

No. 864,509.

PATENTED AUG. 27, 1907.

T. CARNEY.  
CASH REGISTER.  
APPLICATION FILED NOV. 29, 1897.

4 SHEETS—SHEET 1.

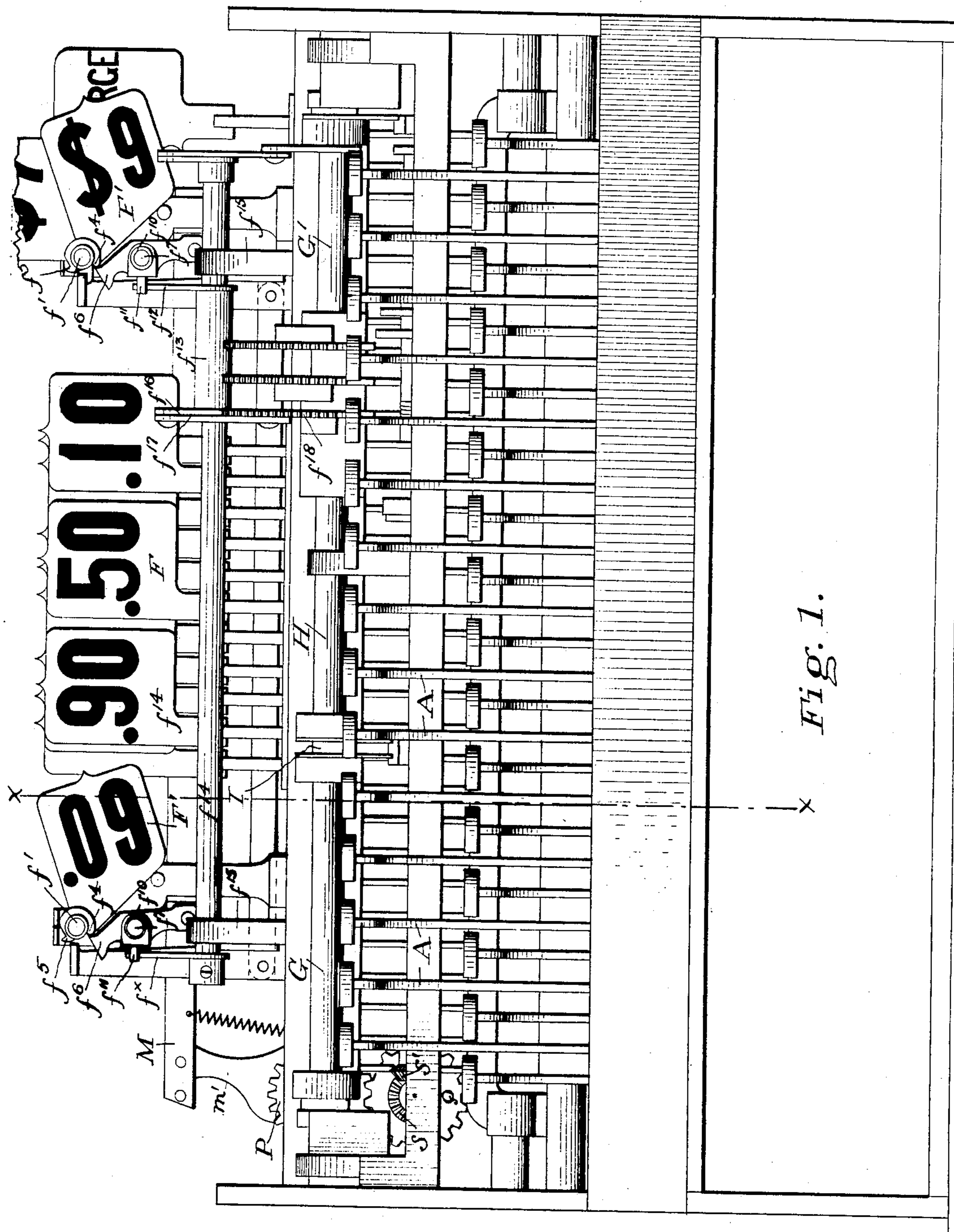


Fig. 1.

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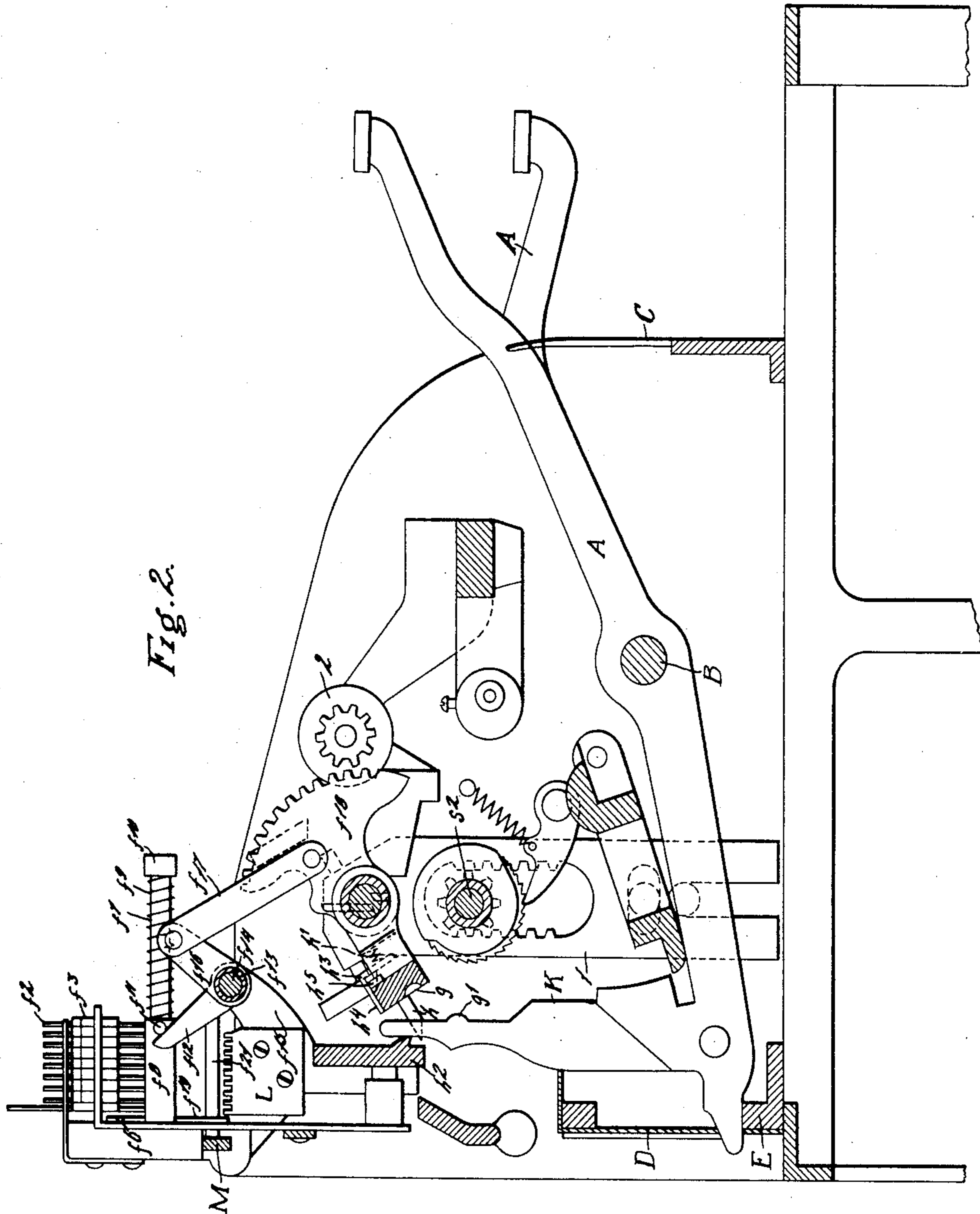
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4 SHEETS—SHEET 2.



Witnesses

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4 SHEETS—SHEET 3.

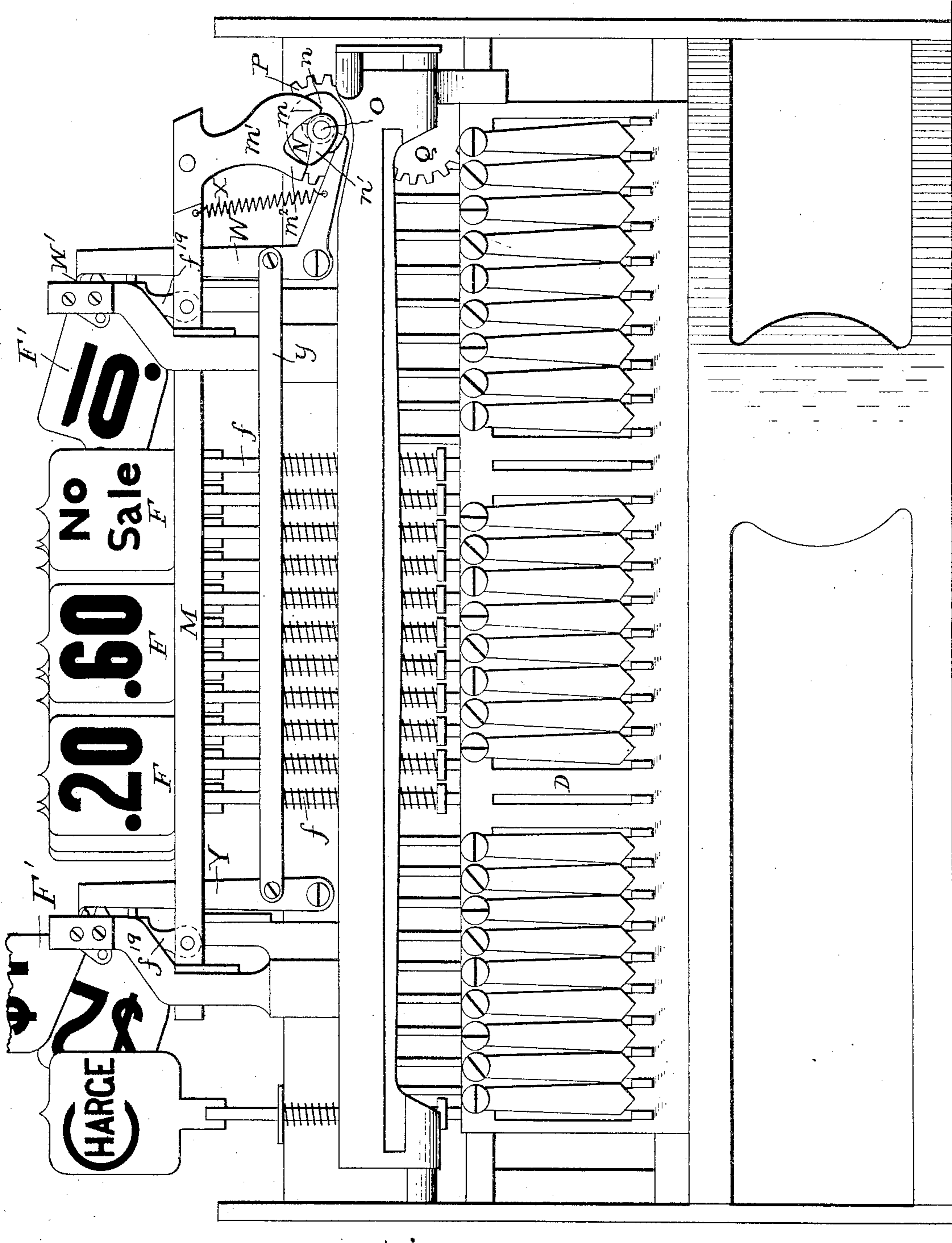


Fig. 3.

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4 SHEETS—SHEET 4.

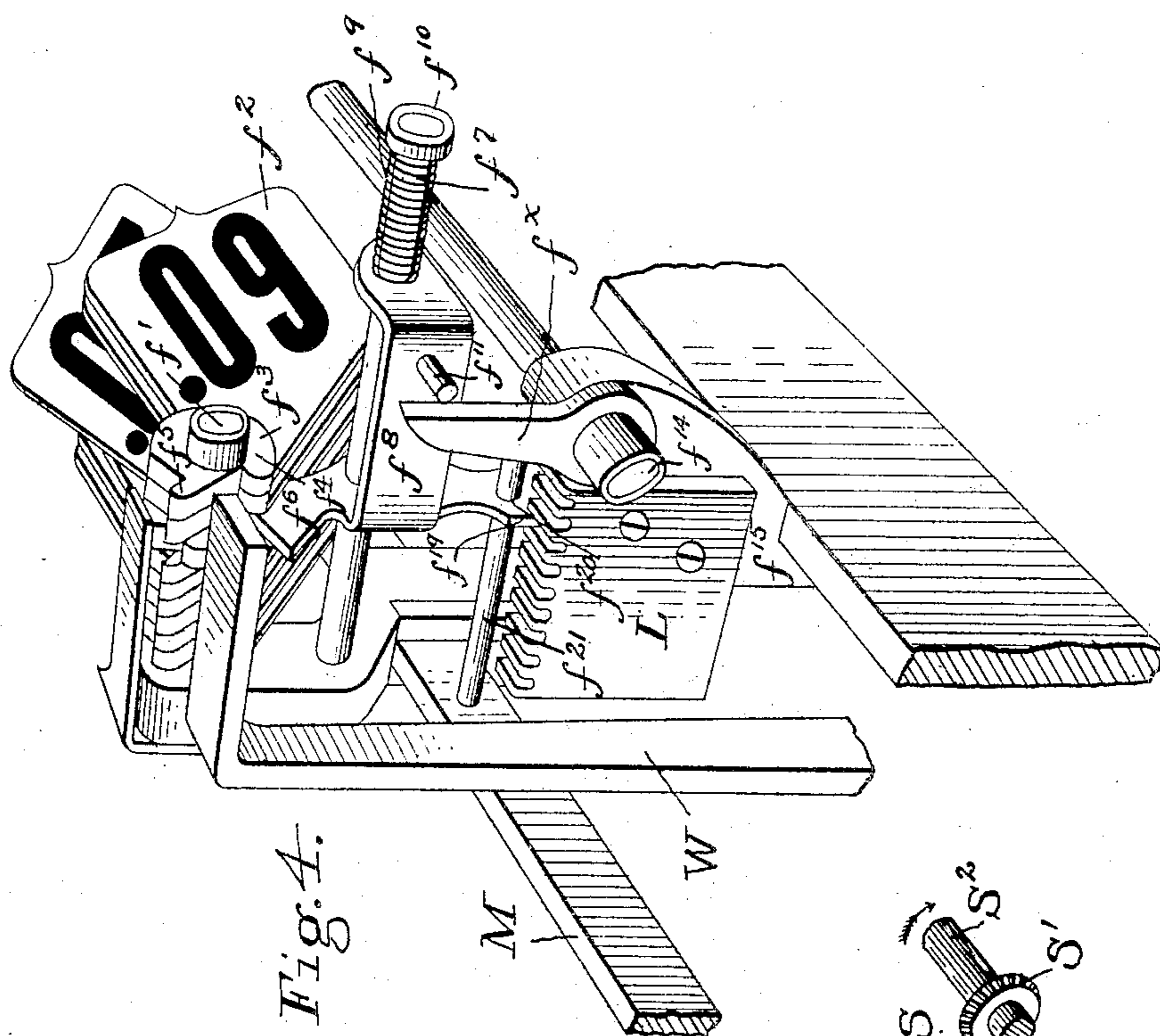


Fig. 4.

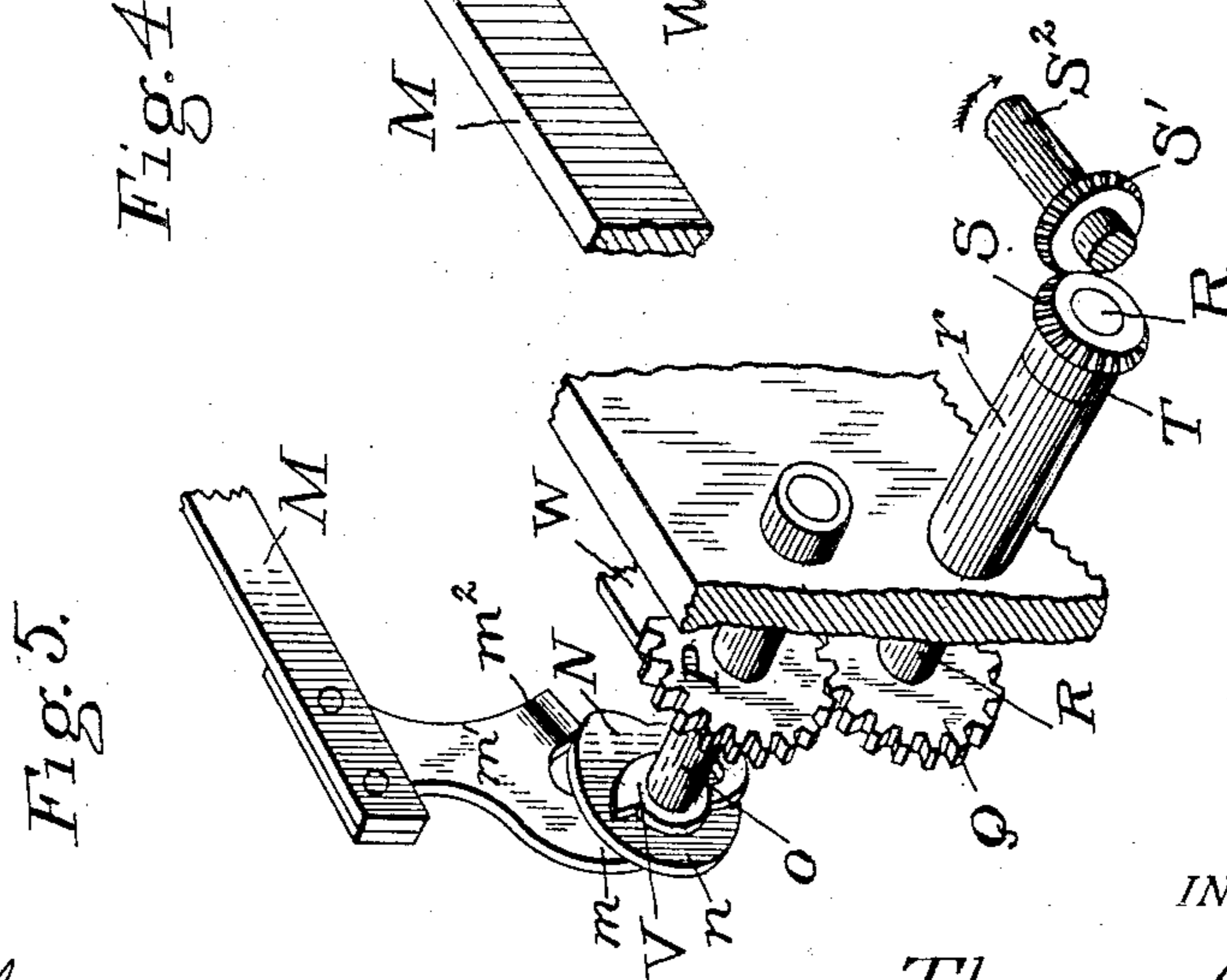


Fig. 5.

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# UNITED STATES PATENT OFFICE.

THOMAS CARNEY, OF DAYTON, OHIO, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE NATIONAL CASH REGISTER COMPANY, OF DAYTON, OHIO, A CORPORATION OF OHIO, (INCORPORATED IN 1906.)

## CASH-REGISTER.

No. 864,509.

Specification of Letters Patent.

Patented Aug. 27, 1907.

Application filed November 29, 1897. Serial No. 660,084.

*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; and I do hereby declare the following to be a full, clear, and exact description of the invention.

This invention relates to improvement in cash registers and indicators and has more particular relation to the type of machine such as patented to me January 22, 1895 and numbered 532,762.

The invention consists of certain novel constructions, combinations and arrangements of parts all of which will be hereinafter more particularly set forth and claimed.

In the accompanying drawings forming part of this specification Figure 1 represents a front elevation of the improvements embodying my invention, applied to a machine of the type mentioned. Fig. 2, represents a vertical transverse section through the same on the line of  $x-x$  of Fig. 1, portions of the mechanism being omitted for the sake of clearness. Fig. 3, represents a rear elevation of my said improved machine. Fig. 4 represents an enlarged detail perspective view of the left hand bank or group of indicator tablets with its operating mechanism. Fig. 5, represents an enlarged detail perspective view of the shaft carrying the compound cam and the surrounding mechanism.

Reference is hereby made to my aforesaid prior patent for a detail description of the construction and mode of operation of my machine, so that a brief description of the same will be sufficient here.

The operating keys consist of levers A, A, arranged in three banks or groups, and fulcrumed on a fixed horizontal shaft B; said levers passing through suitable slots formed in a guide plate C, at the front of the casing. The rear ends of these levers project through a vertically slotted guide plate D, and normally rests upon a cross bar E, at the rear of the frame or casing.

The indicators of the machine consists of tablets F and F<sup>1</sup>, the former being mounted upon and operated by vertical rods  $f$ , which rest with their lower ends upon the rear ends of the middle bank of key levers, while the latter are pivotally mounted upon transverse shafts  $f^1$   $f^1$  arranged upon each side of the middle group of tablets and supported by the frame of the machine.

The operating keys as before stated are divided into three banks or groups each containing nine keys. In the present instance the left hand bank represents units of dollars, the middle bank tens of cents and the right hand bank units of cents. Other special keys

are arranged as desired in relation to these groups but as the same form no part of the present invention and have been described in the patent mentioned, attention is called to said patent for description of the same.

The different keys in the groups are arranged as hereinafter described to transmit different degrees of movement to three vibrating or swinging register frames G, G<sup>1</sup>, and H which represent respectively the different banks of keys. Each of said frames is mounted upon a rock shaft I, journaled at its opposite ends in the sides of the frame. The frames G<sup>1</sup> and H are loose upon the shaft I while the frame G, is keyed or otherwise rigidly secured to the same so as to move therewith. Each of said frames (see Fig. 2) is provided along its rear side with a longitudinal groove  $g$ , into which noses or projections  $g^1$  formed on the respective operating bars K are adapted to project when said bars are raised so as to cause a simultaneous movement of the frame. The projections  $g^1$  are located upon their respective bars at varying distances from the ends of the same, so as to cause a greater or less movement of the frame being operated upon according to the location. The operation of the bars and frames is practically the same as described in the aforesaid patent with the exception that all of said frames are normally locked against any accidental movement by spring pressed locking pawls  $h$ . These pawls each comprise a pawl proper loosely mounted in its respective frame, a coil spring  $h^1$ , also mounted in said frame and engaging said pawl so as to cause the same to normally project sufficiently beyond the frame to engage the under side of a rigid bar  $h^2$ , and a stud  $h^3$  which latter is adapted to be struck by a pivoted yoke frame  $h^4$  connected to the oscillating frame at each end thereof.

It will be observed from the foregoing that the frame  $h^4$  is normally forced backward by the stud  $h^3$  whereby it is caused to project beyond the rear face of the oscillating frame in the path of the upper ends of the bars K, when the latter are operated. The upward and forward movement of any one of said bars will thus cause its upper end to engage the frame  $h^4$  before the projection  $g^1$  has entered the groove  $g$ , and thus force said frame forward. This movement of the frame  $h^4$  causes the pawl  $h$  to be withdrawn from under the bar  $h^2$  and thus unlocks the oscillating frame so that it may be moved. In order to limit the rearward movements of the frames  $h^4$  each of the same is provided with a pendent stud  $h^5$  the lower end of which is adapted to normally engage the front face of the oscillating frame upon which it is mounted.

A feature of my invention relates to the novel indicating mechanism. In carrying out this part of my in-

vention I pivot the indicators on a common axis. Co-operating with the indicators is what I term a selecting mechanism which has a graduated movement; that is, the extent of its movement depends upon the numerical value represented by the operated key. When one of the keys is pressed the selecting mechanism moves first parallel to the axis of the indicators and then at an angle to the direction of its first movement to raise the proper indicator to the exposed position.

The middle bank of indicating tablets representing tens of cents is constructed and operated in substantially the same manner as described in my aforesaid patent, said tablets being raised by the ends of the operating keys or levers while the end banks of tablets are operated respectively by the keys located at the sides of the machine opposite from their respective positions. In other words the left bank of keys operates the right group of tablets and vice versa.

The end groups of indicating tablets are operated in substantially the same manner and I will therefore describe the right hand group only. Each tablet comprises a plate  $f^2$  containing the numeral or other indicating device and a hub or cam sleeve  $f^3$  which latter is suitably journaled upon the shaft  $f^1$  and is formed with two cam projections  $f^4$  and  $f^5$  respectively. The said hubs are operated separately by a sliding lever  $f^6$  which is pivotally mounted upon a rigid shaft  $f^7$  having one end mounted in the frame of the machine and extending parallel with the shaft  $f^1$ . This lever  $f^6$  is formed with an angular arm  $f^8$ , the end of which is apertured for the passage of the shaft  $f^7$ . A coil spring  $f^9$  surrounds the shaft  $f^7$  at its outer end and bears with its respective opposite ends against the arm  $f^8$  and a head or nut  $f^{10}$  applied on the end of said shaft so that the normal position of the lever  $f^6$  is near the inner end of said shaft  $f^7$  out of alinement with any of the tablet hubs. The arm  $f^8$  is provided with a laterally projecting stud  $f^{11}$  which lies normally in the path of an arm  $f^{12}$ , which latter is fast upon a sleeve  $f^{13}$ . This sleeve is loosely mounted upon a rock shaft  $f^{14}$ , which is journaled in suitable brackets  $f^{15}$  secured on the frame of the machine whereby said shaft and sleeve may rotate independently of one another. The sleeve  $f^{13}$  is further provided with a rigid arm  $f^{16}$  extending at right angles thereto and provided at its outer end with a pivoted link  $f^{17}$  by means of which it is connected to the register operating segment  $f^{18}$  so as to move simultaneously therewith. It will thus be observed, that, when said segment is operated as described in my aforesaid patent, the lever  $f^6$  is slid forward a distance equal to the relative movement of the segment so as to bring it in alinement with the proper tablet hub. In order to correct any slight mis-alinement between the upper end of the lever and the hub, I arrange a comb plate  $L$  with its teeth in proximity to the lower end of said lever which is preferably beveled as at  $f^{19}$ , so as to pass between said teeth when said lever is oscillated. This movement or oscillation of the lever causes its upper end to engage the cam projection  $f^4$ , of the hub in alinement with the same, and thus rotate said hub until the numeral plate has passed through approximately a quarter of a revolution which brings the numeral into the proper position to be read in the indicator aperture. The above described operation relates to the right hand bank of tablets, that on the left being actuated by an arm  $f^x$  fast upon the shaft

$f^{14}$  and engaging the pin  $f^{11}$  in substantially the same manner as before described.

It will be observed that each tablet plate is supported at one corner only when in an upright position so that its natural tendency is to assume its normal position. Each of the levers  $f^6$  is formed near its lower end with an aperture  $f^{20}$  through which loosely passes a rod  $f^{21}$ ; said rods being rigidly attached to the opposite ends of a sliding bar  $M$  mounted in the frame of the machine. By this means both of the levers  $f^6$  are operated simultaneously and in turn operate the tablets or not according to their respective positions. The motion of said bar  $M$  is derived from a compound cam  $N$  mounted upon a shaft  $O$  which is journaled in the frame of the machine and provided with a gear wheel  $P$ . This gear meshes with a similar gear wheel  $Q$  fast upon a shaft  $R$  also journaled in the frame of the machine and extending through a rigid sleeve  $r$ , mounted upon said frame. The inner end of the shaft  $R$  is provided with a bevel spur gear  $S$  having a sleeve extension  $T$  which latter abuts against the inner end of the sleeve  $r$  and thus prevents any longitudinal movement of said shaft. The power for operating the bevel gear  $S$  is derived from a similar bevel gear  $S^1$  mounted upon the rotatable power shaft  $S^2$  of the machine whereby the compound cam is operated upon each rotation of said shaft by the keys. This movement of the shaft upon the operation of the keys is accomplished by means substantially similar to those described in the aforesaid patent. The said compound cam  $N$  comprises a disk cam portion  $n$ , and an arm portion  $n^1$ . This latter portion is adapted to engage a nose  $m$ , formed on an arm  $m^1$  which is pendent from one end of the bar  $M$  whereby said bar is retracted upon said cam being operated. The forward movement of said bar is accomplished by said cam striking a nose  $m^2$  also mounted on said arm  $m^1$ . The outer end of this latter nose is deflected inward so that its edge will engage the periphery of said cam disk-portion  $n$  and thus the bar  $M$  is locked against any accidental rearward movement when not being forced rearward by the cam arm  $n^1$  as more clearly shown in Fig. 3 but is disengaged from said disk when said cam arm engages said nose  $m$ . The said shaft  $O$  also carries a cam  $V$  which is adapted to engage one end of a bell crank lever  $W$  suitably pivoted upon the frame of the machine and having its upper end bent at right angles as at  $W'$ , said angular bent portion forming a locking bar under which the nose  $f^5$  of any one of the tablet hubs catches when said bar is forced forward after being retracted by the cam. This forward movement of the locking bar is caused by a coil spring  $X$ , the opposite ends of which are connected to said bell crank lever and said bar  $M$  respectively. A lever  $Y$  similar to the lever  $W$  with the exception of the bell crank extension is pivoted at the end of the machine opposite from said lever  $W$  and is connected to the latter so as to move therewith by a pivoted rod  $y$ . By this means both banks or groups of tablets are provided with a locking bar for preventing the dropping of the tablets after being raised until some one of the keys is again operated.

It will be observed from the foregoing description that the location of the tablets at the opposite ends of the machine from those occupied by the keys governing the same, permit of an arrangement of the keys which may be properly read by the operator from left to right,

and a location of the indicating tablets which may also be properly read from left to right on the side opposite the operator.

While the form of mechanism here shown and described is admirably adapted to fulfil the objects primarily stated, it is to be understood that it is not intended to confine the invention to the one form of embodiment herein disclosed, for it is susceptible of embodiment in various forms all coming within the scope of the claims which follow.

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

1. In a cash register, the combination with a plurality of keys, of a series of pivoted indicators, a pivoted lever slidable along its pivot, means connecting said lever and keys whereby the former is moved into alinement with the proper indicator when a key is operated and devices for oscillating said lever.

2. In a cash register, the combination with a plurality of keys arranged in banks, of a plurality of indicators also arranged in banks, sliding pivoted selecting levers for said indicators, means connecting said levers to said keys, and means arranged to slide said levers independently of each other, but to cause their pivotal movements to be simultaneous.

3. In a cash register, the combination with a series of keys divided into banks, operating members adapted to be operated by said keys, a series of indicators also arranged in banks, a rock shaft connecting the member at one end of the machine to the indicators at the opposite end of the machine and a rocking device similarly connecting the member at the opposite end to the remaining bank of indicators.

4. In a cash register, the combination with a series of keys, operating members adapted to be operated by said keys, a series of indicators, a rock shaft connecting the member at one end of the machine to the indicators at the opposite end of the machine, and a rock sleeve mounted on said shaft and connecting the member at the opposite end to the remaining indicators.

5. In a cash register, the combination with a series of keys, of a series of pivoted indicators, a sliding pivoted lever arranged to operate any one of the same, a rock shaft actuated by the keys and having an arm which engages and operates the said sliding lever to move it into proximity to the proper indicator and a sliding rod connected to the movable parts of the machine and arranged to rock the sliding lever on its pivot to operate an indicator and raise it to exposed position.

6. In a cash register, the combination with a movable member, of a series of pivoted indicators, a selector cooperating with the indicators, a rock-shaft, a link connecting the movable member and the rock-shaft, and an arm on the rock-shaft arranged to move the selector.

7. In a cash register, the combination with the operating keys, of an operating member driven by the keys, a series of pivoted indicators, a selector cooperating therewith, means connecting the selector and the operating member for moving the former in one direction and independent means also actuated by the keys for moving the selector in another direction.

8. In a cash register, the combination with the operating keys, of a series of pivoted indicators, a selector and the following instrumentalities each independent of the others and all driven by the keys, viz: means to adjust the selector in one direction, means for moving the selector in another direction to bring the proper indicator to exposed position, and means for retaining the indicators in exposed position and afterwards automatically releasing the same.

9. In a cash register of the class described the combination with a plurality of keys arranged in banks, of a plurality of pivoted indicators, a sliding pivoted lever arranged in proximity to said indicators, means connecting said lever and keys whereby the former is moved into alinement with the corresponding indicator when a key is operated and devices connecting the keys with the lever

for oscillating the latter to cause it to engage the indicator.

10. In a cash register of the class described the combination with a plurality of keys arranged in banks of a plurality of pivoted indicators corresponding to the keys and also arranged in banks, a sliding pivoted lever arranged in proximity to each bank of indicators for operating the same, a comb plate in proximity to said lever for alining the same when operated, means connecting the keys and levers for sliding the latter to the proper indicator, and devices for oscillating said levers.

11. In a cash register of the class described the combination with a plurality of keys arranged in banks, of a plurality of pivoted indicators arranged in corresponding banks, selecting mechanisms for operating said indicators, pivoted locking bars for locking said indicators of the respective banks in their raised positions and means for operating said locking bars upon a key being depressed to release the indicators and permit them to fall.

12. In a cash register of the class described the combination with a plurality of keys arranged in banks, of a plurality of indicators also arranged in banks, a plurality of sliding pivoted selecting levers for said indicators, means connecting the keys and levers for sliding the latter and devices connecting said levers whereby they are oscillated simultaneously.

13. In a cash register of the class described the combination with a plurality of keys arranged in banks, of a plurality of corresponding indicators also arranged in banks, a sliding pivoted selecting lever for each of said banks of indicators, means for normally holding said levers out of alinement with the indicators, a rock shaft having an arm adapted to move one of said selecting levers, and connected to one of the banks of keys another arm loosely mounted on said rock shaft and adapted to move the remaining selecting lever and connected to another bank of keys and devices for oscillating the selecting levers simultaneously.

14. In a cash register of the class described the combination with a plurality of keys arranged in banks, of a plurality of pivoted indicators also arranged in banks, sliding selecting mechanisms for operating said indicators, means for operating said mechanisms pivoted locking bars for said indicators and devices for locking said bars in position when not being operated.

15. In a cash register, the combination with a series of keys, of operating members arranged to be operated by said keys, a series of indicators arranged in banks, a rock shaft for operating one bank of said indicators, a link connecting said shaft to one of the operating members, a rock sleeve mounted on said shaft and connected to the remaining bank of indicators, and a link connecting said sleeve to one of the operating members.

16. In a cash register of the class described the combination with a series of keys arranged in banks which ascend in denominational succession from right to left, of independent indicators, one for each key arranged in banks which read in ascending order from left to right, means for connecting each key in the right hand bank independently with its respective indicator in the left hand bank and means for similarly connecting the keys in the left hand bank with the indicators in the right hand bank.

17. In a cash register, the combination with a series of keys arranged in denominational banks which ascend in denominational succession from right to left, of independent indicators one for each key arranged in banks which read in ascending order from left to right, means for connecting each key in the right hand bank with its respective indicator in the left hand bank, and means for similarly connecting the keys of the left hand bank with the indicators in the right hand bank.

18. In a cash register, the combination with a series of keys arranged in denominational banks, of a series of indicators, one for each key arranged in denominational banks but in an order the reverse of the keys, and means for connecting each key in a bank at one end of the machine to its respective indicator in a bank at the opposite end of the machine.

19. In a cash register, the combination with a series of keys of different values arranged in a bank with the high

values at one end and descending to the low values at the other end, of a series of indicators reversely arranged, and means connecting the keys and indicators whereby when a high value key at one end of the machine is operated a correspondingly high value indicator at the opposite end of the machine is disclosed.

20. In a cash register, the combination with a series of manipulative amount determining means, of a plurality of series of independently rotatable indicators corresponding to the various amounts; selective devices positioned separately by said manipulative means to select the proper indicators, and a common means actuated by the continued movement of said manipulative means for actuating said selective devices to rotate the selected indicators to exposed position.

21. In a cash register, the combination with a series of

manipulative amount determining means, of a series of independent indicators corresponding to the various amounts, a selective device positioned by said manipulative means to select the proper indicator and actuated by continued movement of same to expose the selected indicator, and connections between the manipulative means and actuating devices to allow actuation of the selecting and exposing means only through movement of the manipulative means.

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

THOMAS CARNEY.

Witnesses:

ALVAN MACAULEY,  
IRA BERKSTRESSER.