

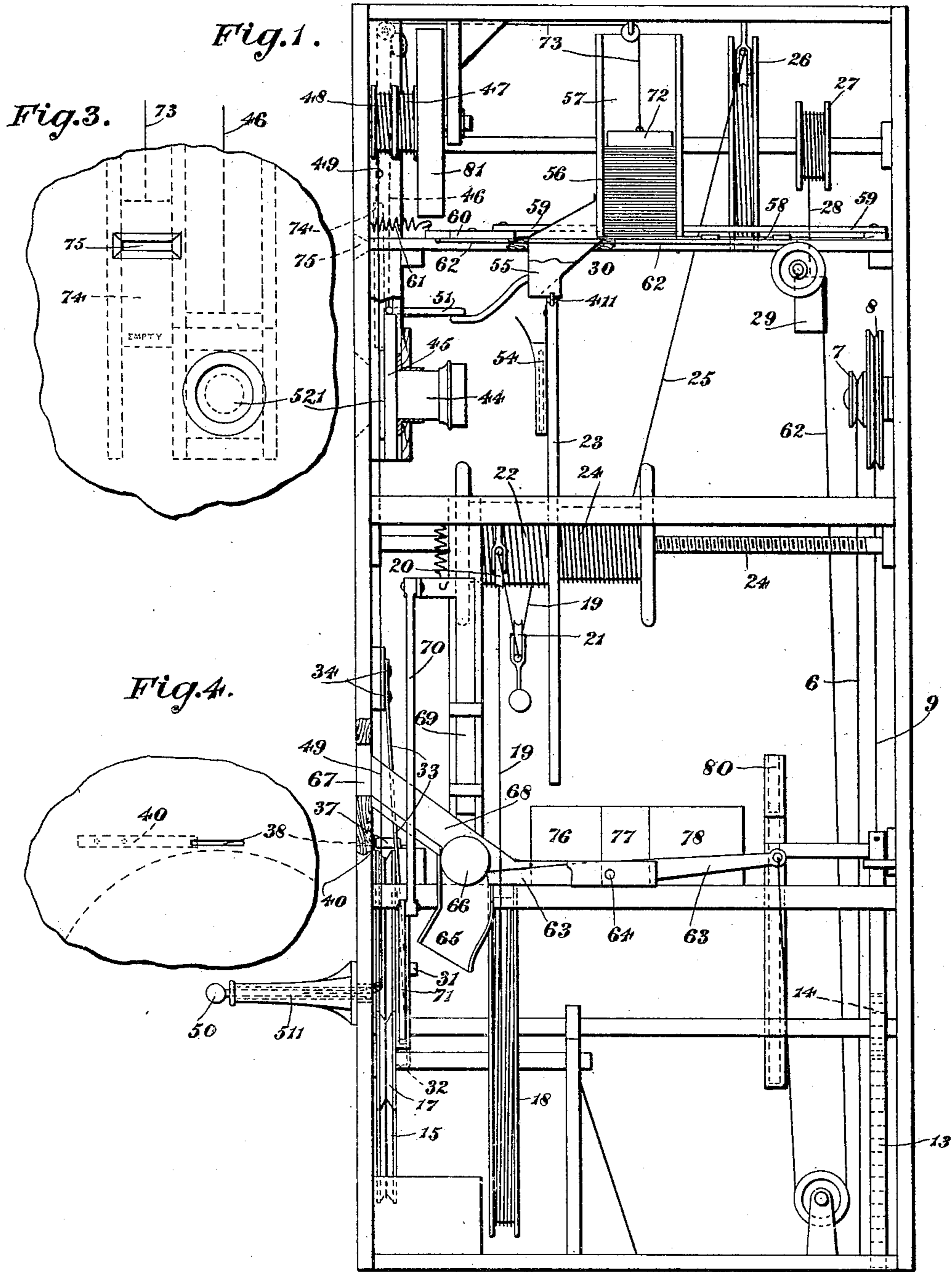
E. J. BALL.

AUTOMATIC PHOTOGRAPHIC APPARATUS.

(Application filed June 19, 1899.)

(No Model.)

3 Sheets—Sheet 1.



Witnesses.

William B. Jones

Frederick J. Burnham.

Inventor.

Edwin J. Ball

By his Attorneys.

Wheatley & Mackenzie

No. 657,505.

Patented Sept. 11, 1900.

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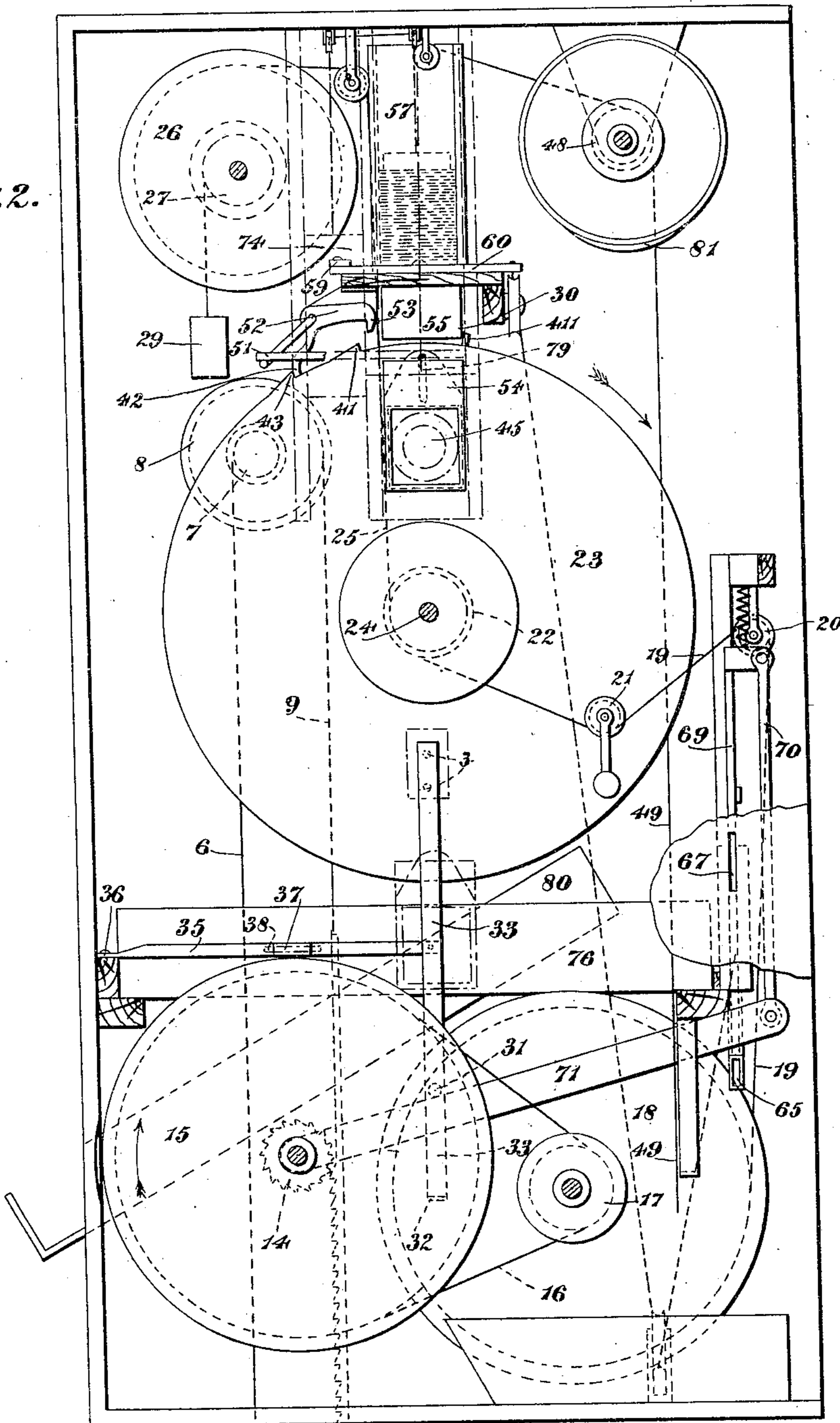
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Fig. 2.



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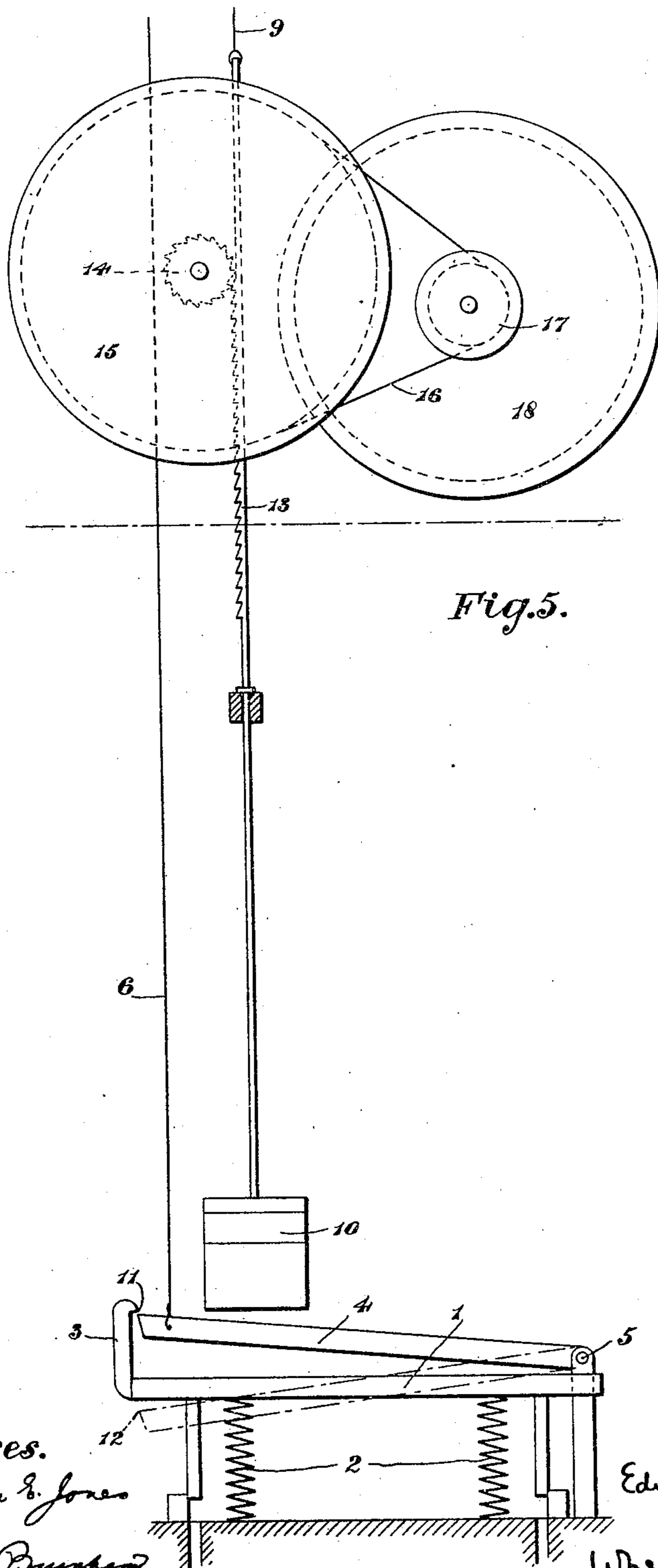
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UNITED STATES PATENT OFFICE.

EDWIN J. BALL, OF HULL, ENGLAND.

AUTOMATIC PHOTOGRAPHIC APPARATUS.

SPECIFICATION forming part of Letters Patent No. 657,505, dated September 11, 1900.

Application filed June 19, 1899. Serial No. 721,086. (No model.)

To all whom it may concern:

Be it known that I, EDWIN JENNINGS BALL, a subject of the Queen of Great Britain and Ireland, residing at Middleton-on-the-Wolds, Hull, in the county of York, England, have invented certain new and useful Improvements in Automatic Apparatus for the Taking, Sale, and Delivery of Photographs, (for which I have made application for patent in England, No. 25,108, dated November 28, 1898;) and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same:

This invention for improvements in coin-freed automatic photographic apparatus has for its object to provide improved means whereby a person can obtain a photograph of himself on the insertion of a proper coin or coins into an apparatus.

In carrying out this invention the person stands on a platform and inserts the necessary coin or coins into the apparatus, then either automatically by the weight of the person or by hand the apparatus is wound up ready for action, and at the completion of the winding up a sensitized plate is fed forward into a holder hanging vertically from a vertical disk, after which the person pulls a cord or slide that opens the shutter and when released automatically closes itself, the time of the exposure being adjustable by varying the height to which it is pulled and its speed of descent. When the shutter falls, it releases the disk carrying the holder and it rotates on a screw, thus carrying at each rotation the plate through a series of troughs arranged below the disk, and finally the holder comes against a fixed pin that tilts the holder and discharges the plate into a delivery-chute. Three troughs are usually sufficient, the plate being immersed several times in each, according to the breadth of the trough and the pitch of the screw.

In the accompanying sheets of illustrative drawings, Figure 1 is a side elevation of the apparatus, the side of the containing-case being supposed removed. Fig. 2 is a front elevation of the front part of the mechanism. Fig. 3 shows a front view of the lens and mirror and the means for indicating when the apparatus is empty. Fig. 4 is a detail view

showing how the main apparatus is unlocked on the insertion of a coin. Fig. 5 shows the main mechanism by which the apparatus is operated.

The mechanism by which the machine is wound up or set by each user comprises the platform 1, supported in front of the apparatus on springs 2 and having a projection 3, that acts on the end of a lever 4, fulcrumed to the base of the apparatus at 5 and connected to a cord 6, that passes around and is fixed to the pulley 7, fast with a pulley 8, on which the cord 9, carrying the weight 10, is wound in the opposite direction to the cord 6 and fixed. As shown, the platform 1 rises and falls vertically, and the center position of the lever 4 is horizontal, so that the projection 3 escapes the end of the lever at the points 11 and 12. As the platform descends it thus depresses the lever and raises the weight 10 until the projection escapes the lever 4, when the weight 10 will react and pull up the lever 4. When the platform again rises, the projection 3 ascends slightly above the end of the lever 4, and in so doing raises the lever and escapes when the lever again falls and the parts take up the position shown in Fig. 5.

The cord 9 is attached to a ratchet-rack 13, that as the platform 1 is depressed slides over and past the teeth of the wheel 14; but as the weight 10 reacts rotates the ratchet-wheel 14 and pulley 15, the rack being drawn completely past the ratchet-wheel 14, so as to leave the pulley 15 free to be returned to its initial position, as hereinafter described. On the pulley 15 is a stop 31, that normally rests on the projection 32 on a swinging arm 33, pivoted at 34 and connected to an arm 35, pivoted at 36. The arm 35 is provided with a projection 37 opposite the coin-slot 38, and on inserting a coin into the slot it acts on the projection 37 and forces the arm 35 sidewise horizontally, and thus removes the projection 32 from the stop 31, and so allows the weight 10 to rotate the pulley 15 in the direction shown by the arrow. The coin in being forced through the slot 38 passes the spring 40, which prevents the return of the coin. As the pulley 15 rotates, the coin that rests on it is carried forward and falls into a suitable receptacle beneath.

The pulley 15 drives an endless cord 16, connected to the small pulley 17, that is fast with a pulley 18. The cord 19 is fixed to the pulley 18 and wound around it, and also after
 5 passing around guide-pulleys 20 21 around a pulley 22 on the disk 23, carrying a second pulley 241, on which is a similar cord 25, also fixed similarly to the pulley 26, fast with a pulley 27, to which is attached a cord 28 with
 10 weight 29. As the pulley 15 is rotated by the rack 13, the disk 23 is rotated on its axis and the weight 29 is raised. It will also be seen that on the descent of the weight 29, as hereinafter described, the pulley 15 will be re-
 15 turned to its initial position, the stop 31 sliding over the inclined end of the projection 32 and forcing it sidewise to pass it.

The disk 23 is provided with two projections or notches 41 and 43 and is mounted on
 20 the screw 24, that forms its axis and on which it is traversed like a nut, so that as the weight 29 is being wound up the disk is traversed toward the front of the apparatus until a projection 411 on its circumference comes against
 25 the stop 30. As the weight 29 descends, it traverses the disk in the reverse direction toward the back of the apparatus. The disk 23 is, however, held in its wound-up position by means of the escapement 42 53, the arm
 30 42 acting on the projection 43 on the disk.

The lens 44 is fixed inside the front of the apparatus and is covered by a slide 45, that is attached by the cord 46 to a pulley 47, fast with a pulley 48, on which is a cord 49, con-
 35 nected to handle 50 outside the apparatus and sliding in a guide 511. The user poses himself by means of the mirror 521 at the front of the slide 45, and when he is ready he pulls the handle 50 to the end of its slide
 40 and lets go. The slide 45 is drawn up to the top and then by its weight immediately begins to descend to again cover the lens. The time of uncovering or exposure is easily adjustable by adjusting the length of the slide,
 45 according to the period of the year, being longer in winter than in summer. The pulleys 47 48 are fast with a counterbalance-wheel 81, that serves to regulate the time of exposure and also insures the parts returning
 50 to their normal positions.

On the disk 23, near its periphery, is pivoted the plate-holder 54 in such position that when the projection 411 on the disk is against the stop 30 the holder 54 is opposite the chute 55.
 55 The plates 56 are stored in the receptacle 57, across the bottom of which slides the pusher 58, that is adapted to push out one plate at a time into the holder 54. The pusher 58 is actuated by means of the rod 59, that is connected to one end of the horizontal lever 60,
 60 fulcrumed at its center and connected at its other end to the spring 61, and by the cord 62 to the lever 63, fulcrumed at 64 and having one end projecting into the coin-chute 65.
 65 On inserting a coin 66 into the slot 67 it drops down the chute 68 and rests on the end of the lever 63. Above the coin-chute is a guided

slide 69, that when depressed forces the coin 66 past the lever 63 and actuates it, thus causing the pusher 58 to force a plate into
 70 the chute 55 and to the holder. The slide 69 is actuated to force a plate into the chute by the link 70, connected to a lever 71, fulcrumed on the axis of the pulley 15, and that is actuated by the stop 31 on the pulley just
 75 as the pulley is completing its final motion under the action of the weight 10, the motion of the pulley being slightly less than one rotation.

A weight 72 rests on the plates 56 in the re-
 80 ceptacle 57 and is attached by a cord 73 to a slide 74, on which is the word "Empty," which word comes opposite the slot 75 when the weight 72 rests on the bottom of the receptacle 57.
 85

On the slide 45 is a projection 51, that when the slide is in its lowest position acts on the escapement-lever 52 and lowers the escape-
 90 ment-arm 42 in front of the projection 43 on the disk, so that the disk is held in its wound-up position. When the slide 45 is raised, the arm 42 is removed and the disk 23 rotates slightly until the projection 41 comes against the other arm 53 of the escapement which
 95 was lowered as the arm 42 was raised. When the slide 45 again lowers, the projection 51 on it again operates the escapement-lever to remove the arm 53, so that the disk is now free to be rotated by the action of the weight 29,
 100 the projection 43 having previously passed the arm 42, and the horizontal motion of the disk removing the projections 43 and 41 on the disk away from their catches, so that they are not stopped at the next and following rotations.
 105

Below the disk 23 are arranged three tanks 76 77 78, containing, respectively, developing, fixing, and washing solutions. It will readily be seen that as the disk rotates and passes
 110 along the screw-axis 24 the holder 54 will pass first several times through the tank 76 and similarly afterward through the tanks 77 and 78. In order to prevent the holder 54 stopping the disk 23 by bearing on the edges of the tanks 76 77 78, the holder is provided
 115 with a slot 79, so that it can rise on its pivot. After the disk 23 has passed the tanks it comes opposite the open top slide 80. The bottom of the holder 54 comes against the bottom of the slide and the holder is tipped
 120 to discharge the plate into the slide, down which it passes to outside the apparatus.

In order to obtain a photograph, the person steps onto the platform, inserts a coin through the coin-slot 67, and then another
 125 through the slot 38, and then poses himself. When ready he pulls out the handle 50 and lets go.

As shown and described, the apparatus is arranged for two pennies; but it is evident
 130 that it can be arranged for one, three, or more coins. For example, for one penny it is only necessary to rigidly connect the lever 63 and slide 69, and for three coins the mechanical

connection is broken at any convenient place and completed in a known manner on the insertion of a penny.

What I claim, and desire to secure by Letters Patent, is—

1. The apparatus for passing the plate through the developing-tanks consisting of a screw-axis, a nut on the axis, a plate-holder pivoted to the nut at a distance from its axis, a series of developing-tanks underneath the axis and a means for rotating the nut on the axis.

2. In a photographic apparatus, a plate-receptacle, a chute leading from the plate-receptacle, a plate-holder adapted to be brought opposite the chute, a rotatable and traversing support for the plate-holder, a means for forcing a plate out of the receptacle into the chute, a lens opposite the plate-holder, a slide between the lens and the plate-holder, a means for raising and lowering the slide, an escapement-catch actuated by the raising and lowering of the slide and acting on the plate-holder, a means for rotating and traversing the plate-holder support, a series of developing-tanks underneath the support and a delivery-slide adapted to come in contact with the plate-holder at the end of its traverse and tilt the plate into the slide.

3. In a photographic apparatus, a spring-platform a ratchet-rack connected to the platform, a counterweight connected to the rack, a ratchet-pinion gearing with the rack, a weight connected to the ratchet-pinion and wound up on the fall of the counterweight, a plate-receptacle, a slide in the receptacle adapted when operated to force out a plate, a chute to receive the plate, a means for connecting the slide to the counterweight, a rotatable traversing support connected to the weight to be operated by it, a plate-holder pivoted to the support at one extremity to receive a plate from the chute, a lens opposite the plate-holder, a slide between the lens and the plate-holder, a means for raising and lowering the slide, an escapement-catch actuated by the raising and lowering of the slide and acting on the plate-holder, a series of developing-tanks underneath the support, and a delivery-slide adapted to come in contact with the plate-holder at the end of its traverse and tilt the plate into the slide.

In testimony whereof I have affixed my signature in presence of two witnesses.

EDWIN J. BALL.

Witnesses:

ALBERT JONES,

JOHN W. MACKENZIE.