

No. 703,263.

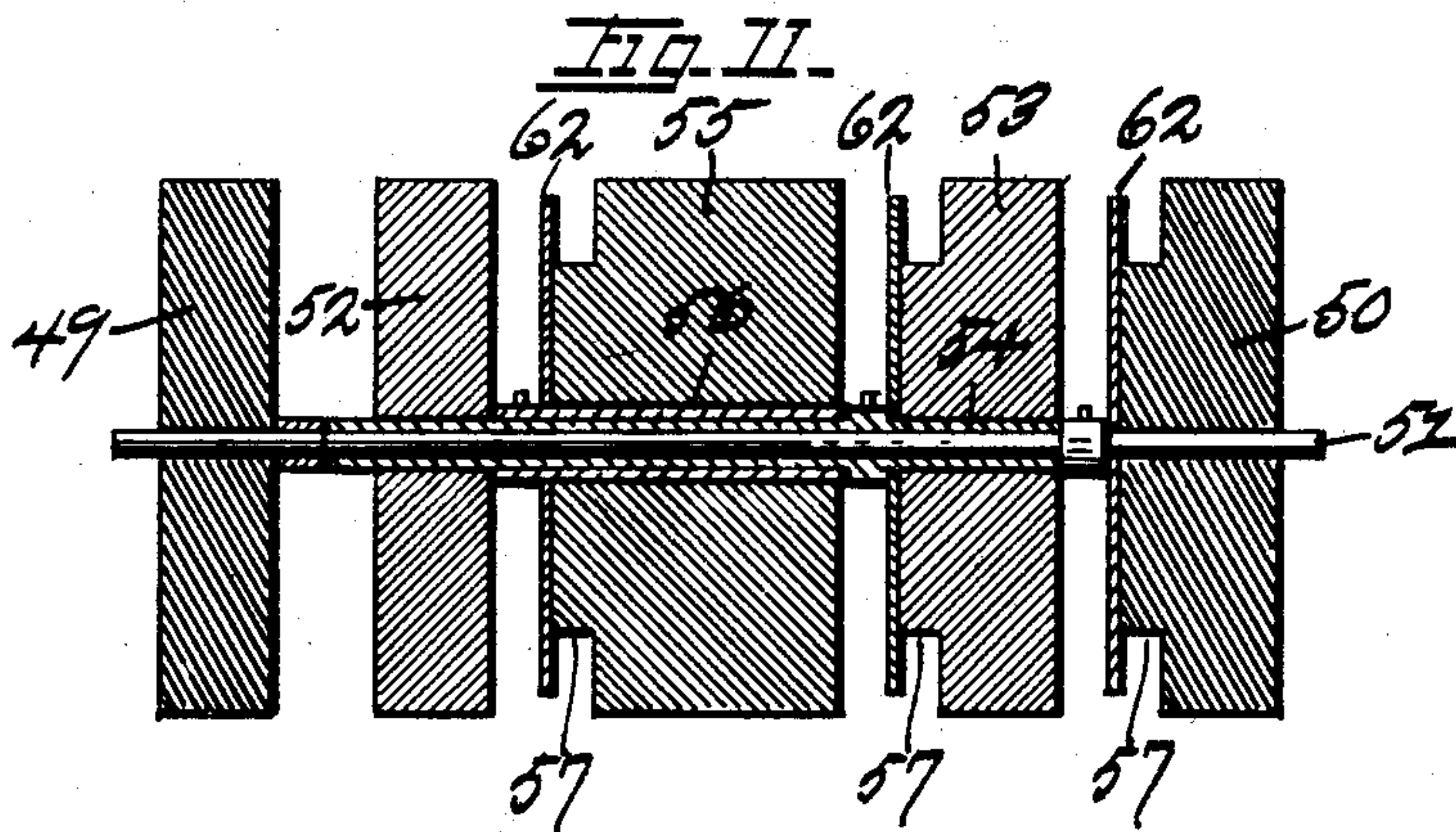
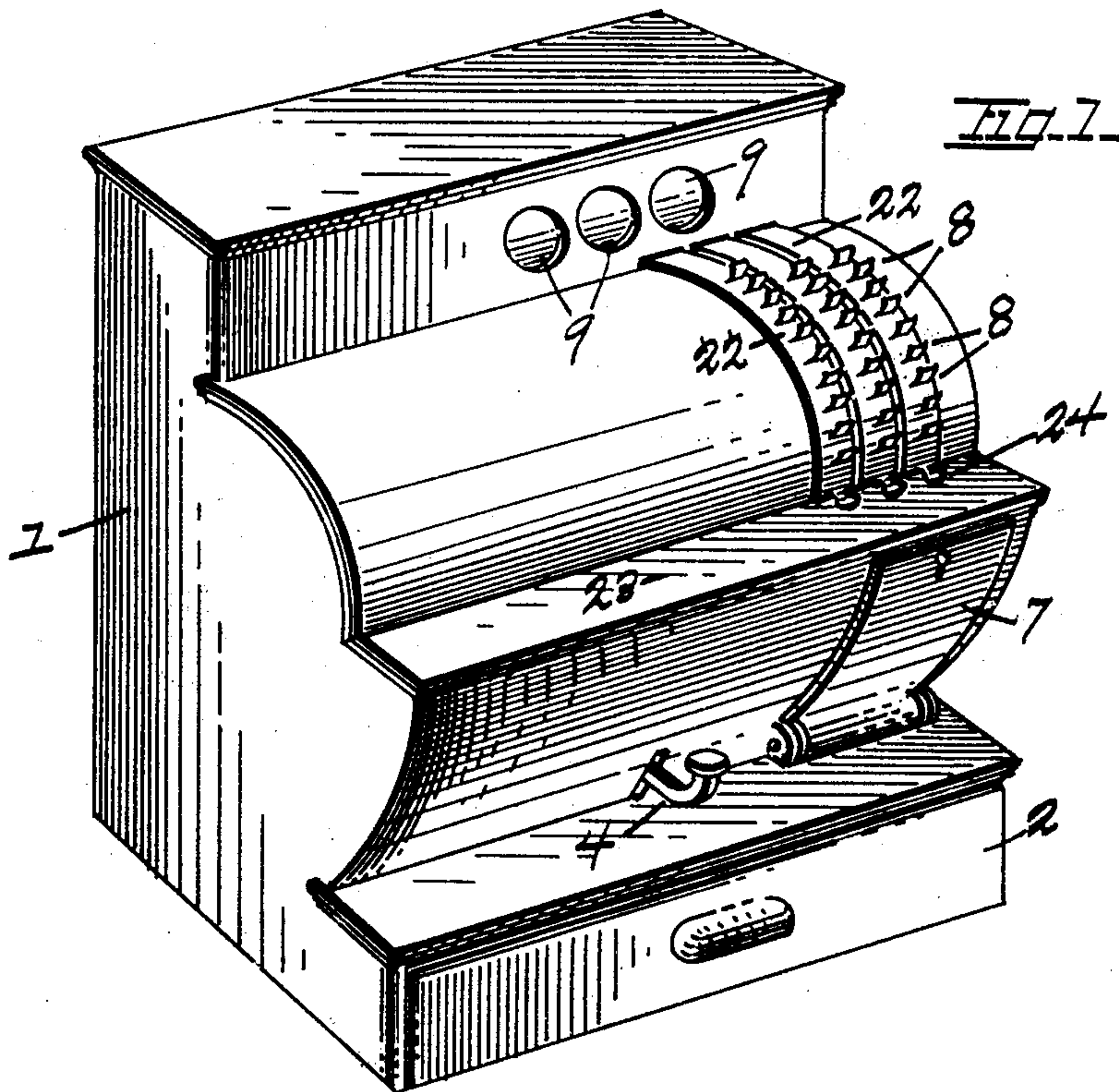
Patented June 24, 1902.

R. W. HUDSON.
CASH REGISTER.

(Application filed June 26, 1901.)

(No Model.)

6 Sheets—Sheet 1.



WITNESSES

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his atty.

No. 703,263.

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R. W. HUDSON.

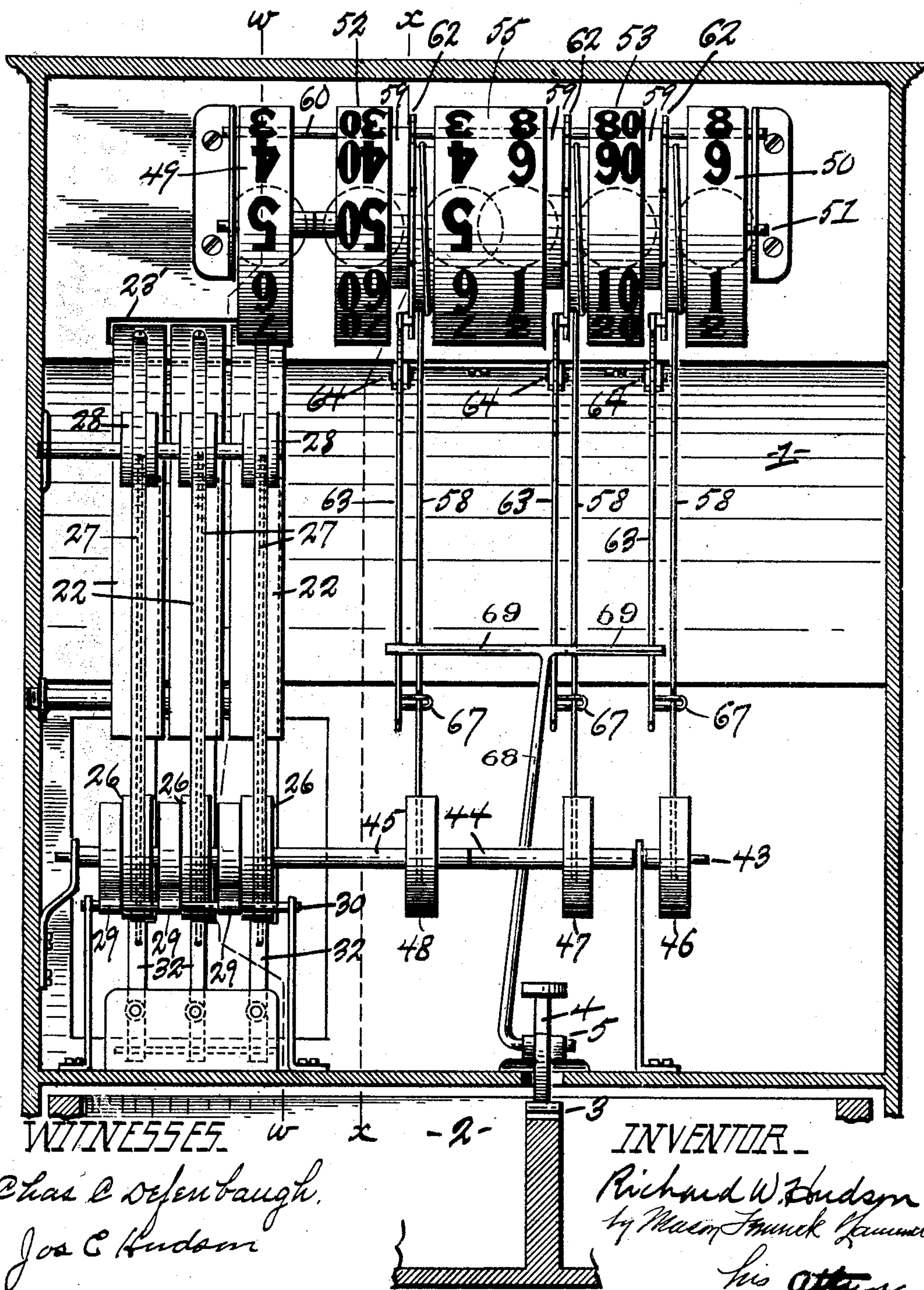
CASH REGISTER.

(Application filed June 26, 1901.)

(No Model.)

6 Sheets—Sheet 2.

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 703,263.

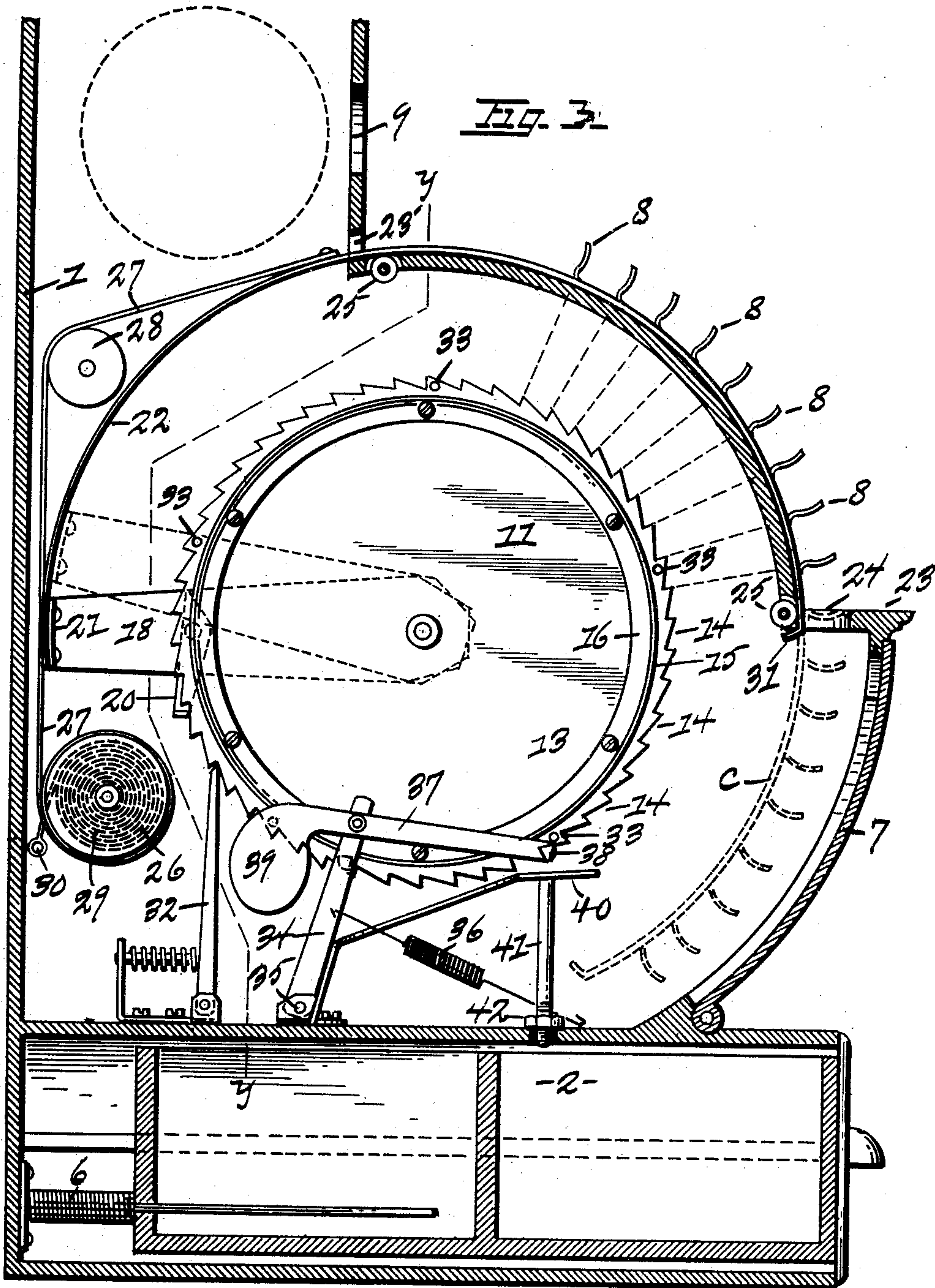
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(Application filed June 26, 1901.)

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6 Sheets—Sheet 3.



WITNESSES.

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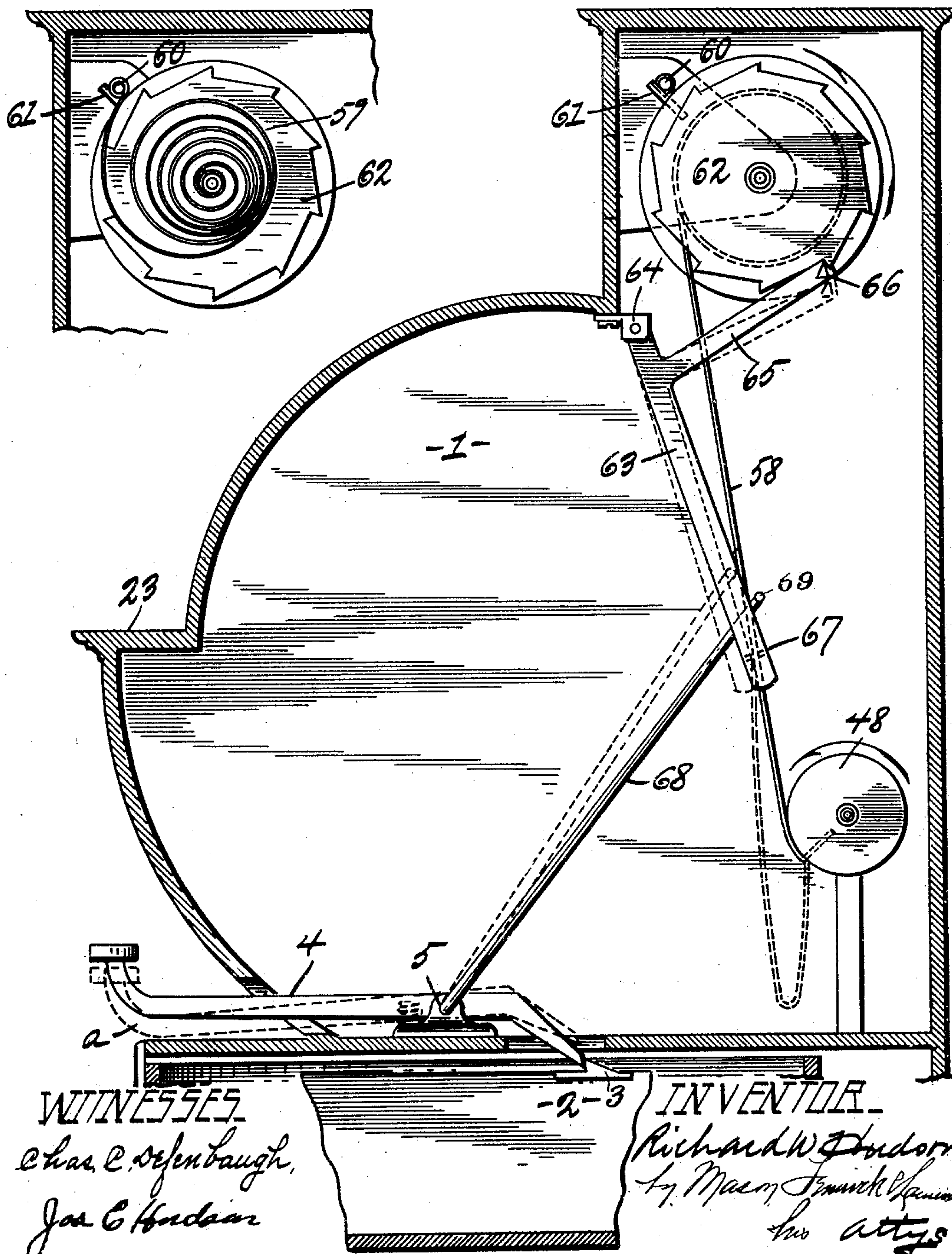
(Application filed June 26, 1901.)

(No Model.)

6 Sheets—Sheet 4.

Fig 9

Fig 4



No. 703,263.

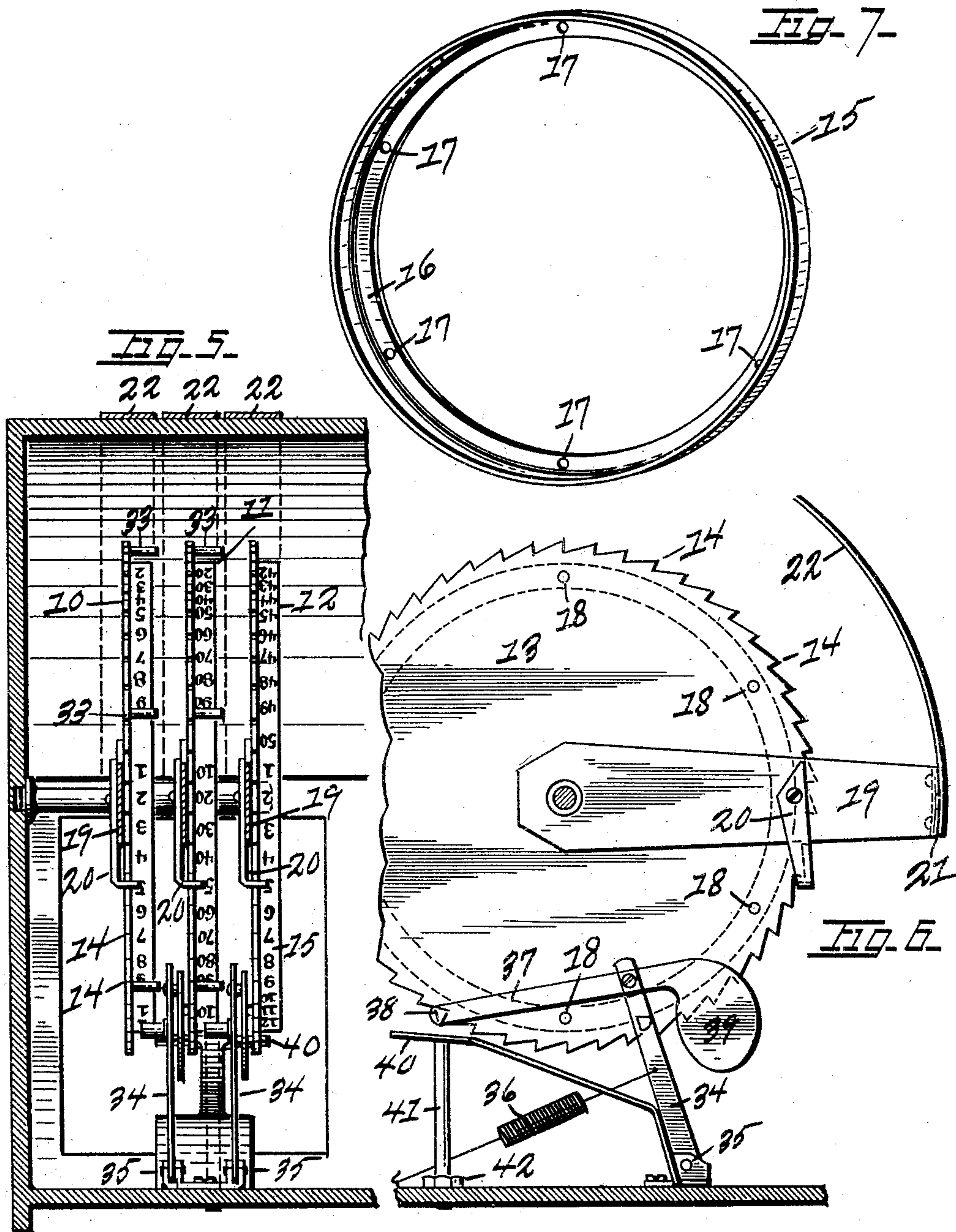
Patented June 24, 1902.

R. W. HUDSON.
CASH REGISTER.

(Application filed June 28, 1901.)

(No Model.)

6 Sheets—Sheet 5.



WITNESSES

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No. 703,263.

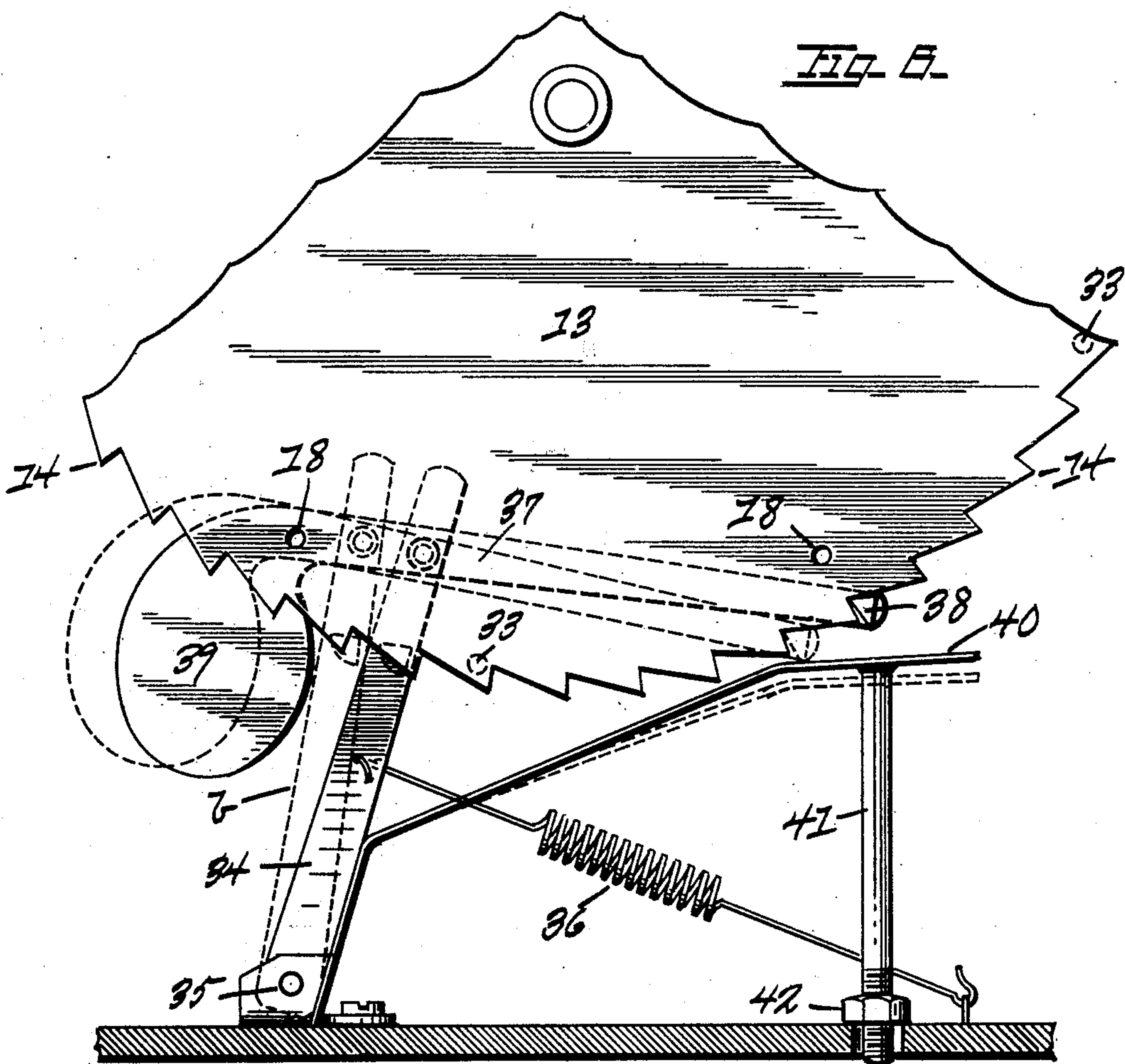
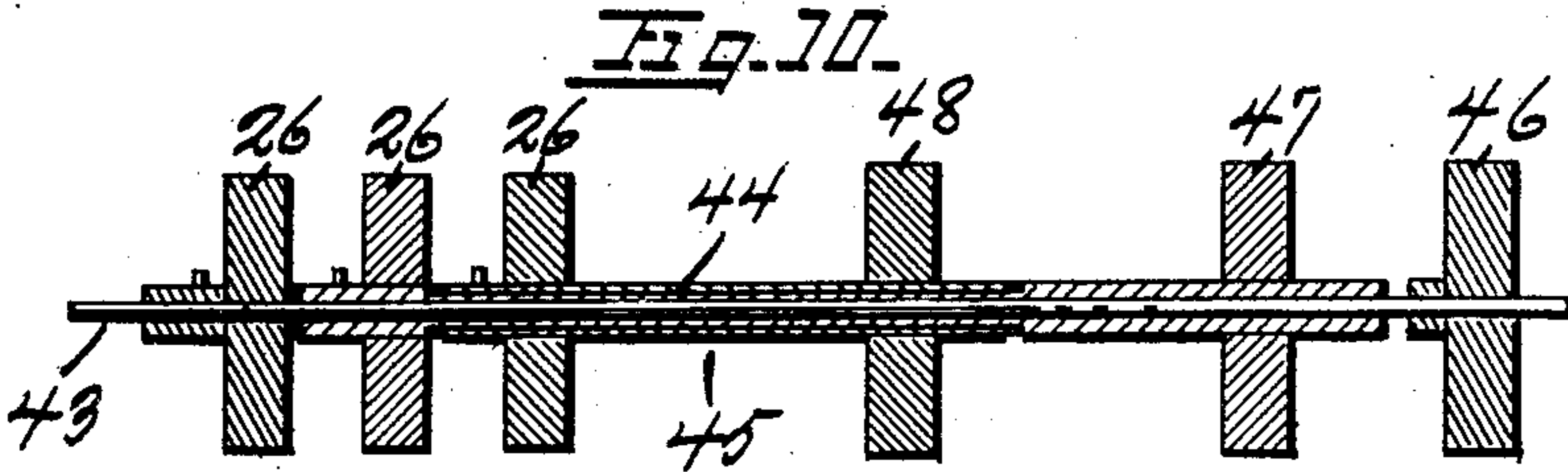
Patented June 24, 1902.

R. W. HUDSON.
CASH REGISTER.

(Application filed June 26, 1901.)

(No Model.)

6 Sheets—Sheet 6.



WITNESSES.

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UNITED STATES PATENT OFFICE.

RICHARD W. HUDSON, OF TOLEDO, OHIO, ASSIGNOR OF TWO-THIRDS TO
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CASH-REGISTER.

SPECIFICATION forming part of Letters Patent No. 703,263, dated June 24, 1902.

Application filed June 26, 1901. Serial No. 66,061. (No model.)

To all whom it may concern:

Be it known that I, RICHARD W. HUDSON, a citizen of the United States, residing at Toledo, in the county of Lucas and State of Ohio, have
5 invented certain new and useful Improvements in Cash-Registers; 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
10 appertains to make and use the same.

My invention has reference to a cash-register, and has for its object to provide a machine of this character the mechanism of which shall be extremely simple and compact
15 in construction and effective in operation, comprising few working parts, consequently insuring low cost in manufacturing.

To reduce the cost of manufacture to a minimum, the parts constituting the mechanism of my invention are largely constructed
20 of sheet metal punched out by means of suitable dies, insuring perfect interchangeability and convenience in assembling.

In carrying out my invention I provide
25 simple, effective, and easily-operated mechanism for registering the amount of a sale and simple and positive mechanism for indicating the amount of a sale, the two mechanisms coacting to produce precise operation.

30 In the drawings, Figure 1 is a perspective view of the register, showing the case for confining the mechanism and the working parts extending through the case adapted for manual operation. Fig. 2 is a rear elevation of the operating mechanism. Fig. 3 is a sectional elevation showing the registering mechanism, the parts being located to the left of the section-line *w w*, Fig. 2. Fig. 4 is a sectional elevation showing the indicating mechanism, the same being located to the right of the section-line *x x*, Fig. 2. Fig. 5 is a rear elevation of the counter mechanism, the parts shown being located forward of the section-line *y y*, Fig. 3. Fig. 6 is a left side elevation of one of the counter-wheels and the mechanism for rotating the same. Fig. 7 is a detail in perspective of one of the flanged rings of the counter-wheels, the same being detached. Fig. 8 is an enlarged elevation
45 showing the operation of the transferring

50 mechanism of the counter-wheels. Fig. 9 is a detail in elevation of the means for returning the indicator-cylinders to their normal positions. Fig. 10 is a sectional detail showing the concentric arrangement of the spindles for transmitting motion to the indicator-cylinders. Fig. 11 is a similar view showing the concentric arrangement of the spindles upon which the indicator-cylinders are mounted.
60

In the various figures in which the case is shown the same is illustrated in section, as indicated by the section-lines.

Referring to the parts, 1 is a suitable case having the general outline shown in Fig. 1. 65 The same is provided with a suitable cash-drawer 2, formed with a catch 3, adapted to engage the end of a key-lever 4, fulcrumed at 5, which extends through an opening in the case and is adapted to be depressed to
70 the position shown in dotted lines *a*, Fig. 4, by which means the drawer is released, the return of the key-lever 4 being accomplished by a coiled spring or other suitable means. The cash-drawer after being released by the
75 key-lever is forced outward by the action of a coiled spring 6.

7 is a hinged closure for an opening through the case to permit examination of the numerals upon the counter-wheels. Closure 7
80 is provided with a suitable lock and key, by reason of which unauthorized inspection of the total amount registered and indicated by the numerals upon the counter-wheels is insured against.
85

The fingers by which the machine is operated are shown at 8, Fig. 1, and in the same figure 9 represents openings through the case to disclose the numerals upon the indicator-cylinders to indicate the amount of a cash
90 purchase.

I will now describe the registering mechanism.

10, 11, and 12, respectively, are counter-wheels suitably mounted to permit independent
95 rotation. As shown, each comprise a disk 13, formed with peripheral teeth 14, and a ring 15, formed with an inwardly-extending

flange 16, provided with perforations 17, preferably at equidistant points to permit of fastening to the disk 13 by means of screws or rivets, coincident perforations 18 being provided in the disks 13 for this purpose. The counter-wheels are preferably three in number, as shown in Fig. 5, the left indicating "cents," the middle one "dimes," and the one to the right "dollars," numerals being provided upon the rings to indicate the same. These numerals may be imprinted directly upon the rings 15 or the same may be stamped to present a raised appearance upon metal strips to be attached to the rings by soldering or otherwise. The ratchet-teeth 14 upon the counter-wheels are in number a multiple of ten, and in the application of my invention as illustrated in the drawings I provide fifty teeth upon each counter-wheel. Closely adjoining each counter-wheel is a ratchet-arm 19, movable independent therefrom. The same are provided with gravity-operated pawls 20 to engage the teeth 14 upon the counter-wheels and are extended beyond the periphery of the counter-wheels and secured at 21 to the arc-shaped operating-plates 22, having axes of curvature coincident with the axis of the counter-wheels. Plates 22 extend through openings in the case and are exposed and accessible from the forward side of the case. Extending radially from the operating-plates 22 are operating-fingers 8, hereinbefore mentioned. The fingers are arranged at equidistant points upon the plates 22, the angle between the same being equal to the angle of a single ratchet-tooth. The plate to the right, looking at the plates 22 from the forward side of the machine, is adapted for registering cents, and the same is preferably stamped or otherwise marked in proximity to the fingers 8, beginning with the lower finger and going upward with characters ".01," ".02," ".03," ".04," ".05," ".06," ".07," ".08," and ".09." In like manner the middle plate 22 is adapted for registering dimes, and the same is stamped, beginning the lower finger ".10, .20, .30, .40, .50, .60, .70, .80, .90." The plate to the right is similarly stamped "1," "2," "3," "4," "5," "6," "7," "8," and "9." and is adapted for registering dollars.

23 is a ledge formed on the case, provided with openings 24 to permit the fingers 8 to pass therethrough when the operating-plates 22 are forced downward. The lowermost fingers upon the plates 22 normally occupy a position above the ledge 23 equal to the distance between the fingers.

25 represents antifriction-wheels to insure the easy operation of the operating-plates 22.

26 represents cylindrical band-wheels independently revoluble, each having one end of a flexible metallic band 27 secured to the periphery thereof, the opposite ends of said bands being attached at suitable points to the operating-plates 22.

28 represents idle pulleys, over which the bands 27 are guided.

Band-wheels 26 are each provided with a band-spring 29, the inner end of which is secured to the hub portion of the band-wheel in the usual well-known manner. The outer terminals of said springs are secured to a transverse rod 30, being thereby held in a partly-wound state. By this means the bands 27 are subjected to constant tension, and the operating-plates 22 are normally held in the position shown in full lines, Fig. 3, the further upward movement of the same being prevented by forming a stop upon the plate, as at 31.

32 represents spring-operated pawls, cooperating with the ratchet-teeth 14 to prevent backward movement of the counter-wheels.

The numerals upon the counter-wheels correspond in position to the ratchet-teeth upon said wheels, each numeral being placed opposite a ratchet-tooth. Upon the counter-wheels which register cents and dimes the space opposite every tenth tooth is left blank, there being five such blank spaces upon each of said wheels. The consecutive series of numerals "1, 2, 3, 4, 5, 6, 7, 8, 9" and the blank space are therefore repeated five times upon the cents counter-wheel, and the series "10, 20, 30, 40, 50, 60, 70, 80, 90" and the blank space five times upon the dimes counter-wheel. The counter-wheel registering dollars is numbered consecutively from "1" to "50," inclusive, one numeral being arranged opposite each ratchet-tooth upon said wheel.

As every tenth space upon the cents and dimes counter-wheels is a blank, means are provided for transferring the cents to the dimes counter-wheel and the dimes to the dollars counter-wheel when the aggregate of cents or dimes registered on their respective wheels amounts to ten or more. The means for accomplishing this is shown in Figs. 3, 5, 6, and 8, Fig. 8 showing the operation of the parts in dotted lines. Arranged upon the cents and dimes counter-wheels at the peripheries thereof and opposite the blank spaces thereon are laterally-extending projections in the form of pins 33. 34 is an arm pivoted at 35 and normally held in the position in full lines, Fig. 8, by a spring 36. Projecting laterally from the arm 34 is a stud normally in position in the path of rotation of the pins 33 and which when engaged by one of the pins 33 causes the arm 34 to assume the position in dotted lines *b*, Fig. 8. Pivoted to arm 34 is a gravity-operated pawl 37, formed at its free end with a laterally-projecting triangular pin 38 to engage the ratchet-teeth 14. The pawl 37 on the opposite side of its pivotal point is enlarged, as at 39, to counterweight the same. The parts are arranged so that the motion of one counter-wheel will be transmitted to the next or higher counter-wheel to move the

same the distance of one ratchet-tooth, after which the arm 34 is released to take its normal position.

I also provide means for preventing an overthrow of the counter-wheels, the same co-operating with the transferring mechanism just described. Should the registering mechanism be operated quickly and with considerable applied force, the impetus imparted to the counter-wheel receiving its motion through the agency of the transferring mechanism might at times be sufficient to move said wheel a distance of two ratchet-teeth, whereas a movement the distance of only one tooth is necessary. I prevent this by arranging a transverse plate 40 approximately tangent to the periphery of the counter-wheels, so that the pin 38 upon the pawl 37 after advancing the counter-wheel the distance of a single ratchet-tooth is jammed between the plate 40 and the face of the nearest ratchet-tooth, after which it is returned to its original position to engage the next tooth upon the counter-wheel. To permit fine adjustment of the plate 40, the same is mounted upon the end of an adjustable rod 41, adjusted by means of a nut 42 on the interior of the case.

The operation of the registering mechanism is as follows: We will assume the amount of a sale to be nine dollars and fifty-two cents. The operator will first engage the ninth finger upon the operating-plate 22, adapted for registering dollars, and press the same down with his finger, which will contact with the ledge on the case, which serves as a stop. The plate 22 and the fingers thereon when depressed will be in the position *c* in dotted lines, Fig. 3. The operator removing his finger, the plate 22 will instantly return to its normal position because of the spring 29 and the intervening connections. In like manner the fifth finger on the middle or dimes plate is engaged to depress the same and also the cents-plate. The counter-wheel for registering cents will consequently advance the distance of two ratchet-teeth or two numbers, the counter-wheel for registering dimes five numbers, and the counter-wheel for registering dollars nine numbers. The total amount of cash sales may be read from the forward side of the counter-wheels, as "49, 90, 9," indicating total cash sales of forty-nine dollars and ninety-nine cents, the hinged closure 7 being unlocked when it is desired to read the numerals upon the counter-wheels. To facilitate the reading of the numerals upon the counter-wheels, a plate having three rectangular perforations in alinement with the numerals may be provided immediately forward of the counter-wheels.

I will now describe the indicating mechanism which I employ in connection with my registering mechanism. The band-wheels 26, hereinbefore mentioned, are independently rotatable upon concentric shafts 43, 44, and

45, respectively. (Shown in section in Fig. 10.) At the opposite ends of the shafts 43, 44, and 45 are keyed or otherwise secured cylindrical band-wheels 46, 47, and 48, respectively. By the arrangement disclosed the band-wheel 48 will move simultaneously with the band-wheel 26 at the extreme left, the wheel 47 with the middle wheel 26, and the wheel 46 with the adjacent wheel 26.

49 and 50, respectively, are indicator-cylinders to indicate the number of cents registered upon the machine, the same being keyed or otherwise secured upon the extreme ends of a shaft 51.

52 and 53 in like manner are cylinders to indicate the number of dimes registered, the same being mounted to rotate simultaneously upon a tubular shaft 54, concentric to shaft 51.

55 is a cylinder to indicate the number of dollars registered. The same is made of greater width than the other indicator-cylinders referred to, so as to accommodate two rows of numerals, and is keyed or otherwise secured to a tubular shaft 56, concentric to shafts 51 and 54. Cylinders 50, 53, and 55 are each provided with a winding-drum 57, to the peripheries of which are secured the ends of operating-cords 58, of silk or other suitable material to insure flexibility. Cords 58 after being secured to the drums 57 are given one or a number of turns about the same, as shown, to cause the indicator-cylinders to rotate in the direction of the arrow, Fig. 4, when the operating-cords are unwound from the drums. The opposite ends of the cords are secured to the peripheries of the wheels 46, 47, and 48, the cord from cylinder 50 connecting with band-wheel 46 and those from cylinders 53 and 55 with band-wheels 47 and 48, respectively. The normal positions of the indicator-cylinders are shown in Fig. 2, to which the same are returned after being released from their indicating positions by a band-spring 59, the outer terminals of which are secured to a transverse rod 60 and the inner ends to shafts 51, 54, and 56, respectively. Each of the cylinders 50, 53, and 55 is provided with a peripheral projection in the form of a pin 61, which serves as a stop to arrest the motion of the cylinders upon the return to their normal positions. Suitably connected with the cylinders 50, 53, and 55, so as to operate simultaneously therewith, are ratchet-disks 62, provided with peripheral ratchet-teeth. The ratchet-teeth correspond in number to the numeral-spaces upon the face of each indicator-cylinder. The cylinders on either end to indicate cents are provided on their faces with numerals corresponding with those upon the cents-operating plate—to wit, "1, 2, 3, 4, 5, 6, 7, 8, 9"—and a blank space. The cylinders for indicating dimes are in like manner provided with numerals corresponding with those upon the dimes-operating plate and a blank space. The cylinder for indicating dollars is provided

with two rows of numerals corresponding to the numerals upon the dollars-indicating plate, the usual blank spaces also being provided thereon. 63 represents similar levers, 5 loosely pivoted at 64 and having laterally-extending arms 65 integral therewith. Projecting laterally from the arms 65 are pins 66, adapted to engage the teeth upon the ratchet-disks 62. The same are, however, normally 10 disengaged from the teeth of said disks, the arms 65 being acted upon by gravity, taking the position in dotted lines, Fig. 4. Near the lower ends of levers 63 are provided eyes 67, adapted to encircle the operating-cords 58.

15 68 is an upwardly-extending arm rigidly secured in any suitable manner to the drawer-releasing key-lever 4, assuming the position in dotted lines, Fig. 4, when the key-lever 4 is depressed to open the cash-drawer. Arm 20 68 is formed with branches 69, adapted to contact with the levers 63 near their lower ends to disengage the pins 66 from the teeth of the ratchet-disks 62.

The operation of the indicating mechanism 25 is as follows: The "cents," "dimes," or "dollars" operating plates being depressed, the band-wheels 26 will rotate to cause the band-wheels 46, 47, and 48 to also rotate in the direction of the arrow, Fig. 4. The operating-cords 30 58 will consequently be wound upon the band-wheels 46, 47, and 48, the same unwinding from the drums upon the indicator-cylinders to rotate the same in the direction of the arrow. The operating-cords 58 are normally 35 sufficiently slack to permit the levers 63 to assume the normal positions in dotted lines, Fig. 4, the pin 66 also being disengaged from the ratchet-disk 62. However, when the cords 58 are under tension to operate the indicator-cylinders the levers 63, the arms 65, and the 40 pins 66 will be moved to the position in full lines, Fig. 4, to engage the disks 62 to hold the indicator-cylinders at their proper indicating-points. When the operating-plates 22 45 of the registering mechanism are released, the wheels 46, 47, and 48 will return to their normal positions and unwind the operating-cords 58, the same hanging loosely, as shown in dotted lines, Fig. 4, the indicator-cylinders 50 remaining in their indicating positions, because of engagement of the pins 66 with the teeth of the ratchet-disks 62. The indicator-cylinders will remain in indicating position until the key-lever 4 is depressed to release 55 the cash-drawer, the arm 68, being rigidly connected with the key-lever, assuming the position in dotted lines, Fig. 4, and by contact with the arm 63 releasing the indicator-cylinders, which will resume their normal positions because of the springs 59. The indi- 60 cator-cylinders arranged as shown will indicate from both the front and the rear of the register, the openings 9 in the case being provided at both the front and the rear in line 65 with the numerals upon the indicator-cylinders. The positions of the openings 9 are

shown by the dotted circles, Fig. 2. To prevent access to the indicator-cylinders, the openings 9 are provided with a glass plate to permit the indicator-numerals to be read 70 therethrough. I may also employ magnifying-lenses to be placed in the openings 9 to magnify the indicator-numerals.

A brief statement of the operation of the register is as follows: The key-lever 4 is de- 75 pressed to open the cash-drawer, the operation releasing the indicator-cylinders, the same then showing blank spaces through the openings 9. The cash-drawer is then closed and the amount of a sale registered by de- 80 pressing the operating-plates. The amount of the sale will then be indicated by the numerals upon the indicating-wheels, the same appearing through the openings 9.

Having thus fully described my invention, 85 what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a cash-register, the combination with a case having its front curved in two concentric arcs one above the other with a horizon- 90 tal ledge connecting the curves and provided with openings, the wall of the case above the upper curve being apertured, of toothed counter-wheels journaled in the casing concentrically with the curves thereof, arc-shaped 95 operating-plates concentric with the curves and wheels and passing through said apertures and having their free ends extending through openings in said ledge, operating means projecting from said plates in line with 100 the ledge-openings, operating means carried by said arc plates and engaging the counter-wheels, and a door in said case formed in the lower curve for permitting inspection of said counter-wheels, substantially as described. 105

2. In a cash-register, the combination with indicator-cylinders, springs for normally returning them to zero positions, pawls normally holding them at indicating positions, a normally spring-opened cash-drawer, a pawl 110 holding the drawer closed and carrying a key, an arm secured to said key, branches formed on the free end of said arm contacting with the indicator-cylinder-retaining pawls and designed, upon the depression of the drawer- 115 releasing key to move said last-mentioned pawls and release the indicator-cylinders from indicating position, substantially as described.

3. In a cash-register, the combination with 120 indicator-cylinders, springs for normally returning them to zero positions, pawls normally holding them at indicating positions, a normally spring-opened cash-drawer, a pawl holding the drawer closed and carrying a key, 125 an arm secured to the last-mentioned pawl for releasing said first-mentioned pawls, registering keys or fingers, band-wheels operated by said keys, and flexible means oper- 130 ated by said band-wheels for moving the cylinders to indication positions, substantially as described.

4. In a cash-register, the combination with indicator-cylinders, springs for normally returning them to zero positions, registering keys or fingers, shafts rotated determinately thereby, cylinders on said shafts, and cords connecting said cylinders with the indicator-cylinders for transferring said determinate movements to the indicator-cylinders, substantially as described.

10 5. In a cash-register, the combination with a centrally-located shaft, of counter-wheels mounted thereon having ratchet-toothed peripheries and correspondingly - numbered rings, graduated, arc-shaped operating-plates concentric with the wheels, pawls operated by said plates engaging the ratchet-teeth, means for determining the extent of movement of the plates, spring-operated means for automatically returning the said plates to their normal positions after each operation, and flexible means connecting said plates with said spring-operated means, substantially as described.

25 6. In a cash-register, the combination with a centrally-located shaft, of counter-wheels secured thereto having ratchet-toothed peripheries and correspondingly - numbered rings, graduated arc-shaped operating-plates concentric with the wheels, pawls operated by said plates engaging the ratchet-teeth, a spring connected with each of said plates for returning the same to its normal position after each operation, spaced fingers projecting from said plates, a ledge on the case having an opening for the passage of the plate and its fingers and serving as a stop therefor, and means at the free end of each of said plates for limiting its return movement, substantially as described.

40 7. In a cash-register, the combination with a case having its front curved in two different but concentric arcs with a horizontal ledge connecting the curves and provided with openings, the wall of the case above the upper curve being apertured, of toothed counter-wheels journaled in the case concentrically with the curves, arc-shaped operating-plates concentric with the curves and wheels, and passing through said apertures, and having their free ends extending through said ledge-openings, spaced fingers projecting from the plates through the slots of the curve in line with the ledge-openings, and pawls engaging the counter-wheels and connected to the arc plates, substantially as described.

55 8. In a cash-register, the combination with a case provided with a curved front, of a shaft supported within the case and arranged concentrically with the curved front, toothed counter-wheels on the shaft, an arc-shaped plate concentric with the front and the shaft and wheels and inclosing a portion of the front, spaced fingers projecting from said plate, ratchet-arms pivoted on the shaft and connected with the operating-plates, and

pawls on the ratchet-arms engaging the counter-wheels, substantially as described.

9. In a cash-register, the combination with a centrally-arranged, solid shaft, a hollow shaft arranged concentric to said solid shaft and cent and dime toothed counter-wheels secured side by side on the solid and hollow shafts respectively, of a lever pivoted on the frame below the cent-wheel and projecting upward alongside thereof, pins projecting laterally from the cent-wheel at every tenth space, a weighted pawl-lever pivoted to the pivoted lever before mentioned and normally in the path of movement of said pins, and a lateral projection on the first-named lever adapted to engage the dime-wheel, means for causing the disengagement of the pawl from the pin on the cents-lever after each tenth-space movement of said wheel, and means for automatically returning said upwardly-projecting lever to its normal position after each operation, substantially as described.

10. In a cash-register, the combination with adjacent counter-wheels independently rotatable and means for transferring every tenth movement of one wheel to the other, comprising a gravity-pawl and a laterally-projecting pin thereon, of a plate fixed tangentially with the wheel in the vertical plane of said lateral pin in position to jam the pin after one movement into contact with the next tooth to prevent the transfer of more than one movement, and means for adjusting said plate toward or from said wheel, substantially as described.

11. In a cash-register, the combination with adjacent counter-wheels independently rotatable and means for transferring every tenth movement of one wheel to the other, comprising a gravity-pawl and a laterally-projecting pin thereon, of a plate fixed tangentially with the wheel in the vertical plane of said lateral pin in position to jam the pin after one movement into contact with the next tooth to prevent the transfer of more than one movement, a rod depending from the free end of the tangential plate through the bottom of the case, and a nut threaded on said rod and bearing upon the bottom of the case to adjustably support the tangential plate, substantially as described.

12. In a cash-register, the combination with counter-wheels, arc-shaped operating-plates and pawls engaging the wheels and operated by said plates, of concentric shafts, band-wheels thereon corresponding in number and vertical planes with the operating-plates, bands connected at their respective ends to the operating-plates and band-wheels, indicating-wheels independently rotatable, a second series of band-wheels secured to and forming pairs with the first series on the same concentric shafts, and cords connecting this second series of band-wheels with the indicating-wheels, substantially as described.

13. In a cash-register, the combination with
counter-wheels, arc-shaped operating-plates
and pawls engaging the wheels and operated
by said plates, of concentrically-arranged, in-
5 dependently-rotatable shafts, band-wheels
thereon corresponding in number and verti-
cal planes with the operating-plates, a spring
carried by each of said shafts for effecting
their backward rotation after each operation,
10 spring-pawls to prevent backward rotation of

the counter-wheels, and means for imparting
motion from said band-wheels to said operat-
ing-plates, substantially as described.

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

RICHARD W. HUDSON.

Witnesses:

CARL H. KELLER,

CHARLES C. DEFFENBAUGH.