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Patented Nov. 21, 1899.

R. H. & J. F. SHAW.  
GAME PLAYED WITH MECHANICAL FIGURES.

(Application filed July 1, 1899.)

(No Model.)

3 Sheets—Sheet 1.

FIG. 1.

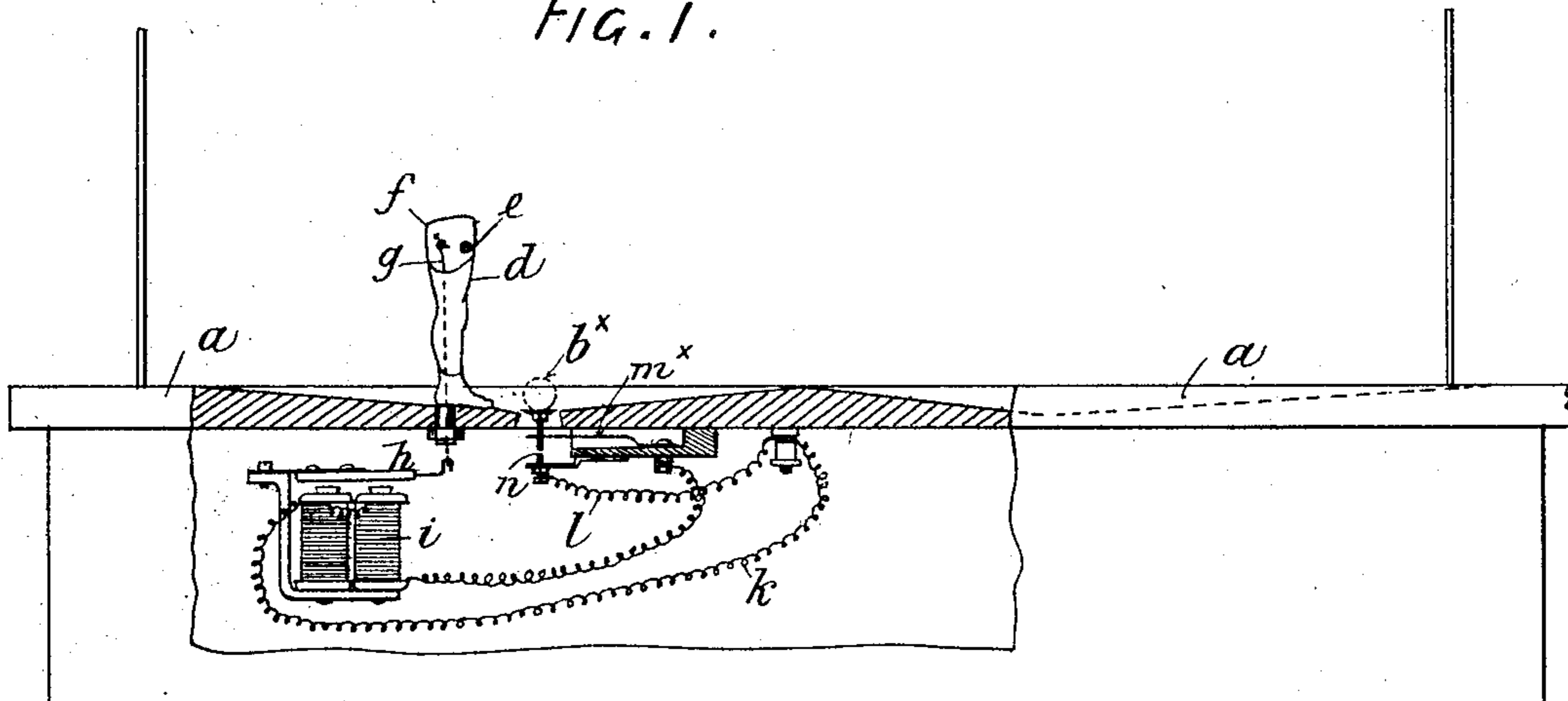
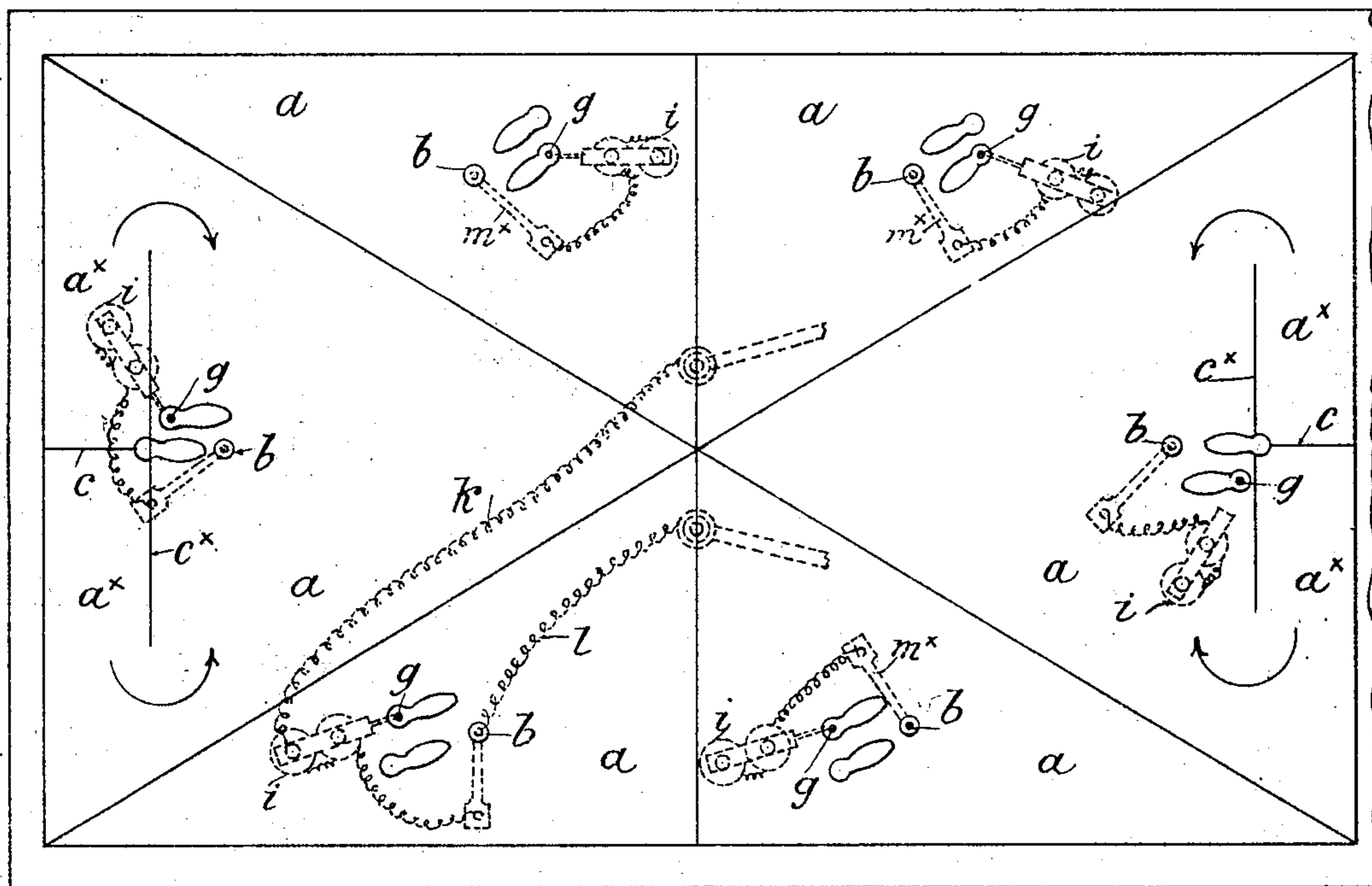


FIG. 2.



WITNESSES:

*P. A. Wright*  
*M. W. Miles*

INVENTORS

ROBERT HARRIS SHAW

JOHN FLETCHER SHAW

BY

*Hawman & Conway*

THEIR ATTORNEYS.

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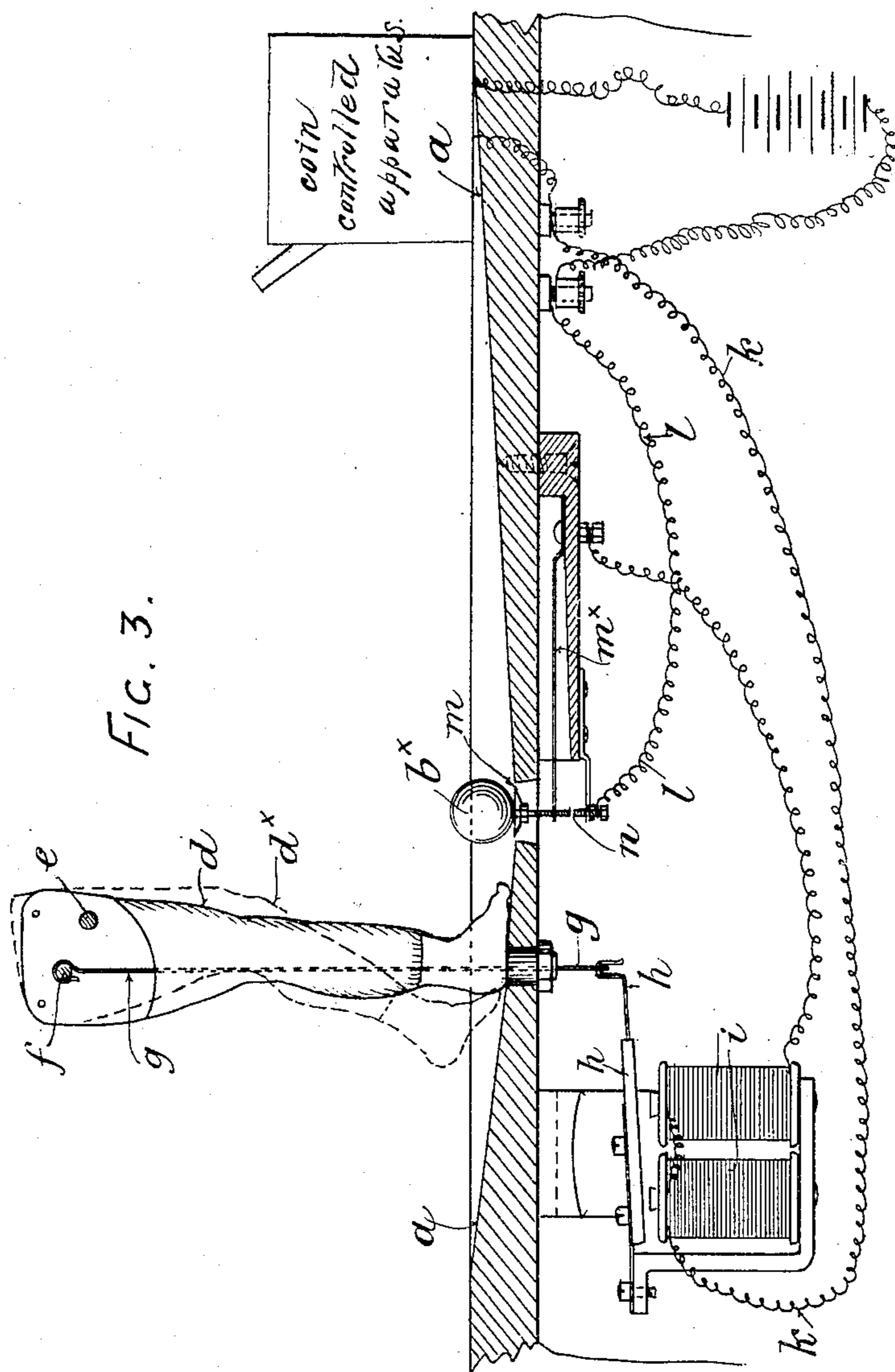
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*P. W. Wright*  
*M. A. Miles*

INVENTORS  
ROBERT HARRIS SHAW  
JOHN FLETCHER SHAW

BY *Shaw & Shaw*

THEIR ATTORNEYS.

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FIG. 4.

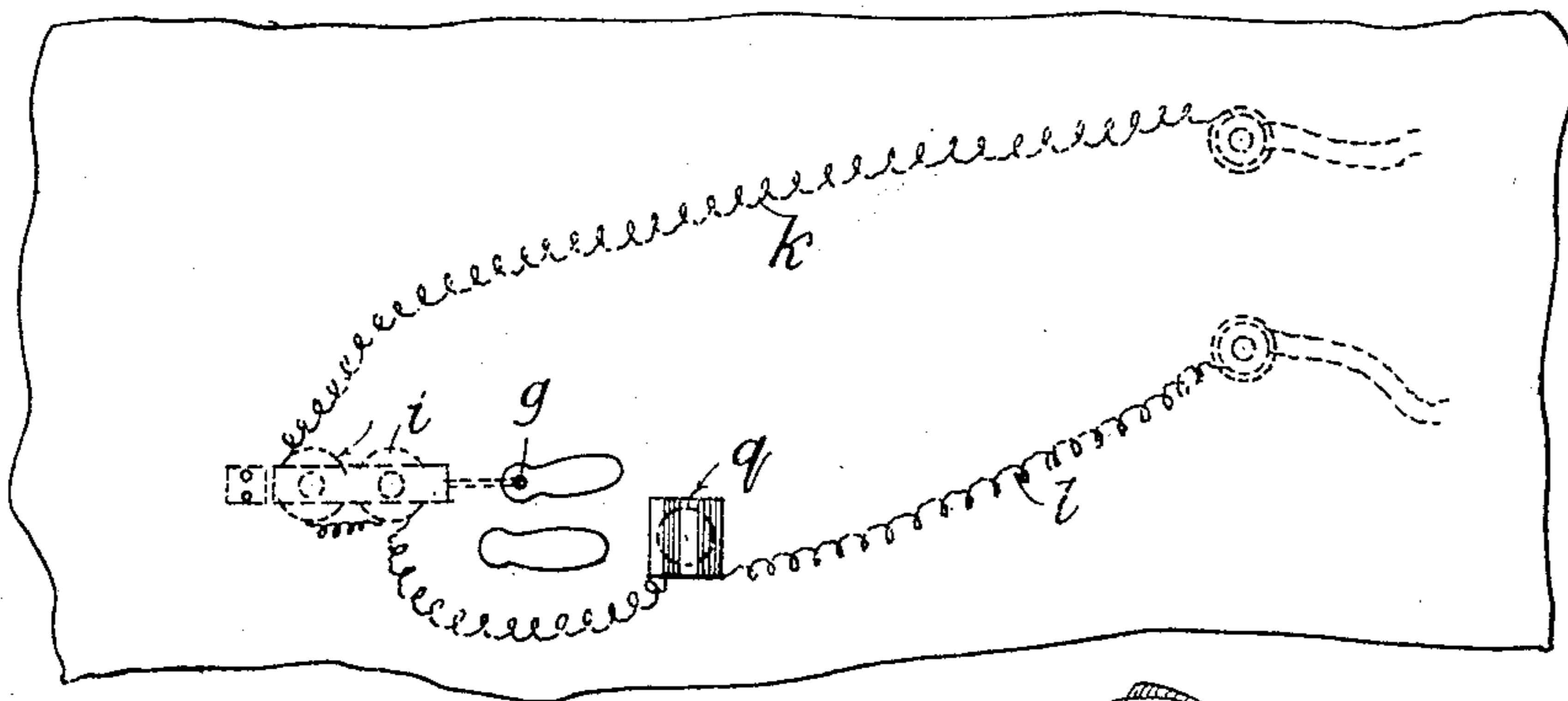
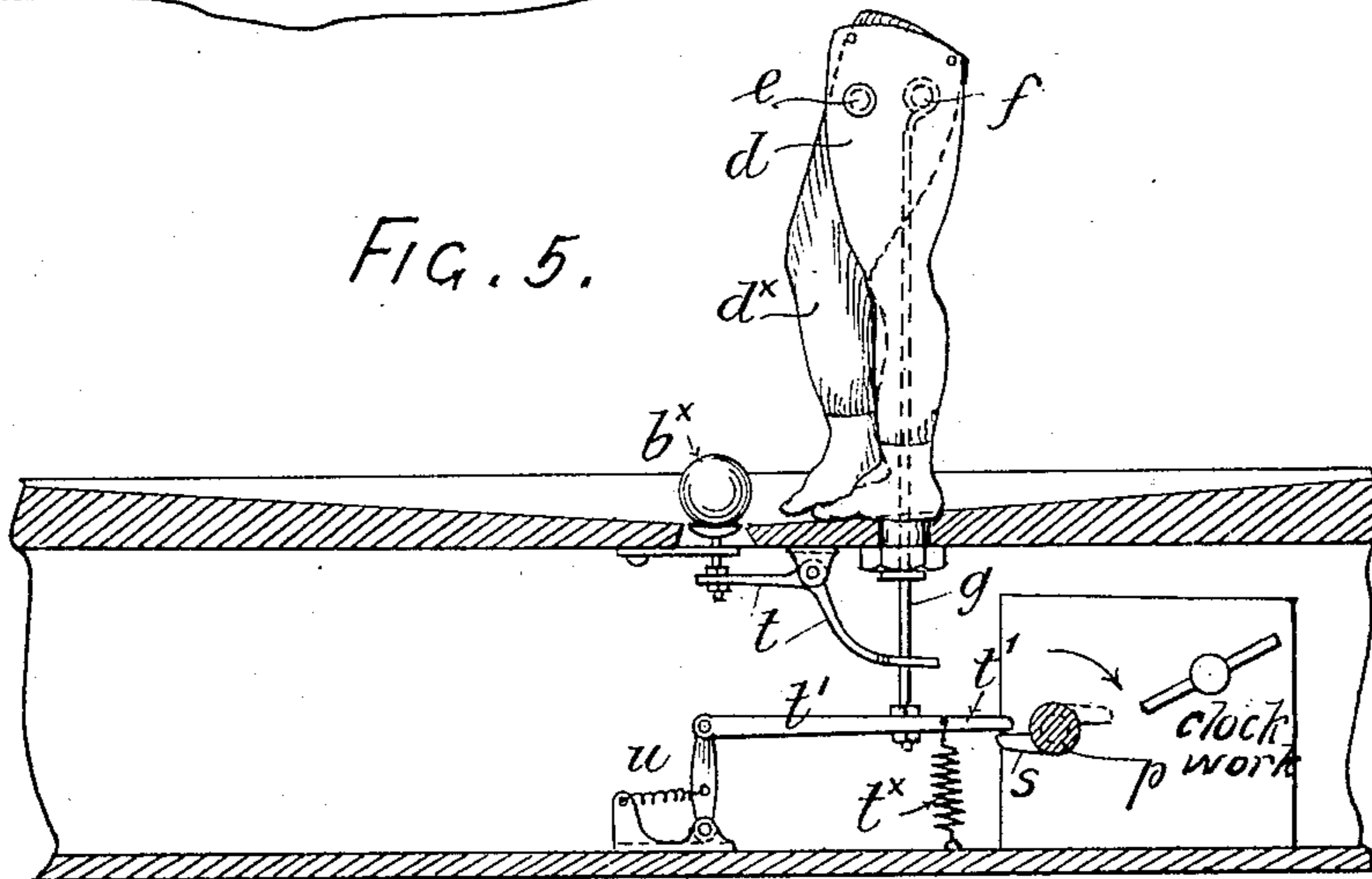


FIG. 5.



WITNESSES:

*P. W. Wright*  
*M. H. Miles*

INVENTORS

ROBERT HARRIS SHAW

JOHN FLETCHER SHAW

BY

*Harvey A. Hemenway*

THEIR ATTORNEYS.

# UNITED STATES PATENT OFFICE.

ROBERT HARRIS SHAW AND JOHN FLETCHER SHAW, OF NEWTON HEATH,  
ENGLAND.

## GAME PLAYED WITH MECHANICAL FIGURES.

SPECIFICATION forming part of Letters Patent No. 637,676, dated November 21, 1899.

Application filed July 1, 1899. Serial No. 722,507. (No model.)

*To all whom it may concern:*

Be it known that we, ROBERT HARRIS SHAW and JOHN FLETCHER SHAW, subjects of the Queen of Great Britain, residing at Newton Heath, near Manchester, in the county of Lancaster, England, have invented new and useful Improvements in Games Played with Mechanical Figures, of which the following is a specification.

10 The object of this invention is so to arrange and give motion to mechanical figures that a game of foot-ball, golf, or the like can be played automatically on the introduction of a coin or its equivalent.

15 The invention consists principally of a suitably-formed floor or ground upon which are mounted at proper intervals and in suitable positions for playing the game the required number of mechanical figures representing  
20 suitable animate objects, men being preferred, and a round ball of wood, metal, or other suitable material, the mechanical figures being made with movable limbs, so that they can be caused to kick or otherwise strike  
25 the ball automatically when acted upon by suitable means, the whole being preferably inclosed in a glass or other transparent casing.

The automatic movements of the figures (and consequently of the ball) may be effected  
30 by any suitable motive power; but we prefer to use for this purpose an electromagnet and an armature extending across the ends or poles of the said magnet. For the sake of illustration, however, we have annexed hereunto  
35 three sheets of drawings, Figures 1, 2, and 3 illustrating the application of an electromagnet as the moving power, and Figs. 4 and 5 showing also the application in lieu thereof of a revolving shaft, which may be driven  
40 either by clockwork or other suitable mechanical motor.

Fig. 1 is an elevation, partly in section, and Fig. 2 a plan view, illustrating the electromagnetic arrangement; and Fig. 3 is a detached  
45 view, on a larger scale, showing more clearly the means for actuating the mechanical figures. Fig. 4 is a plan view illustrating a modification of the electrical arrangement wherein the ball is itself employed to complete the electric circuit and to cause the me-  
50 chanical figure to kick or strike the same,

and Fig. 5 is a partial sectional elevation showing how the ball may cause the mechanical figure to kick or strike it automatically by means of a revolving shaft driven by clock- 55 work or other mechanical means.

In all the figures, *a* represents the board or ground, upon which the automatic game is to be played, which is divided into as many triangular planes as there are mechanical fig- 60 ures. Each of these planes is inclined or hollowed out, so that its lowest point is at the circle marked *b*, (see Fig. 2,) and in each division or plane is fixed a mechanical figure so placed that the movable leg or foot (or in 65 case of golf or the like the club or bat) is immediately behind its own particular circle *b*. The end planes *a*<sup>x</sup>, representing the goals, are made with a ridge *c*, and they are sloped downward from the center, so that if 70 a ball is kicked or struck behind the goal line *c* it rolls back again by gravity to the striking-point *b*, as represented by the arrows.

The positions of the moving figures are represented on Fig. 2 by the soles of the feet 75 only and on Figs. 1 and 3 by a leg *d*. The leg *d* is rigid and attached firmly to the figure and to the floor *a*, and the loose leg *d*<sup>x</sup> or other moving part is hinged thereto by a pivot 80 at *e*. (See Fig. 3.) To the upper leg or part *d*<sup>x</sup> is attached a pin *f*, which is connected by a rod or link *g* to a lever *h*, forming part of the armature of the electromagnet *i*, which is preferably placed underneath the inclined 85 floor *a*. One or more electric batteries *B* are used to generate the current which excites the electromagnet, and the wires *k* and *l*, which convey the electric current to actuate the figures, are fixed under the said inclined 90 floor *a* just beneath the point where the ball *b*<sup>x</sup> rests in front of the mechanical figure. The said electric circuit is made and broken by the said ball when it rolls in front of one of the mechanical figures onto a disk or plate 95 *m* (see Fig. 3) the rod of which is supported by a spring *m*<sup>x</sup> just above a contact-point *n*, which is connected through one of the terminals to one pole of the battery, the spring *m*<sup>x</sup> being connected by a wire to one pole of the 100 electromagnet and the other pole of the same being connected by a wire to the other termi-

nal in connection with the other pole of the battery. The weight of the ball  $b^x$ , rolling onto the disk  $m$ , brings the lower end of its rod into contact with the point  $n$ , and thus completes the electric circuit (which was previously interrupted at that point) and causes the electromagnet  $i$  to attract the armature  $h$  and pull down the rod  $g$ . The upper end of this rod hangs upon the pin  $f$ , fixed in the loose leg  $d^x$  of the mechanical figure, and the movement of the armature  $h$  causes the loose leg  $d^x$  to swing on its pivot  $e$ , and thus kick the ball  $b^x$  off and break the electric circuit. It will be understood that wherever the ball  $b^x$  rolls after kicking the slope of the ground  $a$  will cause it to gravitate toward one or the other of the disks  $m$ , and the mechanical figure next to this disk will be caused to kick it back again automatically.

Any number of figures can be arranged to play the game; but on the drawings we have shown six figures at different places on the aforesaid inclined floor and in something like opposite positions to one another, representing three playing on one side and three on the other side. They are preferably dressed in different colors to show the two opposing sides, and each side is always endeavoring to make a goal.

As before stated, wherever a figure is placed on the above-mentioned inclined floor  $a$  the said floor inclines toward the said figure for a suitable distance around it and so inclined that a ball coming within the inclined area rolls in front of the said figure and completes the electric circuit by pressing down the disk  $m$ , thus causing the loose leg of the figure to kick forward against the ball and thus breaking the contact, while the ball rolls along the floor into another inclined area, where the ball gravitates until it falls onto the disk therein, and thus causes another figure to kick the ball back again, when the same operations are repeated, continuing the game as long as desired, when the electric current can be switched off automatically or otherwise.

In some cases instead of using the weight of the ball rolling onto a disk  $m$  for making and breaking the electric circuit we make the ball itself of suitable metal, and instead of the disk  $m$ , mounted on a spring-lever, we employ a piece of vulcanite or other insulating material  $q$ , (see Fig. 4,) provided with two metallic contact-pieces connected with the interrupted wires and so arranged that when the metal ball rolls onto the piece of vulcanite it connects the two contact-pieces and so completes the electric circuit.

It will be understood that the game, being worked by electricity, is perfectly automatic, the spectators having no control whatever over the result and the result itself being very

uncertain owing to the various directions given to the ball, the amount of vigor of the kick given, and the varying relative positions of the toe of the figure and the ball.

It is intended that the game shall be set going by any suitable coin freed or other equivalent apparatus, and such apparatus may be of any known or suitable construction, so arranged that upon the introduction of a coin or its equivalent the game will play automatically for a certain time and then cease.

Instead of employing electricity as the motive power we sometimes propose to use a revolving shaft  $p$ , (see Fig. 5,) which is set in motion by clockwork or other motor. On this shaft are a series of tappets  $s$ . Whenever the ball comes into position, it rocks a bell-crank lever  $t$ , pushing the rod  $g$  backward and causing the end of the spring-lever  $t'$  to be brought within the reach of one of the tappets  $s$ , which lifts the lever  $t'$ , expanding the spring  $t^x$ . As the lever escapes from the tappet the spring  $t^x$  reacts, pulling the rod  $g$  downward. When the weight of the ball is withdrawn, a spring  $u$  draws the lever back again out of reach of the tappets.

We claim—

1. An improved game consisting of a floor with a plurality of inclined areas, a plurality of figures for such areas, a ball, and means for putting a figure into action to act upon the ball and thereby deliver it to another figure substantially the same and adapted to act similarly to the first figure substantially as described.

2. An improved game having a floor consisting of a plurality of inclined areas, each area having its lowest point at a distance from its boundaries, an automatic figure at this point, a ball and means for causing the figure to act on the ball substantially as described.

3. A floor or ground with inclined areas, automatic figures thereon, an electromagnet to operate said figures, an electric circuit connected with the magnet, a ball and mechanism adapted to close said circuit upon the ball coming into contact therewith, substantially as described.

4. A game of foot-ball played by automatic figures, and comprising a floor, figures thereon and means for causing the figures to automatically kick a ball from one to another, substantially as described.

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

ROBERT HARRIS SHAW.

JOHN FLETCHER SHAW.

Witnesses:

JNO. HUGHES,

J. ERNEST HUGHES.