

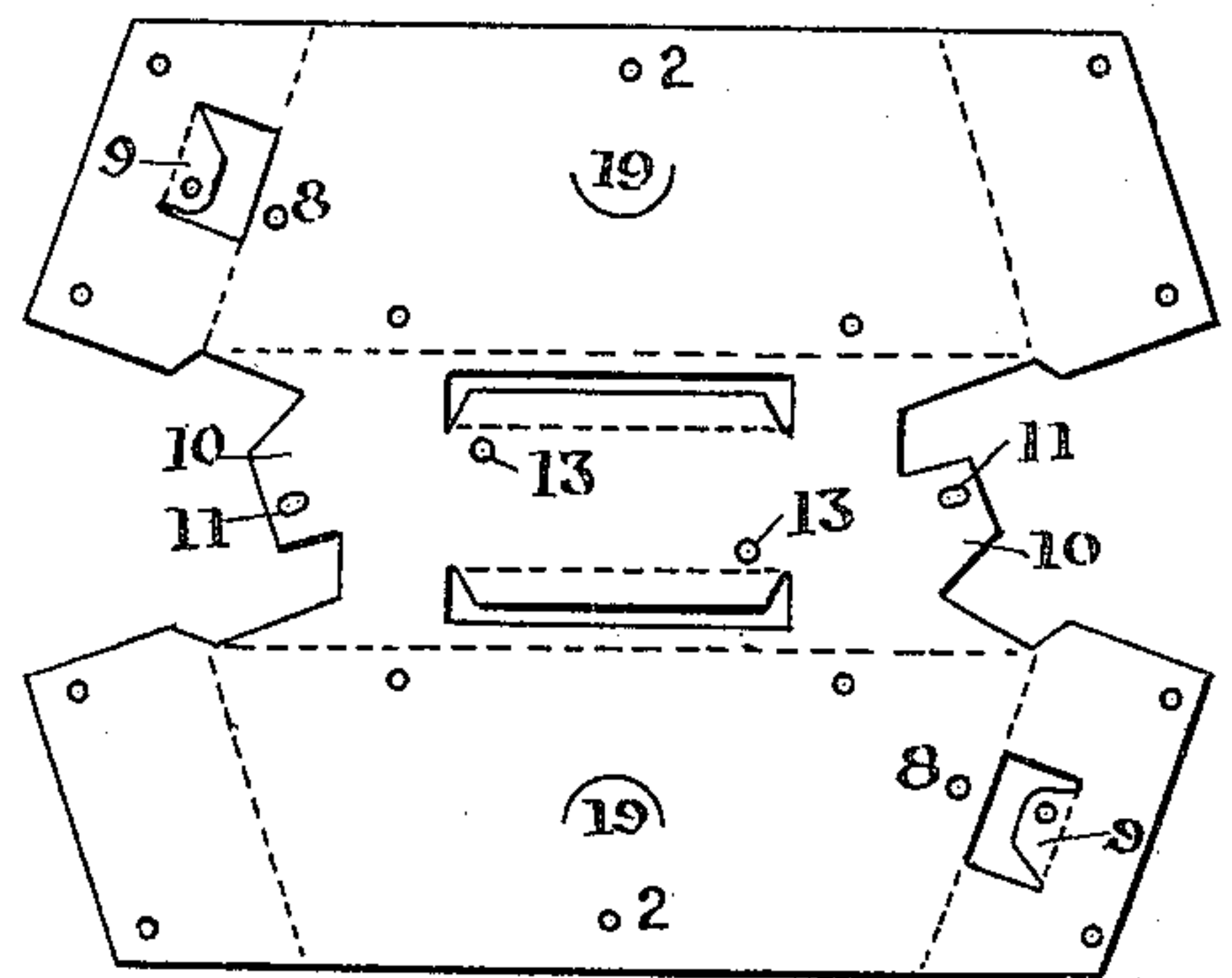
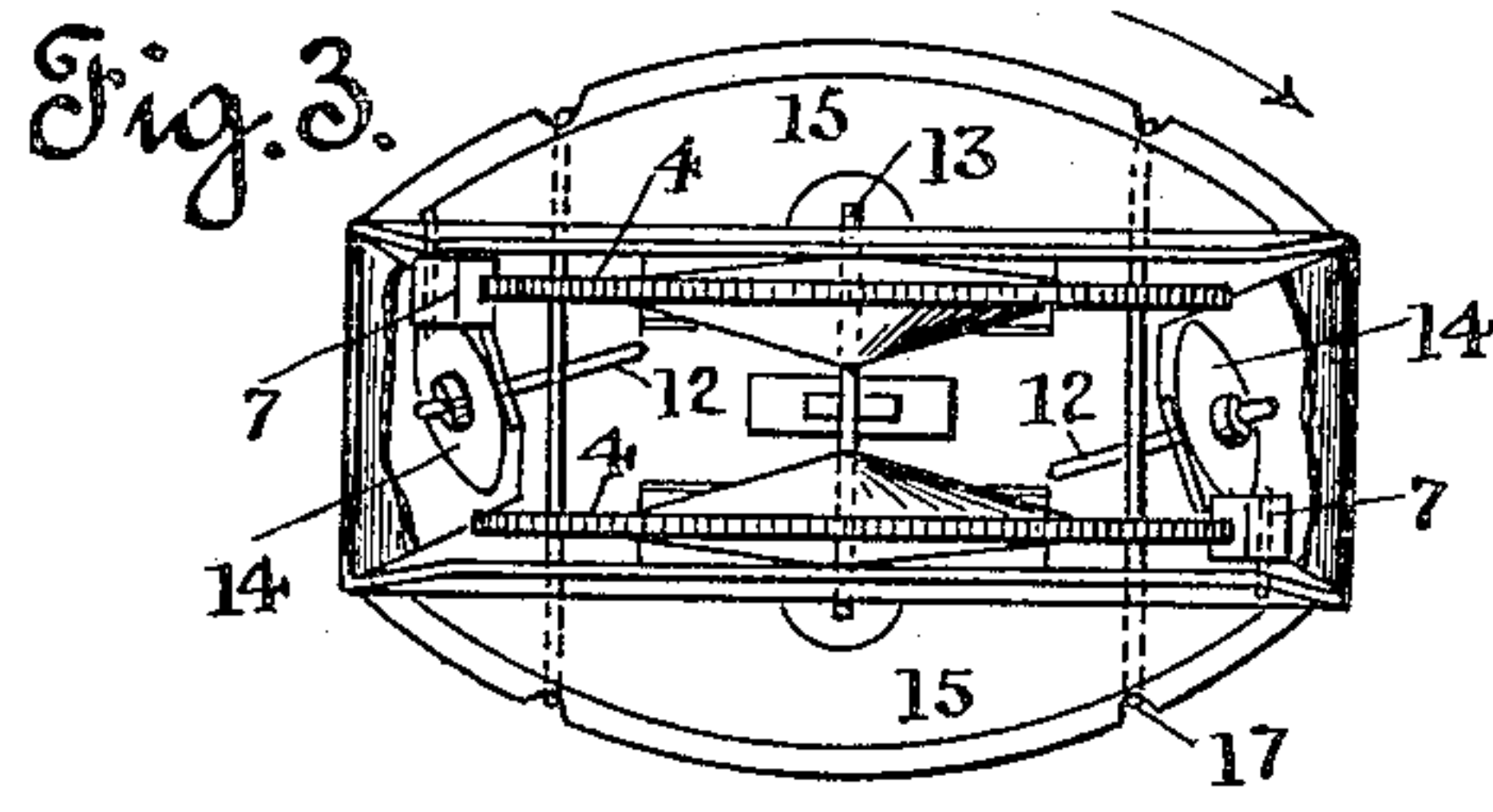
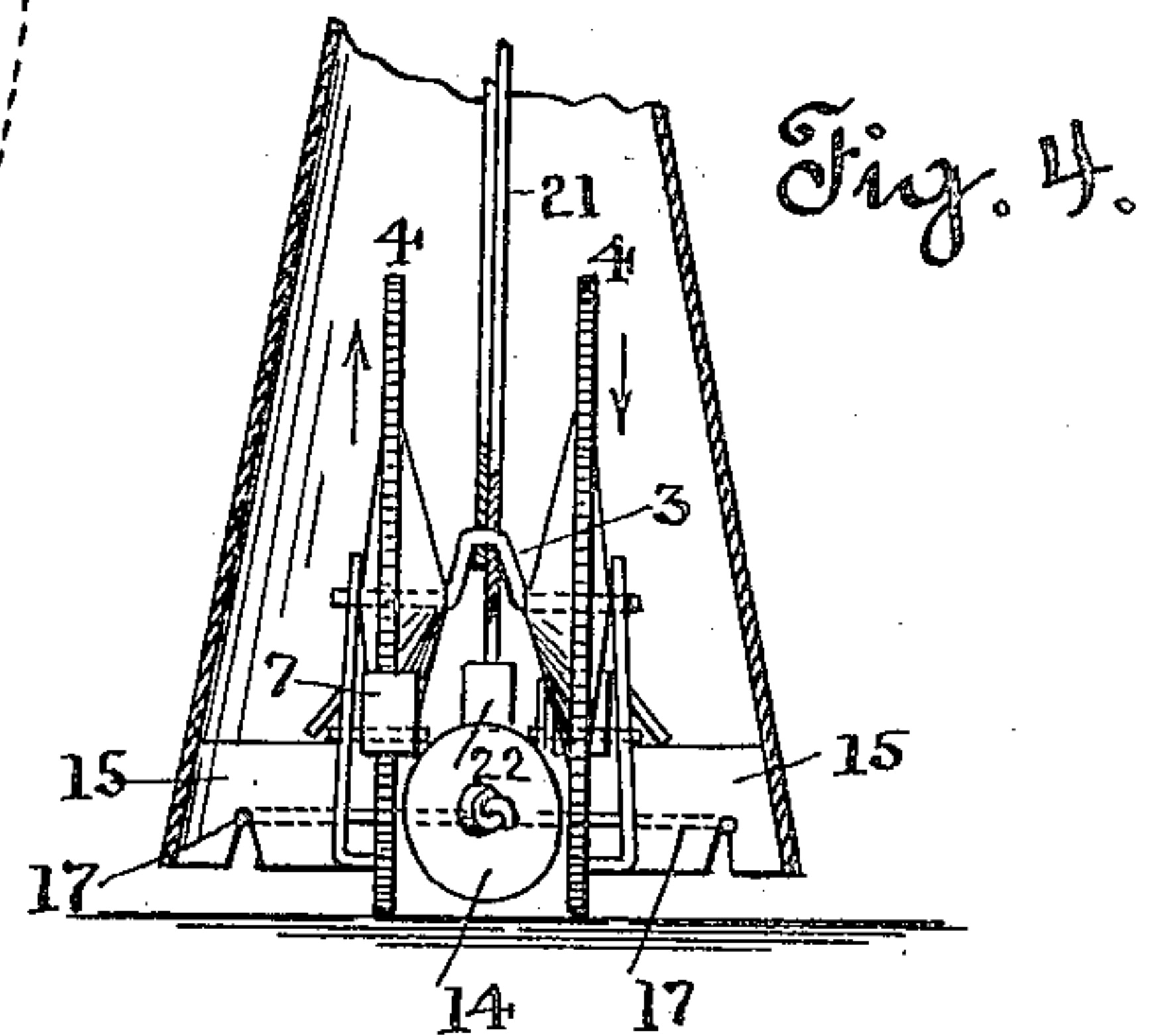
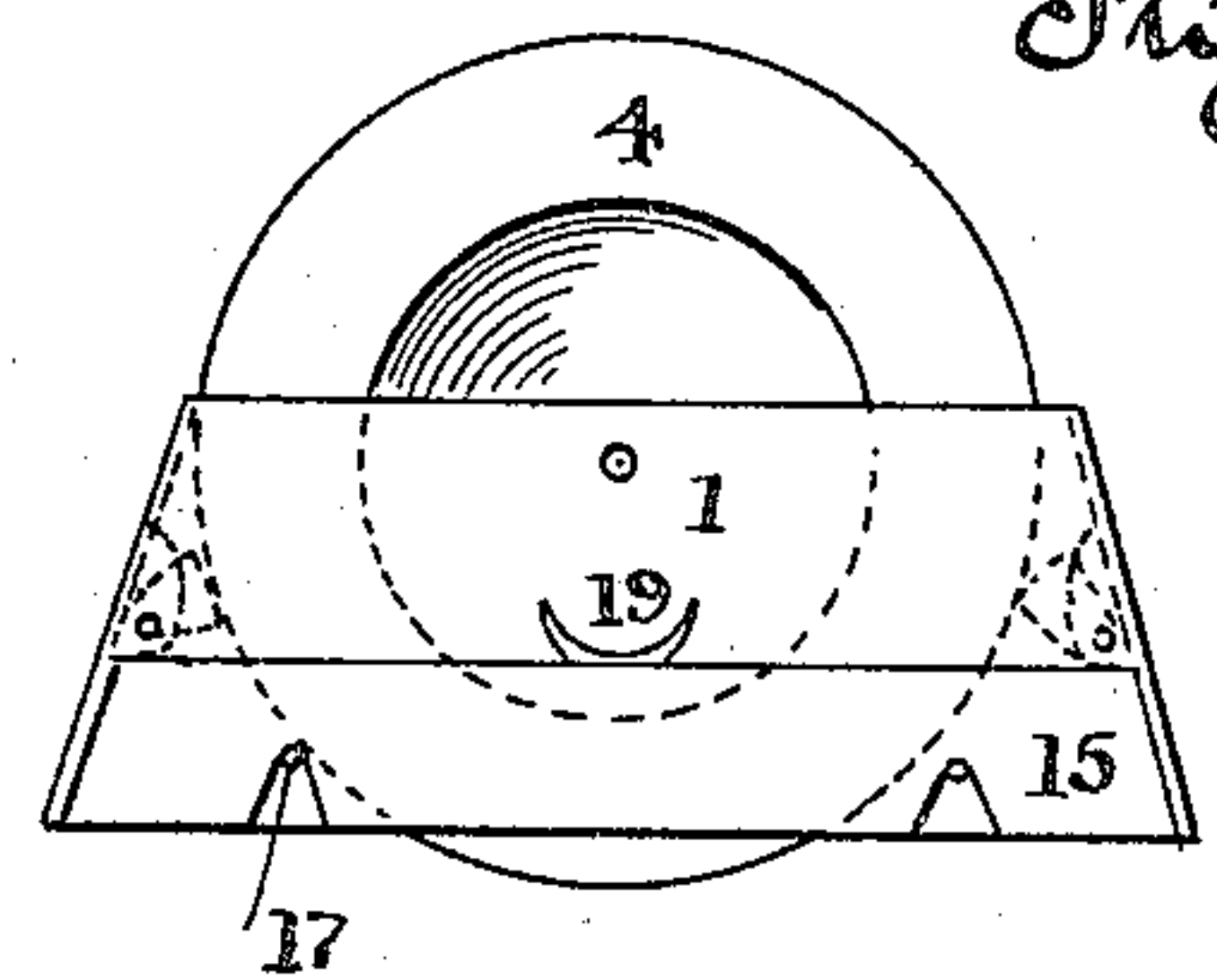
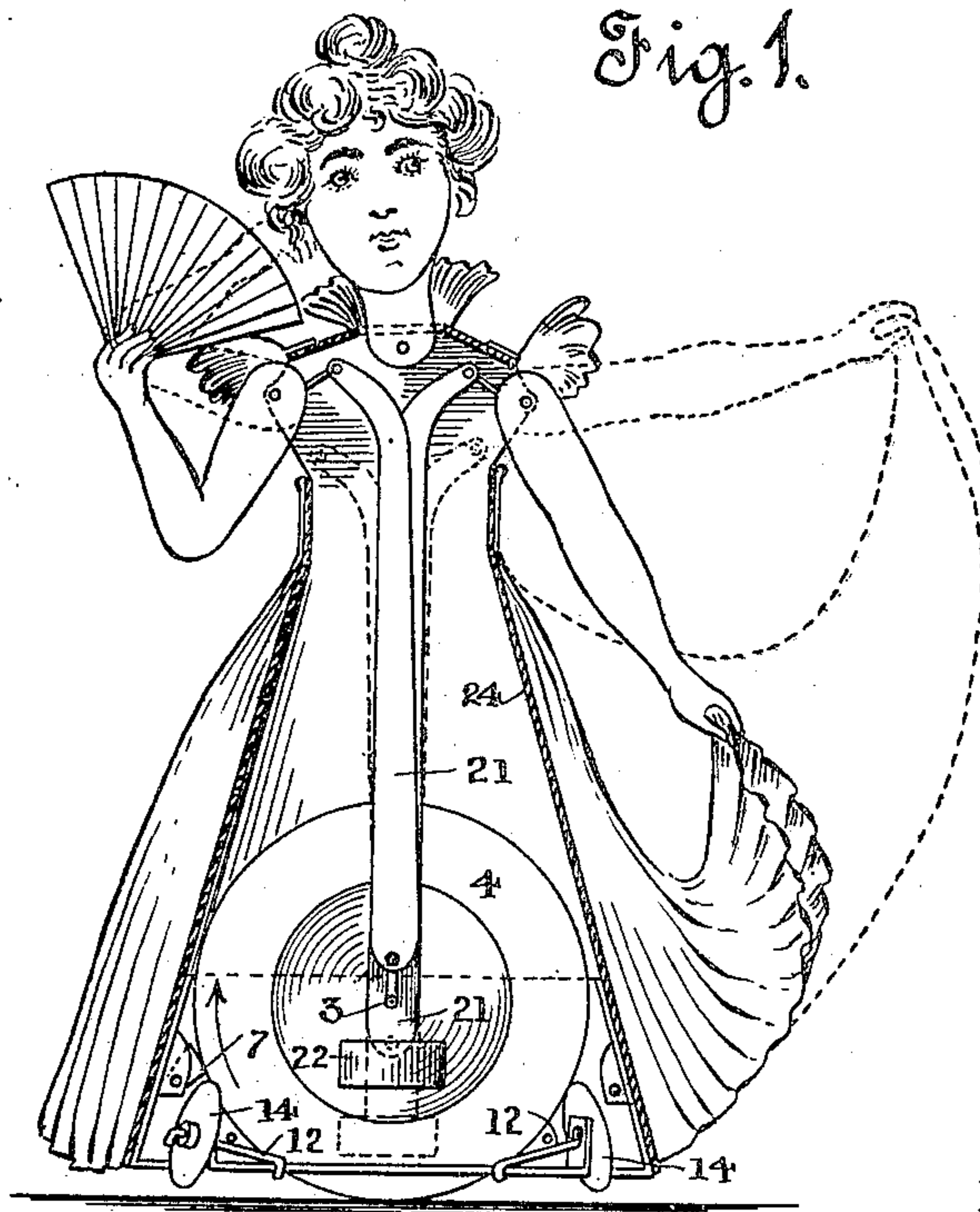
No. 822,707.

PATENTED JUNE 5, 1906.

H. WOLKE.
AUTOMATIC DANCING FIGURE.

APPLICATION FILED OCT. 10, 1901.

2 SHEETS—SHEET 1.



Witnesses.

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2 SHEETS—SHEET 2.

Fig. 7.

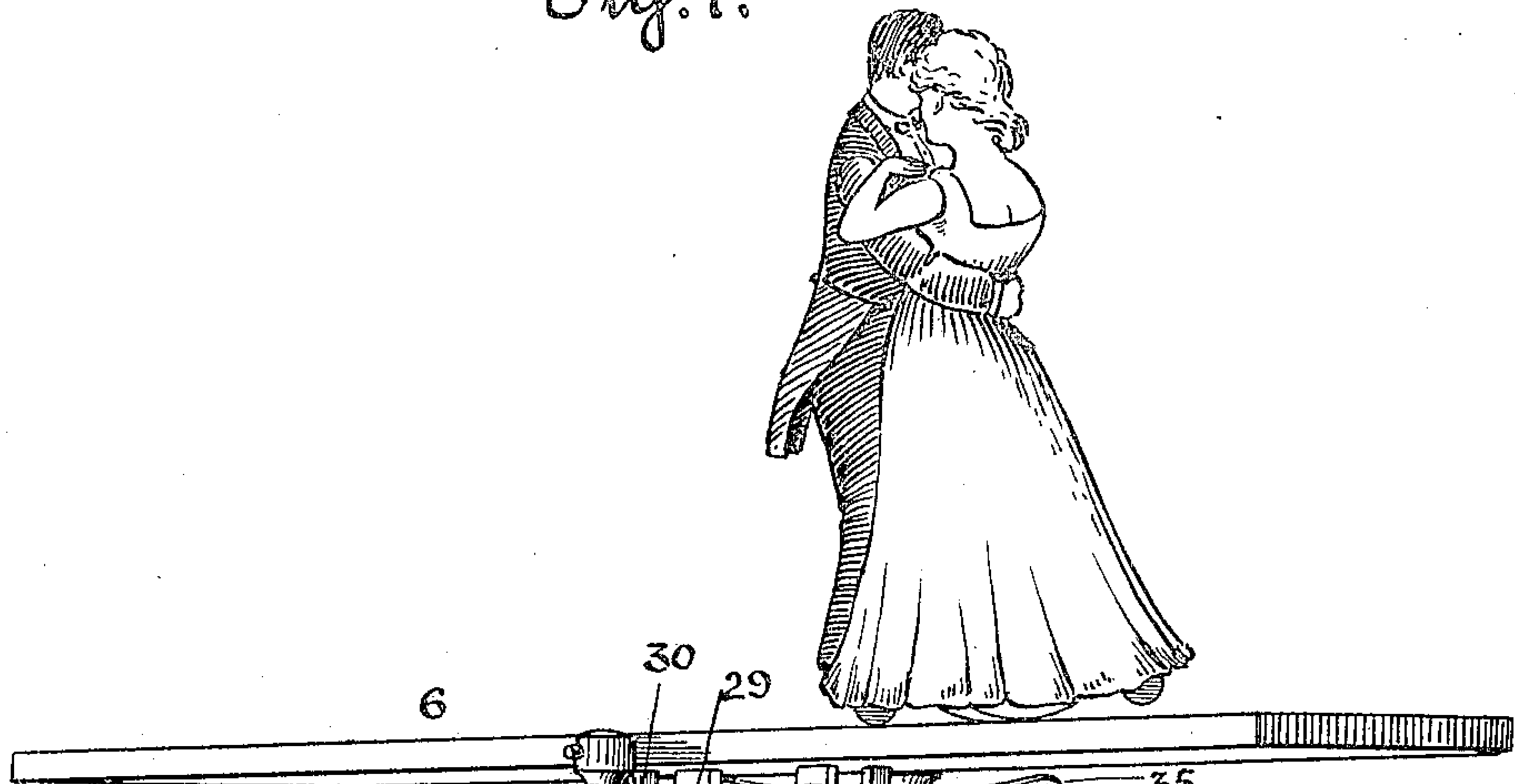


Fig. 8.

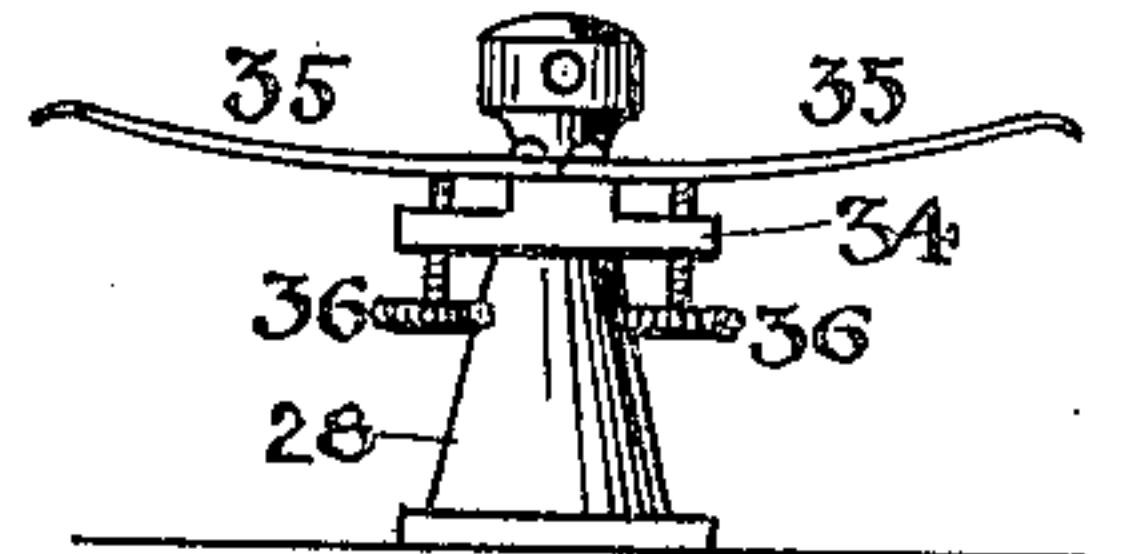
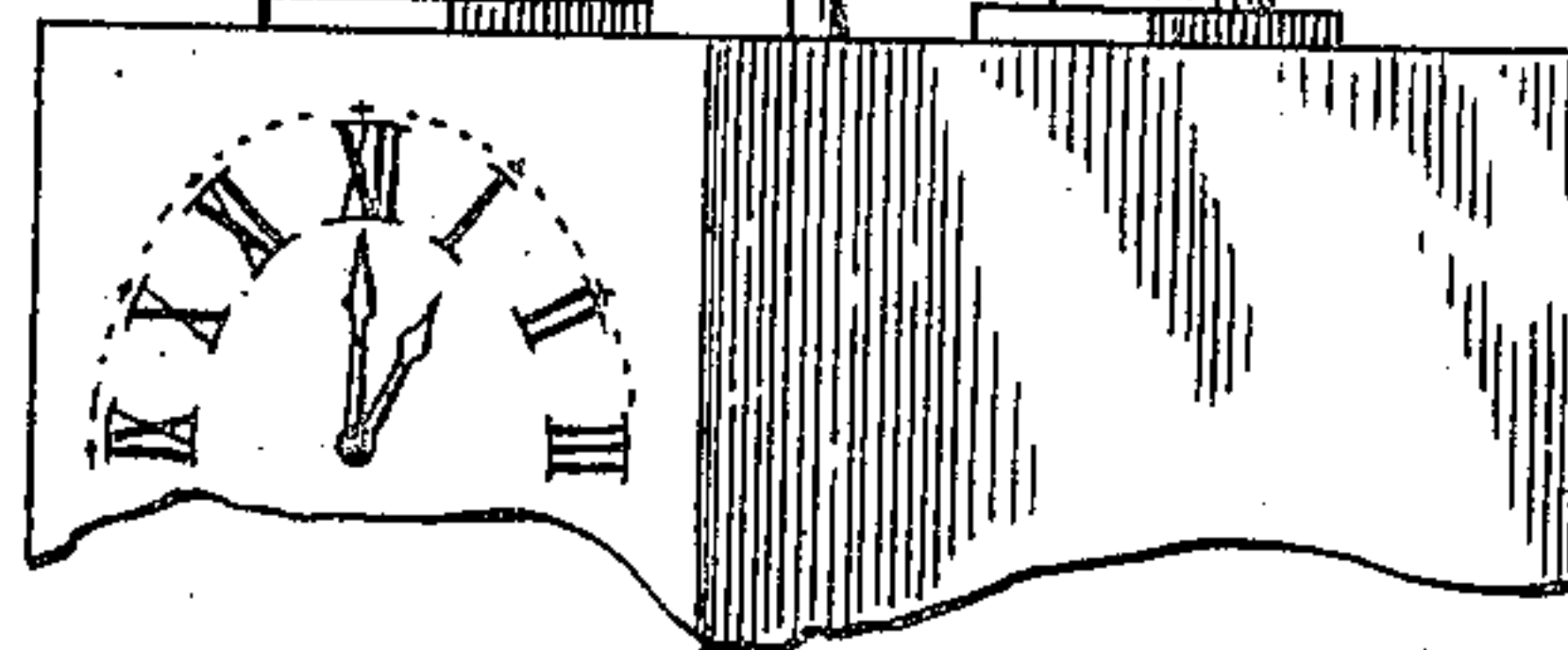
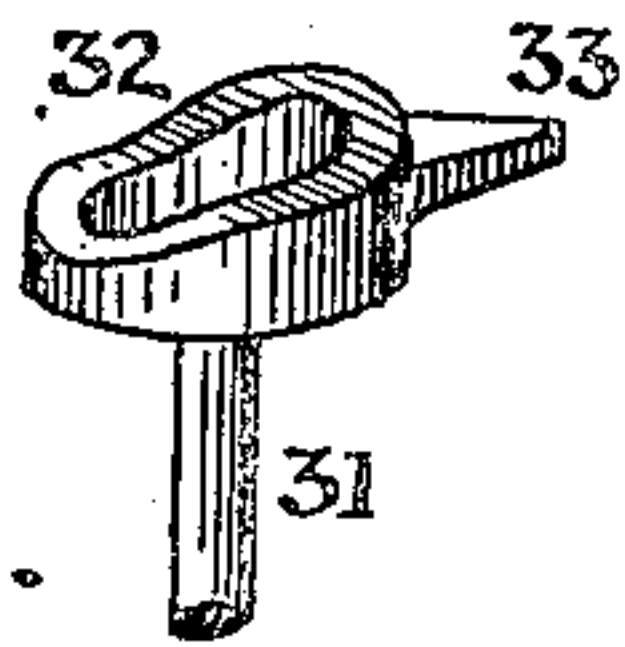
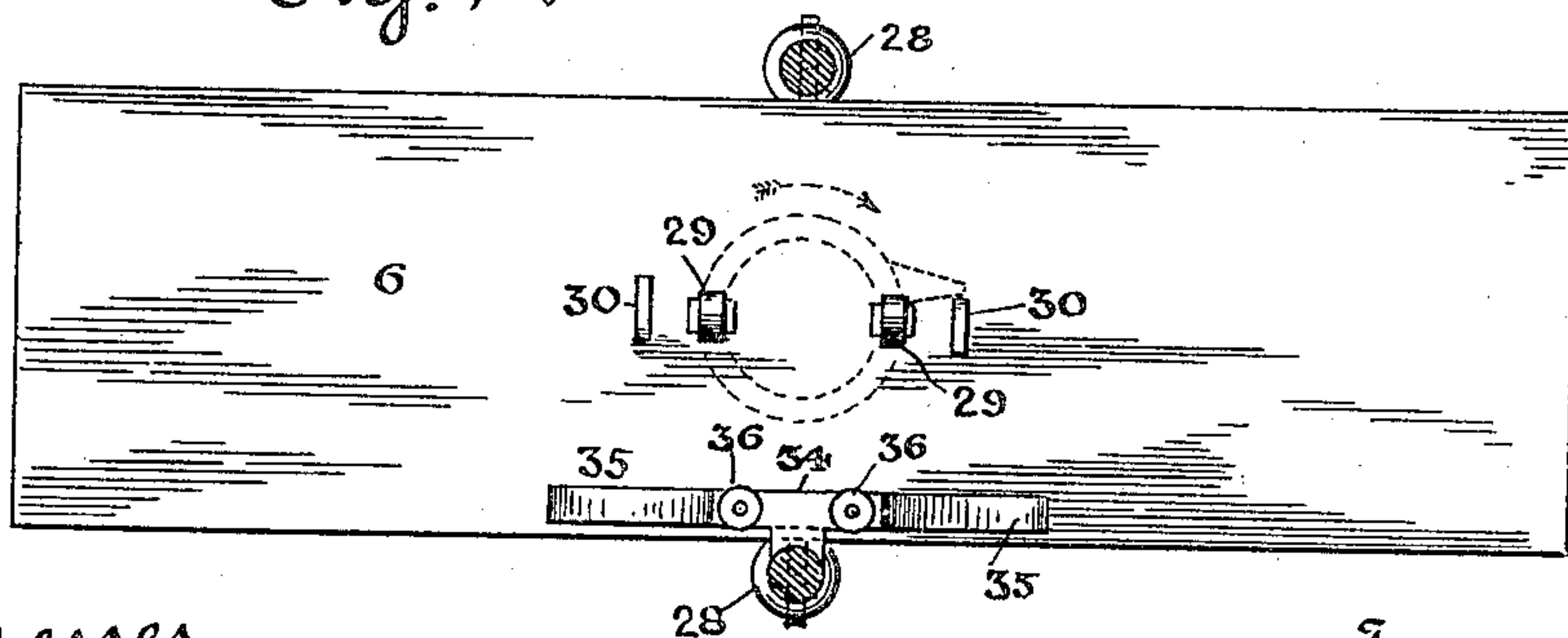


Fig. 9.

Fig. 10.



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UNITED STATES PATENT OFFICE.

HERMAN WOLKE, OF SAN FRANCISCO, CALIFORNIA.

AUTOMATIC DANCING FIGURE.

No. 822,707.

Specification of Letters Patent.

Patented June 5, 1906.

Application filed October 10, 1901. Serial No. 78,239.

To all whom it may concern:

Be it known that I, HERMAN WOLKE, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Automatic Dancing Figures, of which the following is a specification.

The object of my invention is to provide a motor or mechanical movement which when placed upon a flat slightly-inclined surface will, by means of gravity operating through a self-contained mechanism, travel upon said surface in circular movements, as in round dancing, and will continue to do so so long as an inclined path is presented to it, the direction of its progression being changed as the direction of the inclined path is changed.

The invention is capable of embodiment in many different forms of dancing figures, some of which are illustrated on the accompanying drawings.

The surface upon which the mechanism is caused to progress may be tilted and inclined in different directions by hand; but means can be provided for deriving the tilting movements from other mechanism, such as clockwork, causing the dancing device to move and continue moving automatically. When so operated, it is admirably adapted to display moving figures for ornamental or advertising purposes, and owing to the comparatively slow and regular motion imparted to it it could, if mounted on top of a clock or other suitable apparatus, do service as a regulating-escapement, in which position it makes an attractive novelty.

In the accompanying drawings, Figure 1 is a vertical section of a single figure forming a dancing-doll and an elevation of the automatically-turning mechanism which carries said figure. Fig. 2 is a plan of a sheet-metal blank which when folded forms a frame for said mechanism. Fig. 3 is a plan of said mechanism. Fig. 4 is an end elevation of the same at right angles to Fig. 1. Fig. 5 is a modification showing two dancing figures in conjunction. Fig. 6 is a side elevation of the bent metal frame and attached weights. Fig. 7 is a perspective view of means for automatically inclining the surface upon which the dancing figures travel. Fig. 8 is a detail of a cam for operating an inclined supporting-surface. Fig. 9 is a detail view of the

transverse spring-support for regulating the movement of said surface. Fig. 10 is a bottom plan of Fig. 7.

Fig. 2 represents a blank of sheet metal formed by suitable dies in the shape shown and provided with apertures, tongues, and projections for purposes hereinafter set forth. This blank, when bent on the dotted lines, forms the box-like casing 1, which supports the operative parts of the mechanical movement. The holes 2 2 in the casing are bearings for a crank-axle 3. On each side of the crank is a wheel 4, one fixed and one loose upon the axle. These wheels are the supports for the mechanism, as well as the drivers for it, and they extend through the bottom of the casing, so as to rest upon any plane surface held so that it can be inclined in different directions. These wheels can revolve in opposite directions, but are incapable of reversing their rotary motions. This is effected by two clutches 7 7, pivoted in the casing and which fall by gravity into contact with the respective wheel-rims, the latter being preferably finely milled or knurled in order both to insure engagement with the catches and to prevent slipping and sliding on the supporting-surface, as shown in Figs. 3 and 4. These clutches are shown as loosely hinged on pins passing through holes 8 8 in the side of the casing and into the inwardly-bent tongues 9 9, which complete the bearings for said pins, Fig. 2. The blank contains two tongues 10 10, each having a slightly oblong aperture 11. Each of these tongues when turned upwardly forms one bearing for a pin 12, the other part being a hole 13 in the bottom of the casing. Each pin 12 carries a loose wheel 14, which is held between tongue 11 and the turned-down end of pin 12, Fig. 3. The ends of pins 12 after passing through holes 13 are also turned at right angles to hold them in position. Outside the casing and near its bottom, so as to clear the supporting-surface, are metal weights 15, supported in any suitable way. I have shown pins 17, which pass through holes 18 in the casing and into and through the weights on both sides. These pins 17 also bear downwardly upon axles 12 and aid in keeping them in proper position. The weights are also held in position by the tongues 19, Fig. 2, which when turned outwardly, Fig. 3, rest upon them.

The mechanism so far described is a com-

plete and self-contained driving device when set in motion by the inclination of a plane by which it is supported. To render it practicable as a toy or a display device, it is used
 5 in combination with any kind of figure, such as human figures, which in operation simulate a waltzing movement. A practical illustration is given in Fig. 1. The doll form is here shown as a shell 24, which is fitted to in-
 10 close the casing and weights and to project above it. A hole is formed in the top of the shell in which the head and neck are pivoted, so as to have a slight freedom in motion side-wise. Two arms are also pivoted in the cas-
 15 ing, one of which is represented as straight and holding the gown, the other as flexed and carrying the fan, and movements are imparted to these arms by the driving mechanism, as shown. Near their pivoted points
 20 the arms are connected to links 21 21, which at their lower ends are loose on the crank-axle, and one arm has a counterweight 22 at its lower end to counterbalance their upper ends as they are moved up and down by the
 25 crank-shaft in order that such movements shall take place with a minimum expenditure of power.

In the operation of this apparatus it is set upon any plane flat surface capable of being
 30 inclined in various directions. Calling the lower part of such an inclined surface the "front" and placing the wheels in the direction of inclination, one wheel will be engaged in front by a catch 7, and hence is prevented
 35 from turning. The other wheel, however, can move freely. The tendency of the figure to travel down the incline causes the wheel, which is free, to roll in a semicircular path, using the locked wheel as a pivot. The whole
 40 apparatus therefore makes approximately a half-turn in a horizontal plane until the catches 7 are in reversed position relatively to the front. Then the wheel formerly locked has become free and is able to turn in
 45 the same direction as the first, using the first as a pivot. This alternating movement of the wheels is continued as long as an inclined path is presented, and the whole apparatus will travel down the incline in a succession of
 50 progressive turns and at a speed varying with the inclination of the surface. The figure will also follow any variation in the direction of inclination, so that in its simplest form as a dancing toy it can be caused to travel in
 55 any direction, constantly gyrating upon a flat board manipulated by hand. The weights described bring the center of gravity so low as to give stability to the figure and also impart sufficient momentum to keep the
 60 motion uniform. Sometimes, as where two figures are used, a single weight can be employed, the second figure being loaded so as to wholly or partly supply the place of the other. In cases where the attached figures
 65 are very short and light it may not be neces-

sary to use the small rollers 14, the weights alone keeping the whole device in a permanently upright position; but should the center of gravity be at or above the axes of the large wheels the wheels 14 will be desirable
 70 adjuncts to assist in steadying the dancing figure. When such figure is upright, these wheels are supported so as to be slightly above the supporting-surface and out of contact with it; but as the mechanism when in mo-
 75 tion has a tendency to dip forward in the direction of inclination the small wheel which happens to be in front will be brought into contact with such surface and will arrest the swaying tendency. As a smaller wheel thus
 80 brought in contact must not be allowed to interfere with the rotary motion of the figure, it is so hung as to roll freely in conjunction with one of the main wheels, and for that purpose its axis is inclined and points to the ver-
 85 tical plane of the axis of the locked wheel, which is temporarily serving as the pivot. (See Fig. 3.)

In the doll shown in Fig. 1 the intermittent rotary motion of the crank-axle derived
 90 from the fixed carrying-wheel is communicated through the links 21 to the arms of the figure, producing upward and downward movements of said arms and of the skirt and fan. Further, the loosely-pivoted head is
 95 caused to incline slightly sidewise in both directions as the mechanism sways from one guard-wheel 14 to the other. All these incidental or derived movements add to the attractiveness of the device by giving the fig-
 100 ure a more natural and life-like action.

In order to show extreme simplicity in the device, I have illustrated a modification in Fig. 5 in which I entirely dispense with the casing and all accessories excepting two pairs
 105 of wheels. The driving-wheels 4 4 are journaled to two of the feet of the two dancing figures, and the guard-wheels 14 are loosely journaled to the other feet and slightly raised above the supporting-surface. The catches
 110 or clutches 7 are pivoted just above the driving-wheels and engaged by gravity to lock such wheels alternately. The operation is precisely like that before described. The feet are preferably weighted to lower the cen-
 115 ter of gravity and give stability.

Heretofore I have assumed the existence of an inclining surface for supporting my figures and have alluded to a board or other plane held and manipulated by hand as an
 120 illustration of such a surface; but one part of my invention relates to means for operating such a surface, so that my figures placed thereon will perform their movements regularly and continuously so long as such op-
 125 eration continues. I refer to Figs. 7, 8, 9, and 10.

The clock shown in Fig. 7 is illustrative of different moving mechanisms from which power can be derived. Connected to the
 130

clock-movement is a vertical shaft 31, carrying a fixed cam 32, having a horizontally-projecting arm 33. Two pillars 28 are mounted on the clock in transverse line with the driving-shaft, in which is balanced the tilting platform 6. On the bottom of the platform and in its middle longitudinal line are journaled the rollers 29 29, and in the same line and beyond the said rollers are two fixed stops 30 30. Taking the position of Fig. 7 as a starting-point the revolution of the driving-shaft has been stopped by contact of the arm 33 with one stop 30. One roller has been raised by the high side of the cam, and the platform has been given sufficient inclination to start the dancing figure. As the figure passes the center of oscillation its weight inclines the platform still farther, and so releases the cam and driving-shaft. The cam then makes a half-turn and is stopped by the other projection 30, at the same time raising the other end of the platform, so as to incline the latter in the opposite direction and sending the dancing figure back. This seesawing action results in a continuous and uniform gyratory progression of the dancing figure back and forth on the platform.

In order to compel the figure to travel nearly the entire length of the platform, a regulating device is provided which resists the weight of the figure as it travels beyond the center of oscillation. Without such a device the platform would be abruptly overbalanced by a short movement of the figure beyond such center in either direction, and the motion would not be regular and uniform. A block 34 is attached to one of the pillars 28, carrying a leaf spring or springs 35, the free ends of which bear against the bottom of the platform with a pressure regulated by adjusting-screws 36 to be in proper proportion to the weight of the figure. This proportion is such that the figure is compelled to travel a certain distance before it can overcome the spring and depress the platform sufficiently to release the cam-arm. This gives to the mechanism the accurate character of a regulated escapement.

The automatic arrangement of the dancing figure and its seesawing platform is well adapted for periodically interrupting the movement of any driven mechanism where an alternately revolving and stopping motion is desirable.

I do not limit myself to details of construction and arrangement herein described and shown in the drawings, as I desire to avail myself of such modifications and equivalents as fall properly within the spirit of my invention.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. An automatic figure adapted to move upon an inclined surface and having two

rolling-wheels, and means for locking said rolling-wheels alternately whereby they become, successively, pivots for each other.

2. An automatic figure adapted to move upon an inclined surface and having two wheels for supporting it, and a catch adapted to lock each wheel, so that said wheels are free to rotate in opposite directions only.

3. In combination with a figure, two supporting-wheels arranged in parallel vertical planes, and means for locking each wheel against rotation in one direction; all constructed and arranged so that when traveling upon an inclined surface, one wheel is locked while the other describes a partial revolution around it, causing a progressive turning motion of the figure with said wheels as alternate pivots.

4. An automatic figure adapted to move upon an inclined surface, and having two wheels with finely-corrugated peripheries for supporting it, and a catch adapted to lock each wheel so that said wheels are free to rotate in opposite directions only.

5. A figure mounted upon two supporting-wheels, each adapted to act as a pivot around which the other turns, so that it can travel in progressive half-turns upon an inclined surface, in combination with such a surface, and with means for inclining it,

6. A figure mounted upon two supporting-wheels, adapted to act alternately as pivots for each other, in combination with an inclined surface upon which said figure is adapted to travel in progressive half-turns, and with means for inclining said surface and means for changing its direction of inclination.

7. In an automatic dancing toy, a balanced platform, driving mechanism connected to said platform for tilting it in opposite directions, and means for stopping said mechanism when either end of the platform is raised by said driving mechanism, in combination with a figure mounted upon two wheels each adapted to serve as a pivot for the other for causing it to travel on said platform in progressive rotations, said figure being adapted, in the course of said travel, to cause said platform to release said stopping means and permit said driving mechanism to escape.

8. An automatic dancing toy, comprising an oscillating platform, a driving-shaft having a cam for causing said oscillating movement, stops on the platform for arresting said cam and driving-shaft at each half-revolution, and a dancing figure adapted to travel upon the platform in the direction of its downward inclination and to release the cam by increasing the inclination of the platform after passing the center of oscillation in either direction.

9. In an automatic dancing toy, a balanced platform, driving mechanism con-

connected to said platform for tilting it in opposite directions, and means for stopping said mechanism when either end of the platform is raised by said driving mechanism, in combination with a figure having self-contained means for causing it to travel on said platform in progressive rotations, said figure being adapted, in the course of said travel, to cause said platform to release said stopping means and permit said driving mechanism to escape, and springs for resisting the gravity of said figure, but gradually overcome thereby.

10. In combination with motor mechanism; a vertical shaft, a horizontally-arranged cam on said shaft having a high and a low face and a projection, a platform balanced horizontally above the clock, and having upon its bottom two friction-rollers and two fixed stops, all arranged in line, adjustable

pressure-springs bearing beneath the platform on each side on its center of oscillation, and a dancing figure supported by and adapted to travel upon said platform.

11. In a dancing figure, two carrying-wheels, operable automatically by the inclination of a supporting-surface, so that each in turn forms a pivot about which the other partially revolves, and a pair of steadying-wheels mounted upon inclined axles, so as to be capable of rolling in orbits concentric with those of the carrying-wheels.

In testimony whereof I have affixed my signature, in presence of two witnesses, this 5th day of September, 1901.

HERMAN WOLKE.

Witnesses:

L. W. SEELY,
F. M. BURT.