

May 15, 1934.

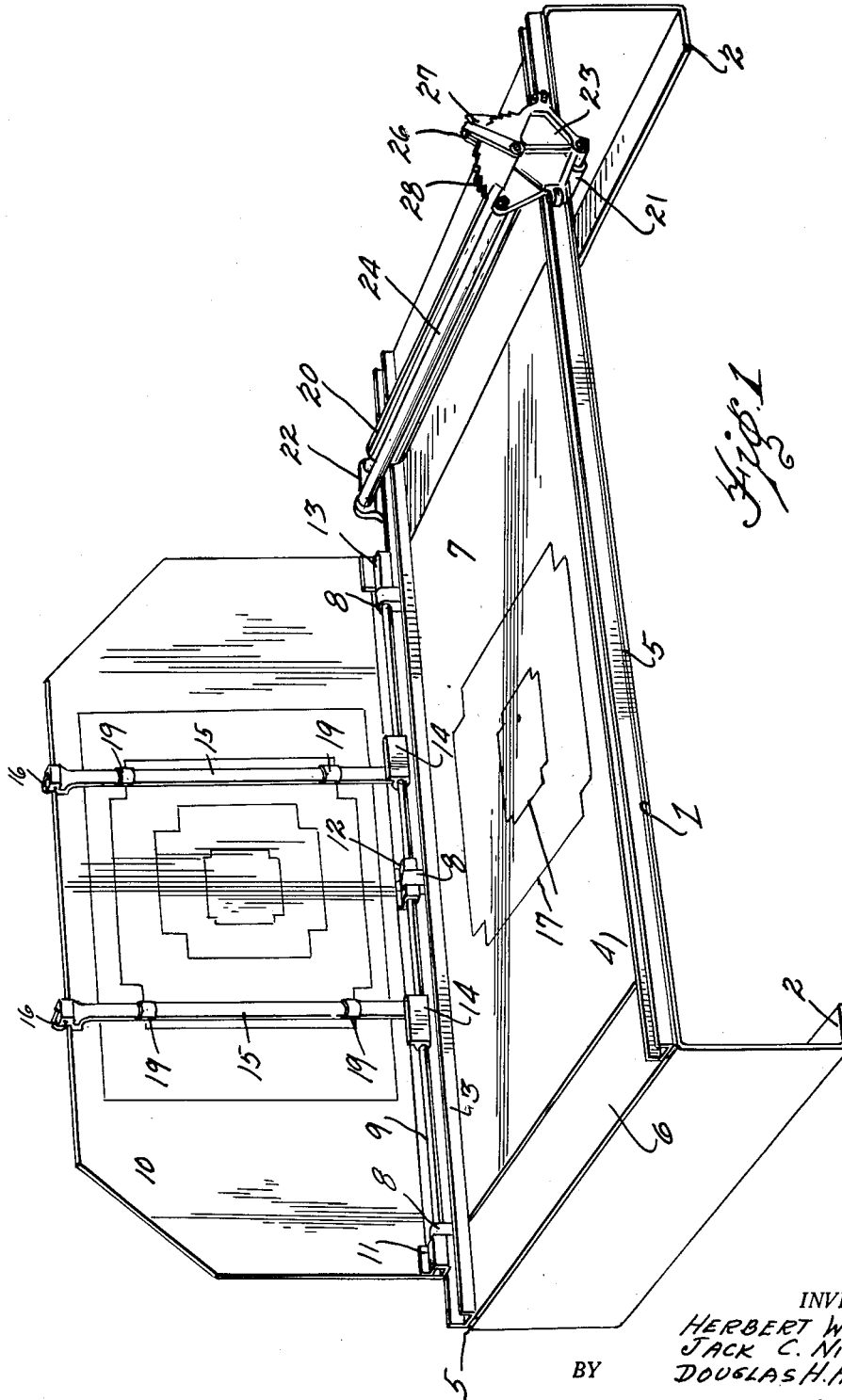
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1,958,628

PRINTING MACHINE

Filed Nov. 8, 1930

4 Sheets-Sheet 1



*Fig. 1*

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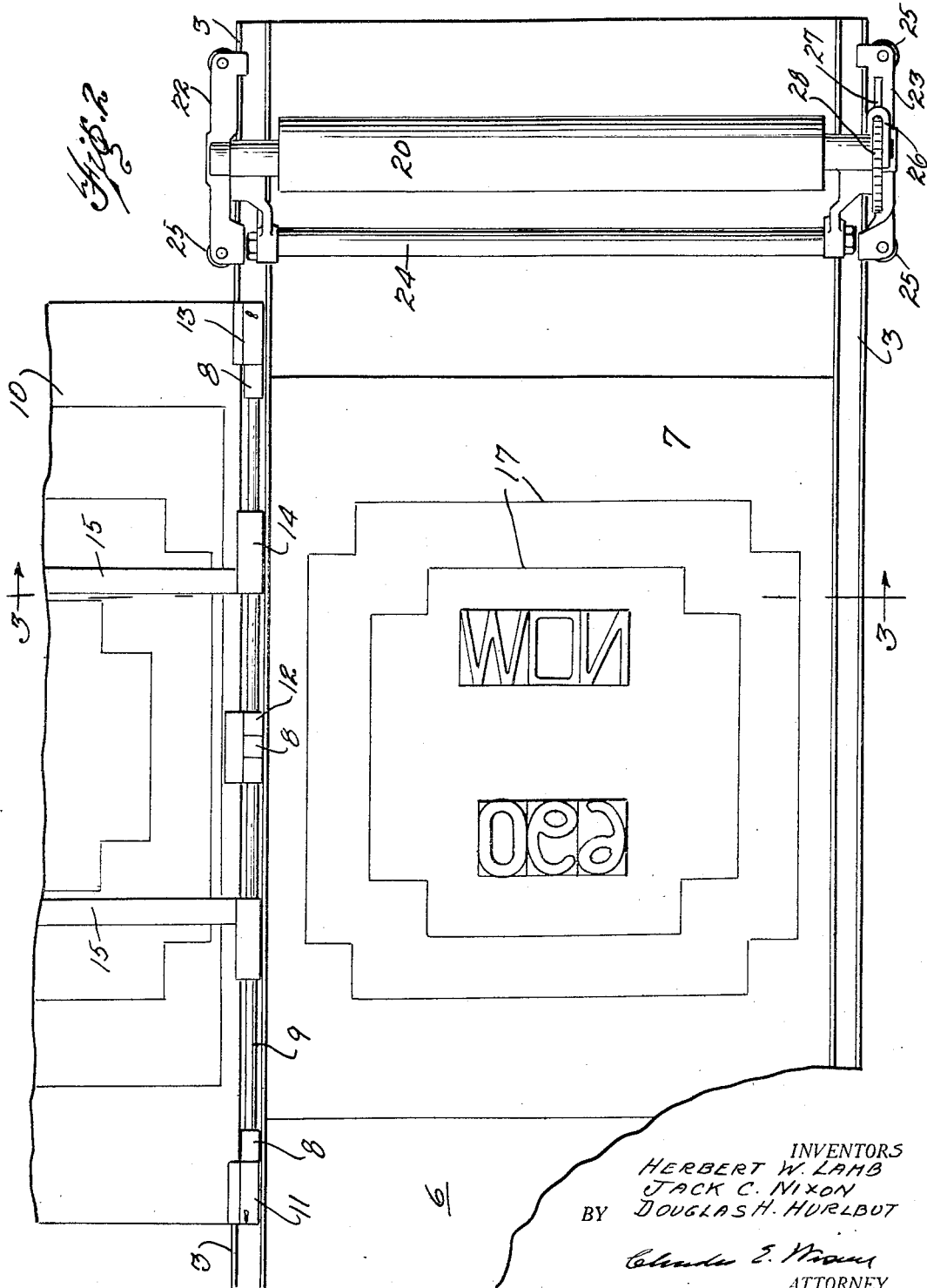
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PRINTING MACHINE

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4 Sheets-Sheet 2



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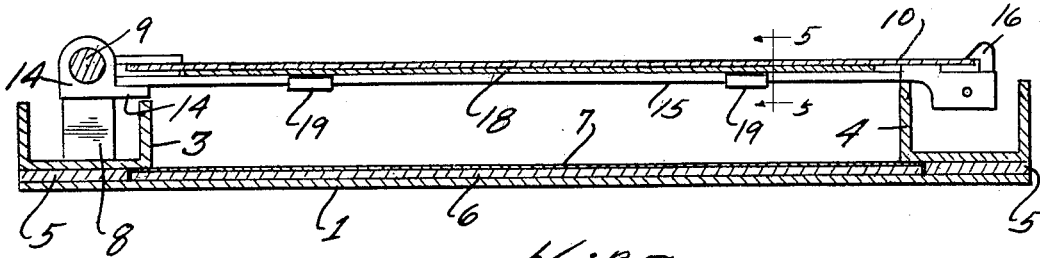
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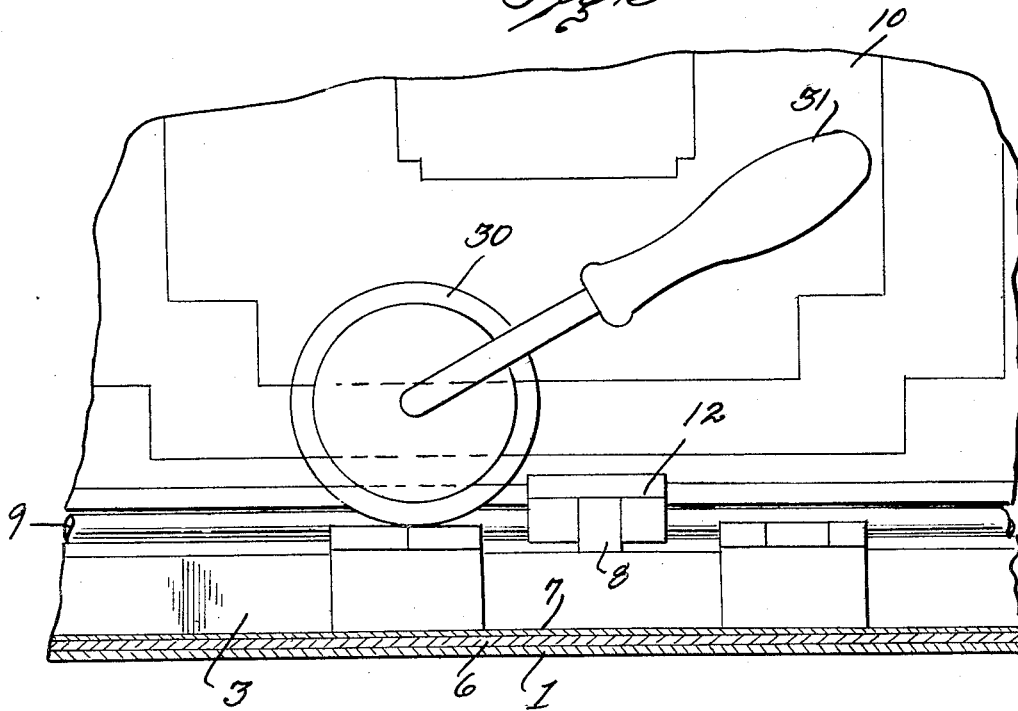
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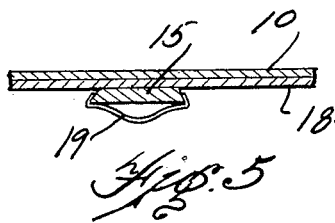
4 Sheets-Sheet 3



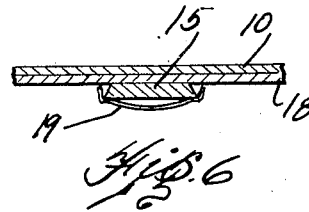
*Fig. 3*



*Fig. 4*



*Fig. 5*



*Fig. 6*

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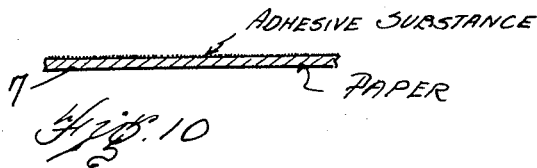
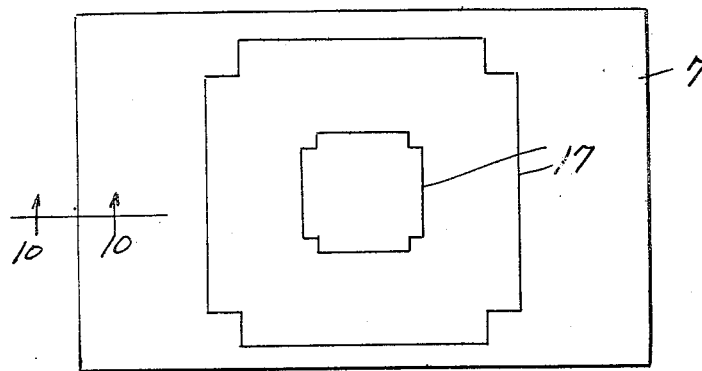
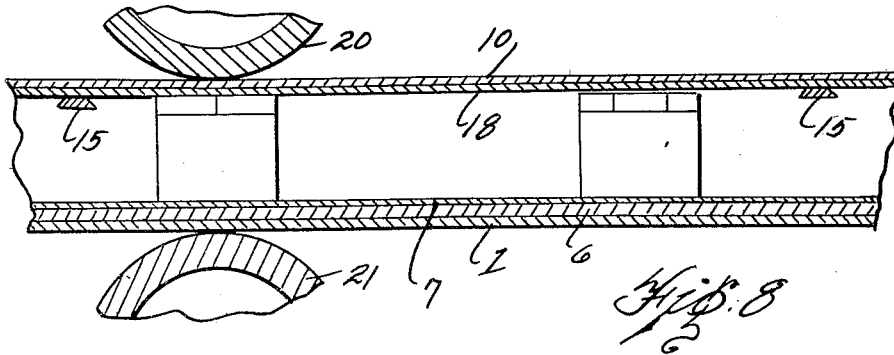
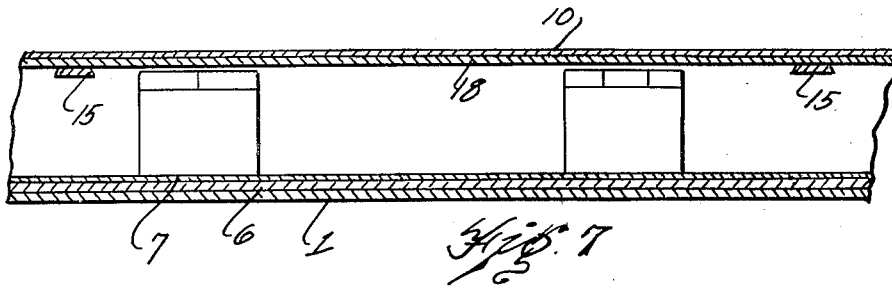
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PRINTING MACHINE

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4 Sheets-Sheet 4



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# UNITED STATES PATENT OFFICE

1,958,628

## PRINTING MACHINE

Herbert W. Lamb, Jack C. Nixon, and Douglas H. Hurlbut, Adrian, Mich., assignors to Line-O-Scribe, Inc., Adrian, Mich., a corporation of Michigan

Application November 8, 1930, Serial No. 494,210

14 Claims. (Cl. 101—269)

This invention relates to printing machines, the object being to provide a simple and inexpensive-ly constructed printing machine which includes a bed plate on which the type are to be positioned, a flexible cover, a printing roller adapted to be moved across the cover member to produce the printing impression, and guide means enabling an operator to predeterminedly position the card to be printed relative to the type.

A further object and feature of the invention is to provide a light flexible sheet metal bed of simplified construction with non-flexible side rails providing runners supporting the printing roller.

A further and primary object and feature of the invention is to provide a printing machine in which type are supported in place without necessity of locking the same in a form.

Previously, the practice has been to set the type in a form and lock the same in position and the bed of the machine is so constructed as to hold the locked form in a predetermined position. By our invention, a sheet of appropriate material is coated with a composition, such for instance as beeswax, to provide a surface semi-adhesive in character on which the operator may place the type in any desired relation, that is, a line may be arranged in a curve, in a straight line, or other desired form and by placing the type one by one with a little pressure on the prepared sheet of material, they adhere thereto sufficiently to permit the inking of the type with an inking roller without displacing the same thereon.

In fact, by each inking and printing operation by the printing roller, the type are caused to more firmly adhere to the adhesive surface. By such an arrangement, persons of little or no knowledge of setting of type in the ordinary way are enabled to use the machine and further than this, the total cost of the machine is reduced, that is, the form is not only dispensed with but the machine work necessary to provide means for locking or otherwise securing the form in the bed is also dispensed with.

These several objects and novel features of the invention are hereinafter more fully described and claimed, and the preferred form of construction of a printing machine embodying our invention is shown in the accompanying drawings in which—

Fig. 1 is a perspective view of our improved printing machine.

Fig. 2 is a plan view of a part thereof on an enlarged scale.

Fig. 3 is a cross section of the machine taken on line 3—3 of Fig. 2.

Fig. 4 is a detail partially in section showing the type in position and the use of the inking roller in relation thereto.

Fig. 5 is an enlarged section taken on line 5—5 of Fig. 3 showing the guide clips and arm for supporting a sheet to be printed.

Fig. 6 is a similar view showing the manner of attachment of the clips.

Fig. 7 is a section of a portion of the bed and cover member showing the type in place.

Fig. 8 is a similar view showing the impression rollers in the act of printing.

Fig. 9 is a plan view showing the preferred form of diagram on the adhesive sheet.

Fig. 10 is a sectional view on line 10—10 of Fig. 9 showing part of the adhesive sheet.

The printing machine is shown in Fig. 1 and in this view it will be seen that the bed plate consists of a sheet of metal 1 the ends of which are downturned and return bent as at 2 to provide feet spacing the plate above the surface of a table or other support on which the printing machine is placed for use. The bed plate 1 has secured thereto side rails 3 and 4 of U form and these in turn are spaced from the bed plate 1 by longitudinal strips 5 less in width than the channel rails 3. The inner edges of the rails are thus spaced from the bed plate providing a recess for the edge portions of a more or less compressible or resilient sheet or pad 6 and on this sheet is placed semi-adhesive type holder sheet 7 hereinafter more fully described, it having its edge portions inserted beneath the inner projecting edges of the channels and fits therein sufficiently tightly to hold the edges of the sheet 7 from displacement in the inking and printing operation.

It will be understood from Figs. 1, 2 and 3 that the side rail 3 is provided with several lugs 8, 8 which are apertured to receive a hinge rod 9. A flexible cover 10, preferably of sheet metal, is formed with ears 11, 12 and 13 connected with the rod whereby the cover is secured in hinged relation with the bed plate. The rod 9 also has blocks 14, 14 thereon that are slidable longitudinally of the rod and to these blocks is respectively attached the guide bars 15. The guide bars at the free ends are each provided with a latch member 16 preferably spring-actuated to engage over the free edge of the cover 10 in the position of parts shown in Fig. 3. The arms 15, as shown in Fig. 3, particularly at the free end when unattached to the cover by the spring dog 16 normally rest on the upper edge of the channel 3 and provide means for supporting a card over

the face of the type that are set on the bed plate as hereinafter stated. The bars 15 are preferably formed of spring steel and normally are slightly bowed and when placed over the bed the upper surface is slightly above the type faces. The cover 10 is likewise transversely bowed. Thus the card to be printed is secured between the cover and bars by pressure when the clips 16 are engaged over the edge of the cover as shown in Fig. 3.

A special feature of this invention consists in the adhesive or semi-adhesive sheet 7 which is preferably provided with lines, such for instance as the diagram shown by the rectangles 17 in Fig. 1, and is coated with a waxy composition on which the type may be set. The coating for the sheet may be composed of ingredients in the following approximate proportions viz: one pound beeswax, one-half pound rosin and one-half pound glycerin, or one pound beeswax to one pound commercial belt dressing; both of which have been found adaptable for the purpose. Other ingredients may be found equally desirable. The sheet to be coated is preferably of paper as indicated in Fig. 10 and the type, which are preferably of wood, are individually set in place by hand, a little pressure being applied thereto to cause the type to adhere to the waxed sheet.

Fig. 2 indicates type set in a straight line on the sheet 7 but, due to the manner of securing the type in place, they may be set in any desired arrangement and the lines 17 are merely guide lines to enable the operator to line up the type sufficiently accurately to make a straight line if desired or to position the printing face of the type relative thereto. Only one form of diagram is shown by the lines 17 but it is to be understood that a diagram or guide means of any shape or form may be utilized on the sheet as may be desired. The wax or other adhesive or semi-adhesive matter applied to the sheet should be more or less transparent in character so that the diagram or guide is visible in the coated sheet.

When the type have been set as indicated, the bars 15 are released from the cover and laid over the bed at opposite ends of the set type and out of position to contact the same and in such position they provide supports for the card or sheet to be printed. It will be observed from Figs. 1, 3, 7 and 8 that the bars 15 are so positioned that the upper surface is slightly above the face of the type permitting the placing of a card 13 thereon out of contact with the type face at this time. These bars 15 are of metal and are flexible in character as is also the cover member 10 which, after the placing of the card on the bars, is laid over the card and engaged with the spring clips or latches 16 at the ends of the arms. Preferably, the bars are provided with spring clips 19, 19 thereon each bar being preferably provided with two clips which are shown in section in Figs. 5 and 6. These are simply of spring sheet metal and, as shown in Fig. 6, by pressing on the clip toward the bar they may be snapped in place and, due to the bars having beveled edges as shown, the ends of these clips engage thereover and by pressing on the clip to slightly release the same, are slidable longitudinally of the bar. Thus, in placing the bars in position to support a card for printing the clips may be positioned in relationship to the guide diagram so that the edge of the sheet to be printed may be properly positioned relative to the type face.

The diagram on the adhesive sheet 7 also

provides a guide for the operator in positioning the same. These clips extend slightly below the under surface of the bar when positioned and form a further guide for the operator in positioning the sheet on these bars. After the sheet is properly positioned on the bars, the cover member 10 is turned downward thereover with the outer or free edge extending beneath the spring catches 16 at the end of each bar. This tightly clamps the sheet 13 to be printed between the bars and the cover plate and in this position the sheet is still slightly spaced from the printing face of the type as shown in Fig. 7.

The bed plate is longer than the cover member as will be seen in Fig. 1 and in the space between the right hand end of the cover member and the end of the plate 1 providing the bed is positioned the printing roller. This consists of an upper roller 20 and a lower roller 21 rotatably supported in end frames 22 and 23 respectively. A bar 24 providing a hand grip is also secured to the end frame to enable the operator to pull the rollers across the bed plate when the cover is positioned over the type. These end plates, as will be understood more clearly from Fig. 2, have foot-like portions thereof resting on the outer flange of the channel rails and the end plates each carry rollers 25, 25 engaging the side face of the outer flange of the respective rails preventing any material lateral movement of the roller frame.

This character of printing roller is shown in the pending application of Charles M. Lamb, Serial No. 439,794 filed March 28, 1930, and operates in the same manner as therein described, it being provided with a means consisting of an arm 26 carrying a spring dog 27 for engaging the notches 28 on the end frame 23. This dog and lever permit an adjustment of the spacing apart of the rollers 20 and 21 and determines the pressure to be applied in the printing operation. It will be seen in Fig. 2 that the length of the upper pressure roller 20 is less than the distance between the upper faces of the two side rails 3. The rollers and frames are also so mounted as to permit of vertical movement relative to the channel members to enable the same to ride over the cover member as will be understood from the following.

When the cover is down, which is the position of the parts shown in Figs. 3, 7 and 8, the roller frame is drawn across the machine by the hand bar 24. The rollers thus progressively press the cover and the card 13 thereon to printing contact with the face of the type and, after drawing the rollers once or twice across the cover as stated, the printing rollers are withdrawn to the position shown in Fig. 2 and the cover raised thereby raising the printed sheet from the type. The bars are then released by releasing the spring dogs 16 and the bars are laid down over the bed for the positioning of the next sheet to be printed. The printed sheet is removed after the bars have been released from the cover.

Another feature of the invention is shown in Fig. 1 wherein the type side of the cover is provided with a diagram corresponding more or less to the diagram on the adhesive sheet 7 and thus the sheet to be printed may be placed directly on the cover and secured by the bars and then laid over the type or the clips 19 may be properly positioned when the bars are in the position shown in Fig. 1 whereupon on laying the same downwardly over the bed they are similarly positioned relative to the diagram on the adhesive sheet 7.

For this use of the device the sheet 7 should be positioned on the bed plate with the diagram thereon substantially in alignment with the diagram on the cover as will be readily understood.

5 A special feature of the invention is in the provision of the sheet having the adhesive surface on which the type are positioned and these, as before stated, are placed on the sheet manually and a little pressure applied thereto to cause the same  
10 to adhere and retain their place sufficiently rigidly to permit inking thereof which is accomplished by means of the inking roller 30 shown in Fig. 4. This roller is provided with a handle 31 to permit  
15 of its manipulation and may be of any approved form. By this arrangement for setting type the facility and speed with which the type may be positioned is greater than is secured by locking the type in a form and subsequently securing the form on the bed plate as is the usual practice.

20 The expense of the apparatus is also reduced and the machine is made very light in weight by forming the bed plate and the end standards of sheet metal more or less flexible in character. By securing the side rails thereto a practically non-  
25 flexible runway for the pressure rollers is provided as heretofore described. With a flexible bed plate and a flexible cover the rollers, by being spaced a predetermined distance apart, apply pressure to the type and hold the bed from flexing  
30 at the line of application of pressure.

It is further to be understood that preferably the sheet to be coated is of paper or cardboard and thus is inexpensive and may be discarded and another sheet used in its place as soon as the coating  
35 becomes thinned or non-adhesive through use. The invention in respect to the type holding means is not confined to the use of a paper or fibrous sheet as any sheet of material adaptable for such use may be employed, as for instance tin  
40 or celluloid. Furthermore, the coated element need not be in sheet form inasmuch as the invention in its broad aspect consists in coating the type supporting surface with an adhesive or semi-adhesive material.

45 We are aware that the bases of type have been coated with an adhesive material but this is inconvenient and expensive as the coating deteriorates through use and the type then require re-coating one by one by hand. By our improved  
50 arrangement such labor is dispensed with and as a quantity of coated sheets are usually sold with the machine and others supplied as the purchaser may need, a clean and fresh adhesive surface is continuously available for use in the setting of  
55 type.

It will be observed from the foregoing that by our improved construction a light portable printing device is secured that is of inexpensive construction, and further that we secure a printing  
60 machine in which even persons unfamiliar with the printers' art may set the type and produce a neatly appearing printed sheet. Thus a machine is secured that is very convenient for the use of merchants for instance where display cards are  
65 required in conjunction with displayed merchandise at considerably less cost than through use of the ordinary printing machine with skilled typesetters and that the various objects of the invention are secured by the construction described.

70 Having thus fully described our invention, its utility and mode of operation, what we claim and desire to secure by Letters Patent of the United States is—

75 1. In a printing machine, a bed plate formed of a sheet of metal, the opposite ends of which

are down-turned to provide standards for spacing the body of the sheet from the surface supporting the machine, a guide rail secured on each longitudinal edge of the sheet, said bed plate providing a support for set type, flexible means  
80 for supporting a sheet to be printed slightly above the printing face of the type, a flexible cover member therefor, and an impression device consisting of a pair of spaced aligned rollers one extending beneath the bed plate and the other  
85 over the upper surface thereof, the said rails providing a support and guide for the impression rollers in moving the same across the machine whereby the cover member and card support are flexed and the card brought to printing  
90 contact with the set type.

2. In a printing machine, a bed plate consisting of a flexible sheet of metal, the end portions of which are down-turned to provide supporting elements therefor spacing the body of the plate  
95 from the surface supporting the machine, a flexible cover member, means associated therewith for holding a sheet to be printed in spaced relation with the printing face of the type, and an impression device consisting of a pair of rollers  
100 movable across the cover member and bed plate flexing the cover member to cause printing contact of the card face with the type as the rollers are moved thereacross.

3. In a printing machine, a bed plate formed of a sheet of flexible material, means for spacing  
105 the same from a supporting surface, a pair of rails on opposite edges respectively of the flexible sheet, a cover member in hinged relation with the bed plate, a diagram on the bed plate relative to which the type may be set, a corresponding diagram on the inner face of the cover  
110 member, means for supporting a sheet to be printed on the cover member in relation to the diagram corresponding to the relationship of the set type to the diagram of the bed plate whereby when the cover member is turned over  
115 the type face the card is held in the desired printing relationship out of contact with the type, and an impression device including a roller movable across the cover in pressure contact therewith to force the sheet to be printed to  
120 printing contact with the type face.

4. In a printing machine, a bed plate on which type may be set for the printing operation, a  
125 cover member hinged thereto adapted to be turned over the bed plate, a pair of flexible bars also in hinged relation with the bed plate and adapted to be turned thereover out of registration with the type, the said bars being bowed  
130 upwardly and providing a support for a card to be printed, a cover member adapted to be turned over the bars and the card, means for securing the free ends of the arms to the free edge of the cover, the cover being transversely bowed  
135 oppositely to the bowed bars whereby the card is secured in place under pressure, and an impression device including a roller movable across the cover member when placed over the bed causing the same to deflect as the roller passes  
140 thereover and thereby cause printing contact of the card with the type face.

5. In a printing machine, a bed plate on which type to be printed may be positioned, a cover member adapted to be placed thereover, a pair of card supporting bars positionable over the  
145 bed plate between the plate and the cover, said bed plate having a diagram thereon relative to which the type may be set, a pair of slidable members on each bar adapted to be positioned  
150

- relative to the diagram when the bars are placed over the bed corresponding to the position the edges of the sheet are desired to be placed in relationship with the printing surface, means for  
 5 securing the cover member to the bars to hold the sheet to be printed in its predetermined position, and an impression device including a roller movable across the cover member to cause a printing impression between the card and the  
 10 type.
6. In a printing machine, a bed plate on which type to be printed may be positioned, a cover member hinged to the bed plate adapted to be turned thereover, a pair of card supporting bars  
 15 hingedly supported on the same axis as the cover at one end and adapted to be turned over the bed plate out of contact with the type, and further adapted to support the card out of surface contact with the type, said bed plate having  
 20 a diagram thereon relative to which the type are positioned, the face of the cover toward the bed plate having a similar diagram thereon, the diagram of the bed plate and cover being arranged in alignment whereby when the cover is placed  
 25 thereover the diagrams are substantially in registration one above the other, means for securing the free end of the bars and free edge of the cover together to clamp a card in place therebetween, a pair of elements slidable on each bar whereby  
 30 they may be adjusted relative to the diagram of the cover of the bed plate and providing a guide means for the operator in placing a card relative to the diagram on which the type is set thereby permitting the operator to position the printing  
 35 on the card in the desired relationship with its edges, and an impression device including a roller movable across the bed plate in pressure contact with the cover member to cause a printing impression of the type on the card.
- 40 7. In a printing machine including a bed plate, means for supporting type in place thereon for a printing operation, comprising a member having a surface sufficiently adhesive to hold the type in place as positioned thereon, and means at opposite  
 45 side edges of the bed plate for engaging over the opposite side edges of the adhesive member to hold the same in position during the printing operation.
8. In a printing machine, a bed plate, a type  
 50 holder positionable thereon comprising a sheet of material having an adhesive surface on which the type may be secured one by one by pressing the same in the desired position thereon by hand, and means on the bed plate engaging over the  
 55 side edges of the adhesive sheet to hold the same on the bed plate during the printing operation.
9. In a printing machine, a bed plate, a type  
 60 holder removably secured thereon, comprising a sheet of fibrous material having a coating of adhesive material on which the printing elements may be secured by pressing the same in the desired position thereon by hand, and means for holding the sheet in position on the bed plate comprising  
 65 a grooved element at each opposite edge of the bed plate for receiving the opposite side edges of the fibrous sheet.
10. In a printing machine, a bed plate, means  
 70 for supporting the type in place thereon for a printing operation, comprising a sheet of material having an adhesive surface on which the type may be placed in any desired relation, the adhesive surface being of a character whereby slight pressure in the positioning of the type causes the same to adhere to the surface sufficiently to permit the same to be inked and a printing impres-  
 75 sion to be made, a diagram on the sheet providing a guide for positioning the type, means on the bed plate for supporting said sheet from displacement comprising oppositely disposed side rails of the bed plate having grooves in the opposite faces opening toward each other and the bottom wall of which is formed by the bed plate, said grooves being arranged to receive opposite side edges of the said adhesive sheet, the upper wall of the grooves overlying the edges of the sheet to prevent displacement thereof in the printing operation.
11. In a printing machine, a bed plate, side rails thereon spaced from the bed plate, a card insertable beneath the side rails and supported in position thereby on the bed plate, said card having a coating of an adhesive character on which type may be positioned one by one by hand whereby they are secured in place, a card holder member by which a card may be supported over the set type and out of contact therewith, and means for producing an impression of the type face on the card.
12. In a printing machine, a bed plate flexible in character, a side rail for each opposite edge thereof, the inner side rails being spaced from the bed plate, a fibrous sheet of material having its opposite edges inserted beneath the respective inner edges of the said rails, a wax-like coating adhesive in character on the said sheet providing  
 105 a means for securing type by pressing the same thereon by hand in the desired relationship, a flexible card holding element adapted to be positioned over the said type and supporting the card out of contact therewith, and a pair of spaced rollers supported by the side rails and movable across the bed plate and cover member to thereby cause a type impression to be made on the held card.
13. In a printing machine, a type holding device consisting of a sheet of fibrous material, a diagram on the said sheet, a coating on the sheet of semi-adhesive character adapted by the placing of type thereon by hand under pressure to cause the same to adhere to the surface, the coating being of a character to permit observation of the diagram therethrough whereby the type may be set on the sheet in any desired relationship to the said diagram, and means engaging opposite edges of the sheet to prevent displacement thereof and thereby maintain the set type as a whole in printing position.
14. In a printing machine, a bed plate on which type are to be positioned for a printing operation, a flexible cover member including  
 130 means for holding a sheet to be printed and adapted to position the said sheet in printing relationship with the type, a guide diagram on the card supporting side of the cover and relative to which the card may be positioned, a type holding device consisting of a sheet of fibrous material detachably supported on the bed plate, a diagram on the said sheet corresponding to the diagram on the cover, the type holding sheet being positioned with the diagram in alignment with the cover diagram, and a wax-like semi-adhesive coating for the type holding sheet through which the diagram is visible, said coating being of a character to support the type in place as they are set under pressure by hand relative to the diagram.

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