

No. 771,117.

PATENTED SEPT. 27, 1904.

G. P. BEALE.
REGISTERING TOY BANK.
APPLICATION FILED MAR. 30, 1903.

NO MODEL.

4 SHEETS—SHEET 1.

Fig. 1.

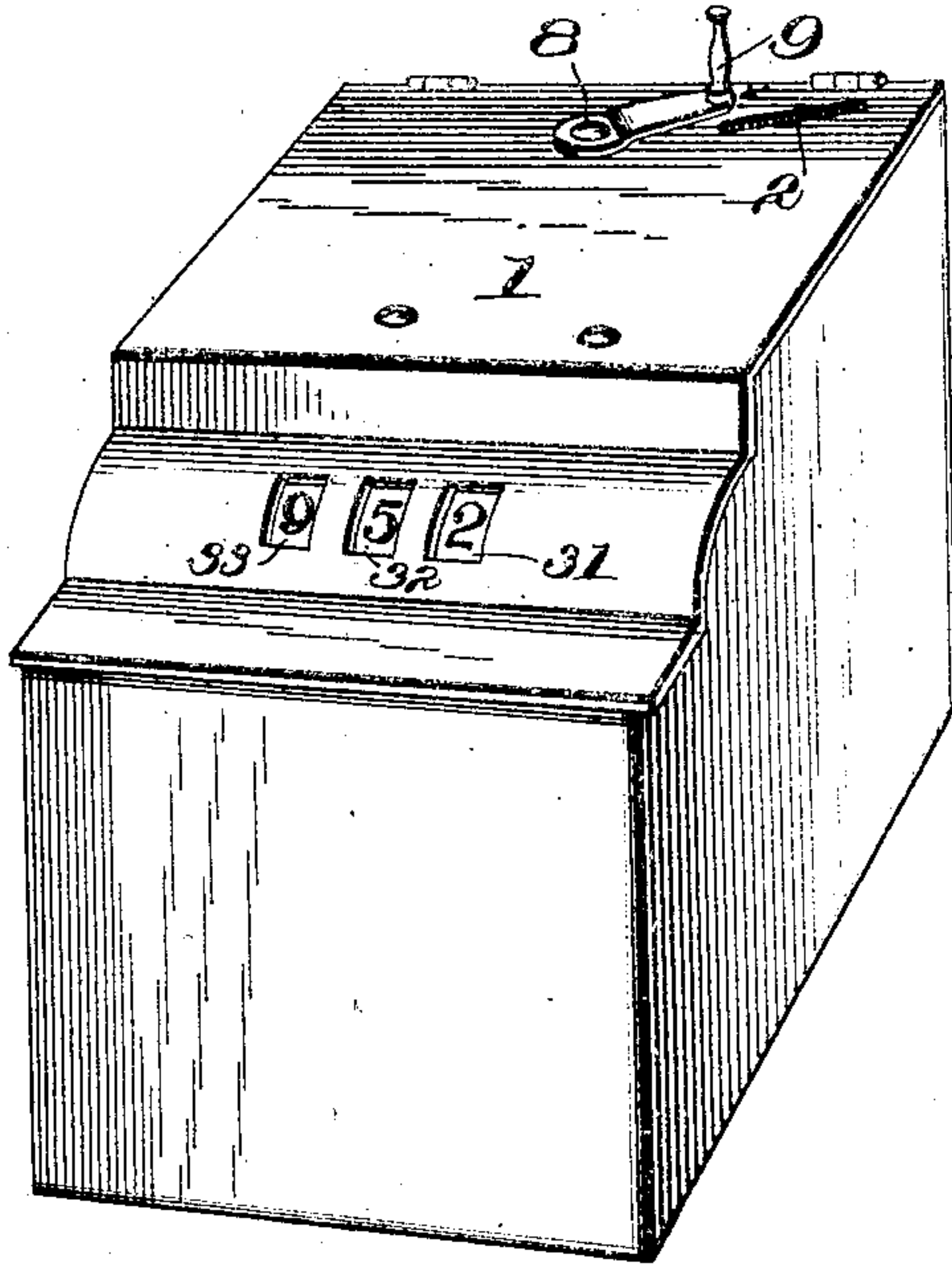
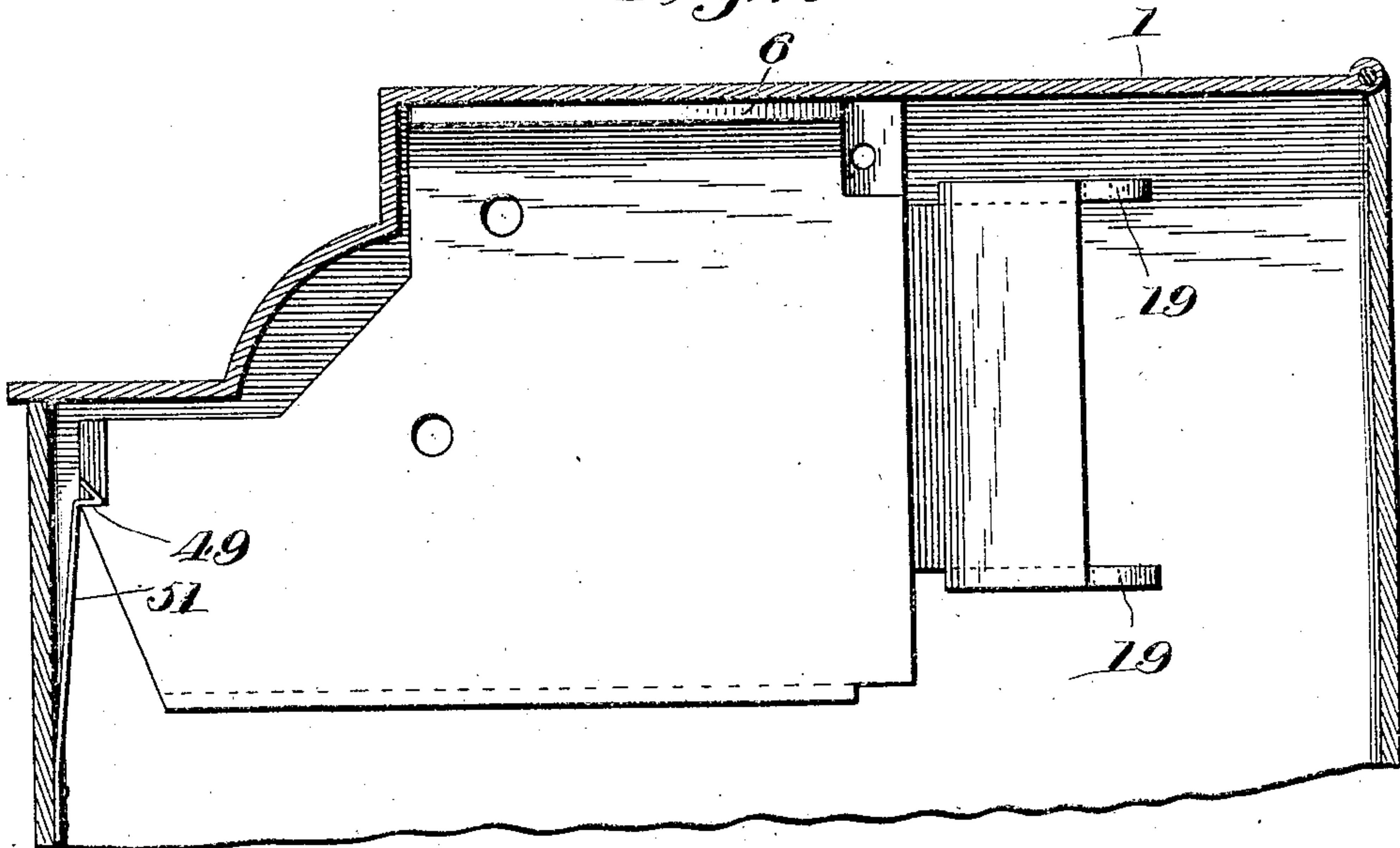


Fig. 2.



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4 SHEETS—SHEET 2.

Fig. 3.

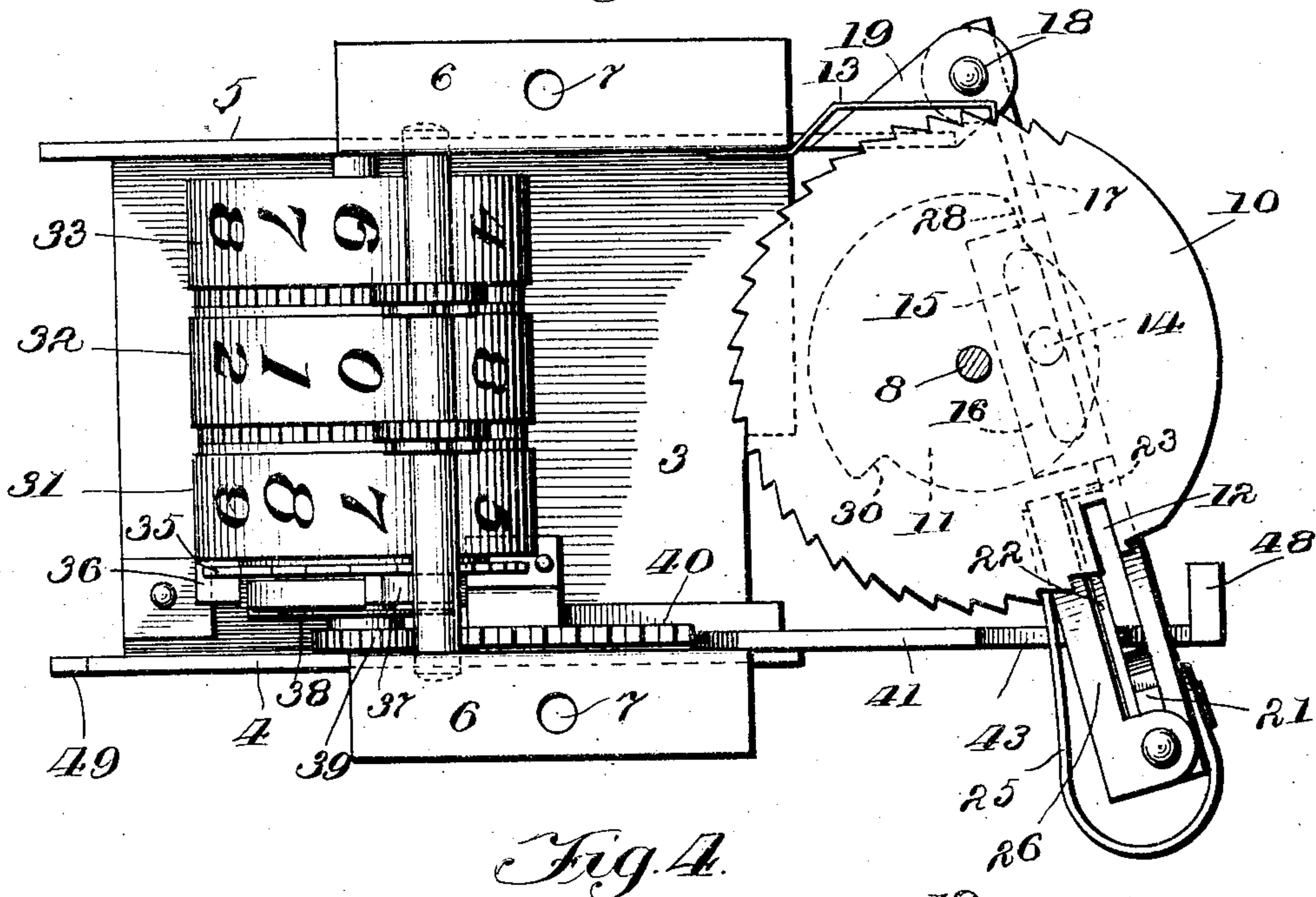
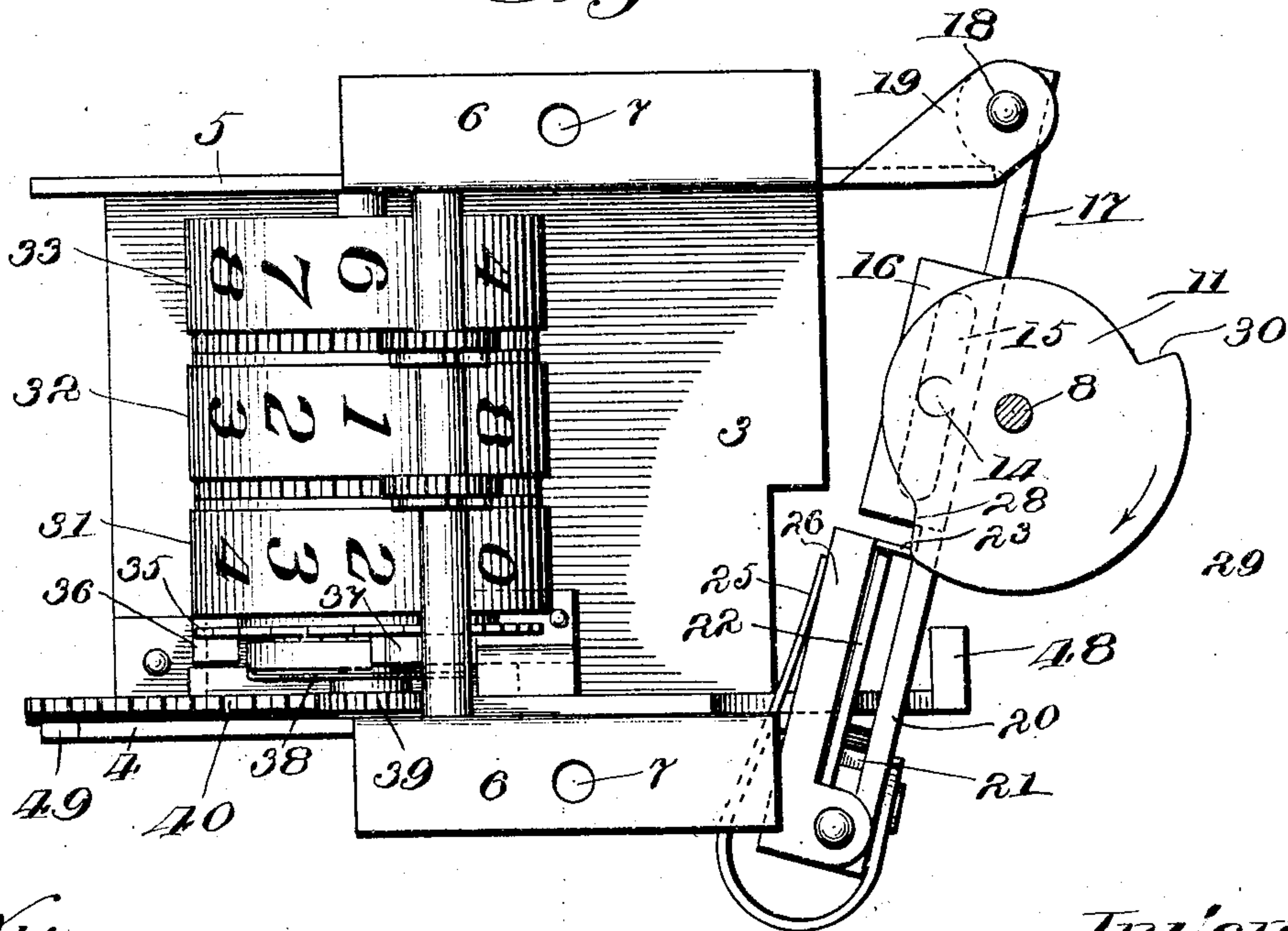


Fig. 4.



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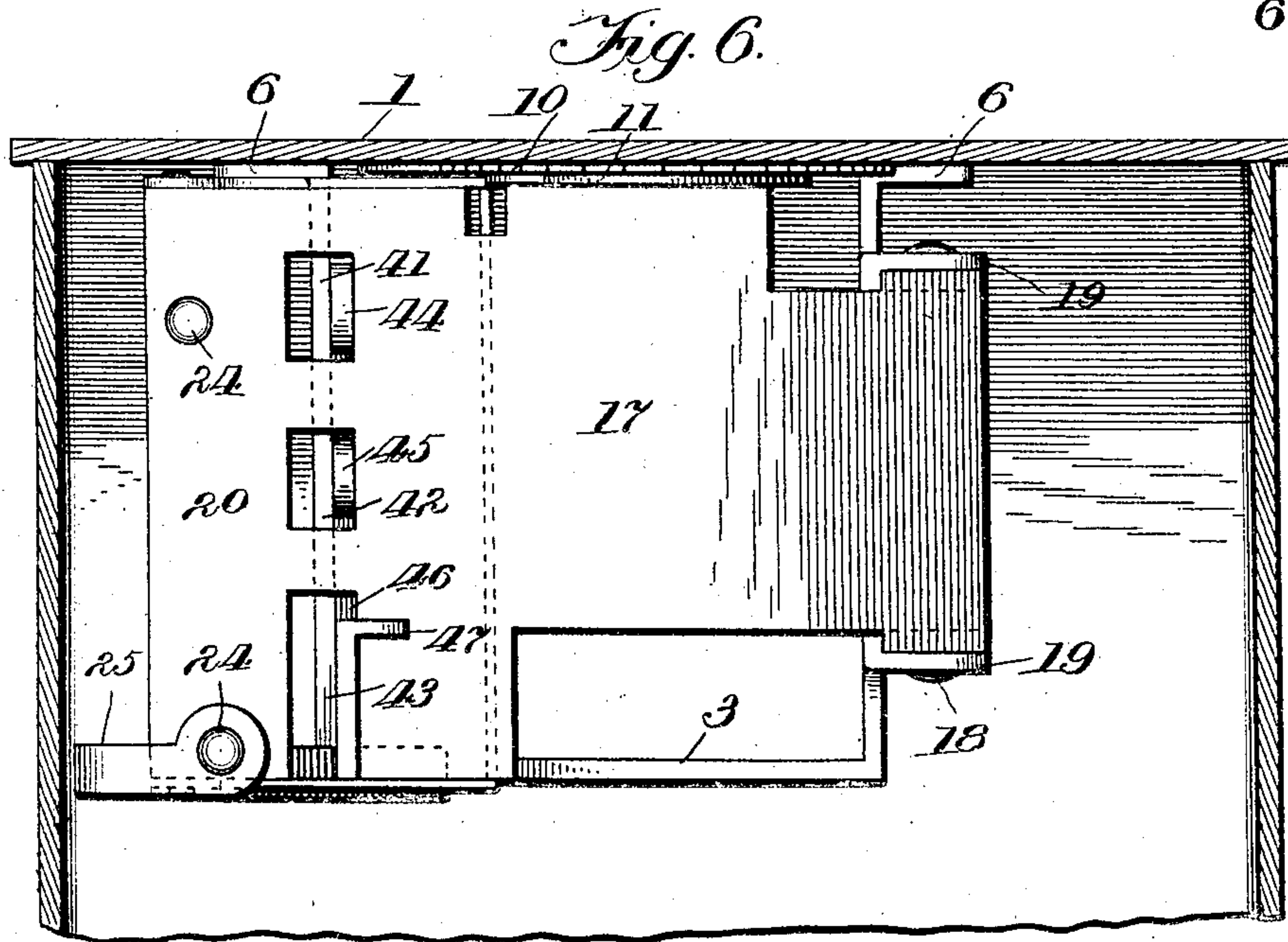
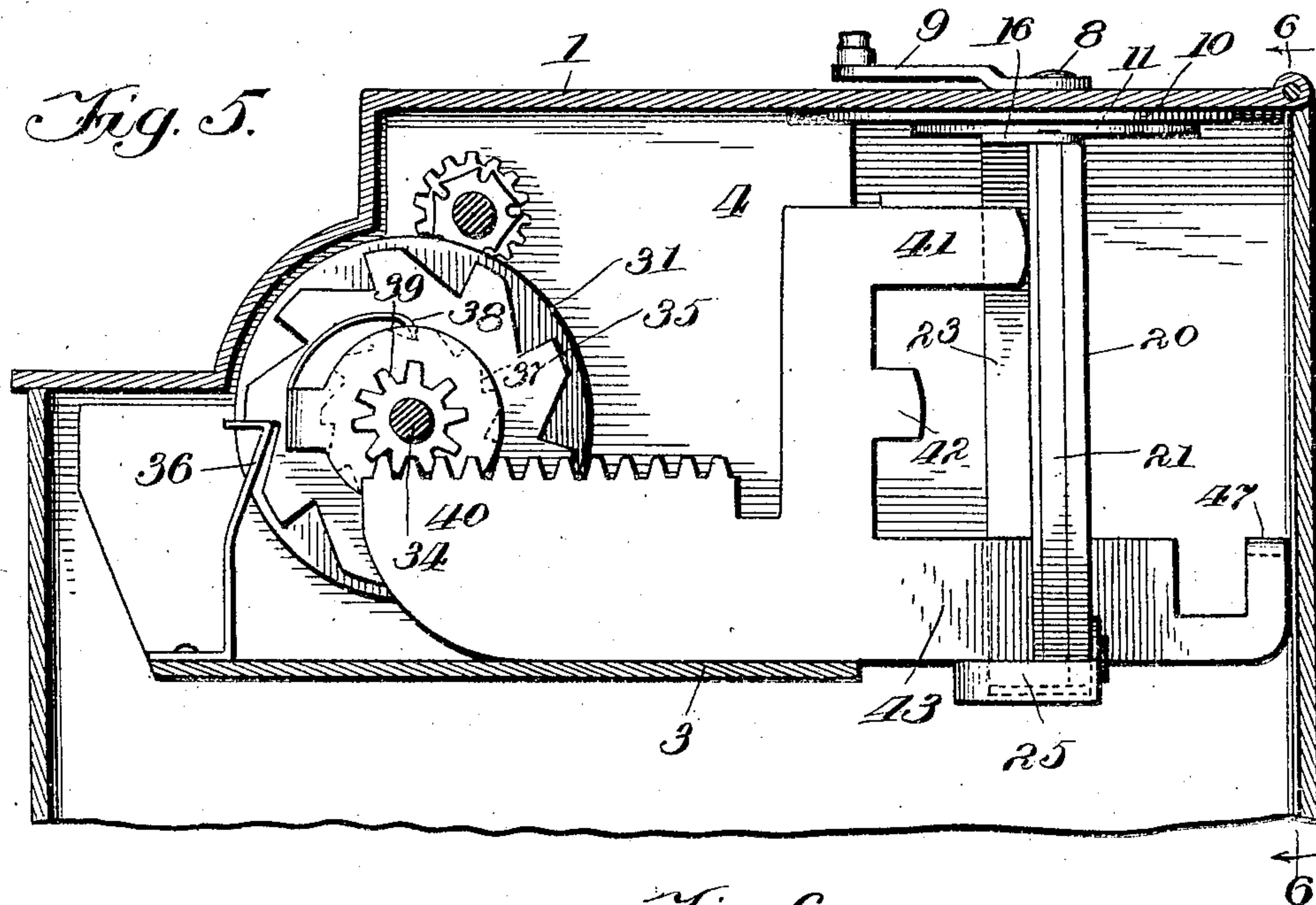
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4 SHEETS—SHEET 3.



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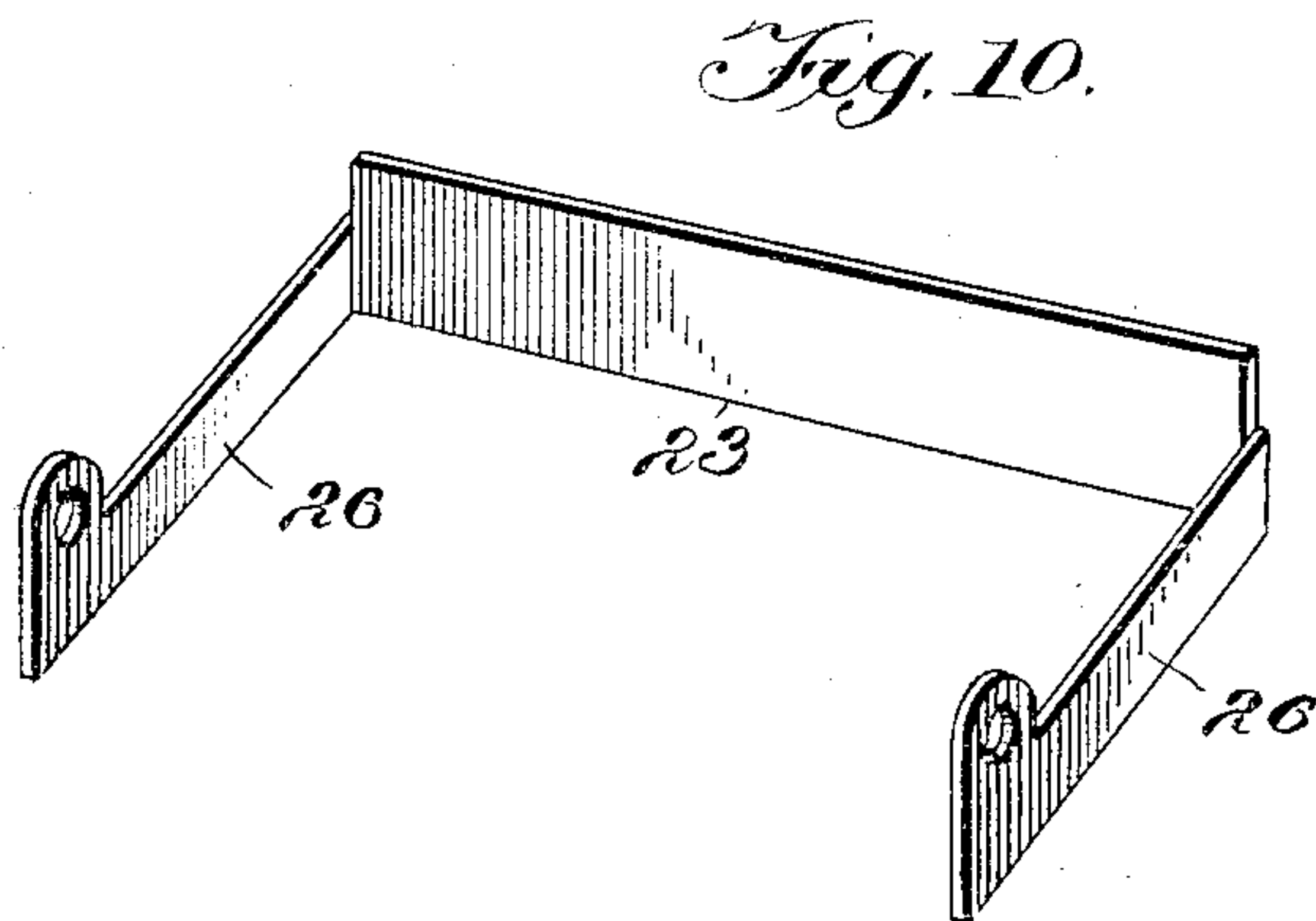
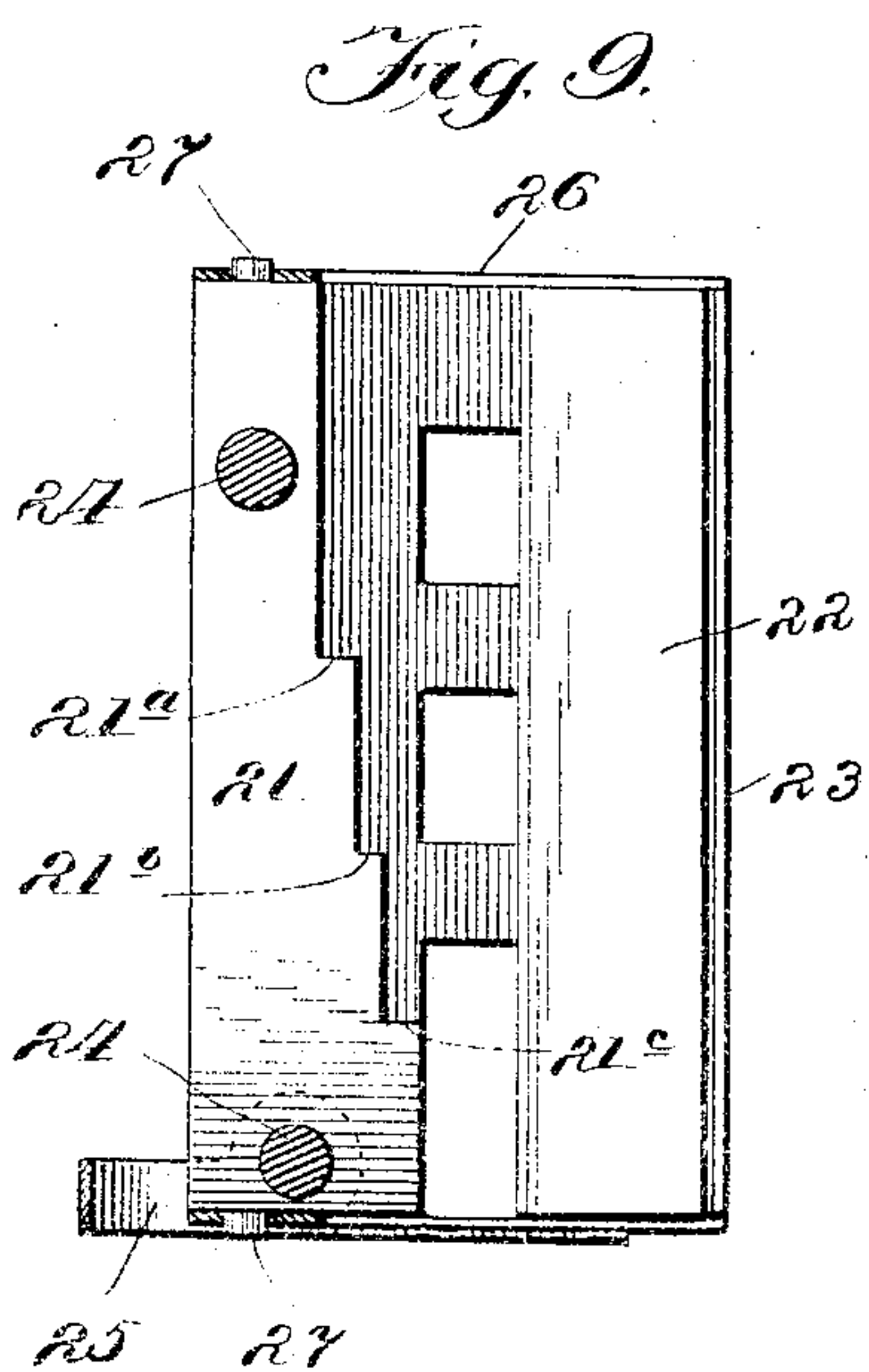
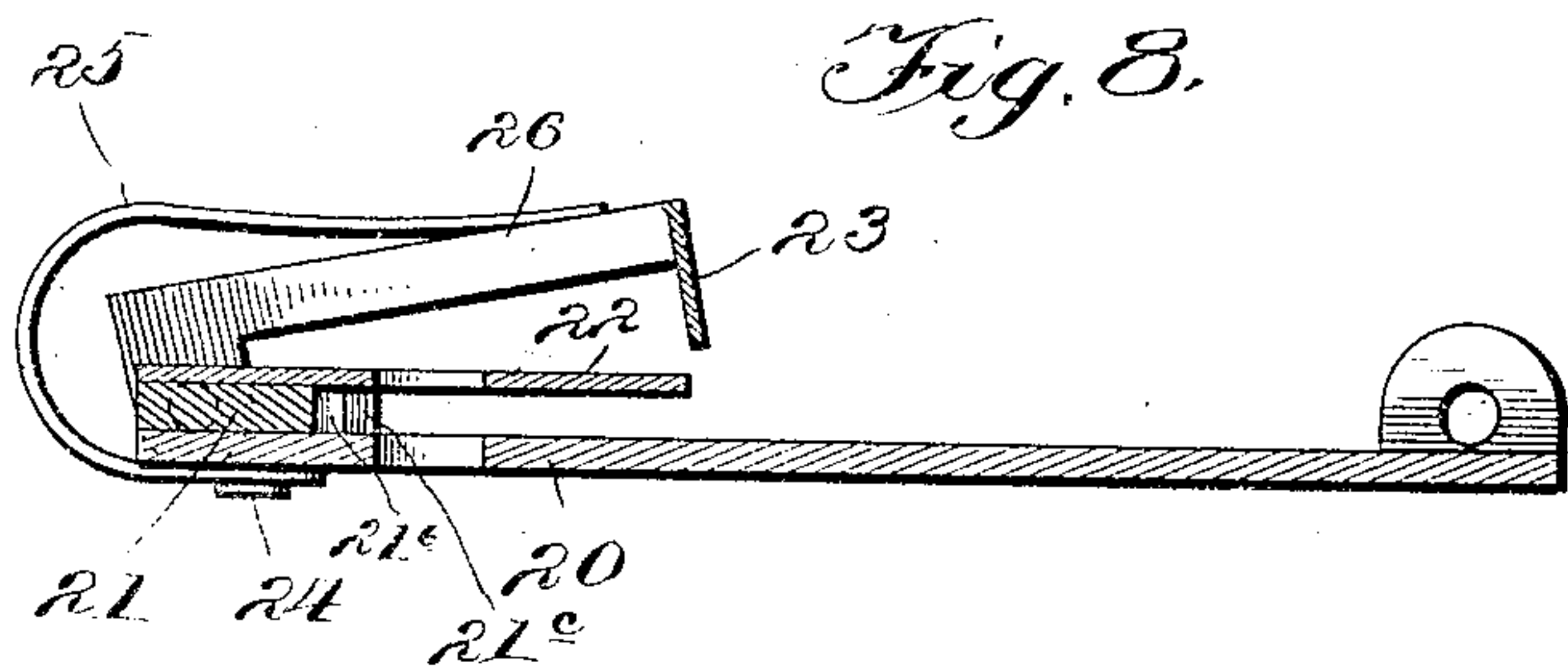
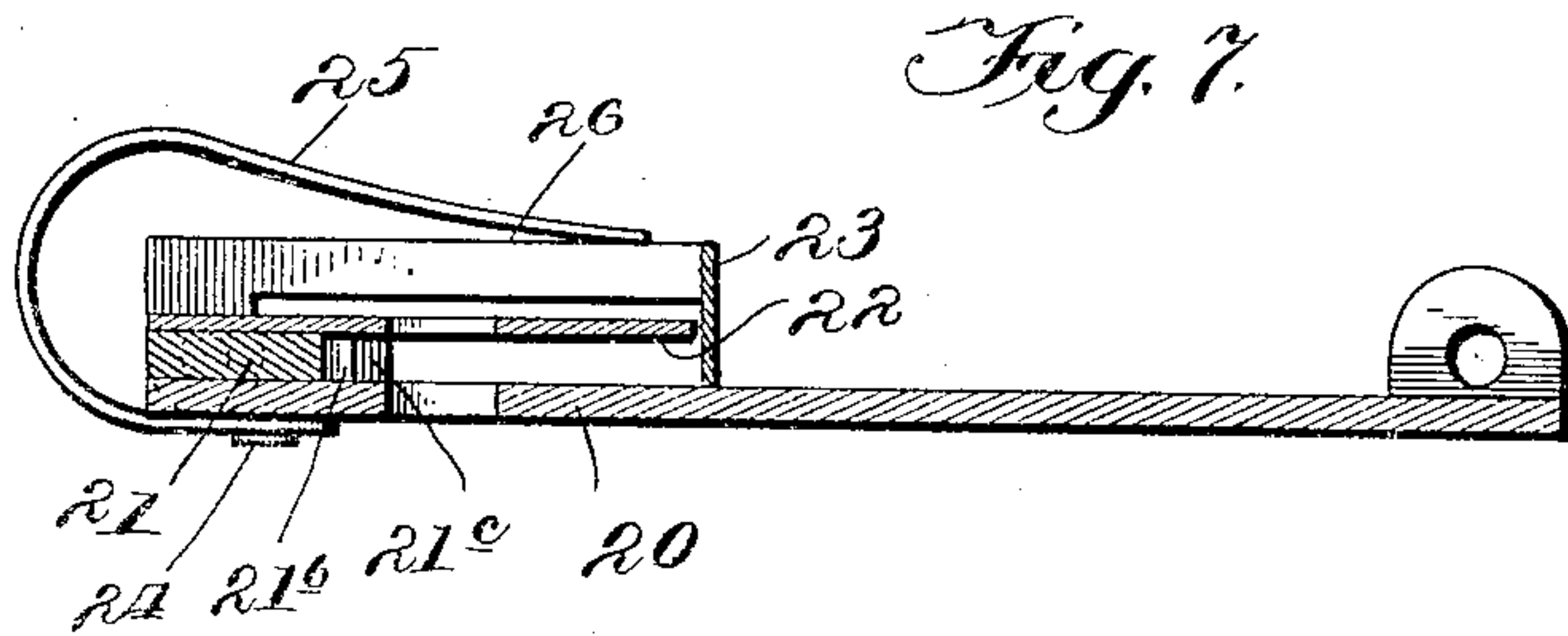
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4 SHEETS—SHEET 4.



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UNITED STATES PATENT OFFICE.

GEORGE B. BEALE, OF CHICAGO, ILLINOIS.

REGISTERING TOY BANK.

SPECIFICATION forming part of Letters Patent No. 771,117, dated September 27, 1904.

Application filed March 30, 1903. Serial No. 150,234. (No model.)

To all whom it may concern:

Be it known that I, GEORGE B. BEALE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Registering Toy Banks, of which the following is a specification.

My original aim was to provide a toy bank with improved mechanism of such construction that in the process of depositing each coin a registering mechanism would be so operated that the sum of all coins deposited can be read at a glance. The essential parts of such a bank are a box or bank proper having a slot for the admission of the coin, a coin-chute into which the coin falls after passing through the slot, an adding-train of some suitable construction, and a device conditioned to be operated by the deposit of a coin and adapted when operated to move one or more wheels of the adding-train through a greater or less distance, depending upon the denomination of the coin deposited. I am aware that, broadly considered, a registering-bank having these characteristics is not new; but all such banks of which I have any knowledge are so constructed that even when carefully manipulated their operation is uncertain and inaccurate, and when not carefully manipulated their operation is so inaccurate that the register is wholly unreliable, even for showing approximately the amount of any given coin deposited or the sum-total of all of the coins deposited. Furthermore, as heretofore constructed such banks may be so manipulated upon the deposit of a single coin as to show an addition to the sum previously deposited of any amount from one cent up to the maximum amount provided for by the register.

The object of my invention is to provide a coin-controlled apparatus of such construction that it is positive and reliable in all of its actions, so that it cannot either through careless handling or intentional manipulation be made to operate otherwise than as intended or to make any error whatever and which when used in connection with an adding-train will operate said train positively and accurately and which when used in connection

with a toy bank will prevent any coin from being extracted through the slot and will prevent any coin from being introduced into the bank proper without causing an operation of the adding-train appropriate to the denomination of the coin deposited.

As above stated, my original aim was to provide a registering-bank; but from the following description it will be seen that many novel features in my invention reside in the coin-controlled apparatus, and I therefore desire to have it understood that I reserve to myself the exclusive right to use coin-controlled apparatus having said novel features for any and all purposes for which they may be adapted. Hence I make no claim in this application for any novel details in the construction of the adding mechanism *per se*, and so far as the generic features of the invention are concerned this adding mechanism may for the purposes of this application be regarded simply as an example of one of the possible uses to which the improved coin-controlled apparatus may be put.

The invention consists in the features of novelty that are hereinafter described with reference to the accompanying drawings, which are made a part of this specification, and in which—

Figure 1 is a perspective view on a small scale of a registering-bank embodying the invention. Fig. 2 is a side elevation of the main bracket and of portions of the box or bank proper on an enlarged scale. Fig. 3 is a plan view of a registering-bank embodying the invention with the top of the bank omitted, the parts being here shown in normal positions. Fig. 4 is a similar view with still other parts omitted, the parts shown being in changed positions. Fig. 5 is a side elevation of a registering-bank embodying the invention with the parts in still other positions, the near side of the box or bank proper and the near side of the main bracket being omitted. Fig. 6 is a vertical section thereof, the plane of the section being approximately indicated by the line 6-6, Fig. 5. Figs. 7 and 8 are horizontal sections of the coin-chute, its supporting-lever and trap, Fig. 7 showing the trap closed and Fig. 8 showing it open. Fig. 9 is an elevation

of the chute and trap with its near side and supporting-lever omitted. Fig. 10 is a perspective view of the trap.

The bank proper may consist of a box or casing of any desired shape or material. In the drawings I have shown it as consisting of a sheet-metal box having a hinged top 1, provided with a slot 2 for the admission of the coins. The main bracket for supporting many of the working parts is secured to the under side of the top. This bracket is made of a piece of sheet-steel bent to provide a bottom portion 3, two side portions 4 and 5, by which the bottom portion is supported, and flanges 6, by which the sides are supported, said flanges being perforated at 7 for the passage of the securing bolts or rivets. The top is perforated for the passage of a shaft 8, which carries above the top a crank 9, by which it may be turned, and below the top a ratchet-wheel 10 and a disk 11. The ratchet-wheel is of such diameter that it extends sufficiently far beneath the slot 2 to close or partially close said slot, excepting when it is in normal position, and it is provided with a notch 12 which when it is in normal position registers with the slot and permits the entrance of the coin. The entire circumference of the ratchet-wheel may, if desired, be toothed; but the requirements will be answered if only a portion of its circumference is toothed, as shown in the drawings. In addition to controlling the slot 2 this ratchet-wheel serves to prevent retrograde movement of the shaft under such conditions as would interfere with the proper operation of the other mechanism hereinafter described, and to this end it is engaged by a spring-dog 13, secured to the side 5 of the main bracket. The disk 11 carries an eccentrically-mounted crank-pin which projects into a slot 15, formed in a flange 16, projecting horizontally from a lever 17, which is fulcrumed at 18 to arms 19, carried by the side 5 of the main frame, so that as the disk rotates in the direction indicated by the arrow the lever and the parts carried by it will be moved back and forth about the fulcrum 18 between the positions shown in Figs. 3 and 4, respectively. This lever 17 carries the coin-chute, which is made up of a portion 20 of the lever itself, a gage-plate 21, a plate 22, and a part 23, hereinafter called the "coin-trap." The portion 20 of the lever and the plate 22 constitute the two broad sides of the chute, the gage-plate 21 constitutes one of the narrow sides of the chute, and the coin-trap 23 constitutes the remaining narrow side of the chute. The lever 20, gage-plate 21, and plate 22 are perforated for the passage of rivets 24, by which they are permanently secured together, one of said rivets being made use of for the further purpose of securing to the coin-chute one end of a spring 25, the other end of which has frictional contact with the trap 23 for holding it normally in position to close one side of the chute, said trap being provided with

arms 26, which are pivoted to studs 27, projecting from the upper and lower ends of the gage-plate 21, so that the trap may be swung to a position which will permit the coin to drop out of the chute. For the purpose of moving the trap from its normal position the disk 11 has a cam-shaped periphery having a lifting-surface 28 so disposed with relation to the crank-pin 14 that when the lever 17 has reached the limit of its movement in one direction under the influence of said crank-pin (see Fig. 4) the lift 28 will engage the trap 23 and move it from the position shown in Fig. 7 to the position shown in Fig. 8. This leaves the chute with only three sides and permits the coin to fall out at the side thus vacated by the trap 23. The summit 29 of the cam is of sufficient length to hold the trap open long enough to insure the discharge of the coin, and its terminus 30 reaches the trap 23 sufficiently before the parts arrive at normal positions to enable the spring 25 to again close the trap.

The gage-plate 21 is provided on its inner edge with a succession of shoulders 21^a, 21^b, and 21^c, or, in other words, its inner edge is offset, so that the chute is of graduated width from top to bottom, being larger at the top than at the bottom. The drawings show a chute intended for receiving pennies, nickels, and dimes. Dimes will fall through the chute and be arrested by the shoulder 21^c, while nickels and pennies will be arrested by the shoulders 21^a and 21^b, respectively. Thus the graduated width of the chute determines the places at which the coins of different sizes are arrested. Since the sizes bear known relations to the denominations, the position of a coin in the chute may be relied upon for effecting further operations appropriate to its denomination.

Considering only the parts thus far described, it will be seen that at each complete revolution of the crank-shaft 8 the following operations will take place: During the first half of the revolution the crank-pin 14 will move the lever 17 and the parts carried by it from the positions shown in Fig. 3 to the positions shown in Fig. 4. The lift 28 of the cam will then come in contact with the trap and move it to uncover one side of the coin-chute. The crank-pin 14 will then return the lever to the positions shown in Fig. 3. During a portion of this return movement the summit 29 of the cam will hold the trap open, and just before the return movement is completed the trap will escape from the summit of the cam and permit the spring 25 to again close it. These movements of the lever are positive, and when the movement of the crank-shaft from normal position is once started the ratchet-wheel 10 and spring-pawl 13 will prevent any retrograde movement until the crank-shaft has been turned through a sufficient number of degrees to complete the forward movement of the coin-shaft and, in ad-

dition thereto, open the trap, so as to permit the coin to escape. Furthermore, when the movement has proceeded far enough to remove the coin-chute from register with the slot 2 the ratchet-wheel 10 will cover the slot sufficiently to prevent the entrance of a coin until the operations last above described are completed. Hence it is impossible to introduce a coin into the bank excepting through the medium of the coin-chute, and when once a coin is inserted in the coin-chute no operations can take place excepting those already described. These operations being positive and invariable, the further operations hereinafter described will be equally positive and will depend upon the position at which the coin stops in the chute.

In the drawings I have shown means adapted to be operated by this mechanism when a coin is in the coin-chute for performing two functions—namely, operating an adding-train and releasing a spring-catch—but, as before indicated, the invention in its broadest aspect is not limited to any particular use or adaptation of said mechanism. The adding-train, as shown in the drawings, comprises three wheels 31, 32, and 33, representing, respectively, units, tens, and hundreds and supported by a shaft 34, suitable means for transmitting movement from each of said wheels to the other in succession, a holdback-wheel 35, secured to the units-wheel 31 and engaged by a holdback-spring 36, a ratchet-wheel 37, also secured to the units-wheel 31, a spring-pawl 38, engaging the ratchet-wheel 37, and a pinion 39, carrying the pawl 38 and rotatively supported by the shaft 34. For transmitting movement to the pinion 39 I have shown a rack 40, suitably supported by the main bracket, so as to be capable of sliding endwise, and three fingers or tappets 41, 42, and 43, carried by the rack-bar and so disposed that they correspond, respectively, with the positions which nickels, pennies, and dimes occupy in the coin-chute, the opposite sides of said chute being provided with openings 44, 45, and 46, through which said tappets may either pass completely as the chute is moved back and forth or through which a coin in the chute may have contact with the appropriate tappet. It will be observed that the tappets are of different lengths, that for dimes being the longest and that for pennies being the shortest, or, in other words, assuming the parts to be in normal positions the faces of the tappets are at different distances from the coin-chute, so that depending upon the size, and hence the position of the coin in the chute, the chute will have a greater or less lost motion before the coin comes in contact with the tappet, and the movement of the chute being positively limited by the throw of the crank-pin 14 it follows that the rack will be moved through a greater or less distance, depending upon the length of the tappet through which its move-

ment is derived. For instance, the tappet 43 is of such length that when a dime is in place in the chute the rack will impart one complete rotation to the pinion 39. When a nickel is in the chute, the rack will impart five-tenths of a revolution to said pinion, and when a penny is in the slot the rack will impart one-tenth of a revolution of the pinion.

The opening 46 of the chute extends quite to the bottom of the sides 20 and 22, and through it passes an extension 47 of the rack-bar, which extension carries a finger 48, lying behind and in the path of the chute, so that as the chute moves from the position shown in Fig. 4 to the position shown in Fig. 3 it will engage said finger and draw the rack-bar back to its normal position.

The side 4 of the main frame is provided with a shoulder 49, which is engaged by a spring-catch 51 for holding the top of the box normally closed. This catch is located opposite the end of the rack-bar, so that when the rack-bar is moved to its extreme position it will engage the catch and free the shoulder 49, thereby permitting the top of the bank to be lifted.

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

1. In a device of the class described the combination with an adding-train having means for transmitting movement from each wheel thereof to the next wheel of higher denomination, means for receiving coins of different denominations and of diameters disproportional to their denominations, and means common to all the coins for which provision is made for moving the deposited coin, of means for turning the first wheel of the adding-train, said means having features peculiar to the coins of different denominations and adapted to engage them, respectively, one of said features being adapted to engage the deposited coin, whereby when the coin is moved as aforesaid, the aforesaid means for turning the first wheel of the adding-train is moved a distance proportional to the denomination of the deposited coin, substantially as described.

2. In a device of the class described, the combination of means for arresting coins of different denominations at different points, means for moving the deposited coin, registering mechanism common to all of the coins, and means deriving its movement from the deposited coin for advancing the registering mechanism through an interval proportional to the denomination of the deposited coin, said means for advancing the registering mechanism having features peculiar to the coins of different denominations, respectively, substantially as described.

3. In a device of the class described, the combination of means for receiving coins of different denominations and of different diameters, means for moving the deposited coin flatwise,

(with one of its flat faces in advance,) a movable device having features peculiar to the several coins of different denominations, respectively, each of said features being adapted to engage the flat face of the coin of the denomination to which it is appropriate, whereby when the deposited coin is moved said device will be moved a distance proportional to the denomination of said deposited coin, and mechanism adapted to be operated by said movable device, substantially as described.

4. In a device of the class described, the combination of a chute adapted to receive coins of different denominations and of diameters proportional to their denominations, means for moving said chute laterally and thereby move the deposited coin flatwise, a movable device having tappets peculiar to the coins of different denominations and adapted to engage their flat faces, respectively, each tappet being of a length proportional to the denomination of its appropriate coin, whereby when the chute is moved as aforesaid the appropriate tappet will engage the deposited coin and be moved a distance proportional to its denomination, and mechanism adapted to be operated by said movable device, substantially as described.

5. In a device of the class described, a chute pivoted at one side whereby it is adapted to swing bodily about said pivot, said chute having means for arresting coins of different denominations at different points, one side of said chute consisting of a movable, spring-pressed trap, means for moving the chute about its pivot, means for opening the trap as the chute is completing its forward movement, and mechanism adapted to be engaged and operated by a coin in the chute before the trap is opened, substantially as described.

6. In a device of the class described, the combination with a register and means adapted to derive its movement from a deposited coin, when moved, for operating said register, of a movable device adapted to receive said coin and adapted to be moved manually for moving the coin and causing it to operate the means for operating the register, means for preventing the retrograde movement of said movable device until the coin has fulfilled its function, and means for thereafter discharging the coin, substantially as described.

7. A coin-chute, for use in coin-controlled mechanism, said chute being movable bodily and having means for arresting coins of different denominations at different points, said chute having in its sides openings corresponding with the positions of the several coins respectively, and mechanism having parts adapted to enter said openings and engage the coins within the chute, substantially as described.

8. A coin-chute, for use in coin-controlled mechanism, said chute being movable bodily and having the two opposite sides provided with openings, the graduated gage-plate 21 arranged between the plates 20 and

22 and the movable trap 23, in combination with means for moving the chute, means for entering said openings and engaging the deposited coin, and means for opening the trap and discharging the deposited coin, substantially as described.

9. In a device of the class described, the combination of a coin-chute, a lever movable to and fro carrying the chute, a shaft, means carried by the shaft for moving the lever, a ratchet-wheel carried by the shaft, a pawl engaging the ratchet-wheel for preventing the retrograde movement of the lever before the chute has completed its forward movement, and means for turning the shaft, the chute being provided with means for confining the coin until said forward movement is completed, and means for thereafter releasing the coin, substantially as described.

10. In a device of the class described, the combination of a chute having means for arresting therein coins of different denominations at different points and for confining them until its forward movement is completed, a shaft, means actuated by the shaft for producing the forward movement of the chute, means actuated by the shaft for releasing the coin when the forward movement of the chute is completed, a ratchet-wheel carried by the shaft, and a pawl engaging the ratchet-wheel, the ratchet-wheel being provided with a slot adapted to register with the entrance to the coin-chute for admitting the coin, substantially as described.

11. In a device of the class described, the combination of a movable coin-chute, means for moving it to and fro, said chute having means for arresting coins of different denominations at different points and for confining them until the forward movement of the chute is completed, means for thereafter releasing the coin and mechanism having parts appropriate to coins of different denominations, respectively, for contacting with the coins and thereby deriving movement from the chute, substantially as described.

12. In a device of the class described, the combination of a movable coin-chute, means for arresting coins of different denominations at different points, means for moving the chute to and fro, and mechanism having tappets of different lengths, appropriate to the coins of different denominations, respectively, adapted to engage the coins in the chute, substantially as described.

13. In a device of the class described, the combination of a movable coin-chute having means for arresting coins of different denominations at different points, said chute being provided in its sides with openings corresponding with the positions of the coins, respectively, means for moving the chute to and fro, a rack-bar having tappets of different lengths adapted to engage the coins respectively through said openings and mechanism

adapted to be operated by said rack-bar, substantially as described.

14. In a device of the class described, the combination of a movable chute adapted to receive coins of different denominations means for moving the chute to and fro, a rack-bar having means for engaging a coin in the chute and an adding-train adapted to be operated by the rack-bar, substantially as described.

15. In a device of the class described, the combination of a movable coin-chute having means for arresting coins of different denominations at different points, a lever carrying said chute, mechanism adapted to derive movement from said chute through the medium of the deposited coin, said mechanism having features corresponding with the positions of and adapted to engage the coins of different denominations, respectively, and means for moving the lever to and fro, substantially as described.

16. In a device of the class described, the combination of a movable coin-chute, a lever carrying said chute, mechanism adapted to derive movement from said chute, a shaft, means for turning said shaft and means interposed between said shaft and the lever for moving the latter to and fro, substantially as described.

17. In a device of the class described, the combination of a movable coin-chute having a movable trap for confining a coin therein, mechanism adapted to derive movement from the coin-chute, a shaft, means for turning said shaft, means interposed between the shaft and chute for moving it to and fro and means carried by the shaft for moving the trap and releasing the coin, substantially as described.

18. In a device of the class described, the combination of a movable coin-chute, a lever carrying the chute, mechanism adapted to derive movement from the chute, a shaft, means for turning said shaft, means interposed between the shaft and lever for moving it to and fro and means for preventing retrograde movement of the lever until its forward movement is completed, substantially as described.

19. In a device of the class described, the combination of a movable coin-chute, a lever carrying the chute, mechanism adapted to derive movement from the chute, a shaft, means for turning said shaft, means interposed between the shaft and lever for moving it to and

fro, a ratchet-wheel carried by the shaft and a pawl engaging the ratchet-wheel for preventing its retrograde movement, substantially as described.

20. In a device of the class described, the combination of a movable coin-chute having a movable trap for confining a coin, a lever carrying the chute, mechanism adapted to derive movement from the chute, a shaft, means for turning said shaft, means interposed between the shaft and lever for moving it to and fro and a cam carried by the shaft and adapted to engage and move the trap for releasing the coin, substantially as described.

21. In a device of the class described the combination of a coin-chute having a movable trap, a lever carrying the chute, mechanism adapted to derive movement from the chute, a shaft, means for turning said shaft, a crank-pin carried thereby and occupying a slot in the lever for positively moving it to and fro and a cam carried by the lever and adapted to engage the trap for opening it, substantially as described.

22. In a device of the class described, the combination of a chute movable to and fro and having a coin-trap, means for moving the chute to and fro and mechanism having a rack-bar provided with a surface adapted to contact with a coin in the chute, on one side thereof and provided also with a finger adapted to contact with the chute on the opposite side thereof whereby the rack-bar is positively moved to and fro, substantially as described.

23. In a device of the class described, the combination of a box having a coin-slot, a shaft, means for turning said shaft supported by the box, a disk carried by the shaft and projecting beneath the slot, said disk being provided with a notch adapted to register with the slot, a movable coin-chute adapted to register with the slot, means interposed between the shaft and coin-chute for moving it to and fro, and mechanism adapted to derive movement from the coin-chute, substantially as described.

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