No. 711,323. Patented Oct. 14, 1902.

H. T. KINGSBURY.

MOTOR FOR TOY VEHICLES.

(Application filed Apr. 23, 1902.)

(No Model.) 2 Sheets—Sheet 1.

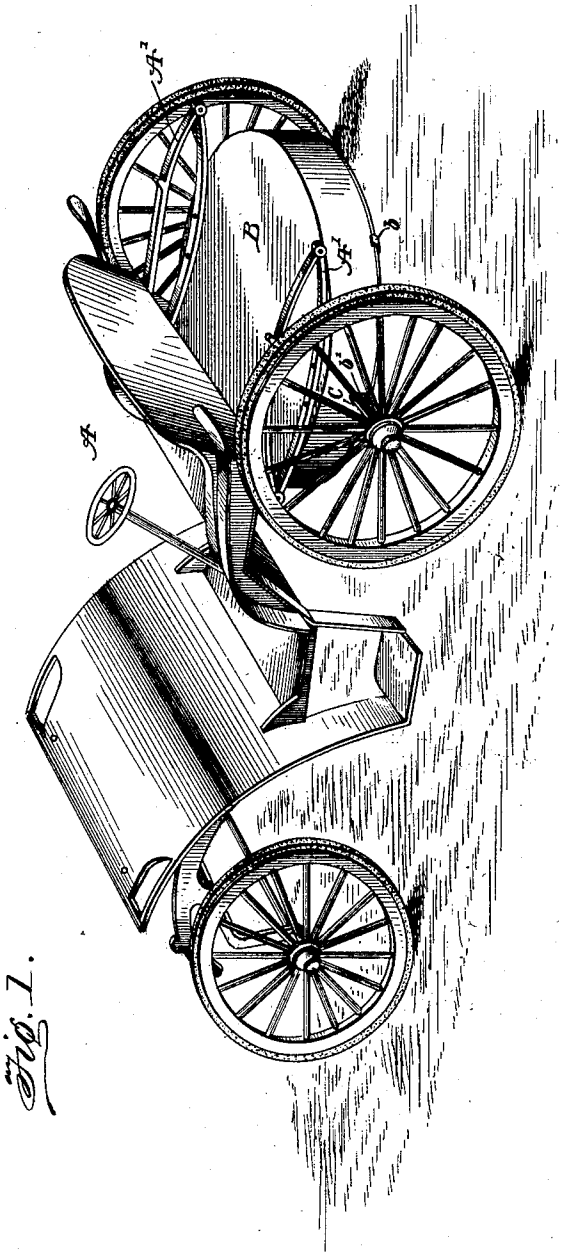


Fig. 1.

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Fig. 2.

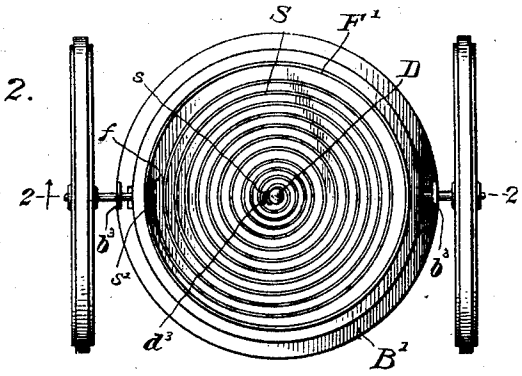


Fig. 3.

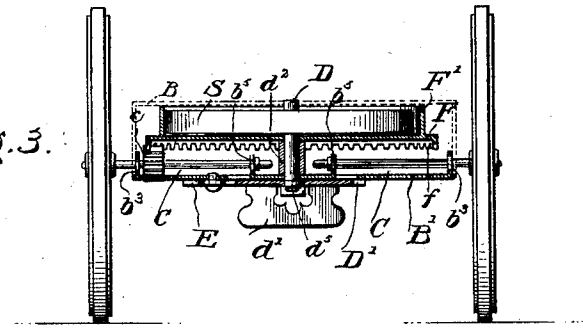


Fig. 4.

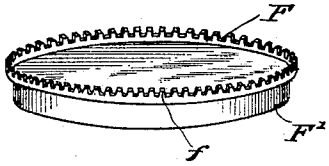
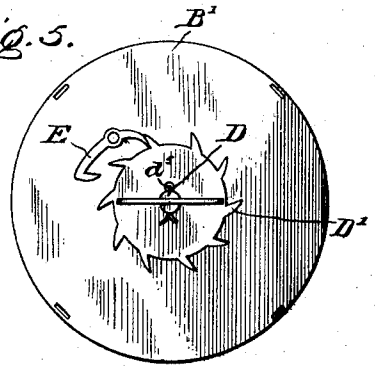


Fig. 5.



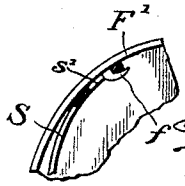


Fig. 6.

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UNITED STATES PATENT OFFICE.

HARRY T. KINGSBURY, OF KEENE, NEW HAMPSHIRE.

MOTOR FOR TOY VEHICLES.

SPECIFICATION forming part of Letters Patent No. 711,323, dated October 14, 1902.

Application filed April 23, 1902. Serial No. 104,326. (No model.)

To all whom it may concern:

Be it known that I, HARRY T. KINGSBURY, a citizen of the United States, residing at Keene, in the county of Cheshire, State of New Hampshire, have invented certain new and useful Improvements in Motors for Toy Vehicles, of which the following is a description, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My invention relates to spring-motors for toys, toy vehicles, and the like.

The objects of the invention are to provide a motor for toys, toy vehicles, and the like which shall be composed of as few parts as possible and these parts simple, durable, and readily assembled; to provide the motor with an inclosing casing to protect the driving mechanism; to form the casing so that it may be readily attached to the vehicle or other toy; to provide the casing with a bottom plate to which the driving mechanism is attached, so that the body of the casing may be first attached to the toy or vehicle and then the bottom, with the attached driving mechanism applied. These objects are accomplished by the mechanism shown in the accompanying drawings, in which—

Figure 1 is a rear perspective of a toy vehicle with my improved motor applied. Fig. 2 is a plan of the motor removed with the driving-wheels attached. Fig. 3 is a cross-section on line 2 2, Fig. 2. Fig. 4 is a perspective of the driving-gear. Fig. 5 is a plan of the under side of the casing-bottom, and Fig. 6 is a detail view showing connection between the spring and the gear-wheel.

A designates a toy vehicle which may be of any desired type. In the present instance the vehicle has parts A′ A′, representing the rear springs of a "Victoria," and to the lower sides of these parts A′ is secured the upper side of the motor-casing B. This securing may be effected in any desired manner, such as by riveting or soldering, and the casing may be secured to some other part of the vehicle than to the parts A′, according to the style of vehicle or toy.

The casing B is preferably formed as an inverted open circular box, having lugs b b on its lower edge and notches b' b' in its opposite sides, and B′ is the bottom plate of the casing, formed with apertures b^2 b^2 to receive the lugs b b, which are upset or bent over upon the under side of the bottom to hold it in place. The bottom B′ is further provided with upwardly-projecting apertured ears b^3 b^3 at its opposite sides, which form the outer bearings for the divided axle C C, to which in the present instance the rear wheels of the vehicle are attached. The inner ends of the axles are mounted in ears b^5 b^5, punched up from the bottom plate near its center. When the bottom B′ is in place, its ears b^3 b^3 will register with and close the notches or slots b' b', and so prevent the entrance of dust and dirt into the casing.

D designates the vertical winding-shaft mounted in the center of the bottom plate B′ and provided therebelow with a ratchet-wheel D′, having a square opening fitting the squared lower end of said shaft. The ratchet-wheel is provided with a handle or thumb-piece d', by means of which the shaft is rotated in the act of winding. The ratchet-wheel is controlled by an escapement-pawl E, pivoted to the under side of the bottom plate B′, the pawl and ratchet operating just like a clock-escapement while the shaft is being turned in the act of winding.

F designates the horizontal driving-gear, formed with depending teeth f, which mesh with a pinion c, secured on one of the axles or shafts C. The driving-gear F is centrally apertured for the free passage of the winding-shaft D, on which is placed a spacing-sleeve d^2, which spaces the driving-gear from the bottom plate B′.

On the upper face of the driving-gear F is secured a circular concentric flange F′, within which is placed the convolute mainspring S, which is wound about the shaft D and connected to a hook-like projection d^3 thereon by means of a slot s in its inner end, while the outer end of the spring is provided with a similar slot s', which engages a hook-like lug f' on the inner wall of the flange F′ of the driving-gear F. These hooks and slots provide for the ready assemblage of the parts on which they are formed or secured, and when so assembled spacing-sleeve d^2 is placed on the shaft D and the lower end thereof is passed down through the central aperture in the bottom plate B′, to which the shafts C C

have been previously applied. The ratchet-wheel D′ will now be placed on the lower squared end of the shaft D and the spring cotter or pin d^5 passed through an aperture in said squared end, whereupon the motor mechanism may be inserted in casing B and held therein by means of the aforesaid lugs *b b*, of which there may be any desired number.

In practice the casing B will be attached to the toy or toy vehicle before the latter is painted and then all will be dipped together. After these parts become dry the bottom, with the motor, will be slipped into place, as above described.

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

1. A motor for toys, comprising an open-bottom casing adapted to be secured to a body, a separate bottom plate for the casing, means for securing the bottom plate in position, a vertical winding-shaft mounted centrally in said bottom plate, a horizontal gear turning on said shaft above the bottom plate, a convolute spring above said gear, secured thereto at its outer end and at its inner end connected to the winding-shaft, and a wheeled axle mounted in bearings at the upper side of the bottom plate, and having a pinion in gear with said horizontal gear, the spring-motor and driven parts all being removable with said bottom plate; substantially as described.

2. The combination with the casing adapted to be secured to the toy, of a bottom plate for connection therewith, a central vertical winding-shaft mounted in the said plate and provided therebelow with a pawl and ratchet and a means for winding it, an axle mounted on the upper side of the plate and provided with a pinion, a horizontal gear turning on the winding-shaft at the upper side of the plate and meshing with said pinion, a main-spring wound around the said shaft with its inner end secured thereto and its outer end secured to the said horizontal gear, and means for securing the bottom plate and its attached parts to the lower edge of the casing; substantially as described.

3. The combination with the casing adapted to be secured to the toy, of a bottom plate therefor, a central vertical winding-shaft mounted in said plate and provided therebelow with a ratchet, and a winding means, a pawl engaging the ratchet, an axle mounted on the upper side of the plate and provided with a pinion, a horizontal gear turning on the winding-shaft and meshing with said pinion, a circular flange on the upper side of said horizontal gear, and a convolute spring within said flange, secured thereto at one end and at its other end secured to the winding-shaft; substantially as described.

4. A motor for toys comprising, a casing adapted to be attached to the toy, a bottom plate, means for attaching the bottom plate to the casing, a central vertical winding-shaft mounted in said bottom plate and provided therebelow with a ratchet and a winding device, a pawl for said ratchet, an axle mounted on the upper side of the bottom plate and provided with a pinion, a horizontal gear turning on the winding-shaft and meshing with said pinion, a circular flange on the upper side of said horizontal gear and provided with an internal hook-like projection, the winding-shaft also having a hook-like projection, and a convolute spring within the circular flange and provided with slots in its ends engaging said hook-like projections; substantially as described.

5. A motor for toys comprising, a casing adapted to be secured to the toy and having lugs on its lower edge, a bottom plate apertured for said lugs, and provided on its upper side with axle-bearings, an axle mounted in said bearings and provided with a pinion, a central vertical winding-shaft mounted in the bottom plate and provided therebelow with a ratchet having a thumb-piece, an escapement-pawl for said ratchet, a horizontal gear turning on the winding-shaft and meshing with said pinion, a circular flange on the upper side of the horizontal gear, and a convolute spring within said flange, secured at one end to the flange and at its other end secured to the winding-shaft; substantially as described.

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

HARRY T. KINGSBURY.

Witnesses:
F. E. KINGSBURY,
L. G. LITCHFIELD.