(No Model.) 3 Sheets—Sheet 1.

C. S. PECK.

MACHINE FOR DIPPING HATS.

No. 580,891. Patented Apr. 20, 1897.

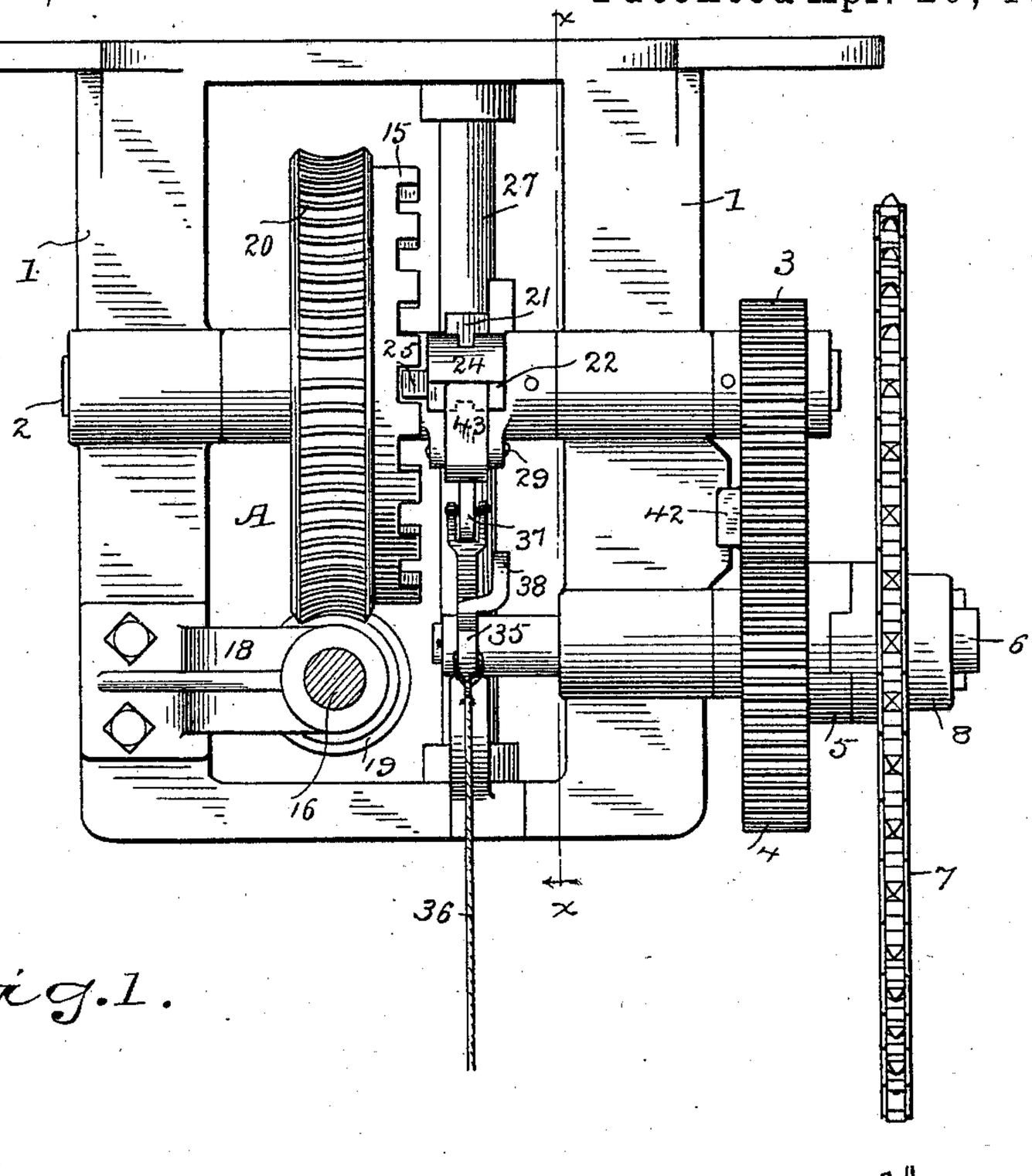
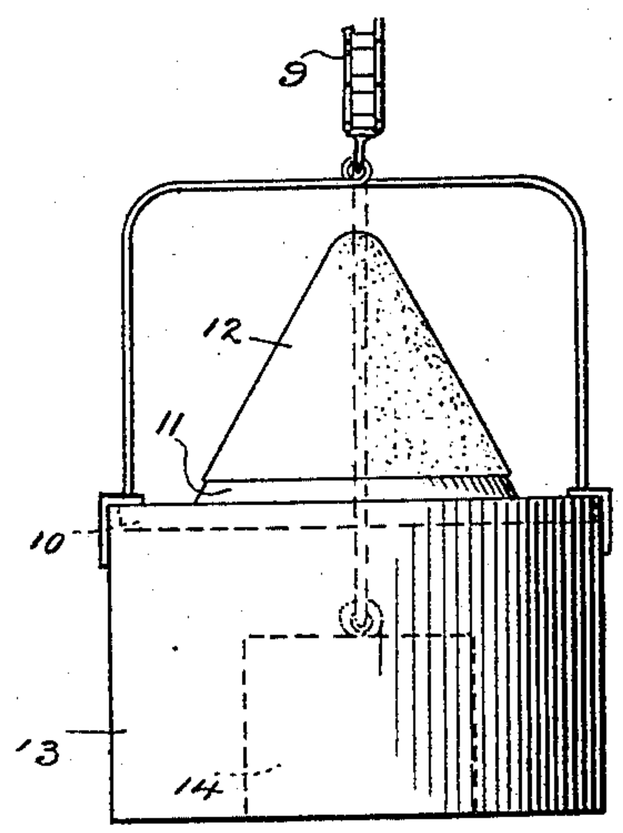


Fig. 1.



WITNESSES

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(No Model.) 3 Sheets—Sheet 2.

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Fig. 2.

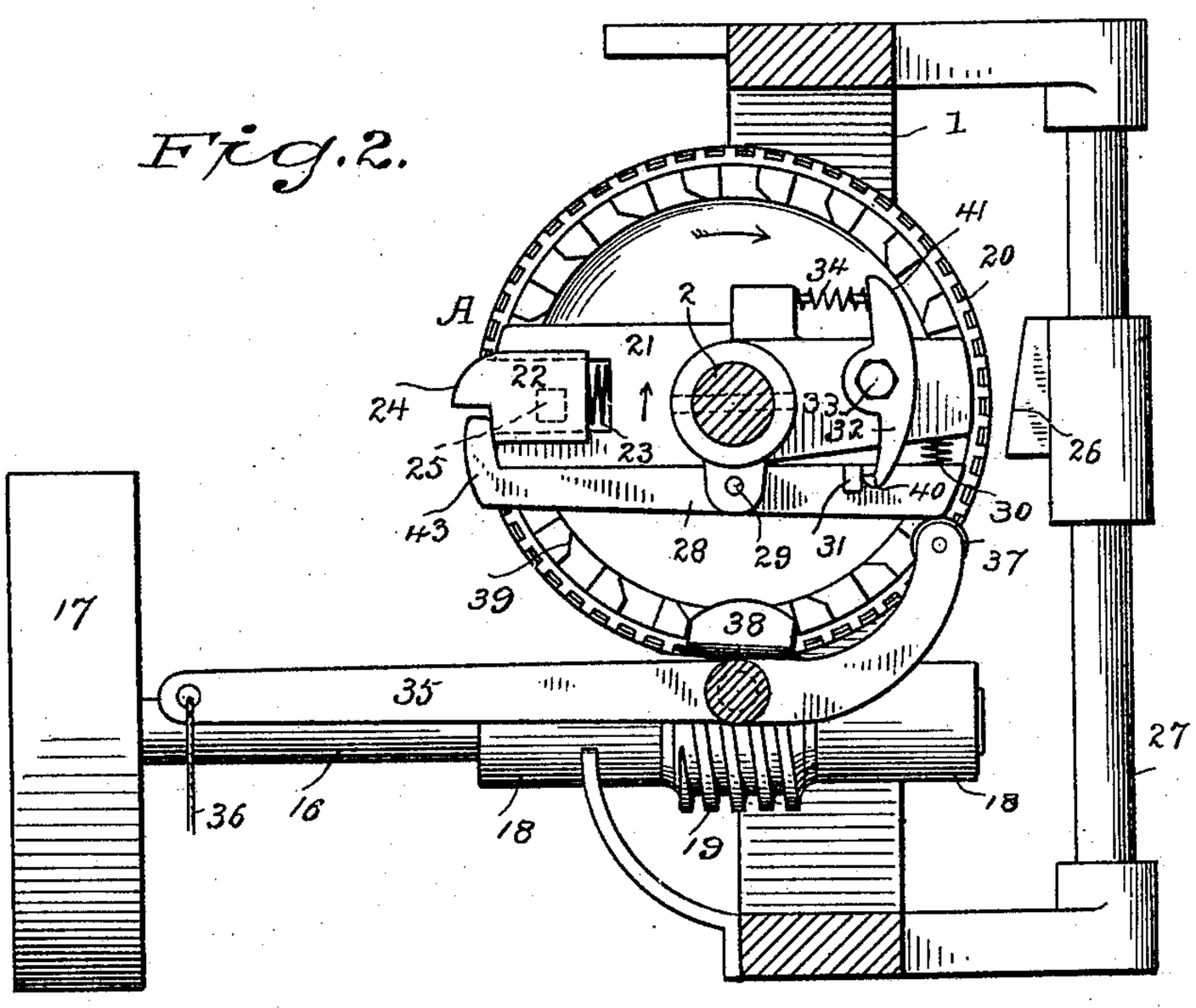

Fig. 5.

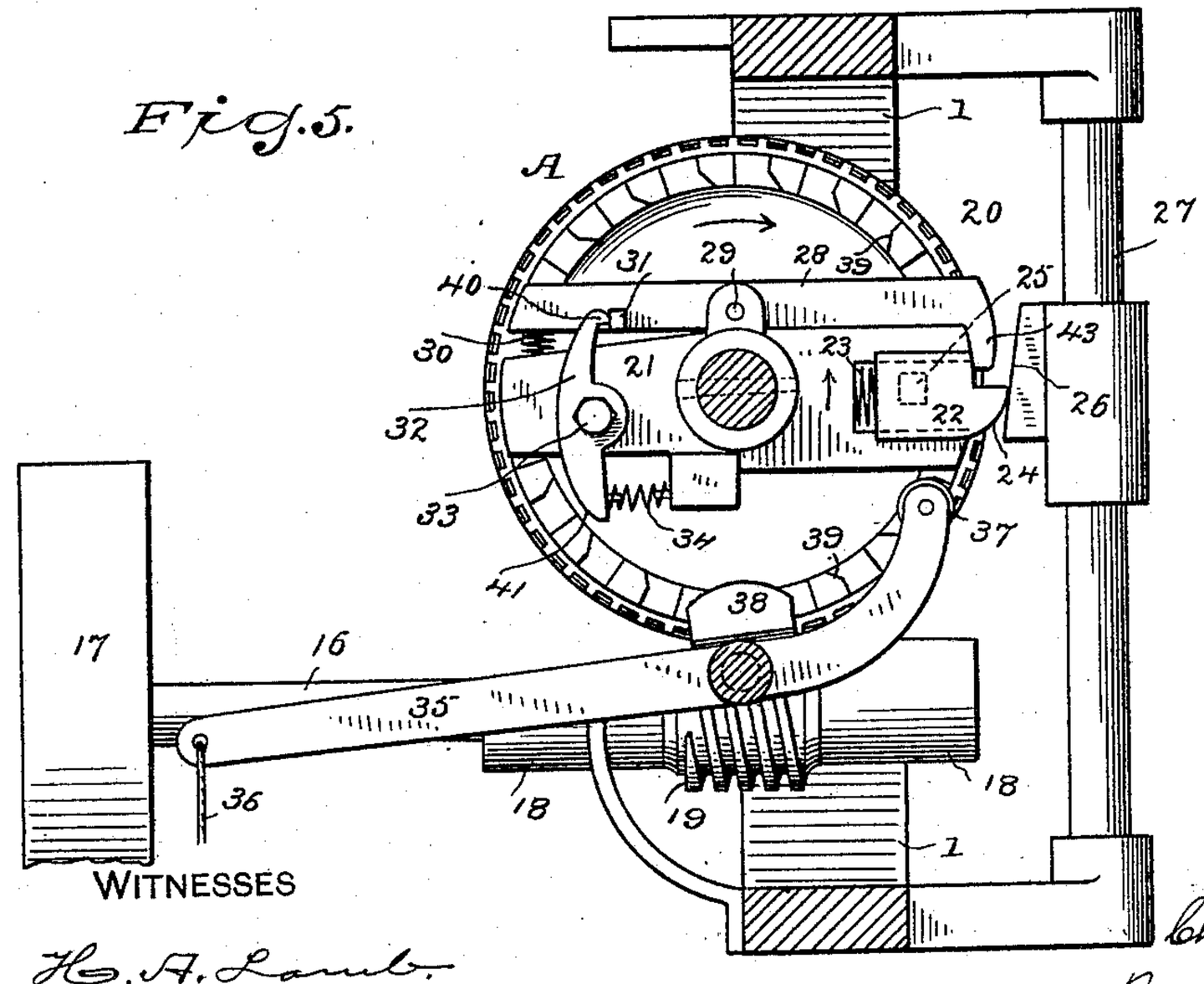

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Fig. 3.

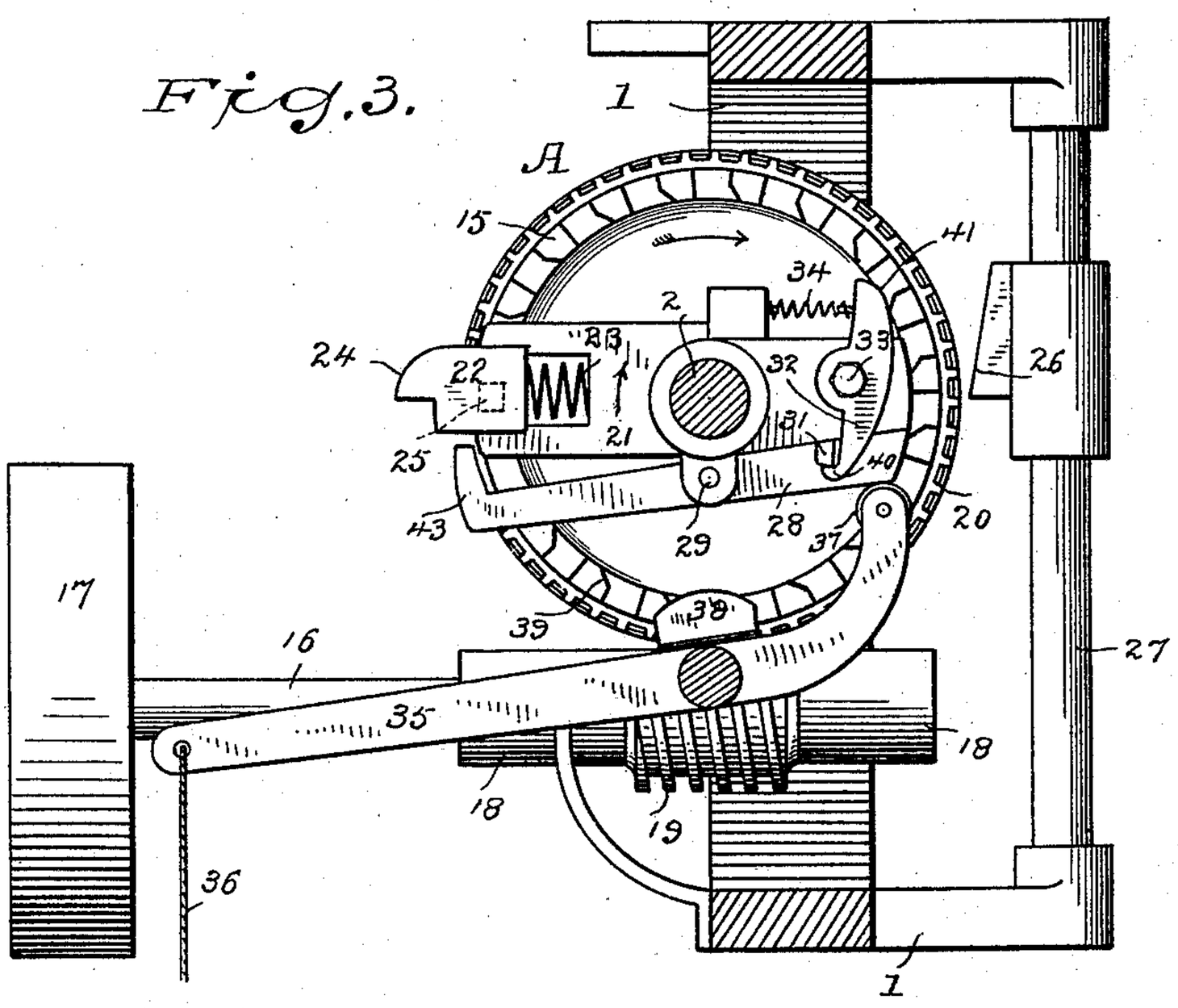
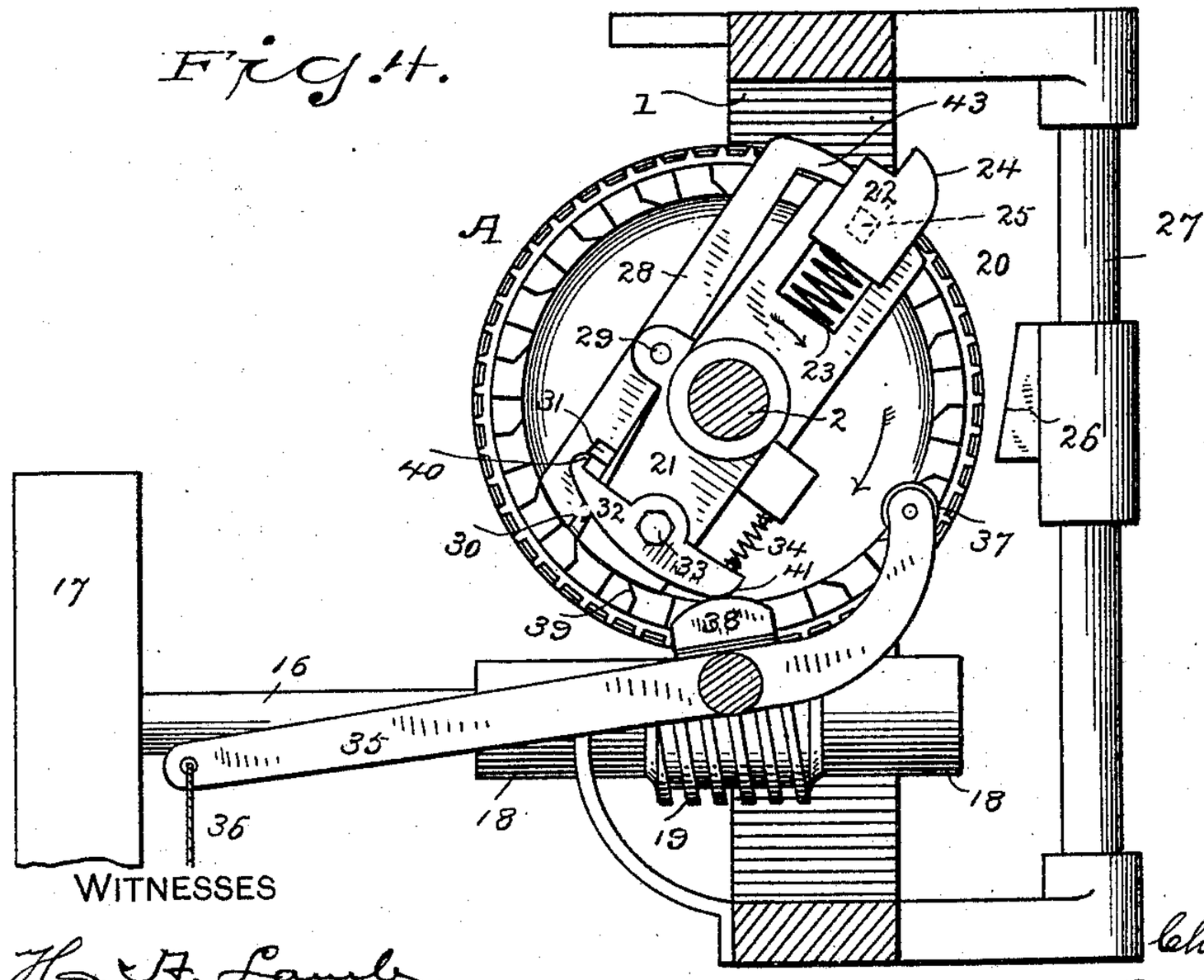


Fig. 4.



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UNITED STATES PATENT OFFICE.

CHARLES S. PECK, OF DANBURY, CONNECTICUT.

MACHINE FOR DIPPING HATS.

SPECIFICATION forming part of Letters Patent No. 580,891, dated April 20, 1897.

Application filed December 28, 1895. Serial No. 573,572. (No model.)

To all whom it may concern:

Be it known that I, CHARLES S. PECK, a citizen of the United States, residing at Danbury, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Machines for Dipping Hats; 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.

My invention relates to machines for dipping hat-bodies upon the cone, and has for its object to simplify and cheapen their construction and at the same time to greatly improve their operation in use.

With these ends in view I have devised the simple and novel construction of which the following description, in connection with the accompanying drawings, is a specification, numbers and letters being used to designate the several parts.

Figure 1 is an elevation of the machine complete, the carrier being at the raised position with a cone and hat-body thereon, as just before or just after a dipping operation; Fig. 2, a section on the line *x x* in Fig. 1, the position of the parts corresponding with Fig. 1; Fig. 3, a similar view showing the position of the parts at the instant the dipping mechanism is connected to the driving mechanism; Fig. 4, a similar view illustrating an intermediate position of the parts, and Fig. 5 is a similar view showing the position of the parts at the instant the dipping mechanism is about to be disconnected from the driving mechanism.

1 denotes a frame which may be of any preferred construction, and 2 a shaft journaled therein, which carries an eccentrically-mounted elliptical gear 3. This gear meshes with an eccentrically-mounted elliptical gear 4, carried by a hub 5, which is journaled on a stud 6, rigidly secured to the frame.

7 denotes the dipping-wheel, whose hub 8 turns freely on stud 6, but is rigidly locked to hub 5, so that the two will turn together. The dipping-wheel is ordinarily a sprocket-wheel, in connection with which a sprocket-chain 9 is used. An ordinary wheel with a rope or chain may, however, be used, if preferred. At one end of the sprocket-chain is attached the usual carrier 10, upon which cones 11, with hat-bodies 12 thereon, are placed for submersion in a tank, which is indicated by 13. At the other end of the sprocket-chain is a weight 14, (see dotted lines, Fig. 1,) the weight being in practice made heavy enough to raise the carrier, cone, and hat-body when they are submerged in the tank.

A denotes a wheel journaled on shaft 2 and turning independently thereof, said wheel being provided on its face with crown-teeth 15. Power is applied to turn this wheel in any suitable manner. In the present instance I have shown a driving-shaft 16, to which power is applied by a belt (not shown) running over a belt-pulley 17. This shaft is journaled in brackets 18, extending from the frame, and carries a worm 19, which engages worm-teeth 20 on the periphery of wheel A, so that in use wheel A is constantly in rotation.

21 denotes a plate which is rigidly secured to shaft 2 and carries a sliding block 22, which is normally moved forward by a spring 23. This block carries a rigid latch 24 and a lug 25, which is adapted to engage the crown-teeth on wheel A and thereby communicate the motion of said wheel to the shaft, elliptical gears, and dipping-wheel.

26 denotes a cam which is so located as to be engaged by latch 24 to disengage lug 25 from the crown-teeth at the completion of a half-rotation of the shaft and dipping-wheel, as will be more fully explained. This cam is shown as rigidly secured to a rod 27, secured in the frame. Lug 25 is held at its retracted position—*i. e.*, in such a position as not to engage the crown-teeth—by means of the hooked end 43 of a latch 28, which is pivoted to plate 21, as at 29, and is suitably shaped to engage sliding block 22 when the latter is at the retracted position and keep it retracted until it is released by movement of the latch. A spring 30 acts to hold latch 28 at the engaging position, as clearly shown in Fig. 2.

31 denotes a lug on latch 28, which is adapted to be engaged by the hooked end 40 of a catch 32, which is pivoted to the plate, as at 33, a spring 34 acting to hold the catch at the engaging position, which is clearly shown in Fig. 3.

35 denotes a starting-lever to which is attached a cord 36 for convenience in operation. The rear end of this lever is curved upward

into position to engage latch 28, as is clearly shown in Fig. 3, and is preferably provided with an antifriction-roller 37. This lever is shown as journaled on stud 6. These details of construction may be varied greatly, however, without departing from the principle of my invention.

38 denotes a cam which is shown as formed upon the starting-lever, but may be located elsewhere if more convenient, and which is adapted to be engaged by a surface 41 on catch 32, said surface and same cam being so shaped that the cam will disengage the catch from lug 31 shortly before the completion of the half-rotation of the shaft, dipping-wheel, &c., as clearly shown in Fig. 4. At the instant this disengagement takes place spring 30 will force latch 28 from the position shown in Fig. 3 to that shown in Fig. 4 and will place the lug 31 in such a position that it cannot be reëngaged by the catch when surface 41 passes off from cam 38. Latch 28 is now in position to be thrown to its locking position, as in Fig. 2, by spring 30 at the instant that the block is moved backward by the engagement of latch 24 with cam 26.

The operation is as follows: Suppose the parts to be in the normal position—*i. e.*, as shown in Figs. 1 and 2—and a cone with a hat-body thereon ready for dipping to be upon the carrier. The operator pulls down upon the cord, which tilts the starting-lever and lifts the rear end of latch 28 against the power of spring 30 and lowers the front or engaging end of said lever, thereby releasing block 22, which is moved forward by spring 23, as clearly shown in Fig. 3, and lug 25 is placed in engagement with the crown-teeth of wheel A, said crown-teeth being preferably beveled, as at 39, so as to insure that the lug will pass between two teeth the instant the block is moved forward by the spring. The instant the engagement of this lug with the crown-teeth takes place plate 21 and shaft 2 are locked to wheel A and are carried forward thereby a half-rotation, that is, until latch 24 comes into engagement with cam 26, and the block is forced backward again, carrying the lug out of engagement with the crown-teeth and stopping the rotation of the shaft. The position of the parts an instant before the disengagement of lug 25 from the crown-teeth is clearly shown in Fig. 5. In order to prevent the possibility of any backward movement of block 22 and the disengagement of the dipping mechanism from the driving mechanism at any time before the dipping operation is completed—that is, before latch 24 comes into engagement with cam 26—I have provided the spring-actuated catch 32 on plate 21. The instant the rear end of latch 28 is raised by the starting-lever spring 34 will cause the hooked end of the catch to engage lug 31 on latch 28, as is clearly shown in Fig. 3, so that even if lug 25 should fail to engage the crown-teeth at the instant the block is forced forward and the block be temporarily moved backward the block will not be retained in its retracted position, owing to the fact that latch 28 is locked at its disengaging position, so that even should the crown-teeth not be engaged by lug 25 at the instant of the forward movement of the block they will be engaged an instant later, owing to the fact that spring 23 will hold the block forward and that latch 28 will be prevented from acting while the block is retracted. This position of the parts is clearly shown in Fig. 3 and continues until the parts reach the position shown in Fig. 4, at which instant surface 41 upon catch 32 engages cam 38 and trips the catch, thereby releasing latch 28. Owing to the fact that block 22 has not yet been retracted, however, latch 28 will simply move from the position shown in Fig. 3 to that shown in Fig. 4, and the hooked end thereof will rest against the block ready to slip past the block and lock it at the retracted position as soon as it shall have been moved backward by the engagement of latch 24 with cam 26 at the completion of a half-rotation of the shaft, as is clearly shown in Fig. 5. During the half-rotation of shaft 2 while said shaft is connected to wheel A rotary movement will be imparted to the dipping-wheel through the engagement of gears 3 and 4, and the cone and hat-body thereon upon the carrier will be immersed in the tank. At the instant that lug 25 is disengaged from the crown-teeth the carrier, cone, and hat-body will be wholly immersed in the tank. During the downward movement of the carrier, cone, and hat-body the weight will have been lifted from its support, which may be the floor or any suitable support. As soon as the disengagement of the lug from the crown-teeth takes place—*i. e.*, the disconnection of the dipping mechanism from the driving mechanism—the disengagement is complete and the weight will act at once to turn the dipping-wheel in the opposite direction and will quickly raise the carrier, cone, and hat-body to the position shown in Fig. 1, and wheel A, plate 21, and the parts operating in connection therewith will be carried from the position shown in Fig. 5 back to the position shown in Fig. 2.

It will of course be understood that the weight reaches its support slightly before the carrier reaches its highest position, so that there will be no shock to the frame of the machine. In order to insure that at the termination of each backward movement of the dipping mechanism—*i. e.*, the raising of the carrier, cone, and hat-body—the parts will always stop at the starting position, I provide a lug 42 on the face of one of the gear-wheels, which engages positively with some portion of the frame, a suitable cushion or buffer (not shown) being of course provided upon either frame or lug or upon both.

I have not illustrated certain features of construction of my improved machine in detail, as they are not, broadly, of my invention,

and may be varied to an almost unlimited extent without affecting the operation of the machine.

By making gears 3 and 4 elliptical I insure that the carrier, and with it the cone and hat-body, will move downward with a gradually-retarded movement—that is to say, when the carrier, cone, and hat-body are descending or sinking in the tank the movement will be fastest at the start and will grow slower to the end of the movement—so that there will be no danger whatever of forcing air within the body through it violently, so as to rupture or injure the body. The raising operation, however, is performed entirely by the weight and takes place quickly, thus effecting a great saving of time. The movement of the dipping mechanism is therefore fastest when no injury can result from rapid movement and relatively slow at the times when it is possible to cause injury to the hat-bodies by too rapid movement. It will be noticed that at the starting-point for the dipping operation the long radius of gear 3, which in the dipping movement is the driving-gear, registers with the short radius of gear 4, which is the driven gear, and that as the movement proceeds the operative radius of the driving-gear will constantly grow shorter and the operative radius of the driven gear will constantly grow longer, thus producing a constantly-retarded movement of the driven gear and with it the dipping-wheel, carrier, cone, and hat-body.

Having thus described my invention, I claim—

1. The combination with the dipping-wheel, carrier and weight, of shaft 2, gearing intermediate said shaft and the dipping-wheel, driving mechanism and means for connecting the shaft with the driving mechanism and for automatically disconnecting the shaft therefrom at the end of a half-rotation, and permitting the weight and other parts to return at once to the starting position.

2. The combination with the dipping-wheel, carrier and weight, of shaft 2, gearing intermediate said shaft and the dipping-wheel, driving mechanism, mechanism carried by the shaft and adapted to connect the shaft with the driving mechanism to rotate the dipping-wheel and lift the weight and means for automatically disconnecting the shaft from the driving mechanism at the end of a half-rotation whereby the weight is permitted to return the shaft and dipping-wheel to the starting position as soon as said parts are disconnected.

3. The combination with the dipping-wheel and an eccentrically-mounted elliptical gear 4 moving therewith, the carrier and the weight, of shaft 2 carrying an eccentrically-mounted elliptical gear 3 which meshes with gear 4, driving mechanism, mechanism carried by the shaft and adapted to connect the shaft with the driving mechanism to rotate the dipping-wheel with a gradually-retarded movement and to lift the weight, and means for automatically disconnecting the shaft from the driving mechanism at the end of a half-rotation whereby the weight is permitted to return the shaft and dipping-wheel to the starting position as soon as said parts are disconnected.

4. The combination with the dipping-wheel, carrier and weight, of shaft 2, gearing intermediate said shaft and the dipping-wheel, wheel A journaled on said shaft, plate 21 carried by said shaft, mechanism for connecting the plate with wheel A so that the shaft and dipping-wheel will be rotated and the weight lifted and means for disconnecting the plate from wheel A whereby the weight is permitted to at once reverse the movement of the parts and return the dipping-wheel, shaft and plate to the starting position.

5. The combination with the dipping-wheel, carrier and weight, of shaft 2, gearing intermediate said shaft and the dipping-wheel, wheel A journaled on said shaft and provided with crown-teeth, plate 21 carried by said shaft and itself carrying a spring-actuated sliding block provided with a lug adapted to engage the crown-teeth and a latch 24, and a cam 26 which is engaged by said latch to entirely disengage the lug from the crown-teeth so that the weight will at once return the parts to their normal position.

6. In combination a dipping-wheel, a carrier for hat-bodies suspended therefrom, a weight also suspended from the dipping-wheel, shaft 2 carrying a plate 21, wheel A which turns on said shaft and is provided with crown-teeth, mechanism for connecting said plate to the crown-teeth and for entirely unlocking or disconnecting it therefrom at the completion of a half-rotation and gearing intermediate the shaft and the dipping-wheel whereby when said shaft is connected to wheel A the dipping-wheel will be rotated in one direction for the purpose set forth and when said shaft is released from wheel A the weight will at once turn the dipping-wheel in the opposite direction to return the parts to their normal position.

7. In combination the dipping-wheel, a carrier for hat-bodies suspended therefrom, a weight also suspended from the dipping-wheel, an eccentrically-mounted elliptical gear 4 moving with the dipping-wheel, shaft 2 carrying a plate 21, and an eccentrically-mounted elliptical gear 3 which meshes with gear 4, wheel A which turns on said shaft and is provided with crown-teeth, and mechanism for connecting said plate with the crown-teeth and for entirely unlocking or disconnecting it therefrom at the completion of a half-rotation, the long radius of gear 3 meshing with the short radius of gear 4 when the parts are in their normal position so that when the dipping-wheel is turned in one direction by wheel A the movement will be fastest at the start and will grow slower to the end of the movement and the return movement will be quickly performed by the weight.

8. The combination with the dipping-wheel, carrier and weight, of shaft 2, gearing intermediate said shaft and the dipping-wheel, wheel A journaled on said shaft and provided with crown-teeth, plate 21 carried by said shaft and itself carrying a spring-actuated sliding block provided with a lug adapted to engage the crown-teeth and a latch 24, a spring-actuated latch 28 pivoted to the plate and adapted to retain the block at the retracted position, a starting-lever adapted to move latch 28 to release the block and a cam 26 which is engaged by latch 24 to disengage the lug from the crown-teeth so that the weight will return the parts to their normal position.

9. The combination with the dipping-wheel, carrier and weight, of shaft 2, gearing intermediate said shaft and the dipping-wheel, wheel A journaled on said shaft and provided with crown-teeth, plate 21 carried by said shaft and itself carrying a spring-actuated sliding block provided with a lug adapted to engage the crown-teeth and a latch 24, a spring-actuated latch 28 adapted to retain the block at the retracted position and provided with a lug 31, a spring-actuated catch 32 carried by the plate and adapted to engage lug 31 to hold latch 28 out of engaging position and a cam 38 which trips the catch and releases latch 28 before the completion of a half-rotation.

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

CHARLES S. PECK.

Witnesses:
S. WILLARD OLEY,
JOHN R. BOOTH.