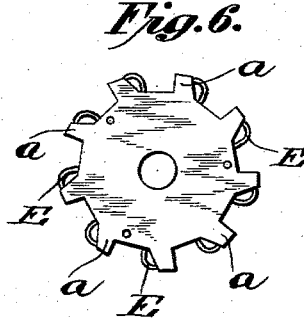
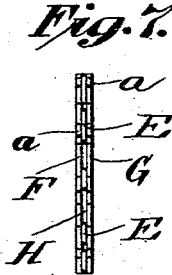
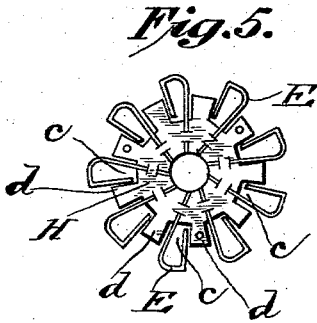
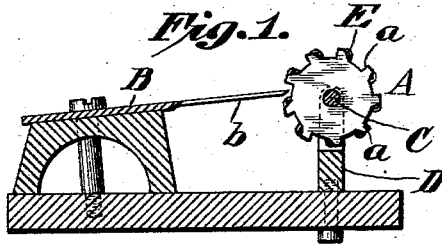
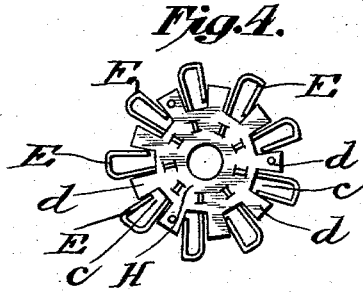
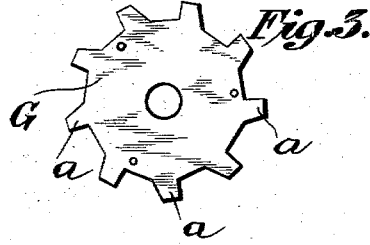
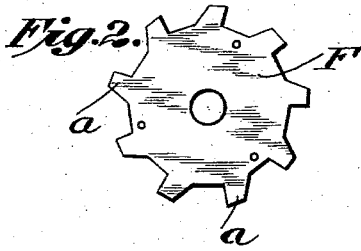


F. A. RICHTER.  
STAR WHEEL.

APPLICATION FILED JULY 7, 1903.

NO MODEL.



Witnesses  
*Comstock*  
*A. L. O'Brien*

*Friedrich Adolf Richter*  
 Inventor  
*By Dickerson, Barron, Raigener & Binney*  
 Attys

# UNITED STATES PATENT OFFICE.

FRIEDRICH ADOLF RICHTER, OF RUDOLSTADT, GERMANY.

## STAR-WHEEL.

SPECIFICATION forming part of Letters Patent No. 740,926, dated October 6, 1903.

Application filed July 7, 1903. Serial No. 164,572. (No model.)

*To all whom it may concern:*

Be it known that I, FRIEDRICH ADOLF RICHTER, a subject of the Emperor of Germany, and a resident of Rudolstadt, Germany, have invented certain new and useful Improvements in Star-Wheels, of which the following is a specification, accompanied by drawings.

This invention relates to star-wheels for use in connection with the comb-plates of musical boxes; and the objects of the invention are to improve upon the construction of such star-wheels and enable a damping effect to be obtained after a note has been sounded.

Another object of the invention is to afford protection for the spring-dampers, so that they will not be injured by a bent tongue of the comb-plate or by other means.

Further objects of the invention will hereinafter appear; and to these ends the invention consists of a star-wheel for carrying out the above objects embodying the features of construction, combinations of elements, and arrangement of parts having the general mode of operation substantially as herein-after fully described and claimed in this specification and shown in the accompanying drawings, in which—

Figure 1 is a side elevation, partly in section, of portions of a musical box, showing the application of the invention. Fig. 2 is a face view of one of the toothed disks of the wheel. Fig. 3 is a face view of the other toothed disk of the wheel. Fig. 4 is a face view of the damper-holder or disk for carrying the damper-springs. Fig. 5 is a face view of the other side of the damper-holder. Fig. 6 is a face view of the star-wheel with the toothed disks and damper-holder assembled, and Fig. 7 is an edge view of the complete wheel shown in Fig. 6.

Referring to the drawings, in Fig. 1, A represents a star-wheel, and *a* the teeth thereof, while B is a comb-plate provided with the tongues *b*. It will be understood that in a musical box there is usually a star-wheel A for each tongue, and the musical tones are produced by having the teeth of the star-wheels engage with the tongues. The star-wheels are mounted upon a shaft C, supported at its ends in standards D.

Each tooth *a* of the star-wheel is provided

with a damper E, shown in this instance as consisting of a spring, which may be made from wire. One end of each spring is secured in any desired manner to the body of the wheel, while its other end is brought into such position as to be engaged by the tongue *b*, which the star-wheel actuates. It will be seen from Fig. 1 that after one tooth has engaged and actuated the tongue *b* to cause it to vibrate the tongue will engage with the damper of the succeeding tooth before engaging with the tooth itself, and the vibration of the tongue will therefore be dampened whenever the motion of the star-wheel brings the damper into contact with the vibrating tongue.

This application is an improvement on my copending application, Serial No. 109,427, filed May 29, 1902, and allowed March 25, 1903.

The main object of this invention is to prevent possible injury to the damper-wires and damper-wheel—as, for instance, by means of a bent tongue *b*—and the greatest possible protection is afforded for the damper-wires, while at the same time they are permitted to vibrate freely.

According to the present construction of the star-wheel toothed portions or disks F and G are provided, having the teeth *a*. When the toothed disks F and G are arranged face to face, the teeth *a* on one disk register with those on the other to form the teeth of the star-wheel. Together with the toothed disks F and G a disk H is provided, forming a damper-holder, to which the springs E are suitably secured in notches *c* between the teeth *d* of the damper-holder. The wires E may be secured to the damper-holder or disk in any suitable manner; but, as shown in this instance, the disk H is slit and the shanks of the wires are thrust within the slits. The metal may then be pressed or hammered to make a smooth surface for the damper-holder. The wires E, as shown, may vibrate freely in the notches *c* of the damper. The damper-holder, with the dampers E, is then secured between the notched disks F and G of the wheel to form the complete star-wheel. (Shown in Figs. 1 and 6.) The construction is such, as will be seen, that the dampers or wires E project slightly at each star-wheel

tooth *a*, and in the operation of the device the dampers being movable in the notches *c* of the damper-holder will have play, and after contact with a tongue *b* they will swing  
 5 back into their original position. The teeth *a* of the toothed disks F and G of the star-wheel form guides for the dampers or springs E and at the same time afford protection for said dampers, for only a small portion of the  
 10 wires project beyond the teeth *a*.

Obviously some features of this invention may be used without others, and the invention may be embodied in widely-varying forms.

15 Therefore without limiting the invention to the construction shown and described I claim, and desire to secure by Letters Patent, the following:

1. A star-wheel for music-boxes, compris-

ing toothed disks, and a damper-holder ar- 20  
 ranged between the same, provided with spring-dampers for the teeth of the wheel, for substantially the purposes set forth.

2. A star-wheel for music-boxes, compris- 25  
 ing toothed disks, a damper-holder secured between the same and having notches in its periphery, and spring-dampers arranged in said notches on the damper-holder and projecting adjacent the teeth, for substantially  
 30 the purposes set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

FRIEDRICH ADOLF RICHTER.

Witnesses:

OTTO KÜCHLER,  
 FRITZ WALLEISER.