

No. 756,082.

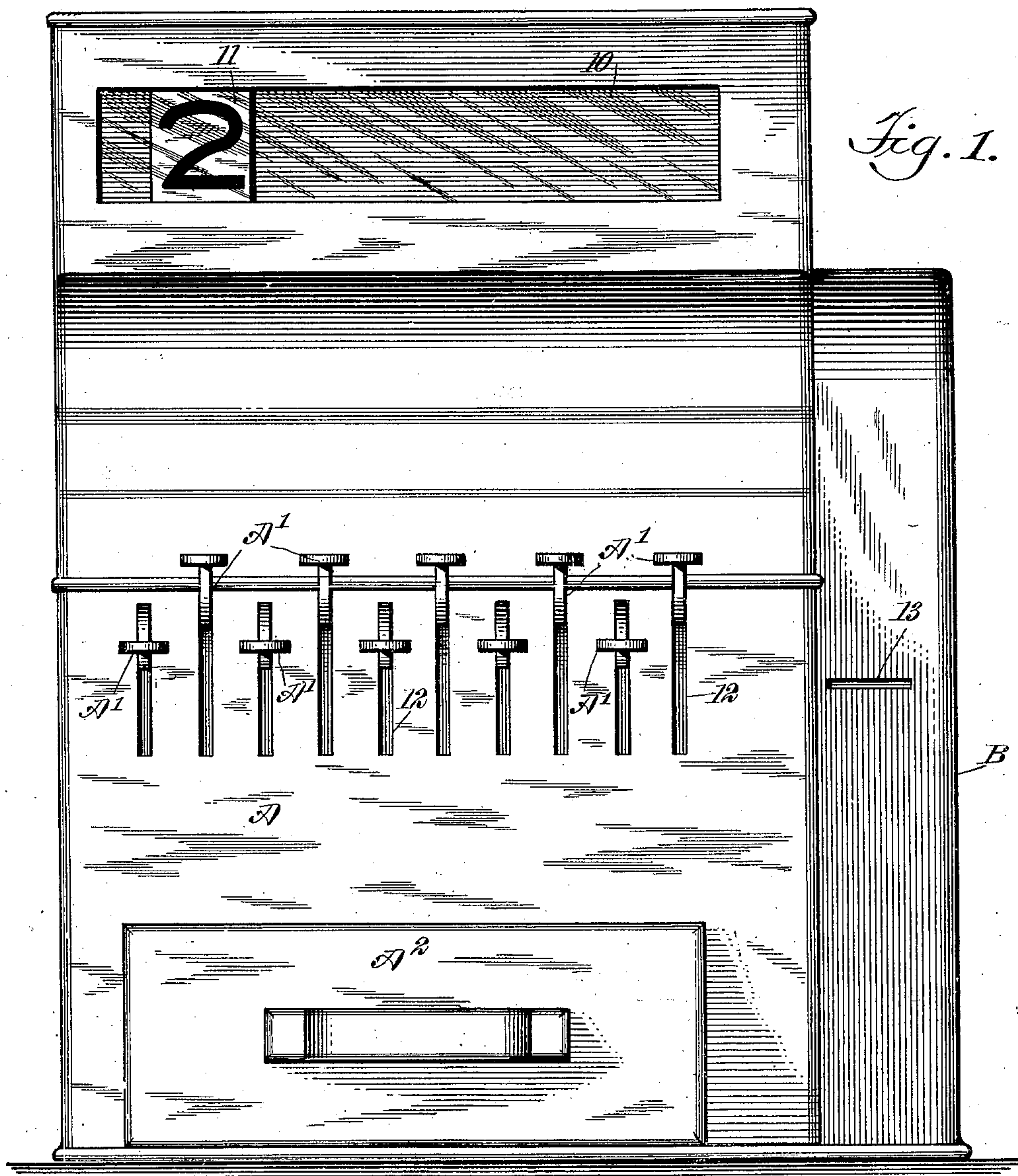
PATENTED MAR. 29, 1904.

J. C. VAHJEN.  
CASH REGISTER.

APPLICATION FILED FEB. 5, 1903.

NO MODEL.

8 SHEETS—SHEET 1.



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No. 756,082.

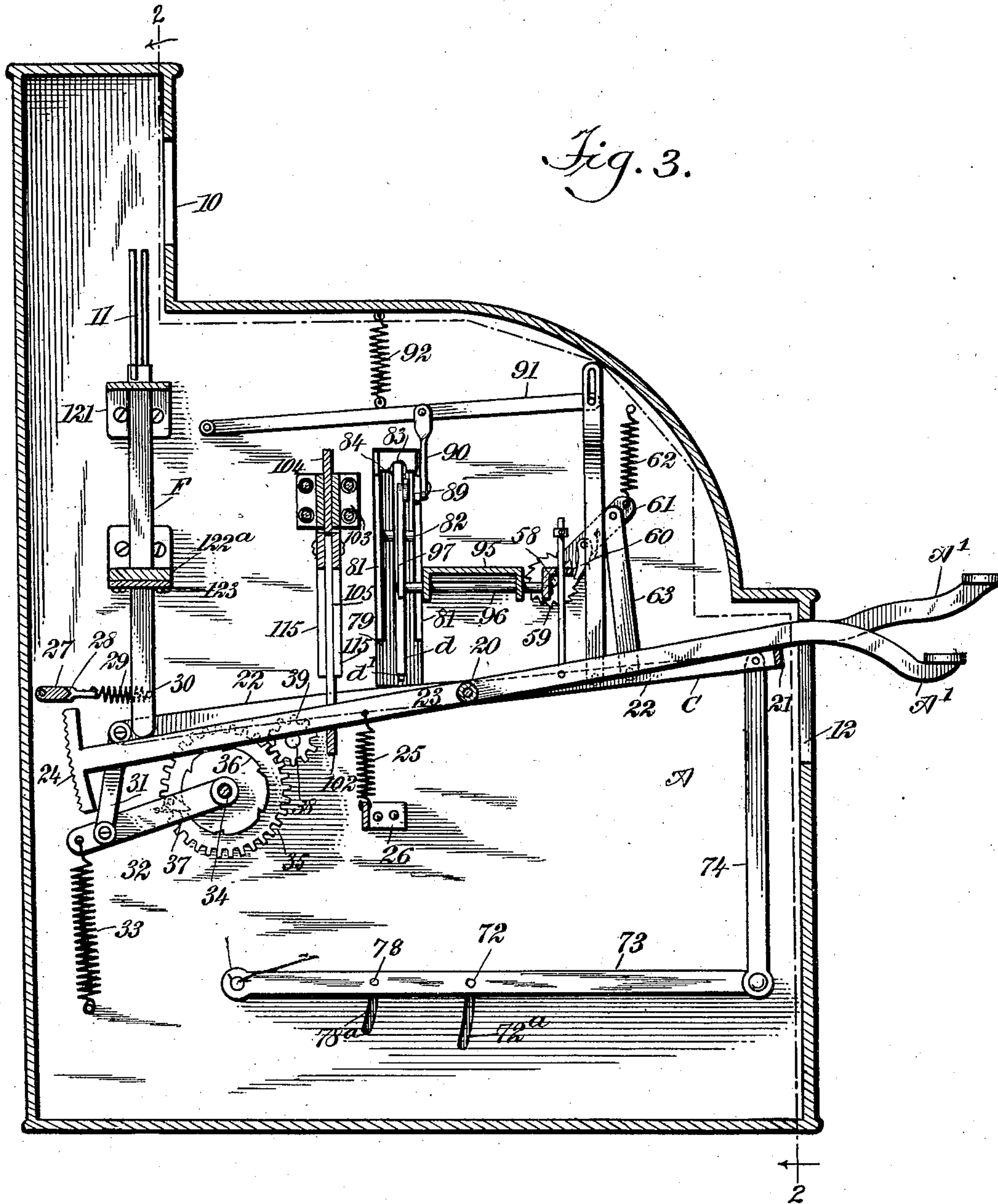
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NO MODEL.

8 SHEETS—SHEET 3.



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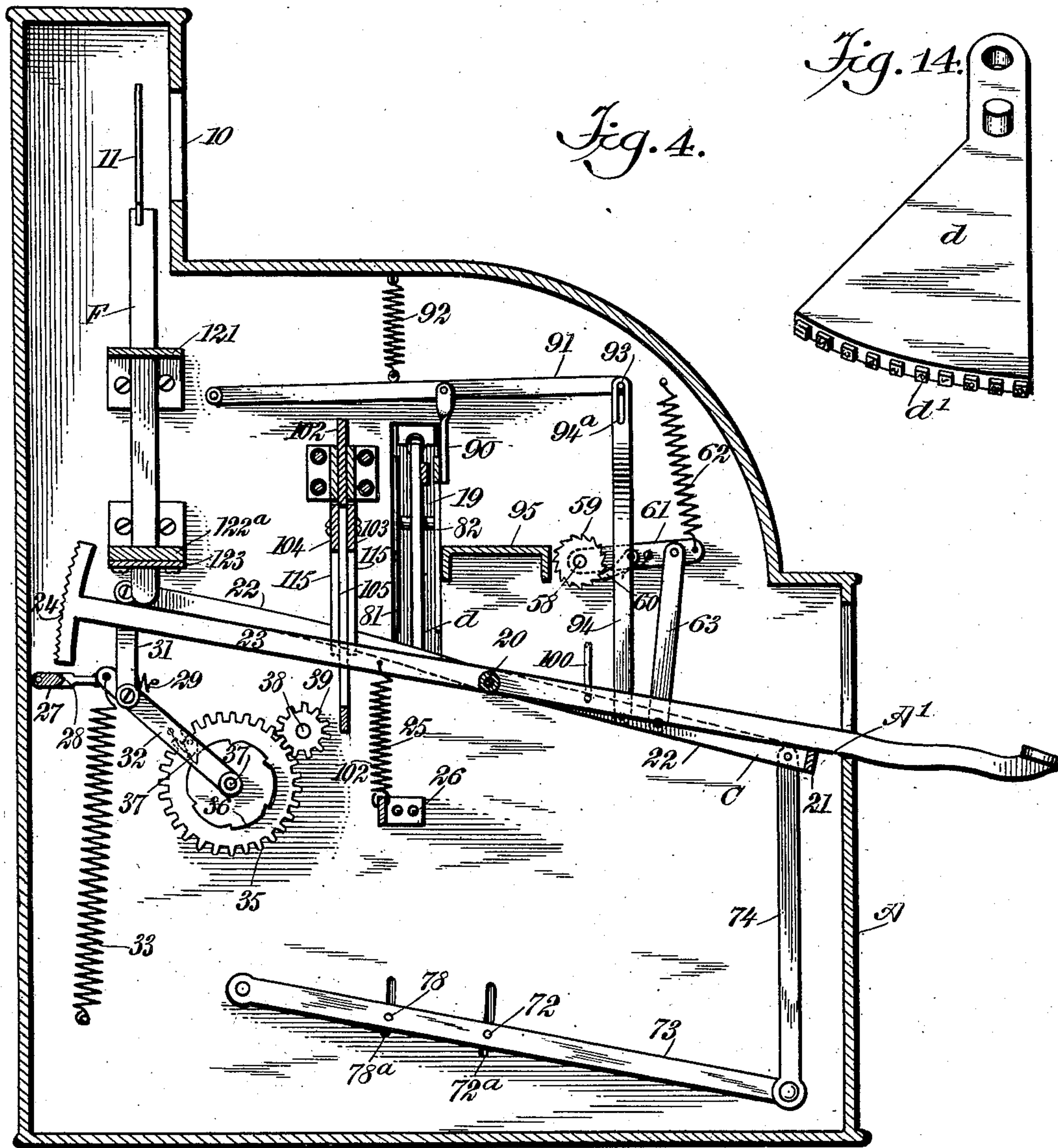
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J. C. VAHJEN.  
CASH REGISTER.

APPLICATION FILED FEB. 5, 1903.

NO MODEL.

8 SHEETS—SHEET 4.



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No. 756,082.

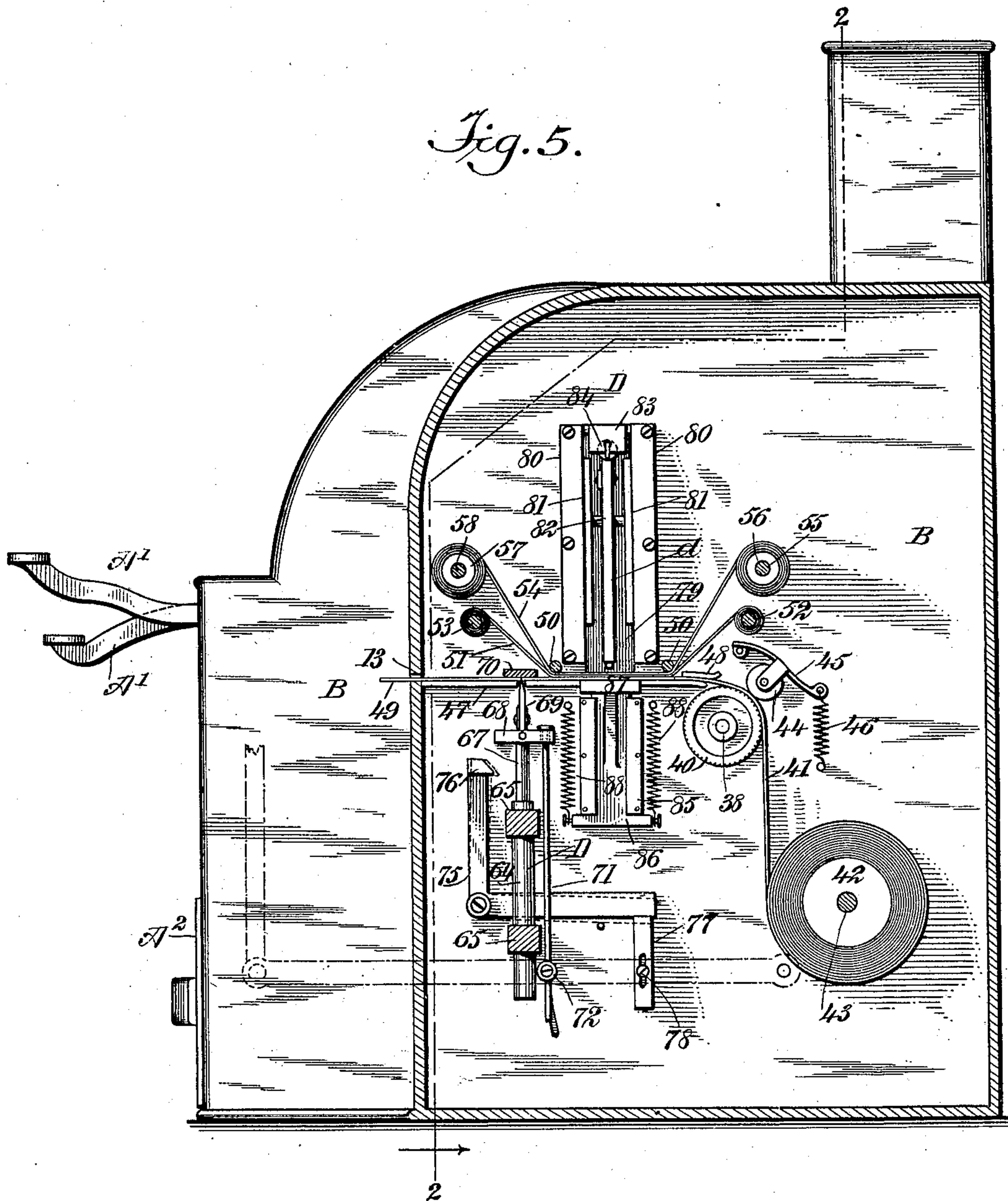
PATENTED MAR. 29, 1904.

**J. C. VAHJEN.**  
**CASH REGISTER.**

APPLICATION FILED FEB. 5, 1903.

NO MODEL.

8 SHEETS—SHEET 5.



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No. 756,082.

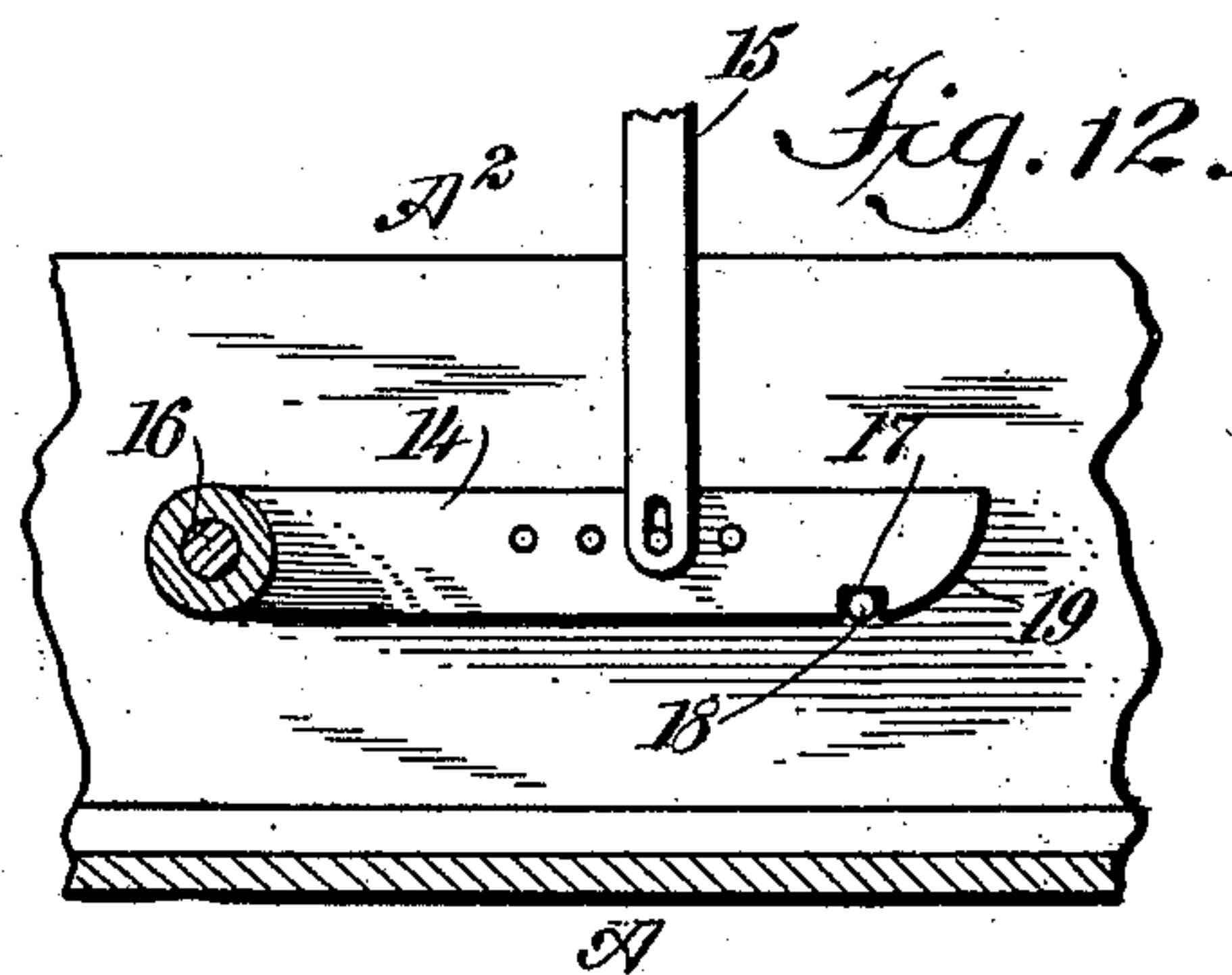
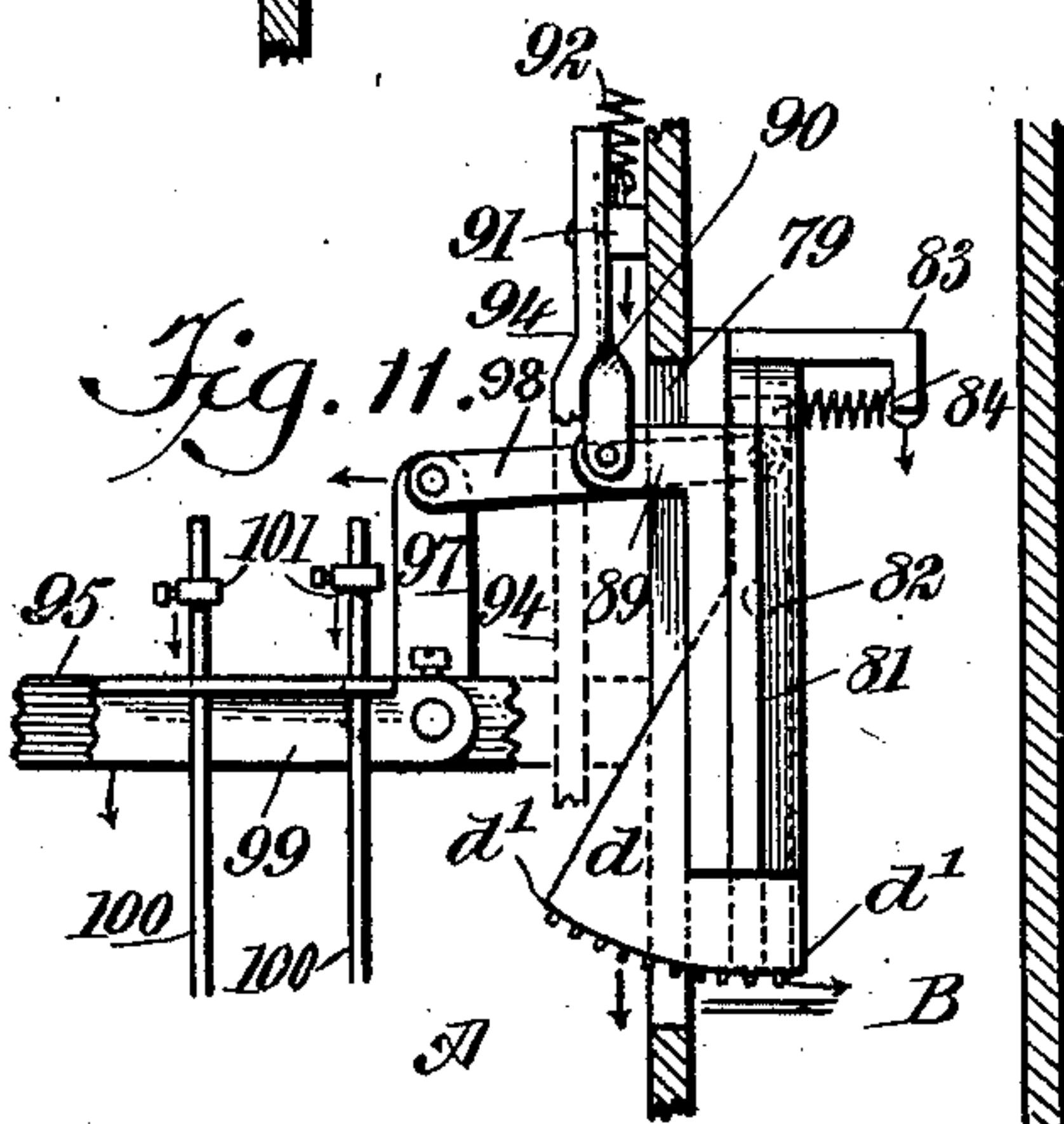
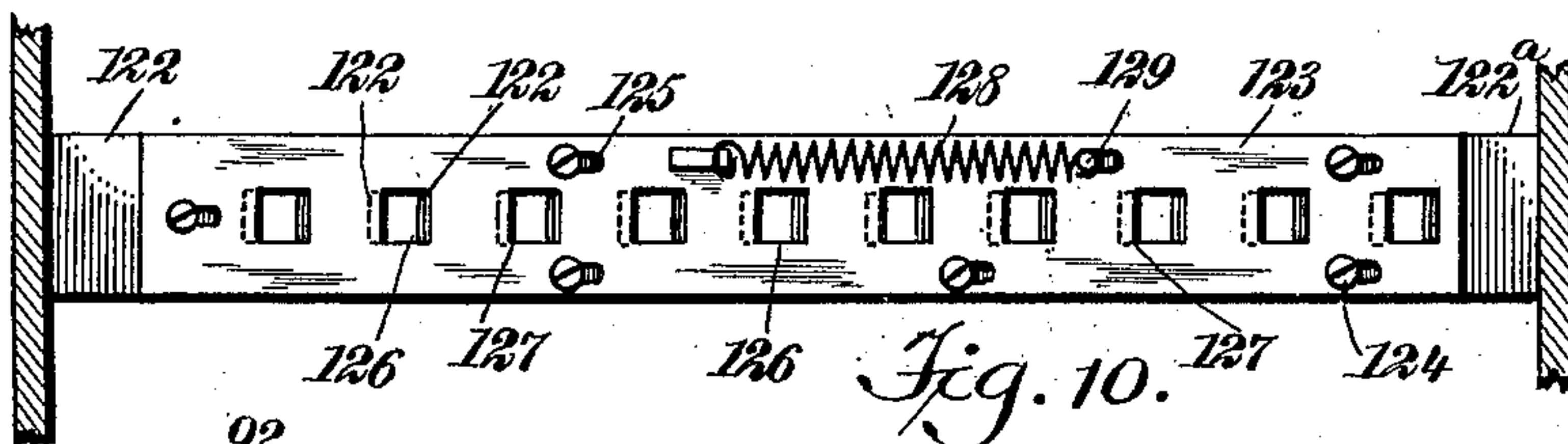
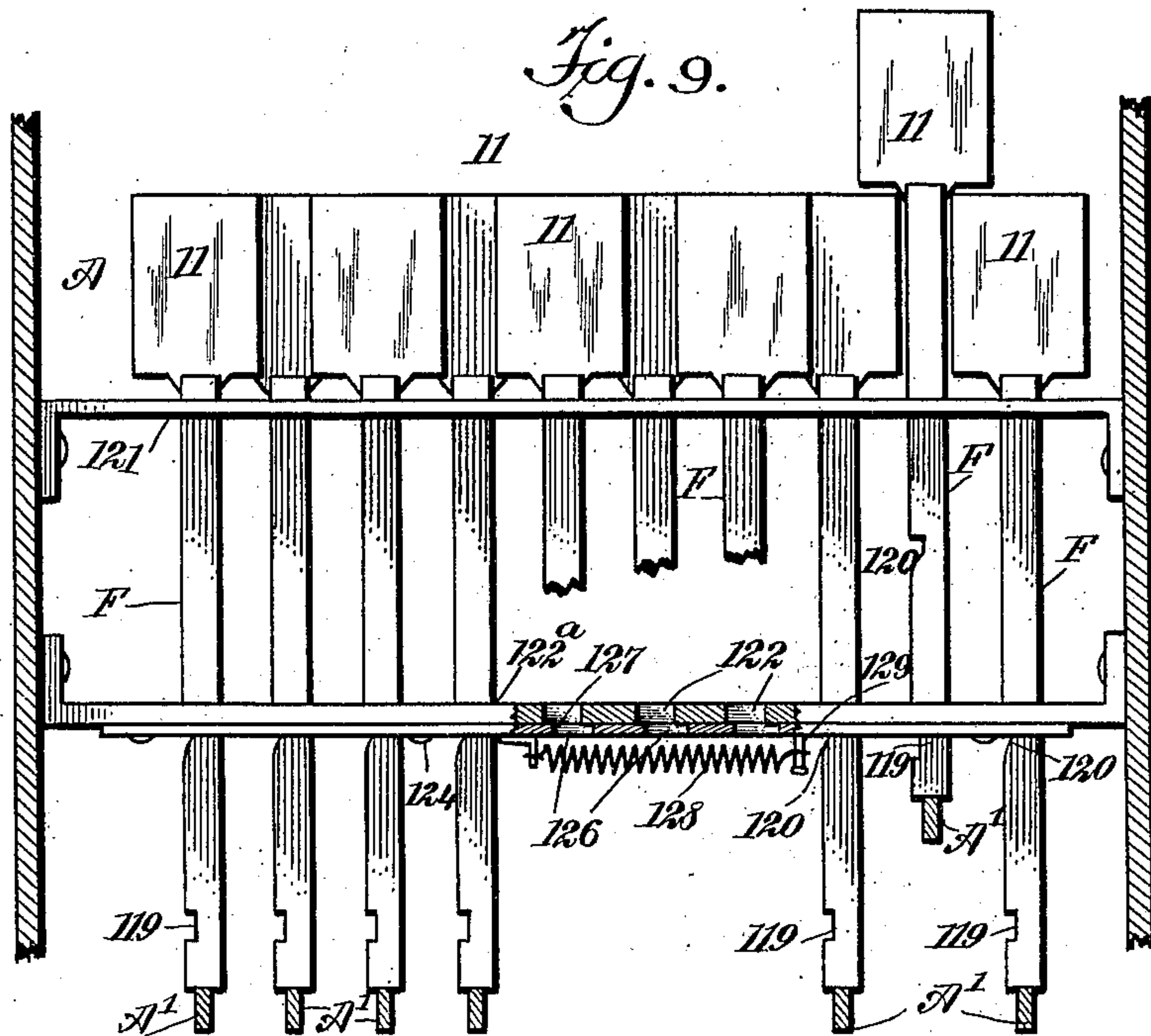
PATENTED MAR. 29, 1904.

J. C. VAHJEN.  
CASH REGISTER.

APPLICATION FILED FEB. 5, 1903.

NO MODEL.

8 SHEETS—SHEET 7.



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No. 756,082.

PATENTED MAR. 29, 1904.

J. C. VAHJEN.  
CASH REGISTER.

APPLICATION FILED FEB. 5, 1903.

NO MODEL.

8 SHEETS—SHEET 8.

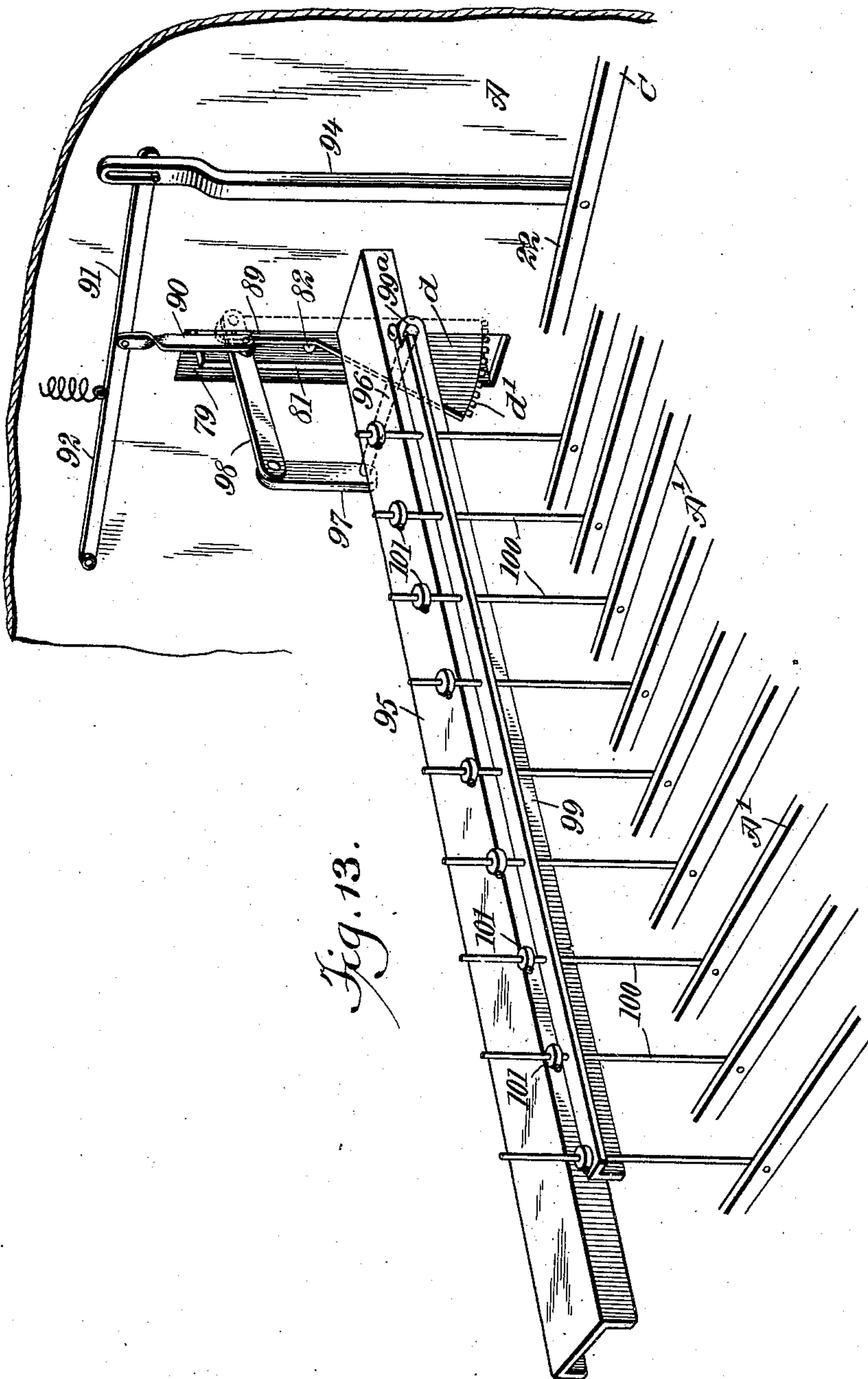


Fig. 13.

WITNESSES:

*As Represented by*  
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# UNITED STATES PATENT OFFICE.

JOHANN C. VAHJEN, OF NEW YORK, N. Y., ASSIGNOR TO JOHN H. VAHJEN,  
OF BROOKLYN, NEW YORK.

## CASH-REGISTER.

SPECIFICATION forming part of Letters Patent No. 756,082, dated March 29, 1904.

Application filed February 5, 1903. Serial No. 141,994. (No model.)

*To all whom it may concern:*

Be it known that I, JOHANN C. VAHJEN, a subject of the German Emperor, and a resident of the city of New York, borough of Manhattan, in the county and State of New York, have invented a new and Improved Cash-Register, of which the following is a full, clear, and exact description.

The purpose of the invention is to provide a simple, durable, and positively-acting construction whereby as each lever-key is depressed a corresponding tablet will be displayed and remain displayed until another key is operated, each key returning automatically to normal position as soon as released from pressure, and to also provide means whereby a key must be fully depressed at each operation in order to discharge a printed check bearing the amount of the sale, which check by suitable mechanism is cut from a roll of tape of suitable thickness and drops from the machine simultaneously with the display of the tablet, and, further, to so construct the locking mechanism for the keys that when a key is partially depressed it cannot be forced to its normal position before it has been pressed downward to the full limit of its travel.

Another purpose of the invention is to provide a printing mechanism adapted for attachment to any tablet-machine, including means for printing and cutting a check and means for simultaneously and by the use of a single ribbon producing a duplicate of the check upon a preferably thin tape, which latter tape remains concealed in the machine until purposely removed, and means for automatically feeding the tape from one spool to another.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a front elevation of the machine. Fig. 2 is a vertical longitudinal section looking toward the rear, the section being taken substantially on the line 2 2 of Figs. 3 and 5.

Fig. 3 is a vertical section taken practically on the line 3 3 of Fig. 2. Fig. 4 is a similar view, a key being shown carried down to its lowest position. Fig. 5 is a vertical transverse section taken practically on the line 5 5 of Fig. 2, showing particularly the printing and cutting mechanism. Fig. 6 is a detail front elevation of a locking mechanism for the keys. Fig. 7 is a rear elevation of the same, and Fig. 8 is a plan view of the said locking mechanism. Fig. 9 is a detail rear elevation, partly in section, of the tablet-carrying bars, the tablets and the supports for the same, and locking device for the bars. Fig. 10 is a bottom plan view of the locking-plate shown in Fig. 9 and the support. Fig. 11 is a fragmentary sectional view of the printing mechanism and immediate connections. Fig. 12 is a sectional detail view of the locking device for the drawer of the machine, taken practically on the line 12 12 of Fig. 2. Fig. 13 is a detail perspective view of the printing mechanism, and Fig. 14 is a perspective view of the printing or impression sector.

The machine consists of a body-section A, which is shown in the form of a single chamber, and an offset chamber B at one side of the main chamber or body of the machine. At the upper portion of the body of the machine an extension of the main chamber is formed, at which the tablets 11 appear at a suitable opening 10, as is shown in Fig. 1.

In the drawings I have illustrated a machine provided with ten key-levers A', which extend at the front of the body A through suitable longitudinal slots 12, and these key-levers A' are shown as arranged in two banks one above the other and as terminating at their outer ends in suitable knobs, upon which numerals may be produced. It will be understood that the keys shown may be duplicated in any desired number of series and that the mechanism to be hereinafter described will be at such time also duplicated to a major extent. At the front of the annex or offset chamber B a slot 13 is made, through which the checks, to be hereinafter particularly referred to, pass out from the machine.

A<sup>2</sup> represents a money-drawer of the ma-



chine, and the said drawer is shown located at the bottom portion of the main chamber or body-section A and is adapted to slide therein in any suitable or approved manner, and when the drawer is released the auxiliary spring at the back of the drawer is employed to force the drawer to an open position. The drawer is locked through the medium of a latch 14, (shown best in Fig. 12,) provided with an upwardly-extending link 15, adjustably attached thereto, and this latch 14 is pivoted to the side of the body opposite the extension or offset chamber B, as is best shown in Fig. 2. The latch 14 is provided near its free end in its under surface with a recess 17, adapted when the drawer A<sup>2</sup> is in closed position to receive a pin 18, extending from the outer side face of the drawer A<sup>2</sup>, as is also shown in Fig. 12, and preferably the free end 19 of the latch 14 is more or less curved, so that as the drawer is closed the said free end of the latch will readily ride up over the said pin 18.

Below all of the key-levers A' an actuating-frame C is located within the main chamber or body A of the machine. This actuating-frame C, as is shown in Figs. 2, 3, and 4, consists of a front bar 21, extending practically from side to side of the said body-chamber, and side bars 22, which extend from the ends of the front bar nearly to the rear of the said body-chamber. Each key-lever A' is fulcrumed upon a fixed shaft 20, extending from side to side of the body-chamber, and each key-lever A' is provided with a rear member 23, extending from the shaft 20, terminating at its rear end in a segmental rack 24, and each extension member 23 of a key-lever A' has a spring 25 attached to it between its ends, and said springs are carried downward and fastened to a bar 26, secured to the side walls of the body-chamber, the said springs serving to normally hold the outer ends of the key-levers in an upper or normal position or the rear ends of their extensions in a normal lower position, (shown in Fig. 3,) and the rack-heads 24 of the extensions from the key-levers act in conjunction with a locking-bar 27, pivoted at its ends to the side walls of the body-chamber, and this locking-bar is provided at its forward face with a knife-edge 28, and springs 29 are attached to the ends of the bar and are secured also to the side walls of the body-chamber at points 30 in advance of the said bar.

It will be observed that when a key-lever A' is pressed downward at its inner end, which action is necessary to display a tablet 11, the teeth of the rack-head 24 of that lever will be carried up in engagement with the knife-edge 28 of the locking-bar 27, and if the said key-lever is pressed down to its full extent the rack-head 24 of that lever will pass the locking-bar 27, which will turn upon its pivot in similar manner to a pawl passing idly over

ratchet-teeth; but in the event the lever A' is purposely pressed down but a slight distance and released the knife-edge of the locking-bar 27 will so engage with the teeth of the rack-head of that lever as to lock the lever against upward movement at its outer end, so that the lever will remain in its partially-operated position until it has been purposely carried down the full length of the stroke, whereupon the rack-head will have passed the locking-bar 27, and when the lever is released, owing to the segmental shape of the rack-head 24, the spring 25, connected with the extension of the lever operated, will draw the extension of the said lever downward, and the rack-head will readily pass the locking-bar 27 and assume its lower initial position, and at the same time the outer end of the said lever will have assumed its upper normal position.

The link 15, connected to the locking-latch 14 of the money-drawer, is pivoted to the rear portion of the left-hand side member 22 of the actuating-frame C, as is shown in Fig. 2, and a link 31 is pivotally attached to the right-hand rear side member 22 of the said frame, as is shown in Figs. 2, 3, and 4. This link 31 is pivotally attached to an arm 32 near the rear end of the said arm, and a spring 33 is attached to the rear extremity of the arm 32 and to the right-hand side of the main or body-chamber of the machine. This arm 32 at its forward end is pivoted upon a short shaft 34, located within the body-chamber of the machine, as is shown particularly in Fig. 3. A gear-wheel 35 is mounted to turn loosely on this shaft, and to the inner face of this gear-wheel a ratchet-wheel 36 is secured, operated upon by a downwardly-extending dog 37, which is pivoted to the aforesaid arm 32. This mechanism is adapted to operate at the downward movement of a key-lever A' a check-feed device, and to that end a shaft 38 is journaled in the right-hand wall of the main or body chamber of the machine, extending into the extension-chamber B, as is shown in Figs. 3 and 5. This shaft within the body-chamber has a pinion 39 secured thereto, meshing with the teeth of the gear-wheel 35, and within the extension-chamber B this shaft 38 has a feed-wheel 40 secured thereon, the periphery of which is preferably roughened or serrated. A tape 41 passes over this feed-wheel 40, and this tape is of thick paper or of pasteboard and is normally wound upon a reel 42, which is mounted to turn on a short axle 43, located within the said extension-chamber B near its lower rear corner, as is shown in Fig. 5. The tape 41 is held in engagement with the feed-wheel 40 by means of a pressure-roller 44, as is shown in Fig. 5, and this roller is carried by an arm 45, pivoted at one end to the partition between the two chambers of the machine. The roller 44 is held in proper engagement with the said tape by a spring 46, attached to the lower and free end of the arm



45 and to a convenient stationary support. The tape 41 after passing over the feed-roller 40 extends over and lies upon a horizontal table 47, extending in direction of the front and the rear of the extension-chamber B from a point below the front outlet-slot 13 in the said extension-chamber for the printed check 49, as is also shown in Fig. 5, and the tape is guided onto the said table 47 by a guide-plate 48, located adjacent to the said feed-roller 40, and over the inner end of the table 47, as is also shown in Fig. 5. Two guide-pins 50 are located over the table 49, somewhat near thereto. These pins are in the same horizontal alignment and are a predetermined distance apart. An inking-ribbon 51 passes beneath these pins, and between the said pins 50 the inking-ribbon is flat or horizontally straight. This inking-ribbon is connected at one end with a suitably-supported spool 52 and at the opposite end with a corresponding spool 53, as is shown in Fig. 5, and any means may be employed for moving the ribbon from one spool to the other. A tape 54, preferably of lighter material than the other—such as tissue-paper, for example—is likewise made to pass under the said guide-pins 50 and above and in contact with the straight intermediate section of the inking-ribbon 51, as is shown in Fig. 5. This upper tape 54 is adapted for recording purposes and is to remain in the machine and receives an impression the duplicate of that produced upon the main or check tape 41 by means of a printing mechanism to be hereinafter specifically described. One end of the said recording-tape 54 is attached to a spool 55, mounted to turn upon a suitable support 56 at the upper rear portion of the said extension-chamber B, and the opposite end of the said recording-tape 54 is attached to a corresponding spool 57, mounted to turn with a shaft 58 at the upper front portion of the said extension-chamber B. The said shaft 58, on which the spool 57 is mounted, is a winding-shaft and extends through the partition between the two chambers into the body-chamber of the machine, as is shown in Fig. 3, and within this chamber a ratchet-wheel 59 is secured on the said shaft 58. On this shaft 58 adjacent to the ratchet-wheel 59 an upwardly and forwardly extending arm 61 is loosely mounted, provided with a dog 60, adapted to operate upon the ratchet-wheel 59 to turn the same, and consequently the winding-spool 57. This arm 61 at its upper forward end is supported by a spring 62, attached thereto and to a fixed support at the right-hand side of the casing, and the said arm 61 is connected with the right-hand side member 22 of the actuating-frame C by a link 63. Thus when a lever-key A' is forced downward the dog 60 acts upon the ratchet-wheel 59 to turn the winding-spool 57 in a direction to wind up the recording-tape thereon a sufficient distance to bring a fresh surface between

the guide-pins 50 to receive the next impression.

It will be observed that the recording-tape 54 is operated upon at the downward movement of a lever-key, while the check-tape 41 is fed at the upward or return movement of the key.

In connection with the check-tape 41 I employ a cutting mechanism D. As is shown best in Figs. 2 and 5, this cutting mechanism consists of a vertical cylinder 64, open at the top and closed at the bottom and supported by transverse bars 65 at the forward portion of the extension-chamber B, and in the bottom portion of the said cylinder a spring 66 is located, as is shown particularly in Fig. 2. A plunger-rod 67 is mounted to slide loosely in the cylinder 64, the lower end of which rod has bearing against the upper end of the spring 66, and at the upper end of the said rod 67 a cross-head 68 is secured, and a knife 69 is attached either to the said cross-head or to a portion of the plunger-rod 67 to which the cross-head is attached, and in the upper position of the said knife 69 it passes through a slot in the table 47 in order to separate a sufficient length of printed tape 41 from the mass of tape to form a check 49 heretofore referred to; but this cutting operation of the knife does not take place until the section of the tape from which the check 49 is to be cut extends sufficiently beyond the front of the extension-chamber B through the opening 13 therein to be readily grasped. A cross-bar 70 is located above the opening in the table 47, through which the knife passes, so that the knife will have a firm surface upon which to bear in its cutting operation.

A rod 71 is loosely mounted in the cross-head 68 of the cutting mechanism, as is shown in Fig. 5, and this rod is provided with a head at its upper end and extends downward parallel with the cylinder 64. Said rod is adapted to draw the knife downward away from the table at the downward stroke of a key-lever. This is accomplished by pivotally connecting the lower end of the said rod 71 of the knife by means of a screw 72 or otherwise to a lever 73, fulcrumed near the back of the machine to the partition-wall between the two chambers, the lever 73 being located in the body-chamber of the machine, as is shown in Fig. 3. The said screw or pin 72, connecting the setting-rod with the lever 73, has sliding movement in a slot 72<sup>a</sup>, made in the division-wall of the two compartments of the machine. The forward end of the lever 73 is connected by a link 74 with the right-hand side member 22 of the actuating-frame C, preferably at a point near the front of the said frame. When the knife and carrying plunger-rod 67 are brought downward by the said lever 73 and setting-rod 71 and connections between the lever and the actuating-frame, which downward movement of the



knife, as stated, is accomplished when a key-lever is depressed, the said knife is held temporarily in its downward position until the depressed key-lever is released and returns to its normal position. This temporary locking of the knife 69 and its carriage in a lower position is accomplished through the medium of an angle or elbow lever 75, pivoted at the junction of its members to the inner face of the right-hand wall of the body-chamber of the machine, as is shown in Fig. 5, and the lower member of this lever is weighted, overbalancing its upper or vertical member, which latter member is provided with a head 76, extending rearwardly beyond the rear edge of the vertical member, and the upper rear face of this head is more or less inclined. Thus when the knife-carriage is drawn downward the cross-head 68 by engagement with the head 76 of the locking-lever 75 will pass the said head until it reaches a position below it, whereupon the lower member of the said locking-lever will bring the upper member in such position that its head will extend over the top of the cross-head 68 of the knife-carriage. In order to effect a release of the knife and bring about the severance of the check-tape 41 to produce a check, a trip-bar 77 is connected by a screw 78 or its equivalent with the aforesaid lever 73 at a point, preferably, between the pivotal connection of the said lever with the rod 71 and the pivoted end of the lever, as is shown in Fig. 3, and this pivotal screw or pin 78 has sliding movement in the slot 78<sup>a</sup>, made in the partition-wall of the machine. Thus when the key-lever is raised and the actuating-frame C ascends the trip-bar 77 will engage with the free or rear end of the lower weighted member of the lock-lever 75 and will force said member upward, thus carrying the head 76 of the vertical member out of engagement with the cross-head 68 of the knife-carriage, at which time the spring 66 will act to force the knife 69 upward to cutting position. In review of this portion of the operation it may be here stated that when a key-lever is pressed down a tablet is exposed and as the key-lever is descending the winding-spool 57 for the recording-tape is turned to wind up the said tape sufficiently to present another surface to receive an impression. In the continued downward movement of the key the knife is drawn down and locked, and at the same time the drawer-latch 14 is released, permitting the spring controlling the drawer to force the latter open. On the return or upward movement of the key-lever operated upon the gear 35 is revolved and the feed-roller 40 for the check-tape is set in motion to feed a printed check out from the machine, previously printed by means of a mechanism to be hereinafter described, and bring a fresh surface of the said tape 41 in position to be printed. At or about the same time and on the upward movement of the key-lever the knife is released from

its locking device and a check 49 is cut from the tape 41 and may be readily drawn out from the machine, as is indicated in Fig. 5.

The printing mechanism heretofore referred to is constructed as is particularly shown in Figs. 2, 3, 4, 5, 11, and 13. As is shown in Figs. 5 and 11, a vertical opening 79 is made above the table 47 about centrally between the guides 50, and upon the partition-wall between the two compartments of the machine in the extension-chamber B slideways 80 are located at the side edges of the said opening 79, as is particularly shown in Fig. 5. Sliding plates 81 have vertical movement in each of the guideways 80, and a printing segment or sector  $\mathcal{A}$  is pivoted upon the said slides or sliding plates 81 on a pin 82, connecting said slides, the wider portion of the sector being its bottom portion. At the bottom edge of the printing-sector  $\mathcal{A}$ , as is best shown in Figs. 11 and 13, type  $\mathcal{A}$  are produced or secured, the said type reading, for example, from "1" to "0," the type designating "1" being at the lower end of the sector, which is within the body-chamber A, as is shown in Fig. 11. The type designating "0" will then be at the opposite edge of the sector or at that edge which is within the extension-chamber B. The type correspond in number to the number of the levers, the type designating "0" being that which corresponds to the key-lever operated to indicate "No sale." This printing-sector  $\mathcal{A}$  is held about centrally of its lower portion in the aforesaid opening 79 in the partition-wall of the machine, as is also shown in Fig. 11, by a spring 84, attached to the outer upper edge of the sector and to a downwardly-extending bracket 83, projected from the upper central portion of the guideways 80, and such position of the sector is its normal position. An opening is made in the table 47, over which the inking-ribbon extends at a point centrally between the guide-pins 50, and just below this opening two lower slideways 85 are attached to the partition-wall between the chambers of the machine within the extension-chamber, as is shown in Fig. 5. A plate 86 has vertical movement in the slideways 85, and the bottom of the plate is extended horizontally to project beyond the bottom portions of the slideways, and so limit the upward movement of the said plate 86, which is normally held in an upper position by springs 88, attached to its lower extension members and to the partition-wall of the machine somewhat adjacent to the table 47, and at the upper end of the sliding plate 86 an anvil-head 87 is formed, adapted to slide freely in the aforesaid opening in the table 47. This anvil-head has limited downward movement. As each key is pressed the printing-sector is rocked upon its pivot sufficiently to bring the proper type-number over the tapes 41 and 54, and on a further downward movement of the key the printing-sector is carried downward



so as to produce an impression, the platen being the anvil head or block 87, which will yield to a slight extent in a downward direction, and after the tape has received the impression and the printing-sector has returned to its upper normal position through the movement of the slides 81 the anvil block or head 87 will assume its normal position, due to the action of the springs 88. (Shown in Fig. 5.)

10 An ear 89 (shown in Figs. 11 and 13) extends within the body-chamber of the machine from one of the slides 81 at a point at or near its upper end, and a link 90 is pivotally attached to this ear 89, which link is in its turn 15 pivotally connected to a lever-arm 91, pivoted at one end near the rear of the body-chamber of the machine to the partition-wall which divides the said chambers. The link 90 is pivoted about centrally to the lever-arm 91, and 20 a spring 92, attached to the upper portion of the machine and to the said lever-arm 91, serves to hold the lever-arm in a normally horizontal position. At the forward end of the lever-arm 91 a pin 93 is secured, and this 25 pin enters a slot 94<sup>a</sup> in the upper end of a link 94, which link in its turn is pivotally attached to the right-hand side member 22 of the operating-frame C.

30 A cross-bar 95 extends from the partition-wall of the machine to the opposite wall of the body-chamber and at a point above the actuating or operating frame C, and at the right-hand end of this cross-bar 95 a short shaft 96 is pivoted. This shaft at its rear end is secured to an upwardly-extending link 97, and 35 this link is pivotally attached to a second upper horizontal link 98, which in its turn is also pivotally connected with the upper end of the printing-sector  $d$ . A key-bar 99 extends 40 normally parallel with the front portion of the cross-bar 95 and practically flush with the upper surface of said cross-bar, and a rod 100 is connected with each key-lever A'. These rods pass through suitable openings in the 45 key-bar 99, which key-bar at its right-hand end has pivotal movement relative to the cross-bar 95, as is shown at 99<sup>a</sup> in Fig. 13. It will be observed that this key-bar 99 is held in its upper or normal position by reason of its connection with the printing-sector  $d$  and by reason of the tension of the spring 84 at the upper 50 portion of said sector. Each rod 100, extending from the key-lever, is provided above the key-bar with a collar 101, adjustably attached thereto, and the collar on the rod connected with the 55 key-lever marked "1" is close to the upper surface of the said key-bar, while the collars on the rods of the other key-levers are graduated in distance from the said key-bar, so that 60 the key-lever 1, for example, imparts the greatest throw to the key-bar, while the right-hand lever, which designates "0" and "No sale," has the shortest throw. In this manner the movement of the sector  $d$  is controlled and the proper 65 type is brought into position to make an im-

pression on the tapes. In the operation of this part of the machine when a key-lever is pressed down for a portion of its downward travel the collar 101 on the rod connected with that lever will have engaged with the key-bar 70 99 and will have carried that key-bar down a sufficient distance to have rocked the printing-sector  $d$  sufficiently to bring the desired type near the position for impression. On the further downward movement of the key-lever the 75 sector will have been moved so that the desired type will be in exact position for impression, and about such time the pin 93 on the lever 91 will have reached the upper end of the slot 94<sup>a</sup> in the link 94, as is shown in Fig. 4, the 80 normal position of these parts being indicated in Fig. 13, and the link 94, drawn down by the actuating-frame pressed upon by the key, will draw the lever-arm 91 downward, and thus through the link connection 90 with the 85 slides 81 will force the said slides downward, and they will carry with them the sector  $d$  and produce the desired impression. When the key-lever is released, the parts above described automatically return to their respective 90 normal positions.

Another feature of the invention consists in a device for locking the key-levers A' in such manner that only one key-lever can be operated at one time, all the others being meanwhile 95 locked. To such an end, I secure a main plate 102 transversely of the side walls of the body-chamber of the machine at the rear of the opening 79 for the printing-sector  $d$ , and on this main plate a locking-plate 103 is 100 mounted to slide at the front, while at the back of the said main plate 102 a second and corresponding locking-plate 104 is similarly mounted, which locking-plates move endwise or in direction of the ends of the main plate. 105 One locking-plate is brought into action by the key-levers at one side of the center of the series, while the other locking-plate is operated by the key-levers at the opposite side of the center of the series. The main or fixed 110 plate 102 is provided with a sufficient number of vertical slots 105 for the passage of the rear extension members 23 of each key-lever A' and with end slots 106 for the passage of the side members 22 of the operating-frame 115 C. Each locking plate or slide 103 and 104 is provided with horizontal slots 107 near its ends, and bolts 108, stationary in the main plate 102, pass through the longitudinal slots 107, and thus guide the locking-plates in their 120 movements. Each locking plate or slide is provided with a spring-controlled centering device E, and in the construction of such devices a longitudinal central recess 109 is produced in the upper edge of each locking plate 125 or slide, and outwardly-extending lugs 110 are provided at the ends of said recesses. A bracket 111 is secured at the upper central portion on each side of the main plate 102, occupying a central position relative to the re- 130



cesses 109 when the locking-plates are in their normal position, as is shown in Figs. 6, 7, and 8, and rods 112 slide horizontally in the brackets one above the other, extending beyond opposite sides of the brackets to an engagement with opposite lugs 110 on the locking plates or slides 103 and 104, being normally so held by springs 113, shown coiled around them within the brackets, and stop-pins 114, passed through the rods and also located within the brackets. Each locking-plate is provided with a series of vertical slots extending through their bottom edges, corresponding in number to the slots 105 in the main plate, through which the key-levers pass. The slots 115 in the locking-plates 103 and 104 are at equal distances apart at one side of the center of the plates and in the normal position of the locking-plates on the main plate. These slots in the locking-plates are normally in registry with corresponding slots in the main plate 102; but the slots in the locking-plates at the opposite side of their centers are placed at irregular distances apart, and the latter slots are at the left-hand end of the rear locking-plate viewed from the rear and the left-hand end of the front locking-plate viewed from the front. The end slots *a* of the series of slots 115 in the locking-plates—that is to say, the end slots of the group which are at regular distances apart—are normally in unobstructed registry with the slot 105 in the main plate through which the “No sale” of cipher lever-key passes, as is likewise the central slot (marked *b*) of the series 115 in the locking-plate in unobstructed registry with the corresponding or central slot 105 in the main plate, as is shown in Figs. 6 and 7. All of the other slots are more or less obstructed. The locking plates or slides 103 104 are narrower than the main plate 102. Therefore a space is obtained between the bottom edges of the locking-plates 103 104 and the bottom portion of the slots 105 in the main plate 102, as is also shown in Figs. 6 and 7. Therefore in the arrangement of the slots 115 in the locking-plates 103 104 a series of tongues 116 is obtained in each locking-plate between the slots of equal width, and these tongues are at one side of the center of each locking-plate, whereas at the opposite side of the center of each locking-plate or opposite end the tongues 117 between the slots are of unequal width, some being wider than the others, as is shown also in Figs. 6 and 7. As the uneven tongues are at opposite ends of the front and rear locking-plates 103 and 104 viewed from the front of the machine, the tongues of uneven width will extend more or less longitudinally over the slots in the locking-plates that are at equal distances apart and the corresponding slots in the main plate with which such equally-distributed slots register, and the lower edges of tongues of uneven width are so beveled at their corners, as shown at 118 in Figs. 6 and

7, that when a lever is raised at its rear end in a slot 105 in the main plate it will draw one or the other of the locking-plates sufficiently from the slot which it covers to permit the particular lever to move in that slot, whereas the tongues of the locking-plates when said plates are so moved will be brought across the slots 105 in the main plate in which the other levers rest, thus locking these levers in their lower position at their rear ends and preventing them from being raised at said ends until the lever operated has been released, whereupon the locking-plates will be returned to their normal position by the centering devices E, and any of the levers may then be singly operated.

In relation to the tablet-bars F, (shown in Fig. 9,) they are rectangular in cross-section and are perpendicularly placed in transverse order at the rear of the machine. The tablets 11 are attached to the upper ends of the rods in any suitable and approved manner, while the lower ends of the tablet-rods normally bear upon the rear ends of the key-levers A'. In the same side edge of each tablet-rod F a lower recess 119 is produced and an upper recess 120. The recesses of all of the rods when the rods are in their normal or lower position are in transverse alinement. The lower recesses 119 of the rods have straight upper and lower walls, while in the construction of the upper recesses 120 of the rods their upper walls are straight or horizontal and their lower walls are inclined or curved in a downward and outward direction. These tablet-bars pass through rectangular openings in the upper supporting-bar 121, extending from side to side of the main chamber of the machine, and through corresponding openings or apertures 122 in a lower supporting-bar 122<sup>a</sup>, and when the said tablet-bars are in their normal or lower positions the upper recesses 120 in the said bars are within the openings 122 in the lower supporting-bar 122<sup>a</sup>. In connection with the lower supporting-bar 122<sup>a</sup> a slide 123 is mounted upon its under face, being guided by studs 124 passed through longitudinal slots in the said plate and into the lower supporting-bar 122<sup>a</sup>, as is shown best in Fig. 10. The plate 123, which is a locking-plate adapted to hold the tablet-bars for a time in an upper position to display a tablet, is provided with a series of rectangular openings 126 therein, corresponding in number and in location with the number and location of the openings or apertures 122 in the lower supporting-bar 122<sup>a</sup>; but normally the slide or locking-plate 123 is so held that an end wall of the apertures therein will overlap the corresponding walls of the apertures 122 in the lower supporting-bar 122<sup>a</sup>, thus providing shoulders 127, which in both positions of the tablet-bars enter a recess therein, said shoulders entering the upper recesses 120 when the tablet-bars are in their lower position and the lower recesses 119 when



the tablet-bars are in their upper position. The locking-slide 123 is thus normally held, preferably, by a spring 128 at its under surface, one end of the spring being attached to the slide and the other end to a pin or offset 129 from the under face of the lower supporting-bar 122<sup>a</sup>, which pin passes through a suitable slot in the locking slide or plate. In the operation of these tablet-bars when one of them is raised to display a tablet by the movement of a key-lever A' the upper recessed portion of the bar, by reason of its inclined bottom wall, will force the said slide in such position that its apertures or openings 126 will be in full registry with the apertures or openings 122 in the lower supporting-bar 122<sup>a</sup>; but the moment the tablet-bar has been carried up sufficiently to bring the lower recess 119 of that bar within the range of the locking-slide 123 the spring 128 will assert itself and draw the slide or locking-plate 123 to its normal position, thus bringing the shouldered portion 127 of the slide into the bottom recess 119 of the uplifted bar, and the bar will remain in its upper position when released from the key-lever; but the moment that another tablet-bar is elevated the locking-slide 123 is again moved to bring its apertures in registry with the apertures 122 and the elevated tablet-bar will be released from locking engagement with the slide 123 and will drop to its lower or normal position.

In the general operation of the machine when a lever-key A' is depressed a tablet 11 is displayed at the upper panel 10 in the casing and remains displayed until another key is depressed, whereupon the first tablet raised drops by gravity as the next tablet is elevated, and as each key-lever is depressed at its front end the upward movement of the rear end of the key-lever brings the locking-plates 103 and 104 for said keys in such position as to permit the singly-operated key to work upon its pivot, and at the same time the said locking-plates effectually prevent any other key-lever from being operated until the one in action is released and is returned to its normal position. Further, during the downward motion of the front end of each key-lever the rear extension 23 of the operated lever in passing the pivoted knife-edge bar 27 will prevent the forward end of the key-lever from returning upward to its normal position until it has completed its downward throw and effected, together with its upward movement, a display of the amount of sale, the printing and delivery of the check, and the impression of the duplicate of the sales transaction upon the recording-tape 54 within the casing of the machine. Further, at the downward movement of the key-lever the cash-drawer is opened, the printing or impression section *d* is placed in position to impress upon both tapes 41 and 54 the amount represented by the lever operated, and the said printing

or impression sector is forced downward to make an impression, and the knife 69 is carried downward and locked in its lower position; but prior to the action of the printing or impression sector the mechanism controlling the winding-spool 57 for the recording-tape 54 is set in motion, and said recording-tape is wound upon said spool sufficiently to bring a plain surface in the path of the printing or impression mechanism. As the operated key-lever returns to its normal position, or at the upstroke of the forward end of the said key-lever, the lower check-tape 41 is fed outward by the feed-roller 40 and connected parts, bringing the outer end of the just-printed section of the check-tape 41 out through the front opening 13 in the machine a sufficient distance to enable the tape to be grasped, and as the operated key-lever nears its normal position on the said upstroke of its forward or outer end the knife 69 is released from its keeper, and in engaging with the tape 41 cuts it, thus producing the check 49, upon which the amount of the sale just made appears, and this check is adapted to be handed to the customer or may be retained as a check upon the recording-tape by the operator of the machine, if so desired.

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

1. In a cash-register, a printing mechanism comprising key-levers, a support above the same, a key-operated bar pivoted at one end upon the support, a slide, a support therefor, a printing-segment pivoted in the slide, a rocking connection between the key-bar and the segment, a frame depressed by the key-levers, and a depressing connection between said frame and the slide carrying the printing-segment.

2. In a cash-register, a printing mechanism comprising a support, a key-operated bar pivoted upon the support, key-levers, a sliding and graduated connection between the key-levers and key-operated bar, a slide raised and lowered by the movement of the key-levers, and a printing-segment pivoted in the slide, rocked by the movement of the key-bar.

3. In a cash-register, a printing mechanism comprising a support, a key-operated bar pivoted at one end upon the support, key-levers, rods attached to the key-levers and passed through the key-operated bar, collars carried by the rods above the key-operated bar, which collars are graduated as to distance from the key-operated bar, a slide, a spring-controlled printing-sector pivoted in the slide, a rocking connection between the sector and key-operated bar, and means for raising and lowering the sliding support for the sector.

4. In a cash-register, a support, a frame mounted to slide in the support, a printing pendulum-sector mounted to rock in the frame, a key-lever and connections between the key-lever and sector, the frame being so timed



that the machine in its action first locates the type on the pendulum-sector with reference to the surface to be printed upon and then carries the frame and the sector supported there-  
 5 by to and from the material upon which the impression is to be made, as described.

5. In a cash-register, key-levers, pivotal supports therefor, an actuating-frame controlled by the movement of the key-levers, a fixed  
 10 support, a key-bar pivoted at one end to the fixed support, connections between the said key-levers and key-bar, whereby to operate the latter by the movement of the former, a printing-sector, a sliding support in which the  
 15 said sector is mounted, a rocking connection between the key-bar and the sector, a tension device adapted to hold the sector in normal position, a spring-controlled lever, and link connections between the said actuating-frame  
 20 and the sliding support for the sector, whereby the said sector is raised and lowered also through the movement of the key-levers, as described.

6. In a cash-register, a printing-sector, a  
 25 slide in which the said sector is mounted, a spring-controlled platen located beneath the type-section of the sector, an inking-ribbon having guided support between the said sector and platen, and tapes between which the said  
 30 inking-ribbon passes, as and for the purpose specified.

7. In a cash-register, a printing-sector, a  
 35 slide in which the said sector is mounted, a spring-controlled platen located beneath the type-section of the sector, an inking-ribbon having guided support between the said sector and platen, tapes between which the said  
 40 inking-ribbon passes, independent feed devices for the said tapes, and a cutting device adapted to operate upon one of the tapes, as set forth.

8. In a cash-register, the combination with a series of key-levers, a fixed support, a key-  
 45 bar pivoted at one end to the said support, rods pivoted to the key-levers and extending loosely through the key-bar, collars carried by the said rods and graduated with respect to the upper surface of the key-bar, a print-  
 50 ing-sector, a slide in which the said sector is pivotally mounted, a rocking connection between the said sector and the said key-bar, an actuating-frame operated by the said key-levers, a spring-controlled lever, a support  
 55 therefor, a connection between the said spring-controlled lever and the said slide for the sector, and a link connection between the actuating-frame and the said spring-controlled lever, which link has lost motion with respect to the spring-controlled lever, of a spring-  
 60 controlled platen located beneath the type-section of the printing-sector, an inking-ribbon, supports therefor and guides for the said inking-ribbon, holding it horizontally between the said platen and the printing-sur-  
 65 face of the said printing-sector, upper and

lower tapes, one passed above and the other below the said inking-ribbon, independent feed devices for the said tapes, a knife adapted to operate upon the lower tape, a spring-  
 70 controlled support for the knife, and connections, substantially as described, between the said actuating-frame, the feed devices for the tapes and the said knife, whereby the latter-named parts are operated as described, by the movement of the key-levers, as set forth. 75

9. In a cash-register, the combination with a series of key-levers, a support above the key-levers, a pivoted spring-controlled frame beneath the key-levers and depressed by a cor-  
 80 responding movement of the key-levers, a key-bar pivoted at one end of the said support, a slide, a support upon which the slide has guided movement, a printing-sector, spring-controlled in one direction, pivoted in  
 85 said slide, a rocking connection between the key-bar and sector, a connection between said actuating-frame and the slide, whereby the raising and lowering of the same is timed, and connections between the key-bar and the key-  
 90 levers, of a yielding platen beneath the printing-surface of the sector, an inking-ribbon, and top and bottom tapes having guided movement between the sector and platen, feed mechanism for the tapes, operated by the said  
 95 actuating-frame, and a cutting mechanism for the lower tape, likewise operated by said actuating-frame, as specified.

10. In a cash-register, a series of key-levers, a tension-controlled frame pivoted beneath the key-levers and adapted to be operated in one  
 100 direction by the action of the key-levers, a check-tape, a support therefor, a feed mechanism for the check-tape, operated by the movement of the said pivoted frame, a knife-carrier movable to and from the said check-  
 105 tape, a spring-cushion for the knife-carrier, adapted to normally force the same in direction of the check-tape, a locking device for the knife-carrier, a trip for the locking device, and actuating communication between  
 110 the knife-carrier and the trip for the locking device, as set forth.

11. In a cash-register, a series of key-levers, a tension-controlled frame pivoted beneath the key-levers, adapted to be operated in one di-  
 115 rection by the action of the key-levers, a check-tape, a support therefor, a feed mechanism for the check-tape, operated by the movement of the said pivoted frame, a knife-carrier movable to and from the said check-tape, a spring-  
 120 cushion for the knife-carrier, adapted to normally force the same in direction of the check-tape, a pivoted locking device for the knife-carrier, a lever pivoted below the locking device, a pull connection between the knife-car-  
 125 rier and said lever, a trip for the locking device carried by the said lever, and a connection between the free end of the lever and the pivoted frame, as specified.

12. In a cash-register, key-levers, a tension- 130



controlled pivoted frame beneath said key-levers and operated thereby, a check-tape, a recording-tape, means for feeding both tapes by the action of the pivoted frame, an inking-ribbon between the tapes, a printing mechanism operated by the key-levers and pivoted frame, adapted for simultaneous impression on both tapes, and a cutting mechanism for one tape, actuated by the said pivoted frame, as specified.

13. In a cash-register, the combination with key-levers, a tension-controlled pivoted frame beneath said key-levers and operated thereby, a check-tape, a recording-tape, means for independently feeding both tapes by the action of the pivoted frame, an inking-ribbon between the tapes, and a printing mechanism operated by the key-levers and pivoted frame, adapted for simultaneous impression on both tapes, of a cutting mechanism for the check-tape, consisting of a fixed cylinder, a spring within the cylinder, a plunger operating in said cylinder, a knife at the upper end of the plunger, a projection from the plunger and a headed rod loosely passed through the projection, a weighted lock-lever adapted for engagement with the projection of the plunger, an operating-lever pivoted below the lock-lever, a connection between the said headed rod and operating-lever, a trip for the lock-lever carried by the operating-lever, and a connection between the operating-lever and said pivoted frame, as described.

14. In a cash-register, key-levers, a spring-controlled pivoted frame operated in one direction by the said key-levers, a printing mechanism operated from the said key-levers, an inking-ribbon in the path of the printing mechanism, spools and guides for the inking-ribbon, a recording-tape engaging with the guides for the inking-ribbon and with the upper surface of said ribbon, a table, a check-tape, a spool therefor, which check-tape passes over the said table and beneath and in engagement with the said inking-ribbon, means substantially as described, for feeding both tapes at different periods by the movement of the key-levers and pivoted frame, a knife operating to and from the check-tape to cut the same in given lengths, a locking device for the said knife, and a releasing device for the locking device, the locking device being automatically operated, and connections between the releasing device and the knife and the said pivoted frame, all combined for operation substantially in the manner described.

15. In a cash-register, a series of key-levers and a locking mechanism for all of the key-levers except the one operated, consisting of a main stationary plate having slots through which the key-levers pass, and forward and rear sliding plates of less vertical width than the main plate and provided with slots corresponding in number to those in the main plate through which the key-levers pass, which slots

extend through their lower edges and form tongues between them, sundry of the tongues of the sliding plates between the slots therein being arranged to normally overlap the slots in the main plate, said tongues being also so arranged that when corresponding slots in the sliding plates are in registry with a given slot in the main plate all the other slots in the main plate will be obstructed by the tongues of the sliding plates, the tongues at one side of the center of each sliding plate being straight at their bottom edges while the tongues at the opposite side of the center have one or both of their lower corners inclined, as set forth.

16. In a cash-register, a series of key-levers and a locking mechanism for all of the key-levers except the one operated, consisting of a main stationary plate having slots through which the key-levers pass, and forward and rear sliding plates of less width than the said main plate and provided with slots corresponding in number to those in the main plate through which the key-levers pass, which slots extend through their lower edges and form tongues between them, sundry of the tongues of the sliding plates between the slots therein being arranged to normally overlap the slots in the main plate, said tongues being also so arranged that when corresponding slots in the sliding plates are in registry with a given slot in the main plate all the other slots in the main plate will be obstructed by the tongues of the sliding plates, the tongues at one side of the center of each sliding plate being straight at their bottom edges while the tongues at the opposite side of the center have one or both of their lower corners inclined, and tension centering devices for the said sliding plates, substantially as described.

17. In a cash-register, a series of key-levers and a locking mechanism for all of the key-levers except the one operated, consisting of a main stationary plate having slots through which the key-levers pass and forward and rear sliding plates having end movement on the main plate, which sliding plates are provided with slots corresponding in number to those in the main plate through which the key-levers pass, said slots in the sliding plates extending through their lower edges thus forming tongues, the sliding plates being narrower than the main plate, each sliding plate having the tongues between its slots straight at their lower ends at one side of the center and beveled at their lower edges at the opposite side of the center, said sliding plates being also so arranged on the main plate that the beveled tongues on the sliding plates are at opposite ends of the main plate, and tension-controlled centering devices which normally hold the beveled tongues of the sliding plates in obstructing position over sundry of the slots in the main plate, the two sliding plates having independent movement, as specified.

18. In a cash-register, upper and lower



guide-bars having corresponding openings therein, a slide mounted on one of the guide-bars, having openings corresponding in number and location to those in the guide-bars, and tablet-bars adapted for movement in the openings in the guide-bars and slide, said tablet-bars having lower recesses the upper and lower walls of which are straight, while the upper walls of the upper recesses are straight and their lower walls are inclined downward, as set forth.

19. In a cash-register, upper and lower guide-bars having corresponding openings therein, a spring-controlled slide mounted upon the lower guide-bar, having openings corresponding in number and location to those in its supporting guide-bar, which openings in the slide normally extend beyond the end walls of the openings in the guide-bar supporting the slide, tablet-bars passed through the openings in the guide-bars and slide, being provided with lower rectangular recesses and upper recesses having straight upper and inclined lower walls, as set forth.

20. In a cash-register, the combination with upper and lower guide-bars having corre-

sponding rectangular openings made therein, a spring-controlled sliding plate mounted upon the lower guide-bar and having rectangular openings corresponding in number and position to those in the guide-bars, opposing walls of the openings in the sliding plate being normally held to extend beyond similar walls in the guide-bar carrying the plate, and key-levers extending beneath the lower guide-bar, of tablet-bars rectangular in cross-section, mounted to freely slide in the openings in the two guide-bars and the sliding plate, which tablet-bars normally rest upon the key-levers and are provided with lower angular recesses in one side and upper recesses in the same side, which upper recesses have straight upper walls and lower inclined walls, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHANN C. VAHJEN.

Witnesses:

J. FRED. ACKER,  
EVERARD BOLTON MARSHALL.