

April 2, 1929.

R. V. KUEN
QUADRUPEDAL TOY

1,707,735

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Fig. 1.

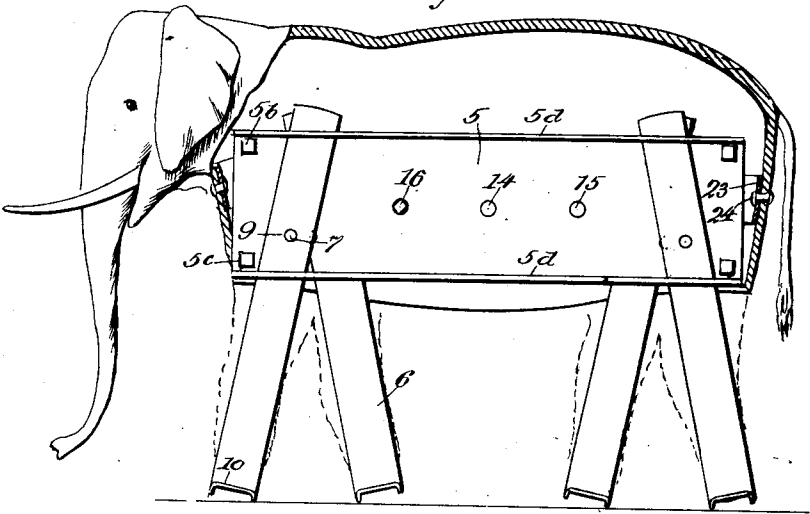


Fig. 2

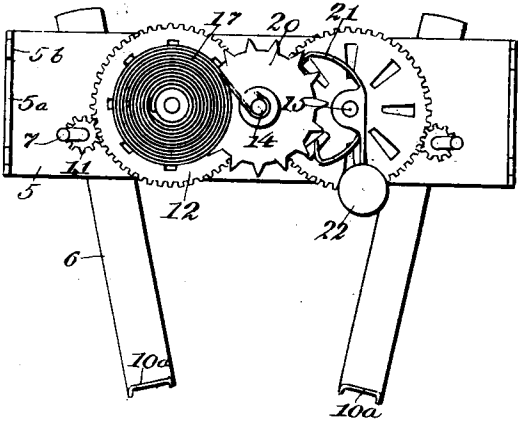


Fig. 4

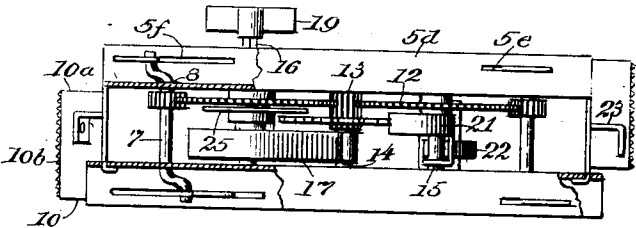
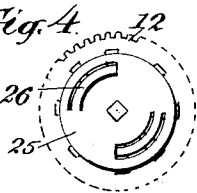


Fig. 3.

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UNITED STATES PATENT OFFICE.

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QUADRUPEDAL TOY.

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This invention relates to perambulating toys, and the object of the invention is to produce a toy simulating a quadruped, and adapted to step over the floor in a manner closely resembling the walk or run of an animal.

The nature of the invention is fully disclosed in the description and claims following, reference being had to the accompanying drawing, in which:—

Fig. 1 is a side elevation of a device embodying my invention as applied to the toy body of an elephant, the body being mainly in section and the legs shown conventionally.

Fig. 2 is a similar view of the same mechanism, but with the nearer legs and side of the housing removed. Fig. 3 is a plan view of the same. Fig. 4 shows the main-spring detent and the adjacent driving gear.

In the drawing, the numeral 5 denotes a casing or housing adapted to carry four movable legs 6 and the mechanism to impart to them a stepping motion. This movement of the legs is produced primarily by double and oppositely cranked shafts 7 running in bearing holes 8 in the sides of the casing. The cranked ends of the shaft engage the legs at 9 in the same manner. The sides of the casing are connected at the ends by cross-ties 5^a, which may be simple right-angle folds of the sheet metal stock of which the sides are formed, both ends being preferably turned up from one side-sheet, and provided with tangs 5^b to engage slots 5^c in the other side-plate. At the top and bottom the side-plates are flanged outwardly at 5^d and slotted to receive the sheet metal legs. The upper slots 5^c are but slightly longer than the width of the entering legs, but the lower slots 5^c are long enough to allow for the full motion of the legs in stepping. It will be evident that the movement of the feet 10 is elliptical, the lift being equal to the diameter of the crank's motion, but the transverse movement being much longer. This gives the mechanical, though not quite the physical effect of walking and running to an interesting and amusing degree.

It will be noted by reference to Fig. 2 that the cranks of the two crank-shafts are oppositely disposed. When in the horizontal position, therefore, the legs on one side both approach each other, and on the opposite side are both extended. In changing from this position, with all four feet on the floor, the legs move forwardly in the diagonal or-

der, since both crank-shafts turn in the same direction. This throws the weight on the two diagonally opposite feet while the other, lifted feet are moving forward. This would of itself tend to support and balance the structure, and prevent its tipping sidewise. Added provision is made, however, to preserve the balance. This consists in extending the feet inwardly at 10^a, so as to give a broad lateral footing, as shown in Fig. 3. To prevent slippage the feet may be provided with downwardly extending teeth 10^b. In the movement of the legs these inwardly extending wings pass over each other alternately.

Within the casing is disposed a simple spring motor in operative connection with the crank-shafts, each of which is provided with a pinion 11. Engaging each pinion is a spur-gear 12, and these are inter-engaged by another pinion 13 on a cross-shaft 14. One of the spur-gears is carried by a round shaft 15, and the other by a square shaft 16. To the latter is connected the main-spring 17, in a well known clock-work manner. Adjacent to the gear on this shaft is a disk-ratchet-wheel engaging slots in the gear, also familiar in clock-work. The spring is wound up by a thumb-piece 19. On the shaft 14 is secured a click-wheel 20, engaged clock-wise by an escapement pawl 21 pivoted on the shaft 15, and provided with a pendulum 22 to steady the movement of the motor.

The perambulator mechanism above described is herein shown set inside the hollow body of a toy elephant, to which it is suitably attached, as by lugs 23 and rivets 24. The body may be open below to admit the mechanism. The animal's legs may be merely bags or trousers of fabric or other flexible material drawn over the mechanical legs, and fastened neatly to the body at the upper ends.

In winding up the toy the child is supposed to hold the legs so they cannot vibrate until set on the floor. The animal thereupon starts across the floor at a lively rate, and brings up finally in a walk, the length of the trip depending on the floor space and the length of the operating main-spring. The winding mechanism is of a familiar clock-work type, comprising with the winding shaft a disk 25 provided with spring pawls 26 to engage slots in the adjacent spur gear 12.

Having thus described my invention, I claim:

1. In a quadrupedal toy, the combination

of front and rear legs, a supporting casing therefor formed with lateral flanges slotted to form short upper and long lower guides permitting oscillation of the legs at the upper ends and an elliptical movement at the lower ends, supporting feet for said legs, a pair of crank-shafts with oppositely disposed cranks, carried by said case, and motor mechanism adapted to rotate the crank-shafts in the same direction.

2. In a toy of the designated class, a casing carrying a propulsive motor, and provided with legs adapted for walking, upper guides enclosing the legs limiting them to up and down and oscillatory movement, supporting feet for said legs, lower enclosing guides for the legs, holding them laterally but permitting them to swing forward and back, a pair of leg-engaging crank-shafts,

each having oppositely disposed cranks engaging the legs between the upper and lower guides, the front and rear cranks being also oppositely disposed, and driving mechanism connecting the motor with said crank-shafts to rotate both in the same direction.

3. In a toy of the designated class, a casing carrying a propulsive motor, front and rear legs at the sides of the casing, upper and lower side guides for said legs in their stepping movement, non-slipping feet for the legs, having lateral extensions to prevent tipping sidewise, crank-shafts connecting operatively with the front and rear legs, respectively, and gearing connecting the motor with said crank-shafts to rotate them concurrently in the same direction.

In testimony whereof I affix my signature.
RHINEHART V. KUEN.