Jan. 3, 1928. 1,654,796

B. DUFF ET AL

PRINTING PRESS

Filed Aug. 12, 1925 3 Sheets-Sheet 1

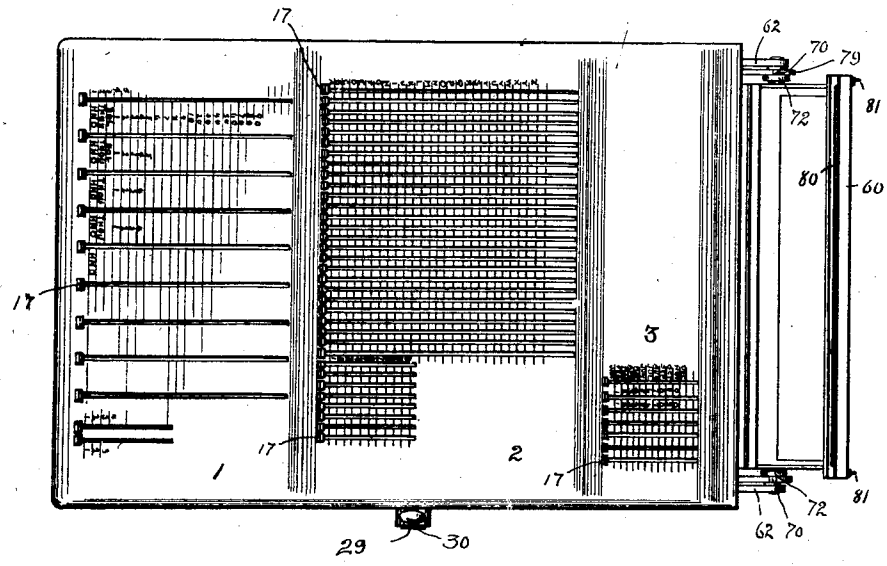


Fig. 1.

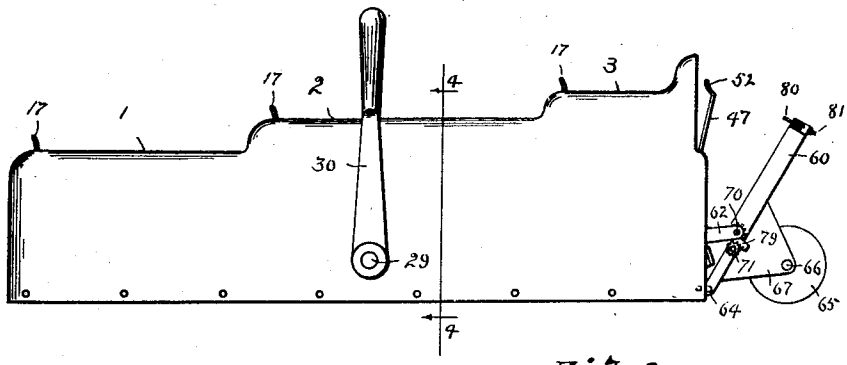


Fig. 2.

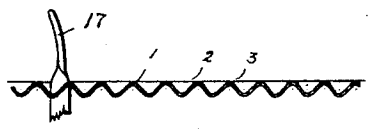


Fig. 3.

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Jan. 3, 1928.

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3 Sheets-Sheet 2

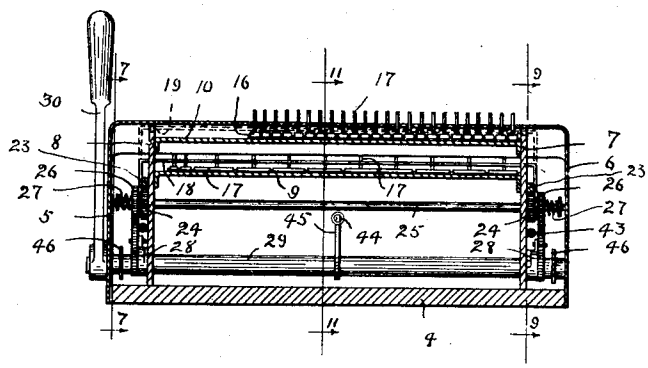


Fig. 4.

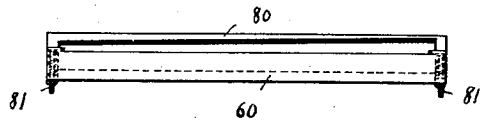


Fig. 5.

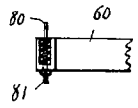


Fig. 6.

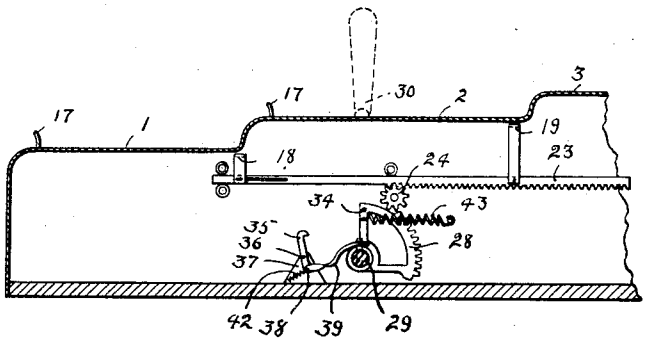


Fig. 7.

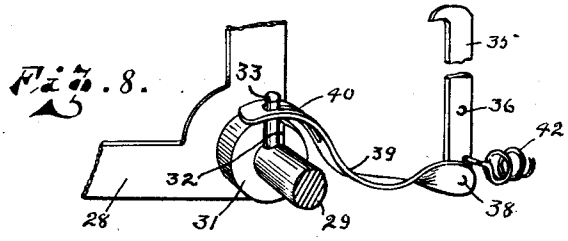


Fig. 8.

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Jan. 3, 1928. 1,654,796

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Filed Aug. 12, 1925 3 Sheets-Sheet 3

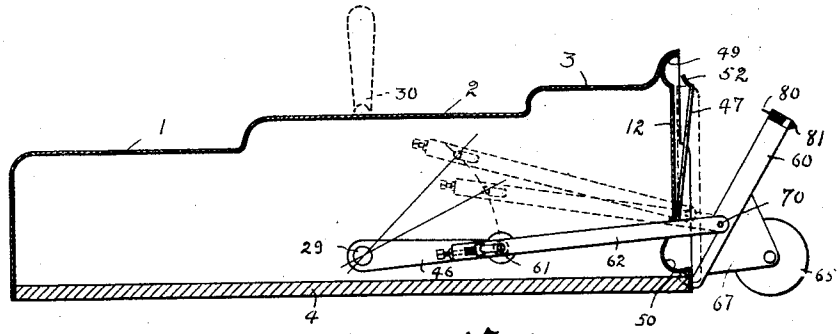


Fig. 9.

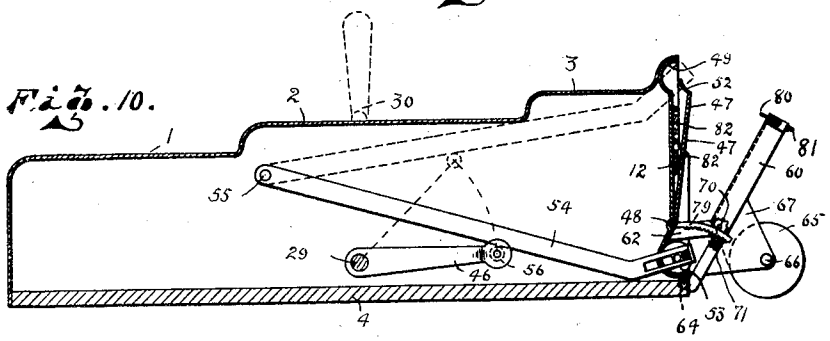


Fig. 10.

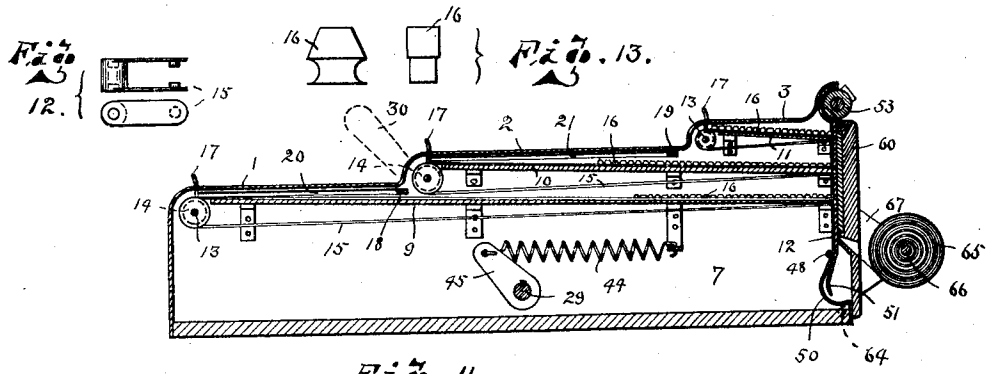


Fig. 12.

Fig. 13.

Fig. 11.

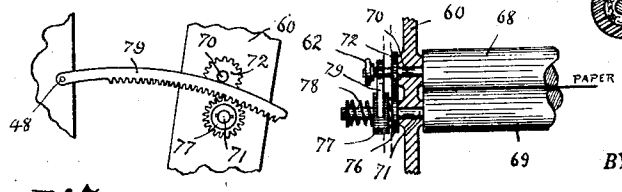


Fig. 14.

Fig. 15.



Fig. 16.

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Patented Jan. 3, 1928. 1,654,796

UNITED STATES PATENT OFFICE.

BERT DUFF AND WALTER F. KLINGMAN, OF DULUTH, MINNESOTA.

PRINTING PRESS.

Application filed August 12, 1925. Serial No. 49,732.

This invention relates to printing machines and has special reference to one particularly adapted for the printing of checks such as used in banking or such institutions where large numbers of checks are written daily.

The principal object of our present invention is to provide such a machine more practical and efficient than those heretofore known.

Other lesser objects and advantages will appear in the further description of the invention.

Referring now to the accompanying drawings, forming part of this application and in which like reference characters indicate like parts:

Figure 1 is a top plan view of one of the improved check writing machines, showing the platen open:

Figure 2 is a side elevation of Figure 1:

Figure 3 is an enlarged section of the key board:

Figure 4 is a section taken on the line 4—4, Figure 2:

Figure 5 is an end view of the platen showing the automatic check feeding device:

Figure 6 is a side elevation of Figure 5:

Figure 7 is a fragmental section on the line 7—7, Figure 4; showing the type returning mechanism only;

Figure 8 is an enlarged perspective view of the type returning quadrant hub:

Figure 9 is a vertical section on the line 9—9 Figure 4 showing the platen operating mechanism only:

Figure 10 is identical with Figure 9 illustrating the inking mechanism only:

Figure 11 is a vertical section on the line 11—11 Figure 4 in the act of printing.

Figure 12 is an enlarged combined plan view and side elevation of the preferred form of belt for carrying the type:

Figure 13 is a combined side and end elevation of the type which are carried by the belt;

Figure 14 is an enlarged elevation of the paper feeding mechanism carried by the platen;

Figure 15 is an elevation, partly in section, at right angles to Figure 14; and

Figure 16 is an enlarged transverse section of the inking roller.

The complete unit is comparatively small, not exceeding materially, in width, the length of an ordinary check, and somewhat greater in length than in width, and is preferably portable so as to be moved from place to place. The housing of the press is substantially rectangular in plan view and has a stepped upper surface, there being three different planes 1, 2 and 3 upon said upper surface on top of the housing. The housing is preferably of suitable sheet metal mounted upon a wooden or other comparatively thick base illustrated at 4, the side walls of the housing being illustrated at 5 and 6. Spaced inwardly of the side walls 5 and 6 are parallel mechanism supporting walls 7 and 8, and supported intermediate of and by these walls 7 and 8 are the belt carrying shelves or platforms 9, 10 and 11. The outer edge of each platform terminates in a suitable horizontal slot in the face or front wall 12 of the press housing, and at the rearmost edge of each platform is a horizontally disposed shaft 13, each of which carries a series of thin rollers 14 about each one of which is a type carrying belt 15; the type being illustrated at 16. Each belt furthermore carries an upright manipulating trigger 17 which protrudes upwardly through one of the key board planes 1, 2 or 3. The key board surfaces or planes are corrugated as clearly shown in Figure 3 of the drawings; it being the only illustration deemed necessary to show their detailed construction, as in the other views they are simply shown as level surfaces. The key board or plane 3 is employed for the type which indicate the dates on the check to be written and are marked as shown in Figure 1 for the month, day, and year; these type being presented for printing through the uppermost slot in the face of the press as they are adjusted into position over the edge of the platform 11. In the key board or plane 2 the corrugations are marked with the letters of the alphabet upon one side thereof as clearly seen in Figure 1 of the drawing, and a section of said corrugations to the right thereof as viewed from the rear of the machine are designated by the numerals from 1 to 0 inclusive whereby such letters and figures as desired may be presented for printing through the next slot below the one previously described for the printing of the name of the

payee and amount of the check. The corrugations in the key board 1 are designated by a letter of the alphabet to permit of the presenting of the worded amount of the check through the lowermost slot in the face of the press.

Each belt irrespective of its series is operated in the following manner:

The index finger of the operator's hand is placed in the concaved corrugation whose designation is previously selected, be it a month in the year, letter of the alphabet, figure, or word, when the thumb of the same hand of the operator is engaged rearwardly of the trigger 17 on the desired belt, when said trigger is brought up to the groove in which the index finger is resting, thus presenting the type carrying the designation initially selected to its respective groove on the face of the press, ready to be engaged by the platen thereof.

Forwardly of the forward limit of each series of slots in the key boards 1 and 2 are transverse return bars 18 and 19, the former occurring below the key board 1 and the latter below the key board or plane 2. These bars are supported and slidably operable in elongated slots 20 and 21 respectively formed in the inner auxiliary walls 7 and 8 of the press and are carried upon the horizontally reciprocable rack bars 23, which are operable by the spur gears 24, mounted upon the transverse shaft 25; these gears occurring just externally of the walls 7 and 8 and each having adjacent thereto and upon the same shaft a similar gear 26, the abutting hubs of each pair of gears 24 and 26 having ratchet teeth formed therein, the gears 26 being held against the gears 24 by means of expansive spiral springs 27. The gears 26 mesh with and are operated by the toothed quadrants 28 which are mounted upon the transverse shaft 29, rotatably carried within the walls of the press and to one side of which latter is mounted upon said shaft the upright operating handle bar or crank 30. Each quadrant 28 has a hub 31 thereupon having a notch 32 therein which is engaged by the pin 33 fixed to the shaft 29 when the latter is rotated backwardly in respect to the press, so that when the operating crank or handle 30 is pulled backwardly and downwardly it will carry with it the quadrants 28, and, the uppermost corner of each being equipped with a laterally projecting pin 34, will eventually be held in their extreme backward position by the engagement of said pin 34 beneath the free end of the dog 35 pivotally mounted as at 36 upon a suitable bracket 37, the opposite end of said dogs (as there is one upon either side of the machine) being pivotally attached as at 38 to the twisted arcuately shaped pitman 39, its opposite end being slotted as at 40 and engaged over the extremity of the pin 33 which extends beyond the hub 31 of the quadrant. The dog 35 and its connections are held in the engaged position shown in Figure 7 of the drawing by means of a suitable contractile helical spring 42 so that the dog will automatically engage the pin 34 on the quadrant and hold the latter from being returned by the action of the contractile springs 43, the object of which is to permit the release of the locking plate, subsequently described. Now when the shaft 29 is returned to its normal position with the lever 30 upright, such occurring by the action of the lever returning contractile spring 44 which is located centrally of the press and connected to the crank arm 45 keyed to the shaft 29 just as it reaches its return limit the pin 33 will engage the outer end of the slot 40 in the lever 39 and give it a slight jerk which will release the hold of the dog 35 on the pin 34 and thus free the quadrants 28. When the quadrants 28 are thus freed and drawn forwardly again to normal position by the action of the springs 43 previously described, they will rotate the gears 26 in anti-clockwise direction or the reverse of their previous action, thus simultaneously rotating in the same direction the gears 24 by virtue of their ratchet connection with the gears 27. This action, as is obvious, will carry the racks 23 backwardly together with the bars 18 and 19 supported thereupon, and these bars, passing above the two series of belts, will engage any and all triggers 17 which may be at all advanced for printing purposes and return them to normalcy ready for subsequent use.

The shaft 29 has also fixed thereto a lever 46 adjacent each end thereof and intermediate of the spaced side walls of the press. These levers simultaneously operate both the type locking plate and the platen of the press, so that prior to the action just described of returning to normal position the type locking plate will have been unlocked, such unlocked position being clearly shown in Figures 9 and 10 of the drawings. This plate is illustrated at 47 and is pivotally supported upon the front wall 12 of the press as at 48.

There is a horizontally concaved recess 49 in the upper extremity of the face 12 and a similar, though slightly deeper, concaved recess 50 in the lower extremity thereof, and the locking plate 47 has an inwardly projecting arcuate lip 51 which registers with the concave 50 in the face below the pivotal point of said locking plate when the latter is unlocked, and it is also provided with the somewhat similar lip 52 at the upper edge which registers with the lower portion of the concave 49 when the plate 47 is locked; this plate of course being provided with slots that register with the slots on the face 12 through which the type protrude,

and when the plate 47 is in its locked position the type protruding therethrough cannot move.

The locking and unlocking of the plate 47 occurs by the action of the inking roller 53 which is yieldably carried in the slotted free ends of the levers 54, pivoted as at 55, one at either side of the press, and which levers rest in the forked free ends of the arms 46 which are keyed to and operate up and down by the rotation of the shaft 29. In these forked extremities of the arms 46 are small rollers indicated at 56 for anti-frictional support of the levers 54. Thus it will be seen that when the shaft 29 is rocked backwardly as before described just prior to the action of the machine which returns the type to normalcy the inking roller 53 will be raised into the uppermost concave and the locking plate held in position ready for the act of printing by the platen 60 being drawn forwardly against the type. This forward action of the platen is accomplished by the same levers 46, there being attached to the outer sides of the free ends thereof as at 61 the platen operating lever 62, their opposite ends being attached to the platen as at 70, so that when these levers are raised the platen is brought against the type simultaneously with the elevation of the inking roller to the uppermost concave 49, and the act of printing accomplished. This position of the inking roller and platen are clearly shown in Figure 11 of the drawings, the platen being pivotally mounted in the front corners of the press as at 64.

The roll of blank paper to be printed upon is indicated at 65, it being carried upon the spindle 66 mounted in the brackets 67 on the back of the platen 60. The paper leads inwardly and upwardly intermediate of two feeding rollers 68 and 69, they being mounted upon spaced shafts 70 and 71, respectively. Externally of the sides of the platen 60 and upon the shafts 70 and 71 are intermeshing spur gears 72 and 76, respectively, and adjacent each gear 76 is a somewhat wider spur gear 77, each being cooperatively connected with its adjacent gear 76 by a ratchet hub, as clearly shown in Figure 15, such ratchet connection being maintained by the expansive spiral spring 78. An arcuately shaped rack 79 is pivoted upon the pivotal connection 48 of the locking plate extending outwardly so that their free ends (one being upon either side of the press) mesh with the gears 77 providing means whereby when the platen is brought up against the type for printing purposes, the paper feeding rollers remain stationary, the gears 77 operating backwardly in respect to their ratchet engagement with the gears 76. However when the platen is returned to its open position, spaced away from the type, the revolving of the gears 77 in the opposite direction by virtue of their contact with the arcuate racks 79 will forcibly rotate the feeding rollers as is obvious and advance the paper one step forcing the printed portion thereof above the free end of the platen, simultaneously presenting a new unit of paper for the next act of printing. It is obvious that the inking roller must, during the opening of the platen, traverse downwardly over the type and, in its extreme lowermost position, open the type locking plate, permitting, if desired, rearrangement of the type for the following check to be printed.

The free end of the platen 60 is provided with a shear or cutting knife indicated at 80 which is yieldably supported at its ends upon the spring controlled bolts 81, and the printed sheet passes between it and the upper edge of the platen 60. This knife 80 extends inwardly normally permitting of free passage of the paper when fed between it and the platen, but when the platen is brought tightly against the type locking plate during the act of printing the knife 80 will be forced inwardly against the upper edge of the platen and thus automatically sever the printed check from the blank paper, and when the last check is printed it may be removed by pinching manually the cutting knife against the paper.

The inking roller 53 is preferably of porous rubber, having a hollow core filled with ink holding elements, such as waste, sponge, or the like, about the supporting shaft thereof.

It will be noted that no specific means is provided for the return to normalcy of the type carrying belts in the keyboard 3 as they provide the date only, which may remain constant during intermittent periods and can be readily returned to normalcy by hand.

It is apparent that any desired fixed permanent printing to be had upon each check may be accomplished by placing suitable fonts carrying same intermediate of the slots in the face 12 of the press, such fonts being indicated at 82 in Figure 10 of the drawings.

Having thus described our invention, what we claim and desire to secure by Letters Patent, is:

1. A printing press of the character described comprising a housing, a stepped upper surface upon said housing forming three separate keyboards, means in each keyboard for presenting selective type for printing, a platen, an inking roller, a type locking plate, and means for simultaneously operating the inking roller, the type locking plate and the platen.

2. A printing press of the character described embodying a housing, a plurality of series of movable type within the housing, means for selectively moving the type to

printing position, means for locking the type in such position, a platen, an inking roller, and means for simultaneously operating the platen, the type locking means, and the inking roller.

3. A printing press of the character described embodying a housing, a plurality of series of movable type within the housing, means for selectively moving the type to printing position, means for locking the type in such position, a platen, an inking roller, means for simultaneously operating the platen, the type locking means, and the inking roller, and automatically controlled means for returning the type to normalcy.

In testimony whereof we hereunto affix our signatures.

BERT DUFF.
WALTER F. KLINGMAN.