J. WHITAKER.

PRINTING DEVICE.

APPLICATION FILED JAN. 15, 1917.

1,360,067.

Patented Nov. 23, 1920.

5 SHEETS—SHEET 1.

Fig. 1.

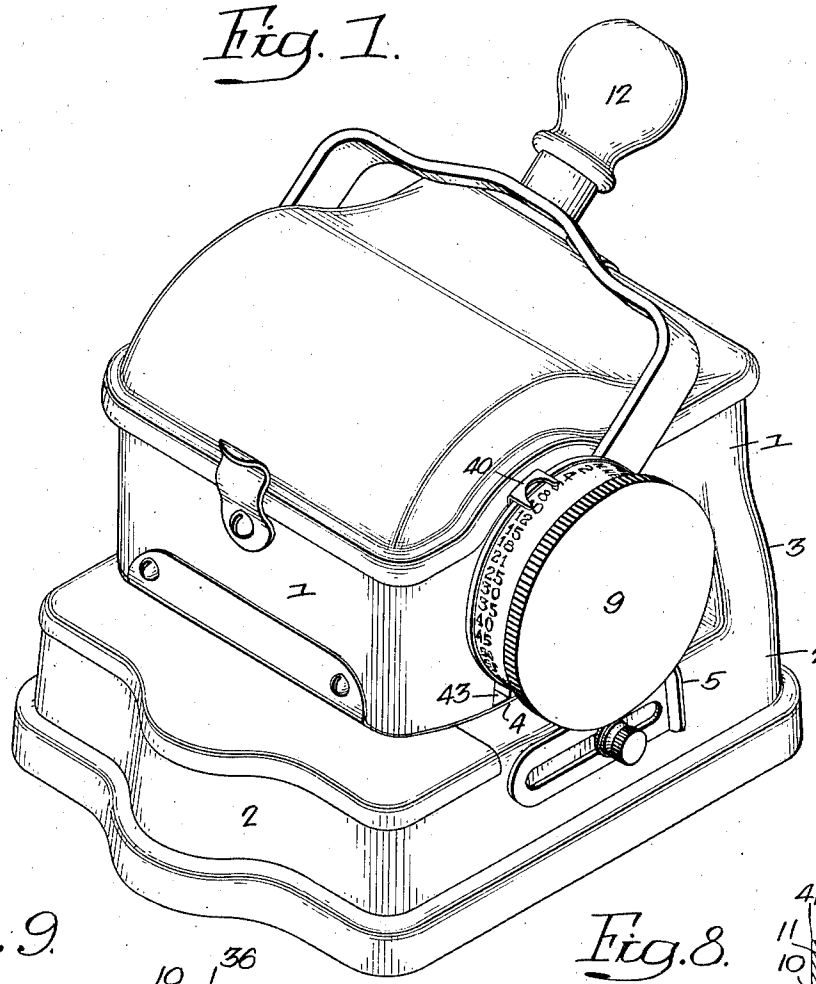


Fig. 9.

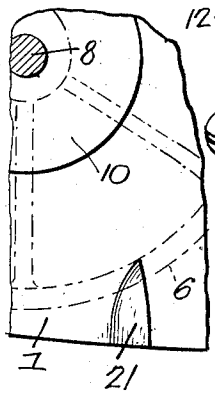
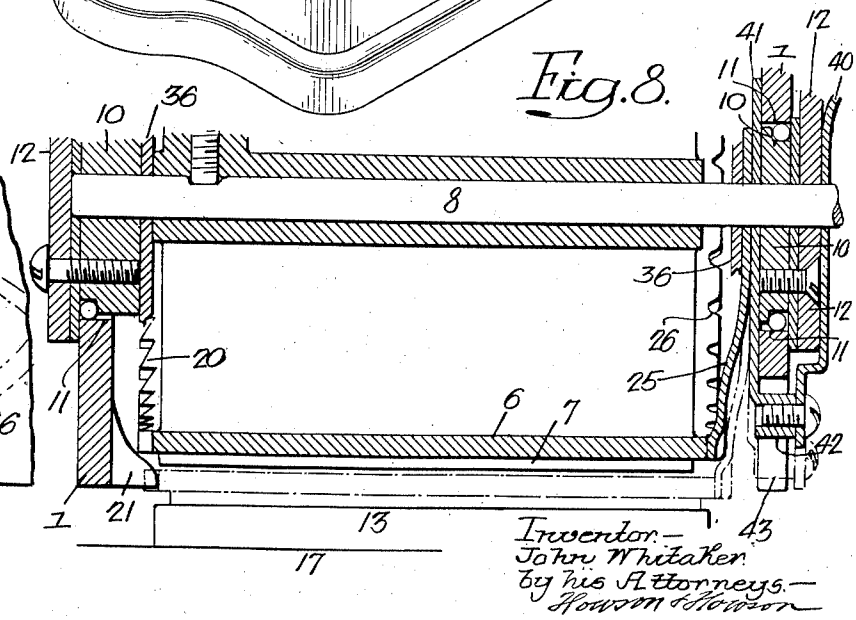


Fig. 8.



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5 SHEETS—SHEET 2.

Fig. 2.

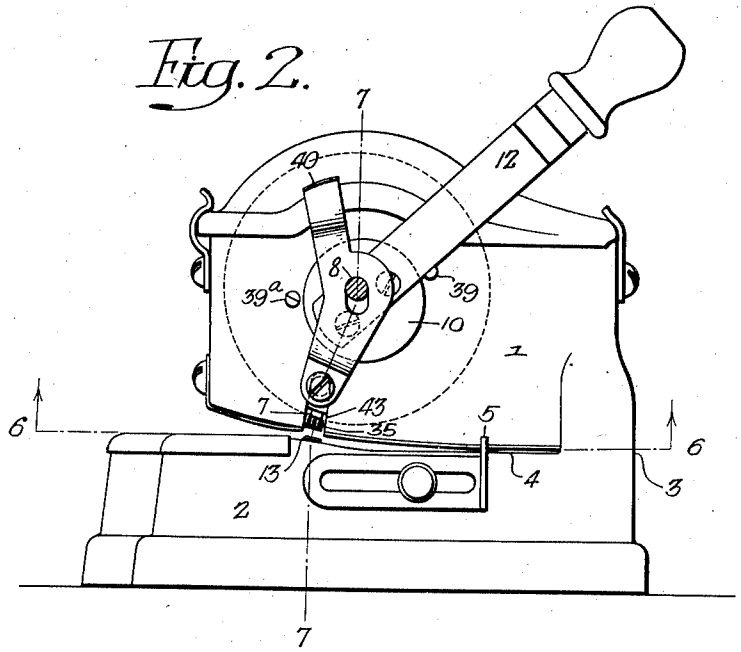
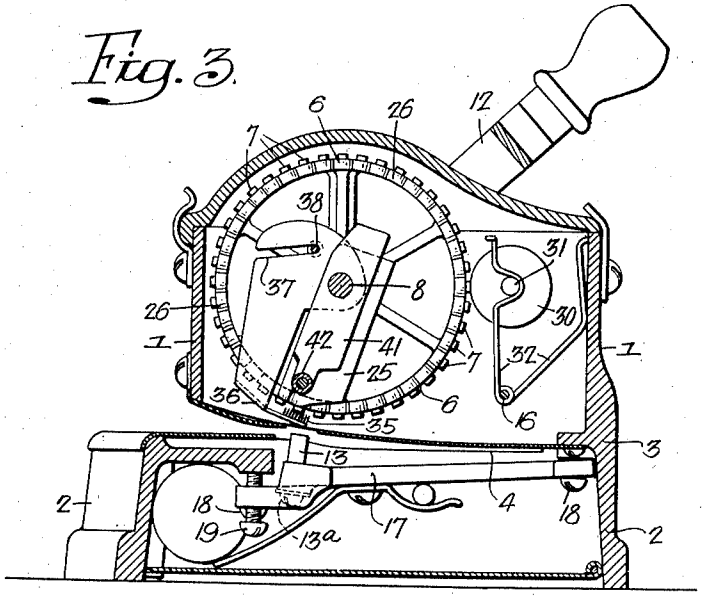


Fig. 3.



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5 SHEETS—SHEET 3.

Fig. 4.

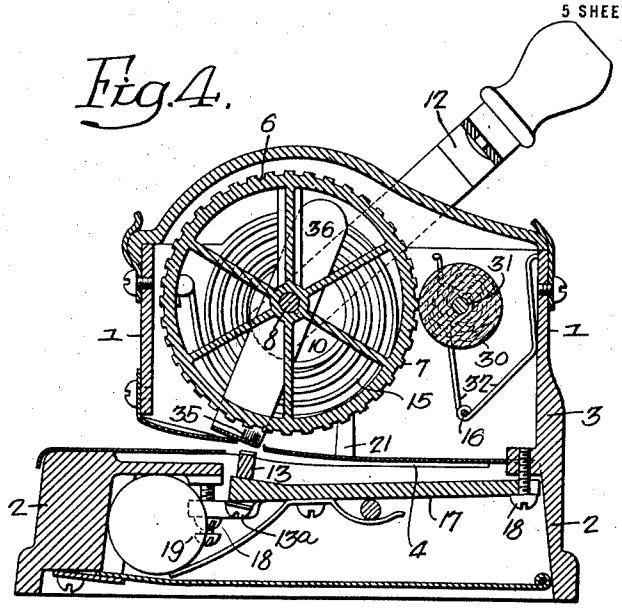


Fig. 5.

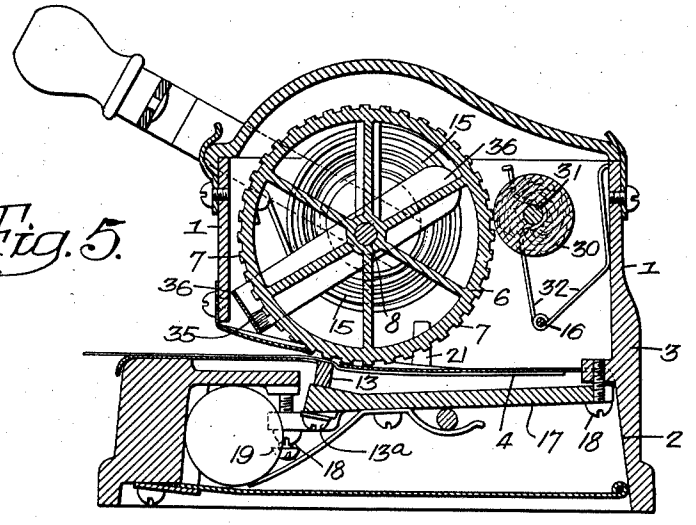
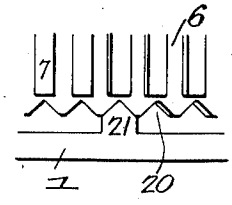


Fig. 15.



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5 SHEETS—SHEET 4.

Fig. 6.

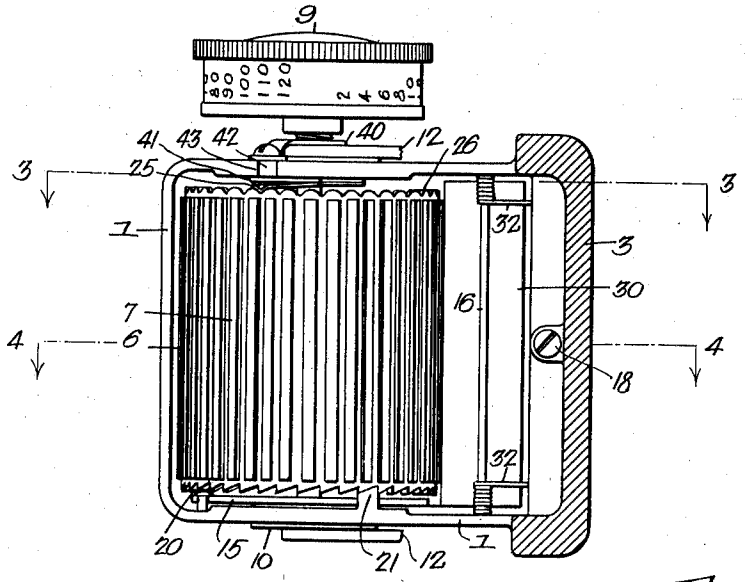
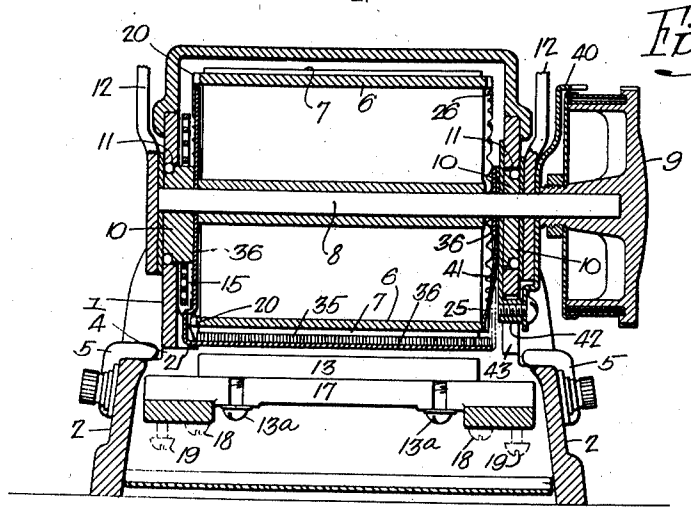


Fig. 7.



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5 SHEETS—SHEET 5.

Fig. 12.

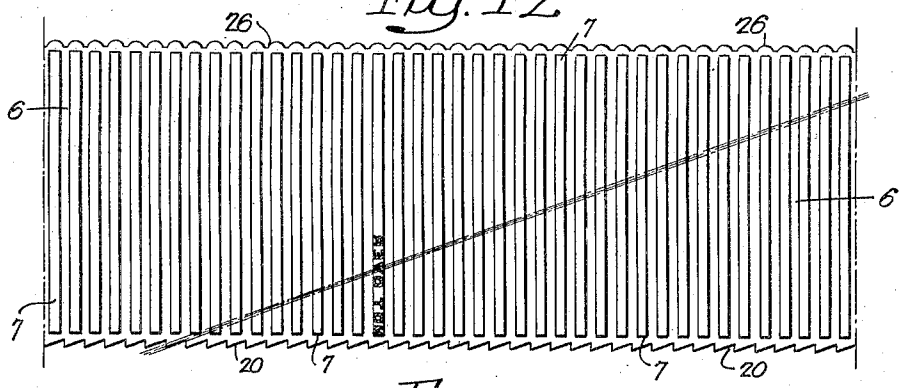


Fig. 13.

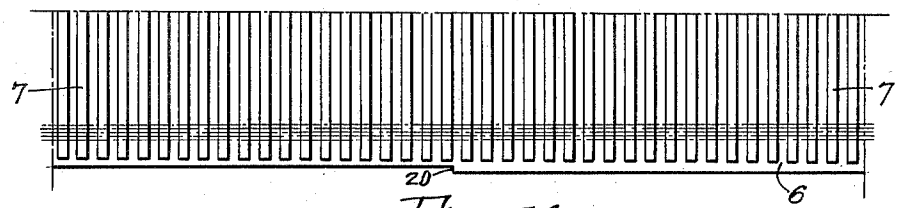
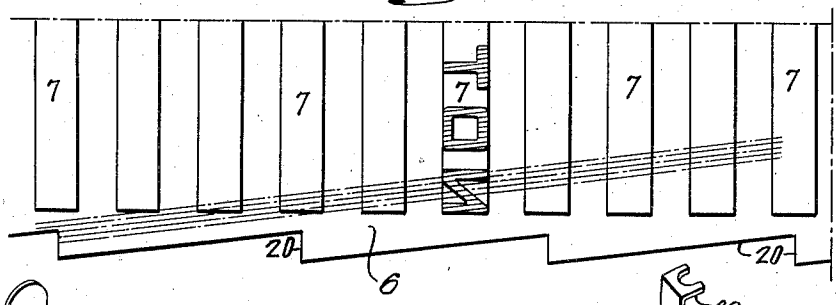


Fig. 14.



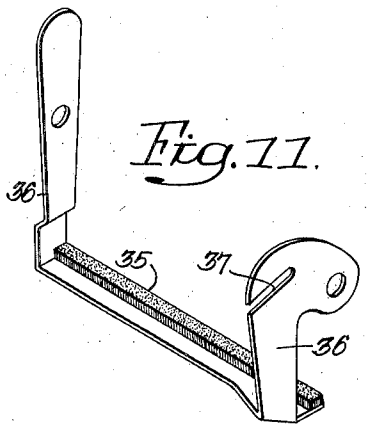


Fig. 11.

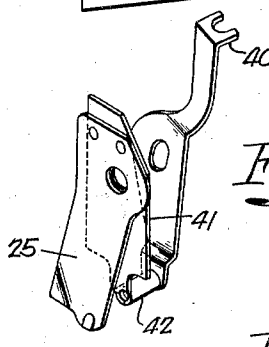


Fig. 10.

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UNITED STATES PATENT OFFICE.

JOHN WHITAKER, OF NORTH WALES, PENNSYLVANIA, ASSIGNOR TO SAFE-GUARD CHECK WRITER COMPANY, INC., OF LANSDALE, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

PRINTING DEVICE.

1,360,067. Specification of Letters Patent. Patented Nov. 23, 1920.

Application filed January 15, 1917. Serial No. 142,430.

To all whom it may concern:

Be it known that I, JOHN WHITAKER, a citizen of the United States, and a resident of North Wales, county of Montgomery, State of Pennsylvania, have invented certain Improvements in Printing Devices, of which the following is a specification.

My invention relates to printing devices, particularly those employed for the purpose of printing amounts on checks, drafts, and similar papers.

One object of my invention is to construct a device in which a revolving cylinder is employed, so that as the cylinder is moved toward the platen it will be locked against movement on its shaft so as to insure a clear impression while the paper is being scarred or perforated.

A further object of the invention is to insure proper registry between the type on the cylinder having grooves in the face, with a platen shaped to mesh with the grooves in the type.

A further object of the invention is to improve the inking mechanism by providing an auxiliary inking device which insures the proper inking of a line of type before each impression without the necessity of rotating the cylinder to bring it in contact with the main inking rolls.

My invention also relates to the general construction of the machine.

In the accompanying drawings:—

Figure 1, is a perspective view of my improved printing device designed to print the amount on checks and like papers;

Fig. 2, is a view in side elevation;

Fig. 3, is a transverse sectional view on the line 3—3, Fig. 6;

Fig. 4, is a sectional view on the line 4—4, Fig. 6;

Fig. 5 is a similar view showing the device in the printing position;

Fig. 6, is an inverted plan view on the line 6—6, Fig. 2;

Fig. 7, is a longitudinal sectional view on the line 7—7, Fig. 2;

Fig. 8, is an enlarged view showing the type cylinder in the elevated position and in dotted lines locked by the lug on the casing;

Fig. 9, is a face view of the locking lug;

Fig. 10, is a detached perspective view of the spring pawl and pointer;

Fig. 11, is a detached perspective view of the reinking device;

Fig. 12, is a development of the printing cylinder;

Figs. 13 and 14, are views illustrating modifications of the printing cylinder; and

Fig. 15, is a view showing V shaped teeth on the cylinder.

My improved structure comprises a hollow frame 1 having a base 2 which, in the present instance, is integrally connected therewith by a rear wall 3, and between the upper portion of said frame and the base is a slot 4 for the reception of checks; the position of said checks, when placed in said slot, being determined by a suitable gage 5.

Mounted in the upper portion of the frame is a printing cylinder 6 having a plurality of type lines 7 arranged longitudinally of the axis of the same; such type lines having the amounts of the check or amounts in excess of which the check should not be paid. The cylinder is secured to a shaft 8 having at the outer end an operating hand wheel 9.

This shaft is mounted eccentrically in bearings 10, preferably ball bearings, journaled in apertures 11 formed in the sides of the frame 1. An impression handle 12 is attached to the bearings so that, on moving the handle, the type cylinder is moved toward or from the platen 13. As the cylinder is moved toward the platen it will have a slight rolling motion due to the eccentric mounting of the shaft; the position of the bearings being such that proper contact of the line of type desired will be made with the platen 13. Mounting the shaft in eccentric bearings allows the cylinder to be turned to the proper position, and on turning the eccentric by the handle the type cylinder is moved bodily toward the platen to make an impression.

For the purpose of returning the cylinder and its operating handle to the inactive position, I preferably provide a helically coiled spring 15, one end of which is connected to the cylinder, while its opposite end is hooked onto a pin or projection on the casing.

Located in the base of the machine is a plate 17 carrying the platen 13, this plate is adjustably mounted in the base so as to regulate the position of the platen in respect to the printing cylinder. Adjusting screws 19 are used in the present instance for making the adjustments, and screws 18 are used to lock the plate after adjustment. The impression platen 13, in the present instance, is a bar having a serrated face and

is secured to the plate 17 by screws 13ª, but it will be understood that the plate 17 may be modified to receive different types of platens.

The platen, in the present instance, has a plurality of serrations forming cutting faces, and these serrations may be made in any manner desirable. In the present instance they are arranged diagonally with respect to the longitudinal line of the plate and are arranged to register with the grooves in the faces of the type of the cylinder.

As mentioned above the hand wheel 9 is secured to the shaft 8 outside of the frame, as shown clearly in Fig. 1, and has figures on its periphery corresponding with the numbers on the type cylinder.

40 is a pointer located on the outside of the frame and the end of this pointer extends over the hand wheel and this pointer is connected to a plate 41 located at the inside of the frame, the connection 42 passing through a slot 43 in the casing; the connection being as near the line of the type face as possible, simply allowing for clearance. Both the plate 41 and the pointer 40 are mounted loosely on the shaft 8 and a click spring 25 is attached to the plate 41 and the engaging pawl of this spring is on a line substantially with the connection 42 and engages the rounded teeth 26 at one end of the cylinder 7. At the opposite end of the cylinder are the teeth 20 which positively engage a lug 21 on the casing when an impression is being made.

By this arrangement the operator on turning the hand wheel can feel the movement of the cylinder and the numbers on the cylinder are so located in respect to the numbers on the hand wheel that, when a certain number is at the pointer 40, the numeral on the cylinder is in proper printing position.

As the impression is made by turning the handle 12, the cylinder and hand wheel are given a slight rolling motion and, due to the particular location of the slot 43 in the frame, the pointer and the click spring will move with the cylinder and hand wheel so that, after the hand wheel is adjusted in respect to the pointer, the movement of the cylinder to printing position will not change the relation of these parts.

In order that the cylinder may be held against rotation when an impression is made, I provide a fixed cam lug 21 on the casing adapted to engage the toothed end 20 of the cylinder. The teeth are abrupt on one side and inclined on the opposite side, similar to saw teeth, but they may be V-shaped if desired. The lug 21 is inclined vertically, as in Figs. 7 and 9, so that, when an impression is made, the teeth of the cylinder will first engage the narrow portion of the lug and will move longitudinally on its shaft as it continues its movement toward the platen 13, the spring 25 at the opposite end of the cylinder allowing this movement. The tension of the spring is increased to such an extent that when an impression is made the cylinder is rigidly held against any rotating movement or longitudinal movement, so that the impression will be perfect. This is especially advantageous where a movable platen is used, such as illustrated in the patent granted to me on the 16th day of January, 1917, No. 1,213,049.

When the type of the cylinder have inclined grooves which coöperate with similarly inclined teeth on the platen, it is necessary to secure accurate registry of the parts. For this purpose the teeth 20 at one end of the cylinder have one side inclined parallel with the inclination of the grooves in the face of the type. In the present instance, the cylinder is provided with a series of forty ratchet teeth, a single tooth for each line of type, so that when an impression is made the tooth of the line of type in printing position engages the fixed cam 21 and justifies the cylinder so as to bring its grooves in proper alinement with the teeth of the platen, insuring accurate registry. Consequently, there is no danger of damaging the face of the type.

In Fig. 12, I have shown a printing drum having forty teeth and the grooves of the type are parallel with the inclined surfaces of the teeth. It is not necessary to have the same number of teeth as type faces, as in Fig. 13 I have illustrated an arrangement in which only one tooth is provided with a long inclined surface. The inclination is slight but parallel with the grooves in the face of the type. The grooves in the type follow a single helical line extending continuously around the printing drum.

In Fig. 14, I have shown an enlarged view of another arrangement in which a tooth is provided for every four lines of the printing drum, the grooves in the face of the type paralleling the angular portions of the teeth.

For the purpose of inking the various type lines on the drum or cylinder, I provide a felt roll 30 mounted upon a rod or shaft 31 which may be supported by the bent arms of a spring carrier 32 supported by the rod or bar 16. This spring frame is under tension to hold the roller against the type faces of the drum or cylinder at all times.

I also provide means for re-inking the type, in the shape of a brush 35 designed to lie normally adjacent the type face in operative position, as shown in Fig. 4. When the cylinder is moved by the handle to bring the type face into printing position, means are provided whereby the brush will be moved across the face of the type to be put in action and will occupy a position forward

of the cylinder during the printing operation, returning to its normal position as soon as the handle is released. Thus the active line of type in use may be re-inked at each successive operation of the machine, so that, should it be necessary or desirable to use the same line repeatedly, the brush will carry enough ink to insure proper inking of said line. Incidentally the brush keeps the type clean, as it brushes the surfaces of the type at each movement of the impression handle.

The brush 35 is carried by a suitable frame 36 journaled on the shaft, and this frame has a cam slot 37 at one end for engagement by a fixed pin 38 carried by the frame 1; the relation being such that when the handle is moved the frame 36 will be actuated by said pin to lift the brush in front of the printing drum, as shown in Fig. 5. The outside of the casing is preferably provided with stops 39 and 39[a] to limit the movement of the impressing handle in both directions.

It will be understood that the serrations or teeth of the type of the printing drum, when brought into contact with a check, draft or other paper to be marked and disposed over the platen, will cut or abrade the paper, and that by reason of the inking of such type such ink will be deposited in the cut or abraded portions. The character of the co-acting cutting members is immaterial, so long as cutting is effected. The teeth may be V-shaped, or they may have a vertical face, that is to say, at right angles to the longitudinal axis of the drum with an inclined face directly adjacent such vertical face, or they may be of any other desirable character.

When a cylinder is used having smooth faced type which act in conjunction with a platen having movable sections which open up the fibers of the paper, such as that illustrated in the patent referred to above, the shape of the teeth 20 on the end of the cylinder is immaterial so long as the cylinder is held rigidly by the lug 21 during the printing operation, insuring an accurate impression and holding the cylinder against any movement caused by the lateral movement of the sections of the platen.

I claim:

1. In a printing apparatus, the combination of a base element, a platen carried thereby, a member pivoted with respect to said base, a printing drum carried by said pivoted member eccentrically to the axis thereof, said member being constructed to permit movement of the printing drum with respect to the platen, means for moving said member to bring the printing drum into position to engage the platen, means for restoring said member and the printing drum to the normal position, and means for imparting longitudinal movement to the printing drum as the same is being moved to and from the printing position.

2. In a printing apparatus, the combination of a base element, a serrated platen carried thereby, a member journaled with respect to said base, a printing drum fixed to said member eccentric to the axis thereof, said member being rotatable to bring the printing drum into coaction with the platen, and a cam carried by the base element for imparting longitudinal movement to the printing drum as said drum is being moved to the printing position.

3. In a printing apparatus, the combination of a frame, a platen carried thereby, a handle, journals for said handle mounted in the frame, a printing drum carried by said journals and mounted eccentrically with respect to the axis thereof, a cam for imparting longitudinal movement to said printing drum as the same is moved to the printing position, a spring for imparting longitudinal movement in the opposite direction as said printing drum is being lifted from the printing position, and a coiled spring connected with the journals of the handle for restoring the handle and drum to the normal position.

4. In a printing apparatus, the combination of a base element, a platen carried thereby, a handle journaled with respect to said base, a printing drum carried by said journals eccentric to the axis thereof, said journals being movable by the handle to bring the printing drum into contact with the platen, means for moving said printing drum longitudinally as it is brought into printing position and removed therefrom, type carried by said drum and having their faces serrated at an angle with respect to the longitudinal axis of the drum, and a projection on the end face of the drum in line with said type cuts.

5. In a printing apparatus, the combination of a frame having a base; a platen mounted in the base; a rotatable member mounted in each side of the frame; a handle connected to said rotatable members so that they will turn with the handle; an axle journaled eccentrically in the rotatable members; a printing drum mounted on the axle; and means for returning the printing drum to its normal raised position when the handle is released.

6. In a printing apparatus, the combination of a frame, a base therefor, a notched platen carried by said base, a drum having printing characters mounted within said frame, the printing characters of said drum being notched to co-act with the notches of the platen, and means for moving the drum vertically and longitudinally with respect to the frame to bring the same into printing registry with the platen.

7. In a printing apparatus, the combination of a frame, a base therefor, a notched platen carried by said base, a drum having printing characters mounted within said frame, said printing characters coacting with said platen, a guide mounted externally of the frame for indicating the printing line desired, a stop for the printing drum, a cam guide for displacing the printing drum longitudinally with respect to the frame when moved to the printing position, and a handle journaled eccentrically with respect to the axis of said printing drum for moving the latter to the printing position.

8. In a printing apparatus, the combination of a frame having a base; a serrated platen carried thereby, a rotatable printing drum mounted within the frame and movable into and out of engagement with the platen, and means carried by the frame for imparting a longitudinal movement to the drum as the latter is being moved to printing engagement with the platen.

9. In a printing apparatus, the combination of a frame having a base, a serrated platen carried thereby, a rotatable printing drum mounted within said frame and movable into and out of engagement with the platen, and a cam carried by the frame for engagement with the drum to impart longitudinal movement thereto as the drum is being moved to printing engagement with the platen.

10. In a printing apparatus, the combination of a frame having a base, a serrated platen carried thereby, a rotatable printing drum mounted within said frame and movable into and out of engagement with the platen, means carried by the frame for imparting longitudinal movement to the drum as the latter is being moved to printing engagement with the platen, and means for restoring the printing drum to its normal lateral position as it is raised from the printing position.

11. In a printing apparatus, the combination of a frame having a base, a serrated platen carried thereby, a rotatable printing drum mounted within said apparatus and movable into and out of engagement with the platen, a cam carried by the frame for engagement with one end of the drum to impart longitudinal movement thereto as the drum is being moved to the printing position, and a spring acting upon the opposite end of the drum for restoring it to its normal longitudinal position when raised from the printing position.

12. The combination in a printing device, of a platen, a cylinder, means for moving the cylinder toward the platen to make an impression, means for turning the cylinder, said cylinder having teeth at each end, a spring click bearing against the teeth at one end of the cylinder and acting when the cylinder is turned, and a fixed lug on the casing arranged to engage the teeth on the opposite end of the cylinder when the impression is being made.

13. The combination in a printing device, of a frame, a platen, eccentric bearings in the frame, a shaft mounted in the bearings, a cylinder mounted on the shaft and having teeth at each end, means for turning the shaft, a spring pawl engaging the teeth at one end of the cylinder and acting as a detent to temporarily hold the cylinder in position, a fixed cam lug on the frame arranged to engage the teeth at the opposite end of the cylinder so that when the cylinder is moved to make an impression it will yield longitudinally and positively engage the lug.

14. The combination in a printing device, of a base; a fixed overhanging frame spaced from the base so as to form a slot for the insertion of a check, or other paper; a platen carried by the base; a cylindrical bearing mounted in each side of the frame, the two bearings being connected; and a handle for operating the bearings so that they will turn in unison; a shaft extending longitudinally through the frame and mounted eccentrically in the bearings; a type cylinder located between the bearings on the shaft; means for turning the cylinder; an inking device located so as to ink the type on the cylinder, the cylinder being moved toward the platen as the bearings are turned by the handle.

In witness whereof I affix my signature.

JOHN WHITAKER