H. G. DAVIS.

PRINTING AND INKING DEVICE.

APPLICATION FILED JAN. 26, 1914.

1,340,380.

Patented May 18, 1920.

2 SHEETS—SHEET 1.

Fig. 1.

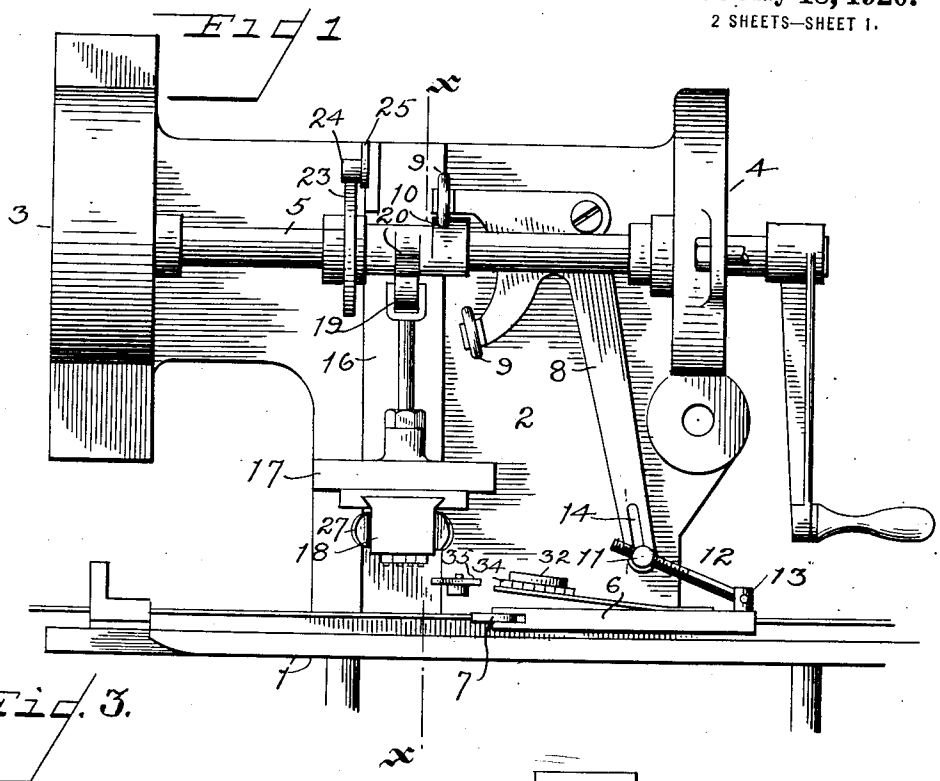


Fig. 3.

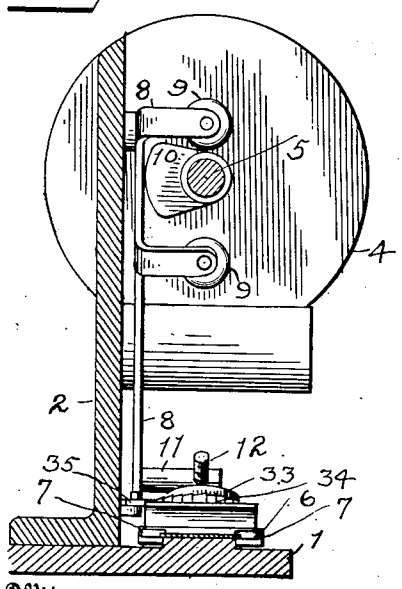
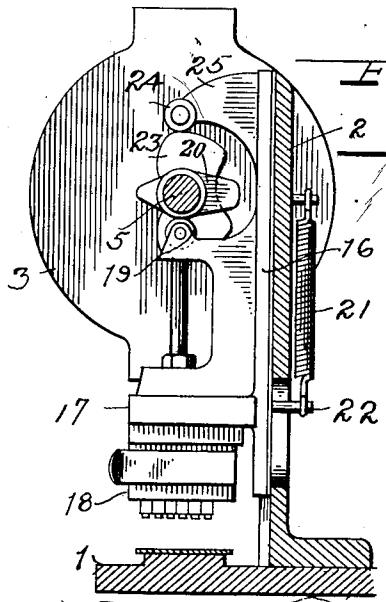


Fig. 2.



Witnesses

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2 SHEETS—SHEET 2.

Fig. 4.

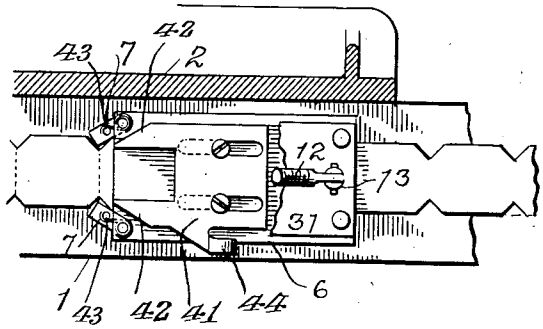


Fig. 5

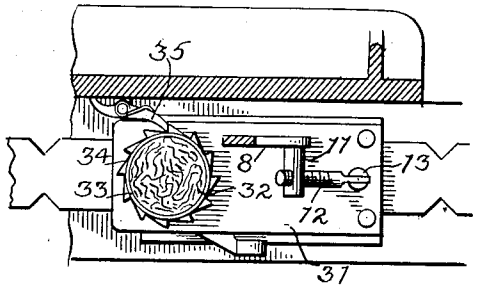


Fig. 6

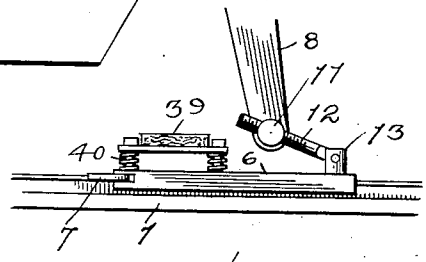


Fig. 7.

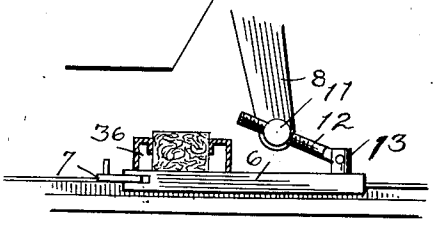


Fig. 8

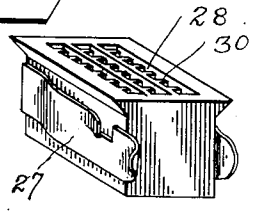


Fig. 9

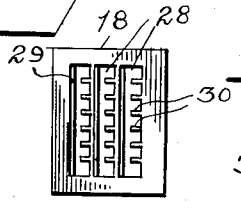


Fig. 10.

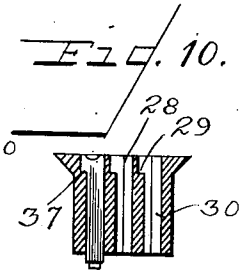


Fig. 12.

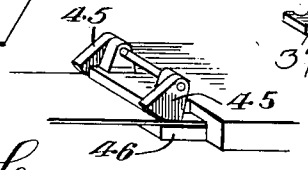


Fig. 11.



Witnesses

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UNITED STATES PATENT OFFICE.

HARRY G. DAVIS, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE H. D. DAVIS MANUFACTURING COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

PRINTING AND INKING DEVICE.

1,340,380. Specification of Letters Patent. Patented May 18, 1920.

Continuation in part of application Serial No. 782,867, filed August 4, 1913. This application filed January 26, 1914. Serial No. 814,514.

To all whom it may concern:

Be it known that I, HARRY G. DAVIS, citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Printing and Inking Devices, of which the following is a specification.

My invention relates to printing and inking mechanism and particularly to such apparatus for uses in conjunction with pin ticket machines such as is shown and described in my co-pending application, Serial No. 782,867, filed August 4, 1913, of which this application is a continuation, so far as the disclosure is common to both applications.

While the invention is particularly adapted for making successive impressions upon an intermittently moving continuous strip, it is to be understood that it is not limited to such construction, but may be employed for printing separate tickets, slips or sheets, and is not limited to use with pin ticket machines but may be employed alone or in conjunction with other apparatus equally as well.

The object of the invention is to simplify the structure as well as the means and mode of operation of such printing and inking devices, whereby they will not only be cheapened in construction, but will be more efficient in use, automatic in operation and unlikely to get out of repair.

A further object of the invention is to provide means for inking the printing type and advancing the strip to be printed between each printing operation and to provide interchangeable printing type and a chase in which they may readily be arranged in printing position by operators unskilled in type setting.

With the above primary and other incidental objects in view as will more fully appear in the specification, the invention consists of the features of construction, the parts and combinations thereof and the mode of operation or their equivalents as herein after described and set forth in the claims.

Referring to the drawings, Figure 1 is a front elevation of the assembled apparatus. Fig. 2 is a vertical sectional view taken on line x—x of Fig. 1, viewed toward the left. Fig. 3 is a similar sectional view, viewed to the right in Fig. 1. Fig. 4 is a detail plan view of the strip feeding mechanism. Fig. 5 is a similar view of the inking pad and means for actuating same. Figs. 6 and 7 are detail side views of the inking pad carrier and strip feeding slide, showing modifications of the inking pad and also a modification of the swinging arm 8. Figs. 8, 9 and 10 are a perspective view, a plan view and a transverse sectional view, respectively of the type chase. Fig. 11 is a perspective view of one of the printing type. Fig. 12 is a modification of the ticket feeding pawls adapted to feed a strip having straight edges.

Like parts are indicated by similar characters of reference throughout the several views.

In the drawings, the apparatus has been shown applied to a frame similar in shape and proportion to that of the pin ticket machine described and claimed in my co-pending application of which this application is a continuation in part. It is to be understood, however, that this particular style of frame is not essential, but that the frame may be of any suitable shape or proportion. A bed portion for the reciprocatory strip feeding slide and an upright standard projecting therefrom to support the reciprocatory printing slide will be sufficient for the printing apparatus herein shown and described.

As herein shown, the frame comprises a base or bed portion 1 at the rear of which projects a vertical portion 2, carrying at each end circular housings 3 and 4, in which is journaled a longitudinally disposed revoluble shaft 5. The circular housings 3 and 4 are not essential to the printing and inking mechanism.

Any suitable means may be employed for rotating the shaft 5. In the drawings a crank has been shown for this purpose.

The material operated upon may be in the form of strips of any suitable length or may be provided in a roll, from which the material is withdrawn by means of the strip feeding mechanism hereinafter described. The material operated upon is advanced

through a step by step movement beneath the printing or marking devices over the bed or base plate 1.

In the drawing, the strip of material has been shown as provided with marginal notches or recesses at regular intervals. Such notches are located coincident with the point at which the strip is to be subsequently severed into separate tickets. In the construction shown these notches or recesses are utilized in feeding the material beneath the printing or marking devices throughout successive steps of equal length. It is obvious that by use of pawls as shown in Fig. 12, a strip of material devoid of such marginal notches or recesses may be employed.

Slidingly mounted upon suitable guides or ways upon the base 1 is a reciprocatory feeding head 6 carrying at its forward end two spring actuated pawls 7 adapted to engage the notches of the strip of material. This feeding head is reciprocated throughout a forward and rearward movement during each cycle of operation by means of a bell lever 8 pivoted to the vertical portion 2 of the main frame. On one arm of the bell lever 8 are carried two rollers 9 adapted to be engaged by a cam 10 upon the shaft 5, whereby the bell lever will be oscillated to and fro at each rotation of the cam. The downward extending arm of the bell lever 8 is provided with a stud 11, which is engaged by a screw threaded adjusting link 12. The opposite end of which is pivotally connected with a lug 13 upon the material feeding head 6. By adjusting the screw threaded link 12, the path of travel of the material feeding head may be varied. Likewise, by adjusting the stud 11 to different positions upon the arm 8 within the slot 14, the extent of the path of travel of the head may be regulated.

Slidingly mounted in the vertical frame portion 2 is a reciprocatory slide member 16 carrying a presser head 17 with which is detachably engaged a type chase 18. The slide 16 is provided with a forward projecting arm carrying a roller 19 adapted to be engaged by a cam 20 upon the shaft 5 to depress the slide 16 against the tension of a retracting spring 21. The spring 21 is attached to a stud 22 projecting from the rear of the reciprocatory slide 16 through a slotted opening in the frame, and connected at its upper end to the frame 2. The cam 20 is a double one adapted to transmit to the slide 16 and presser head 17 carried thereby, a double reciprocatory movement for each rotation of the shaft 5. The initial movement of the slide 16 and head 17 will be a partial depression to press the type carried in the chase 18 supported upon the presser head 17 upon the inking pad or other device carried by the material feeding head 6. The slide 16 and the presser head 17 will then be elevated. After the material feeding devices upon which the inking pad or other device is carried have been retracted, the slide and presser head will be again depressed throughout the full extent of their movement into contact with the strip of material. A cam 23 upon the shaft 5 engaging a roller 24 carried by an arm 25, projecting from the slide 16, insures the return of the printing devices at the completion of the operation. The action of this cam 23 however, is merely supplemental to the retracting spring 21. It is obvious that either the retracting spring 21 or the cam 23 will serve to return the printing devices independent of the other.

Inasmuch as the present apparatus is designed to be used by persons unskilled in the usual methods of type setting, the type and chase are of peculiar formation in order that the proper relation of type may be insured. The type chase comprises a rectangular block or body, shaped to slide in suitable ways in the presser head 17, where it is detachably engaged by a spring arm 27 carried by the chase. This arm 27 engages a suitable stop upon the presser head 17.

The chase is provided with a plurality of vertically disposed, longitudinal slots 28, each formed with an offset or rabbet 29, located adjacent to the upper face of the chase. As will be seen in Figs. 9 and 10, this offset or rabbet is formed on but one side of each of the slots 28. Projecting inward from the opposite face of each slot is a series of thin partitions or walls 30, extending through substantially one half the width of the slot and spaced one from the other a distance equal to the thickness of the type to be employed. It is obvious that these partitions may extend entirely across the slot or may be reduced to form merely a bead or rib upon the inner face of the slot. These partitions or walls 30 which are integral with the division walls between successive slots of the chase, take the place of and serve the purpose of the usual quads or spaces, commonly used between adjacent type. Referring to Fig. 11 it is seen that each type member is provided with an offset or shoulder 37 corresponding with the afore mentioned rabbet 29 of each slot 28. This shoulder 37 upon the type member while engaging with the rabbet 29 of the chase block prevents the type from falling through the chase when in use. It further prevents the type from being inserted in the chase, either wrong end first or in a reversed position, whereby the type would make an inverted impression. The division walls 30 provide a separate recess or cell for each type, so there will be no need of justifying the form after the type have been set in place.

In machines of this character it is essential that the inking devices be not only efficient in order that the tickets may be clearly marked, but also durable. The operation must be rapid and the impressions frequent, thereby subjecting both the type and the inking pad or other devices to considerable wear. To overcome this difficulty and to provide efficient means for inking the printing characters, there is provided a construction, whereby the face of the type are brought alternately into contact with the inking pad and with the material operated upon, without any friction or dragging movement upon the face of the type or the inking member.

In the present construction, the inking member is carried upon a flexible spring plate 31 projecting upward and forward from the ticket feeding head 6. This plate 31 is depressible to a limited extent when the type within the chase are brought into engagement with the inking member by the depression of the slide 16 and presser head 17, to insure proper pressure of the pad upon the type.

The inking member which is carried upon the depressible spring plate 31 may be of any desired form. It may be a simple pad of fabric or felt saturated with ink or supplied from a suitable reservoir carried upon the flexible plate. There is preferably, however, provided upon the plate 31 an inking pad 32 mounted in a rotatable carrier or frame 33, the periphery of which is provided with a series of ratchet teeth 34. Mounted upon a suitable bracket projecting from the vertical portion 2 of the main frame is a spring actuated pawl 35 adapted to engage one of the ratchet teeth 34 at each advance movement of the material feeding head 6. As the head continues to advance, the pawl 35 will cause a partial rotation of the pad 32, whereby each successive impression of the type upon the pad will be in a different relative position. In lieu of this construction, an ink reservoir 36 may be provided upon the feeding head 6, as shown in Fig. 7, and a compressible pad may be employed in such reservoir.

The cam 20 is so timed upon the shaft 5, that as the ticket feeding head 6 reaches the forward limit of its stroke the printing slide will be depressed throughout a limited movement to engagement with the inking pad 32, after which the freshly inked type will be elevated to permit the feeding head 6 and inking device to be retracted out of the path of the type. After the feeding head 6 and inking device have been returned to their normal or retracted position, the slide 16 and the presser head 17 are forced downward throughout the full limit of their stroke into engagement with a strip of material to be operated upon, which is imprinted with the freshly inked type. The slide and type are then retracted preparatory to the next operation.

It is understood that the feeding head 6 and the inking device carried thereby, come to rest momentarily at the forward limit of their stroke, while the type are being pressed thereon to receive their charge of ink. The freshly inked type are withdrawn from the pad before the feeding head 6 begins its return movement. Thus obviating friction between the pad and type and reducing the wear of such parts to minimum.

In Fig. 6 there is shown a further modification of the ink applying devices in which there is employed a depressible pad 39 supported upon helical springs 40 against the tension of which the pad may yield under the pressure of the type during the inking operation. In Fig. 12 there is shown a modification of the material feeding mechanism comprising eccentric pawls 45 oscillating in a vertical plane and adapted to engage the uppermost face of the material. As the feeding head advances, these pawls will be oscillated rearward by their contact with the material, thereby causing the pawls more forcibly to engage the face of the material. The eccentric pawls 45 are adapted to grip the strip of material between such eccentric pawls and a ledge or tongue 46 projecting from the forward side of the head 6. As the head is reciprocated in a forward direction, the resistance of the strip of material will cause the eccentric head to bind tighter upon the strip of material, while upon the return movement of the feeding head, the pawls 45 will be oscillated in the opposite direction to release the strip.

When replacing the type with a new form, it is desirable to make a series of trial impressions to insure the even distribution of the ink before proceeding with the work. These trial impressions may all be made upon a single section of the material. Inasmuch as the spring pressed feeding pawls 7 normally tend to engage the strip of material at all times, means is provided for holding the pawls out of engagement with the strip during such trial operation, thus enabling successive impressions to be superposed upon the strip and also facilitating the replacement of the strip of material. Referring particularly to Fig. 4, there is provided upon the upper face of the reciprocatory feeding head and beneath the spring plate 31 a sliding cam plate 41 having forward projecting inclined fingers 42. The pawls 7 are provided with studs 43 extending into the path of the inclined fingers 42 when the pawls are engaged with the strip of material. By a forward reciprocation of the cam plate 41 the inclined fingers 42 are caused to engage the studs

43 to oscillate the pawls 7 outward out of engagement with the strip of material. The cam plate 41 is provided with a projecting arm or lug 44 by which it may be shifted independent of the feeding head.

From the above description it will be apparent that there is thus provided a device of the character described, possessing the particular features of advantage before enumerated as desirable, but which obviously is susceptible of modification in its form, proportion, detail construction or arrangement of parts, without departing from the principle involved or sacrificing any of its advantages.

While in order to comply with the statute, the invention has been described in language more or less specific as to certain structural features, it is to be understood that the invention is not limited to any specific details, but that the means and construction herein described comprise but one mode of putting the invention into effect, and the invention is therefore claimed broadly in any of its possible forms or modifications within the scope of the appended claims.

Having thus described my invention, I claim:

1. In an apparatus of the character described, a movable printing member, a platen for the material operated upon, a reciprocatory material feeding member adapted to intermittently advance the material operated upon, inking means carried by the material feeding member, means for reciprocating the feeding member, and means for actuating the printing member toward the platen while the inking means carried by the material feeding member is in the path of travel of the printing member and again after the inking means and feeding member have been withdrawn therefrom.

2. In an apparatus of the character described a main frame, a drive shaft therein, a reciprocatory printing member, a cam carried by the drive shaft actuating the printing member a reciprocatory material feeding member, and ink applying member carried thereby, a bell crank controlling the movement of said members, a cam on said shaft operating said bell crank whereby the material operated upon will be intermittently advanced and the ink applying member will simultaneously be brought into engagement with the printing member, said cams being so contoured and arranged that the printing member will be moved into engagement with the material operated upon intermediate the operations of the feeding and inking members.

In testimony whereof, I have hereunto set my hand this 13th day of January, 1914.

HARRY G. DAVIS.

Witnesses:
IDA W. HALL,
ALLEN M. STEARNE.