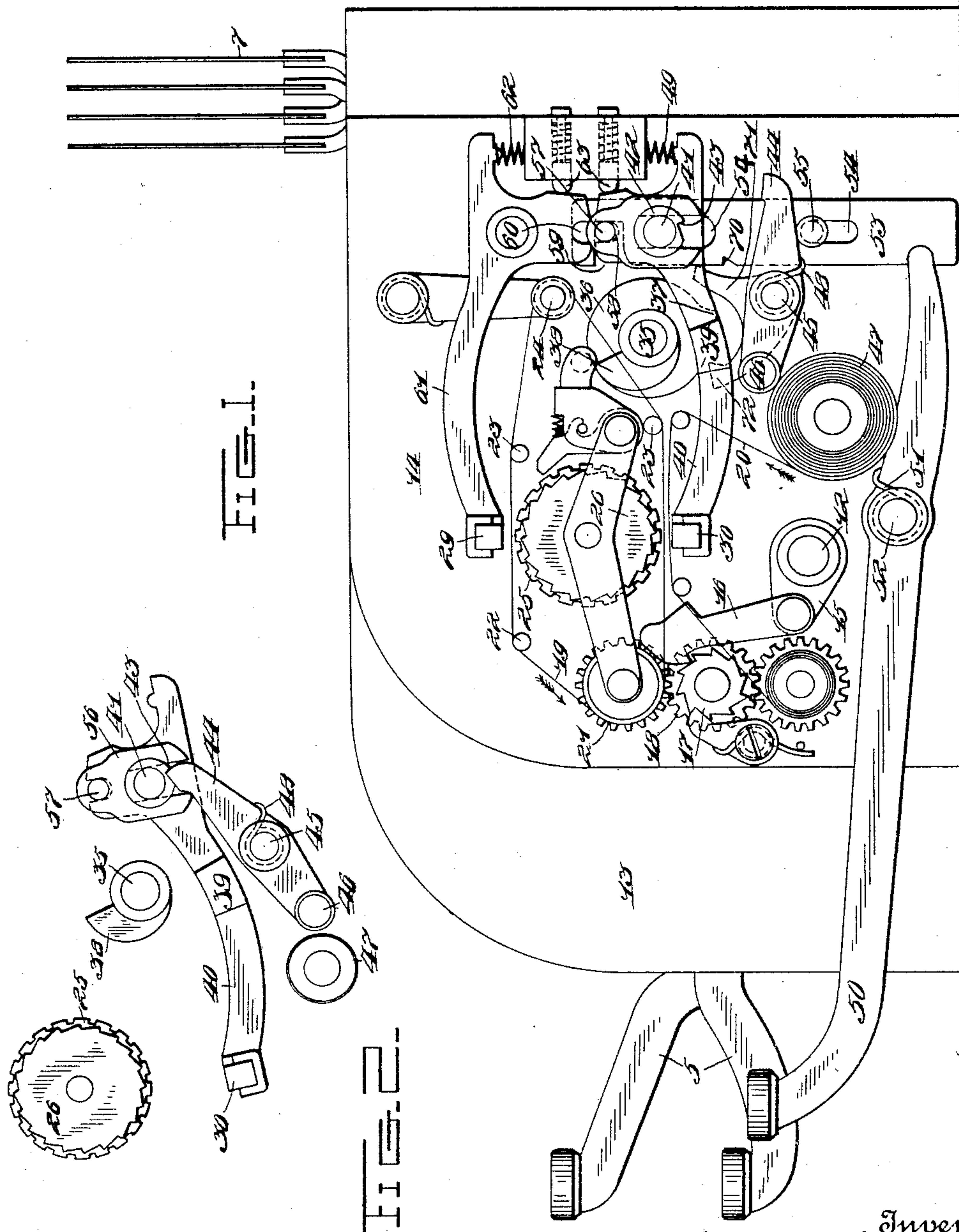


T. CARNEY.  
CASH REGISTER.

(Application filed June 26, 1901.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses  
W. M. McCarthy  
Ira Berkstrasser

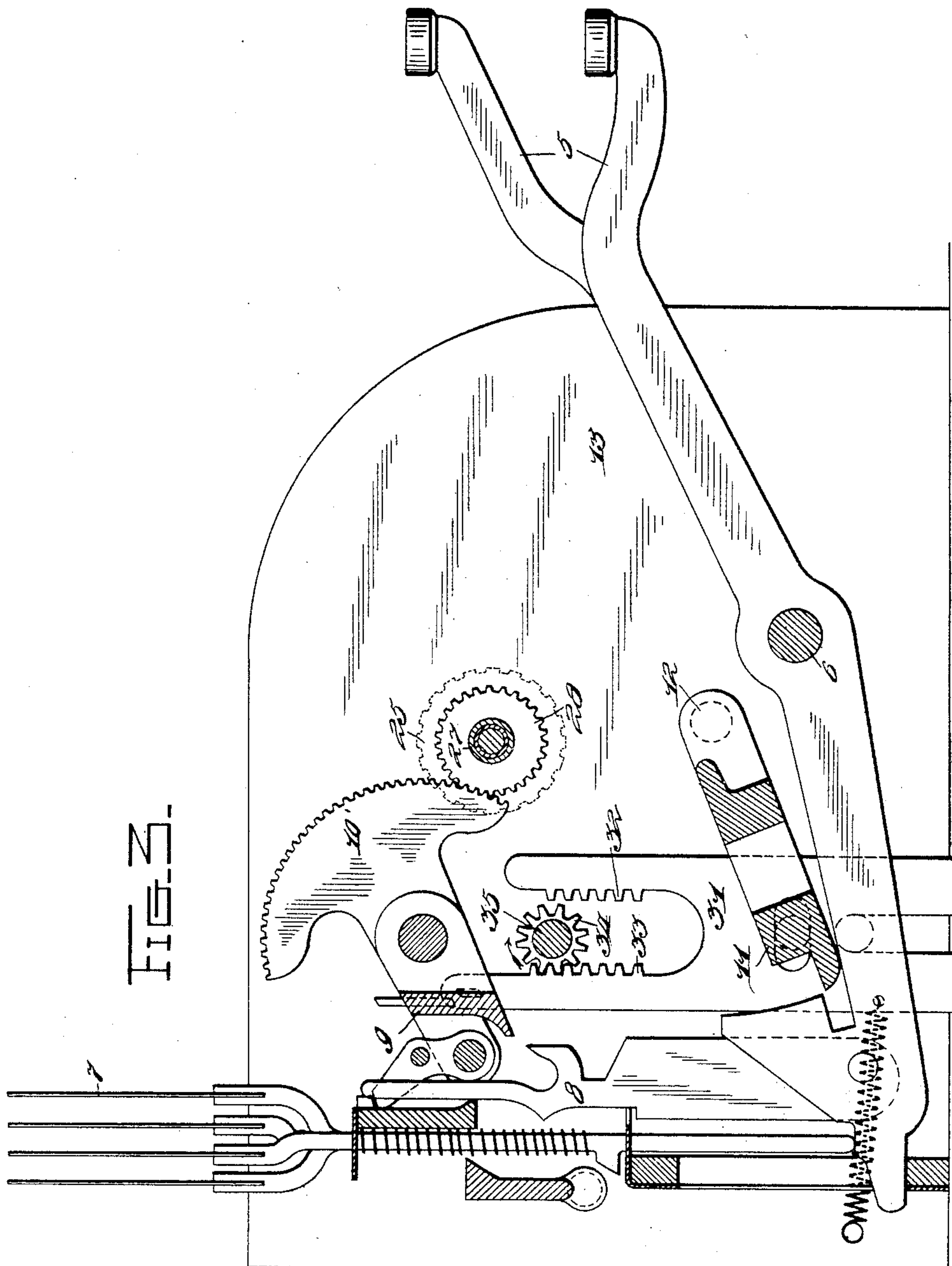
Inventor  
Thomas Carney  
By Howard Macaulay, Attorney

T. CARNEY.  
CASH REGISTER.

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(No Model.)

2 Sheets—Sheet 2.



Witnesses  
W. M. Cleary  
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Inventor  
Thomas Carney  
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# UNITED STATES PATENT OFFICE.

THOMAS CARNEY, OF DAYTON, OHIO, ASSIGNOR TO NATIONAL CASH REGISTER COMPANY, OF JERSEY CITY, NEW JERSEY, A CORPORATION OF NEW JERSEY.

## CASH-REGISTER.

SPECIFICATION forming part of Letters Patent No. 696,224, dated March 25, 1902.

Application filed June 26, 1901. Serial No. 66,161. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS CARNEY, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Cash-Registers, of which I declare the following to be a full, clear, and exact description.

My invention relates to a controller for printing devices, particularly as applied to cash-registers.

The special object of the invention is to provide a means whereby when the paper strip upon which a printed record is made becomes exhausted the printing devices become inoperative, thereby preventing the hammering of the platens against the printing-types.

In the drawings, Figure 1 represents an elevation view of the right-hand end of a cash-register with printing devices and my present invention applied thereto. Fig. 2 is a detail elevation view showing the operation of my invention; and Fig. 3 is a vertical section through the cash-register, showing the general mode of operation.

Of course it makes little difference as to the style or kind of cash-register to which my invention is applied. With minor modifications, such as any skilled mechanic is able to make, it can be applied to any of the well-known forms or types of such machines. For purposes of illustration I have shown it as applied to a machine of the kind patented to me on the 23d day of May, 1893, No. 497,860, in which the value-keys 5 are hung upon the transverse shaft 6. Extending vertically above the rear ends of the value-keys are the usual indicators 7, one for each value-key. The registering movement is transmitted from the operated value-keys to the counter-wheels through the lifting-plates 8, one of which is pivoted to each key, which are arranged to engage and rock the registering-frame 9, and consequently the registering-segment 10, with which in the usual manner and as shown in my said patent the counter-wheels are arranged to engage.

The universal bar or key-coupler overlies all of the keys and is supported upon trunnions 12, the right-hand one of which extends

toward the right through the right-hand side frame 13 of the cash-register and the frame 14 of the printer. There is secured upon the right-hand end of this extended trunnion a crank-arm 15, pivoted to which is the pawl 16, which by engagement with the ratchet-wheel 17 turns the intermediate gear 18, which is rigidly secured to the ratchet-wheel, and thereby feeds the endless inking-ribbon 19 and the detail paper strip 20 a predetermined distance at each operation of the machine. The endless ink-ribbon near the front of the machine passes about a roller 21 and a guide-pin 22. Toward the rear it passes over two guide-pins 23 and a tension-roller 24. In this manner the inking-ribbon forms two parallel bands, between which are located the printing-wheels or type-carriers 25, each of which carries its respective ratchet-wheel 26. The printing-wheels are directly connected with their corresponding registering-segments 10 through sleeves 27, upon the right-hand end of which are secured the type-wheels and upon the left-hand end of which are the gears 28, which connect directly with their respective registering-segments. In this manner the movement of the value-keys is transmitted from the registering-segments to the printing-wheels.

Each of the printing-wheels is provided with a double series of printing-types arranged in a well-known manner, so that duplicate types in each series are at diametrically opposite points on the periphery of the printing-wheels, from which it results that when the upper printing-hammer 29 and the lower printer-hammer 30 are simultaneously operated the same impression is made upon the detail strip paper 20 and upon a paper check which may be inserted under the upper printing-hammer and above the printing-wheels.

Power to operate the printing-hammers is applied through the value-keys, which give the universal bar 11 a definite movement at each operation of the machine. The latter has a slot-and-pin connection with the usual form of rotation-rack 31, which is provided with two series of rack-teeth 32 and 33. By means which are well known in the art when a value-key is operated the rotation rack-bar



first rises, during which the series of rack-teeth 33 engages and turns the pinion 34 on the rotation-shaft 35. At the conclusion of the initial movement of the key the rotation rack-bar is shifted so as to bring the other series of rack-teeth 32 into engagement with the rotation-pinion 34 during the return movement of the value-keys. In this manner the rotation-shaft is turned always in the direction of the arrow, Fig. 3.

By reference to Fig. 1 it will be seen that the rotation-shaft 35 also extends through the side frame 13 of the cash-register and the frame 14 of the printer, and there is secured upon its right-hand extension a disk-cam 36, having a single tooth 37, and a drop-cam 38. Coöperating with the drop-cam is a block or projection 39, which is secured to and carried by the lower-platen-carrying arm 40, which is pivoted upon a stub-shaft 41. A sleeve 42 is rigidly secured to the lower-platen-carrying arm 40 and turns upon the stub-shaft 41 in order to give said platen-carrying arm a wider bearing. This sleeve is provided with a locking-shoulder 43, coöperating with which is a locking-lever 44, which is pivoted between its ends upon a pin 45. The front end of the locking-lever carries an antifriction-roller 46, which rests upon the periphery of paper-roll upon the storage-roller 47. The detail record is printed by the printing-wheels 25 upon this strip 20. There is a spiral spring 48, which is fixed at one end and at the other is bent over the locking-pawl 44, so as to press the roller 46 at all times against the periphery of the paper-roll. So long as there is a supply of paper on the storage-roller the diameter of said paper-roll is sufficient to hold the locking-lever in inactive position. As the paper is unwound from the storage-roller the front end of the locking-lever descends, and of course the rear end thereof ascends, until finally the diameter of the paper-roll becomes so much reduced that the antifriction-roller instead of resting on its periphery slips past it altogether, as shown in Fig. 2, whereupon the upper or rear end of the locking-lever is swung upward against the sleeve 42. When thereafter a value-key is pressed and the lower-platen-carrying arm 40 is rocked downward by the engagement of the drop-cam with the projection 39, the locking-lever is swung by its spring 48 so as to engage under the shoulder 43, and thereby holds the lower platen in its lowermost position against the tension of its spring 49.

Normally the upper printer-hammer is not operated, and it remains inoperative unless the check-key 50 is pressed prior to the operation of a value key or keys. A coiled spring 51, which is coiled about the pivot 52 of the check-key, tends to retain the latter in normal position and to return it to said position when it is released after having been moved therefrom. The rear end of the check-key has a jointed connection with a vertical check-

printing slide 53, which has two vertical slots 54, through the lower one of which passes the headed pin 55. Through the upper slot passes the stub-shaft 41, and its vertical check-printing slide 53 is movable in a vertical direction only. It lies close against the frame 14 of the printer and between it and the lower printer-hammer. The clutch member 56 lies flat against the outer side of the lower printer-hammer and has a bifurcated lower end, the legs of which straddle the stub-shaft 41, parallel slide-slots being cut in the sleeve 42 for this purpose, as shown in Figs. 1 and 2 in broken lines. At its upper end the clutch member carries a pin 57, which normally projects through a notch 58, formed in the upper edge of the lower printer-hammer or platen carrying arm. The pin also extends through the notch 59, which is formed near the upper end of the check-printing slide-plate 53. When now the check-lever 50 is pressed, the slide is raised, thereby carrying or moving the pin 57 into the slot 60, formed in the lower edge of the upper-platen-carrying arm 61, whose spring 62 tends normally to swing the upper platen 29 down against the periphery of the printing-wheels. Spring-plungers 63 operate to normally hold the platens away from the printing-types.

As stated, the upper-platen-carrying arm 61 is normally inactive, and it is only actuated through the lower-platen-carrying arm. Normally the two platen-carrying arms are disengaged; but when the check-lever 50 is depressed through the operation of the clutch member 56 the two platen-carrying arms become engaged, as will be readily understood, and when thereafter upon the turning of the rotation-shaft 35 the lower-platen-carrying arm is depressed by the drop-cam 38 the upper-platen-carrying arm will be simultaneously operated, as will be readily understood. In order to temporarily hold the clutch member in its upper position and the two platen-carrying arms thus engaged, the check-printing slide 53 is provided in its front edge with a notch 70, coöperating with which is a detent-pawl 71, pivoted upon the pin 45. The pawl is spring-pressed toward the rear and has a disengaging-arm 72, which coöperates with the disk-cam 36. When the check-key is pressed, the check-printing slide is raised until the detent-pawl is swung into the notch 70, thereby preserving the check-printer slide 53 in its raised position until the turning of the rotation-shaft brings the tooth 37 of the disk-cam into engagement with the disengaging-arms 72 of the detent-pawl, whereupon the latter is rocked out of engagement with the notch 70 and the check-printer slide, and the check-key will swing back to normal position.

The advantages of employing my invention in connection with a printing cash-register will be apparent to any one familiar with the art. For example, it frequently happens that



the detail strip becomes exhausted unnoticed while a person is operating the machine. In that event the printing-hammer or platen is repeatedly hammered against the printing-type with only the ink-ribbon intervening. This is destructive to the platen and injurious to the ink-ribbon and type. The normally intervening taut paper strip prevents injury to the type and prevents the injurious indentation of the platen or hammer. Heretofore there has been no way of absolutely preventing this except by unceasing watchfulness on the part of the operator. With my present invention, however, when the detail paper upon which the record is printed has been run off the storage-roll and while yet the rear end of the paper strip intervenes between the printing-hammer and the type-carriers the locking-lever 44 under the impulse of its spring passes by the storage-roller and swings up, so that its rear end rests against the periphery of the sleeve 42. On the subsequent operation of the machine when the lower printing-hammer is retracted the shoulder 43 is swung around so far that the engaging end of the locking-lever snaps in under the shoulder 43, thereby holding the lower printing-hammer, and consequently the upper printing-hammer, from operation until the operator or person in charge of the machine replenishes the storage-roller and returns the locking-lever to substantially the position shown in Fig. 1.

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

1. In a cash-register, the combination with the type-carriers and a platen, of a storage-roller for a detail strip and of means which is controlled by the diameter of the paper on the storage-roller for automatically engaging the operative parts of the platen when the paper-roll has become a certain size.

2. In a cash-register, the combination with the type-carriers and a platen, of operating mechanism for bringing the platen against the type-carriers, a storage-roller, and a locking lever or pawl which is controlled by the size of the paper-roll on the storage-roller so as to automatically engage the said operating mechanism and to lock the platen in inoperative

position before the detail strip becomes exhausted.

3. In a cash-register, the combination with the type-carriers and a platen, of the storage-roller, and a locking lever or pawl which is arranged to automatically engage said platen and prevent its operation before the paper strip upon which the record is printed has become exhausted.

4. In a device of the class described, the combination with the type-carriers and the platen, of a storage-roller, means for automatically locking the printer before the complete exhaustion of the detail strip, which consists of a stop device normally in contact with the periphery of the paper-roll on the storage-roller and arranged so that when the diameter of the paper-roll has become reduced to a certain degree it will automatically engage the platen and prevent its operation.

5. In a cash-register, the combination with the type-carriers, of a storage-roller, a platen so arranged that the detail strip is led from the storage-roller between said type-carriers and platen, and a spring-pressed locking-lever which is pivoted between its ends and has one end resting upon the periphery of the paper-roll and the other end arranged to engage and prevent the operation of the platen before the detail strip becomes exhausted from the storage-roller.

6. In a cash-register, the combination with a type-carrier and a platen, operating mechanism for the platen including the shoulder or projection 43, a storage-roller upon which the detail strip is wound and from which it is led between the type-carrier and the platen, and a locking-lever having a spring which causes one end of said locking-lever to rest normally upon the periphery of the paper-roll whereby when the diameter of the storage-roll has become sufficiently reduced, the other end of said locking-lever will engage the projection 43.

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

THOMAS CARNEY.

Witnesses:

IRA BERKSTRESSER,  
W. MCCARTHY.