

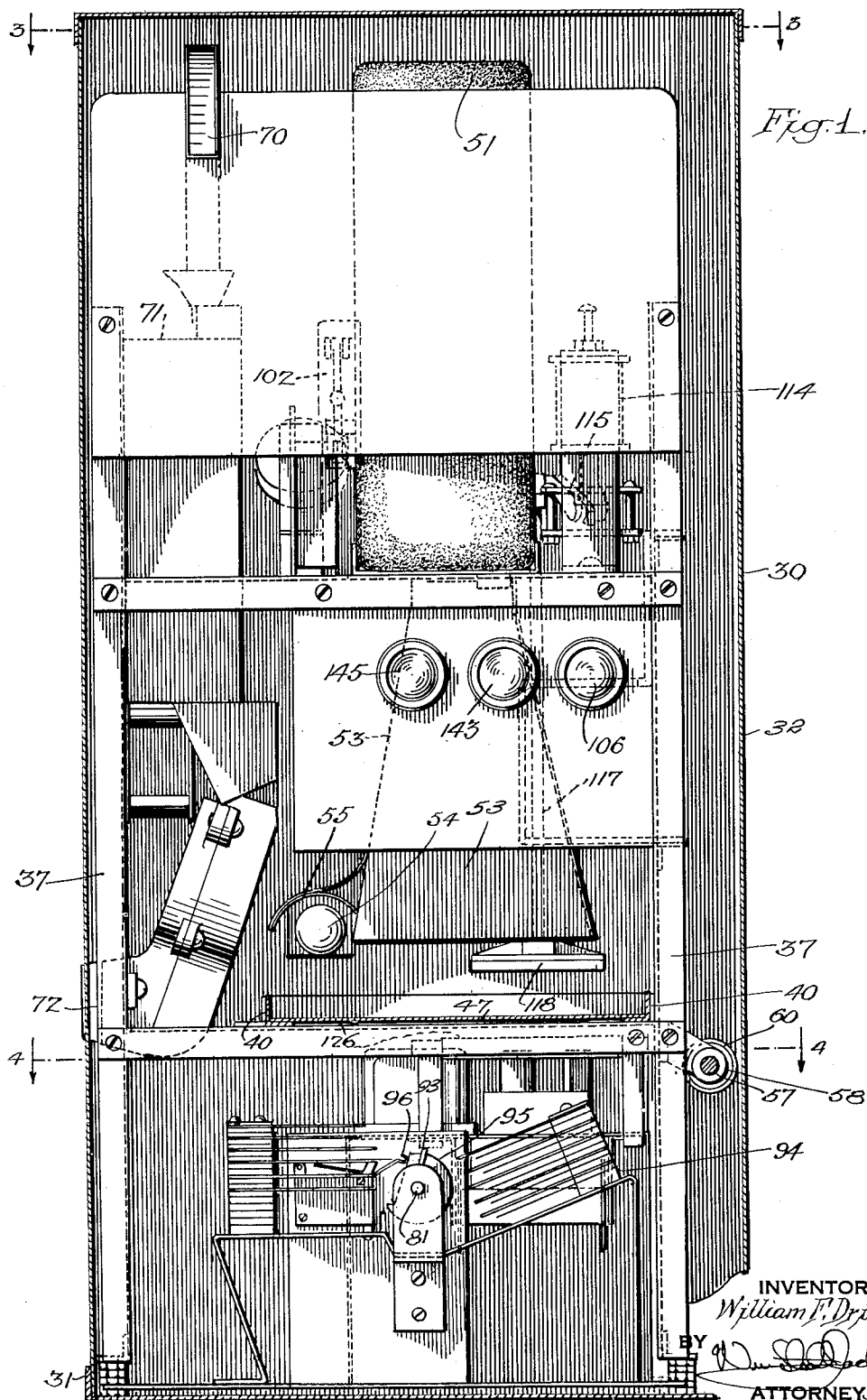
Sept. 6, 1955

W. F. DRISCOLL
CHECK INSURING MACHINE

2,717,069

Filed Jan. 20, 1950

14 Sheets-Sheet 1



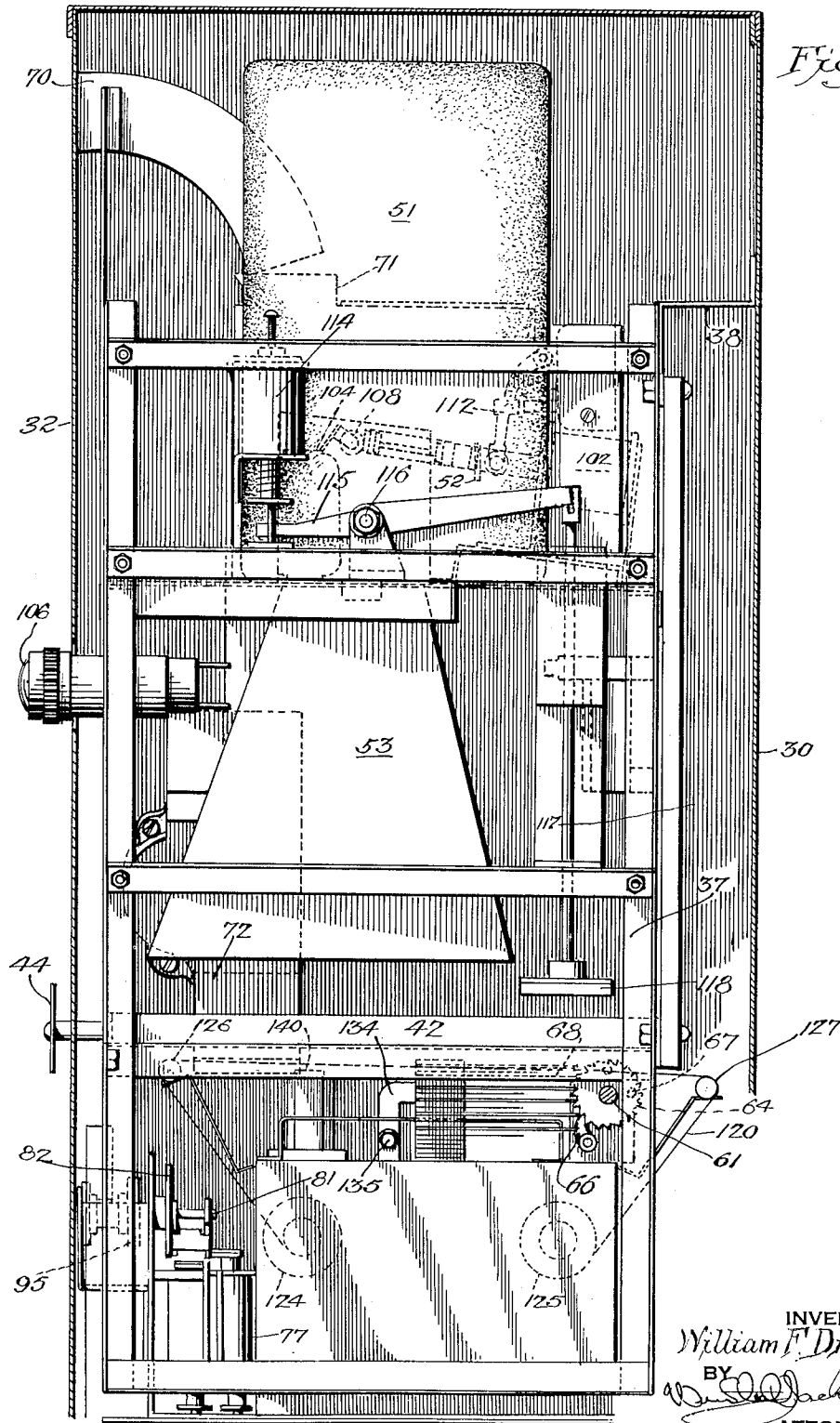
Sept. 6, 1955

W. F. DRISCOLL
CHECK INSURING MACHINE

2,717,069

Filed Jan. 20, 1950

14 Sheets-Sheet 2



INVENTOR
William F. Driscoll
BY
[Signature]
ATTORNEYS

Sept. 6, 1955

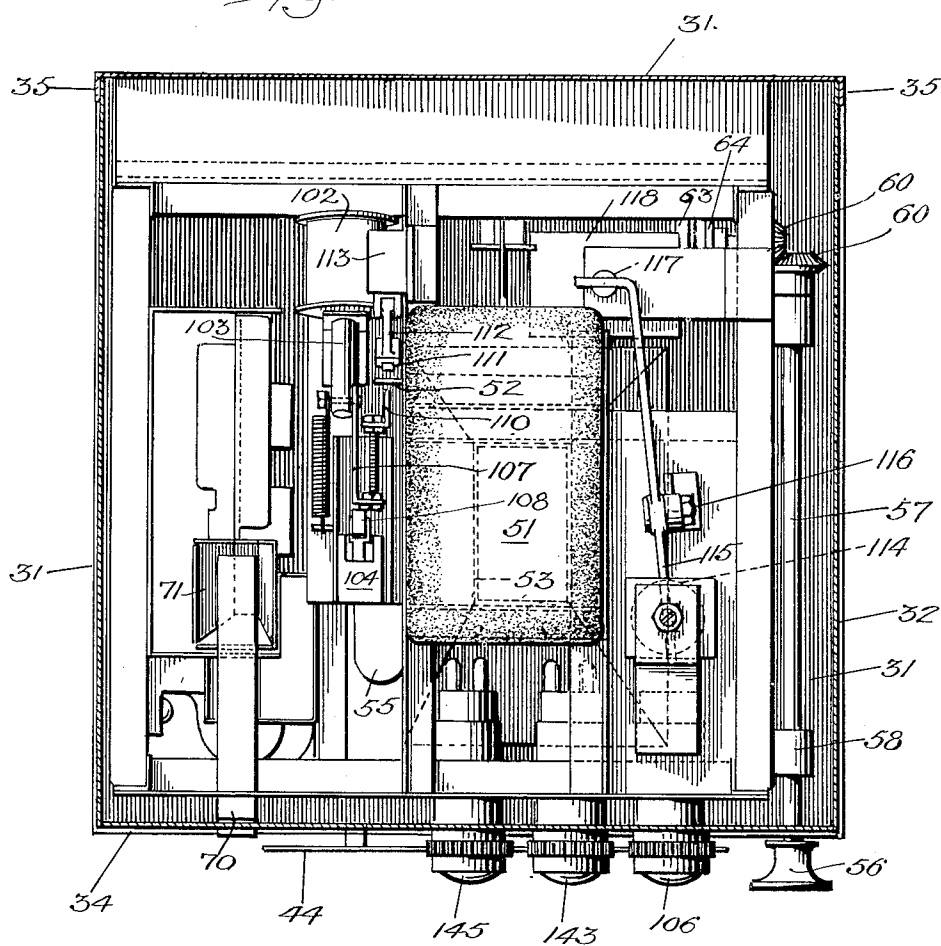
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CHECK INSURING MACHINE

2,717,069

Filed Jan. 20, 1950

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Fig. 3



INVENTOR
William F. Driscoll,
BY
Wm. S. Jackson & Sons
ATTORNEYS,

Sept. 6, 1955

W. F. DRISCOLL

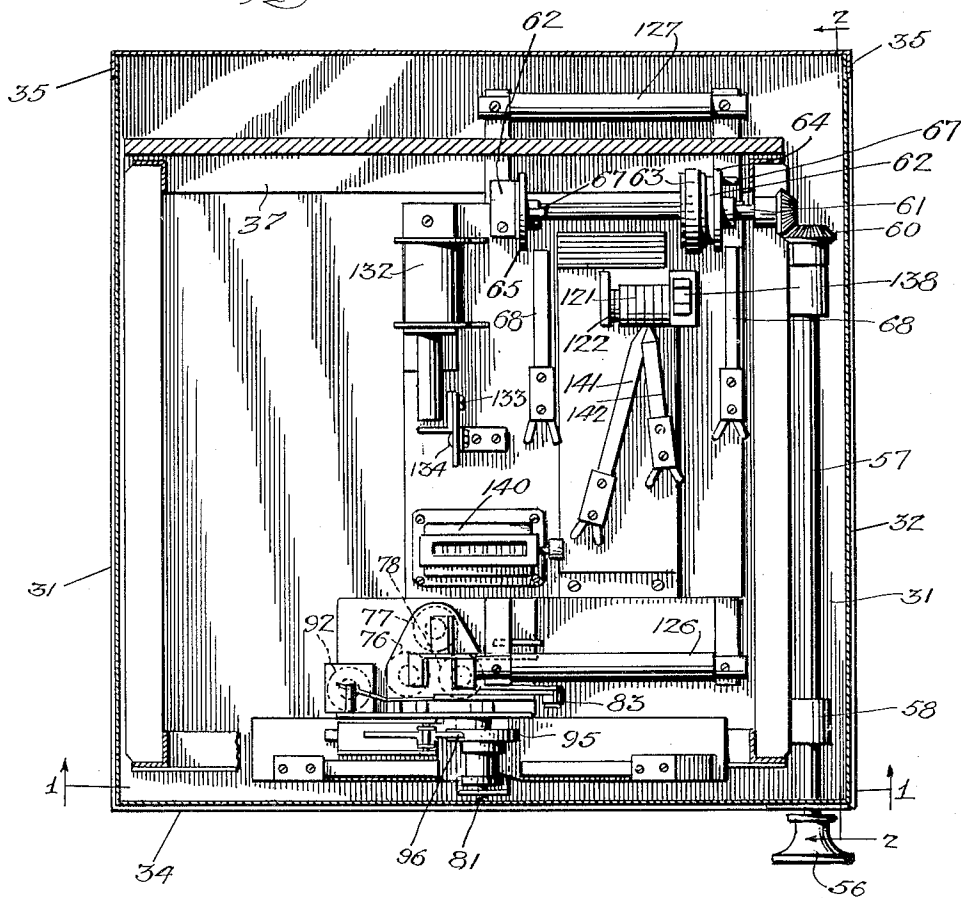
2,717,069

CHECK INSURING MACHINE

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Fig. 4.



INVENTOR
William F. Dryscoll
BY *W. F. Dryscoll*
ATTORNEY5.

Sept. 6, 1955

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CHECK INSURING MACHINE

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Fig. 5.

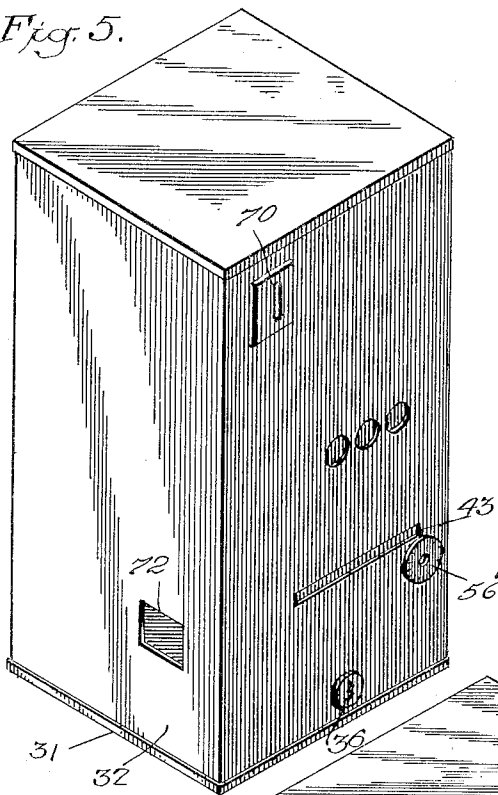


Fig. 7.

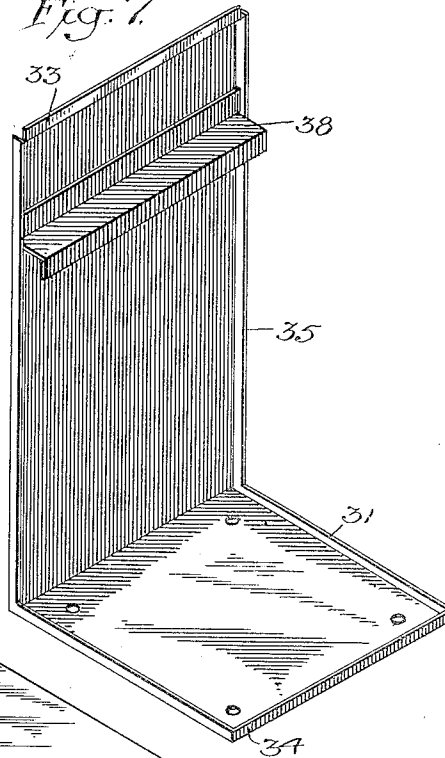
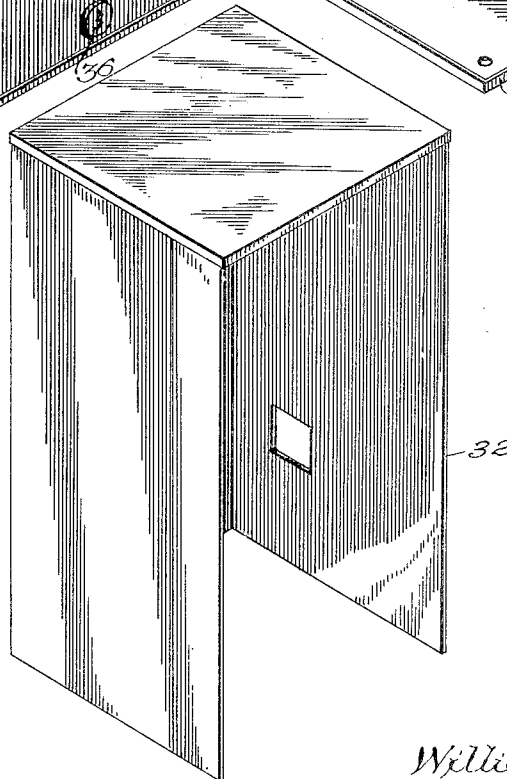


Fig. 6.



INVENTOR
William F. Driscoll.
BY
W. S. Jackson
ATTORNEYS

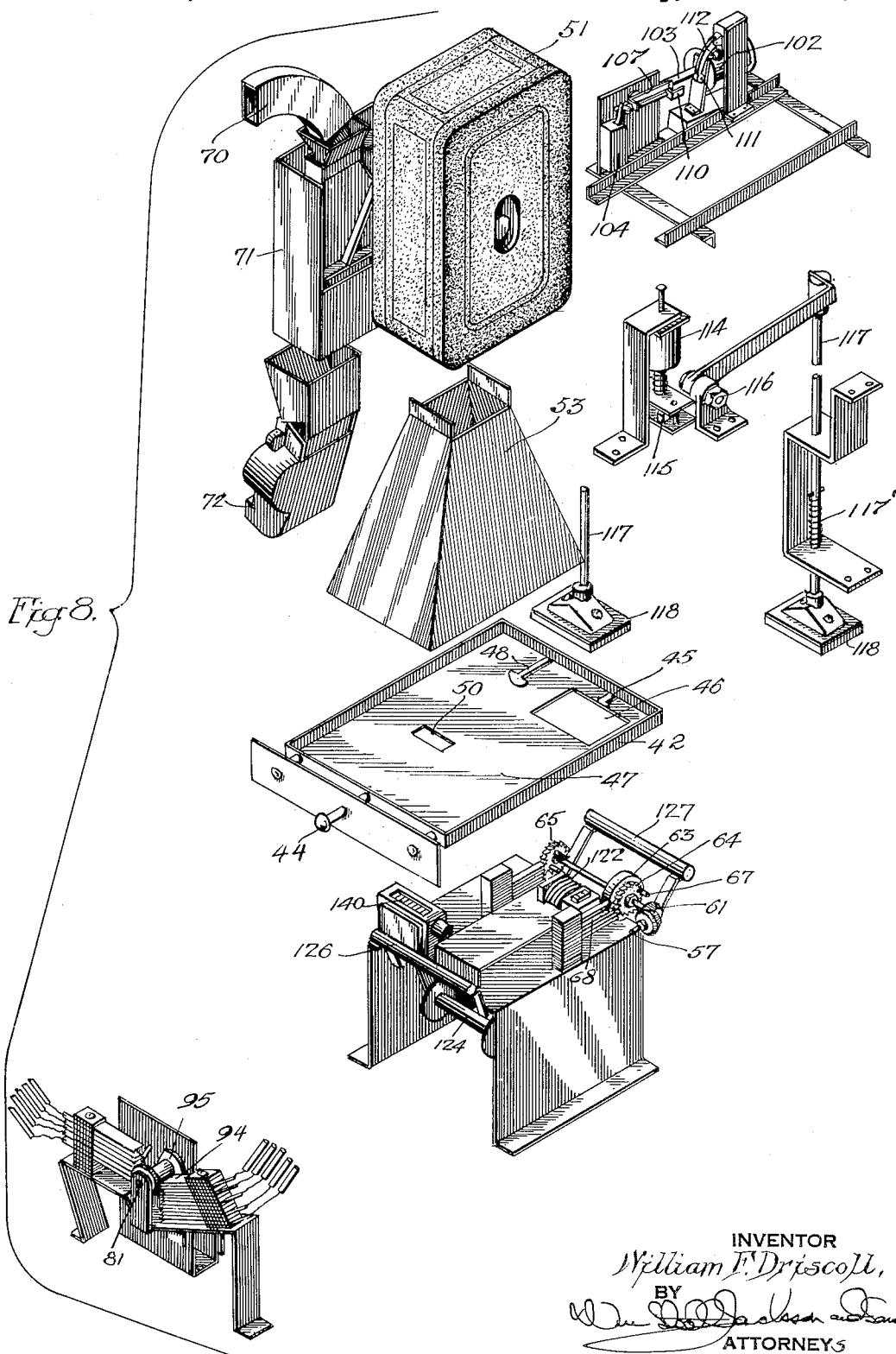
Sept. 6, 1955

W. F. DRISCOLL
CHECK INSURING MACHINE

2,717,069

Filed Jan. 20, 1950

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INVENTOR
William F. Driscoll,
BY
Wm. D. Jackson and Son
ATTORNEYS

Sept. 6, 1955

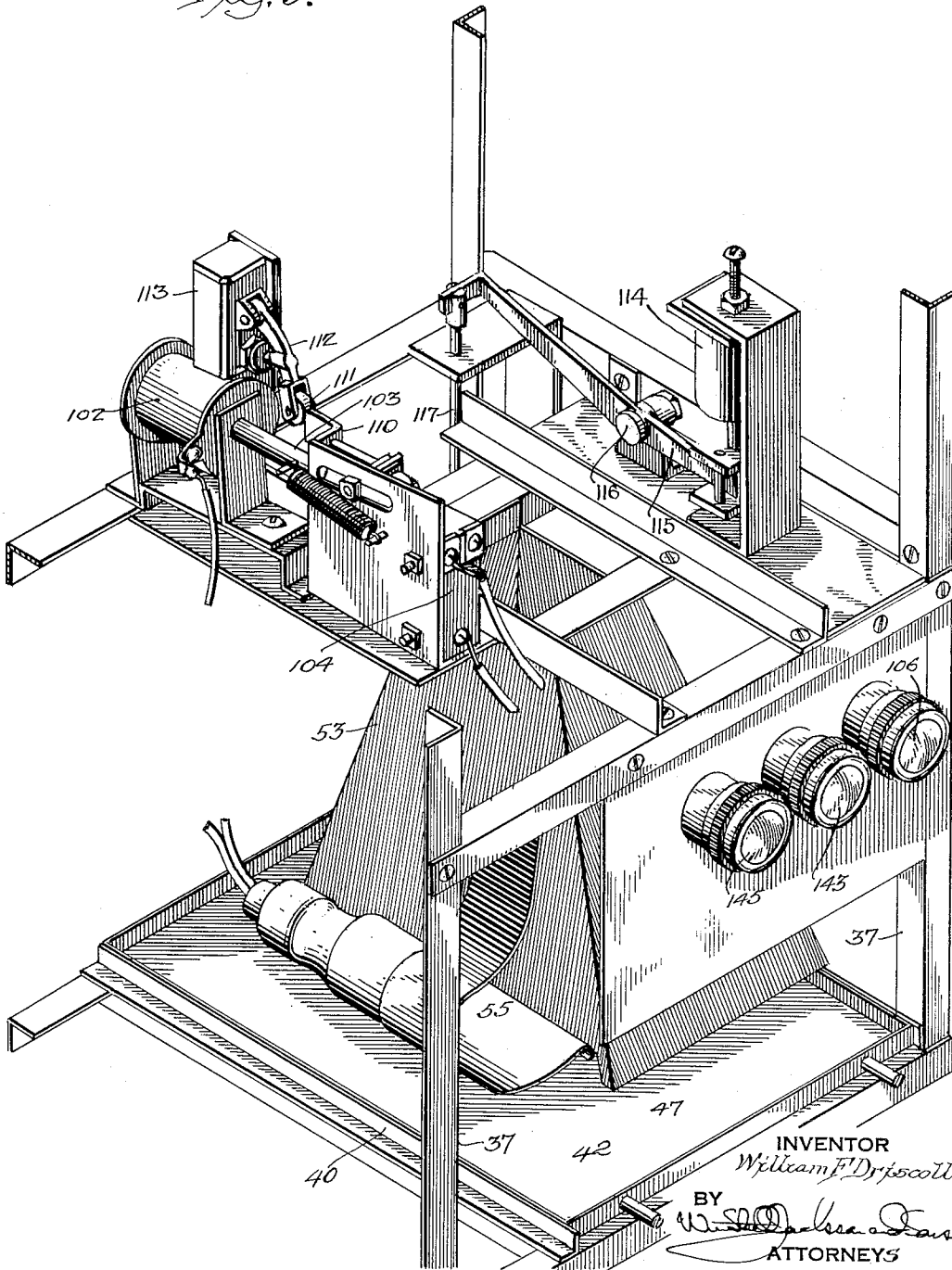
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Fig. 9.



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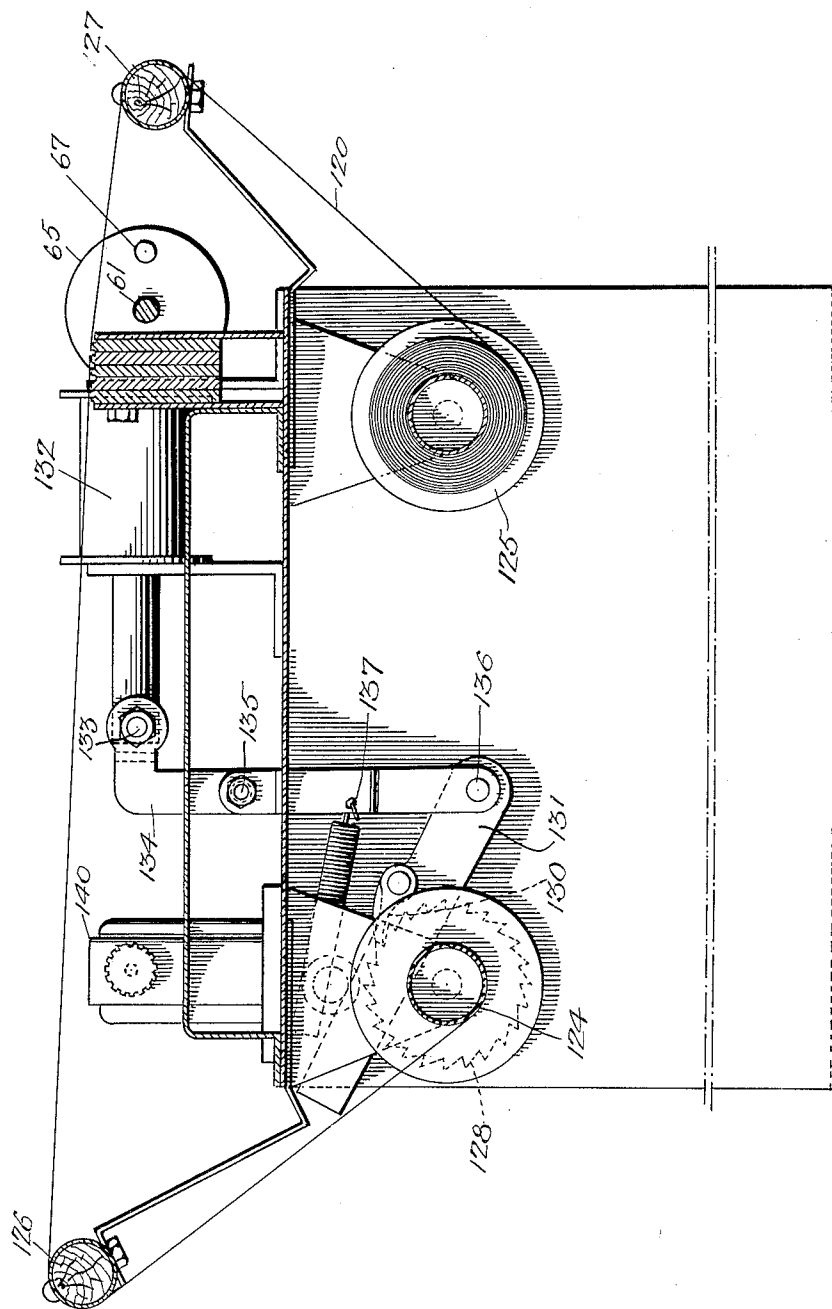
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CHECK INSURING MACHINE

2,717,069

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14 Sheets-Sheet 8

Fig. 10.



INVENTOR
William F. Driscoll.
BY
W. S. Jackson
ATTORNEYS

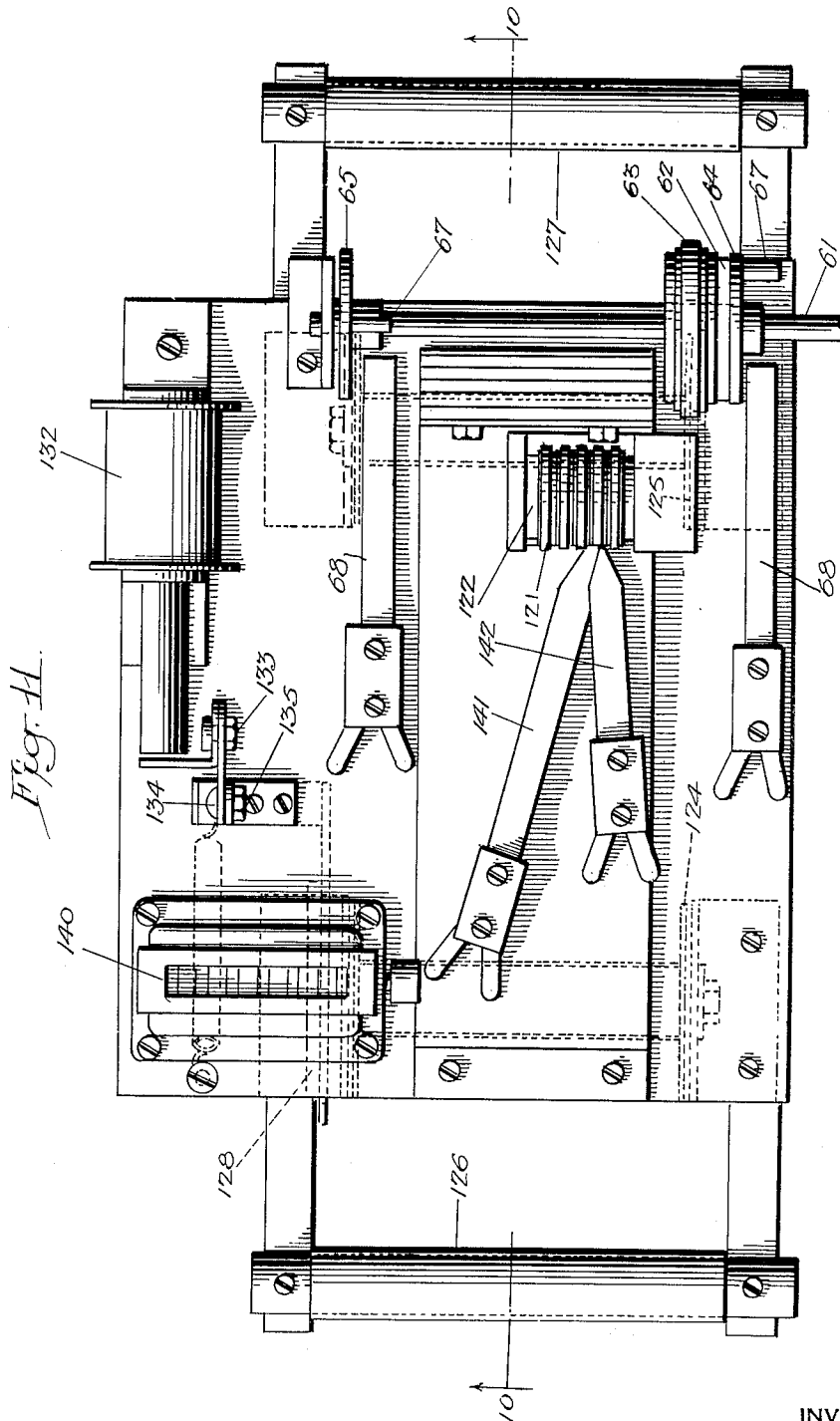
Sept. 6, 1955

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CHECK INSURING MACHINE

2,717,069

Filed Jan. 20, 1950

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INVENTOR
William F. Driscoll
BY *Wm. D. Jackson*
ATTORNEYS

Sept. 6, 1955

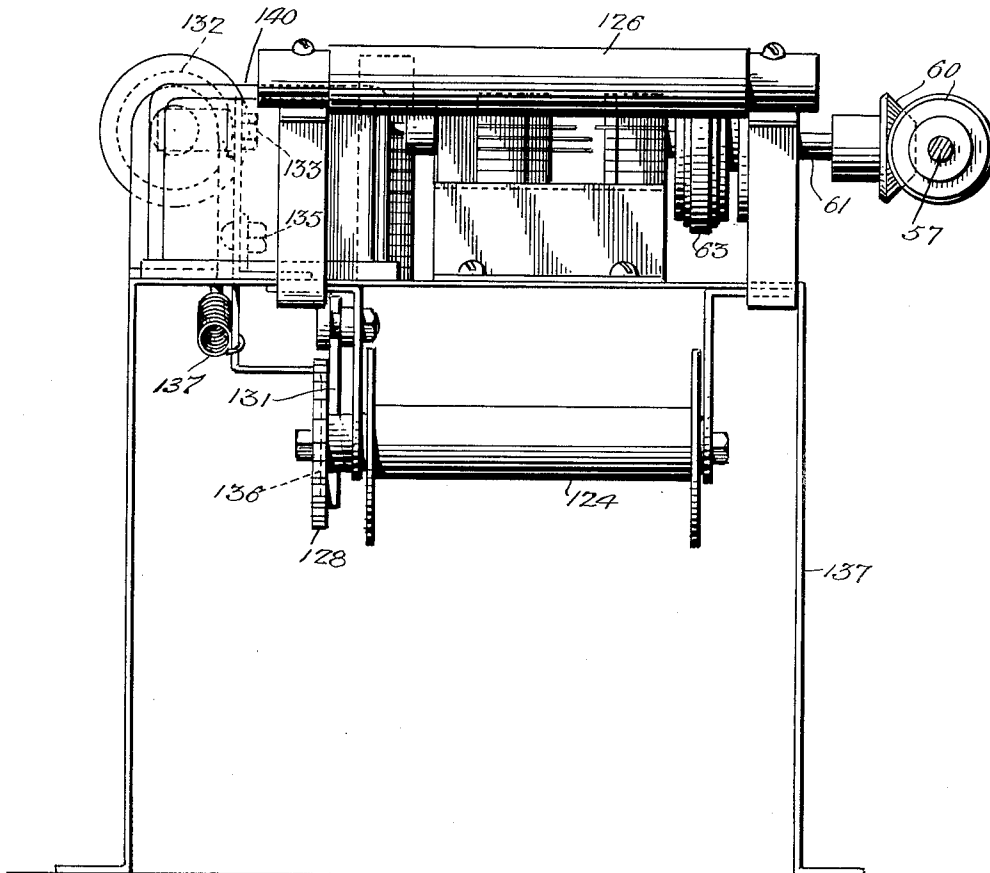
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CHECK INSURING MACHINE

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Fig. 12.



INVENTOR
William F. Driscoll
BY
W. B. Jackson
ATTORNEYS

Sept. 6, 1955

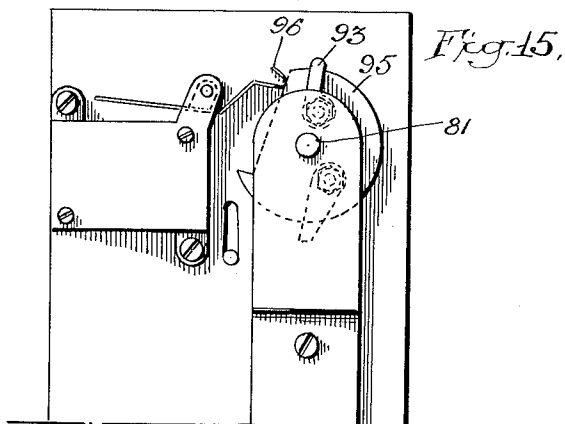
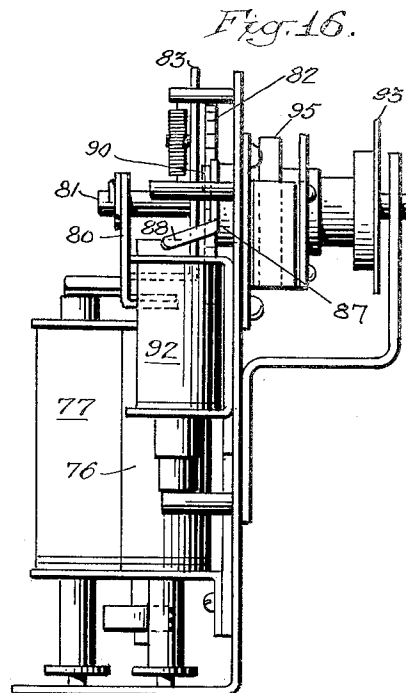
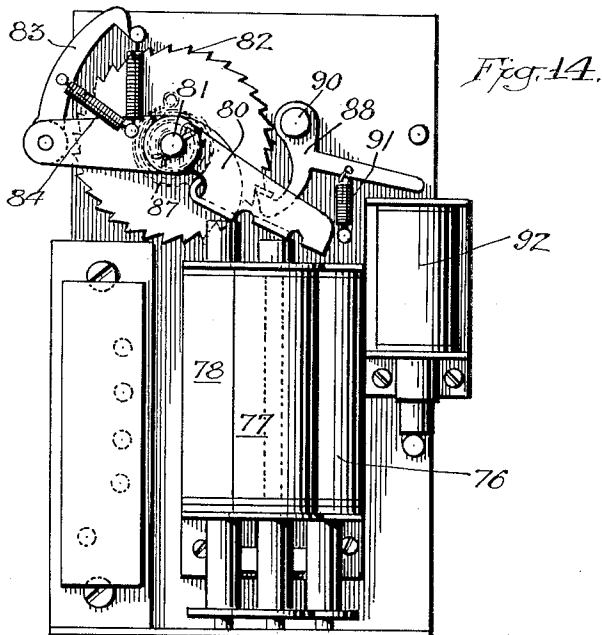
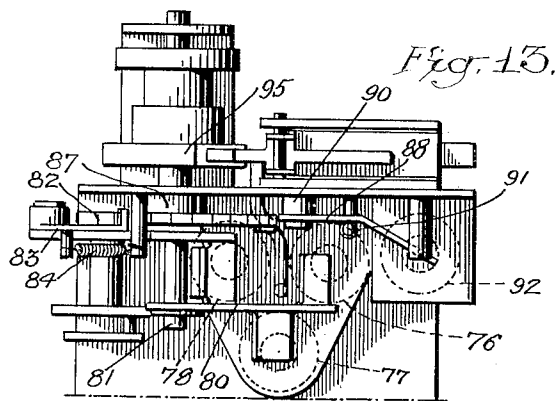
W. F. DRISCOLL

2,717,069

CHECK INSURING MACHINE

Filed Jan. 20, 1950

14 Sheets-Sheet 11



INVENTOR
William F. Driscoll
BY
William F. Driscoll
ATTORNEYS

Sept. 6, 1955

W. F. DRISCOLL

2,717,069

CHECK INSURING MACHINE

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Fig. 17.

146

LAND TITLE BANK AND TRUST COMPANY		3-46 310
No. _____	PHILADELPHIA, PA. _____	147 19 _____
PAY TO THE ORDER OF _____ \$ _____		
_____ DOLLARS.		

Fig. 18.

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FEE COLLECTED \$1.10
PAYMENT ASSURED BY
AMERICAN INSURANCE CO.
POLICY 1234567890
REEL 5 REGISTRATION
000999

INVENTOR
William F. Driscoll,
BY
Wm. S. Jackson and Sons
ATTORNEYS

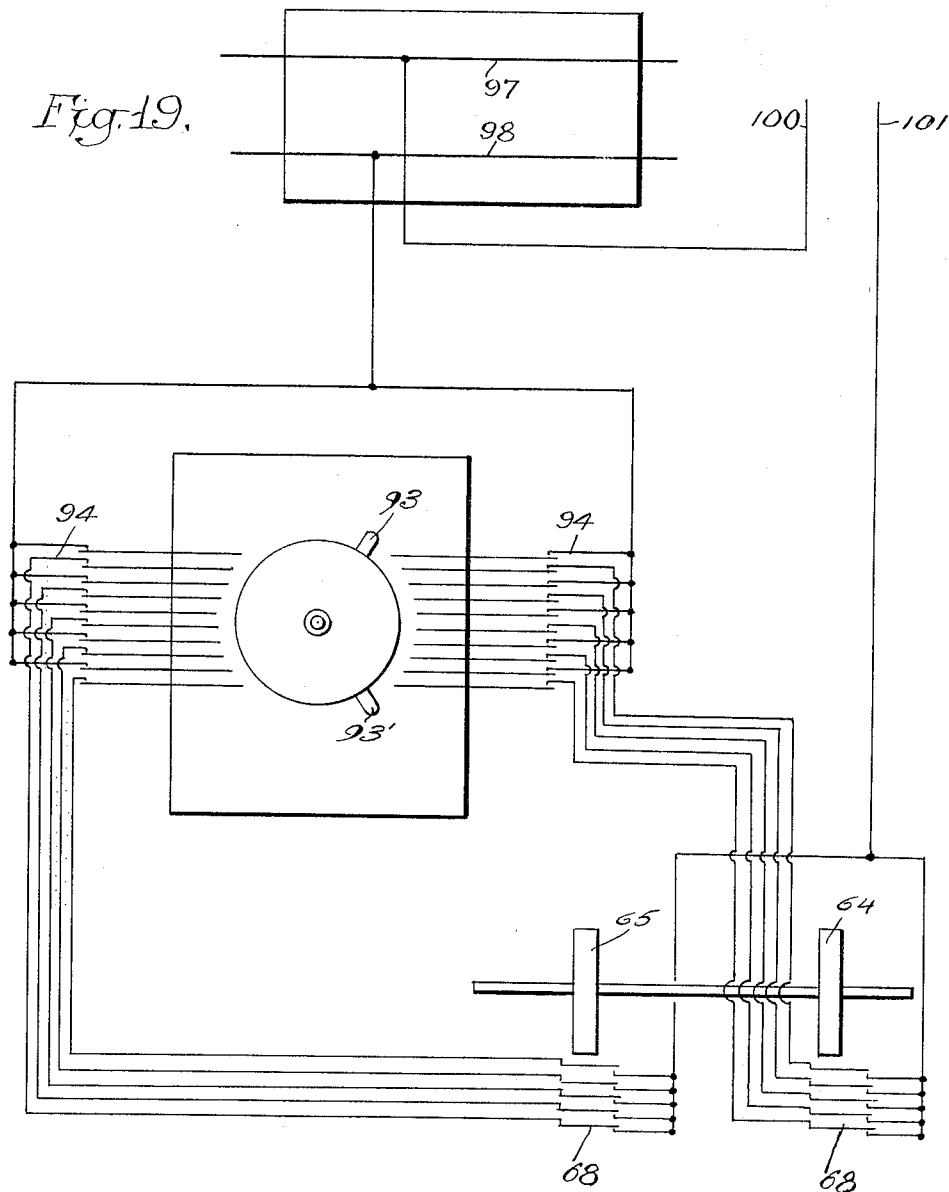
Sept. 6, 1955

W. F. DRISCOLL
CHECK INSURING MACHINE

2,717,069

Filed Jan. 20, 1950

14 Sheets-Sheet 13



INVENTOR
William F. Driscoll
BY
Wm. S. Jackson and Son
ATTORNEYS

Sept. 6, 1955

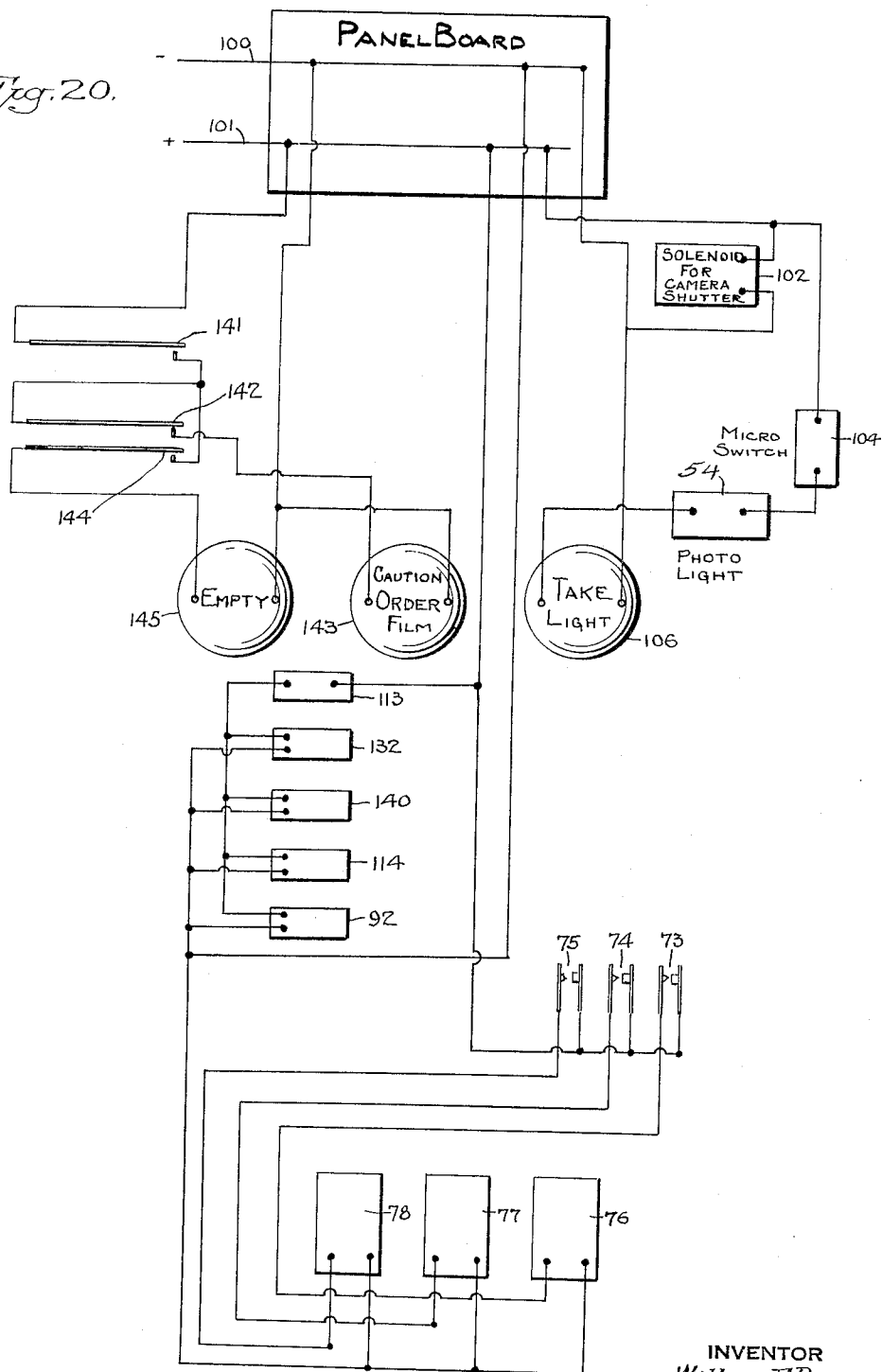
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Fig. 20.



INVENTOR
William F. Driscoll
BY
[Signature]
ATTORNEYS

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2,717,069

CHECK INSURING MACHINE

William F. Driscoll, Philadelphia, Pa.

Application January 20, 1950, Serial No. 139,710

4 Claims. (Cl. 194—9)

The present invention relates to vending machines and particularly to check insuring machines.

The subject matter relating to the coin operated accumulator has been divided from the present application and is embodied in application Serial No. 219,071, filed April 3, 1951, for Coin Operated Accumulator.

A purpose of the invention is to record a check for a fee deposited in a vending machine.

A further purpose is to print indicia on a check in connection with the insuring of the check by the operation of a vending machine, desirably including a transaction number.

A further purpose is to photograph a transaction number on a film on the same frame on which the check is recorded.

A further purpose is to photograph other indicia along with a check and transaction number.

A further purpose is to print indicia on the back of a check through a window in a tray while photographing the check from the opposite side.

A further purpose is to coordinate the selection of a charge rate by a rate switch and the payment of the money corresponding to that rate by an accumulator switch, by placing the respective rate switches and accumulator switches corresponding to the same amount of money in series in a group of parallel branches of the circuit which operates the vending machine.

A further purpose is to advance a ratchet accumulator, which has accumulator switches, by different amounts corresponding to the energization of different solenoids by coin switches actuated by coins of different denominations.

A further purpose is to employ different throws on the accumulator solenoids.

A further purpose is to energize a camera, a photo-illuminator and a printing solenoid by the concurrent connection across a rate switch and the corresponding accumulator switch, and desirably also to advance the printing ribbon and a photograph counting device by separate solenoids.

A further purpose is to energize an electric caution when a counter in the machine counts out.

Further purposes appear in the specification and in the claims.

In the drawings I have chosen to illustrate one only of the numerous embodiments in which my invention may appear, selecting the form shown from the standpoint of convenience in illustration, satisfactory operation and clear demonstration of the principles involved.

Figure 1 is a fragmentary front sectional elevation of the machine, the section being taken on the line 1—1 of Figure 4.

Figure 2 is a right side fragmentary sectional elevation of the machine, the section being taken on the line 2—2 of Figure 4.

Figure 3 is a sectional plan of the machine, the section being on the line 3—3 of Figure 1.

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Figure 4 is a sectional plan on the line 4—4 of Figure 1.

Figure 5 is a perspective of the case, detached from the machine.

Figure 6 is a rear perspective of the case of Figure 5.

Figure 7 is a detail perspective of the base and back of the machine.

Figure 8 is a diagrammatic exploded perspective of the main operating components.

Figure 9 is a fragmentary detail perspective of the main operating solenoid, camera, illuminator and tray.

Figure 10 is a section of the printing ribbon and actuating device, the section being taken on the line 10—10 of Figure 11.

Figure 11 is a top plan view of Figure 10.

Figure 12 is a left end elevation of Figure 10, omitting the ribbon.

Figure 13 is a fragmentary detail top plan of the accumulator.

Figure 14 is a rear elevation of Figure 13.

Figure 15 is a fragmentary front elevation of Figure 13.

Figure 16 is a side elevation of Figure 13.

Figure 17 is a top plan of a check which may be employed in accordance with the invention.

Figure 18 is a bottom plan of the check of Figure 17 after printing of the information on the back.

Figure 19 is a circuit diagram for the main operating components.

Figure 20 is a circuit diagram for the lights and solenoids.

In the cashing of checks, particularly payroll checks, especially by establishments not primarily engaged in that activity, such as stores, it has been customary for the management to take the risk of the check not being good, thus discouraging small operators from cashing checks and often interfering with legitimate business transactions. By the present invention it is possible for the operator of a store or other business or for a member of the public or any other user to obtain insurance on a check to be cashed, at the same time making a record of the check and indicating on the check the fact that it is insured. In this way the risk of loss to the individual business is reduced and the operator can, if he wishes, pass along the premium on the insurance to the customer as a legitimate expense of the transaction.

The machine is adjustable by turning of a rate wheel to permit the user to set the machine for a particular premium, as determined for example by a chart on the outside of the machine. The premium may be rated according to the amount of the check, the distance of the bank from the place of cashing, the presence or absence of endorser, the fact that the check is or is not a payroll check, or any other factor which contributes to the risk. Since the amount of premium collected is printed on the check, the insurer is protected against paying a loss on a risk on which the proper premium was not paid.

After the user sets up the correct premium on the rate wheel, the machine will not operate until coins totalling the correct rate are deposited in the machine. Once the correct coins are deposited, a circuit is completed between any one of several sets of rate switches and the corresponding accumulator switch, to operate the machine.

When the machine operates, it takes a record photograph of the check, along with a photograph of a transaction number and permissibly a photograph of other indicia such as an automobile driver's license, social security card, industrial identification card, or society membership card of the person cashing the check, to aid in establishing the identity and reliability of the customer. At the same time the machine prints on the check, suitably on the back, the transaction number and

any associated indicia, such as the name of the insurance company and the fact that the check is insured. The machine then automatically resets for the next operation.

When the machine has recorded so many transactions that the film is about to be used up, it automatically warns the user that more film is required and eventually indicates the fact that it is no longer operative until the film is changed.

The machine comprises a housing 30 made up of a base and rear panel 31 (Figure 7), and a removable box-like cover portion 32 which interlocks at the top 33 of the rear panel and at the rim 34 around the base and at the front edge 35 of the rear panel. The cover is locked in place by a lock 36 (Figure 5) which engages in suitable manner on the base to prevent tampering.

The main frame 37 of the machine is secured to the base and also to a projecting flange 38 near the top of the rear panel (Figure 7).

Spaced rails 40 (Figure 1) extend horizontally from the front toward the back of the machine in the frame 37, and receive and guide a sliding shelf or tray 42 extending through a slot 43 (Figure 5) in the cover and provided with a handle 44 accessible at the front. The tray is provided with a clip 45 (Figure 8) for engaging the rear portion of a check and holding the bottom of the check above a printing window 46 in the bottom of the tray. The space 47 on the tray forward of the printing window 46 supports the check flat for photographing. A clip 48 to one side of the clip 45 is adapted to engage and hold other indicia such as identifying cards for photographing on the same film frame as the check. A window 50 is provided in the tray (Figure 8) for photographing of transaction numbers through the tray on the same film frame.

Above the tray, downwardly directed for operation, is located a camera 51 having a lever 52 which operates the shutter and advances the film to the next frame as well known in the camera art. The camera is of the well known recording type in which the shutter lever also advances the film of a motion picture film or the like automatically. The camera lens is downwardly directed into a camera hood 53 which is located a suitable distance above the tray.

Located at one side of the hood and supported thereon, is an illuminator 54, suitably an electric lamp, provided with a reflector 55 directed to illuminate the check and other indicia on the tray and also the photograph transaction number shown through the window 50 in the tray.

The user, having determined the premium to be charged, turns a rate wheel 56 extending through an opening 56' (Figure 5) in the cover, operating a rate shaft 57 supported in bearings 58 on the right hand side of the frame 37, and intergeared as by beveled gears 60 with a rate shaft extension 61 extending across the back of the machine. The rate shaft extension 61 is mounted in bearings 62 on the frame, and carries rate printing wheel 63 carrying price numbers corresponding to the different premiums. Whichever number is uppermost at the time of printing is printed on the check.

On the rate wheel extension shaft 62, ratchet wheels 64 and 65 are provided, engaged by spring urged pawls 66 (Figure 2) which assure that the rate wheel must be turned continuously in the same direction. Each of the ratchet wheels has a switch closing pin 67 (Figures 2, 4, 8, 10 and 11), which by its position selectively closes a series of rate switches 68 (Figures 2, 4, 8, 11 and 19). The pins 67 on the respective ratchets 64 and 65 are respectively 90 degrees out of phase, so that only one of the rate switches 68 will be closed at a given time. The separate ratchets permit dividing the series of rate switches into two banks which divide the total arc of adjustment.

When the rate wheel has been set to the desired rate, the operator inserts the required amount of money through the coin slot 70 (Figures 1, 2, 3, 5 and 8), passing into a slug rejector 71 (Figures 1, 2 and 3) of any suitable character not important from the standpoint of the present invention, and then depositing the coin, if accepted, into a suitable receptacle. A coin return connected to the slug rejector is shown at 72 (Figures 1, 2, 5 and 8). The coin on its path to the receptacle encounters switches 73, 74 and 75, each closed by a different denomination of coin (Figure 20) and respectively energizing different accumulator solenoids 76, 77 and 78 (Figures 4, 13, 14, 16 and 20) each of which has an armature operating the same bell crank pawl 80 (Figures 13, 14 and 16) pivoted on the shaft 81 (Figures 2, 4, 8, 13 to 16) of the accumulator ratchet 82 (Figures 2, 13, 14 and 16). Shaft 81 turns in suitable bearings. A pawl detent 83 is pivotally mounted on the remote end of the bell crank pawl 80. The bell crank pawl 80 has levers in the path of the armature of all of the solenoids 76, 77 and 78, but has a common arm pivotally supporting pawl detent 83, and the bell crank pawl is moved different distances by the different solenoids which have different strokes in proportion to the denominations of the coins which close their switches (see different armature lengths in Figure 14). The pawl detent 83 is spring urged toward the ratchet wheel by tension spring 84 and the bell crank pawl is spring urged toward the retracted position by tension spring 85. The ratchet wheel 82 is spring urged toward its zero position by torsion spring 87 and is held in any advanced position by pawl 88 pivotally mounted at 90, spring urged toward engagement of the ratchet wheel at 91 (Figures 13, 14 and 16) and released by the armature of reset solenoid 92 (Figures 13, 14, 16 and 20).

On the shaft 81 of the accumulator ratchet wheel 82 is mounted switch closing fingers 93 and 93' (Figures 1, 15 and 19) which engage and close successively one of a series of accumulator switches 94 (Figures 1, 8, and 19) (in two banks) closing a different accumulator switch for each coin deposited and each significant notch advance of the accumulator. Thus whenever the accumulator advances significantly, a new switch 94 closes and another switch 94 opens as the projections 93 and 93' move around. The limitation on the advance of the accumulator is provided by a cam 95 (Figures 1, 2, 4, 8, 13, 15, and 16) engaging a spring abutment 96 which prevents building up the accumulator to too high a value.

As soon as one of the accumulator switches 94 closes in series with that rate switch 68 which has closed, the circuit is completed between the lines 97 and 98 from the source and leads 100 and 101 (Figures 19 and 20). When energy is provided to leads 100 and 101 in Figure 20 they energize solenoid 102 (Figures 3, 8, 9 and 20) to pull solenoid armature 103, closing micro-switch 104 which energizes the photo illuminator 54 and also energizes "take" pilot light 106 visible at the front of the machine through a suitable bull's eye projecting through an opening in the cover. The closing of switch 104 is accomplished by operator 107 (Figures 3 and 8) in extension of the armature 103 which retracts switch operating roller 108 from micro-switch 104 and allows the switch to close under internal action. An extension 110 (Figures 3, 8 and 9) on the operator 107 engages camera shutter lever 52 (Figure 3) as the solenoid armature is pulled further back, tripping the shutter and advancing the film of the camera one frame.

As the camera operating lever 52 moves back near the end of its stroke it contacts roller 111 on pivoted lever 112 (Figures 3, 8 and 9), closing microswitch 113 (Figures 3, 9 and 20), which energizes press solenoid 114 (Figures 2, 3, 8, 9 and 20). Solenoid 114 pulls up on the forward end of the press lever 115 (Figures 2, 3, 8 and 9) pivoted intermediate its ends at 116 and pivotally con-

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nected at the opposite end to press plunger 117, forcing a suitably resilient press plate 118 down against the top of the check above the window 46 (Figure 8). The plunger is returned by spring 117'. The press plate 118 pushes the check down against ink ribbon 120 (Figure 10) which extends across above price printing roll 63 and also above numbering rolls 121 of printing numbering counter device 122 (best seen in Figure 11).

The ink ribbon is wound over rolls 124 and 125, and feeds over guides 126 and 127. The ribbon pays out from roll 125 under any suitable tension and is taken up on roll 124 by ratchet 128 (Figure 10) actuated by pawl 130 on lever 131 resting on roll 124. The armature of solenoid 132 engages an abutment 133 at the upper end of lever 134 on fixed pivot 135 pivotally connected at 136 at its opposite end to lever 131. Solenoid 132 as shown in Figure 20 is also energized at the same time that press plate 114 is energized. Lever 134 is spring urged at 137 toward retracted position. When the press plate comes down on printing numbering counter device 122 it engages advance button 138 (Figure 4) which advances the counter device to the next number when the press plate retracts.

A separate counter device 140 (Figures 4, 8 and 11) is provided in line with the numbering window 50 showing through the drawer or tray, which exposes a number to be photographed. The counter device 140 has its operating solenoid in parallel with the press solenoid 114 (Figure 20) and the ribbon wheel solenoid 132 and is of the character well known in the art which automatically advances after each energization.

When printing numbering counter device 122 advances to a number approaching the number of frames on the machine, suitably 2300, abutments at the "two" and "three" positions in the respective fourth and third places contact leaf switches 141 and 142 respectively (Figures 4 and 20), closing the light circuit of "Caution order film" pilot light 143 (Figure 20). When 2400 is reached respective "two" and "four" abutments on the fourth and third places close switches 141 and 144 illuminating "Empty" pilot light 145 visible at the front of the machine.

The closing of switch 113 energizes reset solenoid 92 of the accumulator (Figures 14 and 20) to reset the accumulator.

The check 146 as shown in Figures 17 and 18 has a top face 147 which is photographed and a back face 148 which carries the designation printed on it by the price and numbering wheels. It will be understood, of course, that other suitable data establishing the fact of insurance will be applied adjoining the numbering and price wheels, resulting in a printed legend as shown on Figure 18.

In operation, the user, normally the storekeeper or his employee, will place the check on the tray face up, with one end of the check not carrying endorsements immediately above the printing window. Any other indicia such as an identity card may be placed beside the check, and the tray pushed into its inner position.

In this position the photograph transaction number is visible to the camera through the photograph transaction number window in the tray.

The user determines the premium rate from any suitable chart, and turns the rate wheel to the correct premium rate, thus closing the circuit of the correct rate wheel switch corresponding to this premium rate. There are as many rate switches as premium rates, and the machine cannot operate until the correct premium is deposited in the coin slot.

The user then deposits coins totalling the premium in the coin slot. Each coin is tested by a slug rejector in well known manner and rejected in case it is not genuine. Each time a coin is passed by the slug rejector it closes one of a series of coin switches, of which there is a different switch corresponding to each denomination of coin which the machine will accept. Each coin switch

closes the circuit of one of several accumulator solenoids, and each accumulator solenoid has a different stroke depending on the denomination of the coin. For example, the stroke of the accumulator solenoid corresponding to a dime is twice as great as that for a nickel, and that corresponding to a quarter is five times as great as that for a nickel. The various accumulator solenoids all preferably operate the same ratchet accumulator, advancing it an amount corresponding to the denomination of the coin.

As the ratchet accumulator advances it successively closes a sequence of accumulator switches, each of which is in series with one of the rate switches, the respective series branches of the accumulator switches and rate switches being in parallel in the main operating circuit of the vending machine. Until the correct accumulator switch is closed, which corresponds to the rate switch then closed, the machine will not operate.

As soon as the correct accumulator switch is closed, a circuit is completed through a solenoid. This closes a switch which operates the photoilluminator and its spot indicator, the indicator failing to light in case the illuminator is burned out. Further travel of the main operating solenoid trips the camera shutter, taking the photograph and advancing the camera one frame. The photograph records the check along with the transaction number and any other indicia in the tray.

Further along the stroke of the main operating solenoid, another switch is closed which operates the press solenoid, bringing the press plate against the top of the check and making an impression of the type through the ink ribbon on the back of the check at the points where the type on the printing numbering device are located. As the press plate comes down, the printing numbering machine is advanced to the next number. The same switch which energizes the press plate also advances the ribbon and advances the photograph numbering machine.

When the machine is close to the end of the frames on the film, the printing numbering machine closes switches which energize a caution light, and when the machine no longer has available frames on the film, a warning light is similarly operated.

The same switch which energizes the printing solenoid also accomplishes the resetting of the accumulator by operating an accumulator reset solenoid.

It will be evident that the device is intended primarily for use in connection with the insuring of checks, but it will be suitable also for recording of other writings for any other suitable purpose, such as safe keeping of documents.

In view of my invention and disclosure variations and modifications to meet individual whim or particular need will doubtless become evident to others skilled in the art, to obtain all or part of the benefits of my invention without copying the structure shown, and I, therefore, claim all such insofar as they fall within the reasonable spirit and scope of my claims.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:

1. In a check insuring machine, a rate wheel, a succession of rate switches selectively closed by the rate wheel, a ratchet accumulator, a plurality of accumulator solenoids operatively connected to the ratchet accumulator and having different throws, a plurality of coin operated switches operatively connected respectively in circuit each with a different solenoid, a plurality of accumulator switches successively closed by the accumulator, a succession of parallel circuit branches each including one of the rate switches and the corresponding accumulator switch in series, a switch solenoid in series with all of the parallel circuit branches and energized by current flowing through any one of the parallel circuit branches, a slidable check supporting tray, a support for the tray, a camera in position to photograph a check on the tray operated by the switch solenoid, a printing numbering device having numerals in position to contact

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a check on the tray, a press plate reciprocating from a position remote from the check to a position pressing the check against the printing numbering device, a press plate operating solenoid in operative connection with the press plate and means under the control of the switch solenoid for operating the press plate solenoid.

2. In a check insuring machine, a rate wheel, succession of rate switches selectively closed by the rate wheel, a ratchet accumulator, a plurality of accumulator solenoids operatively connected to the ratchet accumulator and having different throws, a plurality of coin operated switches operatively connected respectively in circuit, each with a different solenoid, a plurality of accumulator switches successively closed by the accumulator, a succession of parallel circuit branches each including one of the rate switches and the corresponding accumulator switch in series, a switch solenoid in series with all of the parallel circuit branches and energized by current flowing through any one of the parallel circuit branches, a slidable check supporting tray, a support for the tray, a camera in position to photograph a check on the tray operated by the switch solenoid, a printing numbering device having numerals in position to contact a check on the tray, a press plate reciprocating from a position remote from the check to a position pressing the check against the printing numbering device, a press plate operating solenoid in operative connection with the press plate and electrical means including a press switch closed by the switch solenoid after operating the camera for operating the press plate solenoid after the camera has acted.

3. In a check insuring machine, a support, a slidable tray adapted to position a check and having a window, a guide on the support for the slidable tray, printing mechanism on the support at the window including a numbering impression device, a camera on the support in position to photograph the check on the tray, a press plate cooperating with the printing mechanism on the side opposite therefrom with respect to the check, movable on the support from a position remote from the check to a position in engagement with the check when the

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check rests on the tray and coin operated mechanism on the support for operating the camera and impressing the press plate against the printing mechanism.

4. In a coin operated machine, a support, a rate wheel on the support, a succession of rate switches on the support operatively connected in successive closing relation to the rate wheel, a ratchet accumulator on the support, coin operated switch means on the support for advancing the accumulator progressively according to the denominations of the coins which close the respective switches, a succession of accumulator switches on the support, successively closed by the accumulator and each in series with the rate switch corresponding to the same total value but in parallel with one another, means on the support for positioning a check to be photographed, a recording camera on the support directed against one side of the check to be photographed, an electrically operated printed device on the support including printing numerals and a printing plate reciprocating from a remote position against the opposite side of a check to be photographed, and electrical means for operating the camera and printing device including a single solenoid in series with all the parallel circuit branches operating by flow of current through any one of the group of parallel branches, each of which includes a rate switch, the corresponding accumulator switch and the solenoid.

References Cited in the file of this patent

UNITED STATES PATENTS

429,705	Steffens	June 10, 1890
1,094,073	Ilg	Apr. 21, 1914
1,808,118	Peterson	June 2, 1931
1,852,967	Hana	Apr. 5, 1932
2,266,825	Streckfuss	Dec. 23, 1941
2,278,357	Madden	Mar. 31, 1942
2,346,869	Poole	Apr. 18, 1944
2,435,933	Toolan	Feb. 10, 1948
2,615,545	Dolman	Oct. 28, 1952

FOREIGN PATENTS

375,264	Great Britain	Dec. 4, 1930
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