Jan. 27, 1931. G. E. CREED 1,790,407

STENCIL DUPLICATING MACHINE

Filed Dec. 18, 1929 5 Sheets-Sheet 1

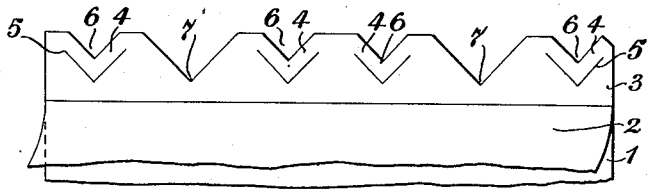


Fig. 1.

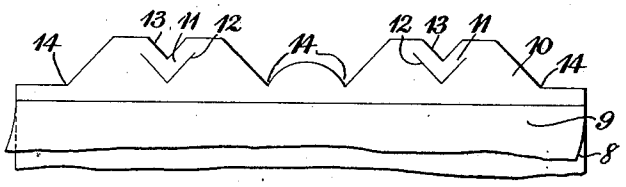


Fig. 2

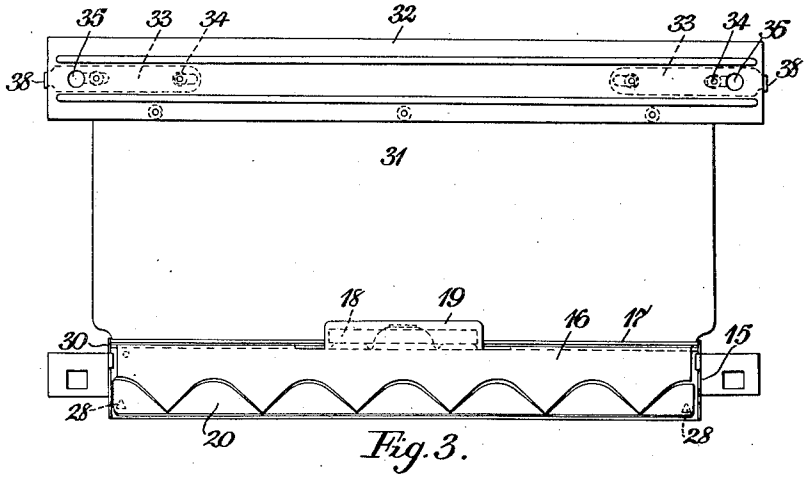


Fig. 3.

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STENCIL DUPLICATING MACHINE

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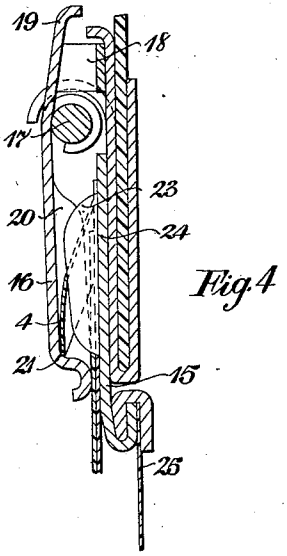


Fig. 4

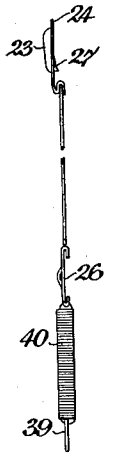


Fig. 6.

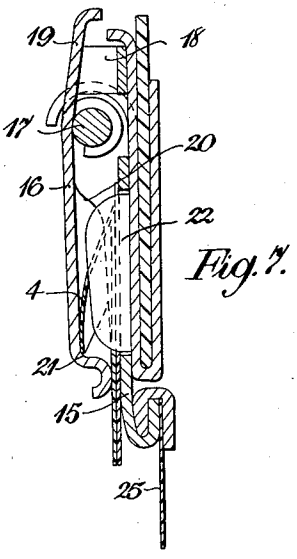


Fig. 7.

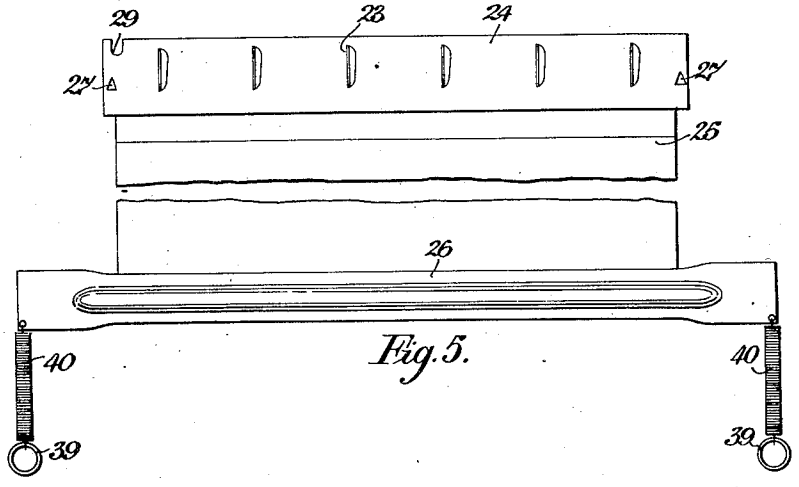


Fig. 5.

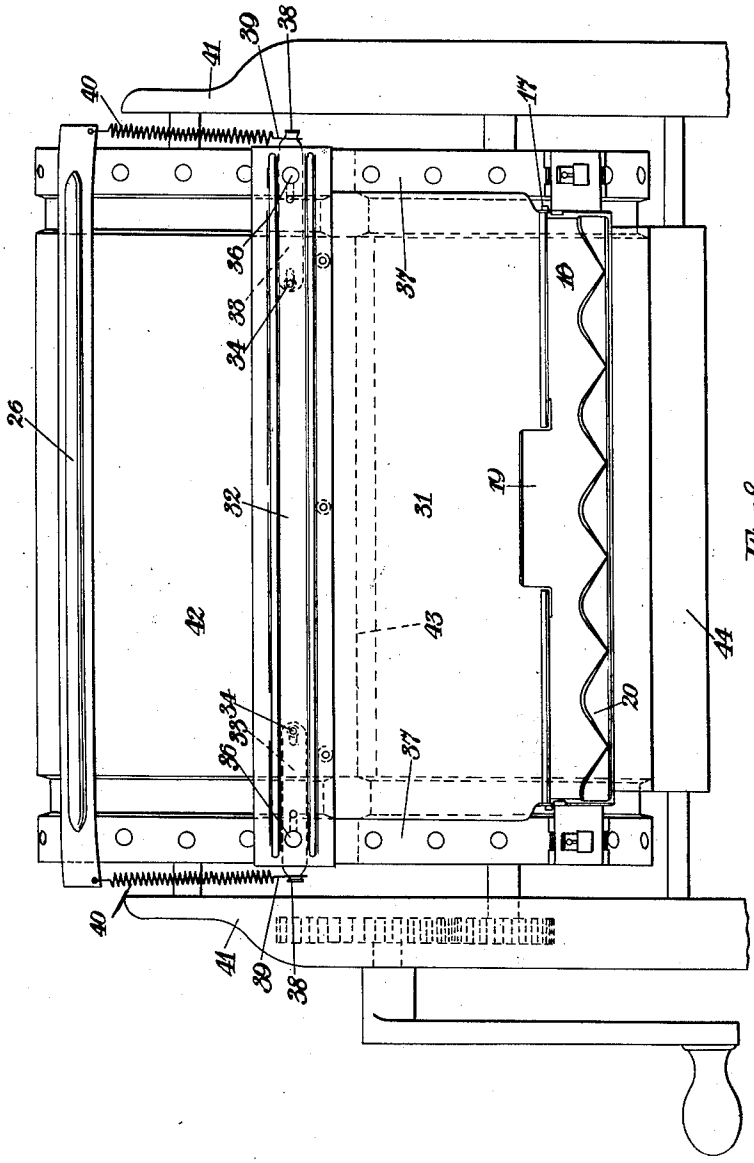
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STENCIL DUPLICATING MACHINE

Filed Dec. 18, 1929 5 Sheets-Sheet 3



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STENCIL DUPLICATING MACHINE

Filed Dec. 18, 1929 5 Sheets-Sheet 4

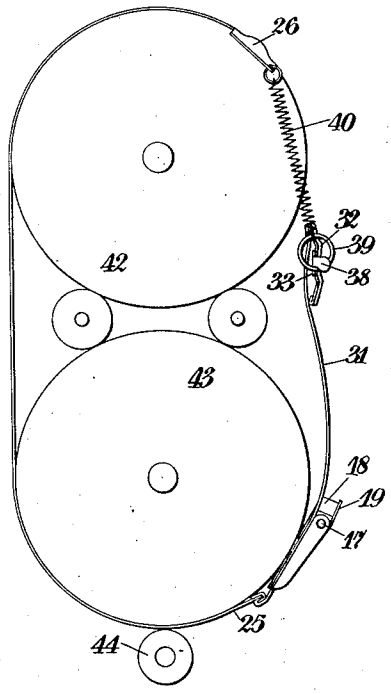


Fig. 9.

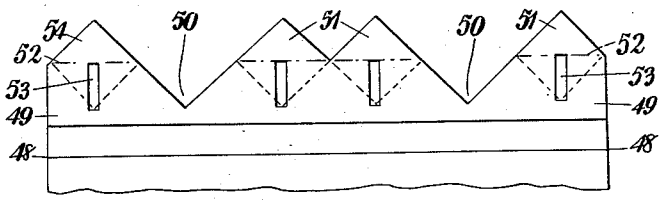


Fig. 12.

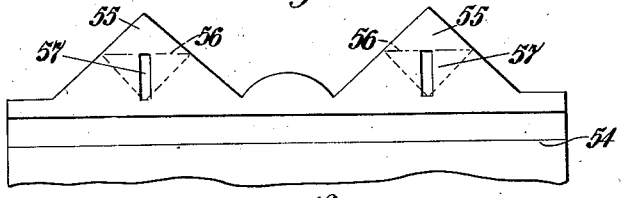


Fig. 13.

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STENCIL DUPLICATING MACHINE

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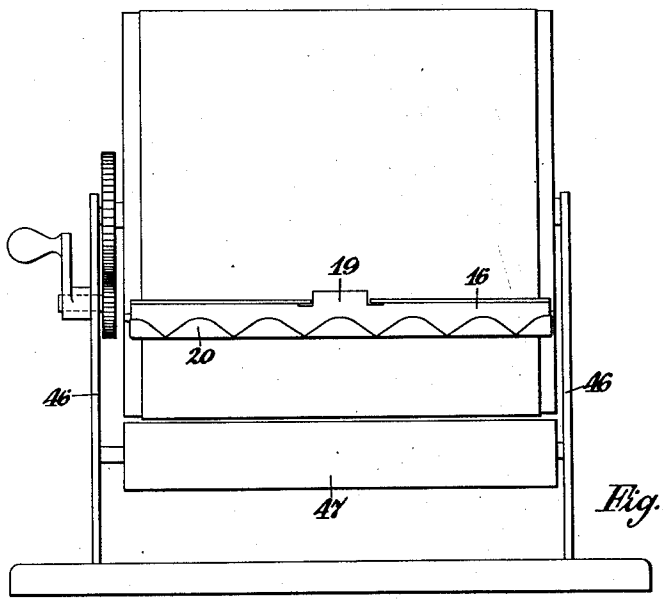


Fig. 10.

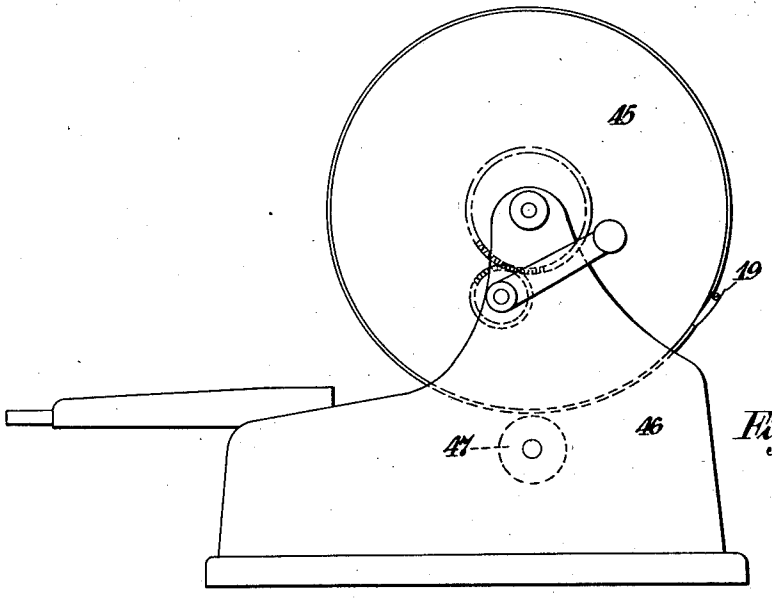


Fig. 11.

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Patented Jan. 27, 1931 1,790,407

UNITED STATES PATENT OFFICE

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STENCIL DUPLICATING MACHINE

Application filed December 18, 1929, Serial No. 415,106, and in Great Britain December 20, 1928.

This invention relates to stencil-duplicating machines.

Hitherto the general practice has been to provide in the stencil heading, which is normally a piece of relatively thick paper gummed or otherwise secured to the stencil sheet proper, a plurality of holes or slots which engage pins provided upon a rigid member or stencil fastening means secured to or forming part of the duplicating machine.

In certain cases the holes have been in the form of keyhole slots while the pins have been under-cut so that after the heads of the pins have passed through the enlarged portions of the slots the stencil may be moved relatively to the fastening means while still engaged thereby in order that the heads of the pins may prevent the stencil heading and, therefore, the stencil from becoming detached.

The object of the present invention is to facilitate the engagement of the stencil with the fastening means on the duplicating machine.

The invention consists broadly in a stencil fastening means normally secured to or forming part of the duplicating machine comprising means adapted to displace one or more tongues, flaps or equivalent elements formed in the stencil heading and an abutment against which the fore or outer edge of such tongues, flaps or equivalent elements will be caused to bear and thus operate to engage the stencil heading with the fastening means.

The abutment is preferably so formed that, in view of the shape of the fore or outer edge of the tongues, flaps or equivalent elements tension on the stencil in a direction parallel with its direction of travel when on the machine will assist in appropriately positioning or centring the stencil sheet.

Preferably, in accordance with the invention, the stencil fastening means constitutes a housing for the greater portion of the stencil heading, the abutment being located in the housing and means being provided whereby the tongues, flaps or equivalent elements may be definitely displaced within the housing to engage against the abutment and thereby ensure the stencil being secured in position.

Conveniently, in accordance with the invention, the fastening means comprises an upper and a lower member between which the stencil heading may be inserted, a connection between the upper and lower members adapted to permit the same to be moved relatively to one another to facilitate the insertion of the stencil heading, abutment members on the upper member and means adapted to constrain the upper member towards the lower member to cause or assist in causing the flaps or tongues on the stencil heading to be engaged against the abutment members.

In one construction, in accordance with the invention, the fastening means comprises a lower member dimensioned to extend the whole width of the inking means of the duplicating machine, an upper member hinged thereto on an axis parallel with the longer edges of said members, an abutment provided on the upper member and within the space between the members, means adapted to constrain the free edges of the two members to approach one another and means located between the two members adapted positively to displace the tongues or flaps on the stencil heading to bring the fore edges of the tongues or flaps into position against the abutment.

The hinged connection between the upper and lower members of the fastening means and the means adapted to constrain the free edges of the two members to approach one another are preferably so designed to enable the free edge of the stencil heading to be pushed between the members, thus moving the upper away from the lower member until when the stencil heading is in position the upper member will descend, thus operating to displace or assist in displacing the tongues or flaps relatively to the remaining portion of the stencil heading and to cause the free edges of the tongues or flaps to bear against the abutment.

On the lower member elevations may be provided adapted to assist in causing the free edges of the tongues or flaps on the stencil heading to bear against the abutment.

Alternatively such elevations or projec-

tions may be provided on the rigid member secured to one end of a sheet of flexible foraminous material which is normally associated with a stencil when mounted on the duplicating machine and is located between the stencil and the inking means of the duplicating machine.

Either the upper or lower member of the stencil fastening means may be arranged to engage the flexible foraminous sheet, for instance, a sheet of silk, usually referred to as the silk carrier. Such a flexible foraminous sheet is normally provided at each of its two opposite ends with rigid members adapted to facilitate its being secured in position on the duplicating machine and to enable the said rigid member to be secured in position on the machine it may be provided with pins or projections adapted to engage holes formed in the lower member of the fastening means or in extensions provided thereon. To facilitate the engagement of the pins or projections with the holes in the lower member of the fastening means spring elements may be provided on the latter.

Such spring elements may each comprise a short length of steel spring one secured to each end of the stencil fastening means in such manner and position that they will operate to force the pins or projections on the rigid member secured to the flexible stencil carrier into the apertures provided on the stencil fastening means.

Alternatively the lower member may be provided with spring elements adapted to engage the stencil fastening means, or any other convenient device for securing such connection may be provided.

The invention will be described further in detail and by way of example with reference to the accompanying drawings, in which:—

Figure 1 is a fragmentary view in elevation of a stencil sheet showing the stencil heading, and

Figure 2 is a similar view of a porous sheet having a heading adapted to be engaged by fastening means in accordance with the invention;

Figure 3 is a view in elevation of the stencil fastening means in accordance with the invention which will normally be secured to or form part of the duplicating machine;

Figure 4 is a corresponding view of a construction incorporating a silk carrier provided on each of its two opposite ends with rigid members as illustrated in front and side elevations, respectively, in Figures 5 and 6.

Figure 7 is a sectional view on a larger scale of an alternative construction of the said means, and

Figure 8 is a front elevation of a generally known type of duplicating machine provided with stencil fastening means as illustrated in Figures 3 to 6 or in Figure 7,

Figure 9 being a corresponding end elevation thereof, while

Figures 10 and 11 are similar views of a duplicating machine of another generally known type provided with stencil fastening means as illustrated in Figures 3 to 6 or in Figure 7.

Figures 12 and 13 are, respectively, fragmentary views in elevation of an alternative form of stencil heading provided on a stencil sheet and a backing sheet respectively.

Referring to Figure 1, 1 represents a portion of the backing sheet of the stencil sheet, 2 a stencil sheet attached thereto, 3 the stencil heading which forms a continuation of the backing sheet which will normally be a sheet of relatively stiff paper doubled over adjacent to one end to provide a reinforced and strengthened portion forming the stencil heading, 4 are tongues or flaps formed in the stencil heading by providing therein V-shaped incisions 5, the top edge of the stencil heading being cut back to form recesses 6 in the vicinity of the incisions to prevent this portion of the heading being distorted in consequence of the displacement of the tongues when the stencil sheet is placed on the stencil-duplicating machine. In addition, deeper recesses 7 are provided in the stencil heading, as illustrated in Figure 1, these recesses being provided in the construction illustrated to enable the stencil sheet to be mounted on the duplicating machine in association with a porous sheet as illustrated in Figure 2.

In Figure 2, 8 illustrates the backing sheet for the porous sheet 9, which may be a sheet of yoshino paper, the backing sheet being provided merely for the purpose of facilitating the handling of a material of the flimsy character of yoshino paper or other suitable highly porous material.

The backing sheet which is engaged with the porous sheet at one end constitutes the heading 10 adapted to be secured to the stencil fastening means of the duplicating machine and this heading is furnished with tongues 11 by forming in the material of the heading V-shaped incisions 12. Adjacent to these incisions recesses 13 are provided in the stencil heading for the purpose explained in connection with Figure 1 and other deeper recesses 14 are provided in the stencil heading. These deeper recesses, as will be seen, are arranged so that, when a structure as illustrated in Figure 1 is superimposed on a structure as illustrated in Figure 2 with the edges of the sheets in alignment, they will not be in register with the deep recesses 7 in the stencil sheet but with the tongues therein, while the deep recesses 7 in the heading of the stencil sheet will be in register with the tongues 11 on the heading of the porous sheet, the purpose of this arrangement being to enable the tongues on the two sheets to be dis-

placed independently of one another in a manner hereinafter to be described.

Referring to Figures 3, 4, and 7, which illustrate the stencil fastening means normally secured to or forming part of the duplicating machine, 15 is the lower member thereof which will be located adjacent to the inking means of the duplicating machine and which extends the whole width thereof and 16 is an upper member hinged to the lower member by the pin 17 and associated with a spring 18 adapted to constrain the free edges of the two members to approach one another, a tongue 19 being provided for moving the upper member relatively to the lower member in opposition to the spring when engaging a stencil or porous sheet with the fastening means.

The upper member 16 is, by a pressing operation, formed with recesses 20, the forward limits 21 of these recesses forming abutments for the tongues on the stencil heading and the heading of the porous sheet.

In the construction illustrated in Figure 7, on the lower member 15 of the stencil fastening means are provided a plurality of tongues 22 certain of which are arranged to displace the tongues on the stencil heading or the tongues in the heading of the porous sheet in the manner shown in this figure thereby causing the forward edge of the tongues 4 or 11, as the case may be, to bear against the forward limits 21 of the recesses in the upper member which form an abutment for the tongues.

In the construction illustrated in Figure 4 the elevations 23 are the equivalents of the elevations 22 in Figure 7 but instead of being formed on the lower member of the stencil fastening means they are formed in the rigid member 24 which is secured to one of the silk carrier 25, the other end of which is secured in the rigid member 26. The member 24 is provided also with projections 27 on its under face adapted to engage in corresponding holes 28 in the lower member of the stencil fastening means and to assist in appropriately positioning the rigid member in the stencil fastening means a recess 29 is provided in its rear edge and a pin 30 is provided in the lower member of the stencil fastening means so that the projections 27 may be engaged in the holes 28. When so engaged in the stencil fastening means the elevations 23, as will be seen, will be in position to displace the tongues on the heading of the stencil sheet and on the heading of the porous sheet.

As shown in Figures 3, 4, and 7 the stencil fastening means is secured as in known constructions when it is to be associated with a machine as illustrated in Figures 8 and 9 to a length of flexible and ink-proof sheet material 31, commonly known as the protector, which in turn is connected to a strip of rigid material 32 provided with slides 33 engaged by pins 34 on the rigid member. These slides are located adjacent to holes 35 designed to engage pins 36 (see Figures 8 and 9) on the flexible steel bands 37, the upturned ends 38 of the slides 33 being arranged to be engaged by loops 39 in the ends of the springs 40 secured to the rigid member 26 provided on one end of the silk carrier. In this way the silk carrier, with the rigid member 24 engaged by the stencil fastening means will be drawn tightly over the inking rollers and the protector 31 will also be drawn taut.

In Figures 8 and 9, 41 are the side members of the duplicating machine, 42 and 43 the inking cylinders and 44 the pressure roller, adapted to press the paper on which the impression of the matter cut in the stencil is to be formed against the stencil.

In the construction illustrated in Figures 10 and 11 the stencil fastening means proper constructed generally as shown in Figure 7 will be secured directly to the inking drum 45 in a manner similar to that in which the hitherto known stencil fastening means are secured in position in such machines, 46 indicating the frame of the machine and 47 the pressure roller.

The stencil heading may be varied in form and construction within relatively wide limits for use in connection with a stencil fastening means within the scope of the present invention and Figures 12 and 13 show one of several possible alternative constructions of heading.

In Figure 12, 48 indicates the backing sheet of a stencil sheet, 49 the main portion of the heading which is formed with recesses 50 leaving V-shaped elements between them, the extremities 51 of which when bent along the dotted lines 52 constituting tongues or flaps adapted to be displaced in a manner similar to the tongues 7 in the construction illustrated in Figure 1 by the elevations 22 or 23 on the stencil fastening means (see Figures 4 and 7) the slots 53 being provided to enable the said elevations to effect such displacement.

In Figure 13, 54 indicates the backing of the porous sheet, 55 the extremities of V-shaped elements forming part of the heading which when bent over along the dotted line 56 will constitute tongues adapted to be displaced by elevations on the stencil fastening means entering the holes 57.

Having now described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. A stencil fastening means for a duplicating machine, comprising a lower member dimensioned to extend the whole width of the inking means of the duplicating machine, an upper member hinged thereto on an axis parallel with the longer edges of said members, an abutment provided on the upper member

and within the space between the members, means adapted to constrain the free edges of the two members to approach one another and means located between the two members adapted positively to displace tongues on the stencil heading to bring the fore edges of the tongues into position against the abutment.

2. A stencil fastening means for a duplicating machine, comprising a lower member dimensioned to extend the whole width of the inking means of the duplicating machine, an upper member hinged thereto on an axis parallel with the longer edges of said members, an abutment provided on the upper member and within the space between the members, means adapted to constrain the free edges of the two members to approach one another, and elevations on the lower member adapted to assist in causing the free edges of tongues on the stencil heading to bear against the abutment.

3. A stencil fastening means for a duplicating machine comprising a lower member dimensioned to extend the whole width of the inking means of the duplicating machine, an upper member hinged thereto on an axis parallel with the longer edges of said members, an abutment provided on the upper member and within the space between the members, means adapted to constrain the free edges of the two members to approach one another, elevations on the lower member adapted to assist in causing the free edges of the tongues on the stencil heading to bear against the abutment, and means adapted to engage a flexible foraminous sheet constituting a support for the stencil sheet when mounted on the duplicating machine.

4. A stencil fastening means for a duplicating machine, comprising a lower member dimensioned to extend the whole width of the inking means of the duplicating machine, an upper member secured thereto, means adapted to force the upper member towards the lower member and recesses in the face of the upper member which is directed towards the lower member and projections on the lower member in register with the recesses and adapted positively to displace tongues on the stencil heading to bring the free edges of the tongues into position against the forward limits of said recesses.

In testimony whereof I have signed my name to this specification.

GEORGE ERNEST CREED.