B. F. JOLINE.

PRINTING MACHINE.

APPLICATION FILED AUG. 8, 1917.

1,262,205.

Patented Apr. 9, 1918.

Fig. 1.

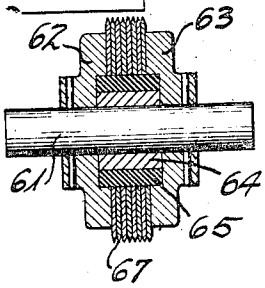


Fig. 2.

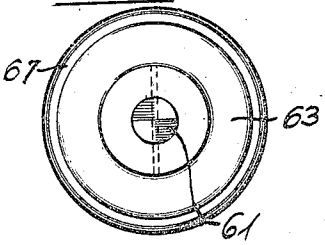


Fig. 3.

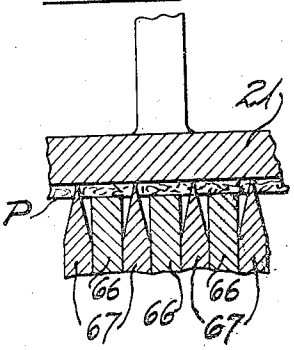


Fig. 6.

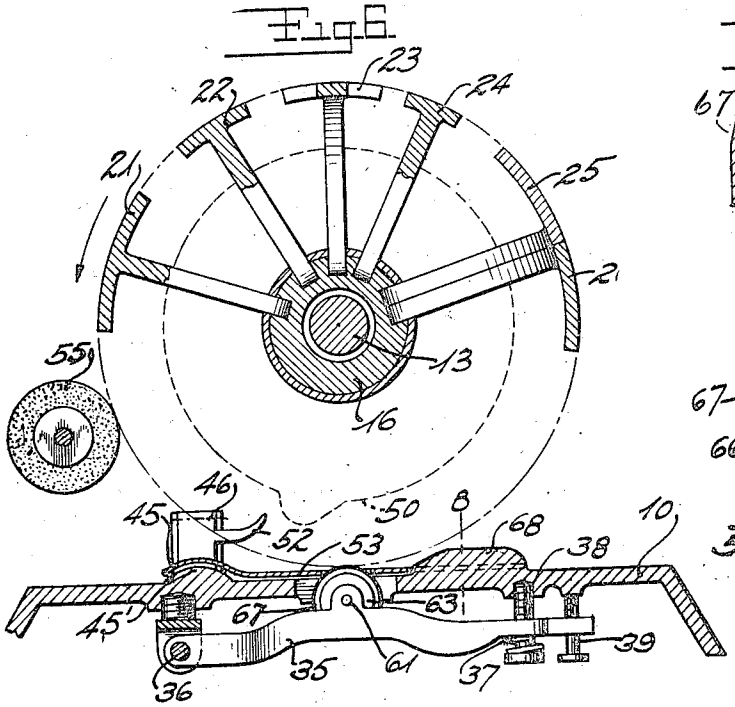


Fig. 4.

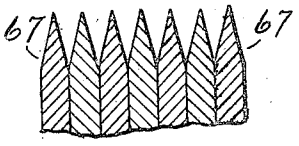


Fig. 5.

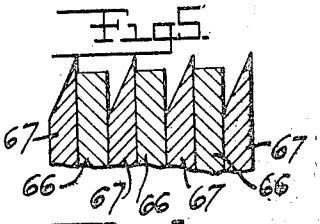


Fig. 8.

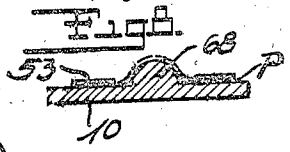
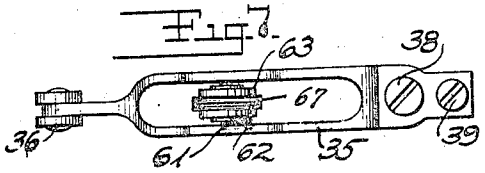


Fig. 7.



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PRINTING-MACHINE.

1,262,205. Specification of Letters Patent. Patented Apr. 9, 1918.

Application filed August 8, 1917. Serial No. 184,995.

To all whom it may concern:

Be it known that I, BENJAMIN F. JOLINE, a citizen of the United States, and a resident of Tottenville, county of Richmond, State of New York, have invented certain new and useful Improvements in Printing-Machines, of which the following is a specification.

This invention relates to a printing machine particularly of the type used in protecting checks or other negotiable paper, in which the paper is cut to prevent erasures.

One of the objects of the invention is to provide a simple and efficient means by which the paper can be cut with a minimum disarrangement of the surface, and yet at the same time so effectively as to permit the ink to penetrate the fibers of the paper to prevent erasure.

With this and other objects in view my invention consists of certain novel features of construction, combination and arrangement of parts as will be more fully pointed out and described in the appended claims.

In the drawings, Figure 1 represents a sectional elevation much enlarged of my novel impression member in the form which I have chosen for illustrative purposes and Fig. 2 represents a side elevation of the same;

Figs. 3, 4 and 5 are much enlarged sectional views of variations in my knife arrangement;

Fig. 6 is a sectional elevation of my knife arrangement;

Fig. 7 is a bottom view of the impression roller holding arrangement of Fig. 6; and Fig. 8 is a section on the line 8—8 of Fig. 6.

The corresponding parts are referred to both in the specification and drawings by similar reference characters.

I have shown my present arrangement in connection with the printing machine of my prior Patent #1,202,393 granted October 24, 1916, so much of the machine shown in that patent being here reproduced as is necessary to illustrate the coöperation of my improvements therewith.

Referring particularly to Fig. 6, 13 is a stationary shaft on which is loosely mounted a hub 16 carrying a plurality of printing segments 20 to 26 inclusive, these segments being provided with a series of type forms and the segments being arranged to swing so that any one of these type forms on any segment can be brought into proper printing relation with any of the printing lines on any of the other forms. The hub 16 is rotatable in the direction of the arrow shown in Fig. 6 and an inking roller 55 is provided to ink the line of type to be printed as the hub 16 is rotated.

10 is the base of the machine provided with a member having a shaft 36 carrying a lever 35 and supported by a screw 38 provided with a spring 37. The downward position of the lever 35 is controlled by a screw 39. On the lever 35 is mounted an impression roller to be hereinafter more specifically described. The base 10 is also provided with a projection 45′ and with a paper clamp 45 pivotally connected at 46 to the support 10 and normally held downward in contact with the support 10 by any suitable spring. The cam 50 connected to the hub 16 is arranged to coöperate with a projection 52 on the clamp 45 to raise the clamp when the printing is finished and the parts are returned to their normal position. To the clamp 45 is connected a guard 53 of light metal, which is slotted so as to extend on either side of the impression roll, and as illustrated in Fig. 6, also to extend to a considerable distance beyond the impression point between the printing members.

The mechanism so far described is the same as that shown in my prior Patent #1,202,393 and a further description or illustration is unnecessary to an understanding thereof.

In my present invention I provide a means for cutting or slitting the paper at the point at which the printing takes place, and I have illustrated in Figs. 1 and 2 one form of my novel device for this purpose. 61 is an axle on which is mounted a pair of collars 62, 63 pinned to the axle 61. Surrounding the axle is a sleeve 64 and around the sleeve 64 is a rubber tube 65. Between the collars 62, 63 and on the rubber tube 65 I mount a plurality of very thin circular cutters having sharp edges. In practice these cutters will be between .005 and .015 inch thick. Since the type which I use is approximately 5/32nds of an inch in width, it will be seen that many more of these cutters than are illustrated in Fig. 1, will be assembled in the width of the line of printing.

I have found that any one of several forms of assemblages of these cutting knives

are effective, and preferably I space the series of knives apart with a series of circular disks which may be of the same diameter as the cutters, or slightly less in diameter. An arrangement in which nothing but cutters are used for the impression surface is shown in Fig. 4, while in Figs. 3 and 5 an arrangement in which disks are interposed between the cutters is shown.

As shown in Fig. 3 the disks 66, which in normal position are of the same diameter as the knives 67, have been pushed downward against the resiliency of the rubber tube 65 by the paper P which is passing between the smooth hard-faced type on the segment 21 and the edges of these disks. The sharp edges of the cutters 67 cause them to cut through the paper until the hard surface of the type is reached.

I have found that the disks 66 need not be of the same diameter as that of the cutters 67 and such an arrangement is shown in Fig. 5 in which this difference in the radii of the disks and the cutters will be somewhat less than the thickness of the paper to be cut. This will produce a pressure on the surface of the paper, although not so great, of course, as would be obtained if the disks and cutters were of the same diameter. The cutters may have the edges sharpened, as shown in Figs. 3 and 4, or simply one edge ground, as shown in Fig. 5.

By using my novel cutting arrangement, I have found that there is little or no tendency for the surface of the paper to be raised above the normal after the cutting operation. This is advantageous in that a pile of checks printed with my novel mechanism is of substantially the same thickness after as before being printed.

While I have found that effective work may be done by my novel cutting arrangement when the rubber tube 65 is omitted, I find that the use of such a tube is advantageous even when a roller in which the disks 66 are omitted, is used, for by this means it is possible for each cutter to adjust itself to the proper cutting depth irrespective of any irregularities on the surface of the type segments. When the disks 66 are used, the rubber tube has an additional advantage in that it permits the disks to assume the proper relation according to the thickness of the paper being printed upon.

As an additional means of insuring that the ink placed on the upper surface of the paper will penetrate the slits or cuts made by the cutters on the impression roller, I provide an arrangement by which the paper, as soon as it has been printed, is bent rather sharply around an axis longitudinal of the cuts so as to permit the still fresh ink to more easily enter such cuts and be absorbed by the interior fibers of the paper so as to make erasure more difficult. As a convenient means to accomplish this purpose, I provide a projection 68 on the base 10 and extend the flexible guide 53 so that its two fingers extend one on either side of this projection 68. As shown best in Fig. 8, this serves to bend the paper P around the projection 68 and thus causes the slits made by the cutters 67 to open with the widest part of the opening upward. The freshly deposited ink can therefore have easy access to the interior fibers of the paper.

While I have shown my slitters as mounted so as to make cuts in the direction of the motion of the paper between the printing members, I do not wish to be confined to this particular method. It is obvious that cutters extending parallel to the axis of the impression member may be provided although this method of cutting is not so effective as that which I have illustrated.

I claim:

1. In a printing machine, a rotary printing member having type with smooth hard surfaces, means to ink the type, and an impression roller coöperating with the printing member and having a series of circular cutting knives constructed and arranged to cut continuous slits through the material fed between the printing member and the impression member.

2. In a printing machine, a printing member having type with smooth hard surfaces, and a coöperating impression roller having a series of circular cutting knives each of the knives being resiliently supported for motion crosswise the axis of the roller.

3. In a printing machine, a rotary printing member having type with smooth hard surfaces, and a coöperating impression roller having a series of circular cutting knives spaced apart by a series of cylindrical disks, the diameter of the disks being not greater than the diameter of the knives, said knives being constructed and arranged to cut continuous slits through the material fed between the printing member and the roller, and means to ink the type.

4. In a printing machine, a printing member having type with smooth hard surfaces, and a coöperating impression roller having a series of circular cutting knives spaced apart by a series of cylindrical disks, the diameter of the disks being not greater than the diameter of the knives, each of the knives and each of the disks being resiliently supported for motion crosswise the axis of the roller.

5. In a printing machine, a printing member having type with smooth hard surfaces and an impression roller coöperating therewith, the roller being composed of a shaft, a rubber tube surrounding the shaft and an alternate series of circular knives and circular disks mounted on the rubber tube, the

relative diameters of the knives and disks being such that the knives will slit through the paper passed between the type and the roller while the disks press the paper against the type.

6. In a printing machine, a printing member having type with smooth hard surfaces, and an impression roller coöperating therewith, the roller being provided with a shaft, a rubber tube thereon and a plurality of circular knives on the tube.

7. In a printing machine, a printing member having type with hard smooth surfaces, and a coöperating impression roller having a plurality of independent resiliently supported knives with the edges thereof in the impression surface of the roller.

8. In a printing machine, a rotary type member, an inking device for the type, an impression member provided with cutting edges to cut the paper as it is being printed and means to bend the paper as it passes away from the printing members, to cause the cuts to open to absorb the ink.

9. In a printing machine, a rotary type member, an inking device for the type, an impression member provided with cutting edges to cut the paper through the printed portion with the cuts extending in the direction of the travel of the paper between the members and means to bend the paper as it passes away from the printing members, on an axis parallel to the direction of the cuts, to cause the cuts to open to absorb the ink.

BENJAMIN F. JOLINE.

Witnesses:
GEORGE F. SCULL,
LOUISE M. BRUNS.