

(No Model.)

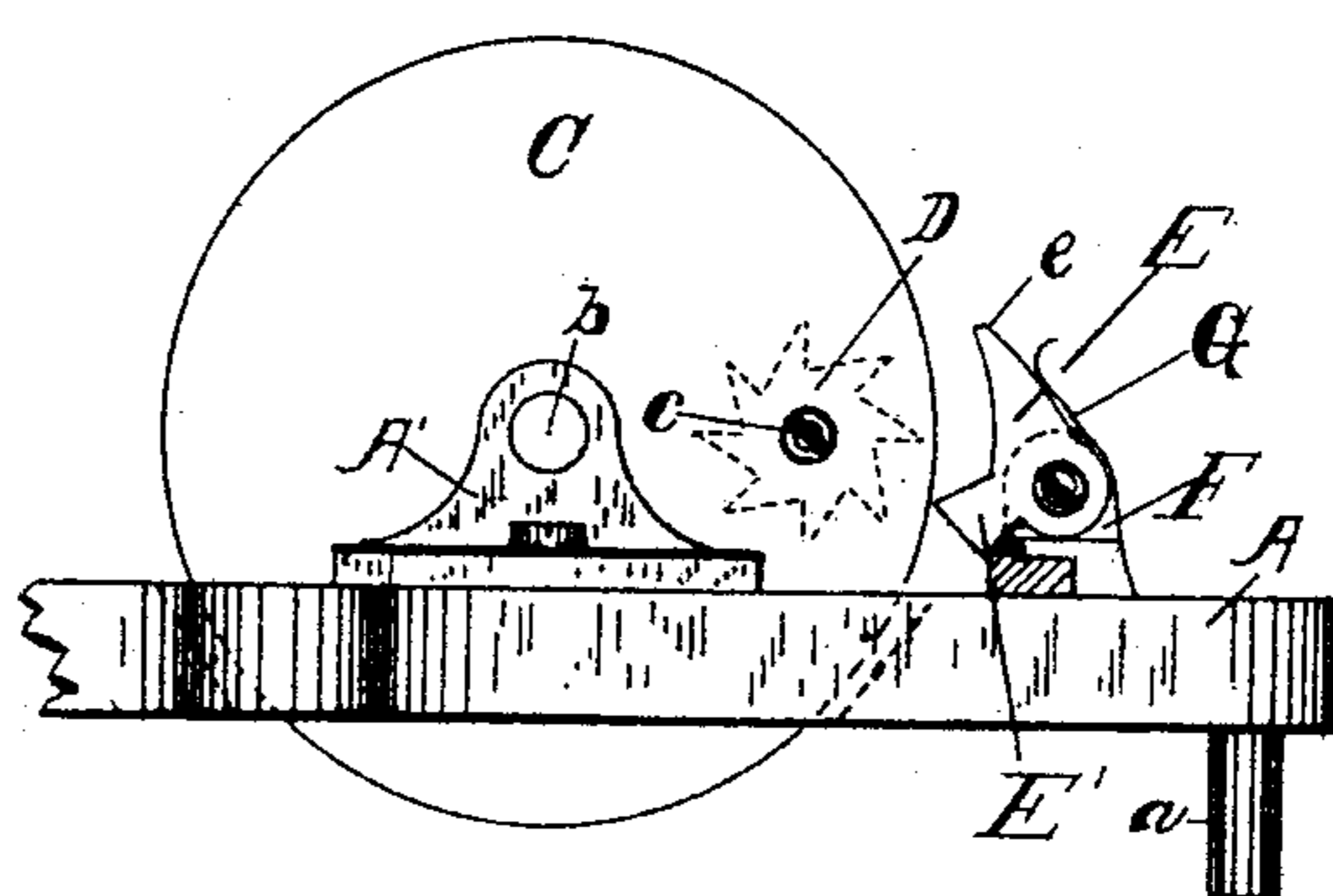
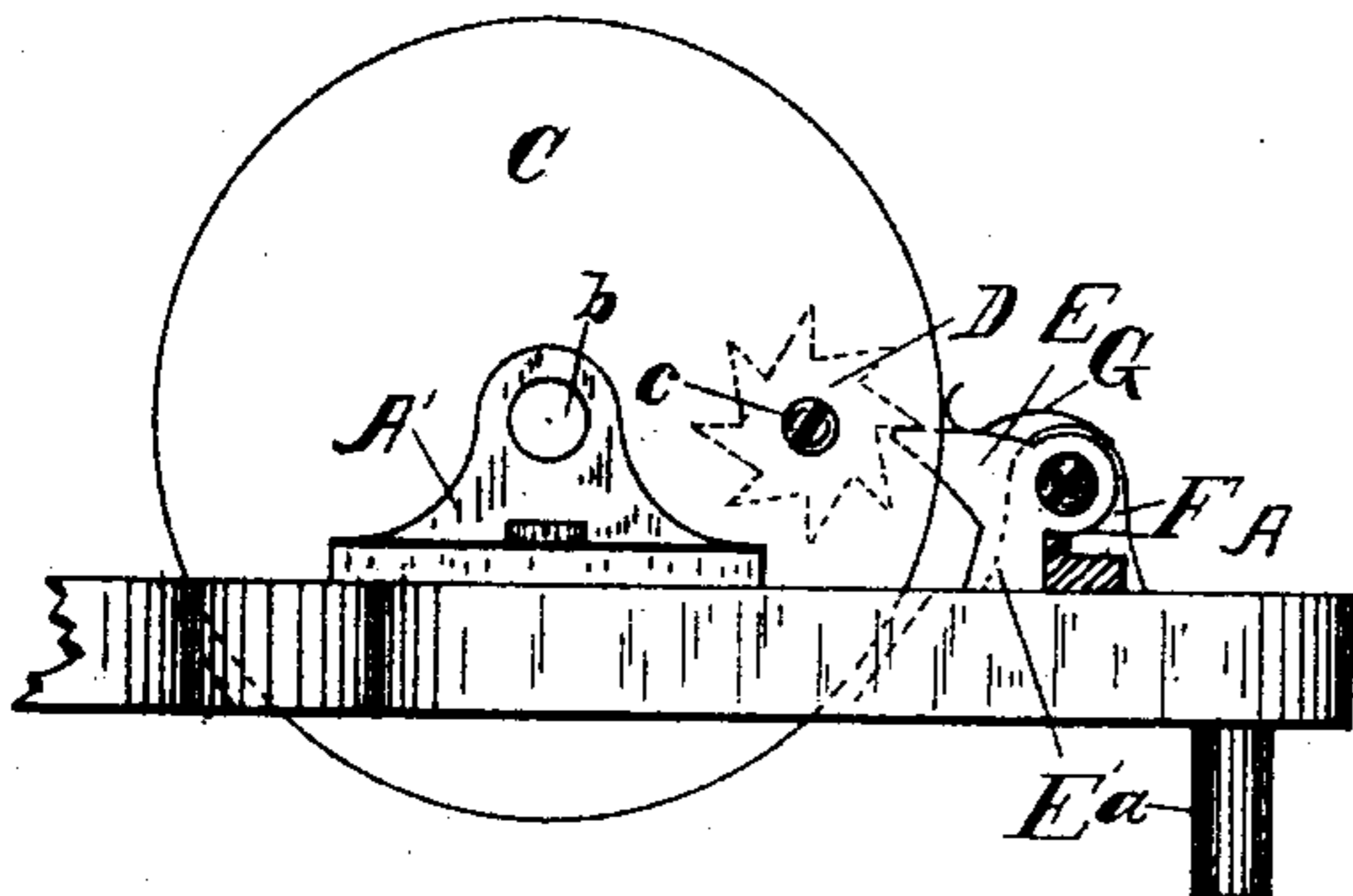
F. VAN FLEET.

TUNE CHANGING DEVICE FOR MUSIC BOXES.

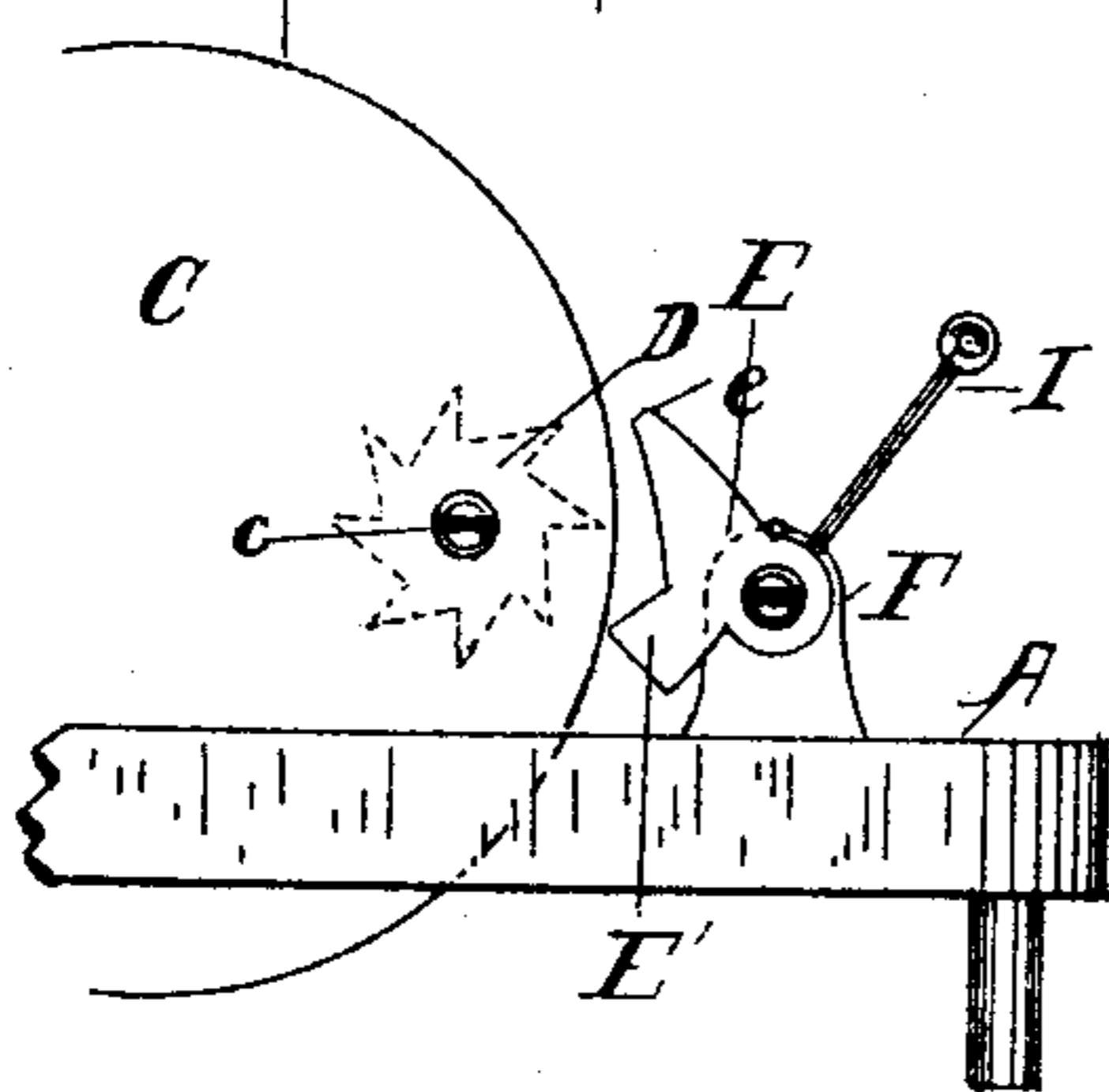
No. 459,970.

Patented Sept. 22, 1891.

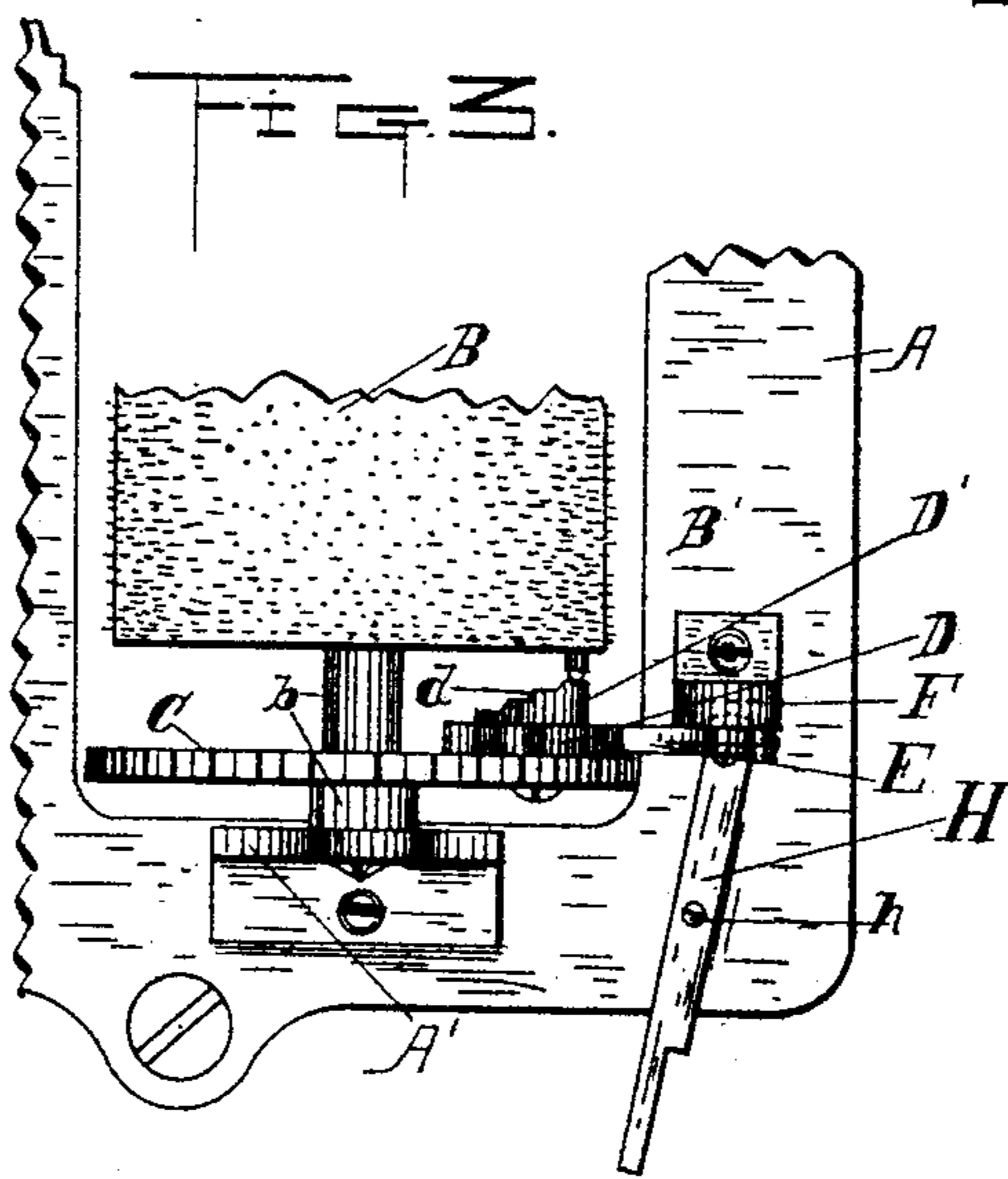
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WITNESSES;

W. Harvey Muzzy.
Charles Lee Cooke.

INVENTOR,

Fred Van Fleet

BY

W. H. Babcock

ATTORNEY.

UNITED STATES PATENT OFFICE.

FRED VAN FLEET, OF WILLIAMSPORT, PENNSYLVANIA.

TUNE-CHANGING DEVICE FOR MUSIC-BOXES.

SPECIFICATION forming part of Letters Patent No. 459,970, dated September 22, 1891.

Application filed February 6, 1891. Serial No. 380,500. (No model.)

To all whom it may concern:

Be it known that I, FRED VAN FLEET, a citizen of the United States, residing at Williamsport, in the county of Lycoming and State of Pennsylvania, have invented certain new and useful Improvements in Tune-Changing Devices for Music-Boxes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The chief object of this invention is to provide a music-box or self-playing cylinder musical instrument with a tune-shifting device which shall automatically adjust itself to an exact seat in the star-wheel and be held thus in engagement therewith, the said device being pivoted to a fixed support, so that the pivotal point is unchangeable in position and in distance with respect to the star-wheel. The advantages of this construction will be hereinafter more fully set forth. The said invention consists therein and in the additional features specified in the appended claims.

In the accompanying drawings, Figure 1 represents an end view in elevation of a part of a self-playing musical instrument, showing the tune-changing device in engagement with the star-wheel, the operating-lever appearing in cross-section. Fig. 2 represents the same with the tune-changing device out of engagement. Fig. 3 represents a plan view of the aforesaid parts, as in Fig. 1, a part of the music-cylinder being also shown. Fig. 4 represents a view, similar to Fig. 2, of a modification.

A designates the bed-plate, supported on legs, one of which *a* is shown.

B designates the music-cylinder, provided, as usual, with radial pins and having journals in its ends, one of which (marked *b*) is mounted in a bearing A' on said bed-plate. The gudgeon at the other end of said cylinder is of course similarly constructed, supported, and mounted, though not shown. A disk C, fast on gudgeon *b*, carries between its center and its periphery a stud *c*, on which the star-wheel D is free to turn. The inner face of said star-wheel is provided

with a curved cam-flange D', having a succession of cam-faces *d*, which act in the usual way against a pin B', projecting from the proximate end of the said music-cylinder B, their function being to shift the latter endwise successively farther and farther, each shift bringing a new set of pins, representing a new tune, into play. Of course each successive cam-face *d* in the direction of rotation of the said cylinder is of greater inward extension than the one before it until the last and greatest of the series is reached, and it begins again with the least.

In the foregoing devices there is nothing novel.

Heretofore it has been common also to use means for holding the star-wheel motionless, when desired, with respect to the forward rotation of disk C long enough for such forward rotation to cause a backward rotation of said star-wheel on stud *c* to a distance corresponding to that between two of the cam-faces *d*, thereby forcing a second and greater cam-face *d* against the pin D', with the result stated. Some form of dog or stop engaging the teeth or rays of said star-wheel has often been used for that purpose. This has generally been formed on or attached to the end of a lever, and sometimes would spring away from the star-wheel, mixing up tunes and causing the dampers of the comb to be destroyed, also putting the box out of tune. To obviate these and other disadvantages, I make use of the following improvements:

E designates the tune-changing device, which is a dog pivoted to a fixed lug F, raised on said bed-plate, the inner and lower corner of said dog being formed into a square extension E', which rests on said bed-plate when the said dog is in its lowest position. Its operating-point *e* is then ready for contact with one of the teeth of said star-wheel, as shown in Fig. 1. A spring G, bearing against the back of said dog near its operative point, forces it automatically down into such engagement. For turning it back out of position to engage, Fig. 2, I use by preference a lever H, pivoted at its middle on a vertical stud *h* of the bed-plate, the inner end of said lever acting against the back of extension E' to lift it,

as shown; or a handle I may be attached to the said dog above or behind its pivotal point for the same purpose, as shown in Fig. 4.

The principal advantages of this construction, combination, and arrangement of devices are as follows: First, the tune-changing device E, being pivoted on a solid fulcrum at a fixed distance from the star-wheel, must turn the latter an equal distance at each change, insuring the correct shifting of the cylinder; secondly, the tune-changing device E takes automatically its position for engagement with the star-wheel by reason of the pressure of the spring G. There is consequently no need to move any part by hand, except on the comparatively rare occasions when the said tune-changing device must be turned out of position for such engagement; thirdly, the tune-changing device can be thrown into or out of engagement with the star-wheel while the music-cylinder is stopped at the end of a tune without danger that the said tune-changing device will not come exactly to its proper place, a failure in which adjustment would prevent it from shifting the cylinder correctly when the playing begins again; fourthly, one cylinder may be exchanged for another without throwing the tune-changing device out of position for engaging the star-wheel; fifthly, as the lever H is not connected to the dog and as the spring G, which presses on the latter, will allow its upward motion, the said dog is not locked in any position and will permit the cylinder to be lifted out of the music-box or the star-wheel to be turned backward by hand for changing the tunes without incurring the danger of throwing the cylinder into the comb; finally, the tune-changing device is cheap, easily applied, and adjusts itself to its proper position for operation in all circumstances without danger of injuring any part of the mechanism.

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

1. A self-playing cylinder musical instrument provided with a movable tune-changing device for moving the star-wheel, arranged and adapted to automatically move itself into position for engagement, for the purposes set forth.

2. A self-playing cylinder musical instrument provided with a spring-pressed pivoted tune-changing device arranged and adapted to automatically take position for engagement, the said device being free to yield in an upward direction for the purpose of allowing the cylinder to be lifted out of the music-box or the star-wheel to be turned by hand for changing the tune, substantially as set forth.

3. In combination with the cylinder of a musical instrument and the star-wheel and intervening connections, a pivoted dog having a fixed fulcrum arranged for automati-

cally engaging the said star-wheel, the said dog being free to yield in an upward direction for the purpose of allowing the cylinder to be lifted out of the music-box or the star-wheel to be turned by hand for changing the tune, substantially as set forth.

4. In combination with the tune-changing star-wheel of a self-playing musical instrument, a pivoted dog having a fixed fulcrum and a spring for forcing said dog into position for engagement with the said star-wheel, substantially as set forth.

5. A music-box provided with a self-adjusting pivoted tune-changing device, substantially as set forth.

6. In combination with the endwise-movable cylinder of a music-box, a star-wheel provided with a series of cam-faces arranged to cause said endwise movement by contact with a projection of said cylinder, a pivoted spring-pressed dog having an immovable fulcrum arranged to engage the said star-wheel, the latter when not thus engaged revolving with the rotation of said cylinder, but being free to rotate backward when held by such engagement against thus revolving, for the purpose set forth.

7. In combination with the star-wheel of a self-playing musical instrument, a tune-changing device pivoted to a fixed support, a lever for raising it out of position to engage the said star-wheel, and a spring for automatically forcing it into such position, substantially as set forth.

8. The tune-changing device E, pivoted to a fixed support and provided with a downward extension E', a lever H, pivoted to turn against this extension for the purpose of tilting the said tune-changing device upward and backward, a spring bearing against the back of the said device to force it downward into its normal and operative position, and the tune-changing star-wheel of a self-playing musical instrument, the said star-wheel being arranged to be engaged by the said tune-changing device when the latter is in this normal position, substantially as and for the purpose set forth.

9. In combination with the tune-changing star-wheel of a self-playing musical instrument, a tune-changing device consisting of a dog pivoted to a fixed fulcrum and arranged and adapted to automatically take position for engaging the said star-wheel, substantially as and for the purpose set forth.

10. In combination with the tune-changing star-wheel of a self-playing musical instrument, a tune-changing device consisting of a pivoted dog arranged to automatically take position for engaging the said star-wheel, and an independently-pivoted lever for throwing the said dog out of operative position, the said lever being without attachment to said dog, substantially as set forth.

11. In combination with the endwise-movable cylinder and star-wheel of an automatic

musical instrument, a pivoted spring-pressed
device engaging said star-wheel for causing
such endwise motion of said cylinder, the
said device being free to yield to allow the
5 backward turning of the said star-wheel or
the lifting of the said cylinder, substantially
as set forth.

In testimony whereof I affix my signature in
presence of two witnesses.

FRED VAN FLEET.

Witnesses:

JOHN F. LAEDLEIN,
JOHN T. FREDERICKS.