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Date of Application, 31st July, 1891
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PROVISIONAL SPECIFICATION.

Improvements in Mechanical Toys.

I, CORNELIS FREDERIK ALEXANDER RÖELL of the Lyric Club Leicester Square in the County of Middlesex a Jonkheer of the Kingdom of Holland do hereby declare the nature of this invention to be as follows :—

My invention relates to improvements in mechanical toys and has for its object to so construct and actuate toy figures such as boxing figures that their movements will appear more natural than heretofore.

For this purpose I mount one arm at the shoulder upon an axis of motion and I connect the forearm at the elbow to the upper arm by a pin joint and in order to raise the arm into a horizontal position and extend it as if delivering a blow I mount upon the shoulder axis and at the back of the figure a lever one end of which is pin jointed to the elbow of the forearm whilst the other end is pin jointed to the upper end of a link the lower end of which is pin jointed to a vertical bar which receives a vertical reciprocating motion as hereinafter described suitable stop pins being employed to limit the extent of movement of the arm.

The other arm I may also mount and actuate in the manner above described but in the case of a boxing figure I preferably form the arm without an elbow joint and crank or bend the same in imitation of the guard arm of a boxer and I fix upon the shoulder axis thereof at the back of the figure a crank to which I pin joint the upper end of a link the lower end of which is provided with a long slot to receive a pin fixed to the vertical bar by which means the upward movement of the vertical bar will retract the jointed arm without giving motion to the cranked arm whilst the downward movement of the vertical bar will first extend the jointed arm and then raise the guard arm.

The leading leg of the figure is at the hip mounted upon an axis of motion fixed to the body and jointed to the vertical bar by the pin to which the links are connected and which is eccentrically mounted with regard to the hip axis and thus the downward movement of the vertical bar will also cause the leg to be extended in unison with the leading arm, a bearing roller upon the foot facilitating this movement.

The vertical bar is normally held in its raised position with the limbs of the figure in a position of rest by means of a light spring located at the back of the figure and the necessary downward movement is given to the vertical bar by the means hereinafter described.

The rear leg of the figure is supported by a downward extension passing through the stage floor and which is pin jointed to a sliding or swinging bar which receives a to and fro motion in any suitable manner in order to cause the figure to advance and retire as if in the act of boxing and the advance of the figure is caused by the leg extension in the outward movement of the horizontal bar coming against a fixed stop which throws the figures forward.

Upon an offset from the downward extension of the leg is mounted upon an axis of motion a horizontal lever one end of which is pin jointed to the lower end of the vertical bar and the other end of which is provided with a pin or roller which takes a bearing upon the top of the sliding bar and thus as the figure rocks forward or advances upon the pin joint of its extension the axis of the horizontal lever is lowered thus depressing the outer end of the lever and consequently the vertical bar and advancing the leading arm and leg and raising the guard arm.

Dated this 31st day of July 1891.

WHITE & WOODINGTON,
27, Southampton Buildings, London, Agents.

[*Price* 8*d*.]

COMPLETE SPECIFICATION.

Improvements in Mechanical Toys.

I, CORNELIS FREDERIK ALEXANDER RÖELL of the Lyric Club, Leicester Square in the County of Middlesex, a Jonkheer of the Kingdom of Holland 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 :—

My invention relates to improvements in mechanical toys and has for its object to so construct and actuate toy figures such as boxing figures that their movements will appear more natural than heretofore.

For this purpose I mount one arm at the shoulder upon an axis of motion, and I connect the forearm at the elbow to the upper arm by a pin joint and in order to raise the arm into a horizontal position and extend it as if delivering a blow, I mount upon the shoulder axis and at the back of the figure a lever, one end of which is pinjointed to the elbow of the forearm whilst the other end is pinjointed to the upper end of a link, the lower end of which is pinjointed to a vertical bar which receives a vertical reciprocating motion as hereinafter described, suitable stop pins being employed to limit the extent of movement of the arm.

The other arm I may also mount and actuate in the manner above described but in the case of a boxing figure I preferably form the arm without an elbow joint and crank or bend the same in imitation of the guard arm of a boxer, and I fix upon the shoulder axis thereof at the back of the figure a crank to which I pinjoint the upper end of a link, the lower end of which is provided with a long slot to receive a pin fixed to the vertical bar by which means the upward movement of the vertical bar will retract the jointed arm without giving motion to the cranked arm whilst the downward movement of the vertical bar will first extend the jointed arm and then raise the guard arm.

The leading leg of the figure is at the hip mounted upon an axis of motion fixed to the body and jointed to the vertical bar by a pin which is eccentrically mounted with regard to the hip axis and thus the downward movement of the vertical bar will also cause the leg to be extended in unison with the leading arm, a bearing roller upon the foot facilitating this movement.

The vertical bar is normally held in its raised position with the limbs of the figure in a position of rest by means of a light spring located at the back of the figure and the necessary downward movement is given to the vertical bar by the means hereinafter described.

The rear leg of the figure is supported by a downward extension passing through the stage floor and which is pin jointed to a sliding or swinging bar which receives a to and fro motion in any suitable manner in order to cause the figure to advance and retire as if in the act of boxing and the advance of the figure is caused by the leg extension in the outward movement of the horizontal bar coming against a fixed stop which throws the figure forward.

Upon an offset from the downward extension of the leg is mounted upon an axis of motion a horizontal lever one end of which is pinjointed to the lower end of the vertical bar and the other end of which is provided with a pin or roller which takes a bearing upon the top of the sliding bar and thus as the figure rocks forward or advances upon the pinjoint of its extension the axis of the horizontal lever is lowered thus depressing the outer end of the lever and consequently the vertical bar and advancing the leading arm and leg and raising the guard arm.

And in order that the said invention may be more clearly understood and readily carried into effect, I will proceed aided by the accompanying drawings more fully to describe the same.

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Description of the Drawings.

Figure 1 is a front elevation representing one of the two figures necessary for a boxing contest constructed and provided with actuating means according to my invention.

Figure 2 is a rear elevation thereof.

Figure 3 is an edge view thereof.

Figure 4 is a similar view to Figure 1, but showing the limbs of the figure extended in the act of delivering a blow, and

Figure 5 is a front elevation of the second figure in a boxing contest and in which some of the connections are necessarily somewhat modified.

In the several figures like parts are indicated by similar letters of reference.

Referring to Figures 1 to 4 *a* represents the body of the figure, *b* represents the rear leg thereof, and *c* represents the leading leg, whilst *d* and *e* represent the leading and guard arm respectively.

The leading arm *d* is at the shoulder mounted upon an axis of motion d^1, and the fore arm is connected at the elbow with the upper arm by a pinjoint d^2, whilst in order to raise the arm *d* into a horizontal position and extend it into the position represented at Figure 4, as if delivering a blow, a lever *f* is mounted upon the shoulder axis d^1 at the back of the figure, and the lower or outer end of this lever *f* is formed with a slot f^1 to engage a pin d^3 upon the elbow of the fore arm, whilst the upper or inner end of the lever *f* is pinjointed at f^2 to the upper end of a link *g*, the lower end of which is pinjointed at h^1 to a vertical bar *h* which is guided by apertured brackets b^1 b^5, and receives a vertical reciprocating motion as hereinafter described, a stop pin a^1 upon the body, engaging the upper arm and limiting the retraction of the arm *d* and a similar pin d^4 upon the fore arm engaging the lever *f* and limiting the extension thereof.

The other or guard arm *e* may be mounted and actuated in the manner above described, but in the case of a boxing figure, and as shown in the drawings, such arm is preferably formed without the elbow joint and is cranked or bent in imitation of the guard arm of a boxer, and upon the shoulder axis e^1 thereof at the back of the figure is fixed a crank e^2 to the outer end of which at e^3 is pinjointed the upper end of a link *i*, the lower end of which is provided with a long slot i^1 to receive the pin h^3 of the vertical bar *h* by which means the upward movement of the vertical bar *h* will retract the jointed or leading arm *d* without giving motion to the cranked or guard arm *e* as represented at Figures 1 and 2, whilst the downward movement of the vertical bar *h* will first extend the jointed or leading arm *d* and will then raise the guard arm *e*, as represented at Figure 4, a stop pin a^2 upon the body limiting the downward movement of the guard arm *e*.

The leading leg *c* of the figure is at the hip mounted upon an axis of motion c^* fixed to the body *a* and provided with an eccentrically disposed pin or stud c^1 which is embraced and acted upon by an inclined slot h^2 formed in an enlargement of the vertical bar *h* to which the links *g i* are connected and thus the downward movement of the vertical bar *h* will also cause the leading leg *c* to be extended in unison with the leading arm *d* as represented at Figure 4 whilst a bearing roller c^2 mounted upon an axis of motion c^3 upon the foot of the leg *c* and travelling upon the platform *j* is employed to facilitate such movement.

The vertical bar *h* is normally held in its raised position with the limbs of the figure in a position of rest as indicated at Figures 1 and 2, by means of a light spring *k* located at the back of the leg *b* of the figure, and at its lower end taking an abutment against the bracket b^1 upon the leg, and at its upper end acting upon a shoulder h^2 of the vertical bar *h*, whilst the necessary downward movement is given to the vertical bar *h*, by the means hereinafter described.

The rear leg *b* of the figure is supported by a downward extension b^2 thereof, which passes through an opening formed in the stage floor or platform *j* and is

pinjointed at l^1 to a reciprocating sliding or it might be a swinging bar l which may receive a to-and-fro motion in any suitable manner in order to cause the figure to advance and retire as if in the act of boxing, the advance of the figure being caused by the leg extension b^2 in the outward movement of the horizontal bar l coming against a fixed stop m carried in any suitable manner, and which throws the figure forward.

I preferably give the necessary to-and-fro motions to the sliding horizontal bar l by means of a waved wheel or cam wheel n which is fixed upon a shaft or axis of motion n^1 driven by any suitable means, and which wheel is embraced by two downwardly projecting studs l^2 from the bar l furnished with anti-friction rollers l^{2*}.

Upon an offset b^3, upon the downward extension b^2 of the leg b is mounted upon an axis of motion o^1 a horizontal or approximately horizontal lever o one end of which is pinjointed at o^2 to the lower end of the vertical bar h and the other end of which lever o is provided with a pin or enlargement o^3, or it might be a roller which takes a bearing upon the top of the sliding bar l and thus as the figure advances or rocks forward upon the pinjoint l^1 of its extension the axis o^1 of the horizontal lever o is lowered, thus depressing the upper end o^2 of the lever o, and consequently the vertical bar h and thereby advancing the leading arm d and leg c and raising the guard arm e of the figure.

In the example given at Figure 5, the parts are substantially the same as those hereinbefore described, but by reason of the figure standing with its back to the audience, some trifling modifications become necessary in order to connect the actuating means which are concealed from view with the limbs, and which modification I will now describe.

In order to mount the lever f which is located at the front of the figure and connect it with the leading arm d which is located at the back thereof, the axis d^1 is prolonged and passed through the body a and has mounted thereon the lever f whilst the outer end of the lever f which extends beyond the body a, engages the pin d^3 of the fore arm d and inasmuch as the link i and arm e are arranged both on one side of the figure, the crank e^3 is unnecessary, and the crank pin e^3 connecting the arm e and link i is therefore fixed directly to the arm e, furthermore a curved slot b^4 is provided in the leg b to admit of the passage of the pin c^1 fixed to the leg c and which engages the inclined slot h^3 of the vertical bar h.

Although I have shown and described my invention in connection with boxing figures, I would have it understood that by slightly modifying the limbs and their connections, it is equally applicable to foiling and other figures.

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 :—

1. In a mechanical toy figure the combination of arms articulated to the body at the shoulder, links pinjointed to cranks or offsets or levers from such arms, a vertically moveable bar located at the back of the rear leg, and connected with the links, an articulated leading leg connected with the moveable bar, a stage or platform, a downward extension from the rear leg passing through such platform, and means for oscillating the figure and imparting a vertical movement to the vertical bar, and stop pins for limiting the movements of the limbs substantially as herein shown and described.

2. In a mechanical toy figure the combination of an arm pinjointed to the body at the shoulder and articulated at the elbow, a lever mounted upon an axis of motion upon the body, and at one end engaging an offset from the elbow, and at the other end pinjointed to a link, a vertically moveable bar located at the back of the figure and at its upper end connected with the link, means for imparting a vertical movement to the vertical bar, and stops for limiting the movement of the arm substantially as herein shown and described.

3. In a mechanical toy the combination of a figure provided with articulated limbs, stops for limiting the movements thereof, a vertically moveable bar located at the back of the figure, suitable means of connection between the vertical bar and the limbs, a stage or platform, a downward extension from the rear leg of the figure passing through the platform and mounted upon an axis of motion, a horizontal lever mounted upon an axis of motion upon such extension and at one end pinjointed to the vertical bar and at the other end shaped to bear upon a horizontal bar or the like and means for imparting an oscillating movement to the figure substantially as herein shown and described.

4. In a mechanical toy the combination of a figure provided with articulated limbs, stops for limiting the movement thereof, a vertically moveable bar located at the back of the figure, suitable means of connection between the vertical bar and the limbs, a stage or platform, a horizontal bar located beneath the platform and adapted to receive a reciprocating movement, a downward extension from the rear leg of the figure pinjointed to the horizontal reciprocating bar, a horizontal lever mounted upon an axis of motion upon such extension, and at one end pinjointed to the vertical bar, and at the other end shaped to bear upon the horizontal reciprocating bar, means for imparting a reciprocating movement to the latter, a stop for the throwing forward the figure upon the movement of the horizontal reciprocating bar, and a light spring for returning the limbs of the figure to their normal position substantially as herein shown and described.

5. In combination with a mechanical toy figure constructed and actuated in the manner hereinbefore described, a stage or platform, and a small wheel or roller mounted upon the foot of the leading leg of the figure and bearing upon the stage or platform substantially as herein shown and described.

6. The general combination and arrangement of parts constituting a mechanical toy substantially as herein shown and described.

Dated this 30th day of April 1892.

WHITE & WOODINGTON,
27, Southampton Buildings, London, Agents.

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Fig. 1.

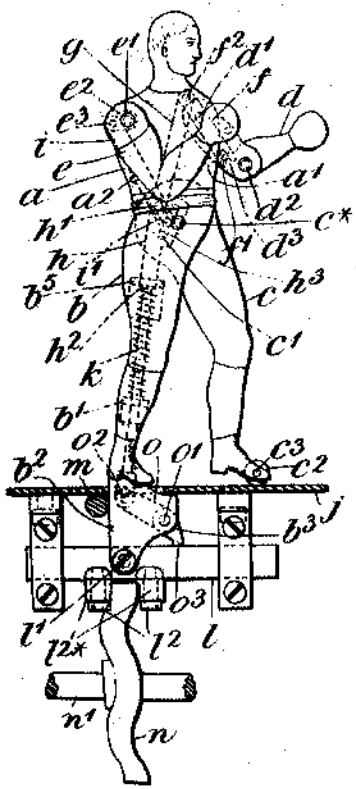

Fig. 2.

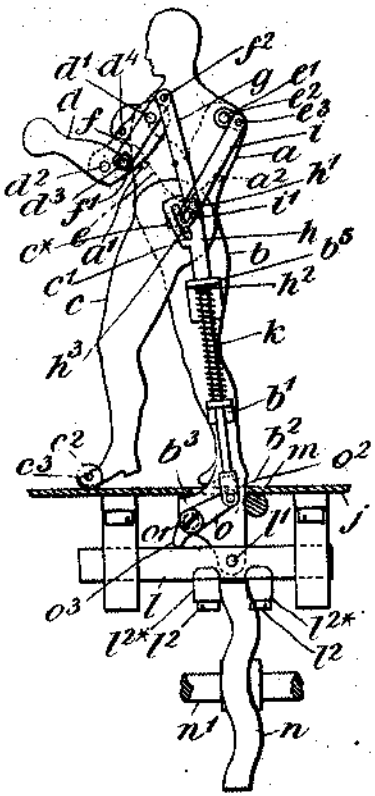

Fig. 3.

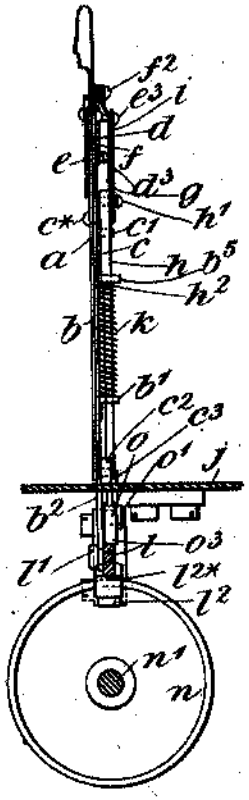

Fig. 4.

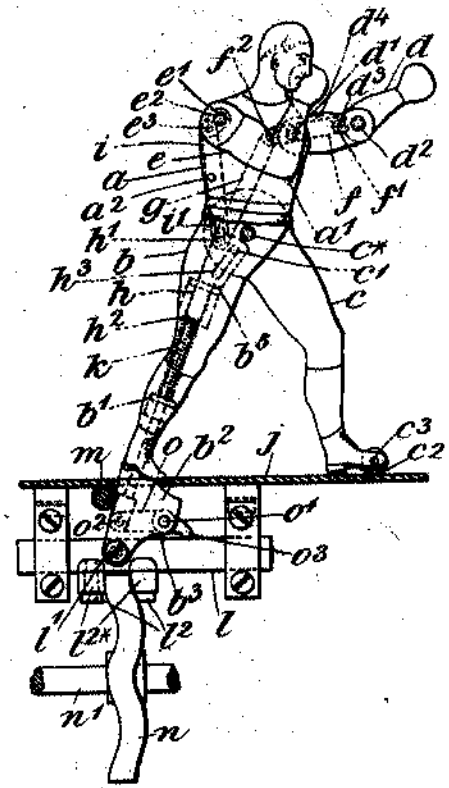

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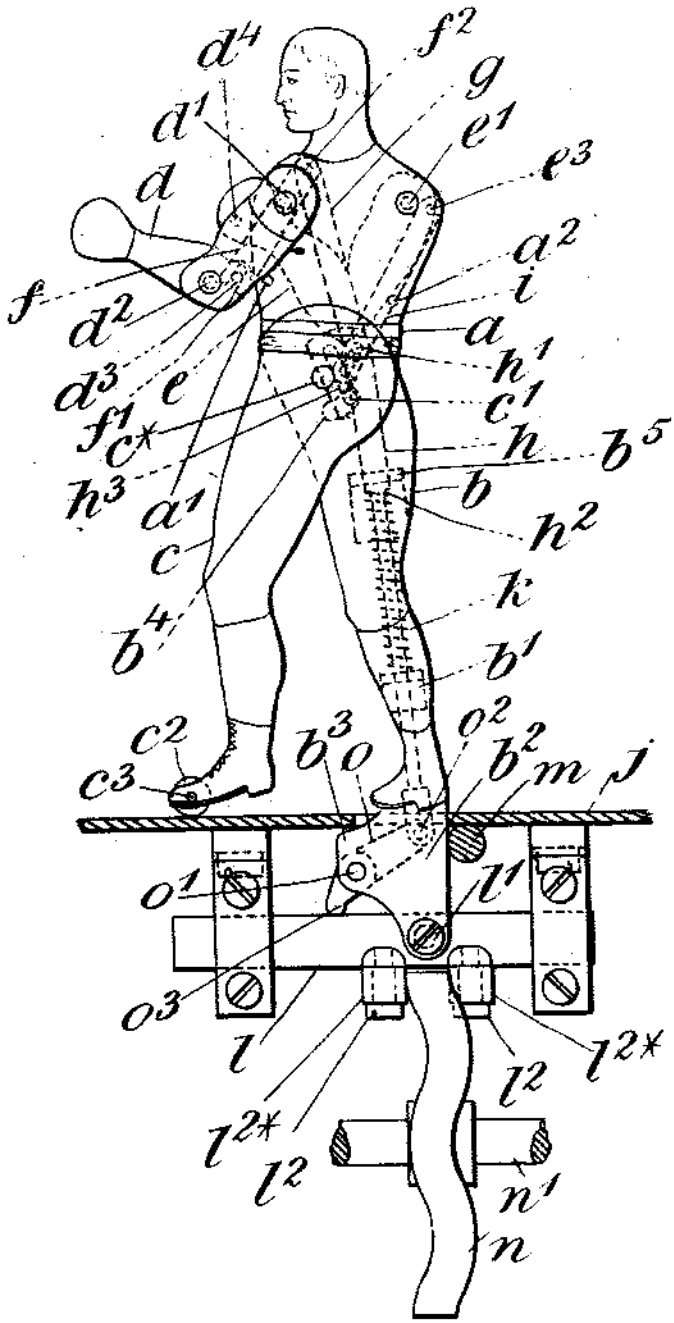
Fig: 5.



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