Nov. 14, 1933. I. H. WILSEY 1,935,194

METHOD OF AND MACHINE FOR WRITING CHECKS

Filed Dec. 30, 1931 2 Sheets-Sheet 1

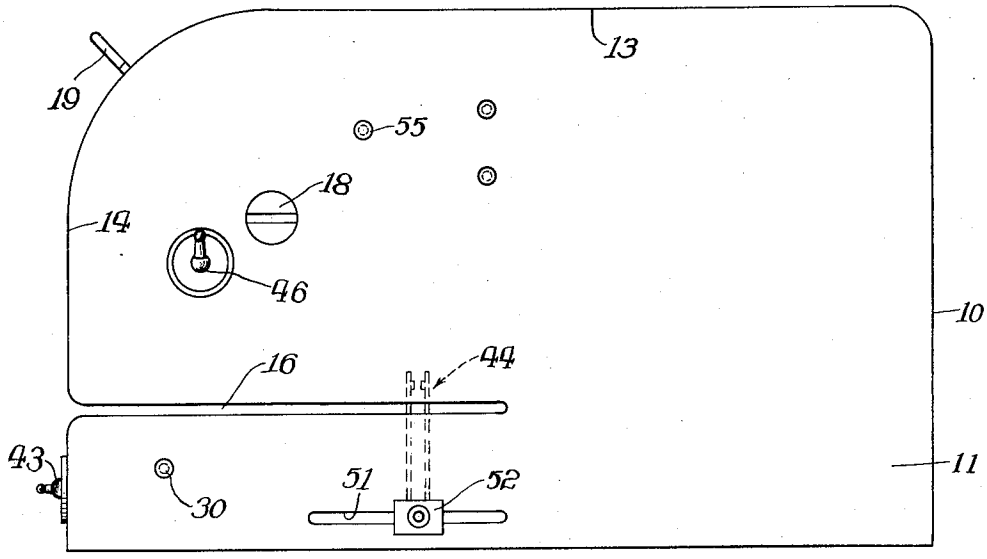


Fig. 1

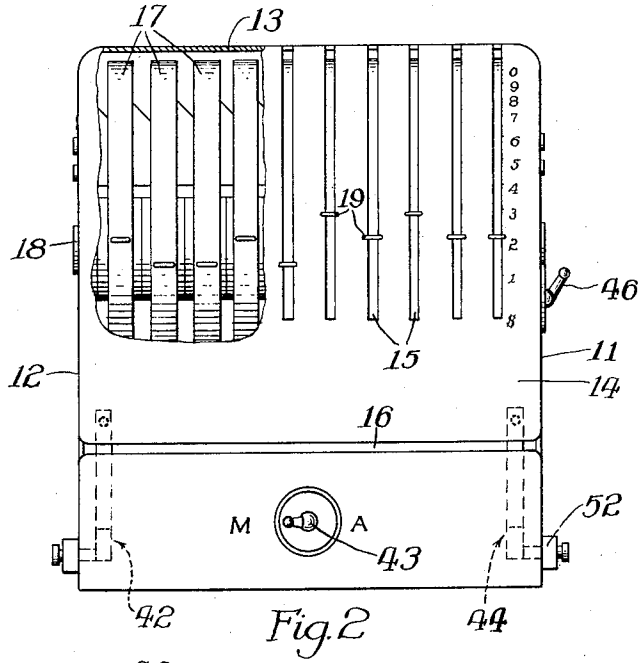


Fig. 2

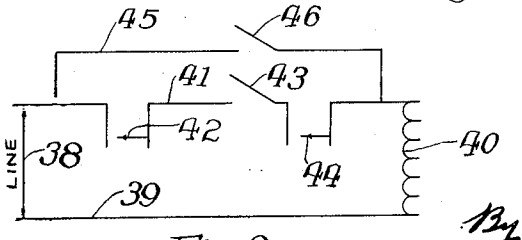


Fig. 3

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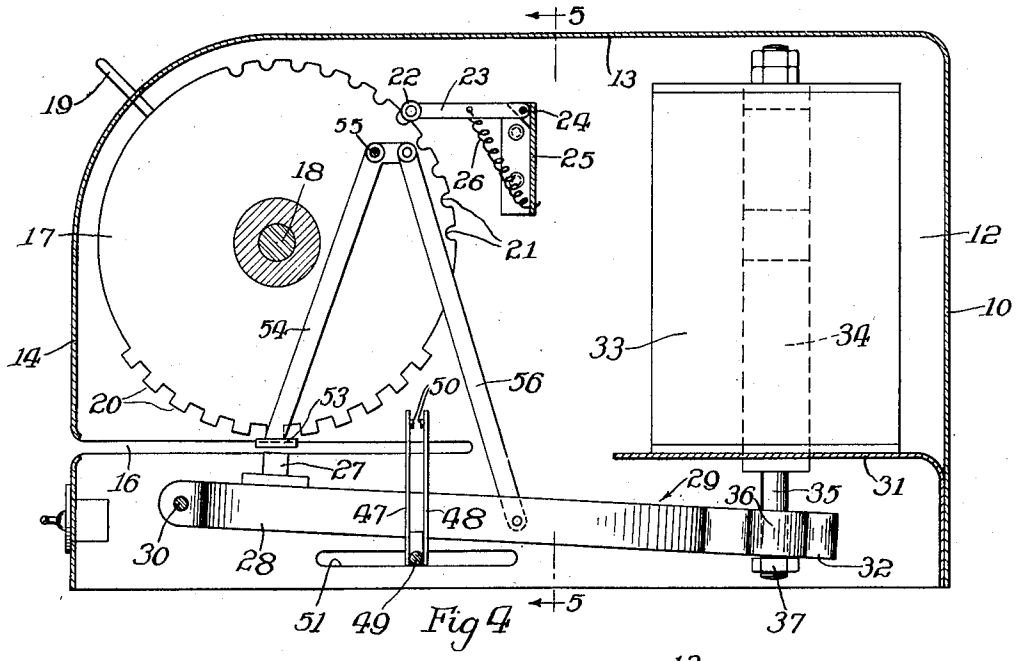


Fig 4

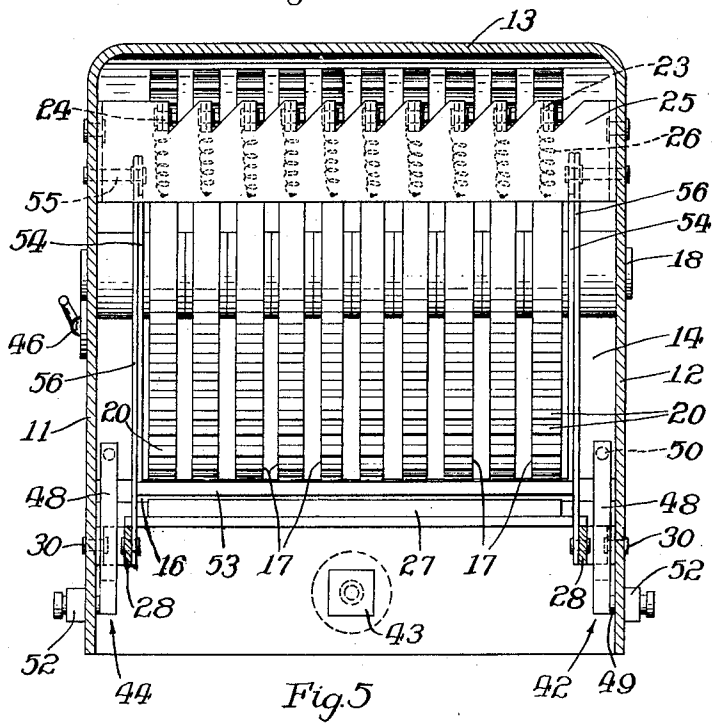


Fig.5

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METHOD OF AND MACHINE FOR WRITING CHECKS

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Application December 30, 1931
Serial No. 583,832

12 Claims. (Cl. 101—20)

The general aim of this invention is to produce a stamping or marking machine of novel construction and mode of operation, and more particularly to provide a new machine such as a check writer or protector by which individual sheets of paper may be rapidly stamped or marked.

One object of the invention is to produce a machine of this character which is electro-magnectically operated.

Another object is to provide a machine in which the marking operation is initiated by the closing of an electric switch under control of the operator.

A further object is to provide such a machine in which the control circuit is automatically closed in the act of inserting the paper into the machine.

A more specific object is to produce such a machine in which the relative approaching movement of the marking devices and the coacting element, between which devices and element the paper is inserted, is caused by the relative movement of a solenoid coil and its core and is controlled by a switch in the electric circuit which includes the solenoid coil.

A further object is to provide a machine which is instantly convertible from manual to automatic control and vice versa.

A further object resides in the provision of a novel method of marking documents in which, by effecting rapidly recurring printing movements during a marking operation, a deep penetration of ink into the body of a document and shredding of the surface is achieved.

Other objects and advantages of the invention will be fully understood from the following specification in connection with the accompanying drawings, in which:

Figure 1 is a side elevational view of a check writer embodying the features of my invention.

Fig. 2 is a front elevation of the machine, parts of the casing being broken away.

Fig. 3 is a diagram of the electric circuits of the operating mechanism.

Fig. 4 is a view in vertical section from front to rear of the machine.

Fig. 5 is a transverse vertical section, on a slightly enlarged scale, in the plane of line 5—5 of Fig. 4 looking in the direction of the arrows.

While the principles and characteristics of my invention are capable of embodiment in many different physical forms, I have illustrated in the drawings and shall herein describe in detail a check writing machine constituting one embodiment of the invention without, however, intending to limit the invention to the specific construction disclosed. The scope of the invention will be expressed in the appended claims.

In the machine illustrated in the drawings, all of the mechanism is contained within a housing having a rear wall 10, side walls 11 and 12, a top wall 13, and a front wall 14 which merges into the top wall 13 on the arc of a circle generally conforming to the axis of the marking disks, to be presently described. This merging arcuate portion of the housing has a plurality of slots 15 (Fig. 2) through which finger pieces on said marking disks project to permit of manipulation of said marking disks to the desired position in setting up the numbers or marks to be impressed upon or into the sheet of paper to be marked. The side walls 11 and 12 and the front wall 14 are slotted, as at 16, to receive the paper or check to be marked.

In the present machine, the marking devices comprise a series of ten disks 17 which are mounted for independent rotation upon a shaft 18 having its ends fixed in the side walls of the casing. Each disk has a finger piece 19 projecting out through one of the slots 15 by which the operator may rotate the disk to position any desired one of a number of marking elements or type faces, generally indicated at 20 (Fig. 5), in operative position.

Means is provided for yieldingly holding the disks in the desired set position, said means comprising a series of peripheral notches 21 (Fig. 4) in each disk to be engaged by rollers 22 on the free ends of a series of arms 23 pivoted, as at 24, on a bar 25 which has its ends fixed to the side walls 11, 12 of the casing. A series of springs 26 tends to hold the rollers 22 in engagement with the respective disks.

A platen 27 extends beneath the series of disks in position to coact with the selected printing elements 20 on the disks in causing a check or sheet of paper to be impressed between the printing characters and the platen. As is usual in check writers, the printing characters, or the platen, or both, may be roughened on their abutting surfaces to emboss, impress or roughen the sheet of paper for purposes well-known in this art.

The platen and the printing elements constitute the marking devices and these devices are arranged for relative approaching movement to effect the printing operation. To this end, as shown in Figs. 4 and 5, the platen 27 is supported at either end by the arms 28 of a yoke 29, which arms extend from front to rear of the machine along the side walls 11, 12. The arms are pivotally and separately secured near their front ends to the adjacent side walls, as at 30, near the front end of the machine.

The yoke is actuated to swing the platen toward the printing elements by electromagnetic means which is preferably a solenoid. The rear and side walls of the casing support a rearwardly located horizontally extending platform or shelf

31, arranged to overlie the rear end or stem 32 of the yoke 29. The shelf has mounted thereon a solenoid 33 so arranged that the armature 34 therein reciprocates in accordance with the swinging movements of the yoke 29. The end of the armature may extend through a suitable aperture (not shown) in the shelf and is connected with the stem 32 of the yoke. This connection should allow of limited relative movement between the parts and a convenient arrangement comprises a rod 35 rigid with the armature for extension through a loop 36 formed in the yoke stem 32 and held in such position by a nut 37 on the outer end of the rod.

In this embodiment, the parts are, by gravity, held in the position shown in Fig. 4 wherein the platen 27 is spaced from the printing elements to permit of insertion of a sheet of paper therebetween and the solenoid armature extends partially from the coil. Hence, energization of the solenoid draws the armature into the coil, thus swinging the yoke and the platen to move the paper to be marked against the printing elements.

The control circuits for the solenoid, by which circuits either manual or automatic operation may be selectively accomplished, will now be described, particular reference being had to Fig. 3. From one side of the source of current 38, which will generally be an ordinary 110 volt alternating current circuit to which connection may be easily established by a conventional plug and socket arrangement, a lead 39 extends to one side of the solenoid coil 40. The other side of the source is connected with the other side of the coil by a lead 41 in which is interposed three switches 42, 43 and 44. Switches 42 and 44 will be termed automatically operable switches since they effect the automatic operation of the device, and switch 43 is a control switch for this lead. A shunt circuit 45 about the three switches 42, 43 and 44 has an interposed switch 46 therein constituting the manual control for the device.

Referring to the automatic control feature, the switches 42 and 44 (see particularly Figs. 4 and 5) comprise resilient fingers 47, 48 mounted on an insulating member 49 and having opposed contact points 50 thereon. The switches are located on opposite sides of the casing adjacent to the side walls, extend transversely across the paper receiving slot 16, and are mounted for adjustment along the length of the slot. Thus, the insulating members 49 extend in part through elongated apertures 51 in the side walls 11, 12 paralleling the slot 16, and finger pieces 52, screw threaded into engagement with the projecting parts, secure the switches to the casing at selected points along the lengths of the apertures.

The switches 42, 44 are arranged so that a piece of paper being inserted in the slot 16 will engage a finger on each switch and move it to establish the circuit therethrough, and the switches are so fashioned that this closing movement may be accomplished with very little effort. When a printing operation has been completed through closing the switches 42, 44 the solenoid may be deenergized to allow the parts to return to their original inoperative position by applying a withdrawing force to the innermost edge of the sheet whereby to flex the sheet slightly and permit either one of the switches to open. By providing a switch on either side of the casing and arranging the switches in series so that both switches must be closed to establish the circuit, it will be apparent that a piece of paper in moving into the machine must occupy a proper predetermined position before the solenoid will be energized.

In connection with the automatic operation of the device, it is of course understood that the switch 43 will be closed so that the closing of both switches 42, 44 will effect a printing operation. When manual control is desired, the switch 43 is opened to render switches 42, 44 ineffective and the switch 46 is then actuated by the operator to energize and deenergize the solenoid. As may be seen in Figs. 1, 2 and 4, the switches 43 and 46 are conveniently mounted on the front and side walls 14 and 11 respectively.

While any suitable means for applying ink or the like to the printing elements may, if desired, be employed, it is preferred that a device of the character illustrated be used, wherein the ink is applied by means which operates in synchronism with the movements of the platen. As shown, the device comprises an ink pad retainer 53 supported at each end by depending legs of bell crank levers 54 which are pivoted, as at 55, to the side walls 11, 12. In the inoperative position of the machine, the retainer is in contact with those printing elements which are opposed to the platen and is, therefore, located between the printing elements and the platen. Links 56 connect the other legs of the levers 54 with the corresponding legs of the yoke 29. The arrangement of parts is such that when the yoke moves upwardly to carry the platen toward the printing elements, the bell crank levers 54 are swung by the links 56 to retract the retainer and ink pad carried thereby away from its normal position.

In the operation of the devices, the user first sets the device for either automatic or manual control by means of the switch 43. If automatic control is selected, the switches 42, 44 are adjusted along the apertures 51 to such position that the switches will be closed as the sheet reaches a proper printing position in moving into the device through the slot 16. It will be evident that the automatic control will be most advantageous where a large number of similar documents, such as checks, are to be printed since the user need only set the printing elements as desired and then insert the document. Should manual control become necessary the switch 43 is opened, after which printing is effected by manually closing and opening the switch 46.

In printing certain documents, as for example in printing the denominational figures on checks, it is of the utmost importance that the printed matter be incapable of alteration, at least without destroying or noticeably disfiguring the document. This end has been attained by a novel method of printing the documents which includes the step, in the printing operation, of producing rapidly recurrent printing movements of the platen relative to the printing elements. Thus, when a solenoid is operated by alternating current, the alternations produce in the solenoid coil a rapidly fluctuating magnetic force, which, acting on the armature, causes the armature to vibrate rapidly or chatter. In the present device, such vibrations are imparted, through the connecting parts, to the platen thus causing the platen to move rapidly with respect to the printing elements. Consequently, rapid and recurrent printing movements are produced between the printing devices which, while the stroke of movement is short, are sufficient to cause the ink to penetrate the paper deeply. Moreover, where the surfaces of the printing elements or platen are roughened, the numerous printing movements

are effective to shred the immediate surface of the paper while working the ink thereinto. Obviously, it would be impossible to alter a document so printed.

I claim as my invention:

1. A marking machine comprising, in combination, a casing having a slot therein, a series of marking devices on one side of said slot mounted for shifting movement relative to each other to present different characters in marking position, means spaced from the characters on the opposite side of the slot to allow insertion of a sheet to be marked through said slot into a position between said devices and means, a shiftable support for said means for moving said means toward and away from said devices to effect a marking operation, and an actuating solenoid operatively connected with said shiftable support.

2. A marking machine comprising, in combination, a series of marking devices mounted for relative shifting movement to present different characters in marking position, a platen spaced from said devices in opposition to the characters which occupy the marking position, a pivoted support for said platen having swinging movement to carry said platen toward said devices, electromagnetic means operatively connected with said support for effecting the swinging movement thereof, an ink applying device normally positioned between said devices and platen in contact with the characters which occupy the marking position, and connecting means interposed between said ink applying device and said support for withdrawing the devices as said platen approaches the marking devices.

3. In a marking machine, the combination of a marking device and an element coacting therewith to press a sheet of material therebetween, electromagnetic means for effecting relative movement between said marking device and element, and an energizing circuit for said electromagnetic means including a pair of spaced switches operable by engagement with spaced portions of the sheet to be marked to close the circuit.

4. The method of marking documents which includes the step of rapidly and recurrently impressing desired characteristics upon a document to shred the surface thereof while causing a deep penetration of a marking fluid into the body of the document.

5. The method of marking documents which includes the steps of producing rapidly recurrent movements in an instrumentality by the cyclic alterations of a current, and transferring such movements to cooperating marking devices during a marking operation to effect repeated impressions upon the document whereby to cause a marking fluid to penetrate deeply into the document.

6. In a marking machine, the combination of a marking device and an element coacting therewith to press a sheet of material therebetween, electromagnetic means for effecting relative movement between said marking device and element, an energizing circuit for said electromagnetic means including a switch for automatically closing the circuit upon engagement thereof by a sheet to be marked, and a separate manually operable switch for controlling the circuit independently of the first mentioned switch.

7. In a marking machine, the combination of a marking device and an element coacting therewith to press a sheet of material therebetween, electromagnetic means for effecting relative movement between said marking device and element, an energizing circuit for said electromagnetic means including a switch operable to close the circuit upon the proper positioning of a sheet to be marked between said marking device and element, and adjustable means supporting said switch for varying such position whereby the machine may be adapted for operation upon sheets of different sizes.

8. A marking machine comprising, in combination, a series of marking devices mounted for relative shifting movement to present different characters in marking position, a platen spaced from said devices in opposition to the characters which occupy the marking position, a pivoted support for said platen having swinging movement to carry said platen toward said devices, and electromagnetic means operatively connected with said support for effecting the swinging movement thereof, said electromagnetic means being connected with a source of alternating current, the alternations of which are effective to produce a chattering or rapid vibration of said electromagnetic means which is transmitted to said platen.

9. In a marking machine, the combination of a casing having an elongated slot for receiving a sheet of material to be marked, a marking device disposed on one side of said slot, an element disposed on the other side of said slot and coacting with said marking device to press therebetween a sheet of material in said slot, electromagnetic means for effecting relative movement between said marking device and element, and an energizing circuit for said electromagnetic means including switches mounted on opposite sides of said casing adjacent to said slot for automatically closing the circuit upon engagement of both switches by a sheet to be marked.

10. A marking machine having, in combination, a marking device, an element coacting with said device to press a sheet of material against said device, an alternating current circuit, and electromagnetic means in said circuit for actuating said element, said means in response to current alternations having a vibratory action by which said sheet is rapidly and recurrently pressed against said marking device.

11. A marking machine having, in combination, a marking device, an element coacting with said device to press a sheet of material thereagainst, and means for effecting such coaction with a rapidly recurrent movement whereby to shred the material and produce a deep impression therein.

12. A marking machine having, in combination, a marking device and a coacting element normally spaced apart a short distance to permit the insertion of a piece of paper therebetween, and an alternating current solenoid for causing relative approaching movement between said device and said element to impress the paper therebetween, said solenoid having a vibratory action due to current alternations for effecting repeated impressions in the paper.

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