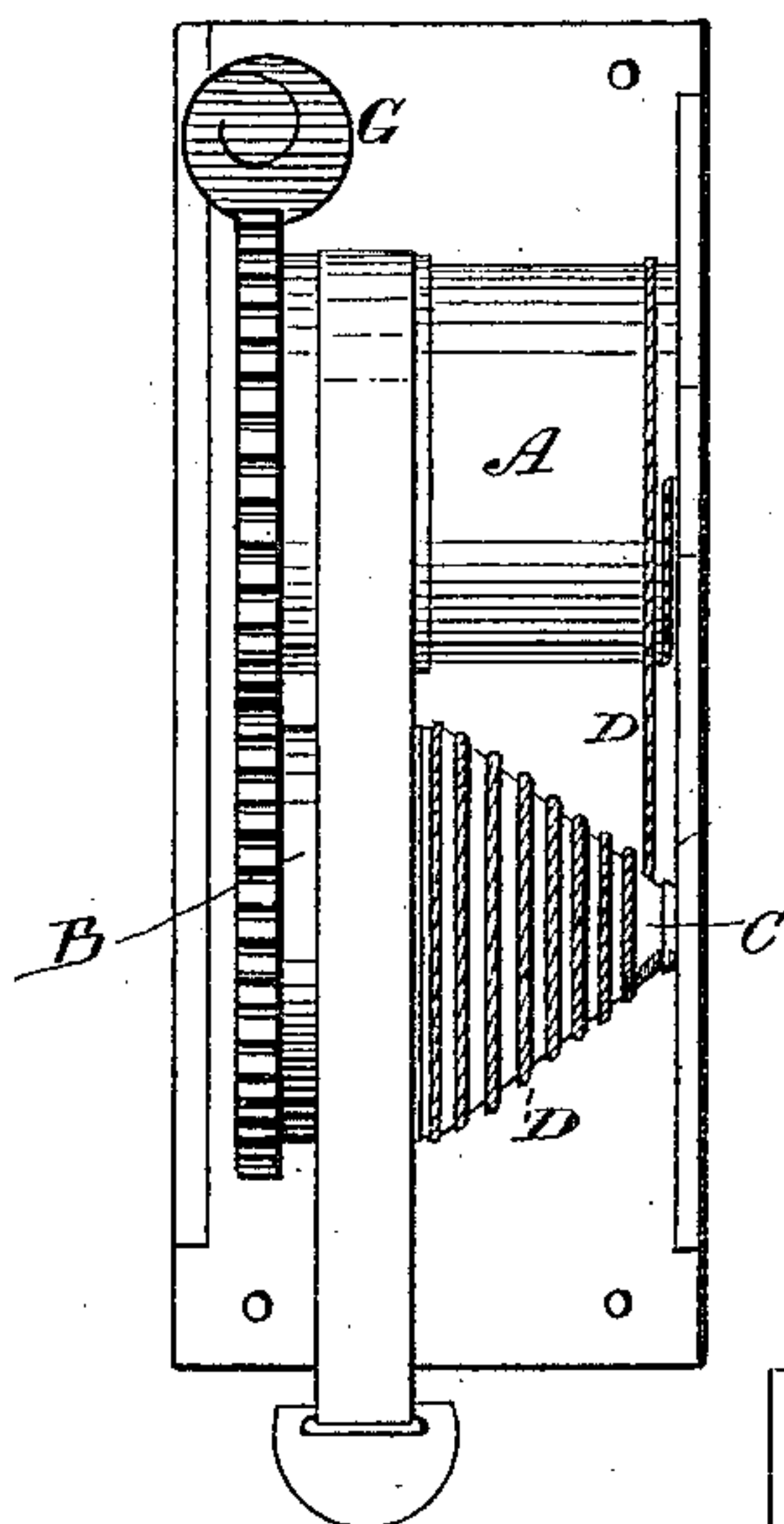


Fig. 2.

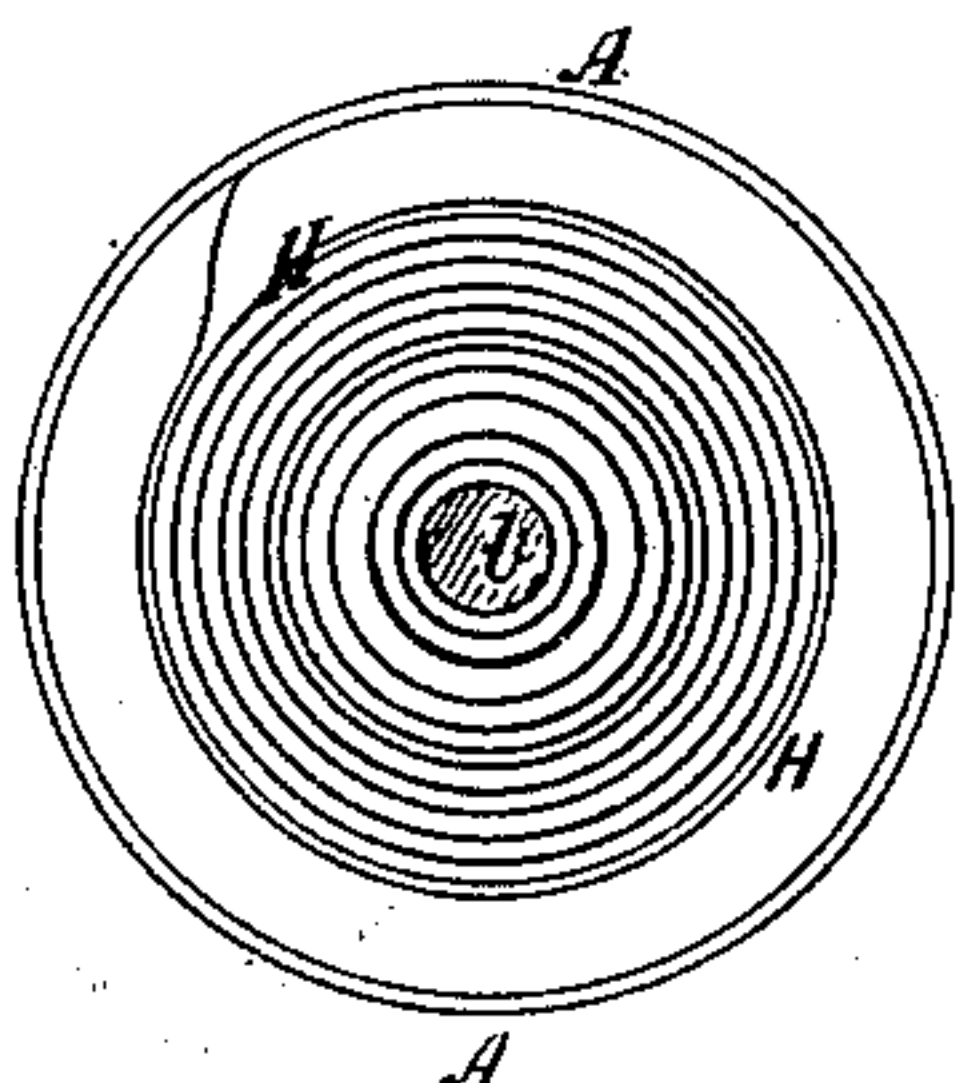


Fig. 5.

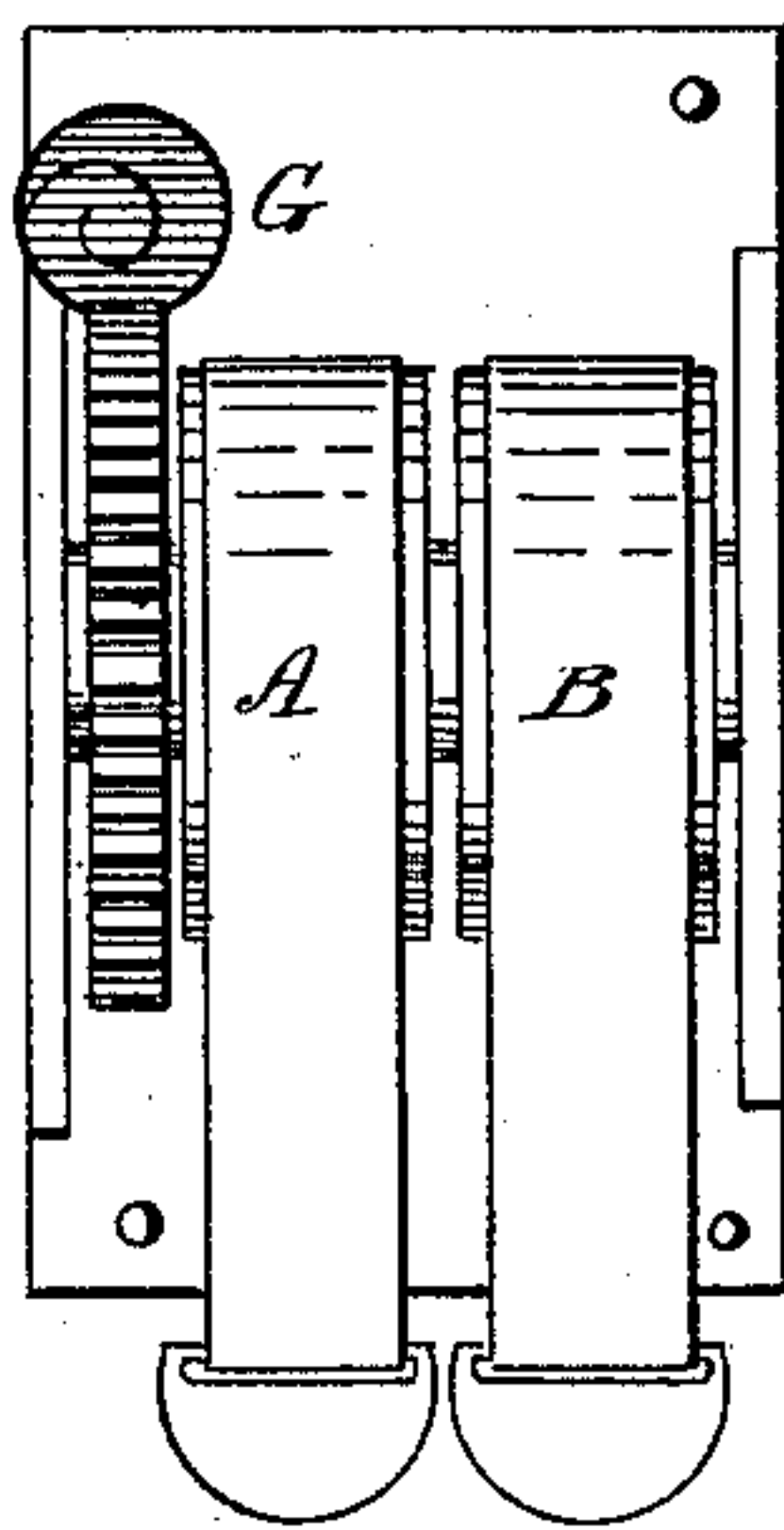


Fig. 4.

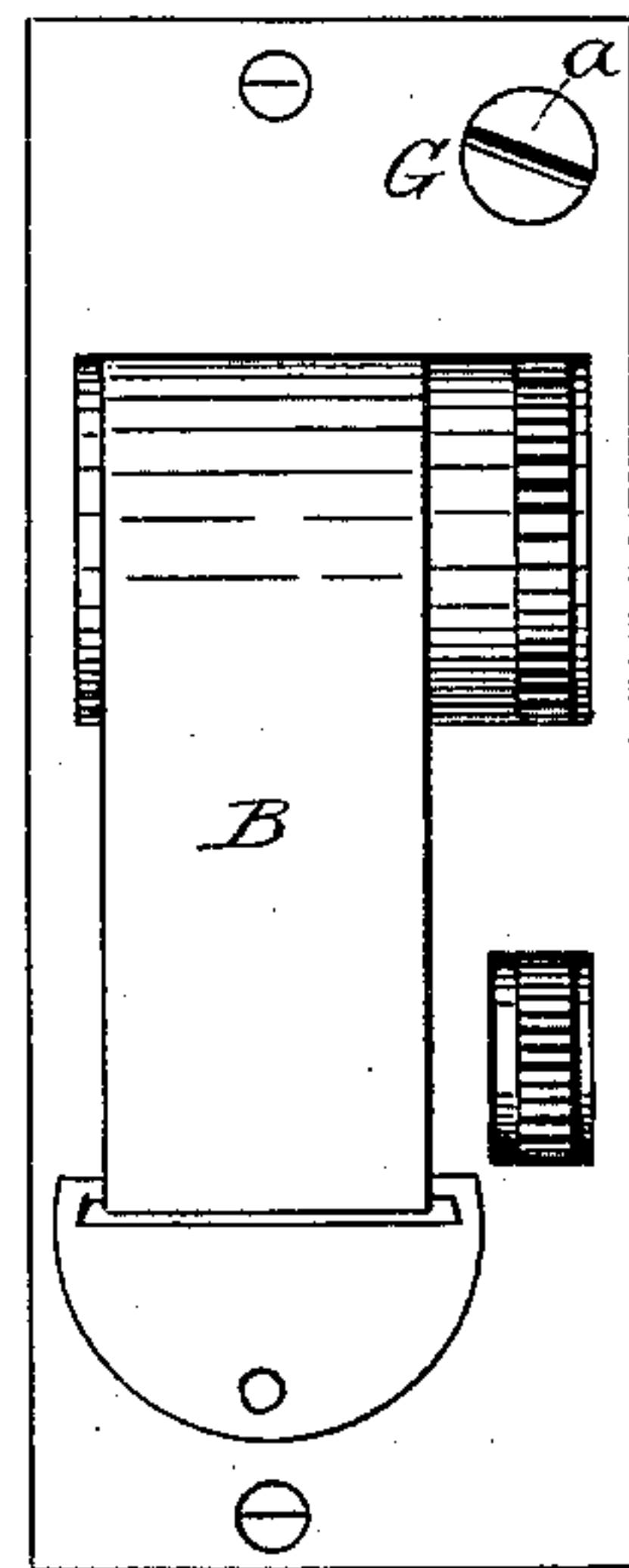


Fig. 3.

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# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN SASH-BALANCES.

Specification forming part of Letters Patent No. **221,247**, dated November 4, 1879; application filed May 31, 1879.

*To all whom it may concern:*

Be it known that I, WILLIAM MILNER, of the town of Strathroy, in the county of Middlesex and Province of Ontario, Canada, manufacturer, have invented certain new and useful Improvements on Sash-Balances; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings of my invention, where—

Figure 1 is a side view. Fig. 2 is a front view. Fig. 3 is a back view of frame, &c. Fig. 4 shows the wheels or boxes when arranged side by side. Fig. 5 is a sketch of the interior of box and springs.

This invention consists of an arrangement for balancing the upper and lower sashes by means of a light coil-spring in one box, which regulates the stronger spring in the other.

It consists, also, of a cable and cone-shaped winding-base for the same purpose.

It also relates to the mode of winding the said springs, by attaching them to axles, the ends of which are connected to outer cog-wheels operated by an endless-screw winder.

A B are two circular boxes or wheels containing coil-springs. The lower box, B, is formed with a cone-shaped end, C, round which is wound the cable D, one end of which is attached to said cone, while the other is made fast to the box A, so that when the strain or weight of the sash comes upon the upper box the tension of the spring contained in said box is regulated or "evened" by the lower box. The spring contained in this box B is lighter than the one in the upper box, A, being only of sufficient tension to counterbalance the difference in power in the upper box between the sash when raised and the sash when down. When the sash is up the cable acts on the small end of the cone C; when down and while

lowering, it comes to that part of the cone having the larger diameter, and here the strain is decreased.

E and F show a series of teeth formed in the faces of the ends of upper and lower boxes or wheels, which usually mesh into each other. On the top of the upper one is attached the winder G, passing through the frame. This is an endless screw, so placed as to always act on the center, meshing into cog-wheel E, and forming a stationary lock at any point. In Fig. 3, *a* shows the slot in end of this winder, in which a screw-driver may be inserted, and the winder thereby operated. When the screw-driver is turned round it causes the rotation of cog-wheel E, which is attached centrally to an axle, *b*, passing through the box, to which axle one end of the coil-spring H is made fast, and round which it is wound. The cogs F on lower box, B, cause the simultaneous winding of the lower one; or, if thought fit, another winder may be connected to this lower box.

Fig. 4 shows the boxes or wheels A B, containing the coil-springs, when placed side by side instead of one being above the other. In this arrangement the action of the winder G is precisely the same as already described, only, as a single axle connects the two boxes, one set of teeth or cogs is dispensed with.

I claim as my invention—

In a sash-balance, the screw-winder G, having slotted end *a*, in combination with winding-axle *b*, cog-wheels E and F, spring-boxes A and B, the latter having cone-shaped end C, and cable D, substantially as and for the purpose set forth.

WILLIAM MILNER.

Witnesses:

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