C. M. DAHL.

MECHANICAL HORSE.

APPLICATION FILED OCT. 13, 1919.

1,369,628. Patented Feb. 22, 1921.

2 SHEETS—SHEET 1.

Fig. 1.

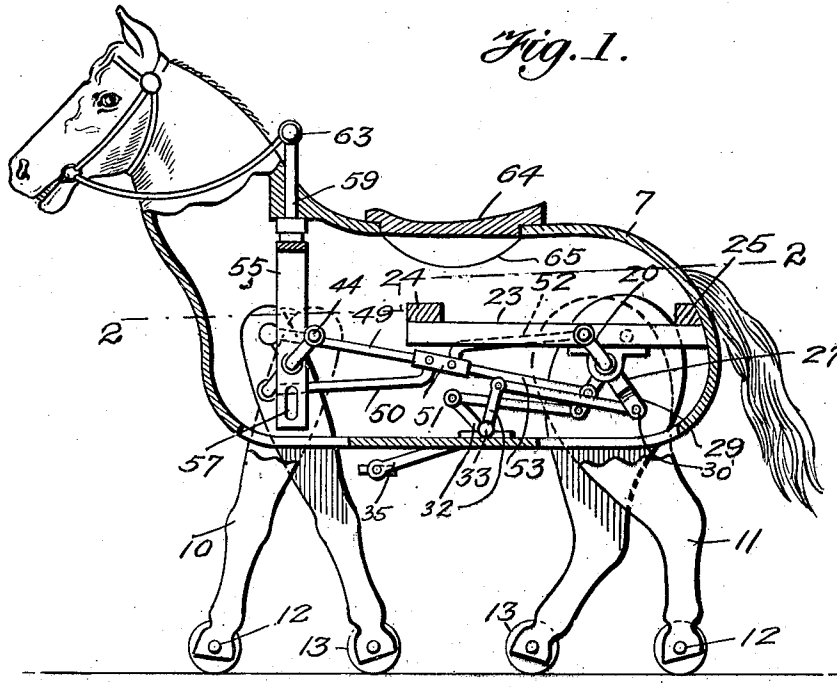
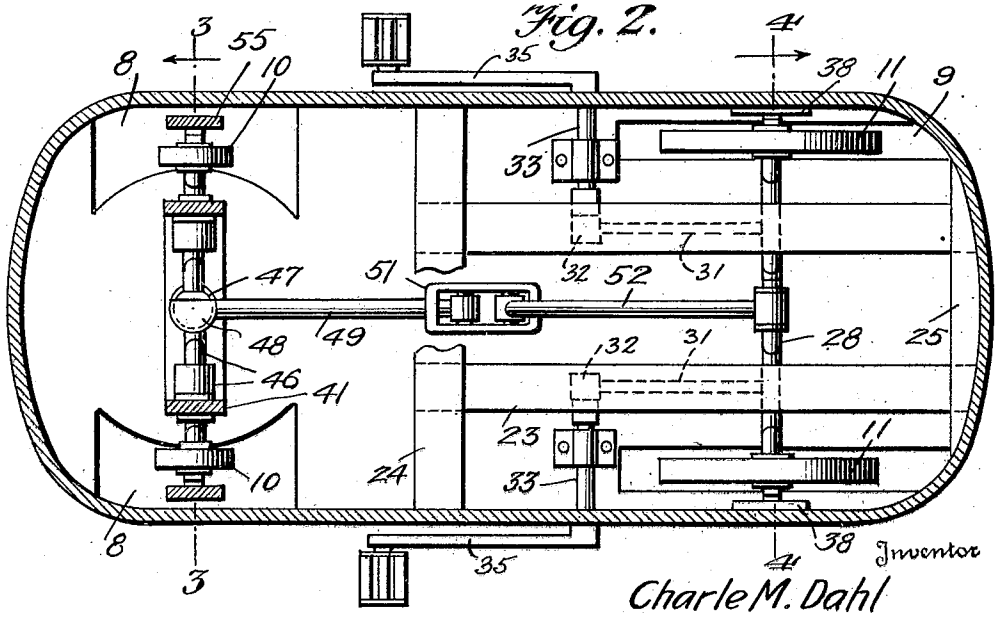



Fig. 2.




Witnesses

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2 SHEETS—SHEET 2.

Fig. 3.

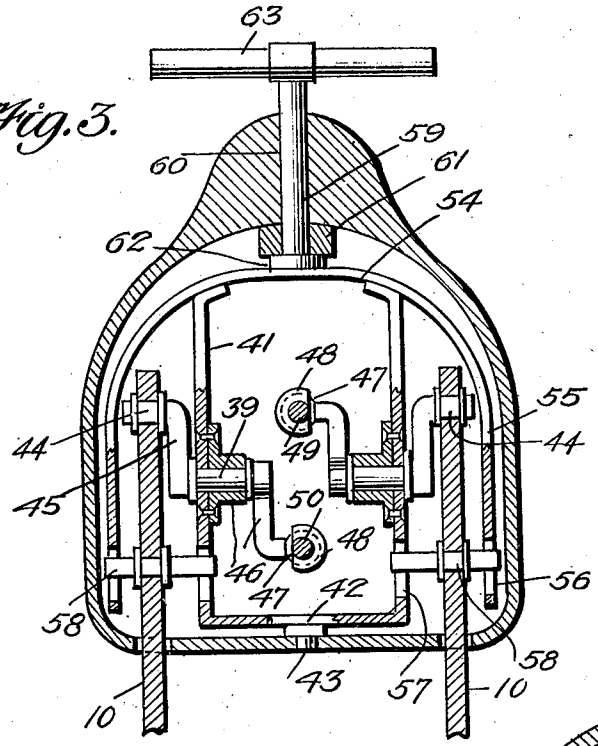



Fig. 6.

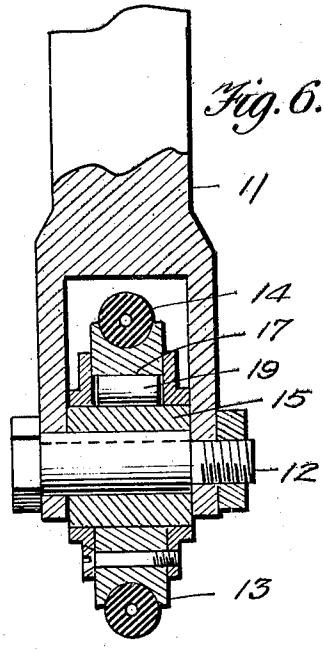



Fig. 4.

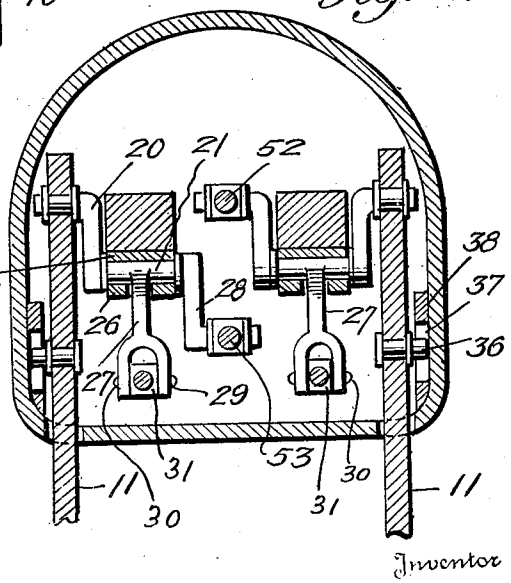
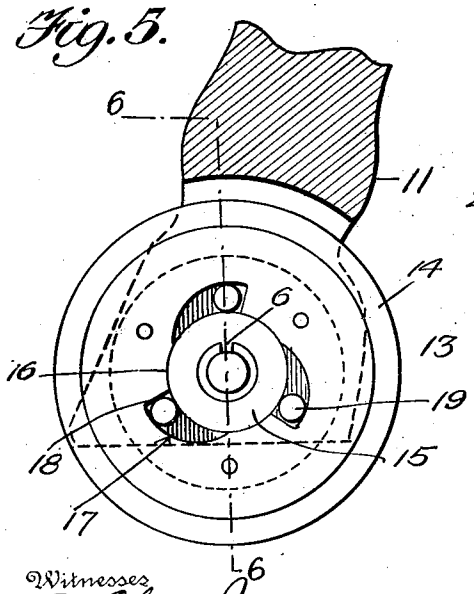



Fig. 5.




Witnesses

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# UNITED STATES PATENT OFFICE.

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## MECHANICAL HORSE.

1,369,628. Specification of Letters Patent. Patented Feb. 22, 1921.

Application filed October 13, 1919. Serial No. 330,178.

*To all whom it may concern:*

Be it known that I, CHARLES M. DAHL, a citizen of the United States, residing at Charlottesville, in the county of Albemarle and State of Virginia, have invented new and useful Improvements in Mechanical Horses, of which the following is a specification.

This invention has reference to mechanical toys.

An object of the invention is to produce a toy in the form of a four-footed animal and which is pedal actuated by a child seated thereon to impart a combined oscillatory and reciprocatory movement to the legs of the toy, causing the same to be propelled in a forward direction and the movement of the legs of the toy to similate a walking or running movement of the animal which the toy represents.

It is a further object of the invention to produce in a mechanical toy which represents a four-legged animal pedal operated means concealed in the body of the animal for imparting a movement in a forward direction of the toy, means being provided for holding the toy against movement in a rearward direction and means being also provided for guiding the toy in its movements.

The foregoing objects and others which will appear as the nature of the invention is more fully disclosed may be accomplished by a construction, combination and operative arrangement of parts such as is illustrated by the accompanying drawings, it being understood, however, that the nature of the invention is such as to render the same susceptible to modifications, especially in shape, size and proportion, such modifications falling within the scope of what is claimed.

In the drawings:

Figure 1 is a side elevation of a mechanical toy constructed in accordance with this invention, parts being broken away and parts being in section.

Fig. 2 is a horizontal sectional view approximately on the line 2—2 of Fig. 1, on an enlarged scale.

Fig. 3 is a sectional view approximately on the line 3—3 of Fig. 2.

Fig. 4 is a sectional view approximately on the line 4—4 of Fig. 2.

Fig. 5 is an enlarged detail sectional view through the lower or hoof portion of one of the rear legs of the toy showing in elevation the roller member journaled thereon and the clutch means for preventing the turning of the roller in one direction.

Fig. 6 is a sectional view approximately on the line 6—6 of Fig. 5.

It is to be understood that the body of the toy may be in the shape and form of any four-footed animal, and for convenience I have illustrated in the drawings a toy in the shape and form of a horse.

The toy includes a hollow body member 7 having its base portion adjacent to its breast and rump provided with suitable openings 8—8 and 9—9 respectively through which pass the front legs 10—10 and 11—11 respectively. These leg members have their lower end or hoof portions bifurcated and through the said bifurcations pass shafts 12 for rollers 13, the said rollers having peripheral grooves which receive therein compressible, preferably rubber tires 14, so that the toy may be propelled over smooth surfaces, such as the floor of a room, without imparting injury thereto.

The shaft 12 of the rear legs 11, and also those of the front legs 10, if desired, have keyed thereon a wheel or roller 15 that is received in a round opening in the center or hub portion of the roller 13. The referred to opening in the roller is indicated by the numeral 16, and the wall provided thereby is formed with equi-distantly spaced depressions providing inner curved walls 17 that at the deepest portions of the depressions terminate in straight shoulders 18. In these depressions are metal rolls 19. These elements constitute a clutch, as it will be apparent that when the metal rolls 19 contact with the shoulders 18 the main rollers 13 are free to revolve upon the shafts 13 in one direction, but a movement of the said main rollers in an opposite direction will cause the metallic rolls 19 to travel upon the arcuate walls 17 and to exert a binding action against said walls and against the periphery of the wheels 15.

The front legs 10 and the rear legs 11 are independently connected to crank shafts. The crank shafts for the rear legs are indicated by the numerals 20, the same having their central straight portions 21 journaled in suitable bearings 22 that are secured each to one of a pair of longitudinally extending bars 23 in the hollow body 7. These bars 23 are connected at both their front and rear ends by transverse bars or cleats 24 and 25 respectively, the said cleats being also se-

cured to the sides of the body 7. The bearings 21, upon the lower or under surfaces thereof are slotted as at 26 and through these slots pass arms 27 formed on the straight portion 21 of the crank shafts. By reference to the drawings, especially Fig. 4 thereof, it will be seen that the shafts 20 have both of their ends provided with oppositely directed L-shaped portions or cranks, and the inner cranks are indicated by the numerals 28, the outer cranks, or the cranks nearest the sides or body being received through suitable openings, as previously stated, in the upper portion of the rear legs 11.

The arms 27 preferably have their outer ends bifurcated or U-shaped as indicated by the numerals 29 and in these said ends there is pivotally secured, as at 30, pitmen 31. Each pitman 31 has its free end pivotally secured to the crank end 32 of a shaft 33. The shafts 33 are in longitudinal alinement and are each journaled in a suitable bearing 34 that is secured upon the bottom member of the hollow body 7. The shafts 33 pass through suitable openings in the sides of the body 7, and to these projecting ends are secured cranks or pedal members 35.

On the rear legs 11 are lugs 36 which, if desired, may be surrounded by rolling sleeves. These lugs are received in the slots 37 of plates 38 that are secured to the sides of the hollow body 7.

The pedals are disposed at opposite angles or inclinations on the opposite sides of the body and the operator, by pressure of his feet thereon imparts a partial rotary movement thereto, sufficient to swing or oscillate the crank shafts 33, which through the medium of their link connections with the arms 27 of the crank shafts 21 impart a swinging movement in opposite directions to the legs 11. Because of the arrangement of the lugs 36 in the slots 37 of the plates 38, a slight vertical movement is imparted to the said legs on the operation of the pedals which permits the rollers carried by the legs at all times contacting the ground surface. The lugs 36 provide movable pivots for the legs. The construction is such that the rear legs move in reverse directions, but move simultaneously and the clutch mechanism between the ground rollers and the hoof portions of the legs permit of the said legs being moved freely, or more strictly speaking permit of the ground rollers being freely revolved when the same, in the forward movement of the legs contact with the ground surface, while the said rollers are held against rotation when the legs are moved rearwardly. In the latter instance the legs having their rollers contacting with the ground surface serve as fulcrum elements and cause the forward movement of the toy figure.

The crank shafts for the forward legs 10, each includes a straight portion 39 that is journaled in suitable bearings 40 provided upon uprights 41 of a substantially U-shaped member, the connecting element for the uprights or arms 41 being centrally provided with a boss or enlargement 42 from which extends a pivot member 43 that is received in a suitable round opening in the bottom portion of the body 7 between the slots through which the front legs pass. The straight portion 39 of each of the shafts has its ends provided with oppositely extending crank portions which are substantially L-shaped, and to the outer crank portions 44 of the said shafts the upper portions of the front legs 10 are pivotally connected. The inner substantially L-shaped ends or crank portions of the shafts 39, which are indicated by the numerals 46 have their outer angle end provided with ball heads 47 and these heads receive cup-shaped bearings 48 secured to the ends of power imparting rods 49 and 50 respectively. The ends of the rods 49 and 50 are pivotally connected in one end of the yoke 51, while in the opposite end of the said yoke there is pivotally connected similar power imparting rods 52 and 53 respectively. These last mentioned rods are in reality extensions of the first mentioned rods, but it is necessary, as will presently be apparent that the power imparting rods comprise pivoted sections. The rods 52 and 53 are connected to the outer angle ends of the crank members 28 on the respective shafts 21 for the rear legs. By the above construction it will be apparent that when the pedals are actuated to impart movement to the rear legs 11, a similar movement will be imparted to the fore legs 10. The arms 41 of the U-shaped member on which the shafts 39 are pivoted have their upper ends connected to a second U-shaped member which is positioned reversely to the first mentioned U-shaped member. This last mentioned member is broadly indicated by the numeral 54 and the depending sides or arms 55 thereof have elongated slots 56 therethrough, the said slots being arranged opposite similar slots 57 in the arms 41. The leg members 10 are provided with laterally extending lugs 58 which are preferably round in cross section and which may have their ends surrounded by revoluble sleeves, the said lugs serving as trunnions for the front legs 10. The oppositely arranged U-shaped members provide a frame which, through the medium of the pivotal engagement of the element 43 with the body 7 is susceptible to a turning movement, the slots 8 in the body having their inner walls rounded to permit of the free turning of the legs through the said opening. To the upper end of the frame there is secured a cross sectionally rounded post 59 that

passes through a round bearing opening 60 in the neck portion of the figure. On the post 59 is a washer 61 that bears against a boss or enlargement 62 on the frame for the front leg and also bears against the inner wall at the neck portion of the figure so that the pintle 43 is at all times retained in its bearing opening. The post extends a suitable distance outward of the figure and has its outer end provided with a laterally extending handle 63, and the turning of this handle by the operator will, of course, turn the legs 10 angularly with respect to the body 7 and consequently direct the angle movement of the toy. By providing the ball and socket joints between the power or push rods 49 and 50 and the crank shafts for the fore legs these members are brought only slightly out of longitudinal alinement with their extensions 52 and 53 when the front legs are turned.

The animal figure has its head portion provided with the usual bracket and the reins therefor may be left free or attached to the handle 63. The figure is also provided with a saddle directly above the pedals. This saddle is in the nature of a removable element, being indicated by the numeral 64 which has its outer portion flanged so that the body thereof is considerably thickened and the said body is received in an opening 65 in the top of the hollow body portion 7 of the figure. By removing the saddle access may be obtained to the interior of the figure so that any repairs required to the mechanism therein may be easily accomplished.

Having thus described the invention, what is claimed as new, is:—

1. A movable toy including a hollow body and a pair of forward and a pair of rear legs having their upper portions received in the body, pedals on the opposite sides of the body connected to shafts having angle inner ends, said shafts journaled in bearings in the body, a crank shaft journaled in bearings in the body for each of the respective legs, a lug on each of the legs received in a slotted guide member in the body, depending arms on the crank shafts for the rear legs, pitmen connecting the respective arms with the angle ends of the first mentioned shafts, loosely connected push rods between the crank shafts for the rear legs and the crank shafts for the front legs, pivoted rollers on the outer ends of all of the legs, and clutch means between the rear legs and the rollers for holding the rollers against turning when the rear legs are moved rearwardly of the body and for permitting the turning of the said rollers when the said rear legs are moved forwardly of the body.

2. A mechanical toy including a hollow body having a pair of fore legs and a pair of hind legs, pedals on the opposite sides of the body between the legs, a crank shaft journaled in bearings in the body for each of the legs, a shaft journaled in the body for each of the pedals and each of said shafts having an angle end, the crank shafts for the rear legs having depending angularly disposed arms, pitmen connecting said arms with the respective angle ends of the mentioned shafts, lugs on the rear legs received in slotted guides in the body, a frame pivotally connected in the body and supporting the bearings for the front crank shafts, lugs on the fore legs guided in slots in said frame, loosely connected push and pull rods between the rear and front crank shafts and a ball and socket joint connecting said rods with the front crank shaft, a standard arising from the frame and passing through a bearing opening in the top of the toy figure, a handle thereon, rollers having compressible tread portions pivoted to the outer ends of the legs, and clutch means between certain of said rollers and certain of the legs for permitting the turning of the rollers in one direction and for preventing the turning of the rollers in another direction.

In testimony whereof I affix my signature.

CHARLES MELVIN DAHL.