July 16, 1929. E. THORENS 1,720,772

MUSICAL BOX

Filed May 13, 1927

Fig. 1

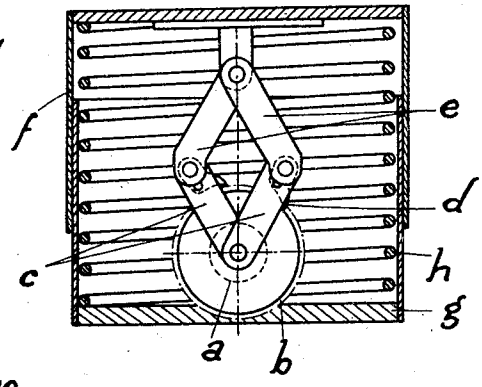


Fig. 2

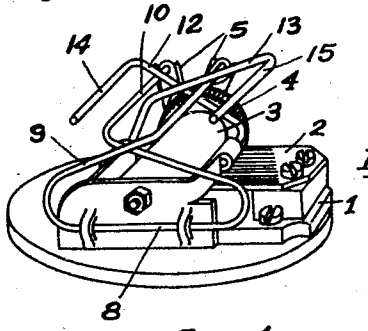


Fig. 3

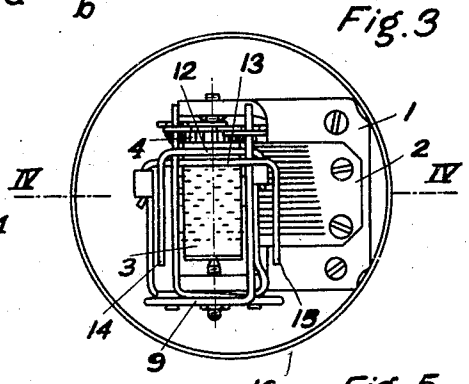


Fig. 4

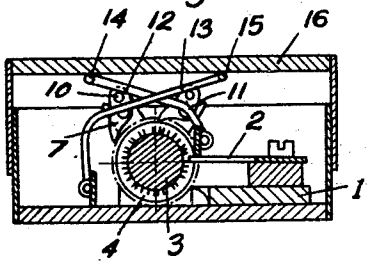


Fig. 5

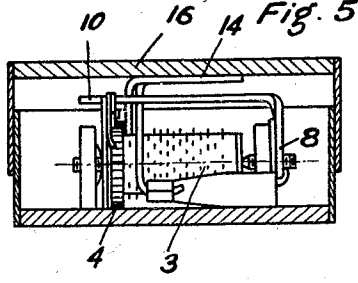
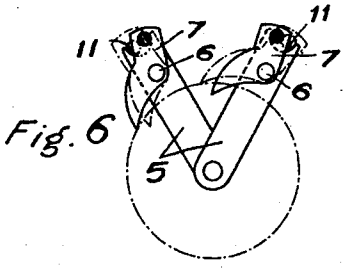


Fig. 6



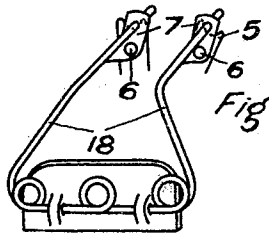
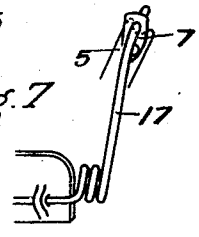


Fig. 7



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UNITED STATES PATENT OFFICE.

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MUSICAL BOX.

Application filed May 13, 1927, Serial No. 191,225, and in Switzerland March 15, 1927.

This invention relates to music-boxes of the type more particularly adapted for use as toys for children. Such music-boxes are fitted with a revolving cylinder, actuated by a driving device effecting both rectilinear and reciprocal motion and the object of this invention is to provide, between this device and the cylinder, a transmission system which is simple, sturdy and compact. On the drawing, Fig. 1 illustrates an apparatus now on the market. Fig. 2 is a perspective view of the interior parts of a music-box according to this invention. Fig. 3 is a plan view thereof. Fig. 4 is a section on line IV—IV of Fig. 3. Fig. 5 is a partly sectional side view. Fig. 6 shows a detail part and Fig. 7 shows modifications of another detail. The arbor of the revolving cylinder *a* carries the ratchet wheel *b* and permits oscillation of both arms *c*, provided each with a pawl *d* and connected themselves by means of a pin joint to the arms *e*, fastened to the lid *f*; the latter, which may effect both a rectilinear and reciprocal motion on the body *g* of the box, is usually held by a helical spring *h* in the position pictured on Fig. 1. By pushing the lid *f* against the action of the spring *h*, the operator forces away both arms *c*, and the pawl *d* on the right, according to Fig. 1, moves the cylinder clockwise; by letting the lid *f* go, this latter is pushed back under the action of the spring *h*, and the pawl *d* on the left moves then the cylinder in the same direction. This contrivance, it will be readily understood, is very simple indeed, but offers the disadvantage of requiring rather much space in height, owing to which circumstance it is, in some cases, difficult to use the musical box referred to, say, for concealing it in small articles as dolls are.

A construction according to Figs. 2 to 7 requires much less space.

The backing plate 1 bears the vibration comb 2 and the revolving cylinder 3. To this cylinder is attached the ratchet wheel 4, and on the arbor of the said cylinder are mounted the two oscillating arms 5, supporting each in 6 the pivots of the pawl 7. The spring 8 is fastened to the backing plate 1; it consists of two symmetrical parts, each of them being made of a limb 9, situated in a perpendicular plane to the axis of the cylinder, and a limb 10 parallel to this axis; the end of the limb 10 is located in a hole of the lug of one of the pawls and in a notch 11, of larger diameter, machined in the corresponding arm 5 (see Fig. 6). 12 and 13 are two springs, situated in perpendicular planes to the axis of the cylinder, mounted on the backing plate 1 in order that they may oscillate in these planes and resting each against one of the limbs 10 of the spring 8. These springs 12 and 13 are bent at their upper end, forming the limbs 14 and 15, which support the lid 16 of the box, allowed to effect a rectilinear motion on the body 17 of the latter.

Figs. 3 and 4 show the box in the position of rest. In order to make the cylinder rotate, the operator has but to push against the lid 16, which, being supported by the limbs 14 and 15, forces them both down and aside; these limbs act on the limbs 10 with the same result, the consequence being that both arms 5 are deflected. While this motion is effected, one of the pawls 7 works into the ratchet wheel 4 and compels the cylinder to rotate in a certain direction; as soon as the operator lets the lid 16 go, the springs 8, 12 and 13 resume their first position, the arms 5 come nearer again, and, in turn, the other pawl 7 works into the ratchet wheel 4, compelling the cylinder to rotate in the same direction as before.

On Fig. 6 is pictured how the pawls may operate without springs. Let us suppose that both arms 5 are getting deflected; the end of the left limb 10, e. g., will shift for a while in the notch 11 of the arm 5, without moving the latter; on the contrary, it will, during that time, turn the pawl 7 on its pivot 6 from the position shown by full lines to that marked by dots, and make it work into the teeth of the ratchet wheel 4.

By comparing Fig. 1 with Fig. 4, it will be readily found that the constructional embodiment just described requires less space in height since it works without the helical spring, which is very bulky. The springs 8, 12 and 13 are now substituted for the arms *e*, which had to be connected by means of a pin joint to the lid, and for the spring *h*. In that way, not only place is gained, but the fitting is simplified as well.

Of course, my invention is not limited to what is shown on the drawing; especially, shape and position of the springs may be quite different. It would, say, be possible to use two springs instead of the simple spring 8; to shape the latter like that pictured in 18 on Fig. 7; to substitute for the same two springs

17, each with a helical part. As for the springs 12 and 13, they might be even left out and superseded by a wedge secured to the lid 16 and driven between the limbs 10.

I claim:

1. A mechanism for revolving the sound drum of a music box, comprising a rectilinearly movable driving member, two swivel arms having each a pawl pivoted thereon, said pawls engaging a ratchet wheel integral with the sound drum and spring means for transmitting the motion of the driving member to the swivel arms, said spring means including two limbs, each presenting a portion extending substantially parallel with the axis of the sound drum, the ends of said limbs being connected to said swivel arms and to said pawls.

2. A mechanism for revolving the sound drum of a music box, comprising a rectilinearly movable driving member, two swivel arms having each a pawl pivoted thereon, said pawls engaging a ratchet wheel integral with the sound drum and spring means for transmitting the motion of the driving member to the swivel arms, said spring means including two limbs divided intermediate their length in two portions, one portion of each limb situated in a plane perpendicular with the axis of the sound drum and the other portion extending substantially parallel with said axis, the ends of said limbs being connected to said swivel arms and to said pawls.

3. A mechanism for revolving the sound drum of a music box, comprising a rectilinearly movable driving member, two swivel arms having each a pawl pivoted thereon, said pawls engaging a ratchet wheel integral with the sound drum, spring means for transmitting the motion of the driving member to the swivel arms, said spring means including two limbs, each presenting a portion extending substantially parallel with the axis of the sound drum, the ends of said limbs being connected to said swivel arms and to said pawls, and two pivotally fixed levers leaning on the portions of said spring limbs extending substantially parallel with said axis and adapted to support the driving member and to transmit its motion to said spring limbs.

In testimony whereof I affix my signature.

ERNEST THORENS.