(No Model.) 3 Sheets—Sheet 1.

G. A. HASTINGS.

COIN CONTROLLED PAPER DELIVERING MACHINE.

No. 523,936. Patented July 31, 1894.

Fig. 1.

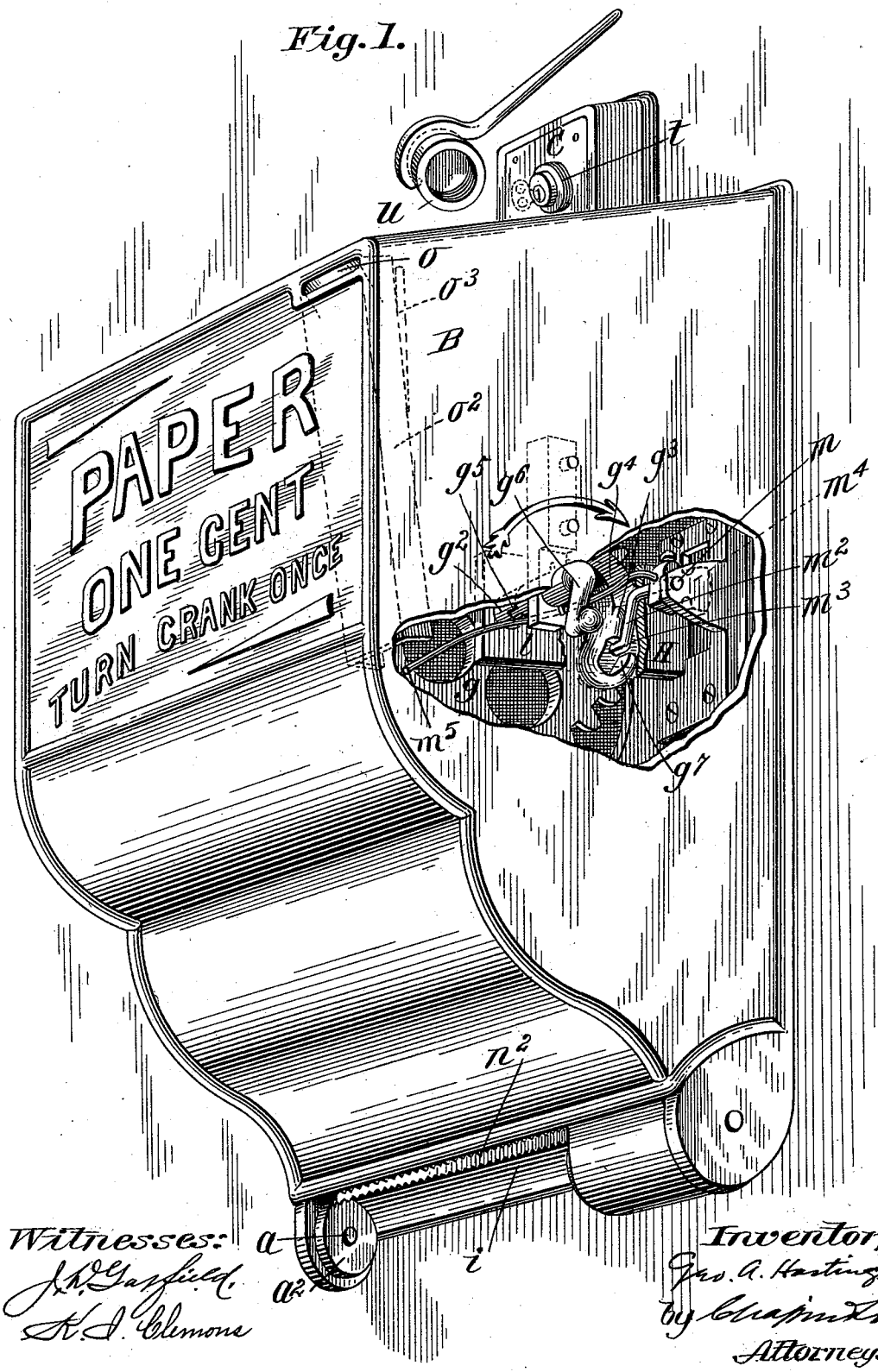

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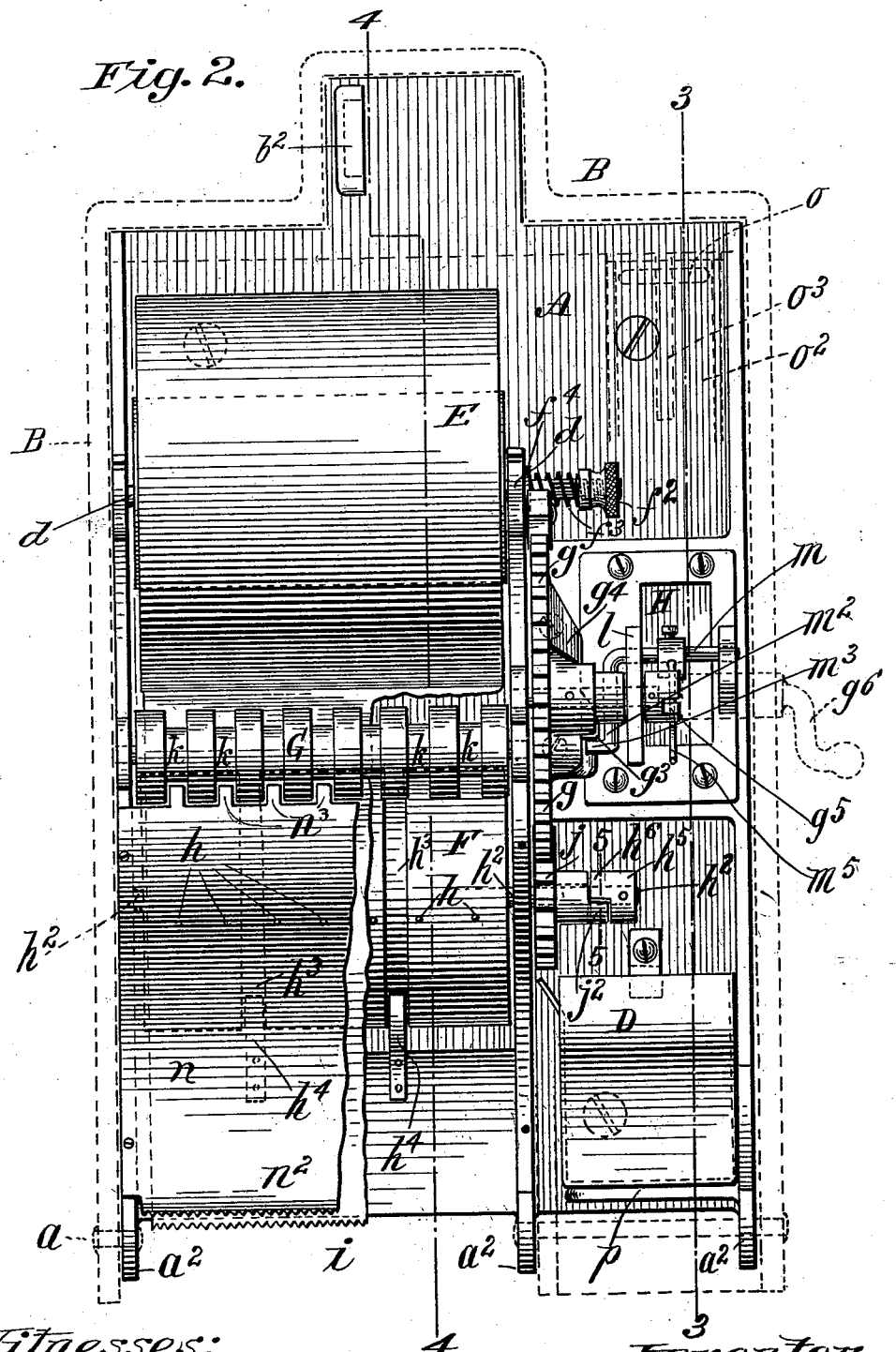
Fig. 2.



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(No Model.) 3 Sheets—Sheet 3.

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Fig. 3.

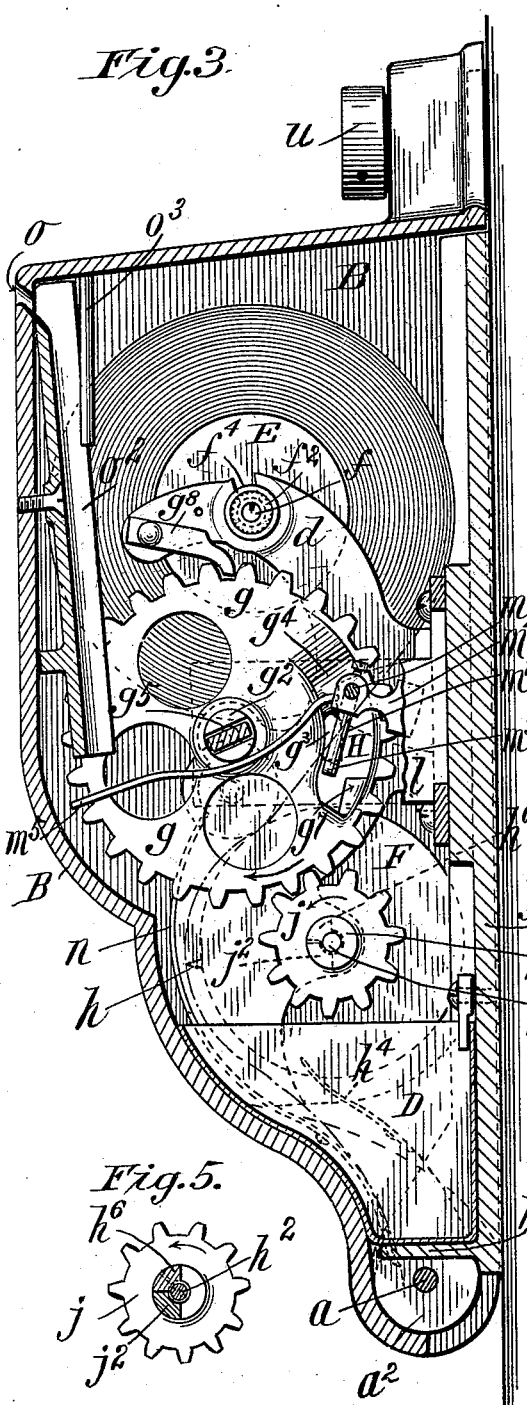

Fig. 4.

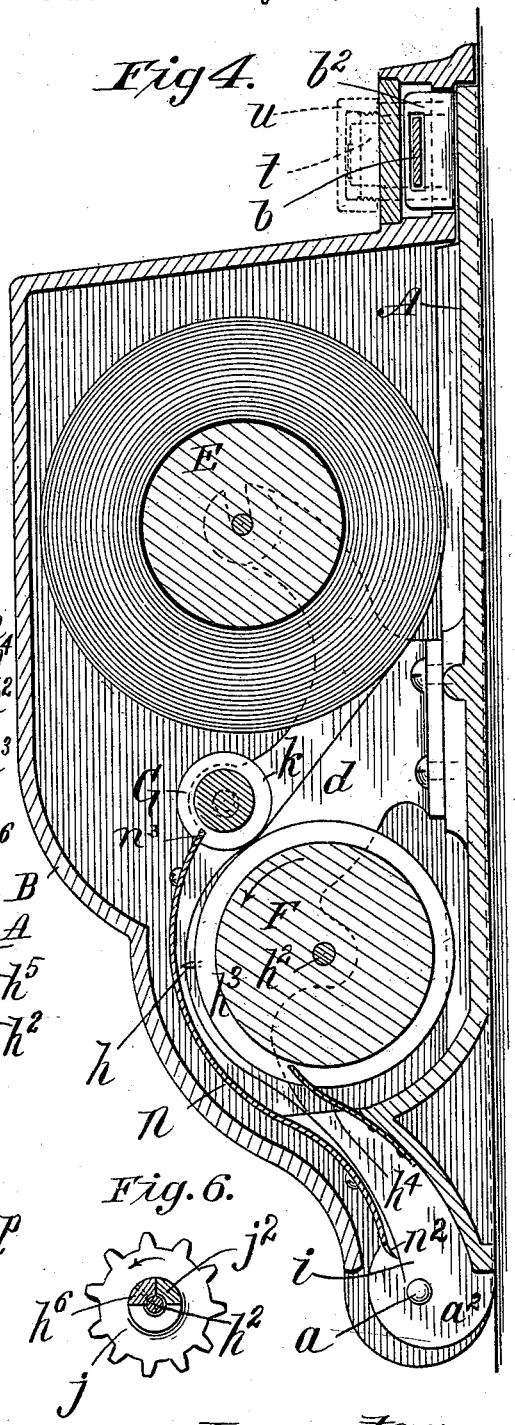

Fig. 5.

Fig. 6.

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UNITED STATES PATENT OFFICE.

GEORGE A. HASTINGS, OF ORANGE, MASSACHUSETTS.

COIN-CONTROLLED PAPER-DELIVERING MACHINE.

SPECIFICATION forming part of Letters Patent No. 523,936, dated July 31, 1894.

Application filed January 29, 1894. Serial No. 498,375. (No model.)

To all whom it may concern:

Be it known that I, GEORGE A. HASTINGS, a citizen of the United States of America, residing at Orange, in the county of Franklin and State of Massachusetts, have invented new and useful Improvements in Coin-Controlled Paper-Delivering Machines, of which the following is a specification.

The object of the present improvements in coin actuated paper delivering machines is to produce a machine of this character which is simple in organization, and inexpensive, certain and efficient in operation, durable, proof against being "beaten" or tampered with, yet easy of access by authorized persons for replenishing the paper supply, or withdrawing the earnings,—and altogether involving approved mechanical principles and attractive and generally satisfactory. And to these ends the invention consists in various features, and combinations or arrangements of parts, all substantially as will hereinafter fully appear and be set forth in the claims.

The machine is completely and clearly illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of the machine as seen set up for use with the lock concealing and guarding cap detached and with a part of the casing broken out to disclose important portions of the internal mechanism. Fig. 2 is a front view of the machine as seen upon the removal of the inclosing casing: in this view an edgewise portion of the outrunning paper is shown as torn away, as is also a part of the serrated guard and tearing plate for the purposes of clearer illustration: and in this view the part of the casing inclosing the entire mechanism, except at the back, is indicated in dotted lines. Fig. 3 is a vertical section through the machine from front to rear on the line 3—3, Fig. 2, and particularly showing the portion of the mechanism which the coin directly operates. Fig. 4 is also a vertical section through the machine from front to rear,—but taken on the line 4—4, Fig. 2, and particularly showing the paper supply and delivery devices and the part whereby may be severed the delivered portion of the paper. Figs. 5 and 6 are cross sectional views in detail through a clutch mechanism, as taken on line 5—5, Fig. 2, showing different relative positions of the parts as and for the purpose hereinbelow set forth.

The same characters of reference indicate corresponding parts in all of the views.

I will now proceed to describe the parts in detail:

The casing and support for the mechanism consists of a back plate, A, to be properly supported against a wall, and another casting, or shell, B, forming the top, front, sides, and bottom inclosure. The front is designed to fall away or recede downwardly and rearwardly and at its lower part has connection pivotally, as seen at a, with the forwardly extending ear pieces, a^2, which are cast integrally with the back. The front casing at the top contains the lock, C, the bolt, b, of which enters the socket in the lug, b^2, which is formed on, or permanently attached to, the back, all so that when unlocked the front of the casing may be swung down on the pivots, a, a, for access to the interior of the machine for the purpose of replenishing the paper or withdrawing the coins in the money receptacle, D.

As viewed in Fig. 2 the paper supporting and delivering parts occupy about two-thirds of the space from the left vertical side to the other, the remaining space at the other side being occupied by the coin-actuated mechanism which liberates the paper delivering parts.

E represents the paper supply roll. This is removably journaled in brackets, d, d, which stand forwardly from the back plate, A, and has on one of its projecting journal studs, f, the end head, or knob, f^2, against which latter is set a coiled spring, f^3, which bears inwardly on the washer, f^4, the face of which bears, without rotation, on the outer side of the adjacent bracket, d. One end of the spring, f^3, which is under endwise compression, has an engagement in a spline groove of the journal stud so that, as the roll turns, the spring moves as a part thereof, and its other end has a yielding frictional bearing on the washer which latter remains stationary. This prevents the supply roll from acquiring any movement by impetus, or from being accidentally caused to jump out

of the journal sockets therefor. The head, or knob, f^2, is preferably made in the form of a knurled thumb-nut to screw engage the threaded extremity of the journal stud whereby, on turning this nut, the tension may be varied.

F represents the measuring roll, preferably of wood, having a series of spurs or pins, h, projecting from its periphery in a line parallel with its axis. This roll has journal studs, h^2, h^2, by means of which it is supported at a little distance below, and removed from, the supply roll in the aforementioned brackets, d, d. The measuring roll has several circumferential grooves, h^3, therein in which lie the ends of spring fingers, h^4, h^4, supported from below. These fingers serve to prevent the paper, which is drawn from the rear side of the supply roll, E, and thence passes down over the upper-forward face of roll, F, (and between it and the iron, or comparatively heavy and loosely journaled roll, G,) to and through the delivery slot, or opening, i, at the lower end of the machine, from becoming, under any circumstances, wound around the measuring roll. On the one outer end of the shaft, or journal stud, h^2, of said roll, F, is fixed a collar, h^5, having a lug or arm, h^6, to constitute a member of a clutch, the other member of which is constituted by a quadrantal segment, j^2, of the hub of a pinion, j, which is loose upon shaft, h^2.

The aforesaid iron roll is mounted to have a bearing bodily on the paper, maintaining it in close contact against the roll, F. The said roll has a series of circumferential grooves, k, k, corresponding to the spurs, h, h, of the measuring roll, so that the presence of the spurs will not affect the rotation of the proximate rolls about substantially fixed bearings.

g represents a tumble-gear which is fixedly mounted on the freely rotatable stud, g^2, which is extended between, and supported by, the bracket, d, and the support lug, l, for revolution therein. This gear is in permanent meshing engagement with the said pinion, j. It has on its outer face, near its spur toothed edge, a projection, or shoulder, g^3, for engagement by the coin operated trip device, H, which is horizontally opposite and rearward from the axis of rotation of the gear. This gear is weighted at this edge portion at which the shoulder is provided, (see thickened weighted portions at g^4) so that immediately the trip device is swung, the gear will have about a quarter of a rotation. This is so that after the coin has been entered and the trip released this gear wheel, g, which is the primarily locked part, will instantly be moved to clear itself from the trip, whereby the delivery mechanism may not be immediately locked up again before the paper is run out. The said gear has a slot, g^5, in one end of its shaft, or stud, whereby it may be positively turned from the outside of the case by the crank, g^6, the hub of which has a removable engagement with said slot, after it has been freed to move, and has assumed a position with its weighted part downward. Now it will be seen that the gear wheel, g, after it has made a complete rotation, brings its shoulder, g^3, back to engagement with the trip whose normal, engaging position is automatically resumed by reason of its weight. The lug seen at g^7, acts as a guard to prevent the end of the trip from becoming disengaged should the tumble-gear be brought suddenly against the trip to cause a rebound. Said lug, g^7, as it comes around to its normal position, by impinging against the trip will cause a jar or vibration thereof, to throw off or displace any object which may become lodged upon any member of the trip device. The pawl, g^8, is hung above, and adapted to engage with, the teeth of the tumble gear to prevent any substantial extent of backward movement of the said gear.

The trip, as seen, comprises the loosely journaled rock-shaft, m, which is axially parallel with the axis of the tumble-gear, and has the cranked extension, m^2, and the trip projection. This rock-shaft also has the weighted radial arm, m^4, whereby it is made to resume the position of engagement. The rock shaft,—or a part which is as one thereof,—has also the forwardly extended comparatively long wire arm, m^5.

The coin slot, o, is horizontally formed through the front side of the casing at the rear upper corner. o^2 represents an approximately vertical coin-guiding trough, the upper end of which communicates with the coin-slot while the lower end is near the wire, or long, forwardly extended arm, m^5, of the trip device.

o^3 represents a coin restraining and guiding bar extending downwardly in a line slightly angular to the length of the trough and not far therefrom, the purpose of which is to limit the inward movement of the coin and to cause its inner edge to be downwardly directed.

The money box has a plane vertical back, a narrow level bottom,—which rests on the forwardly extended shelf, p, cast as one with the casing back, near its lower end,—and its front is in the form of an ogee curve which closely lies against, and conforms to, the compound-curved contour of the lower portion of the casing front—see Fig. 3. The casing front which is hinge connected on the pivotal line, as seen, below the shelf, when swung closed, has its inner side close to the front edge of the shelf.

Inasmuch as unprincipled persons frequently attempt to burglarize machines of this nature, the formation and disposition of the receptacle and casing, relatively the one to the other, as shown, largely increases the security of the inclosed funds. The curved formation of the parts increases the security, as it becomes impossible to insert any sharp or thin blade, or the like, for any substantial

distance along the front of the receptacle to break the latter.

A removable sheet metal plate, or cover, *n*, is supported by and within the front casing just in front of the measuring wheel: this plate has at its upper edge, projections, or fingers, n^3, entering the circumferential grooves of the roll, G, such portion extending slightly above and over the measuring roll, F. This cover-plate extends downwardly within the paper delivering opening, *i*, (see Fig. 4) whereat it is serrated as at n^2, for a tearing edge. The purpose of this plate is to protect the wheel, F, and other parts of the mechanism from injury by the insertion of a knife-blade, screw-driver, or other instrument, through the delivery opening, in an attempt to rob or defeat the machine.

The lock mechanism is comprised, as indicated at C, in the compartment therefor at the top of the front casing, B. There is no necessity to here illustrate or describe any particular construction or character of lock further than to point out that the lock is formed with a forwardly extended hub, or boss, *t*, surrounding the key-way; this hub is exteriorly screw-threaded and receives thereon the internally screw-threaded and massively formed circular metallic cap, *u*, which has, exteriorly, a spanner hole whereby it may be set hard upon the hub to protect the lock and conceal the key-hole, and to measurably divert attention from the location thereof.

Now, the operation of the machine is as follows, the parts being understood as locked and in positions shown in the drawings:—The penny, or other coin, passed through the slot and operating the trip causing the engaging parts, m^3, to swing rearwardly out from engagement with shoulder, g^3, on the tumble gear liberates the latter whereupon by its weighted portion,—rearwardly and horizontally located relative to its axis,—it is caused to have about a quarter of a rotation; this movement is without effect upon the mechanism other than to merely turn the pinion about three-fourths of a rotation. In Fig. 5 the relations of the portions, h^6, j^2, of the clutch are seen as before these movements, while in Fig. 6 the relations are seen after the said rotational movements have been completed. Now, to continue the operation, the person may grasp the crank, g^6, turning the tumble gear-wheel the remaining three-fourths of a rotation; and, of course, now any movement of the tumble gear, through the pinion which is in clutch with the measuring roll, causes the latter to turn, whereupon the paper will be fed out in a length equal to several times the circumferential length of the measuring roll; this, as intimated, may be performed by turning the crank, as directed by the lettering on the casting, but in lieu of this mode of operation after the tumble gear has been freed the paper may be drawn off by grasping its slightly protruding edge at the bottom of the machine and pulling downwardly until the further movement of the pinion is prevented by the tumble gear becoming locked, and the parts, h^6 and j^2, being in engaging relations shown in Fig. 5. One rotation of the tumble gear permits as many rotations of the measuring wheel as the diameter of the pinion may be divisional of the diameter of the tumble gear. Should the person draw on the paper, instead of turning the crank and gear, after the gear has been liberated and has made its quarter turn, he may turn the measuring roll and draw off paper without turning the pinion, three quarters of a turn, whereupon the pinion and tumble gear must then, on the further drawing off of the paper, have rotational movements in unison with the measuring roll.

If the patrons of the machine would turn the crank simultaneously with the release of the trip device from the tumble wheel, the provision of the arrangement for a lost motion between pinion, *j*, and the shaft of the measuring roll might be dispensed with, but, of course, this may not be depended upon, and the tumble gear must clear itself from its detaining device, and all without having to spontaneously perform any of the work of moving the paper delivering rolls of the machine.

It will be mentioned that the paper, before being severed at the serrated edge of the plate, *n*, is drawn upon downwardly so far as may be, and until the measuring roll may not have any further rotary movement, which condition is always established when the tumble gear is locked and the part, h^6, of the measuring-roll-shaft is limited by the part, *j*, of the then immovable pinion, as seen in Fig. 6. That is to say, in other words, that any movement gained by the pinion-segment, j^2, at the first advance movement relative to the roll segment, h^6, at the first part of the operation, (whereby the parts would assume the positions of Fig. 6) is taken up at the end of the operation by the draft upon the paper, preparatory to tearing (so that the said segments will have their original relations seen in Fig. 5) to render possible the tumbling of the tumble gear on the next introduction of a liberating coin.

Of course it is understood that the tension between the paper and the rolls, is to be such that there can be no slipping of the paper past the rolls independently thereof. The series of pins, *h*, which are always pointing forward at the beginning of the paper feed, cause the certain and immediate starting for the downfeed of the paper when the movement is transmitted through the measuring roll, thereto.

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

1. In a coin-controlled paper delivering machine, the combination with a roll having a feed engagement with the paper, of a weighted

tumble-wheel having a portion to constitute an abutment, and a trip to engage said abutment and adapted to be moved by the weight of the coin to release the said wheel, and a medium of driving connection between the tumble-wheel and the said roll adapted to have in the initial portion of its movement a lost motion, whereby the tumble-wheel may have, automatically by reason of its weighted portion, a degree of movement to carry its abutment clear of the coin actuated trip and without effect to move, or to receive impediment by, the roll, substantially as described.

2. In a coin-controlled paper delivering machine, the combination with a roll having a feed engagement with the paper and having on its shaft or arbor a projection, of a pinion loose on said shaft and having another projection adapted, after the pinion has partially rotated, to engage with the projection on the shaft, the tumble-wheel having a gear engagement with the pinion, and the coin operated trip for engagement with the gear, substantially as described.

3. In a coin-controlled paper delivering machine, the combination with the tumble-wheel having the shoulder, g^3, of the trip device adapted to move into, and from, engagement with said shoulder and a guard projection, g^7, on the said wheel on the opposite side of the path of movement of the trip from the shoulder, g^3, substantially as and for the purpose set forth.

4. In a coin-controlled paper delivering machine, the combination with the supply roll, of the roll, F, having a feed-engagement with the paper and having on its shaft the segmental projection, h^6, the loose pinion with the segmental projection, j^2, on its hub, of the tumble wheel, g, having a gear tooth engagement with the pinion, and a coin-controlled trip device for engaging the tumble wheel, substantially as described.

5. In a coin-controlled paper delivering machine, the combination with a rotatably mounted paper supply roll, and a roll, or rolls, having a feed engagement with the paper, and coin liberated mechanism for liberating the feed roll to turn, of a spring surrounding the shaft of the paper supply roll by one end exerting yielding pressure against a bearing support for the roll and by its other having an engagement in a spline groove of the shaft, and a thumb-nut having a screw engagement on the extremity of the shaft for varying the endwise compression of the spring, substantially as and for the purpose set forth.

6. In a coin-controlled paper delivering machine, the combination with the trip device for liberating the mechanism, of the inclosing casing having the slot, o, therethrough and the trough, o^2, leading downwardly from the slot toward the trip, and the bar, o^3, substantially as described and shown.

7. In a coin-controlled paper delivering machine, the combination with the fixed and movable parts of the casing, and the lock for confining them in inclosing relations, having an externally screw-threaded hub, t, surrounding its key-way, of the internally threaded cap to screw engage said hub and exteriorly adapted to be turned up by a special implement, as a spanner or wrench, substantially as and for the purpose set forth.

8. In a coin-controlled paper delivering machine, the combination with the tumble-wheel having a journal stud or shaft with a slotted end, of the movable part of the casing having a crank, or knob, rotatably mounted thereon, and having its inner end formed with a rib, or projection, to engage the slot at the hub of the tumble-wheel, and to readily disengage as the movable part of the casing is swung upon, substantially as described.

9. In a coin-controlled paper delivering machine, the combination with the casing, and the paper supply roll rotatably mounted therein, of the measuring and feed roll, F, provided with the longitudinal series of spurs, h, and the grooves, h^3, and having on its supporting shaft the projection, h^6, the pinion, j, loose on said shaft, having on its hub the projection, j^2, the peripherally grooved weight-roll, G, exerting a pressure bearing upon said roll, F,—or interposed paper—the paper guard fingers, h^4, the extremities of which enter the grooves in the feed roll, the guard plate, n, for, and in front of, and extending below, the roll, F, the weighted tumble wheel, g, in gear tooth engagement with the said pinion, and the coin-actuated trip device engaging a projection on the said wheel and a crank, or the like, extended to the exterior of the casing for turning the liberated tumble-wheel, all substantially as and for the purpose set forth.

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