July 15, 1941. J. J. O'BRIEN ET AL 2,249,575

TICKET CUTTING MACHINE

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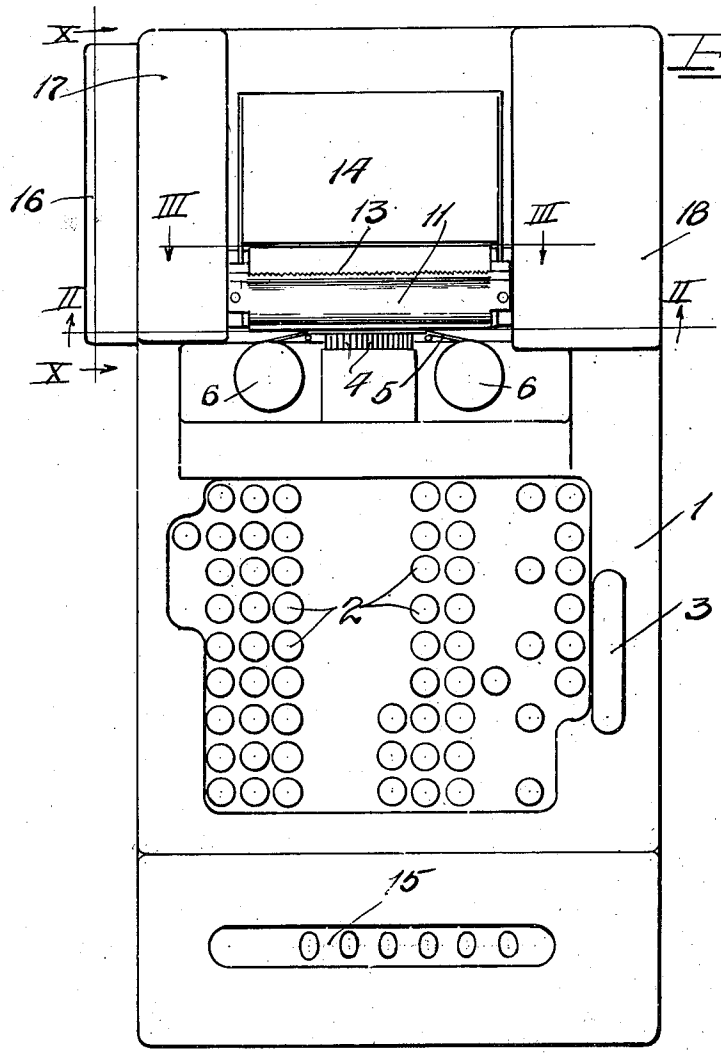


Fig. 1

Inventors
James J. O'Brien.
James Strad.

By Charles Bills Attys.

July 15, 1941. J. J. O'BRIEN ET AL 2,249,575

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Fig. 2

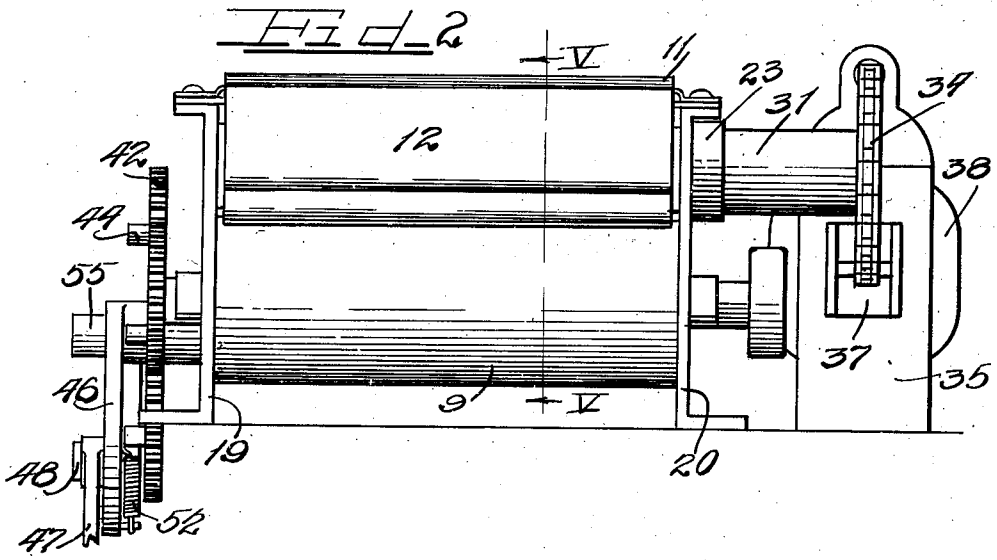
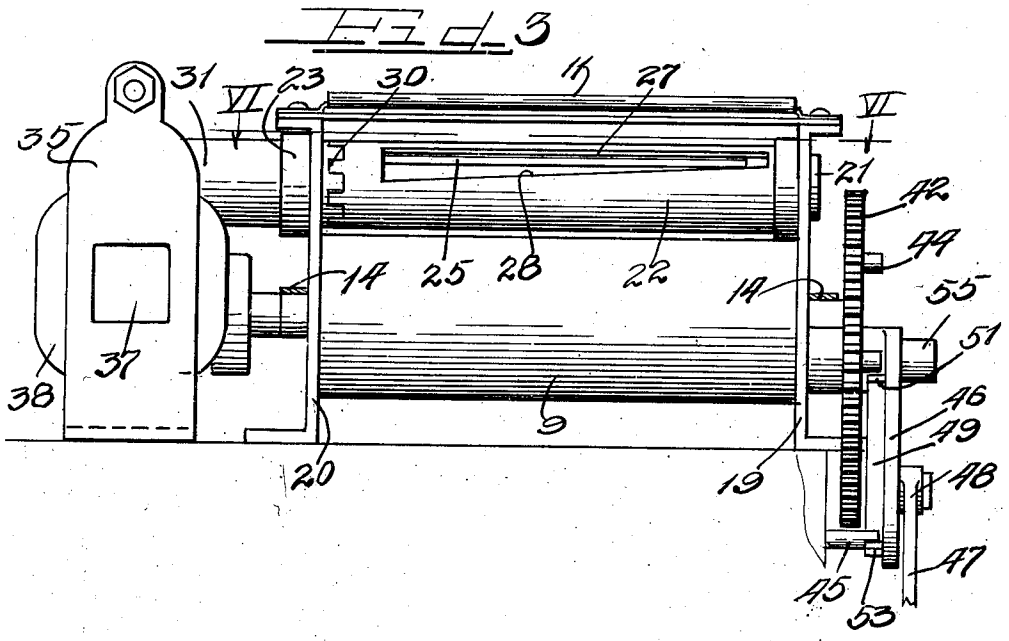


Fig. 3



Inventors
James J. O'Brien.
James Strad.
Charles Bell
Atty.

by

July 15, 1941. J. J. O'BRIEN ET AL 2,249,575

TICKET CUTTING MACHINE

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Fig. 4

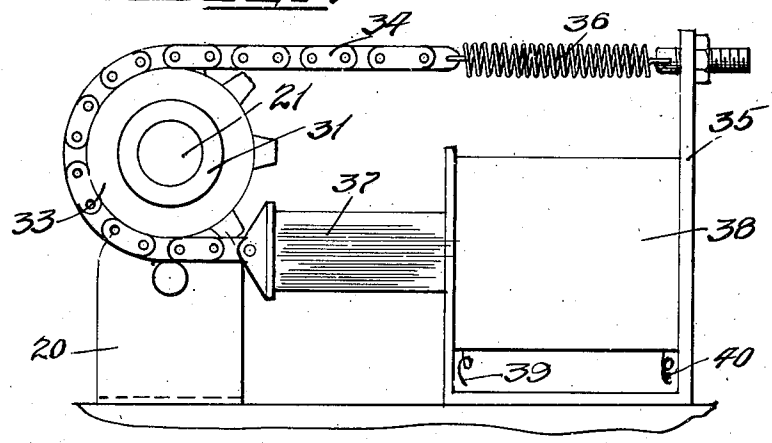


Fig. 5

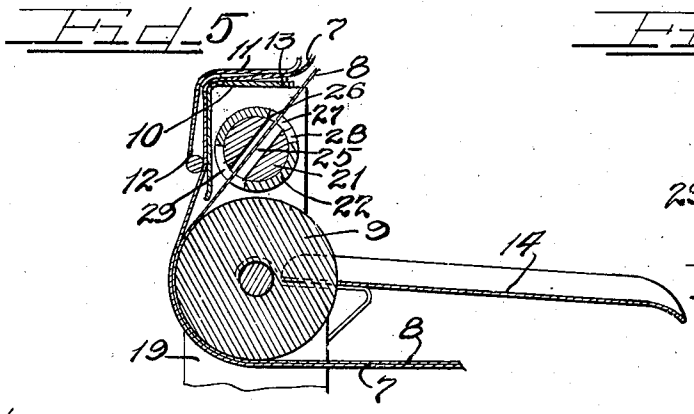


Fig. 8

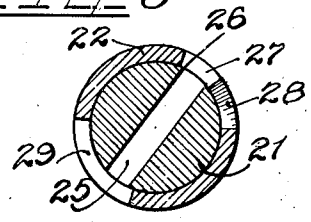


Fig. 9

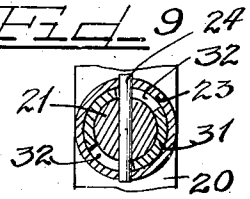


Fig. 6

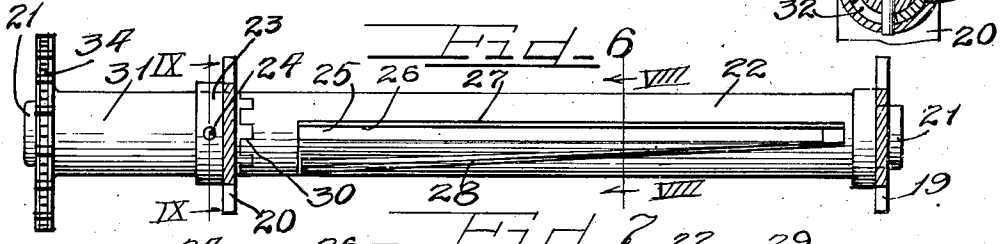
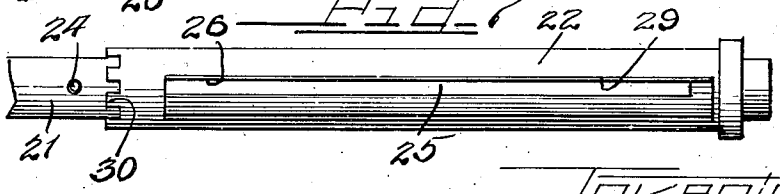


Fig. 7



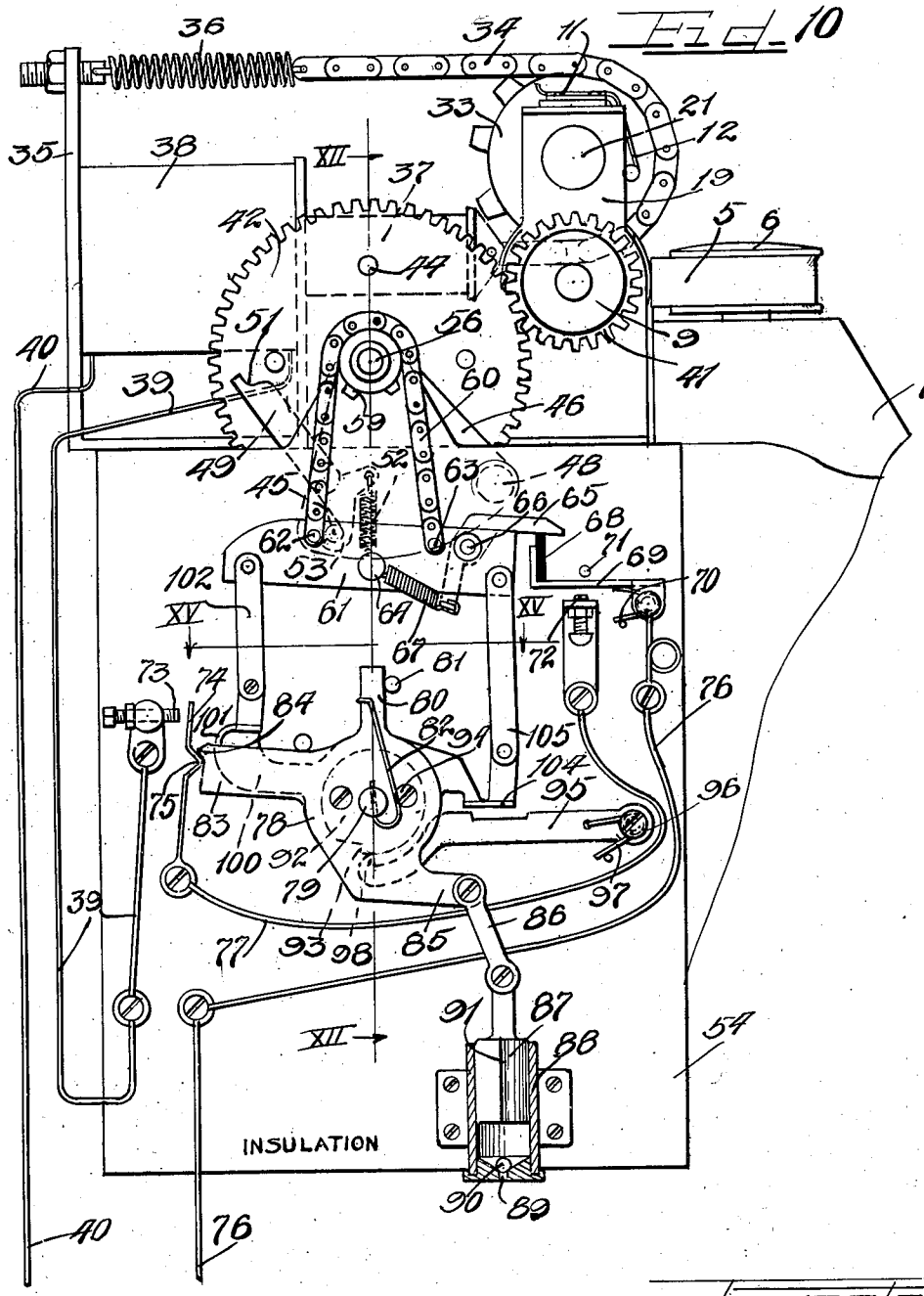
Inventors
James J. O'Brien
James Strad.
by Charles Bill Attys.

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Fig. 10



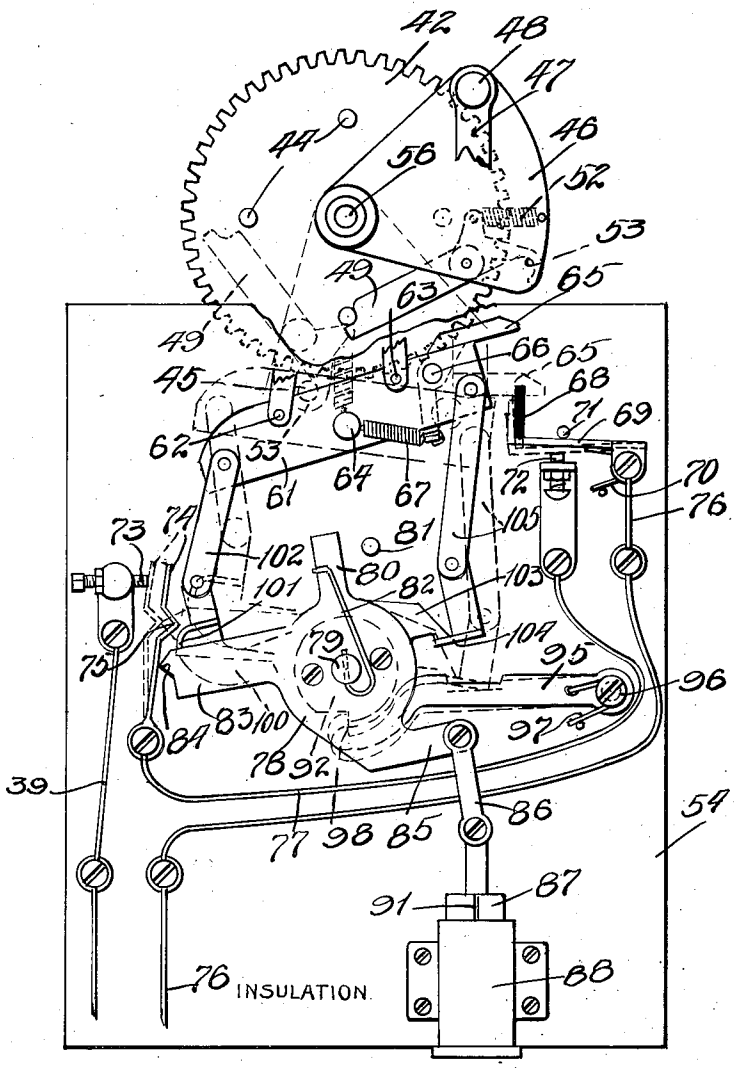
INVENTORS
James J. O'Brien
James Strad
BY Charles Hill & Co. ATTYS.

July 15, 1941. J. J. O'BRIEN ET AL 2,249,575

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Fig. 11



Inventors
James J. O'Brien
James Strad
Charles Hill
Attys.

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Fig. 12

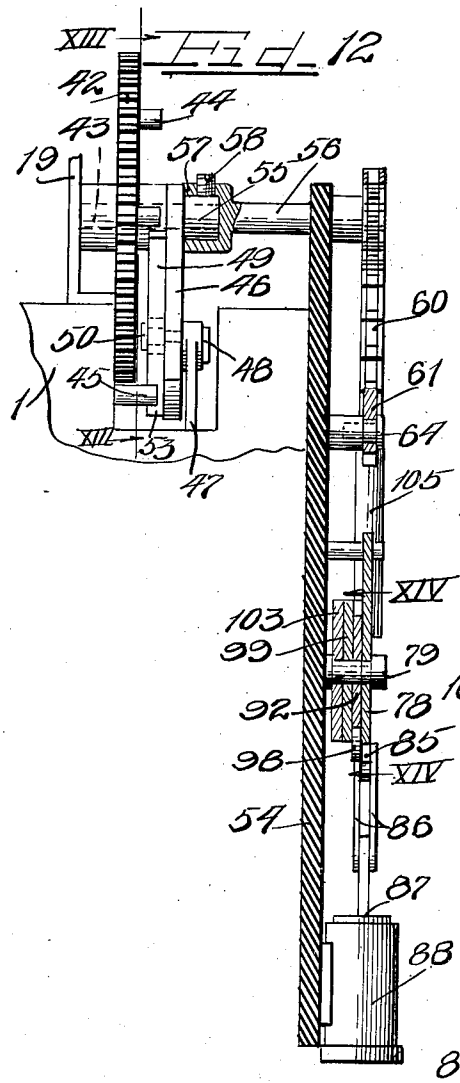


Fig. 13

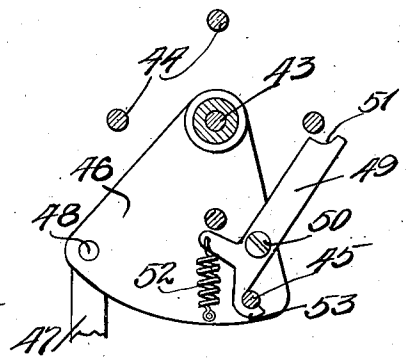


Fig. 14

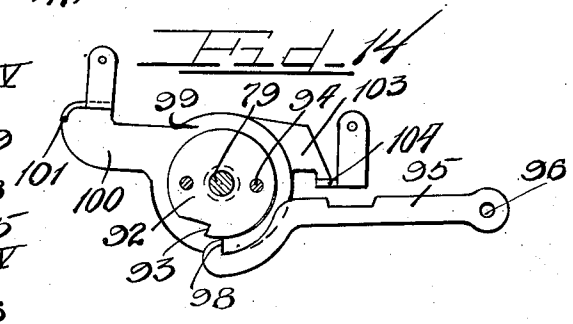
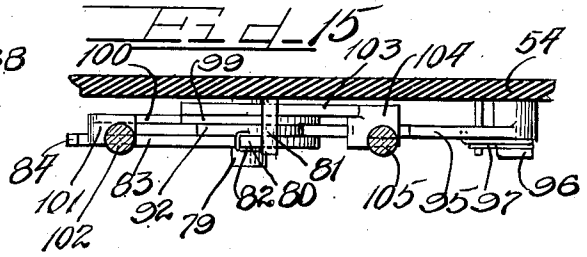


Fig. 15



Inventors
James J. O'Brien.
James Strad
By Charles Hill Attys.

Patented July 15, 1941 2,249,575

UNITED STATES PATENT OFFICE

2,249,575

TICKET CUTTING MACHINE

James J. O'Brien and James Strad, Chicago, Ill.

Application March 1, 1939, Serial No. 259,158

10 Claims. (Cl. 164—68)

This invention relates to improvements in a ticket cutting machine, and more particularly to a ticket cutting mechanism for association with a calculating machine, cash register or the like, wherein the machine provides a typewritten or printed ticket or purchase receipt, although the invention will have other uses and purposes as will be apparent to one skilled in the art.

We are aware that in the past certain cash registers and similar machines have been developed, wherein a ticket is automatically cut and delivered in position to be taken by the cashier or customer. However, in the case of certain calculating machines, such as adding machines, totalizers and the like, which provide both a customer's coupon or receipt and a copy of it for the establishment, extreme difficulty has been experienced in equipping the calculating machine with a cutting mechanism for severing the customer's ticket. In certain types of machines, it has been necessary for the operator to reach over and tear off the customer's ticket from a continuous ribbon of tickets contained in the machine by grasping the projecting ticket and tearing the ribbon against a toothed or serrated edge. The ticket copies kept by the establishment are frequently all contained on another continuous ribbon which is not severed until desired. At the same time, it is the general practice to have the calculating machine totalize the entire number of individual transactions over a certain period of time, such total appearing in a visible location on the machine.

More specifically, there is a well-known adding or calculating machine upon the market in which the type bars when printing extend upwardly above the machine graduated distances. For example, a type bar printing number 1 will extend only a short distance above the upper surface of the machine, while a type bar printing number 9 will extend for a considerable distance above the machine, and other type bars for numbers 2 to 8, inclusive, will extend proportionately above, between the bars for numbers 1 and 9. With the type bars being elevated in such manner so as to mark through an inking ribbon upon a pair of superposed record strips against a platen, so little room remains that it has not been found practical to equip such machine with an automatic cutting mechanism which would operate efficiently and very rapidly and yet not interfere with the proper functioning of the various parts of the calculating machine. Obviously, it would be extremely desirable to have such a cutting mechanism because the operator of the calculating machine could readily record one or more additional purchases in the time expended to reach out over the machine and tear off the customer's ticket at the proper location so that the customer may readily receive it.

With the foregoing in mind, it is an important object of the present invention to provide an automatic cutting mechanism which occupies an extremely small space and which may be readily attached to a finished calculating machine without any change in the mechanism of the calculating machine except in a most negligible degree.

Another object of this invention is the provision of cutting mechanism for association with a calculating or adding machine which operates after the action of the machine is complete, but functions in response to the operation of the calculating machine parts.

A further object of the invention is the provision of a cutting mechanism which is electrically operated under the control of a delayed action switch responsive to the operation of the calculating machine, and arranged to insure operation of the cutting mechanism after the calculating machine has ceased operating.

Still another object of the invention is the provision of a new and novel arrangement of cutting mechanism designed to occupy an exceedingly small space.

It is also a feature of this invention to provide a novel cutting element capable of severing a ticket from a continuous ribbon of stock, and at the same time function as a guide for said ribbon of stock so that it will not fall out of alignment when cut.

A further feature of the invention resides in the provision of a cutting element for successively severing tickets from a stock ribbon, the element being arranged to hold the stock ribbon in its desired position behind the line of cut before, during and after the time of cut.

Also an object of this invention is the provision of a cutting mechanism including a novel delayed action control switch.

Still a further object of the invention is the provision of a cutting mechanism, simple in construction, positive in action and which may be readily attached to a calculating machine to sever tickets from the end of the stock ribbon extruded by the calculating machine.

It is a further object of this invention to provide a ticket-cutting mechanism, highly desir-

able for use in connection with ticket-issuing machines, of which the cutting elements are self-sharpening.

While some of the more salient features, characteristics and advantages of the present invention have been above pointed out, others will become apparent from the following disclosures, taken in conjunction with the accompanying drawings, in which:

Figure 1 is a plan view of a standard calculating machine equipped with cutting mechanism embodying principles of the present invention;

Figure 2 is an enlarged fragmentary elevational view taken substantially as indicated by the line II—II of Figure 1, with the covers removed;

Figure 3 is an enlarged fragmentary vertical sectional view taken substantially as indicated by the line III—III of Figure 1, with the covers removed;

Figure 4 is a fragmentary elevational view, taken from the right hand side of Figure 2, with the covers removed;

Figure 5 is a fragmentary vertical sectional view taken substantially as indicated by the line V—V of Figure 2;

Figure 6 is a fragmentary plan sectional view taken substantially as indicated by the line VI—VI of Figure 3;

Figure 7 is a fragmentary bottom plan view of the cutting element, showing the side opposite to that seen in Figure 6;

Figure 8 is an enlarged vertical sectional view taken substantially as indicated by the line VIII—VIII of Figure 6;

Figure 9 is a fragmentary vertical sectional view, with parts in elevation, taken substantially as indicated by the line IX—IX of Figure 6;

Figure 10 is an enlarged fragmentary elevational view, with parts in section for purposes of clarity, taken substantially as indicated by the line X—X of Figure 1, with the respective cover removed;

Figure 11 is a fragmentary elevational view of the switch structure and control means therefor of Figure 10, showing the parts in a different position of operation;

Figure 12 is a fragmentary vertical sectional view, with parts in elevation, taken substantially as indicated by the line XII—XII of Figure 10;

Figure 13 is a fragmentary vertical sectional view, taken substantially as indicated by the line XIII—XIII of Figure 12;

Figure 14 is a fragmentary vertical sectional view, taken substantially as indicated by the line XIV—XIV of Figure 12; and

Figure 15 is a fragmentary plan sectional view, taken substantially as indicated by the line XV—XV of Figure 10.

As shown on the drawings:

The illustrated embodiment of the present invention is shown associated with an adding machine 1 (Figure 1), only so much of the internal mechanism of which is illustrated in the drawings as governs the operation of the ticket-cutting mechanism to be later described herein. This adding or calculating machine comprises a pluralty of depressable keys 2 upon which a desired combination of figures or other printed matter may be set up. The selected combination may then be printed upon a dual stock ribbon by depressing the control or actuating bar 3 of the machine. The internal construction of the machine then causes a selected combination of figures or letters to be printed upon the dual stock ribbon by means of type bars 4 acting through an inking ribbon 5 carried by suitable spools 6—6. In the particular machine illustrated, the type bars 4 rise vertically to accomplish the printing, and the height of rise of each bar is dependent upon the particular figure or letter selected; for example, a bar rising considerably higher to imprint a figure 9 than for the printing of the figure 1.

The dual stock ribbon comprises a pair of superposed substantially continuous stock strips, an outer carbon-backed strip 7 and an inner ticket strip 8, both of which travel over a platen 9. With reference more particularly to Figure 5, it will be seen that immediately after printing the strips separate, the outer strip 7 traveling upwardly over a bracket part 10, beneath a guide element 11, with a suitable resilient guide holder 12 keeping the strip in proper location. This strip 7 is the one retained by the establishment owning the calculating machine and will carry in successive order the originals of the various ticket copies delivered to the customers from the ticket strip 8. After printing, the record strip 7 may be removed at any desired time or after any predetermined number of tickets have been issued by simply tearing the strip along a serrated or toothed member 13.

The ticket strip, after leaving the platen, travels through a cutting mechanism embodying principles of the present invention, and in successive order tickets are severed from the strip 8 by this mechanism, each ticket falling upon a tray 14 from where it may be easily picked up by the customer.

Prior to the advent of the present invention, it was necessary for the operator of the calculating machine 1 to reach over the machine and tear off each customer's ticket along the serrated member 13 and then drop the ticket into the tray 14 for the customer to receive. Such action on the part of the operator consumed an objectionable amount of time, during which time the operator could have easily handled one or more purchases.

With reference again to Figure 1, it will be seen that the calculating machine also includes a totalizing section 15 where the total amount of purchases evidenced by the successive distribution of tickets from the strip 8 may be noted at any time.

Our novel ticket-cutting mechanism is associated with the calculating machine just above described in general and may be substantially entirely covered. For example, the control switch mechanism is disposed beneath or within a cover 16, the connection of the cutting mechanism with the operating parts of the calculating machine is beneath the cover 17, and the actuating means for the cutting elements may be disposed within a cover 18. The cutting elements proper, of course, extend transversely immediately above the platen and underneath the guide 11. The respective covers 16 and 17 may, of course, be made in an integral piece if so desired. It will be noted that the addition of the cutting mechanism to the calculating machine does not in any manner detract from the appearance of the calculating machine, but in fact these covers actually enhance the appearance of the machine as a whole.

With reference to Figures 2 to 9, inclusive, it will be seen that the cutting elements proper are carried by a pair of opposed upstanding brackets 19 and 20 which also carry the platen 9 and the

raise the sector 46 to the position seen in Figure 11, and the spring 52 causes the end 51 of the pawl 49 to engage the downwardmost pin 44 on the drive gear 42. Almost immediately, the lever 47 moves downwardly, pulling the sector again into the position seen in Figure 10, but during this downward movement, the pawl rotates the gear 42 one-quarter of a revolution and likewise causes the platen to advance the stock ribbons. Near the end of this downward movement, the hook end 53 of the pawl engages the trip pin 45 and disengages the pawl from the respective pin 44 against the action of the spring 52. The drive gear 42 is thereby stopped until the next cycle of movement is desired. The actuating means for the lever 47 are embodied in the machine 1 proper and need not be herein described.

The actuating parts for the platen 9 just described are all an inherent part of the internal mechanism of the calculating machine 1. Our novel switch control means for energizing the aforesaid solenoid 38 and thus cause a severance of a ticket from the strip 8 are connected to the aforesaid platen actuating means without any change in those means. The novel control switch structure is practically all carried by a depending plate 54 of insulating material fastened in any suitable manner to the frame of the machine 1.

In the calculating machine mechanism, a collar 55 is affixed to the freely oscillatable sector 46 around the shaft 43. The novel switch control mechanism is connected to this collar 55 without any change in the aforesaid calculating machine parts. The switch mechanism includes a shaft 56 having a coupling end 57 embracing the collar 55 and attached thereto in any suitable manner, such as by a set screw 58, so that the shaft 56 rotates in both directions with the above described movement of the sector 46. This shaft 56 is also journaled in an upstanding portion of the insulating plate 54 and carries a sprocket wheel 59 on the outer side of the plate in engagement with the intermediate portion of a flexible link chain 60.

The ends of the chain 60 are attached to a rocking lever 61, as indicated at 62 and 63 respectively, on opposite sides of the pivot shaft 64 for the rocking lever 61. A bell crank arm 65 is pivoted to the rocking lever at 66 and is held in the position seen in Figures 10 and 11 by a suitable tension spring 67 acting on the lower end of the arm. The upper portion of this arm projects outwardly in position to bear against an insulation block 68 carried by a contactor 69 normally urged upwardly by a spring 70 against a stop member 71. When depressed by the arm 65, the contactor 69 will be pressed against a contact point 72, thus closing a circuit now about to be described.

The contactor 69 and contact point 72 together form a switch embodied in a circuit which also includes another switch comprising a contact point 73 and a resilient contactor 74 having an intermediate hump 75, by means of which the contactor is moved into circuit closing position. Due to its inherent resiliency, the natural tendency of this contactor is to remain in open circuit position.

The switch 73—74 is in direct circuit with the solenoid 38 controlling the cutting element by the aforesaid conductor 39. The other conductor 40 from the solenoid goes direct to any suitable source of electrical energy. The other conductor leading from the main line of electrical energy, designated 76, is in circuit connection with the aforesaid contactor 69 on the first described switch. Another conductor 77 connects the contact point 72 of the first described switch with the contactor 74 on the second switch. It is therefore apparent that assuming both switches to be closed, current may flow from the line through the conductor 76, the contactor 69, the contact point 72, conductor 77, contactor 74, contact point 73, conductor 39, through the solenoid 38, and return through the conductor 40. It is quite clear that the solenoid 38 cannot be energized unless both switches, or contactors 69 and 74, are both in circuit closing position. In the event the contactor 74 is moved to circuit closing position while the contactor 69 remains in open position, the circuit is broken at the contactor 69, and it is impossible to energize the solenoid 38 and actuate the cutting means. The contactor 69 is energized directly by the downward movement of the aforesaid sector 46, through the flexible chain 60, the rocking lever 61, and the projecting arm 65. This same downward movement of the sector 46 also indirectly causes actuation or circuit closing movement of the contactor 74, by releasing automatic mechanism for closing the second switch after the sector has ceased its downward movement.

The automatic switch control mechanism includes a rotatable control member 78 freely movable on a stub shaft 79, the control member being normally held in the position seen in Figure 10, with the upper arm 80 thereof against a stop member 81 by means of a suitable spring 82. This control member 78 also embodies an arm 83 having a point 84 for actuating the aforesaid contactor 74. On its underside, the control member has an arm 85 connected by a suitable dual link 86 to the plunger 87 of a dash pot cylinder 88. The lower end of the dash pot cylinder is provided with a relatively small opening 89 normally closed by a ball 90 in a suitable conical seat. It will be appreciated that the plunger may readily move in an outward direction, but that when the plunger moves inwardly from the position of Figure 11 to the position of Figure 10, this movement is somewhat retarded and delayed due to the slow escape of air from the cylinder. The plunger 87 is provided with a vertical groove 91 which may be sized to permit the air to escape at the proper speed. A disk 92 having a suitable notch 93 cut in the lower portion thereof is attached to the rear side of the control member 78 in any suitable manner, such as by bolts 94. Immediately adjacent this disk is a lever 95, pivoted at one end as indicated at 96, and normally urged upwardly against the disk by a suitable spring 97. The free end of this lever is in the form of a hook 98 which rides the circumferential edge of the disk 92, and when this disk, together with the control member 78, is moved into the position seen in Figure 11, the lever 95 snaps upwardly and the hook 98 engages in the notch 93, holding both the disk and control member 78 against further movement until released.

Actuating means for the control member 78 include a circular member 99 also freely rotatable about the shaft 79, having an arm 100 carrying a lateral extension 101 for engagement with the upper edge of the arm 83 of the control member. This arm 100 is connected through a suitable link 102 to one end of the aforesaid rocking lever 61.

A similar member 103 is provided, also freely rotatable about the shaft 79 for releasing the latching lever 95. This member 103 also has a

guiding means 11 and 12 of the calculating machine. The cutting elements proper include a fixed or stationary shaft 21 on and around which a hollow shaft or sleeve 22 is rotatable. The stationary shaft 21 extends through a collar 23 carried by the bracket 20, and a pin 24 (Figure 9) extends through both the shaft and the collar to prevent rotation of the shaft. The shaft also has an elongated slot 25 therethrough, which is preferably of uniform width and functions as a guide for the ticket strip 8, as seen in Figure 5. One of the outer edges of this slot, as indicated at 26, functions as a knife or cutting edge when a ticket is severed. This slot 25 extends upwardly and outwardly at an oblique angle in keeping with the movement of the ticket strip 8, so that when a ticket is severed, it will drop upon the receiving tray 14.

The hollow shaft or sleeve 22 is disposed around the stationary shaft 21 with as intimate a fit as is consistent with free rotation of the sleeve relatively to the shaft 21. In one side thereof, this sleeve is provided with a slot 27, one end of which is narrower than the other end, so that one wall 28 of the slot is disposed obliquely with respect to the axis of the sleeve, and this wall 28 is preferably beveled to provide a knife-like cutting edge. It will be seen, therefore, that when the sleeve is rotated relatively to the fixed shaft 21, the right hand portion of the cutting edge 28, as viewed in Figure 6, starts the severance of a ticket by co-acting with the cutting edge 26 on the fixed shaft. While the action of the cutting element is extremely quick, nevertheless, due to the oblique nature of the edge 28, the ticket is progressively severed from the stock strip, insuring a good, clean cut.

On the opposite side thereof, the sleeve 22 is provided with a relatively wide slot 29 (Figures 5, 7 and 8) which is of sufficient width to permit the sleeve 22 to rotate sufficiently in one direction to sever a ticket from the strip 8, and then return to original position without in any manner contacting the strip at the opposite end of the slot 25 in the stationary shaft.

In order to insure proper actuation of the cutting sleeve 22, it will be noted that one end of this sleeve is provided with a series of teeth 30 to form a clutch. This clutch end 30 is in continuous engagement with a similar clutch end on a driving sleeve 31 which freely surrounds the projecting end of the fixed shaft 21 and extends through the aforesaid collar 23. This driving sleeve, as seen in Figure 9, has a pair of opposed slots 32—32 therein, through which the locking pin 24 extends, so that the sleeve may rotate relatively to both the fixed shaft 21 and the collar 23 for a distance sufficient to insure a cutting of a ticket from the strip 8 and return of the cutting sleeve 22 to original position. The outer end of the driving sleeve 31 carries a sprocket wheel 33 in engagement with a flexible link chain 34, one end of which is secured to a suitable bracket 35 through a tension spring 36. The other end of the chain 34 is attached to a plunger 37 of a solenoid 38, which is energized through conductors 39 and 40 embodied in an electrical circuit more fully described later herein.

In the position of rest, as seen in Figure 4, the plunger 37 is extended without the solenoid and held in that position by the spring 36. When the solenoid is energized, the plunger is pulled within the solenoid coil, turning the sprocket wheel 33 against the action of the spring 36, and consequently rotating the cutting sleeve 22 through the driving sleeve 31 sufficiently to cause the severance of a ticket from the ticket strip 8. The solenoid is only temporarily energized, that is, for a sufficient length of time to cause such movement of the core 37, and upon de-energization of the solenoid, the spring 36 restores the parts to original position ready for the next cutting operation.

The energization of the solenoid 38 is controlled by novel switch mechanism, as shown in Figures 10 to 15, inclusive, which is in turn responsive to the movement of certain parts of the calculating machine 1. As stated above, it is desirable to have the cutting mechanism operate after the calculating machine has ceased to function in connection with the particular ticket to be cut. In other words, the relative parts of the calculating machine 1 should be substantially stationary or performing no useful function at the time the solenoid 38 is energized and the cutting mechanism operates. By providing such a timing arrangement, the cutting mechanism does not interfere in any manner with the rapid and repeated actuation of the calculating machine 1, and no revision, re-arrangement or reconstruction of any parts of the calculating machine are necessary to accommodate the cutting mechanism, except to an extremely negligible extent, which does not in any manner change the functioning of any parts of the calculating machine.

Contemporaneously with the printing of the required data upon the ticket strips 7 and 8, the calculating machine 1 proper functions to rotate the aforesaid platen 9 sufficiently to extrude the stock strip a proper distance for the cutting of a ticket. To this end, the calculating machine embodies a gear 41 (Figure 10) carried by the end of the platen 9, and a larger driving gear 42 to rotate the platen a predetermined distance each time a ticket is desired to be delivered. As seen in Figures 12 and 13, this larger driving gear 42 is mounted on a shaft 43. The driving gear 42 is also provided with a plurality of spaced pins 44 extending outwardly from the side surface of the wheel. In this instance, four such pins are employed spaced approximately 90 degrees apart. The driving gear is driven with the aid of these pins and moves substantially one-quarter of a revolution to rotate the platen through the gear 41 each time a ticket is printed and the stock ribbon moves accordingly. A trip pin 45 extends outwardly from the frame of the machine immediately beneath the gear 42.

The drive means for the gear 42 include a sector 46 pivoted freely around the shaft 43 adjacent an angle of the sector. The sector moves freely relatively to the shaft 43 and oscillates through an angle of substantially 90 degrees. The sector is driven in its oscillatory path by a bar or lever 47 pivoted adjacent the free corner of the sector, as indicated at 48. On the side thereof next the gear 42, the sector carries a driving pawl 49, pivoted as indicated at 50, and having a hook end 51 for engaging a respective pin 44 on the gear 42. The pawl 49 is urged into engaging position by a spring 52 or equivalent means. Opposite the hook end 51, the pawl is provided with a releasing hook 53 periodically engageable with the fixed trip pin 45.

When the calculating machine is at rest, the parts just above described are in the position seen in Figure 10. When it is desired to advance the stock strips to extrude a ticket, the control bar 3 is depressed. This causes the lever 47 to

laterally extending part 104 for engagement with the latching lever, and this part 104 is connected through a suitable link 105 with the other end of the aforesaid rocking lever 61.

In view of the foregoing description of the respective parts of the mechanism, only a relatively short summary of the operation will be necessary at this point.

As explained above, when the control bar 3 of the calculating machine 1 is depressed, the sector 46 is caused to move upwardly from the position seen in Figure 10 to the position seen in Figure 11. The sector then promptly is pulled downwardly by the lever arm 47. On this downward movement, the large driving gear 42 is moved through the pawl 49 carried by the sector substantially a quarter of a revolution, thereby turning the gear 41 on the platen 9 the required distance to cause the stock strips 7 and 8 to be ejected by the platen a distance equivalent to the length of the desired ticket.

During its upward movement, the sector causes the shaft 56 and likewise the sprocket wheel 59 to turn, thereby moving the rocking lever 61 to the position seen in Figure 11, through the flexible chain 60. This movement of the rocking lever through the member 99 and the lateral extension 101 on the arm thereof causes a pivotal movement of the control member 78 to its downward position seen in Figure 11. As the control lever 78 rotates counter-clockwise to this downward position, the point 84 temporarily closes the contactor 74, but the contactor 69 being in upward position prevents energization of the solenoid 38. Accordingly, the cutting means do not operate at this time. At the same time, the disk 92 carried by the control member 78 is moved into position so that the hook 98 on the latching lever 95 engages in the notch 93 and thereby holds the control member in the position shown in full lines in Figure 11. Of course, the plunger 87 will likewise have been lifted from the position of Figure 10 to the position of Figure 11.

When the sector 46 moves downwardly, thus causing the platen to eject the stock strip, the other switch mechanism 69—72 assumes the dotted line position seen in Figure 11. Just as the downward movement of the sector 46 terminates, the extension 104 on the member 103 disengages the latching lever 95, permitting the spring 82 to swing the control member 78 back to the position seen in Figure 10. Of course, before the control member 78 begins its movement, the sector 46 and all parts of the calculating machine 1 proper have come to rest. The return movement of the control member 78 is somewhat delayed by the plunger 87 and dash pot cylinder 88, which prevent the control member 78 from snapping back into original position and thus closing the contactor 74 for too short an interval to properly actuate the cutting mechanism through the solenoid 38. It will be seen from Figure 11 that when the control member 78 closes the contactor 74 on its return movement, the arm 65 carried by the rocking lever 61 has closed the contactor 69, so that the solenoid is now energized. The spring 67 controlling the bell crank arm 65 prevents any damage to the switch mechanism in the event the rocking lever 61 moves a trifle too far.

It is therefore apparent that after the mechanism of the calculating machine 1 has ceased its action, the novel switch mechanism returns to normal position with a delayed action insuring adequate energization of the solenoid for the proper actuation of the cutting member to sever a ticket from the stock strip 8. In short, therefore, while the cutting mechanism acts in direct response to the movements of parts of the calculating machine proper, the cutting mechanism cannot be operated until after the calculating machine parts have ceased movement. The entire action is exceedingly rapid, however, and the ticket is severed from the ticket strip 8 almost immediately after the two stock strips have been projected by the platen 9. The solenoid is only energized for a sufficient length of time to cause a quick retraction of the plunger 37, and the spring 36 is permitted to promptly restore the plunger and the cutting mechanism to its original position.

From the foregoing, it is apparent that we have provided novel cutting mechanism for association with an adding or calculating machine, cash register or similar device, the cutting mechanism acting very efficiently after the working parts of the apparatus to which it is attached has ceased motion, and it will be noted that the cutting mechanism occupies extremely little space. It will be further noted that the cutting mechanism is self-sharpening in character and accurately timed in its operation by a novel delayed switch mechanism. Furthermore, the parts are relatively simple in construction and economical to manufacture and use.

We are aware that many changes may be made and numerous details of construction may be varied through a wide range without departing from the principles of this invention, and we, therefore, do not purpose limiting the patent granted hereon otherwise than is necessitated by the prior art.

We claim as our invention:

1. In combination with means capable of extruding a portion of ribbon for an operation, cutting mechanism arranged to sever a ticket from the extruded portion of said ribbon, and delayed action control means responsive to a moving part of the first said means to cause operation of said cutting means after said part has ceased operating.

2. In combination with a machine capable of extruding a portion of stock ribbon, electrically operated cutting mechanism for severing a ticket from the extruded portion of said ribbon, and control means for said cutting mechanism embodying a pair of switch means both of which must be closed at the same time to cause operation of the cutting mechanism, said control means being responsive to a movement of a part of said machine in one direction to close only one of said switch means and responsive to the movement of said part in the opposite direction to close both said switch means.

3. In combination, means for advancing a stock strip periodically, cutting mechanism arranged to sever a portion from said strip periodically, control means including a spring urged control member for causing operation of said cutting mechanism, means responsive to movement of a part of said advancing means in one direction to set said control member against the action of its spring and latch the same in set position, and means responsive to an opposite movement of said part to free said control member and permit it to cause actuation of the cutting mechanism.

4. In combination, means for advancing a stock strip periodically, cutting mechanism arranged to sever a portion from said strip periodically,

control means including a spring urged control member for causing operation of said cutting mechanism, means responsive to movement of a part of said advancing means in one direction to set said control member against the action of its spring and latch the same in set position, means responsive to an opposite movement of said part to free said control member and permit it to cause actuation of the cutting mechanism, and a delaying mechanism to hold back said control member sufficiently so that said cutting mechanism will not operate until the parts of said advancing means have ceased effective motion.

5. In combination, a machine including mechanism capable of extruding a stock ribbon, cutting mechanism attachable to said machine without altering the operating parts of said machine for successively severing tickets from said ribbon, and said cutting mechanism being arranged to automatically respond to a driven part of said machine and perform a cutting operation after said driven part has ceased motion.

6. In combination, a machine capable of extruding a portion of stock ribbon, and cutting mechanism arranged to sever a ticket from said ribbon, said cutting means being automatically controlled by a driven part of said machine which aids in extruding the ribbon but being ineffective to sever said ribbon until after the parts of said machine effecting extrusion of the ribbon have ceased motion.

7. In combination, a machine including mechanism for extruding a portion of stock ribbon, electrically operated cutting means for severing a ticket from said ribbon, circuit closing means responsive to a moving part of said machine to energize said cutting means, and delayed action control means arranged to prevent said circuit closing means from energizing the cutting means until after said part has ceased motion.

8. In apparatus of the character described, electrically operated cutting mechanism for successively severing tickets from a stock ribbon, switch means in circuit connection with the cutting mechanism for governing the energization of said mechanism, means for actuating the switch means, and retarding mechanism to delay the effective action of said switch means until the actuating means have ceased effective motion.

9. In combination, means for extruding a stock ribbon, electrically operated cutting mechanism for severing a ticket from the extruded part of said ribbon, switch mechanism for controlling the energization of said cutting mechanism, holding mechanism responsive to a movement of a part of said means in one direction to hold the switch mechanism against circuit closing movement and responsive to a movement of said part in the opposite direction to release the switch mechanism, and delaying means for restraining the switch mechanism so that circuit closing position will not be reached until the first said means has ceased functioning.

10. Ticket issuing apparatus, including feeding means to extrude a stock ribbon, cutting mechanism arranged to respond to a feeding movement of said means to sever a ticket from said ribbon, and retarding mechanism arranged to delay the cutting action of the cutting mechanism until all feeding movement has ceased.

JAMES J. O'BRIEN.
JAMES STRAD.