

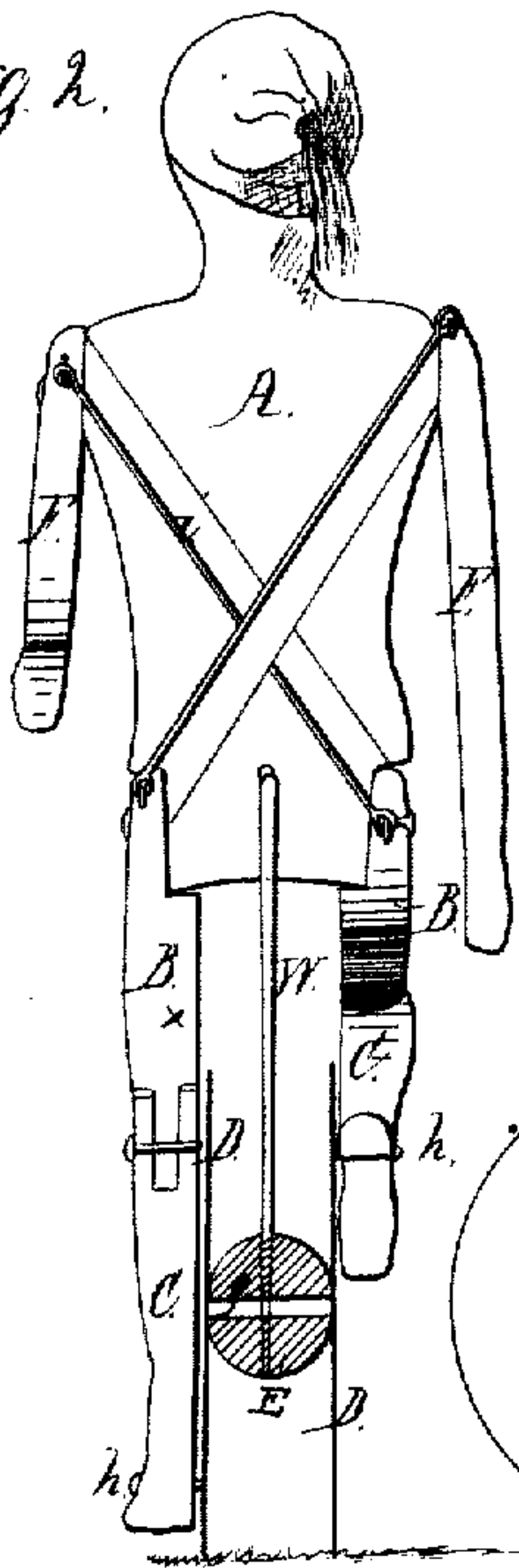
*R. Weir,*

*Trundle Toy.*

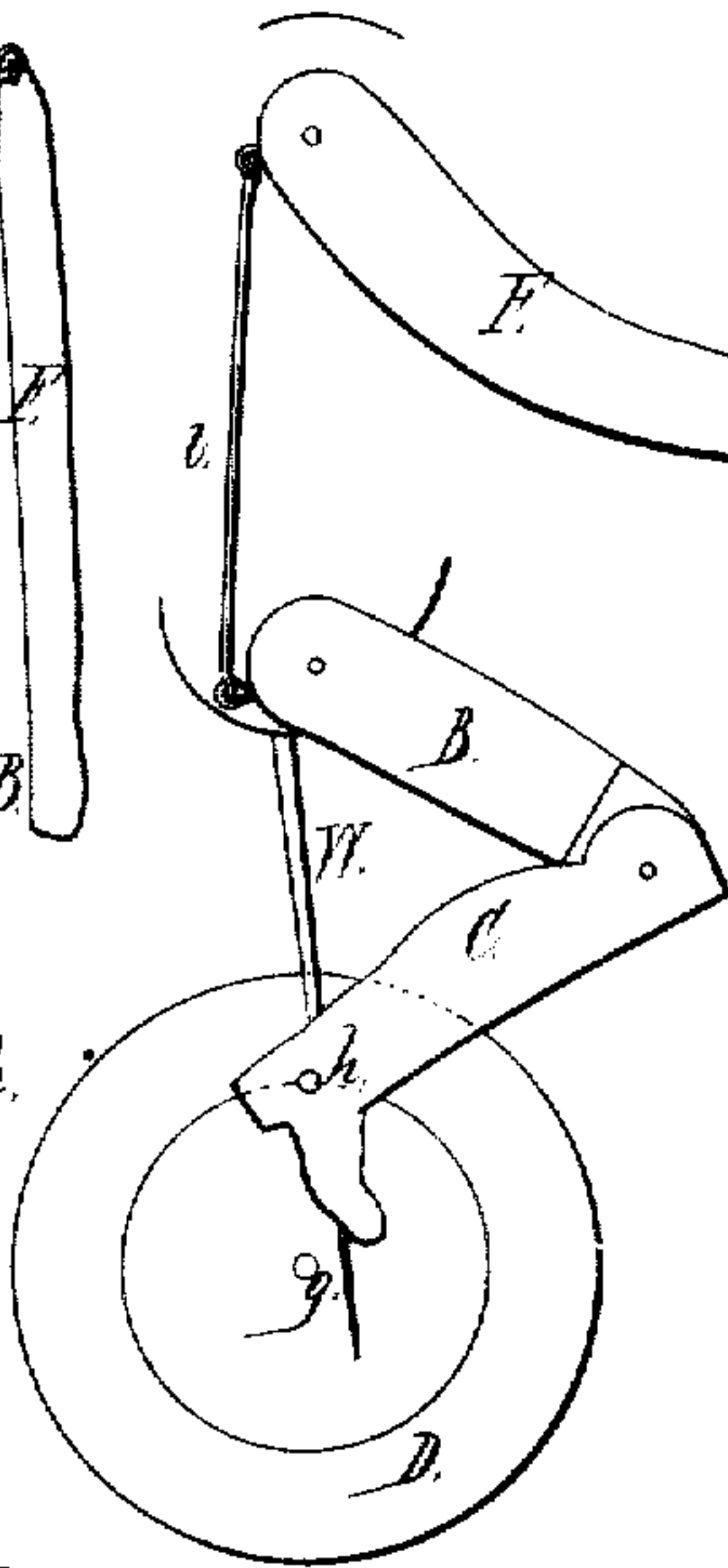
*N<sup>o</sup> 58,922.*

*Patented Oct. 16, 1866.*

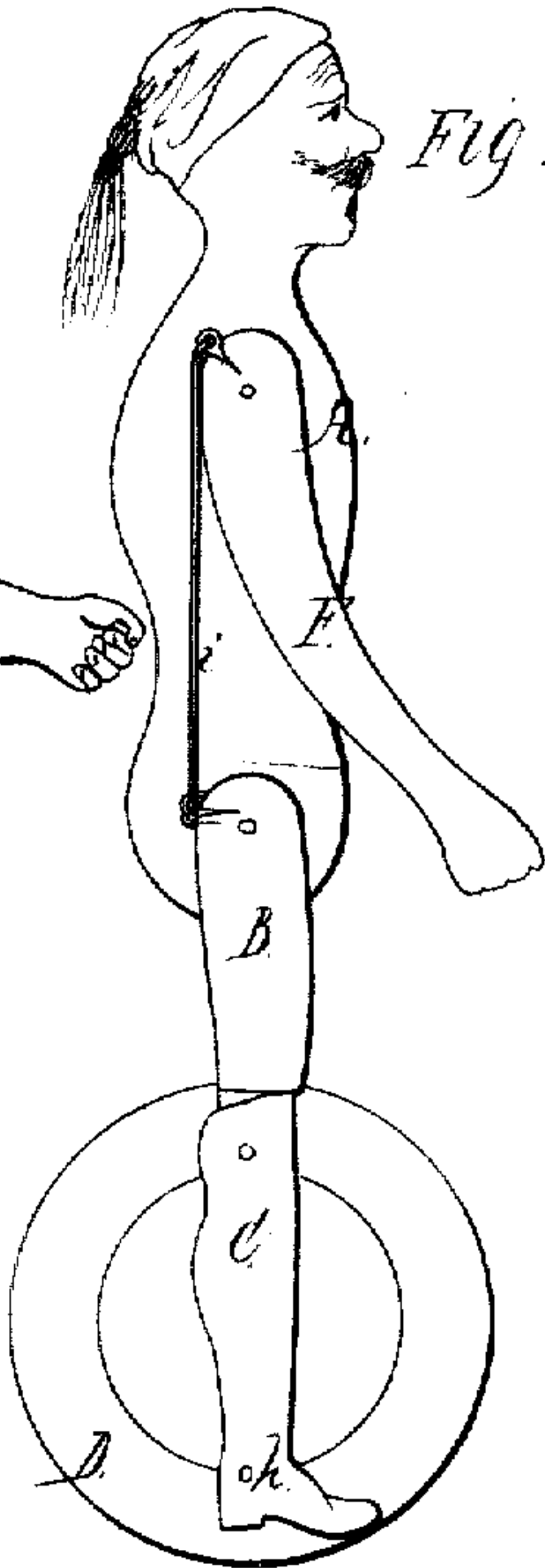
*Fig. 2.*



*Fig. 3.*



*Fig. 4.*



*Fig. 1.*



*Witnesses,  
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# UNITED STATES PATENT OFFICE.

ROBERT WEIR, OF COHOES, NEW YORK.

## TOY WALKING-FIGURE.

Specification forming part of Letters Patent No. 58,922, dated October 16, 1866.

### *To all whom it may concern:*

Be it known that I, ROBERT WEIR, of Cohoes, in the county of Albany and State of New York, have invented a new and Improved Toy; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification.

The nature of this improvement consists in making a figure of a man or other animal perform motions of the limbs to resemble walking or running. This is accomplished, for the figure of a man, by mounting the body upon a carriage in such a manner that the legs are astride of a pair of carriage-wheels, and the feet are lifted and carried forward at each revolution of the wheels, to imitate nature, by opposite crank-pins attached to the wheels and feet, the arms being alternately thrown backward and forward by a connection from each to the opposite leg.

The object of this improvement is to make a toy which shall be useful by furnishing occupation, amusement, and interest to all, especially the young, without tending to demoralize them or deprave their tastes, and the mechanism employed, although simple, comprises a combination of mechanical devices and movements sufficient to make the toy not alone a proper and amusing plaything, as above stated, but an attractive study, to waken and develop the mechanical tastes of the young and direct their thoughts and exertions into useful and instructive channels.

The drawings represent the improvement applied to the figure of a man.

Figure 1 represents, in perspective, the whole toy complete, except that one wheel is removed to show other portions more clearly. Fig. 2 is a rear view, and Figs. 3 and 4 side views, which will be referred to more particularly hereinafter.

The same letters of reference refer to like parts in all the figures.

The legs of the figure are constructed with joints at the hips and knees, and are put astride of two wheels, D D, which are secured rigidly to the axle *g*. The axle *g* passes through and turns in a hole in handle or stick E. The handle E is made in one or more pieces of convenient length, so that one end may be held in the hand, while the wheels D D rest upon the floor

or a table. The body A of the figure is supported in the proper position by a wire, W, one end of which is secured to the body between the legs, and the other enters a socket on stick E.

Each of the feet of the figure is pivoted through the heel to the nearest wheel D by means of a crank-pin, *h*, which is attached to wheel D near the circumference, the two crank-pins *h* and *h*, on either side of the figure, being opposite to each other in relation to the axis *g*. The arms F F of the figure are pivoted at the shoulder. Across the back of the body A, from each hip to the shoulder on the opposite side, are cut grooves, crossing each other, as shown in Fig. 2. Lying in these diagonal grooves are wires *i i*, which connect each thigh with the arm on the other side of the body. A small eye on the lower end of each wire couples with another eye driven into the back part of the thigh, as represented. The other end of the wire is secured in like manner to the back part of the arm, near the shoulder-joint.

When the thigh is moved up to the position shown in Fig. 3, the wire *i* pushes up the opposite arm—which is the only one shown—and the same connection *i* pulls down the arm when the thigh is moved to the position in Fig. 4.

The knee-joint is constructed to bend in only one direction. The drawings represent this joint made by jaws on the boot grasping a tenon on the upper part. The flanks of the tenon and jaws on the boot are made to touch when the leg is straight, but are rounded on the back side, permitting free motion of the leg in that direction.

The figure is dressed according to taste, and the mechanism is put in operation by taking the stick E in the hand and pushing the toy, with the wheels D D in contact with the floor or other surface. This causes the wheels to revolve, and each one of the pins *h h* lifts the foot to which it is attached, and carries it up, forward, and down in a curve varying but little from a cycloid, the opposite connections with the shaft causing the feet to alternate in each movement. The movement of the legs by means of the connections *i i* causes the arms to swing, so that the general effect is that of a man walking, trotting, or running, lifting the feet



high and swinging the arms in a ludicrous but not unnatural manner.

The details of construction may be modified greatly. The connections *i i* can be evidently placed either in front or rear of the body, and may consist, in the first case, of stiff sticks or wires merely, to push the arms up when they would fall by gravity; or, in the second case, strings may be substituted for the wires shown in the drawings, as they would pull the arm up and allow it to fall, as before. Strings might be put both front and back to pull the arm in both directions.

When the clothing permits, either kind of connection above mentioned may be used to cause a thigh to move the arm on the same side in the opposite direction, by making such connection from the front of thigh to the back of arm, or vice versa.

The wheels *D D* may be set either forward or back of the figure, and from the crank-pins *h h* connecting-rods be run out horizontally, or nearly so, and the feet be pivoted to the rods at a certain distance from the wheels. In this case the movement of the limbs will appear more natural, as the feet will not be lifted so high, and yet will receive the same horizontal movement as before.

The figure may be that of a soldier running, with his hands grasping his musket. An officer may be made to brandish his sword or a civilian swing his cane, when walking, by suitably connecting the arms and legs on the principles above stated.

It is proposed, in some cases, to make the head of the figure movable, and cause it to turn or nod by connections to the other mechanism, or by the oscillations of an attached weight, which can be concealed in the body.

Combinations of two or more figures can be made—as, for instance, one man chasing another—in which case, by varying the size of the wheels, either pursuer or pursued can be caused to take more steps.

The legs of animals, both front and rear, may be moved by the same kind of mechanism, and in all combinations it will generally be possible, by simple connections, to make one pair of wheels or one revolving shaft operate several pairs of legs.

A figure may be made pushing a wheelbarrow or pulling a cart.

Clock-work operated by a spring or weight may be adapted to make the movements of the figure automatic. Such spring may either operate the wheels *D D*, and thus propel the fig-

ure and move the limbs at the same time, or it may propel the carriage by separate driving-wheels, when the shaft or axle *g* can be turned by gearing, or by allowing the wheels *D D* to run upon the surface moved over.

By properly supporting the figure—as, for instance, mounting it on three or four wheels—the spring and necessary clock-work may be concealed in the body; or such moving-power may be placed in a cart or wheelbarrow which the figure seems to be pulling or pushing.

It will be observed that if the figure and carriage be stationary and the wheels *D D* revolved, the feet will merely be carried about in a circle; but if the axle *g* be turned while the figure progresses along any surface, the combined movements produce the proper effect. The propulsion of the carriage may therefore be accomplished in any manner, so long as the axle *g* is made to revolve; and if the attachments to such revolving axle lift the feet but a little distance while the figure is propelled the full length of a step, the combined movements will very accurately represent those of nature.

Cams may be substituted for crank-pins *h h* on axle *g*, and the motion of the limbs be thereby performed more naturally, but with less simplicity.

It will be observed that the hip-joints of the figure are maintained at a certain fixed distance from the axle *g*, for the body is supported (by wire *W*) from the carriage, and the axle turns therein; also, the thighs, being pivoted at the hip, cannot slide or yield, except to turn on the pivot. Therefore, when either foot or any part of the leg below the knee is lifted by its corresponding crank-pin *h*, attached to axle *g*, the knee-joint is necessarily bent and the knee thrown forward in imitation of nature, the hip-joint turning on its pivot in the body and the leg on *h* in the wheel. This is a distinctive feature of my invention.

I claim as new and desire to secure by Letters Patent—

Combining the body and jointed limbs of a figure with a revolving axle, *g*, by means of crank-pins *h h* and wire *W*, or their equivalents, in such a manner as to produce an alternate bending of the knee-joints and other movements of the limbs, substantially as herein described and set forth.

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