Sept. 1, 1936. H. P. ELLIOTT 2,053,070

ROTARY PRINTING APPARATUS

Original Filed May 12, 1933

FIG. 6.

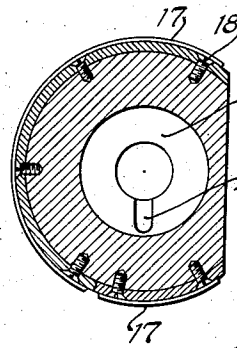
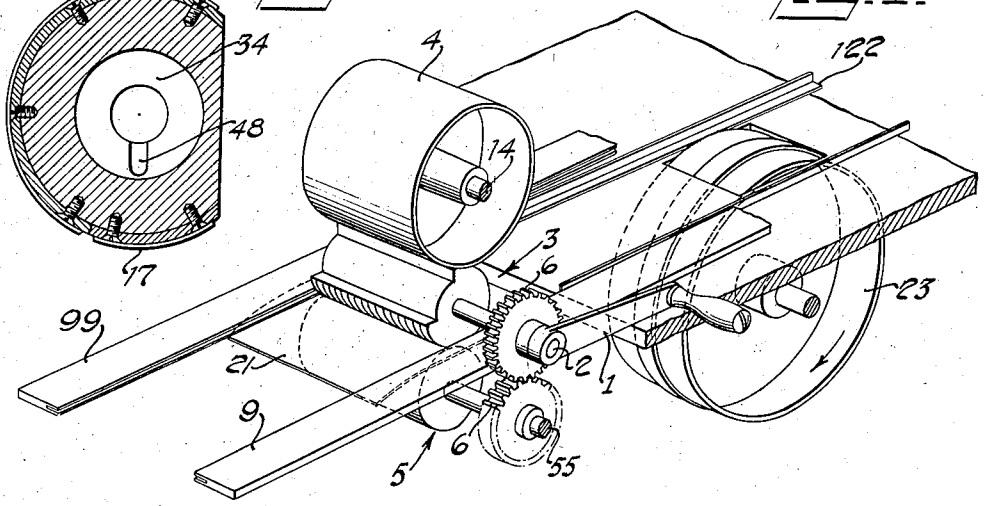


FIG. 1.



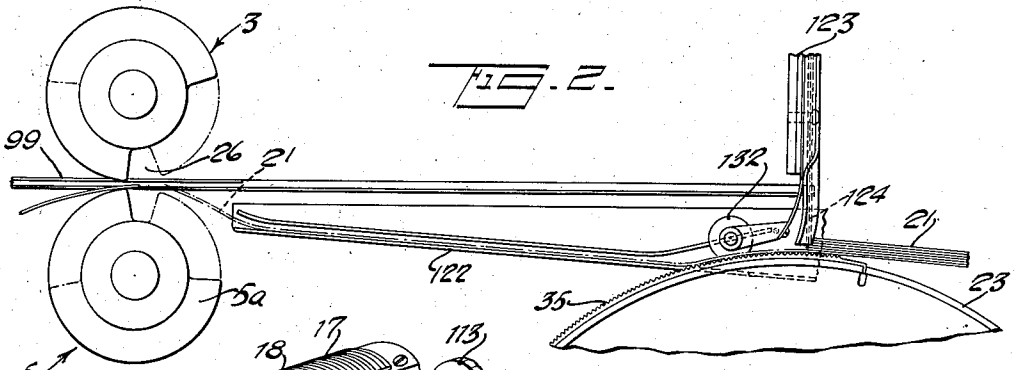


FIG. 2.

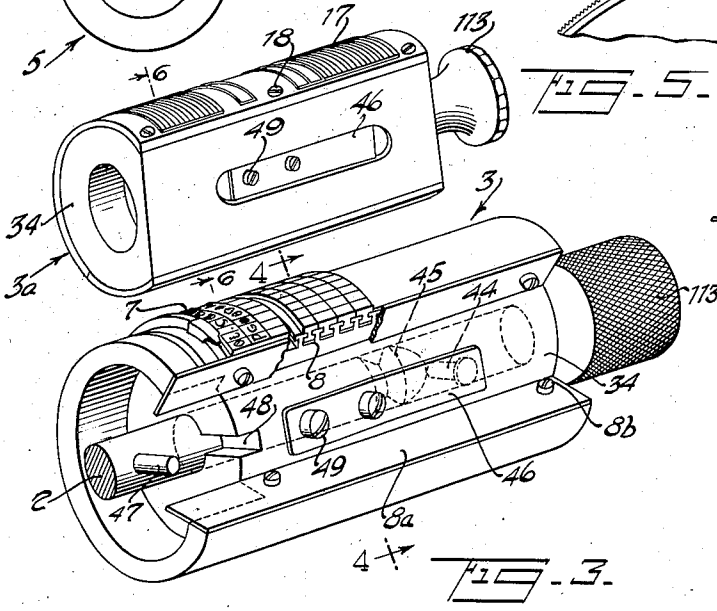


FIG. 5.

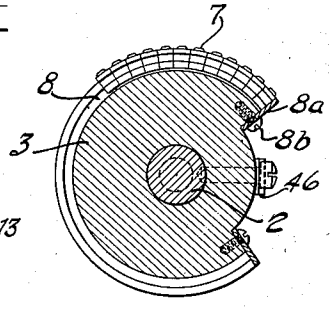


FIG. 4.

FIG. 3.

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UNITED STATES PATENT OFFICE

2,053,070

ROTARY PRINTING APPARATUS

Harmon P. Elliott, Watertown, Mass., assignor to The Elliott Addressing Machine Company, a corporation of Massachusetts

Application May 12, 1933, Serial No. 670,643
Renewed July 6, 1936

5 Claims. (Cl. 101—216)

This application is a continuation in part of my co-pending application on which my Patent No. 1,916,564 was granted July 4, 1933, and the present invention relates to removable, type-carrying sectors which may be inserted in stencil addressing machines of the type shown in said application and also in Patent No. 1,909,910 granted May 16, 1933, on my still earlier application for Addressing and printing apparatus. By substituting such a type-carrying sector for the ink-bearing sector of the apparatus covered by my said patent, the so modified structure may be used as a little printing press to print a message on each of a series of postcards, or for other similar purpose. The type bearing sector may have metal type set removably in grooves or otherwise in its face, or it may have a facing sheet of rubber or similar elastic composition which has been moulded to form (when inked) a printing surface of any desired pattern.

The type and ink bearing sector, and the smooth faced ink bearing sector, being exchangeable one for the other in the machine, constitute the means whereby the character of the printing performed by the machine may be varied, as well as the area covered by the printing done on the successive paper sheets or post cards, or other articles fed to it for printing; and this without necessarily changing, or modifying the action of, any of the other machine parts.

The best forms of apparatus at present known to me embodying my invention are illustrated in the accompanying sheet of drawing, in which

Fig. 1 is a diagrammatic perspective view of a simple hand-operated printing apparatus employing one of the removable type-carrying sectors forming the principal novel feature of the invention.

Fig. 2 is a diagrammatic side elevation of a slightly different form of such an apparatus, with parts broken away.

Fig. 3 is a perspective view, on an enlarged scale, of one form of such type carrying sector bearing removable type, and

Fig. 4 is a cross section on line 4—4 of Fig. 3.

Fig. 5 is a perspective view of such a sector provided with stereotype platen for doing the printing, and

Fig. 6 is a cross section on line 6—6 of Fig. 5, on an enlarged scale.

Throughout the drawing like reference characters indicate like parts.

1 is a hand crank fast on an overhanging shaft 2, on the other end of which is removably mounted a type-carrying sector, generally indicated at 3. The removable mounting and releasable clutch for such sector may be of the construction best shown in Fig. 3, where shaft 2 has a circumferential groove 45 near its free end, with which a radially movable pin 44 set in the sleeve 34, carrying sector 3, may engage; said pin being pressed toward said groove by plate spring 46 fastened to sector 34 by screws 49, 49.

The type-carrying sector 3 cooperates with the lower platen roll, 5 or sector 5a, carried by shaft 55 extending parallel to shaft 2, these two revoluble printing elements being caused to rotate in opposite directions by gearing 6, 6. A lower platen sector 5a shown in Fig. 2 may be substituted for the full faced roll 5 shown in Fig. 1. Two parallel, straight bars 9 and 99 lie in, or slightly above, a plane tangent to 5 or 5a, and, in cooperation with guides 122, make certain that the front end of each card or sheet 21 to be printed is pushed into the open space 26 (see Fig. 2) left between the two sectors when they are in such positions that the card can be grasped by the revolving sectors, or roll and sector, for the printing operation. 4 is an inking roll mounted on a shaft 14, which is above, and parallel to, shafts 2 and 55.

Postcards 21 may be fed one at a time automatically from a stack by a revolving feed drum 23, faced with a roughened rubber band or bands 35, as shown in Fig. 2 and described in detail in my above mentioned patent. 123 is the vertical plate of a magazine in which the stack of postcards 21 may be held, and 124 indicates spring tongues supported by 123 and so adjusted thereon as to permit only one card at a time to be fed by drum 23 into guides 122. Such feeding action is assisted by the spring pressed roller 132.

In the form of type-carrying sector 3 shown in Figs. 3 and 4, the curved face of the sector is provided with circumferential, undercut grooves 8, 8, in which separate type 7, 7, may be slid and retained by plate 8a fastened by screws 8b. Thus the proper selected type may be assembled with which to print any desired message, or other legend, on the postcards 21. The lines of typed matter would then extend circumferential of the sector face, which is important as producing a continuous feeding action on the card or sheet being printed.

In the modification shown in Figs. 5 and 6, the ink-carrying sector 3a comprises the stereotype plates 17, 17, on the faces of which the various lines of type have been molded in the well known way, said plates being fastened to the sleeve 34 by screws 18.

In both forms the sleeve **34** has a radially extending slot **48** cut in its open end to receive the radially extending pin **47** set in shaft **2**, whenever the sector is slid onto the free end of said shaft. Also, said sleeve is provided with a knurled projection **113** at its other end which can be conveniently grasped by the operator when pulling one sector off from the driving shaft **2**, or when installing another different sector thereon. The plates **17**, **17**, might be molded from a rubber composition or other plastic material which will set.

In operation the proper type for printing the desired reading matter is set in sector **3**, or cast on a plate or plates **17**, **17**, to be fastened to sector **3a**, and the sector so prepared is slipped on the shaft **2**, thereupon becoming automatically clutched thereto. The operator then turns handle **1** in the direction indicated by the arrow and the type, inked by roll **4**, are pressed upon the cards or sheets fed under guide bars **9** and **99** by drum **23**, or by hand, as said articles are pulled between the sectors by the rotation of the latter. The broken line positions of sectors **3** and **5a** shown in Fig. 2 indicate how successive cards **21** may be grasped and printed one at a time as the apparatus is operated, the bars **9** and **99** preventing the advancing front ends of said cards or sheets from being thrown too far upward to ensure their being properly so grasped.

The grooves shown in the inner edges of guide bars or rolls **9** and **99** serve to carry stencils when the apparatus is changed over for printing addresses on the postcards, all in the manner described in my before mentioned Patents Nos. 1,909,910 and 1,916,564.

Whenever the type carrying sector **3** is to be removed or replaced, it will be turned so that the arc-shaped portion of its surface carrying the type **7** or the stereotyped type plate **17** will be out of register with the lower pressure platen **5**, as otherwise the very considerable degree of pressure normally existing between these opposed surfaces would prevent the sector being easily moved in or out. The pressure of the inking roll **4** on the sector **3** is much less than that of the lower platen **5**, so that the sector can be pushed in or out while in contact with said inking roll. Moreover said roll would be mounted on a swinging carriage, such as shown in my Patent No. 1,922,553, dated August 15, 1933, so that it could be easily lifted and held away from sector **3**. Also, as the type-carrying sector and inking roll are each carried by an overhung shaft journaled at the end nearest the gearing **6**, **6**,—as more fully shown and described in my above noted recently issued patents, the sector **3** being slipped onto, or pulled off of, the free overhung end of shaft **2**, as also indicated in Fig. 3 of the present application drawing, it is possible for the operator while grasping crank **1** with his right hand to conveniently slip a sheet of paper on an envelope to be printed and held in his left hand, sideways into the machine beneath the type-carrying sector whenever its cutaway portion **26** is opposite platen **5**, instead of having such sheets or envelopes fed endwise to the printing zone by drum **23**. Furthermore, the fact that there are no rear journal bearings for the overhung shaft permits wide sheets of paper to be fed through the printing zone by drum **23**, or otherwise.

Having described my invention, I claim:

1. In a printing apparatus comprising a lower, revoluble platen, an inking roll located above said platen and revoluble upon an overhung shaft parallel to the axis thereof, a revoluble overhung shaft journaled between the two above-mentioned elements and extending parallel to the axes thereof, gearing for synchronously rotating said platen and said shaft in opposite directions located at the journal bearing ends thereof, and means for guiding a sheet or card to be printed in a plane tangent to the curved surface of said platen, the combination, with said above described apparatus, of a type-carrying sector adapted to be slid on and off said shaft and to rotate with the arc-shaped portion of its surface in contact with said inking roll when on said shaft, and means for releasably locking said type-carrying sector to said shaft so as to rotate therewith; whereby said type-carrying sector can be quickly removed or replaced whenever its said arc-shaped portion of its surface is out of registry with the surface of said lower platen by slipping it off of or on to the free end of said overhung shaft.

2. A combination such as defined in claim 1, in which said type carrying sector has a series of parallel undercut grooves in its curved surface, and a plurality of type set in said grooves and locked therein.

3. A combination such as defined in claim 1, in which said type carrying sector has a series of parallel undercut grooves in its curved surface running circumferentially thereof, and a plurality of type set in said grooves and locked therein.

4. A combination such as defined in claim 1, in which said type carrying sector comprises a curved stereotype plate fastened to the curved surface of said sector.

5. In a printing apparatus comprising a lower, revoluble platen, an inking roll located above said platen and revoluble upon an overhung shaft parallel to the axis thereof, a revoluble overhung shaft journaled between the two above-mentioned elements and extending parallel to the axes thereof, gearing for synchronously rotating said platen and said shaft in opposite directions located at the journal bearing ends thereof, and a pair of parallel straight bars located in a plane tangent to the curved surface of said platen adapted to limit the upward movement of the front edge of any card or sheet being fed toward said platen, the combination, with said above described apparatus, of a type-carrying sector adapted to be slid on and off said shaft and to rotate with the arc-shaped portion of its surface in contact with said inking roll when on said shaft, and means for releasably locking said type-carrying sector to said shaft so as to rotate therewith; whereby said type-carrying sector can be quickly removed or replaced whenever its said arc-shaped portion of its surface is out of registry with the surface of said lower platen by slipping it off or on to the free end of said overhung shaft.

HARMON P. ELLIOTT.