

No. 688,545.

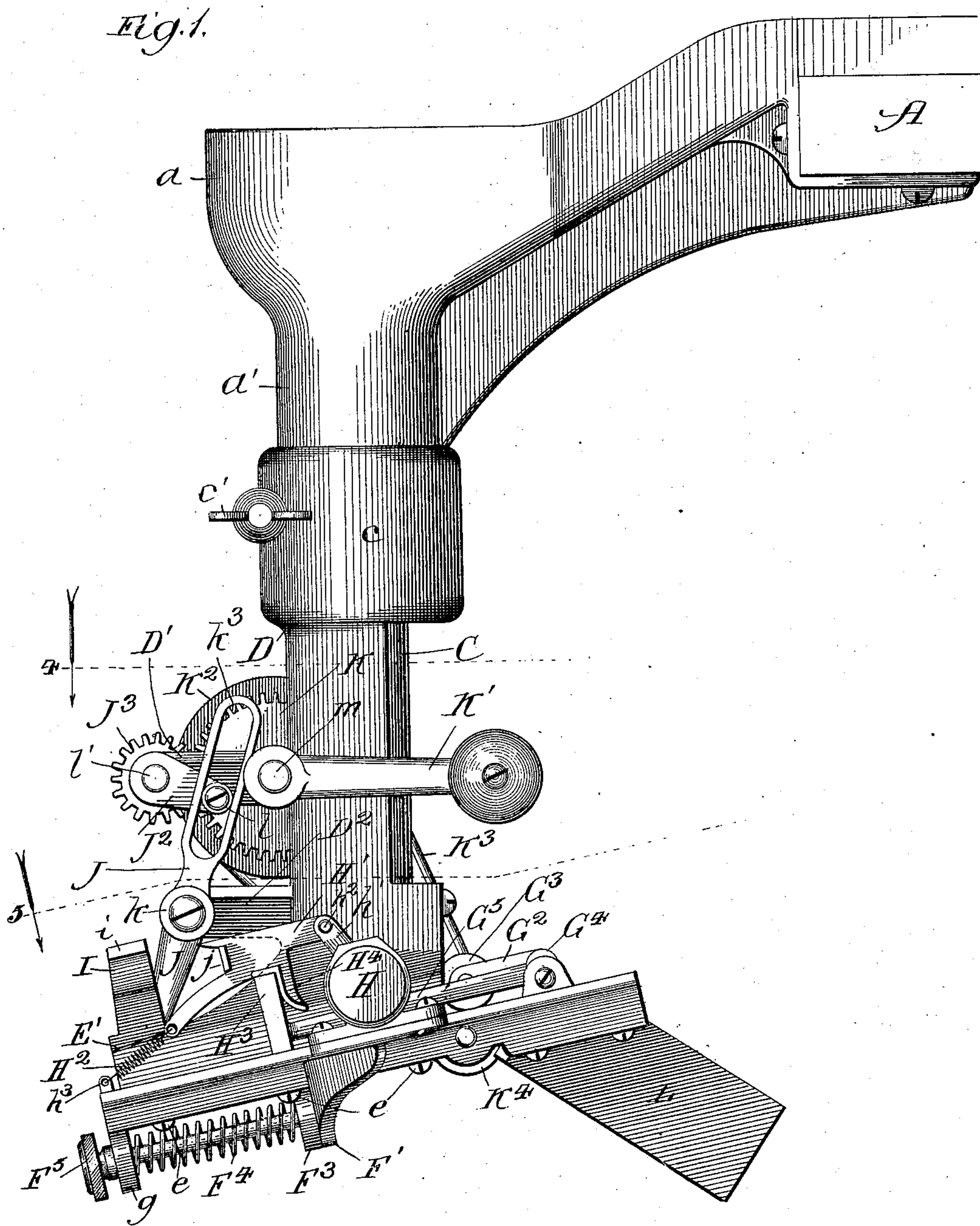
Patented Dec. 10, 1901.

T. I. PORTER & H. W. ABBOTT.
COUNTING MACHINE.

(Application filed June 7, 1900.)

(No Model.)

4 Sheets—Sheet 1.



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Fig. 2.

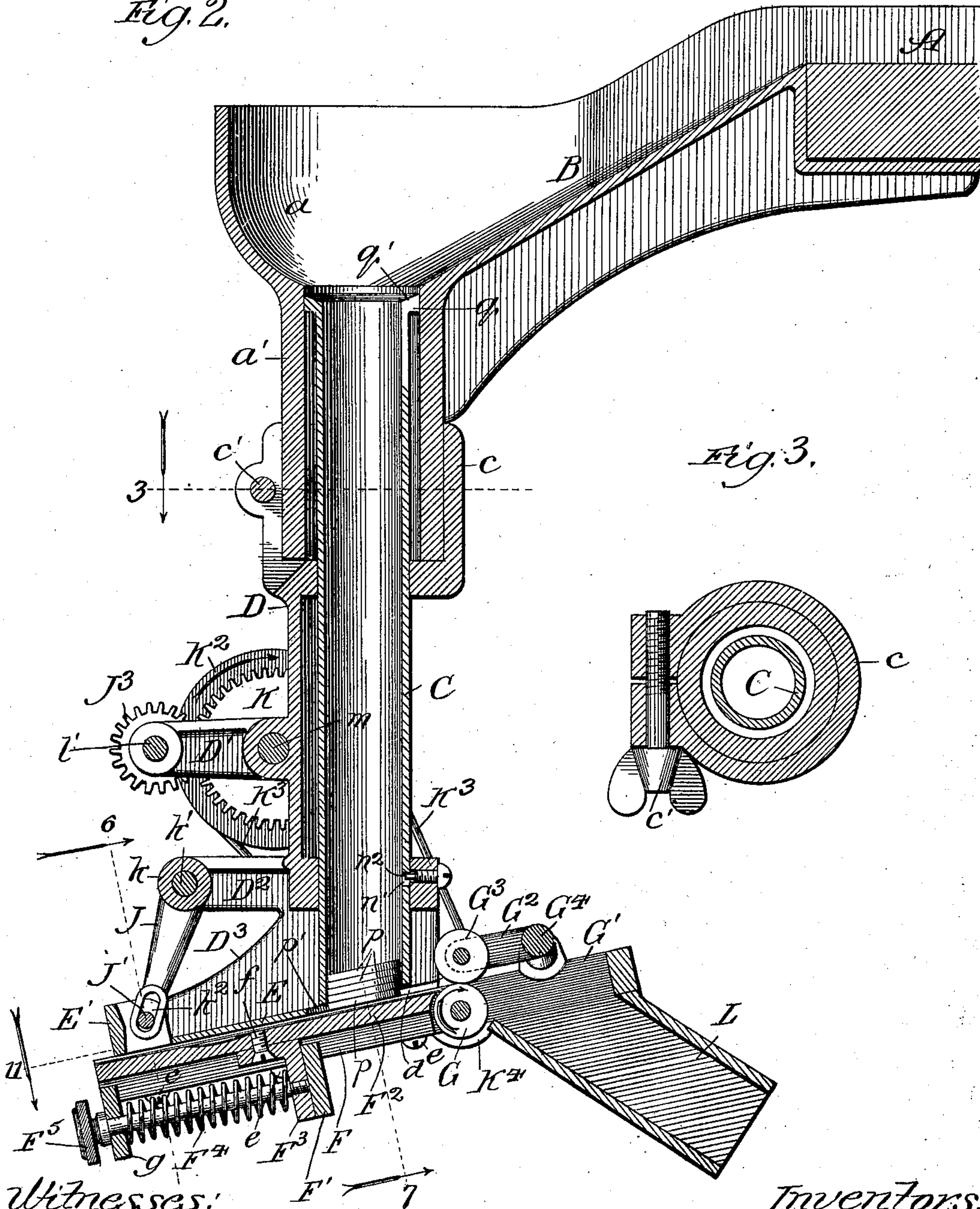


Fig. 3.

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Fig. 9.

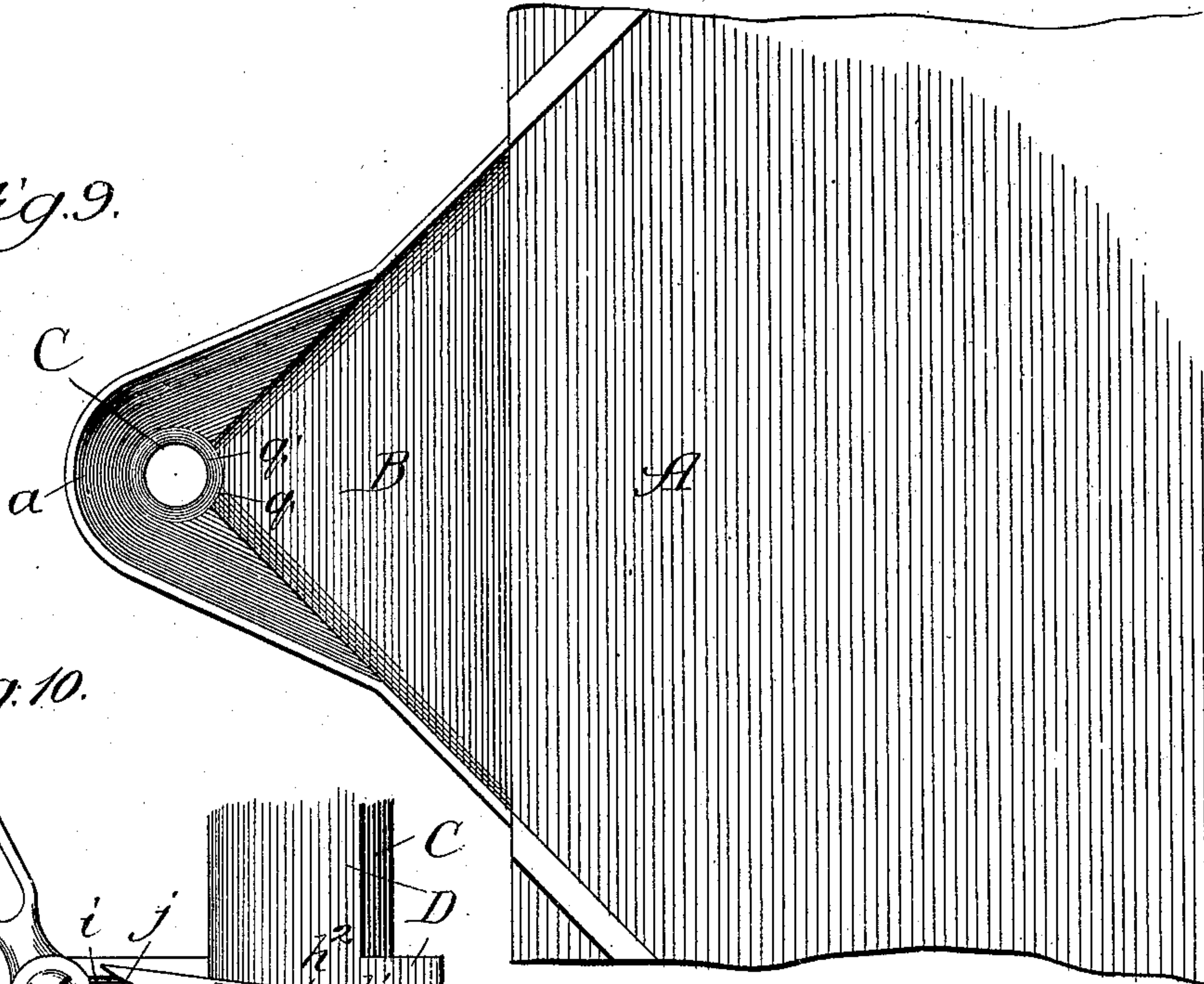


Fig. 10.

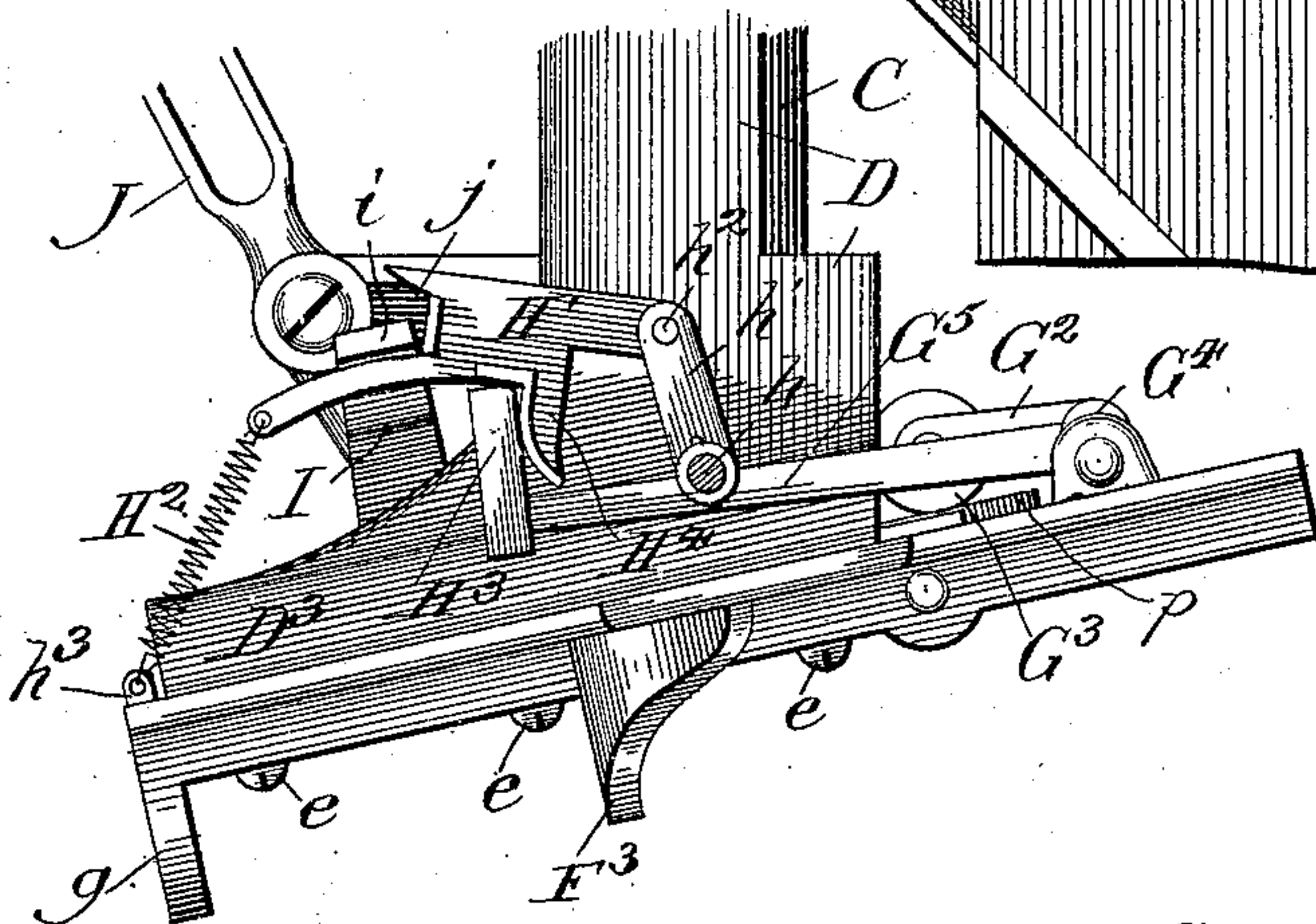
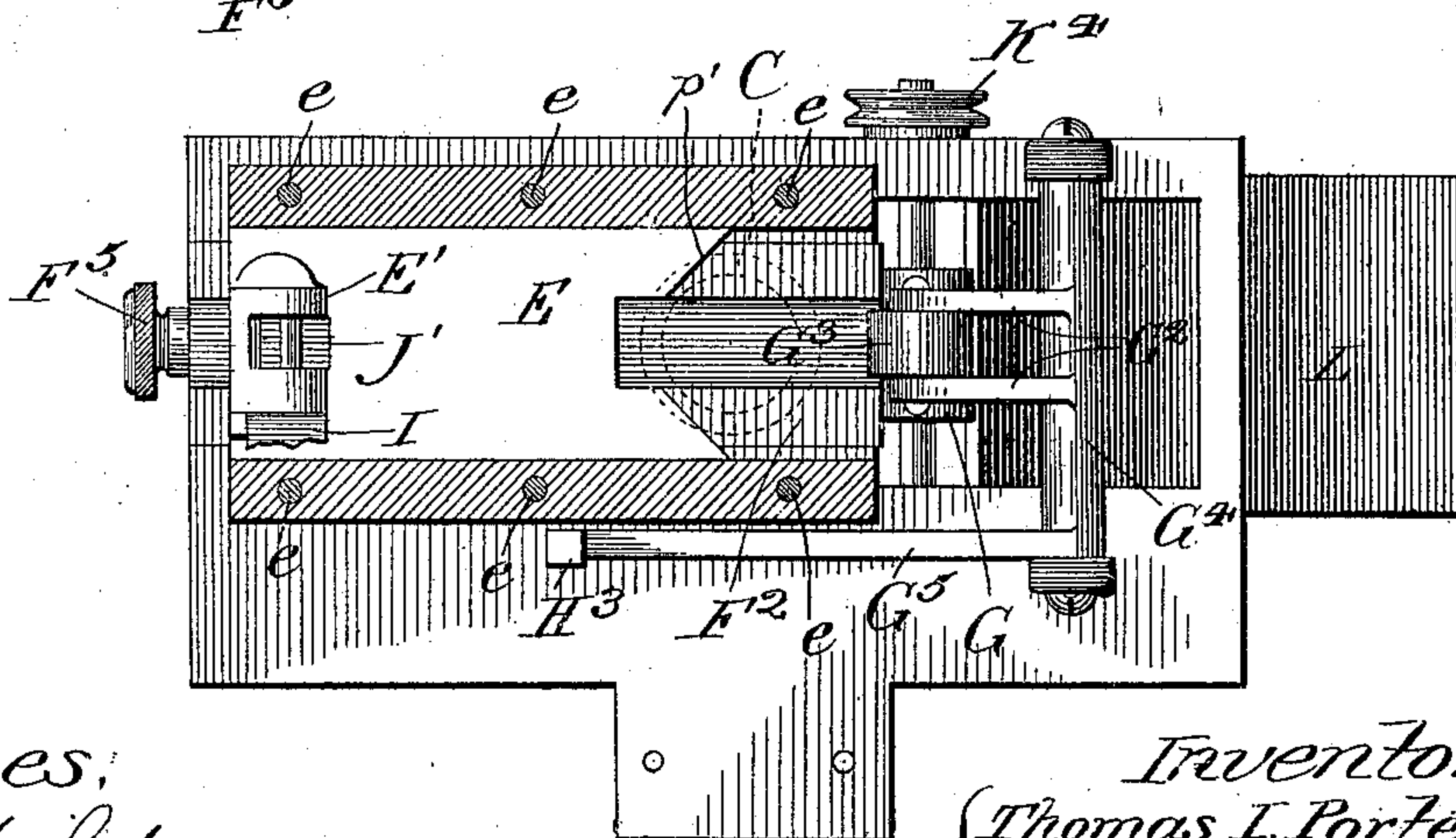


Fig. 11.



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UNITED STATES PATENT OFFICE.

THOMAS I. PORTER AND HARRY W. ABBOTT, OF CHICAGO, ILLINOIS,
ASSIGNORS, BY DIRECT AND MESNE ASSIGNMENTS, TO THE PORTER
COINOMETER COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF
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COUNTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 688,545, dated December 10, 1901.

Application filed June 7, 1900. Serial No. 19,429. (No model.)

To all whom it may concern:

Be it known that we, THOMAS I. PORTER and HARRY W. ABBOTT, citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Counting-Machines, of which the following is a specification.

Our invention relates particularly to automatically-operating machines for counting coins, although the invention may be advantageously employed in machines for counting flat disks, medals, or the like.

Our primary object is to provide a machine of simple construction and perfect operation which may be employed for counting coins of any denomination.

In the preferred construction there are employed a vertically-disposed coin-tube, a reciprocating slide for ejecting the coins as they gravitate to the bottom of the tube, a rock-arm beneath which the coin is forced flatwise by said slide, a register-actuating device which is preparatorily moved through the medium of said rock-arm, and means carried by the mechanism for positively moving said actuating device to cause the register to operate.

The accompanying drawings illustrate our invention in its preferred embodiment.

In the drawings, Figure 1 is a view in side elevation, showing the counting-machine, the casing, however, being left off to expose the moving parts and the hopper or platform being broken away; Fig. 2, a central vertical section taken as indicated at line 2 of Fig. 5; Fig. 3, a horizontal section taken as indicated at line 3 of Fig. 2; Figs. 4 and 5, horizontal sections taken as indicated at the corresponding lines of Fig. 1; Fig. 6, a broken section taken as indicated at line 6 of Fig. 2; Fig. 7, a broken section taken at the corresponding line of Fig. 2; Fig. 8, a similar view showing the manner in which provision is made for ejecting a deformed coin; Fig. 9, a broken plan view of the hopper and inclined chute connected therewith; Fig. 10, a broken view principally in side elevation, a portion being in section, however, as indicated at line

10 of Fig. 5; and Fig. 11, a plan section taken as indicated at line 11 of Fig. 2.

A represents a hopper or platform upon which the coins are deposited; B, Figs. 2 and 9, an inclined coin-chute having converging side walls and ending in a dished portion *a*, from which depends a hollow boss *a'*; C, a coin-tube which in the form shown telescopes with the hollow boss *a'*; D, a housing having a split ring *c*, which is clamped to the boss *a'* by means of a screw *c'*; D' and D², brackets projecting from the front side of the housing D; D³, inclined guides supported from the lower end of the housing D and supplied with grooves *d*; E, a coin-ejecting slide moving in the grooves *d*; F, a bottom piece or lower frame-piece detachably secured to the guides D³ by screws *e*; F', a strengthening cross-rib for the part F and affording also a stop; F², a normally closed spring-held slide affording a bottom for the coin-tube C; F³, a steel lug or stop depending from the slide F² and secured thereto by a screw *f*; F⁴, a spring confined between the stop F³ and a cross-piece *g* at the front end of the part F; F⁵, an operating-handle having a stem projecting through the cross-piece *g* and the coil-spring F⁴ and screwed into the stop F³ and serving to move the slide F² when it is desired to allow the contents of the tube C to drop through; G, a roller journaled in rearwardly-extending projections G' of the frame-piece F; G², a bifurcated rock-arm having a coin-engaging roller G³ and itself secured to a rock-shaft G⁴, journaled in lugs on the extensions G'; G⁵, a rock-arm connected with the shaft G⁴ and moving therewith; H, a counting or registering device of common construction, the same being supplied with a rock-shaft *h* and a rock-arm *h'*, through the medium of which the registering mechanism is moved; H', an actuating-arm pivotally connected to the free end of the arm *h'* at a point *h*²; H², a retractile spring connected with the arm H' and a lug *h*³ on a stationary part; H³ and H⁴, contacting lugs or stops on the rock-arm G⁵ and the arm H', respectively; I, an arm projecting from a driving-head E', with which the slide E is provided, and having a laterally-

projecting lug i , which serves to engage a recess j in the free end of the arm H' when the arm H' is in its lifted position; J , a lever having a central horizontal pivotal boss k , journaled on a shaft k' , supported by the bracket D^2 and provided at its lower end with a slot k^2 and at its upper end with a slot k^3 ; J' , a pin connecting the slotted lower end of the lever J with the head E' of the slide E ; J^2 , a crank having a roller l traversing the slot k^3 of the lever J and supported on a crank-shaft l' , journaled in the bracket D' ; J^3 , a pinion on the shaft l' for communicating motion thereto; K , a gear in engagement therewith and fixed to a shaft m , journaled in the bracket D' ; K' , a handle for rotating the shaft m ; K^2 , a grooved pulley fixed to the shaft m ; K^3 , a belt for transmitting motion from the grooved wheel K^2 to the grooved wheel K^4 , fixed to the shaft of the roll G , and L a discharge-chute located beneath and in the rear of the rollers G and G^3 .

The lower end of the coin-tube C is shown inclined to correspond with the general inclination of the guides for the slide E . Said tube rests upon the slide E at its front side, while its rear side is raised slightly above the plane of the slide, as shown in Fig. 7. The rear side is also provided with a curved central shallow recess n , as shown in Fig. 7, the purpose whereof is to allow any upwardly-bowed coin to pass out beneath the coin-tube. The coin-tube is vertically movable and is provided with a slot n' , into which projects a stud n^2 , carried by the housing D . By this means the tube is limited in its movement. Fig. 7 shows the normally stationary slide F^2 , forming the bottom for the coin-tube, to be provided with a longitudinal slot n^3 , the purpose whereof is to permit coins which are bowed downwardly to pass from the machine.

In Fig. 2 the coin-tube is shown supplied with coins p . In Figs. 2 and 11 the slide E is shown notched or provided with a V-shaped recess p' for receiving the coins.

In practice one hopper A and inclined chute B are employed for use with coins of different denominations, but not differing greatly in size—such as dimes, pennies, nickels, and quarters—and another hopper and inclined chute are employed for larger coins of different denominations, such as half-dollars and dollars. For each denomination there is employed a coin-tube C , a housing D , and all the movable parts connected therewith. It will be seen that by unturning the screw c' all below the part a' may be removed and that similar mechanism for coins of another denomination may be applied to the inclined chute. We have shown the tube C telescoping with the hollow boss a' and provided at its upper end with a collar q , having an inclined upper surface q' . The tube is shown of proper size to receive dimes. It will be understood that the collar q may be omitted and the tube C increased in diameter to enable it to receive pennies and nickels. If desired, that portion of the tube

which enters the hollow boss a' may be omitted and the upper end of the tube caused to abut against the lower end of the boss, thereby producing a tube of sufficient size to receive quarters. Similarly a hopper A and chute B may be provided for half-dollars and dollars, and coin-tubes, housings, and mechanism for the several denominations may be provided, to be attached to or detached from the boss a' at will.

The operation of the machine will be readily understood from the foregoing description. By turning the crank K' motion is imparted through the grooved wheel K^2 and belt K^3 to the roll G and through the gear K and pinion J^3 to the crank J^2 , whereby a reciprocating motion is imparted to the lever J and the coin-ejector E . As the ejector forces a coin between the rollers G and G^3 (see Fig. 10) the arm G^2 is rocked upwardly, turning the shaft G^4 and raising the long rock-arm G^5 . The upward extension H^3 at the free end of the arm G^5 engages the lower edge of the spring-held actuating-arm H' and raises the latter till the recess j is in position to be engaged by the lug i on the arm I . As the ejector continues its movement the lug i forces the arm H' bodily along, thereby causing it to move the rock-arm h' a sufficient distance to cause the counter to register the movement. As the ejector returns to its starting position the lug i is disengaged from the recess j and the retractile spring draws the arm H' down to its normally lowered position. Should the slide E encounter a thick coin, it will nevertheless eject it, the coin-tube C being raised by the coin in its passage in some instances. In other instances, where the coin is bowed up but slightly, the coin may pass beneath the coin-tube without raising the tube. This may be true also where the coin is bowed downwardly, as shown in Fig. 8, the passage being facilitated by the slot n^3 . Should the ejector fail to give to the coin sufficient momentum to carry it to the discharge-chute, the friction-roller G will serve to complete the discharge. It will be observed that as the crank J^2 revolves it acts upon different portions of the lever J , and consequently the slide E has a varying velocity. The parts are so timed that when the crank engages the upper portion of the slot k^3 , thereby giving to the slide its slowest movement, the slide is engaged in the work of ejecting the coin. The return movement is accomplished while the crank engages the lower portion of the slot, and consequently the return movement is faster than the ejecting movement.

In practice the coins are spread out by the operator for inspection at the edge of the platform A and are shoved over onto the inclined chute B , whence they gravitate to the coin-tube. When the coin-tube is filled, and, if desired, also the inclined chute B , the operator turns the crank of the machine till all the coins have been ejected one by one and their passage registered at the counter. It is

found that the coins will almost invariably fall flatwise into the tube C. If by any chance the coins should become wedged, or remain on edge in the tube, or a very badly deformed coin should accidentally be passed into the tube, the slide F² may be withdrawn to permit the contents of the tube to fall through.

As will be readily understood from a view of Fig. 2, the purpose of inclining the bottom of the coin-tube is to cause the coins to tend to gravitate against the front wall of the coin-tube, whereby the coin being ejected may be more readily slipped from beneath the coin immediately above it, and thus have little tendency to draw the superimposed coin along with it.

By means of our improved machine coins may be counted with exceedingly great rapidity. It will be understood that any suitable registering device may replace the device H, the latter being a device now purchasable upon the market, and hence not described in detail. It is believed to be broadly new to employ a coin-tube for conducting the coins, superimposed upon each other in a single column, to a coin-ejecting slide which serves to eject the coins one at a time. It is also believed to be broadly new to cause the coin during its ejection to preparatorily move an actuating device for the register to place the same in position to be engaged and positively moved by a part of the moving mechanism, and thereby cause a registration of the movement.

Modifications within the spirit of our invention may be made, and hence no limitation is intended by the detailed description given above except as shall appear from the appended claims.

What we claim as new, and desire to secure by Letters Patent, is—

1. In a device of the character described, having an ejector, a vertically-movable coin-tube located directly above said ejector and yielding to permit passage of abnormal coins, substantially as described.

2. The combination of a coin-tube, a movable bottom therefor exposed from below and capable of being opened to permit the tube's contents to fall from the machine, an ejector moving between said tube and said bottom, a register, and mechanism for moving said register, substantially as and for the purpose set forth.

3. The combination of a coin-tube, a reciprocating slide moving transversely of the lower end thereof, a bottom for said tube beneath the plane of said slide, said tube being provided at its rear side immediately above the path of the slide with a curved recess *n*, an arm extending into the path of ejection and movable by a coin during the ejection thereof, a register, and an actuating device for the register movable through the medium of said arm, substantially as described.

4. The combination of a coin-tube, a recip-

rocating ejector-slide at the base thereof, a bottom for said coin-tube having a relatively wide recess on its upper surface extending parallel to the path of the ejector, said bottom serving also to support the coin during ejection, an arm extending into the path of ejection and movable by a coin during the ejection thereof, a register, and an actuating device for the register movable through the medium of said arm, substantially as described.

5. The combination of a coin-tube, a reciprocating slide, a positively-rotated friction-roller beneath and in the rear of the lower end of said tube, a coin-actuated rock-arm between which and said roller the coins pass as they are ejected, a register, and an actuating device for said register movable through the medium of said rock-arm, substantially as described.

6. The combination of a coin-tube, a reciprocating ejector-slide, a rock-arm movable by a coin during ejection, a register, an actuating device therefor, means movable with said rock-arm for preparatorily moving said actuating device, and means moving with said slide and serving to engage said actuating device and effect a registration, substantially as and for the purpose set forth.

7. The combination of a coin-tube, a reciprocating ejector, a pivoted lever connected with said ejector, a crank engaging said lever in a manner to impart a slower working than return stroke, means for turning said crank, and registering mechanism, substantially as and for the purpose set forth.

8. The combination of a coin-tube, a reciprocating ejector at the base thereof, gear mechanism for moving the ejector, a bottom for the coin-tube, a friction-roller beneath and in the rear of said tube, and means for communicating motion from said gear mechanism to said friction-roller, substantially as and for the purpose set forth.

9. The combination of a coin-tube, a reciprocating ejector-slide, a rock-arm movable by a coin during the passage thereof, a register provided with a rock-arm, an actuating-arm pivotally connected with the rock-arm of the register, a spring connected with said pivotal arm, means movable with the coin-actuated rock-arm for preparatorily moving said spring-held arm, and means carried with said ejector-slide for positively moving said spring-held arm to cause a registration, substantially as and for the purpose set forth.

10. The combination of a coin-chute provided with a depending hollow boss, a housing detachably connected with said boss, a removable coin-tube, and ejecting and registering mechanism carried by said housing, substantially as and for the purpose set forth.

11. The combination of a coin-chute provided with a depending hollow boss, a coin-tube telescoping with said hollow boss, a housing detachably connected to said boss, and ejecting and registering mechanism carried

by said housing, substantially as and for the purpose set forth.

12. The combination of a coin-tube, a normally closed spring-held slide serving as a movable bottom for said tube, an ejector-slide interposed between the base of said coin-tube and said bottom, a register, and mechanism for moving the register, substantially as and for the purpose set forth.
13. The combination of a coin-tube, a register, an actuating device for said register, an ejector, mechanism adapted to be engaged by a coin during its passage from the machine under the action of said ejector and serving to preparatorily move said actuating device, and a moving part projecting from said ejector and serving to engage said actuating device after it has been thus preparatorily moved and through the medium of said device cause a registration, substantially as and for the purpose set forth.
14. The combination of a coin-tube, a reciprocating ejector, an arm in the path of ejection and movable through the medium of the coin during its ejection, a register, an actuating device therefor, an arm movable with said first-named arm and serving to preparatorily move said actuating device, and a moving part projecting from said ejector and serving to engage and positively move said actuating device after the latter has been moved preparatorily during the passage of a coin from the machine, substantially as and for the purpose set forth.
15. The combination of a platform, a depending housing having an expanded base, a coin-tube connected with said housing above the base thereof, a coin-supporting bottom for said coin-tube at said expanded base, an ejector moving on the upper surface of said bottom and beneath said coin-tube, a coin-actuated rock-arm, a register, a register-actuating device preparatorily moved through

the medium of said rock-arm, an arm moving with said ejector and serving to engage said register-actuating device and effect a registration, and ejector-actuating means, substantially as described.

16. The combination of a frame, coin-tube, reciprocating ejector, coin-actuated rock-arm, register having a shaft provided with an arm through the medium of which said shaft is moved in one direction, an automatically-retracted actuating device pivotally joined to said last-named arm, means carried by said coin-actuated arm for lifting said actuating device, and an ejector-carried arm for engaging said actuating device and through the medium thereof actuating the register, substantially as described.

17. The combination of a coin-tube, an ejector projecting in front of the base thereof; a coin-actuated rock-arm in the rear of the base of said tube, an arm moved thereby and projecting in front of said tube, a register, a register-actuating device projecting in front of said tube and preparatorily set by said last-named arm, and ejector-carried means for moving said register-actuating device to effect a registration, substantially as described.

18. The combination of a frame, coin-tube, ejector, shaft, connections between shaft and ejector, friction-roller, connections between shaft and friction-roller, coin-actuated rock-arm, register, actuating device therefor preparatorily set through the medium of said rock-arm, and a moving part for engaging said actuating device after the latter has been set and moving the same, thereby to effect registration, substantially as described.

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In presence of—
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