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Patented Nov. 21, 1899.

R. A. GRIMOIN-SANSON & A. J. ALLARD.

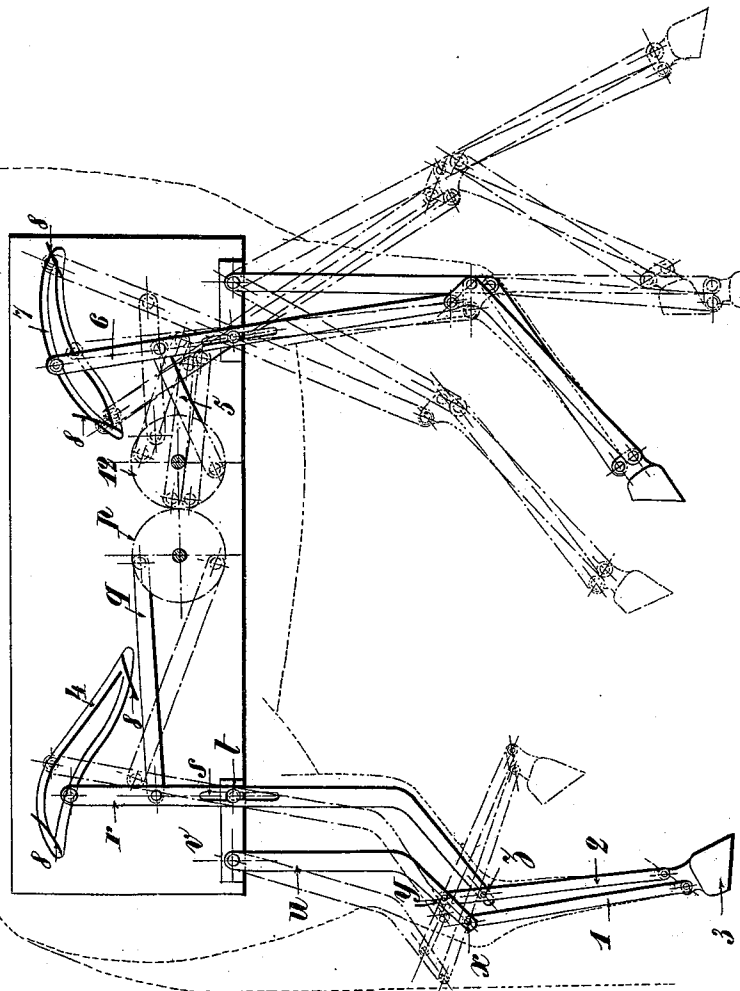
ROUNDAABOUT.

(No Model.)

(Application filed Mar. 9, 1899.)

2 Sheets—Sheet 1.

FIG. 1.



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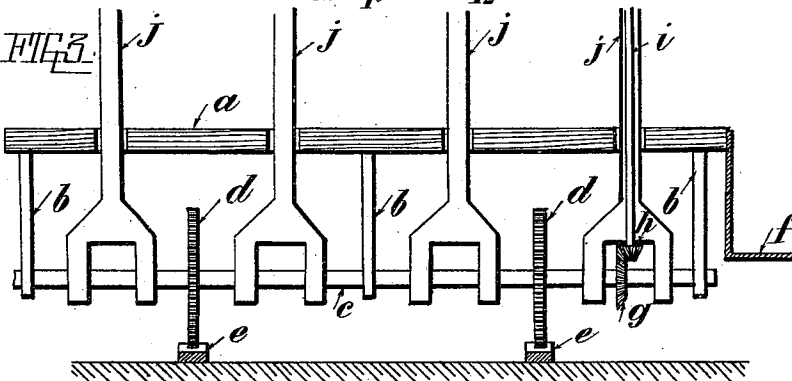
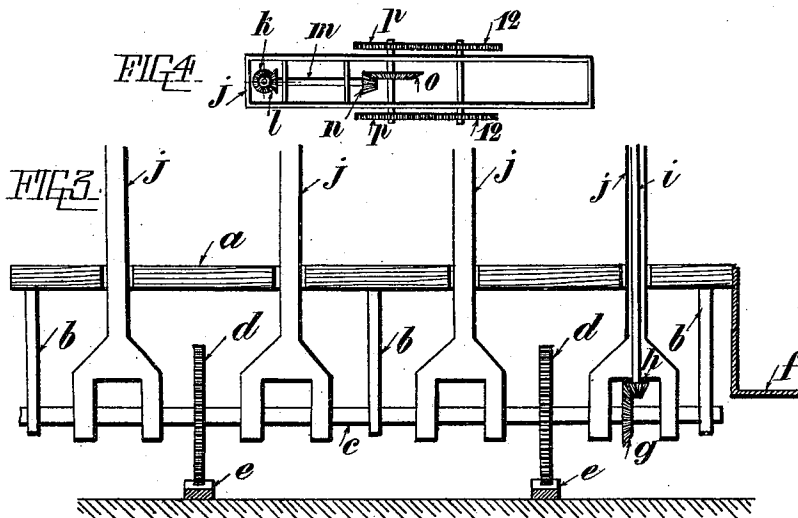
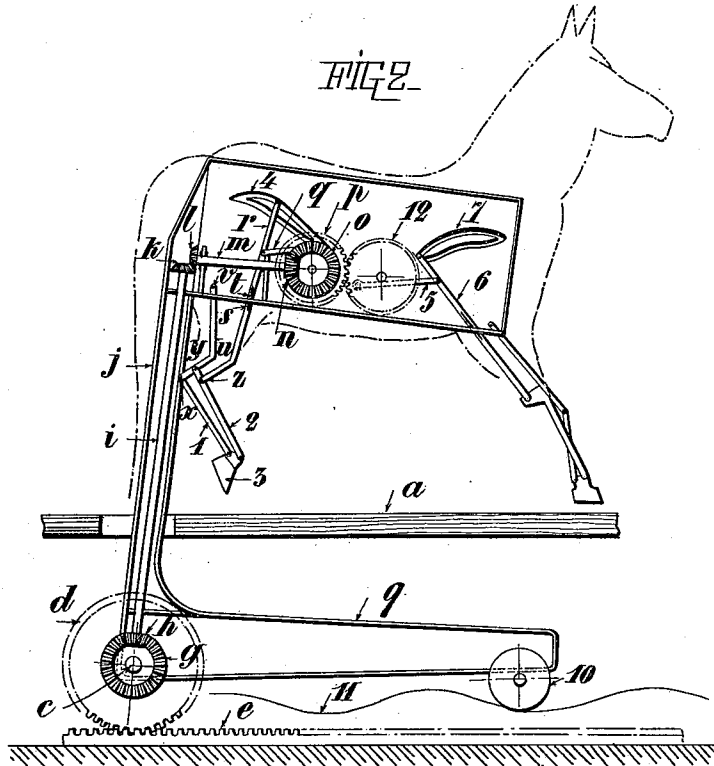
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(No Model.)

2 Sheets—Sheet 2.



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# UNITED STATES PATENT OFFICE.

RAOUL ADRIEN GRIMOIN-SANSON AND ARMAND JOSEPH ALLARD, OF  
PARIS, FRANCE.

## ROUNABOUT.

SPECIFICATION forming part of Letters Patent No. 637,508, dated November 21, 1899.

Application filed March 9, 1899. Serial No. 708,364. (No model.)

*To all whom it may concern:*

Be it known that we, RAOUL ADRIEN GRIMOIN-SANSON and ARMAND JOSEPH ALLARD, citizens of the Republic of France, and residents of Paris, in the Republic of France, have  
5 invented a new and useful Improvement in Roundabouts, which is fully set forth in the following specification.

This invention relates to improvements  
10 in roundabouts with automatic and jointed horses or other animals.

Our improvement comprises, contrary to what is the case with those hitherto used at fairs and other public entertainments, not  
15 wooden horses which are more or less movable as a whole, but wooden horses which are actually jointed in such a manner as to give the illusion of real horses which are either trotting or galloping.

In order that our invention may be readily and clearly understood, we have represented in the accompanying drawings, by way of example, the various details of our improvements in roundabouts with automatic and  
20 jointed wooden horses or other animals.

Figure 1 is a diagrammatic view of a wooden horse constructed in accordance with our invention. Fig. 2 represents the mechanism employed for actuating the horse. Fig. 3 is  
30 a cross-section representing the arrangement of the roundabout as a whole. Fig. 4 is a plan view of the mechanism provided within each figure.

Our improved roundabout consists, essentially, of a flooring *a*, Fig. 3, connected by means of vertical uprights *b*, and a suitably-operated drive-shaft *c*, mounted upon gear-wheels *d*, which travel along racks *e*. It is provided with foot-boards *f*, giving access to  
40 the platform *a*, as is the case with roundabouts of the ordinary kind. Upon the shaft *c* are rigidly fixed at intervals bevel-pinions *g*. The number of these bevel-pinions will of course depend upon the width of the roundabout and upon the number of horses which it is desired  
45 to arrange side by side in the same row. In the example illustrated in the drawings it has been assumed that the roundabout consists of various rows each containing four horses.

We will now consider the method of transmitting movement to each horse as a whole, what is stated as to one being of course applicable to the others. The pinion *g* gears with a second pinion *h*, which is rigidly fixed  
55 in a tube *j*, which should be of great strength, as it supports the entire weight of the horse. In order the better to assist in the illusion, this tube *j* may be hidden by the tail of the animal. The shaft *i* terminates at its upper  
60 portion in a second pinion *k*. This pinion *k* gears with a pinion *l*, rigidly fixed upon a horizontal shaft *m* and terminating in another pinion *n*, gearing with a bevel-wheel *o*, upon the axis of which is keyed a wheel *p*, gearing  
65 with a wheel 12. It will be seen that owing to this method of transmission the two wheels *p* and 12 rotate in opposite directions, seeing that they are driven directly.

The wheel *o* is provided with a connecting-rod *q*, which is attached to a lever *r*, provided with a slide *s*, in which travels the pin *t*, rigidly fixed to the body of the animal. Parallel with the lever *r* is arranged a second lever  
70 *u*, pivoted at *v* to the body of the animal. These two levers *u* and *r* form the upper portion of one of the hind legs of the horse. They are pivoted at *x*, *y*, and *z* to levers 1 2, which are pivoted at their lower portion to the shoe  
75 3. Owing to the movement of rotation of the wheel *o*, the connecting-rod *q* obliges the upper extremity of the lever *r* to move along the double groove 4. As a result of this displacement there are imparted to the various  
80 levers *u*, *r*, 1, and 2 movements which exactly correspond with those of the hind legs of a trotting-horse. As regards the fore part of the animal, the wheel *p* is likewise connected by means of a rod 5 to a lever 6 similar to the lever *r*. The connecting-rod 5  
85 forces the upper portion of this lever to slide in suitable grooves 7 in such a manner as to impart to the fore legs of the horse the natural movements of the fore legs of a trotting-horse. The grooves 4 and 7 are formed in  
90 a fixed plate T, forming part of the main body of the horse or figure.

It will of course be understood that the sys-

tem of parts which has just been described is duplicated; but the positions of the rods *q* and 5 are arranged at an angle of one hundred and eighty degrees from the first-named corresponding parts.

In order to compel the upper portions of the levers *r* and 6 to circulate in the two portions of each of the grooves 4 and 7, these latter are provided at their extremities with appropriate springs 8. These springs may be replaced, if desired, by suitable cams arranged at the points of junction of the two grooves and constituting, so to speak, "reversing-points." These cams are provided with ratchets, preventing them from turning in a direction contrary to that of the desired movement.

The tube *j*, which supports the horse, is connected at its lower portion with a slightly-inclined tube 9, terminating at its front portion in a roller 10, moving along a sinuous path 11.

When the roundabout has been started, the toothed wheels *d* move along the supporting-racks *e*, and each horse participates in the motion of the apparatus as a whole. The various movements which have been described above are produced owing to the transmission-gearing by means of the pinions *g*, *h*, *k*, *l*, and *n*. At the same time, as a result of the action of the roller 10, which is displaced along the sinuous path 11, the body of each horse as a whole performs an undulating movement which, in combination with the movements of the legs, produces an admirable representation of a trotting-horse.

For the purpose of fairs and other public entertainments we employ the arrangement which has been described—that is to say, a movable platform; but this is not the sole application of our invention and we may, for example, utilize it for the race-horse in race or "*petits-chevaux*" games. In the case of race games of this kind the motor sets the horses in motion without transmitting any movement to the flooring, which is independent, and when once the horses have been started their operating mechanism may be disengaged from the motor by means of a loose pulley, leaving the horses free to stop of their own accord and at hazard. Consequently any one of the horses may stop nearest to the winning-post, as is the case in the race games in question. It will be understood that with this arrangement the players will have, in addition to the attraction of the game itself, the additional attraction of being able to mount the horses which they have selected.

As above stated, the weight of each horse is carried by a tube *j*. It will of course be understood that this tube may be of any appropriate section or it may be replaced by U-shaped or other tubes. In the same manner the transmission of movement to the horse takes place by means of a rod, which terminates in two pinions. We reserve the right

to replace this rod by suitable driving-chain, such as a Galle or Vaucanson chain.

By means of a simple modification of the guiding-grooves our improved mechanism may be applied to figures of animals other than horses.

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

1. The combination of a platform, a movable figure on the same, a rotary drive-shaft journaled in bearings supported by the platform, laterally-extending rotary shafts, each for operating a figure, and extending through said platform, gearing connecting the drive-shaft and laterally-extending shafts, and means for rotating said drive-shaft, substantially as set forth.

2. The combination of a platform, a movable figure on the same, a rotary drive-shaft journaled in bearings supported by the platform, laterally-extending rotary shafts, each for operating a figure, and extending through said platform, bevel-gearing connecting the drive-shaft and laterally-extending shafts, racks, and gear-wheels mounted on said drive-shaft and meshing with said racks, substantially as set forth.

3. The combination of a platform, a rotary drive-shaft, means for rotating the same, a support extending loosely from said shaft through said platform, a laterally-extending portion on the said support, a roller journaled in said portion, a sinuous path along which said roller runs, and a movable figure mounted on said support, substantially as set forth.

4. The combination of a platform, a rotary drive-shaft, means for rotating the same, a tubular support extending loosely from said shaft through said platform, means for oscillating said support, a figure mounted on said support and provided with movable parts, a laterally-extending shaft extending through said support, gearing connecting the drive-shaft and laterally-extending shaft, and mechanism connected with said laterally-extending shaft for operating the movable parts of said figure, substantially as set forth.

5. A figure provided with movable parts, consisting of a body provided with a double groove, jointed levers pivoted to and extending from said body, one of said levers having a pin-and-slot connection with said body, and having its upper end guided in said double groove, and operating mechanism connected with the said lever above its pin-and-slot connection, substantially as set forth.

In testimony whereof we have signed this specification in the presence of two subscribing witnesses.

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ARMAND JOSEPH ALLARD.

Witnesses:

EMILE LEDRET,  
EDWARD P. MACLEAN.