W. BAXTER, Jr.

AUTOMATIC TOY.

No. 188,841. Patented March 27, 1877.

Fig. 1.

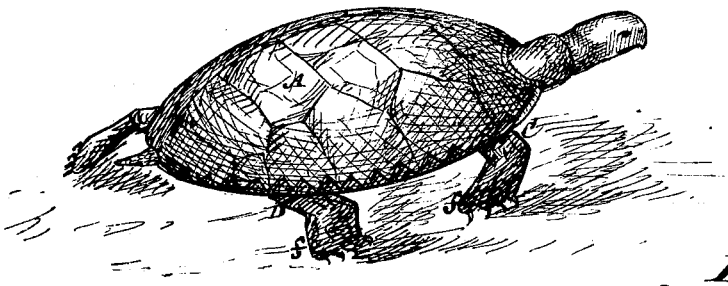


Fig. 5.

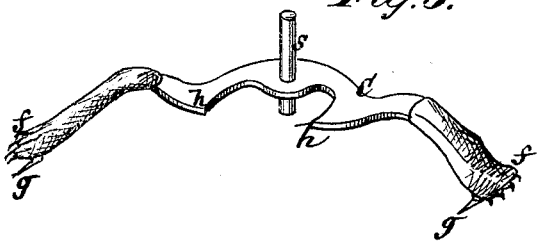


Fig. 2.

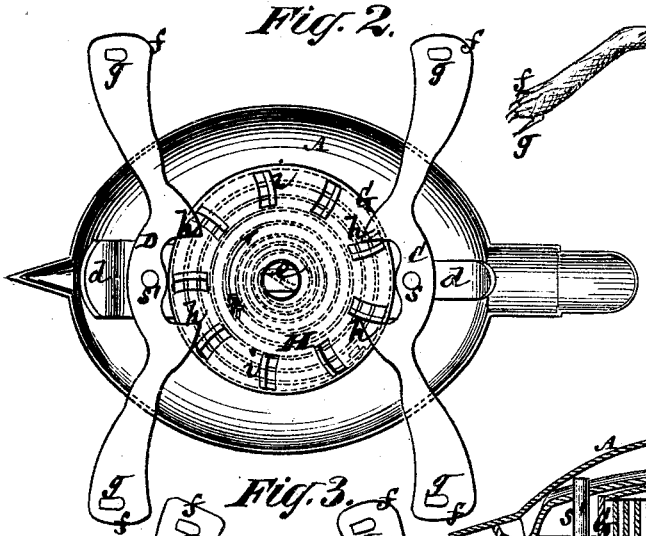


Fig. 4.

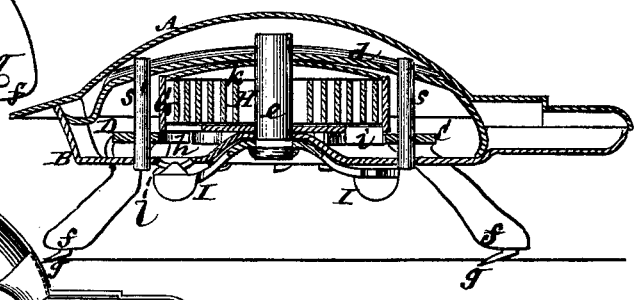
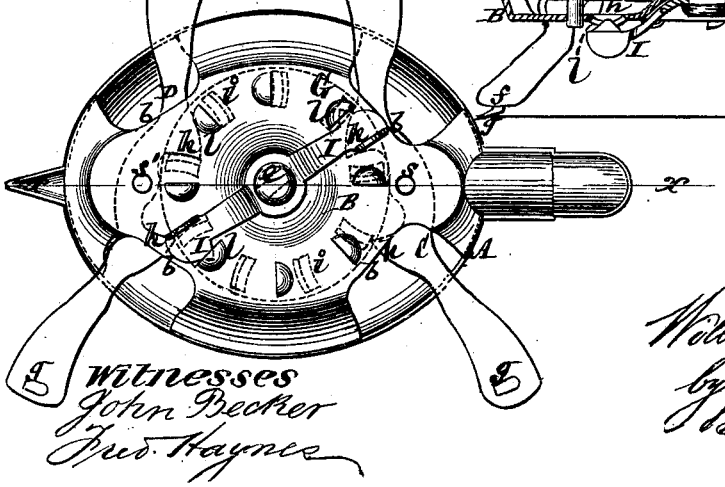


Fig. 3.



Witnesses
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WILLIAM BAXTER, JR., OF NEWARK, NEW JERSEY.

IMPROVEMENT IN AUTOMATIC TOYS.

Specification forming part of Letters Patent No. **188,841**, dated March 27, 1877; application filed February 17, 1877.

To all whom it may concern:

Be it known that I, WILLIAM BAXTER, Jr., of Newark, in the county of Essex and State of New Jersey, have invented certain Improvements in Mechanical Toys, of which the following is a description, reference being had to the accompanying drawing, forming part of this specification.

This invention relates to mechanical toys imitative of various animals, including tortoises and other chelonian reptiles.

The object of the invention is to give a natural and lifelike action to the several or certain of the limbs of the animal by means which are both cheap and simple, and whereby the toy animal is made to move or propel itself in a natural and efficient manner.

The invention consists in various combination of the working parts or mechanism, and in certain peculiarities of construction, whereby lightness is combined with great simplicity and strength, the same including a direct application of a rotary driving wheel or cam containing the operating-spring within it, and acting on levers which represent the propelling limbs of the animal or reptile; also, a peculiar light and cheap construction of said wheel; a certain novel construction and combination of the feet and claws of the levers or limbs of the animal, and tappets by which said limbs are vibrated; an attached spring-winding key constructed to act also as a pawl; and a ratchet constraining the operating-spring, constructed of a sheet-metal plate indented to form ratchet-teeth.

The invention also consists in a toy tortoise, or other reptile, to the anterior and posterior limbs of which a creeping movement is communicated by a spring and gearing, substantially as hereinafter described.

Having thus specified the object and nature of the invention, its description will be proceeded with in reference to the accompanying drawing, which illustrates the invention as applied to a mechanical toy tortoise.

Figure 1 is a view in perspective of said toy tortoise. Fig. 2 is an under view of the same, with the bottom covering-plate removed; Fig. 3, an entire under view thereof; Fig. 4, a longitudinal section on the line *x*·*x*, and Fig. 5 a view in perspective of a double-armed lever representing the anterior or posterior limbs of the animal or reptile.

The back and belly of the toy tortoise are composed, respectively, of upper and lower plates A B, suitably connected at their sides and ends with openings *b* at the sides for the levers C D (which represent the anterior and posterior limbs of the reptile) to work through.

Within the back A is a bridge, *d*, which, in connection with the belly or lower plate B, serves to receive or form bearings for the working spindles or pivots of the operating mechanism—as, for instance, the pivot *s* of the lever representing the anterior limbs, the pivot *s'* of the lever representing the posterior limbs, and the arbor *e* of the operating-spring. Both of the opposite feet or legs of the anterior limbs represented by the lever C are rigidly connected or formed of a single piece, and the same mode of construction applies to the lever D, which represents the posterior limbs The ends of the levers C D representing the feet *f* of the limbs are each provided on their under side with one or more claws, *g*, sloping backward, to facilitate alternate hold and release of the feet on the ground or surface over which the toy tortoise is made to travel. These claws may be formed of or from pins cast in or with the levers C D.

The other parts of the toy, its pivots excepted, may, for the most part, be made of sheet metal.

The levers C D are vibrated on or with their pivots *s s'* by means of a propelling-wheel, G, operated by a coiled spring, H, and acting successively like an escapement-wheel upon tappet-projections *h* on opposite sides of the pivots *s s'*. These tappets or projections *h* are formed of and with the same piece as either lever C or D. The spring H is fast at its one end to the winding-arbor *e*, and at its other end to the wheel G, which latter is of cup construction to receive the spring within it, and is arranged to rotate within the body of the tortoise on or around the arbor *e*. Said wheel G, however, need not be constructed to receive the operating-spring within it; but it is preferred to so construct it, and whereby the wheel is not only stiffened, but made to form also the box for the spring. Such combined wheel and spring-box is struck up out of sheet

metal, and its teeth *i*, which are curved to secure their action on the tappets *h* when the wheel is rotated by the spring in one direction only, are also formed by cutting or stamping without wholly severing them out of the same piece of sheet metal as the wheel, and suitably turning such cut but attached portions, so that they project from the face of the wheel. This may be done at the same operation as cupping the wheel, when the latter also forms the box for the spring, or it may be done at a different operation. A covering-plate, *k*, may be arranged over the open side of such combined box and wheel.

The spring-arbor *e* is constructed to receive on its one end a key for the purpose of winding up the spring. This key, as shown in the drawing, consists of a sheet steel cross-piece or key, I, permanently secured on one end of the arbor *e*, and bent so that when it is turned to wind up the spring it acts as a pawl by locking with ratchet-teeth or projections *l* on the plate B, to prevent the spring H flying back, or, in other words, to insure the operation, when wound up, of the wheel G. These ratchet-teeth *l* are here represented as formed by simply indenting the sheet-metal plate B, thus obviating the necessity of an independent ratchet-wheel for holding the spring and combining lightness with cheapness of construction. The hereinbefore-described construction of the wheel G also has the advantage of lightness, and to secure an easy operation of the toy lightness is a very important feature. By the permanent attachment of the key I to the winding-spring spindle *e* much inconvenience and loss of time are avoided.

To communicate to the toy reptile a natural or creeping motion, the wheel G is made with an odd number of teeth, *i*, so that when operated by the spring H it will act on the tappets *h h* of the two levers or limbs C D to vibrate the latter in such relation with each other that a joint back action is given to the left front foot *f* and right back foot *f* of the limbs C D, as shown in Fig. 3, and afterward a like back action communicated to the right front foot and left back foot of said limbs or levers, and so on alternately, thereby causing the claws *g* of the several feet *f* in the order above named to bite into the ground or surface and giving the necessary propelling action by the force of the spring H to the body of the toy reptile over the ground.

The direct application of the wheel G, which is driven by the spring H to the anterior and posterior limbs of the toy reptile is not only a simple and economical application of the propelling force, but in dispensing with complicated gearing the weight of the toy is reduced, and its operation by the spring consequently facilitated; also, a lighter spring will answer every purpose.

I claim—

1. The propelling-wheel G, constructed of sheet metal to form a cup or box for reception of the operating-spring H, and with curved teeth *i* struck up on one side or face, essentially as described.

2. The combination of a toothed propelling-wheel, G, and the centrally or intermediately pivoted levers or limbs C D, arranged on opposite sides of the axis of said wheel, and having duplicate tappets or tappet-like projections *h h*, substantially as shown and described.

3. The feet *f* of the limbs, provided on their under side with one or more claws, *g*, constructed to slope backward, in combination with the tappets *h* on reverse sides of the pivots of the levers or limbs C D, essentially as specified.

4. The key I attached to the arbor *e* of the operating-spring, and constructed to act as a pawl against the teeth of the ratchet, which keeps the spring to its work, substantially as shown and described.

5. The ratchet which keeps the operating-spring to its work, through the intervention of a pawl, constructed of a sheet-metal plate indented on its surface to form ratchet-teeth *l*, essentially as specified.

6. As a new article of manufacture, a toy tortoise or other reptile, to the anterior and posterior limbs of which a creeping movement is communicated by a spring and gearing, substantially as described.

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Witnesses:

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BENJAMIN W. HOFFMAN.