

N<sup>o</sup> 14,787



A.D. 1893

Date of Application, 2nd Aug., 1893  
Complete Specification Left, 2nd May, 1894—Accepted, 2nd June, 1894

PROVISIONAL SPECIFICATION.

Improvements in Mechanical Toys.

I, WILLIAM BRITAIN Junr. of 28 Lambton Road Hornsey Rise London N. Mechanical Model Maker do hereby declare the nature of this invention to be as follows:—

5 The object of my invention is to produce a galloping motion in four legged animals by the contact of their feet on the ground, when they receive a forward motion from a cart or other suitable driving apparatus.

10 I make the body of an animal (such as a horse) hollow with the legs fulcrumed in it free to move through the necessary angle and fixed together in pairs. Fixed to the front pair of legs and projecting backwards from the fulcrum, I make an arm with a longitudinal slot in it. I make a similar arm project forward from the hind legs of such a length that the two arms overlap each other to the length of the slots; but arranged side by side so that they can pass each other without touching.

15 I make any suitable driving apparatus in a cart with the shafts free to rise and fall a small amount. I fulcrum the animal between the shafts at any suitable point such as the hind leg bearing, and make a cranked axle pass through the animal parallel with the leg axles and bear on the shafts. I make this axle work through slots radial to the fulcrum in the body with a short throw crank at those points and through the slots in the arms projecting from the legs with a long throw 20 crank. Now supposing the body of the animal to be fulcrumed on the axle of the hind legs, then the crank axle will revolve in the same direction as the wheels of the cart and the short crank will be 90° behind the long one.

25 Then when the motive power in the cart drives the body of the animal forward one pair of legs will always be in position to catch on any suitable surface and cause the crank axle to revolve driving the other pair of legs forward until the short crank tilts the body so as to raise the one pair of legs out of contact with the surface and depress the other pair so that they catch they, having already passed their most forward position and started returning owing to the long crank working in a slot, which enables the slot to turn the crank more than half a turn in one 30 direction and less than half a turn in the other. Thus so long as the crank axle revolves in one direction the legs are brought in contact with the surface alternately soon after passing the most forward position; and both pairs of legs having the quick return motion of a crank working in a radial slot combine to carry the crank over the dead centres and thus give it a continuous revolution.

35 In another modification I make the crank axle bear in the sides of the body and make the small crank work in the slots in the shafts.

Dated this 2nd day of August 1893.

W. BRITAIN, JR.

COMPLETE SPECIFICATION.

40 Improvements in Mechanical Toys.

I, WILLIAM BRITAIN Junior of 28 Lambton Road, Hornsey Rise London, N. Mechanical Model Maker do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

45 The object of my invention is to obtain a galloping motion in a four legged  
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*Britain's Improvements in Mechanical Toys.*

animal, by the contact of the feet on the ground, when a forward motion is imparted to it by a suitable motor.

In the accompanying drawing Fig. 1, is a longitudinal section. Fig. 2 a section and Fig. 4, a side elevation showing an animal attached to a cart containing a suitable motive power.

I make the body *a* of an animal (such as a horse) hollow, and fulcrum the legs in it. The front legs *c* I fix together and make them to oscillate on the axle *e*; and the back legs *b* I fix together and make them to oscillate on the axle *d*. Projecting backwards from the front legs opposite their axle I make a lever *f* with a longitudinal slot in it, and I make a similar lever *g* project forward from the back pair of legs. I make these levers of such a length that they shall overlap each other the length of the slots; and place them side by side so that they can pass each other without touching. Now supposing the motive power to be a two wheeled cart *h* I fulcrum the animal between the shafts *i* on a suitable axle such as one of the leg axles and make another axle *k* with two cranks in it pass right through the body of the animal parallel to the supporting axle, and working in bearings on the shafts I make a large crank *n* on this axle at such a position that it shall work in the slots in the levers *f. g* projecting from both pairs of legs; and a small crank *m* in such a position that it shall work in a slot in the side of the body. I make the slot in the body radial to the axle upon which the body is fulcrumed so that when the crank axle is revolved the body of the animal is rocked so as to alternately raise and depress the front and back legs.

Now supposing the animal to be fulcrumed on the axle of the hind legs the crank axle will revolve in the same direction as the wheels of the cart and the small crank will be fixed about 90° behind the large one. The crank axle working in the radial slot in the lever attached to the legs it is much nearer the fulcrum at one side of its throw than at the other, so that each pair of legs in its backward stroke will drive the crank axle round more than half a circle on the side most distant from the fulcrum of the legs; and the crank axle being in a line between the bearings of the two pairs of legs the legs, being alternately retarded by their contact with whatever surface the animal is travelling on and the body being pushed forward each pair will drive the crank axle through more than half a circle, and they combine to carry it over the dead centres, and keep it revolving in one direction. Each pair of legs is carried forward again by the crank during the remaining portion of its revolution on each side. The small crank acting to press each pair of legs on to the ground when they arrive at their most forward position.

In another modification I make the crank axle to bear in the sides of the animal and make the slot for the small crank in one or both of the shafts.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

A galloping motion in a mechanical animal produced by the contact of the feet upon a level surface when the body is pushed forward by suitable mechanism, by means of the quick return motion of a crank being moved by and moving levers projecting from each pair of legs radial to their axles; together with the means of rocking the body of the animal so as to raise the legs alternately off the surface upon which it travels; substantially as described.

Dated this 2nd day of May 1894.

W. BRITAIN, JR. 50

Fig. 1.

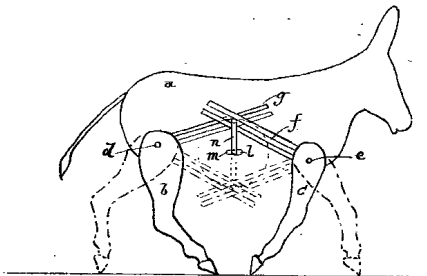


Fig. 2.

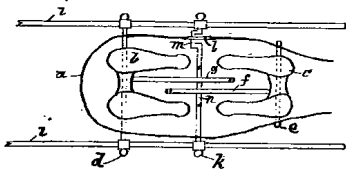


Fig. 3.

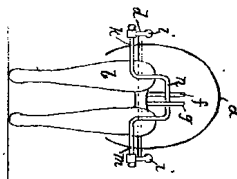
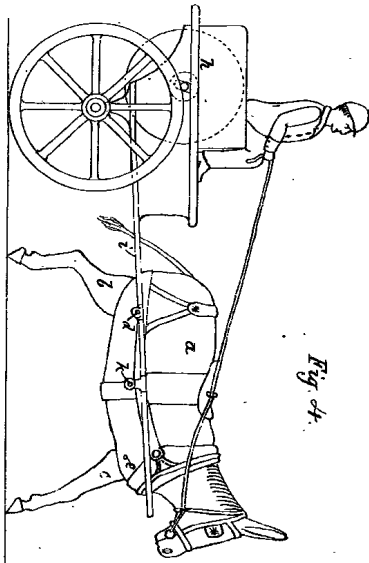


Fig. 4.



[This Drawing is a reproduction of the Original on a reduced scale.]

Fig. 1.

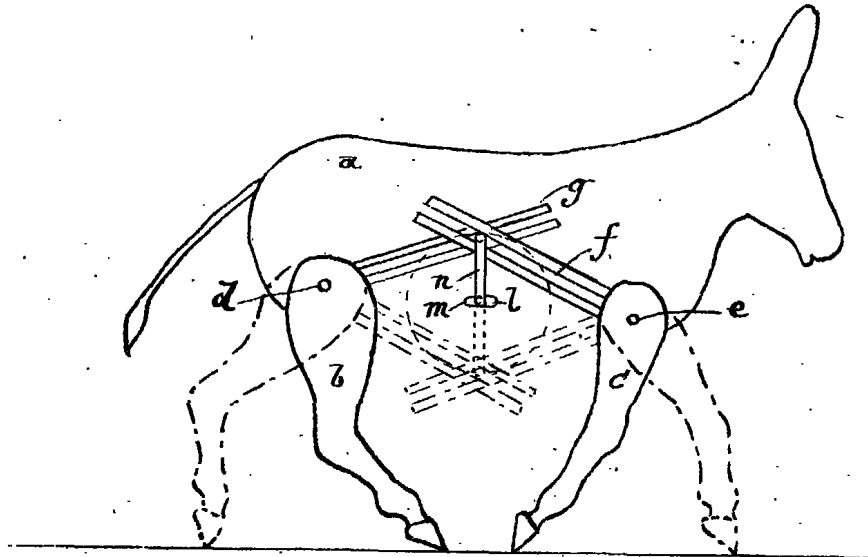
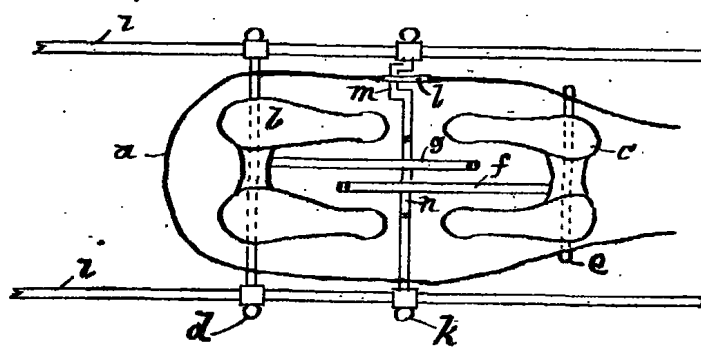


Fig. 2.



[This Drawing is a reproduction of the Original on a reduced scale.]

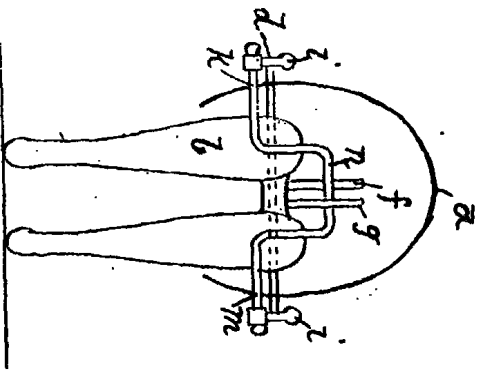


Fig. 3.

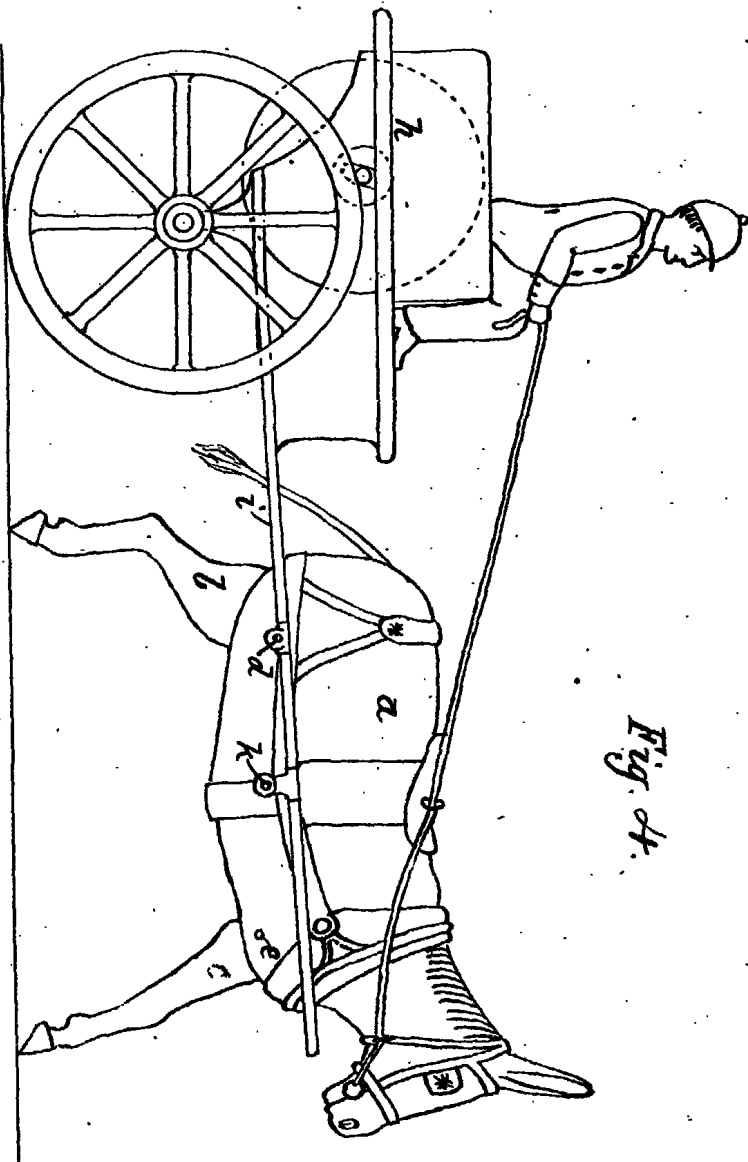


Fig. 4.