Sept. 3, 1929. J. G. KINGS 1,726,841

DUPLICATING MACHINE

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Fig. 1.

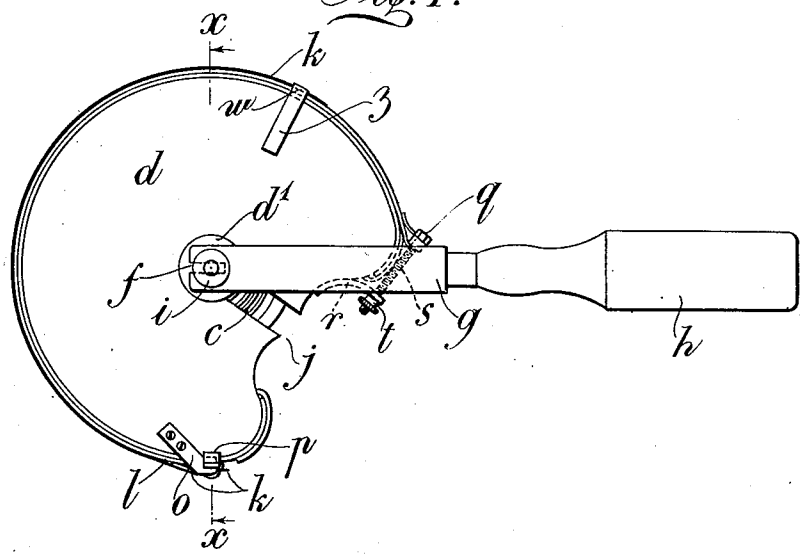

Fig. 2.

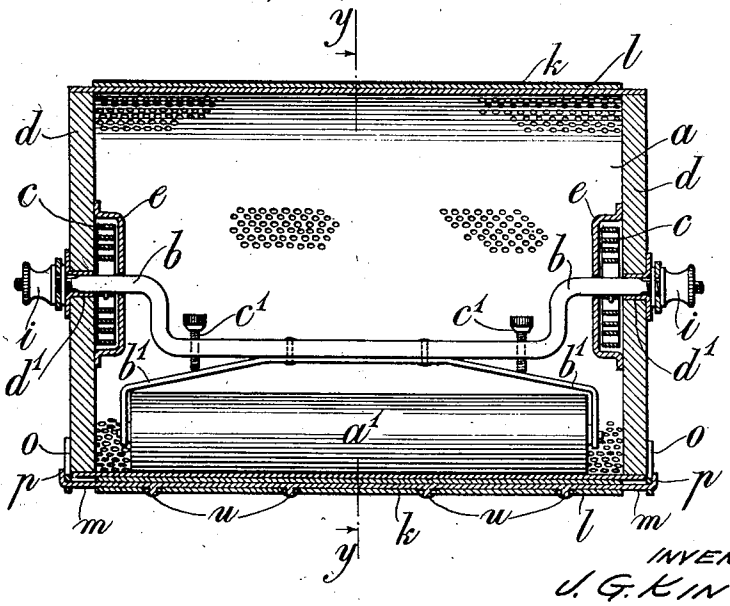

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Fig. 3.

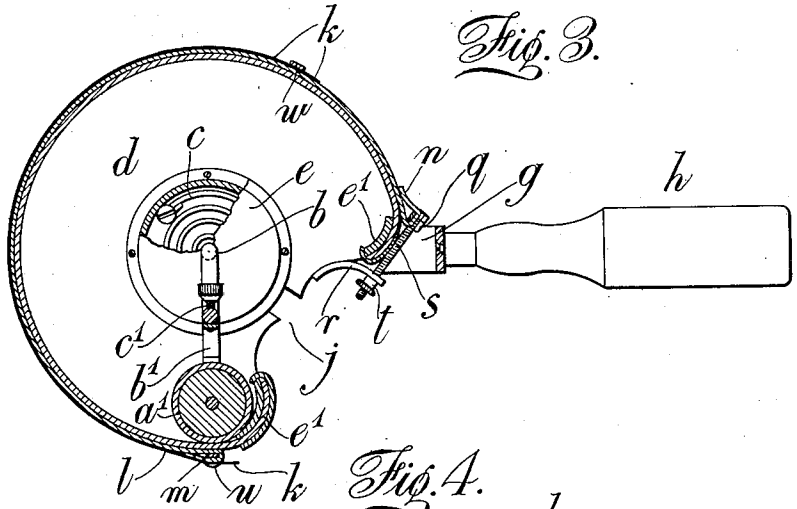
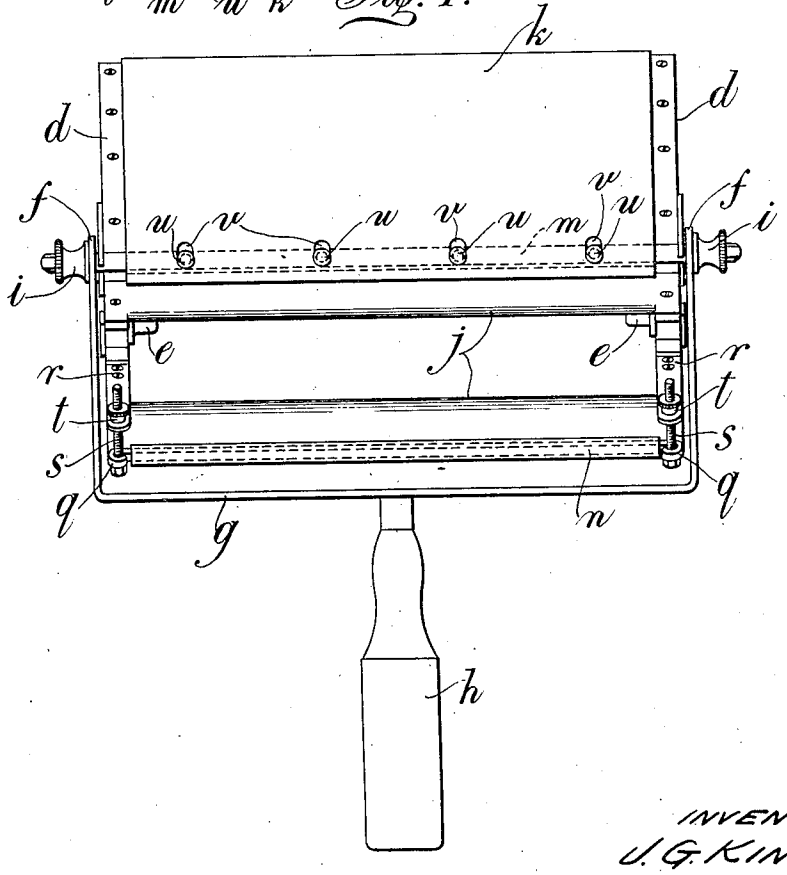


Fig. 4.



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Patented Sept. 3, 1929. 1,726,841

UNITED STATES PATENT OFFICE.

JOHN GEORGE KINGS, OF RUGBY, ENGLAND.

DUPLICATING MACHINE.

Application filed February 27, 1928, Serial No. 257,415, and in Great Britain March 18, 1927.

This invention relates to duplicating machines for printing circulars, letters and the like and it has for its primary object to provide a portable hand operated machine of improved and extremely simplified construction.

According to this invention the improved duplicating or printing machine comprises a perforated hollow cylindrical roller of metal or other material mounted to turn against the action of spring means with respect to a shaft adapted to be connected to a frame or handle, the said roller being adapted to permit a perforated stencil to be passed over the same and detachably secured thereto, and an inking roller carried by the said shaft, the said inking roller being carried by the said shaft in a manner to be yieldable relatively thereto, and/or the said shaft being so mounted as to be yieldable with respect to the perforated roller to permit of the inking roller being held yieldingly relatively to the inner face of the said perforated roller.

In order that the said invention may be clearly understood and readily carried into effect the same will now be described more fully, by way of example, with reference to the accompanying diagrammatic drawings, in which:—

Figure 1 is an end elevation of a duplicating or printing machine embodying the invention,

Figure 2 is a longitudinal section taken on the line x—x, of Figure 1,

Figure 3 is a cross-section taken on the line y—y, of Figure 2, and

Figure 4 is an inverted plan view.

Referring to the drawings, the machine comprises a perforated hollow cylindrical roller a which may be of any suitable construction, the said roller being adapted to be moved angularly relatively to a shaft b, against the action of spring means, such as the spiral springs c, see particularly Figures 2 and 3, for returning the roller to normal position after each operation. The said springs are each secured at one end thereof to the shaft b and at the other end to a corresponding end wall d of the roller, the end walls also having secured thereto protecting casings or covers e for the springs. The ends of the shaft b extend beyond the end walls of the roller a and are reduced to provide diametrically opposed flat faces to cooperate with the slotted ends f, see particularly Figure 1, of a yoke, or the like g, having a centrally disposed handle h secured thereto to permit the roller to be manipulated, the slotted ends of the yoke affording a convenient means for enabling the manipulating handle and relative parts to be readily attached to or detached from the shaft b. The reduced ends of the said shaft are also screwthreaded for the reception of nuts i to secure the yoke g and handle h detachably to the shaft. The circumferential surface of the roller a is shown interrupted at j to form a longtiudinal gap or opening affording access to the interior of the said roller. k denotes the stencil and l a sheet of felt or textile material arranged preferably between the stencil and the roller a. The said sheet l may be detachably secured as by means of longitudinal bars m, n engaging corresponding loops at the ends of the sheet, the bar m co-operating at the ends thereof with slotted elements o secured to the end walls of the roller a, the said bar having turned-up end portions p to prevent longtiudinal movement of the bar with respect to the roller a. The bar n is provided with eyes q, and lugs r or the like are secured to the roller a, through which screws s are passed and engaged by nuts t. The stencil k may be detachably secured in position as by means of the heads of spaced studs u secured to the bar m and passed through holes in the loop of the sheet l with which the bar m engages, and through corresponding holes v in the stencil adjacent to one end thereof, the other end of the stencil being conveniently secured as by means of a clamping bar w having the ends z thereof in yieldable engagement with the end walls of the roller a. For inking purposes, there is provided within the roller a a relatively smaller roller a' which is spring-controlled as by means of yieldable supporting elements b' secured to a cranked portion of the shaft b and adapted to be adjusted to the pressure required by means of screws c' in threaded engagement with the said cranked portion. The roller a' is so mounted that as the printing device is used or moved over the surface of the paper or the like it will force or cause the ink to pass through the perforations in the roller a and through the porous wax stencil k. In lieu of, or in addition to, the adjustable means above described with reference to the inking roller a', the said roller may be yieldably supported as by means of rubber or other resilient

rings (not shown) disposed around the shaft bearings d' and held in position by cover plates or the like attached to the end walls of the perforated roller a, the flanges on the bearings d', in the example shown, being preferably dispensed with, and the roller a' being carried by projecting arms or the like associated with the shaft for the roller a, the arrangement being such that downward pressure on the handle when the device is being used will cause the roller a' to be pressed resiliently against the inner surface of the perforated roller a. The roller a' may be felt covered to hold the ink, or in some cases a felt or a plain rubber or like roller may be employed in conjunction with the sheet l of felt or textile material arranged between the waxed stencil k and the perforated cylindrical roller a. Suitable limiting stops may be provided either on the roller a, or on the means for manipulating the device, to determine the angular movement of the roller a. The roller a is shown provided at Figure 3 with longitudinal strips e' of felt or the like, which strips may co-operate with the inking roller a' and serve as stops or cushions therefor.

It will thus be manifest that by the present invention, there is provided a simple device which will serve all the purposes of the costly machines at present commonly employed for duplicating letters or the like.

What I claim is:—

1. A portable printing machine comprising a hollow perforated roller adapted to have ink forced through the perforations and adapted to carry a stencil, a shaft extending axially of the roller and centrally offset from the axial plane within the roller, an inking roller for cooperation with the inner surface of the perforated roller to force the ink through the perforations, a resilient connection between the inking roller and the offset portion of the shaft, and means carried by the shaft for adjusting the tension of the resilient connection.

2. A portable printing machine comprising a hollow perforated roller adapted to have ink forced through the perforations and adapted to carry a stencil, a shaft extending axially of the roller and centrally offset from the axial plane within the roller, an inking roller for cooperation with the inner surface of the perforated roller to force the ink through the perforations, a spring strip secured to the offset portion of the shaft and terminally supporting the inking roller, and screws threaded in the offset portion of the shaft and bearing on said spring strip to provide for varying the pressure of the inking roller on the inner surface of the hollow roller.

3. A portable printing machine comprising a hollow perforated roller adapted to have ink forced through the perforations and adapted to carry a stencil, a shaft extending axially of the roller and centrally offset from the axial plane within the roller, an inking roller for cooperation with the inner surface of the perforated roller to force the ink through the perforations, a handle connected to said shaft to cause angular movement of the hollow roller when in contact with the surface and under operating pressure on the handle, and a spring connection between the hollow roller and shaft tensioned in the operating movement of the hollow roller to return the hollow roller to normal position on release of the operating pressure.

In testimony whereof I have hereunto signed my name.

J. G. KINGS.