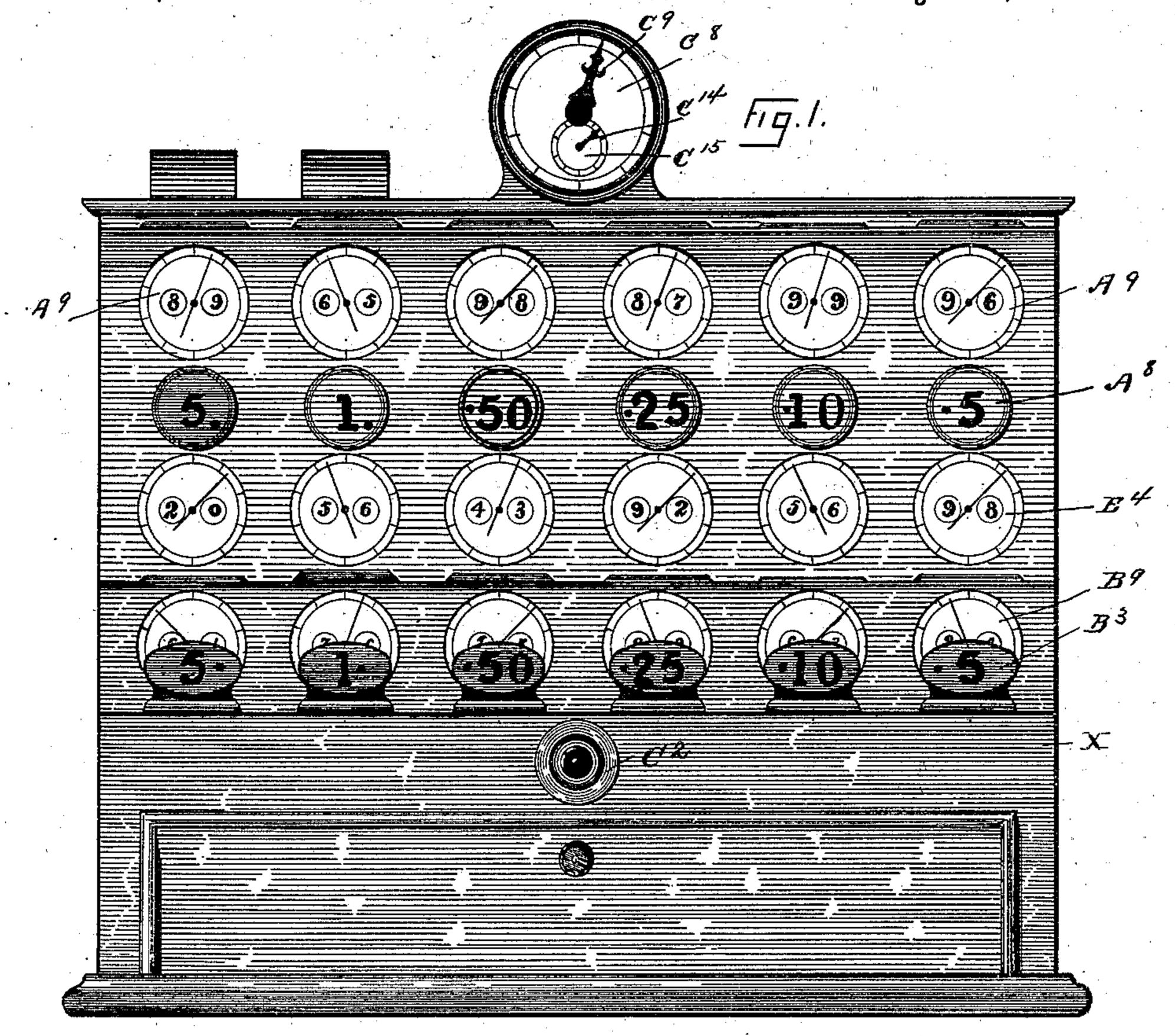
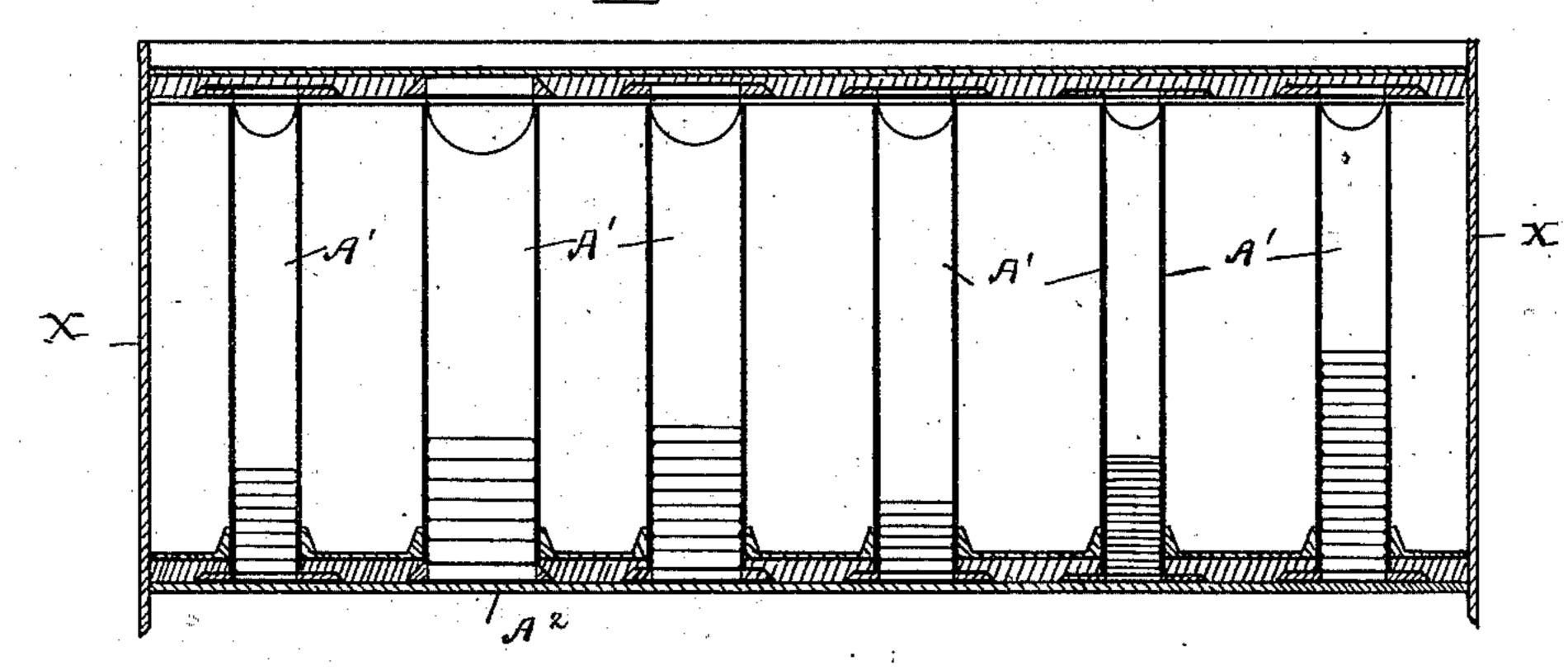
MECHANISM FOR REGISTERING AND RECORDING COINS RECEIVED AND DELIVERED.

No. 560,844.

Patented May 26, 1896.



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WITNESSES:
Balanne Valu
Fred 6. Hat.

Philo E Daniels

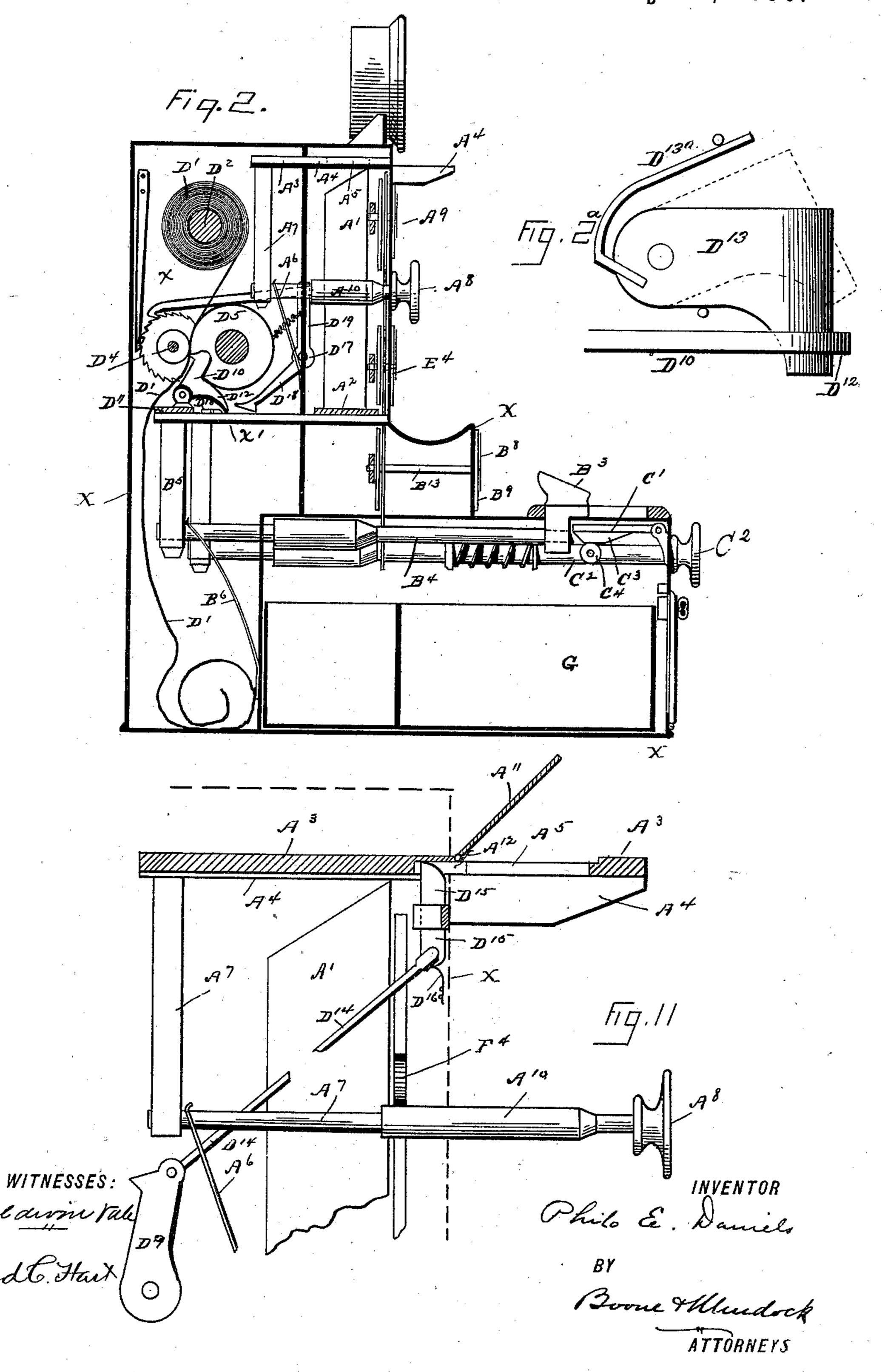
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Boone & Clave doch ATTORNEYS

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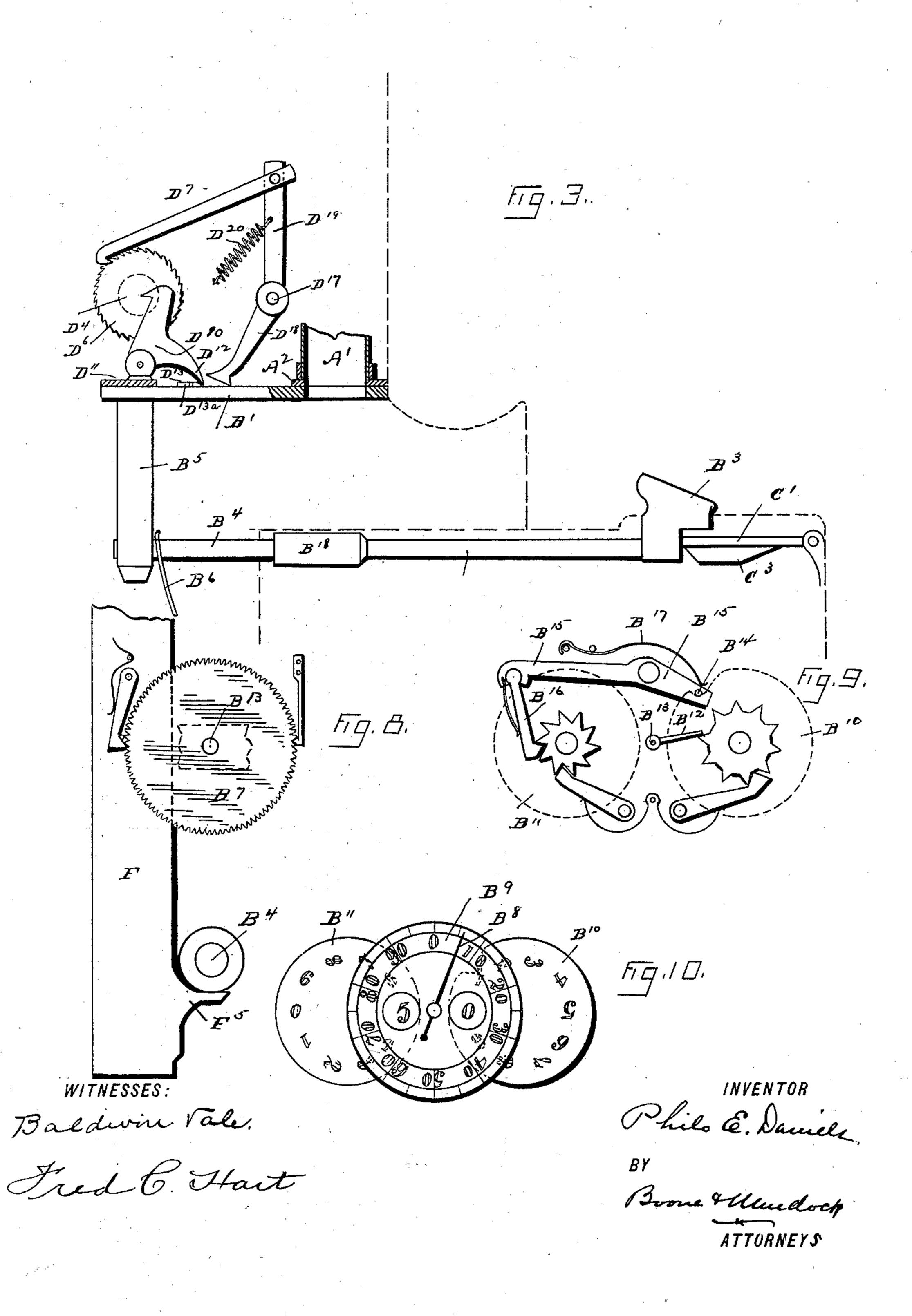
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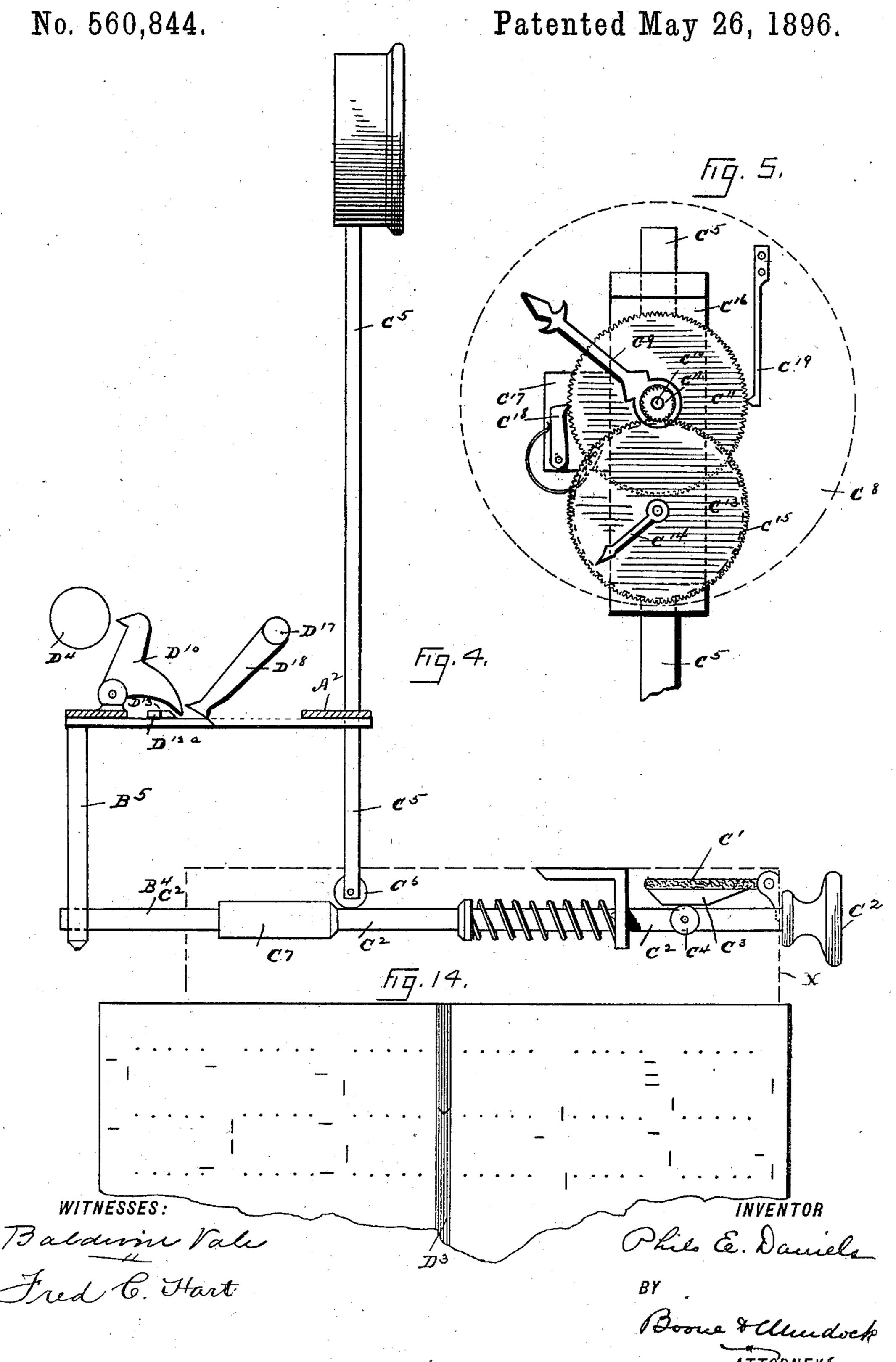
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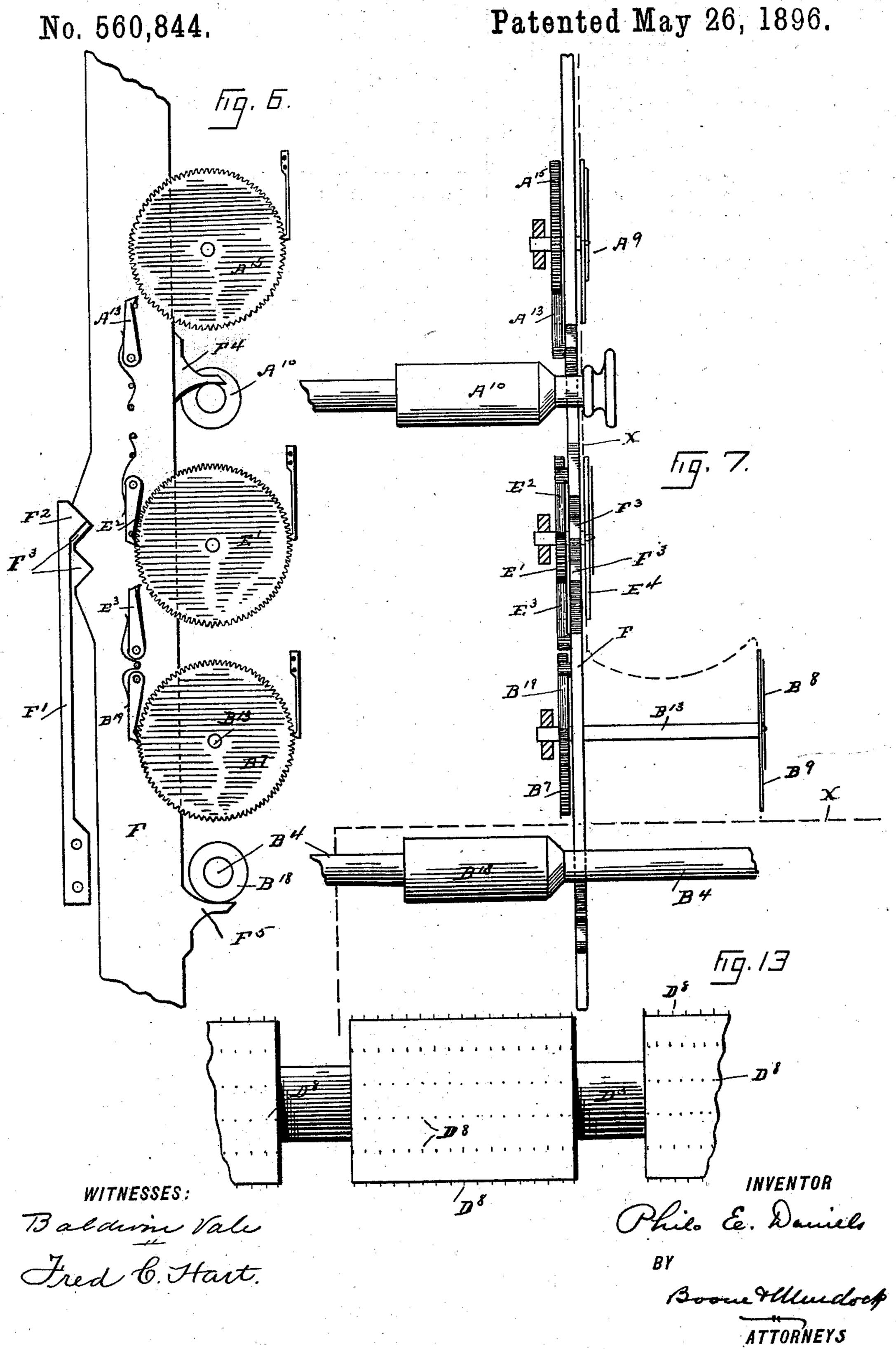
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MECHANISM FOR REGISTERING AND RECORDING COINS RECEIVED AND DELIVERED.



MECHANISM FOR REGISTERING AND RECORDING COINS RECEIVED AND DELIVERED.



United States Patent Office.

PHILO E. DANIELS, OF OAKLAND, CALIFORNIA, ASSIGNOR OF ONE-HALF TO MICHAEL J. DONOHOO, OF SAME PLACE.

MECHANISM FOR REGISTERING AND RECORDING COINS RECEIVED AND DELIVERED.

SPECIFICATION forming part of Letters Patent No. 560,844, dated May 26, 1896.

Application filed September 23, 1895. Serial No. 563,438. (No model.)

To all whom it may concern.

Be it known that I, Philo E. Daniels, a citizen of the United States, residing at Oakland, in the county of Alameda and State of California, have invented certain new and useful Improvements in Cash and Change Registers; and I do hereby declare the following to be a full, clear, and exact description of said invention, such as will enable to others skilled in the art to which it most nearly appertains to make, use, and practice the same.

This invention relates to cash-registers, and has for its objects to produce a record of all the transactions in cash and a history of each transaction; further, to provide visible devices which will tell at a glance the condition of the business being done in cash, and, further, to provide means for employing a check-20 book system in conjunction with the register.

With these objects in view the invention consists in providing separate money-receptacles for each variety of the various coins in use, each of which has a loader and an extractor for taking one of the coins therefrom, which loaders and extractors have separate and independent registers to tell the number of times they have been operated.

It further consists in providing a universal locking device for all the extractors, which locking device is provided with an individual register to record the number of times it has been operated, and which serves as a register for the number of sales as well. To each of the foregoing (the extractors and locking device) are provided attachments to imprint upon paper or other suitable material marks distinctive in character or location, whereby a record is kept of the total number of sales and the history of each sale.

It further consists in providing intermediate registers which are operated by both the loading and extracting devices to show a difference in the operations of each, the difference showing the sum total of sales at all times; and it further consists in providing receptacles for checks of the individual salesmen, which receptacles are unlocked simultaneously with the unlocking of the extracting devices, which are, as above stated, provided with a register.

In the drawings, Figure 1 is a front elevation of the complete register constructed in accordance with this invention. Fig. 2 is a cross-section of the same, showing in heavy 55 lines the construction of the case. Fig. 2ª is an enlarged detailed view in plan, disclosing more particularly the latch D¹³ with its spring D^{13a}. Fig. 3 is a detail view of the extractors and the recording devices connected there- 60 with. Fig. 4 is a detail view of the locking devices. Fig. 5 is a detail view of the register for the locking device, showing in dotted lines the dials of the same. Figs. 6, 7, 8, 9, and 10 are detail views of the registering 65 mechanism for the loading and extracting devices. Fig. 11 is a detail view of the loading devices, showing in section the coin-slides thereof. Fig. 12 is a front view of the moneytubes in section. Fig. 13 is a detail view of 70 a segment of the feed and line-printing roll. Fig. 14 is a detail view of the record-sheet, showing record-marks on the same.

For the purposes of the description of the present construction embodying this inven- 75 tion we will let the letter X designate the case within which the operative parts of this invention are mounted. These operative parts we will designate in their assembled form. Thus the loading devices and their 80 elements we will designate by the common letter A. The extracting devices and their elements will be designated by the common letter B. The locking devices and elements will be designated by the common letter C. 85 The record-roll and its elements will be designated by the common letter D. The devices for showing the amount of the sales will be designated by the common letter E, and the remaining parts of the machine will 90 each be given a separate distinguishing letter.

The loading devices herein employed, as shown, consist in the tubes A', which are of the various sizes to suit the coins to be placed in them. The capacity of the machine may 95 be enlarged or diminished at will to take all or a part of the current coins in circulation by the adding of suitable tubes and the parts operating thereon. These tubes are detachable, resting in sockets on the carrying-bar 100 A², which extends across the case X from side to side directly back of the front plate.

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The tubes at the top are beveled, as shown, for the purpose of allowing the moneys to pass over the filled tubes and lead to the money box or boxes. Operating back and 5 forth over the upper ends of these tubes are the slides A^3 . The slides rest on the flat tables or platforms A^4 , which are solid where projected in front and skeletoned to leave an opening over the tubes inside the casing X. 10 In the slides A³ are perforations A⁵ to receive the coins when the slides are drawn forward, so that the perforations rest over the solid tables A⁴ and to carry them back over the tubes to be deposited therein. To draw these 15 slides back, the springs A^6 are provided. These engage the inner ends of the rods A^7 of the pull-buttons A^8 , by means of which the slides are drawn forward. These rods are mounted in suitable bearings, as shown 20 in Fig. 11 of the drawings, and are provided with registering devices A⁹, to operate which they are provided with conical-shaped bosses A^{10} . The rods A^7 are connected rigidly to the slides, so that when the rods are drawn 25 out the slides are projected forward to receive the coins. To guide the introduction of the coins more certainly and to seat them in the perforations A⁵ more surely, I provide the pivoted doors A^{11} , which fly open on the 30 slides being drawn forward, as shown at Fig. 11 of drawings. These doors may be actuated by the springs A^{12} , as shown, or by weighted ends back of the pivotal connection. On the face of these doors are painted charac-35 ters indicative of the denomination of the moneys contained in their respective tubes. This serves as a guide to the purchaser, and thereby forms a check on the operator by directing the attention to the amount of 40 money being placed in the machine, which must correspond to the amount which he gives to the salesman. These doors serve the further purpose of holding the coin in position during its introduction into the ma-45 chine and compels it to operate the recording mechanism, as will be described farther on.

The extractors consist in slides B', which are mounted in guides formed in the central 50 bench X', upon which the carrying-bar A^2 rests. These slides are elongated and projected backward to carry the operating devices for the recording mechanism. Where they pass under the tubes they are provided 55 with perforations to receive the coins of the denomination which the tube they work upon are designed for in such manner that the bottom coin in each column rests in the perforations in the slides. By this means the coin 60 is drawn forward out of the tube and machine with the slides. To draw the slides forward, they are provided with the pull-buttons B³ at the forward end of the pull-rods B4, which are connected at the rear to the slides by means 65 of the rods B5, slots being cut in the bench X' to allow them to operate back and forth. The pull-rods B⁴ are drawn back by the springs

B⁶, which maintain the perforations for the coins in the slides in position in line with the tubes. By means of this construction of the 70 loading and extracting devices it will be observed that as the loading-slide carries the coins into the machine they are dropped into their respective tubes until the tube is filled. In this condition the coins will fall over the 75 tubes, being allowed to do so by the beveled shape of the upper end of the tubes, as shown in drawings. This, however, will rarely occur except in the tubes of large denomination, where few are given out in change. In 80 the other tubes the extractors will, it is estimated, take from the tubes about as many coins as are placed therein by the loaders.

As either the loader or the extractor on each tube is operated the small registers A⁹ and B⁹ 85 are operated to turn the small pointers or hands on them one space forward. This is accomplished in each by the raising or lowering of the register-bars F, which extend from the extractor pull-rods to the loader pull-rods. 90 The bars F are suitably mounted in guides on the front plate of the machine and are supported by the detent F', which has the head F², wedge-shaped to fit in the V-shaped recesses F³ in the side of the bars. The head 95 F² rests in the upper or lower recess, according as the loader or extractor was last worked. To operate to shift the bars F, the pull-rods of the loader and extractor are provided with the bosses A^{10} and B^{18} , the forward ends of 100 which are cone-shaped to drive under the extension F^4 in the one instance and over the extension F⁵ in the other instance, as the loader or extractor is operated, respectively. Mounted on the flat side of the bars F are the 105 pawls A^{13} and E^{19} and also the pawls E^{3} and E², all of which are adapted to engage the ratchet-wheels A^{15} , B^7 , and E' in the one or the other position of the bars F—that is to say, in a raised position or in a lowered position. 110 At no one time do all the pawls engage. The purpose of this is to operate the ratchet-wheel E' at every operation of either the loader or extractor, but in opposite directions for each.

Thus when the extractor has been oper- 115 ated the bar F is drawn down, as shown in the drawings at Fig. 6, the head F² of the detent F' resting in the upper recess F³. The drawing shows the position of the pawls as they appear when the extractor pull-bar is 120 fully extended outward. The pawls E¹⁹ and E² have moved the ratchet-wheels B⁷ and E' around one tooth. In this position the detent-head F² is raised partly on the inclined face of the recess. When now the extractor 125 is carried inward and the boss B¹⁸ is removed from the path of the extension F⁵, the pressure of this detent-head on the inclined surface will raise the bar F slightly until the detent-head is seated. In doing this the pawls 130 E² and B¹⁹ will run back one tooth, ready for the next operation of the same kind. If, however, the loader is now operated, the first part of the movement imparted to the bar F

by the extension of the cone-shaped end of the boss A¹⁰ under the extension F⁴ draws the bar F upward until the detent rests in the lower recess, while the pawls B¹⁹ and E² are 5 drawn away from their ratchet-wheels, and the pawls A¹³ and E³ are drawn to their wheels. In this position a continuance of the pull on the loader pull-bar brings the full thickness of the boss A¹⁰ under the extension F⁴ and 10 causes the pawls A¹³ and E³ to rotate their wheels one tooth. In this latter rotation of the wheel E' it will be observed that it was in the opposite direction of the first, whereby the total number of the registers in one di-15 rection is counteracted by the total number in the other. Thus if the loader operates the wheel E' in a forward direction seven times and the extractor operates it five times in the reverse direction the total number in the 20 forward direction will show as "2," which will indicate an excess of two coins of the denomination put in the tube over those taken out. The registers A⁹, B⁹, and E⁴ are the same in construction and operation, so I will 25 limit myself to the description of that on the extractor.

The ratchet-wheel B⁷ is provided with a spindle B¹³, reaching forward outside the case X and provided with the hand or pointer B⁸. 30 The spindle is suitably mounted in the casing and the stationary dial B9, which is set out from the case X to allow the dials B¹⁰ and B¹¹ to move behind it. These latter dials are suitably figured on their surface, as shown, 35 and the dial B9 has perforations on either side of the center to allow these figures to show through. The figuring is from "0" to "9" or ten equal divisions. Each of the dials B¹⁰ and B¹¹ have on their backs star-wheels 40 of ten teeth. The star of the dial B¹⁰ is larger in diameter than that on dial B¹¹, in order to engage the pin B¹² on the main spindle B¹³ every full revolution of the said spindle. As it is thus turned the pin B¹⁴ on the lever B¹⁵ 45 is raised out of the depression, in which it is shown in Fig. 9 of drawings, onto the edge of the dial B¹⁰. When this end of the lever B¹⁵ is raised, the other end carrying the pawl B¹⁶ is depressed, carrying it down one tooth, 50 which it engages. When now the dial B¹⁰ has made a complete revolution, the pin B¹⁴ falls into the depression which it left, allowing the spring B¹⁷ to bring the lever B¹⁵ to its original position, moving the dial B¹¹ one 55 tooth of its star-wheel, one division of its spacing, or the successive figure on the dial. In this particular construction the ratchetwheel B7 is provided with one hundred teeth and the two star-wheels with ten teeth, where-60 by the capacity of the register is ten thousand, as will be seen.

Thus far it will be observed that as the tubes are loaded the register A⁹ will register each coin as introduced, and as each coin is taken from the tubes the extractor-registers will show the total number taken from each tube; and, further, as the loader and extrac-

tor on each tube operates the registers E⁴ on each tube in opposite directions they will show the amount of the difference between the num- 70 ber of coins taken in and those taken out or the condition of the business being done through the machine.

For the purpose of keeping a record of the business for office-records I have provided the 75 roll of paper D', which is supported on the roller D², mounted in bearings in the sides of the case X. The paper is ruled, as shown at Fig. 14 of the drawings, the line D³ indicating where the record of the locking devices C are 80 made, which record indicates the number of sales. The paper D' is carried between the feed-rolls D⁴ and D⁵, which bear upon either side of the paper. The roll D⁴ is provided at its end with the ratchet-wheel D⁶, which is 85 engaged by the pawl D⁷ of the feeding devices. The roll D⁵ is formed in a number of segments or sections, as shown, between which are spaces for the recording devices. These sections are provided with rows of punctur- 90 ing-points D⁸, which, when they are rolled against the roller D4, cut the paper to form lines across the same.

The devices for forming the record on the paper consist of the triggers D9 and D10, the 95 former recording the operations of the loaders and the latter the operations of the extractors. Each set has a head which is adapted to print or cut some distinctive character on the paper D'. To accomplish this, they are pivotally 100 mounted in suitable bearings on the cross-bar D¹¹ and adapted to throw the printing-head forward against the paper. As shown in the drawings, the marks of the three recordingheads are shown, the locking device being in- 105 dicated by the "v," the extractor devices being indicated by the "-," and the loading devices by the "1." These, however, may be changed indefinitely.

The triggers D¹⁰, which are to record the op- 110 erations of the extractors, are provided with the rear extensions D¹², which normally trail on the slides B'. The heads of these are thrown forward against the paper D' by the latches D¹³, which are pivotally mounted on 115 the slide B'. These latches are so mounted as to hold rigidly in place when drawn forward under the extension D12, which are thereby raised to throw the printing-heads forward. As the latches are returned they turn on their 120 pivotal connections against the springs D^{13a}, and thereby pass the said extensions coming back. The springs D^{13a} operate to throw the latches into position immediately after they have passed the extensions D^{12} , when the ex- 125 tractor is drawn back.

The triggers D⁹ are operated from the loader devices. To accomplish this, the upper ends of the triggers are attached to the rods D¹⁴, which are pivotally attached at the other end 130 to the small fingers D¹⁵. The fingers D¹⁵ are mounted in guides on the front plate of the case X and are provided with the inclined end, which reaches up into a slot cut in the

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slides A³, whereby the slide may be moved back and forth without engaging the fingers. Thus when the perforations in the slides are not returned loaded with a coin the finger is 5 not depressed and no record made on the paper. This operates as a check on the salesman in the event of his attempting to take the money and make the proper register. This would immediately show by comparison of 10 the loader-register and the record. When, however, the coin is placed properly in the perforation, the return of the slide causes the coin to strike the inclined face of the finger D¹⁵ and depress the same. As the finger is 15 depressed the end of the rod D^{14} , to which it is attached, is depressed, causing the end attached to the trigger to move forward against the paper D' and record the operation. Immediately the coin has passed over the finger 20 D^{15} the spring D^{16} raises the same and restores the parts to their normal positions.

To prevent the making of two records in one spot, I have provided the roll D4 with the ratchet-wheel D⁶ and connected the same to 25 a feed mechanism. The feed mechanism consists in the rod D^{17} , the fingers D^{18} , and the arm D^{19} , the rod D^{17} being pivotally mounted in bearings in the sides of the case X and provided rigidly with the fingers D¹⁸, which ex-30 tend in the path of the latches D^{13} . As the latches D¹³ are drawn forward, as above described, they extend under and lift the fingers, causing the rod D^{17} to rotate. This rotation of the rod throws the arm D¹⁹ back 35 against the strain of the spring ${
m D}^{20}$ and causes the pawl D⁷ to rotate the ratchet-wheel D⁶ one tooth, which, being rigidly attached to the roll D4, causes it to partly rotate and draw the paper D' down a slight distance. When 40 the latch D¹³ has passed entirely under the fingers D^{18} , the spring D^{20} returns the arm D^{19} and pawl forward to normal positions and seats the fingers D¹⁸ back on the slides ready for the next operation of this or any other 45 slide.

Thus far I have described the parts and operation of the different registers and records when the parts are unlocked to allow for operation. The locks are only applied to the 50 change-extractors and consist in the door C', which is hinged to the case X and extends upward behind all the pull-buttons B³ of the extractors. It is divided in the center to allow the door to swing down to either side of the 55 pull-rod C², by means of which it is operated. On either side of the division above referred to are the runners C³, under which normally rest the rollers C⁴ on the rod C². The rod C² is suitably mounted in bearings in the case 60 X and is adapted to be drawn back and forth. When drawn forth, the rollers C⁴ are drawn from under the runners C³ and the door C' is allowed to drop. In this position the pullbuttons B³ of the extractors may be drawn 65 forward, as described, and, further, the slots wherein the pull-buttons work are opened for

the introduction of sales-checks, where the check-book system is used, into the boxes G.

To register and record the opening of the door C', I have provided the mechanism shown 70 at Figs. 4 and 5 of drawings. The recording devices attached to the pull-rod C² are similar in every respect to those of the extractors above described. The register in this device is mounted on the top of the case X. It con- 75 sists in the rod C⁵, which is mounted in bearings on the case X and rests on the rod C² on a friction-roller C⁶. The rod C² is provided with the cone-shaped boss C⁷ to drive under the said roller and raise the rod, as in the 80 registering devices above described. The registering is accomplished by this rising and falling of the rod C⁵.

The register consists of the dial C⁸, which is divided into one hundred divisions, which 85 are numbered from "1" to "100." The hand or pointer C⁹ is mounted on the spindle C¹⁰, which is mounted in bearings in the case X and the dial C⁸. Inside the case the spindle is provided rigidly with the ratchet-wheel C¹¹ 90 and the small pinion C¹². The pinion C¹² has ten teeth and engages the cog-gear C¹³ of one hundred teeth, whereby ten turns of the pinion and ratchet-wheel with its hand or pointer cause one full revolution of the cog-gear C¹³. 95 To this gear is secured the hand C14, which operates over the small dial C¹⁵ to mark the hundreds. To turn the ratchet C¹¹, the rod C⁵ is provided at the top, directly behind the dial C⁸, with the flat plate C¹⁶, mounted on an 100 extension C¹⁷ of which is the pawl C¹⁸, to engage the teeth of the ratchet as the rod C⁵ is raised. To hold the ratchet is provided the safety-catch C^{19} . Thus it will be seen that to operate the extractors to make change 105 from the tubes the doors C' have to be lowered from the path of the pull-buttons B³, and to do this the rod C² has to be drawn out, which operation is registered on the dials C⁸ and C¹⁵ and recorded on the paper D', as above 110 described.

In its operation this cash-register is principally designed to be used in conjunction with what is known as the "check-book" system, wherein a duplicate check is made 115 out, showing the cash transactions. These checks it is designed to number to correspond with the register-dial C⁸, which has to register the opening of the door C' for the introduction of the checks into the boxes G. 120 It will also be observed that the opening of this door has been recorded on the paper D', and if the extractors are operated to take moneys from the tubes this will show on the paper D', beside the record of such opening 125 of the door. This complete record should correspond with the duplicate check, which is dropped into the box G. This is equally true of the cash-registers, even where no change is made, for the reason that the check 130 has to be deposited in the boxes. While however, the check-book system is desired to

be used in conjunction with this cash-register, it may be dispensed with, the registers and the record being a check on the salesman, as they must correspond.

In some instances I use an alarm-bell or the signal device in connection with the rod C² to draw attention to the opening of the

drawer.

Having thus described this invention, what to I claim is—

1. In a cash-register such as described the combination of coin-receptacles each adapted to contain coins of certain denomination, loading devices to insert the coins in said receptacles from one end, extractors to take the coins from said receptacles at the other end, registering devices for each to show the operations of each, and registering devices operated from both the loading and extracting devices in opposite directions to show the excess of the number of operations of the one over the operations of the other substantially as described.

2. In a cash-register such as described the combination of coin-receptacles each adapted to contain coins of certain denominations, with loading devices to insert the coins in said receptacles from one end, extractors to take the coins from said receptacles at the other end, registering devices for each receptacle operated from both the loading and extracting devices in opposite directions to show the excess of the number of operations of the one over the operations of other, substantially as described.

3. In a cash-register, the combination with coin-holding receptacles, of extractors adapted to separately remove a bottom coin from each receptacle, registering and recording mechanism therefor, pull-rods B⁴ for said extractors, having pull-buttons B³, the pull-rods C² also having pull knobs or buttons, and the slotted pivoted doors adapted to stand in the path of the movement of said pull-buttons B³ and to be taken out of said path by the outward movement of said pull-rods C², substan-

tially as set forth.

4. In a cash-register, the combination, with coin-holding receptacles, of extractors adapt50 ed to separately remove a bottom coin from said receptacles, registering and recording mechanism therefor, pull-rods B4 for said extractors, having pull-buttons B3, the pull-rods C2 also having pull knobs or buttons, and the slotted, pivoted doors arranged in the path of the movement of said pull-buttons B3 and adapted to be taken out of said path by the outward movement of said pull-rods C2, said pull-rods C2 having rolls adapted to support said slotted doors in their normal position, substantially as set forth.

5. In a cash-register, the combination of coin-receptacles, loading devices therefor, extractors to take the bottom coins from said coin-receptacles, the registering devices common to both said loading and extracting devices, comprising the sliding notched registering-bar, the pawl therefor, series of ratchets on the index-shafts of said registers, spring-pressed pawls carried by said registering-bar, 70 two simultaneously engaging two of said ratchets and other two simultaneously out of engagement with other of said ratchets, and pull or push rods adapted to respectively engage projections of said registering-bar, sub-75 stantially as set forth.

6. In a cash-register, the combination of coin-receptacles, loading devices therefor, extractors for the removal of the coins from said coin-receptacles, a record-sheet, spring- 80 held marking devices engaging said record-sheet, a ratchet feeding device for said record-sheet, pawls engaging said ratchet feeding device, and slides carrying spring-pressed latches engaging said marking devices and 85 actuating said pawls, said slides being connected to, and operated by, said extracting

devices, substantially as specified.

7. In a cash-register, the combination of coin-receptacles, loading devices therefor, exportractors for the removal of coins from said coin-receptacles, a record-sheet, spring-held marking devices engaging said record-sheet, a ratchet feeding device for said record-sheet, pawls engaging said ratchet feeding device, 95 slides carrying spring-pressed latches engaging said marking devices, said slides being connected to, and operated by, said extracting devices, said pawls having fingers standing in the path of said latches, substantially as 100 set forth.

8. In a cash-register, the combination of coin-receptacles, loading devices therefor comprising coin-receiving slides, with the perforations or openings thereof normally resting over the imperforate portions of tables, a record-sheet and mechanism for said recordsheet, the spring-pressed finger with its upper, beveled end arranged to project into the opening or perforation of the coincident coinreceiving slide, and a marking device to act upon said record-sheet, connected to said finger, and devices adapted to actuate said coinreceiving slides, substantially as set forth.

In witness whereof I have hereunto set my 115

hand this 9th day of September, 1895.

PHILO E. DANIELS.

Witnesses:

BALDWIN VALE, E. F. MURDOCK.