Sept. 12, 1933. C. M. LAMB 1,926,983

PRINTING MACHINE

Filed March 28, 1930 5 Sheets-Sheet 1

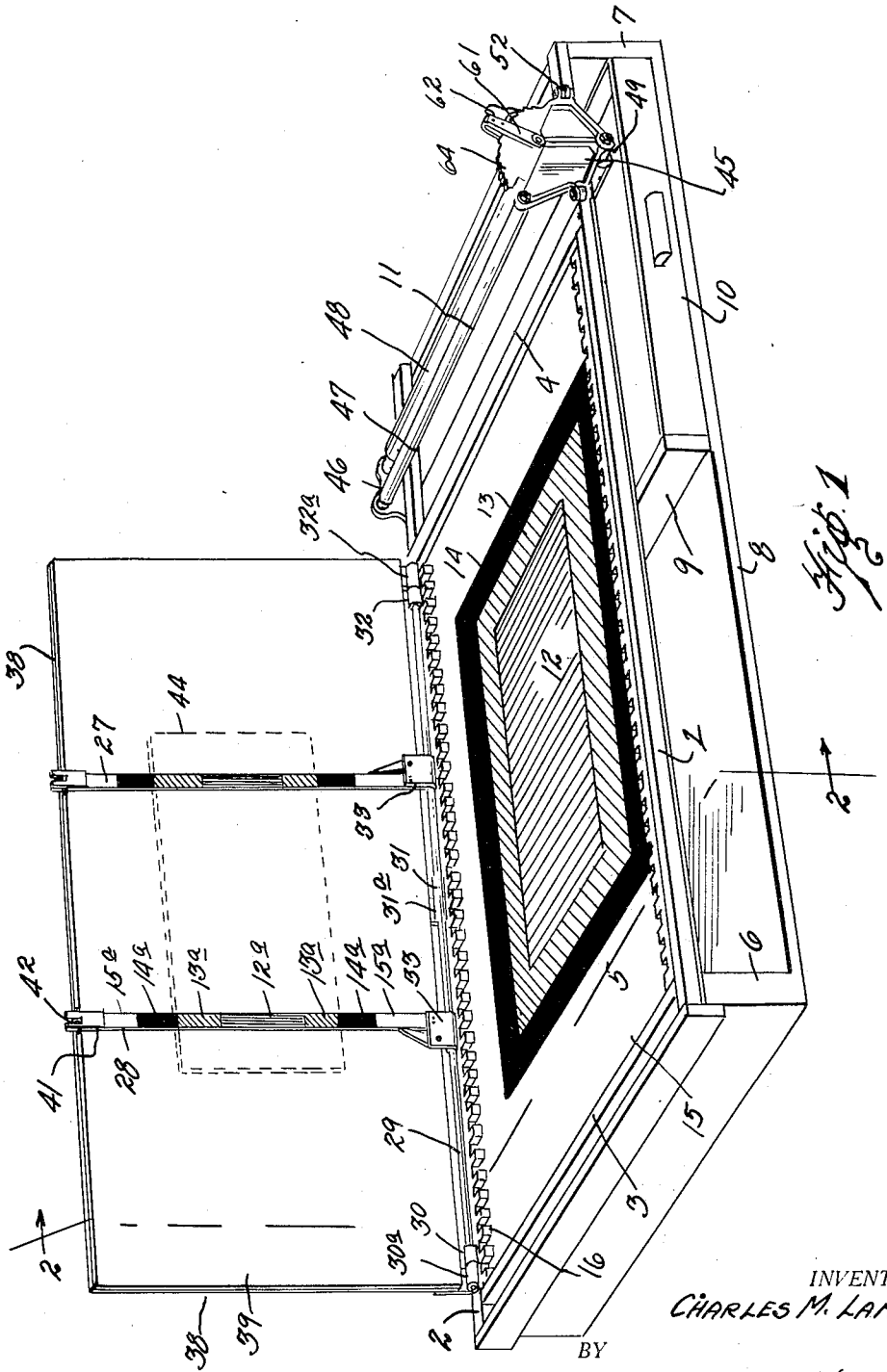


Fig. 1

INVENTOR.
CHARLES M. LAMB
BY
ATTORNEY.

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PRINTING MACHINE

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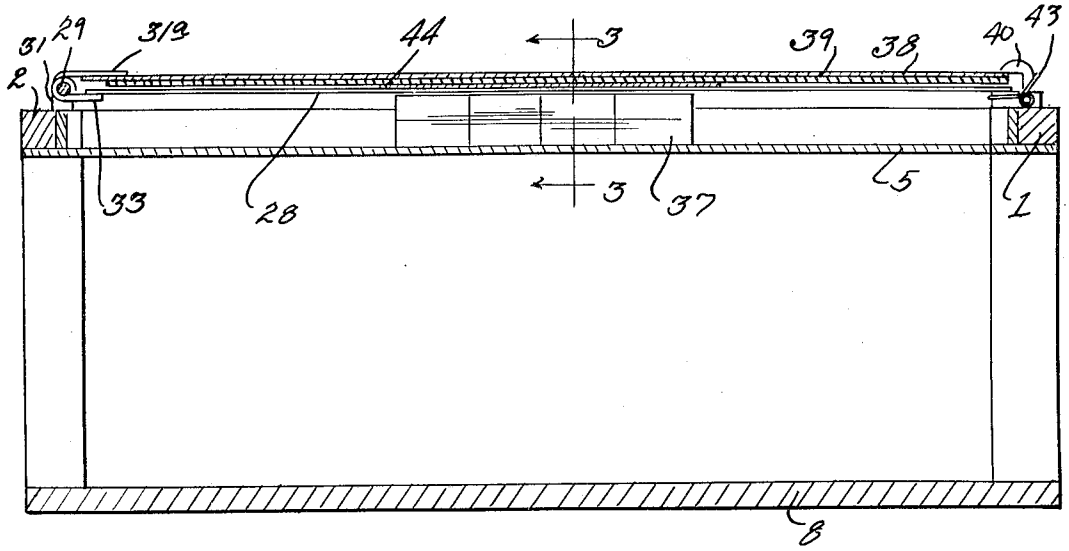


Fig. 2

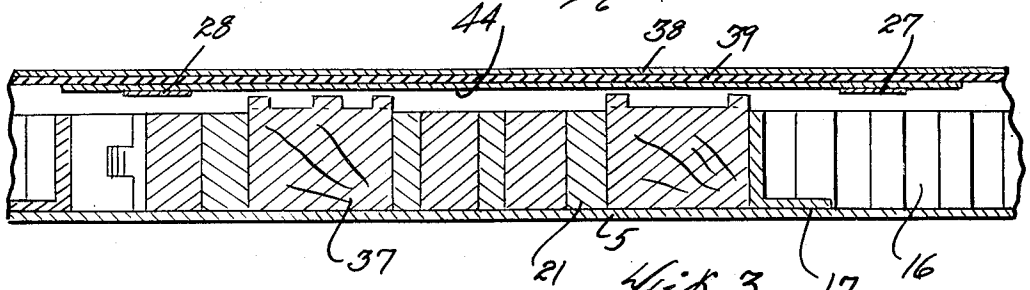


Fig. 3

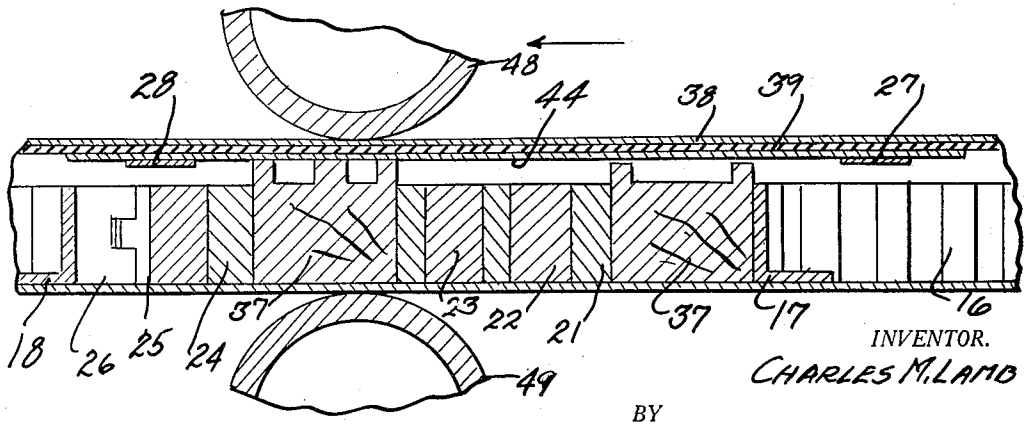


Fig. 4

INVENTOR.
CHARLES M. LAMB

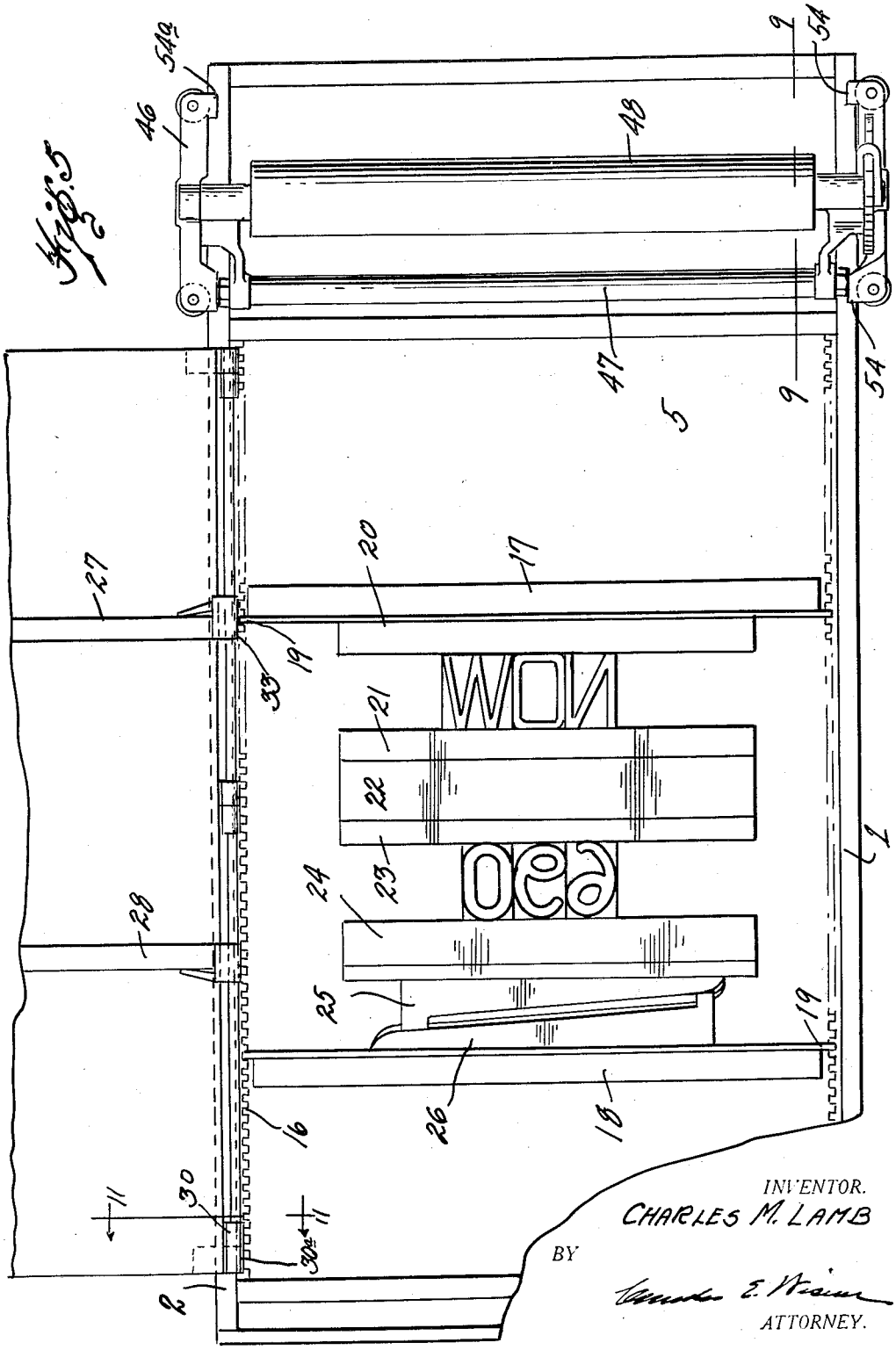
BY

ATTORNEY.

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Filed March 28, 1930 5 Sheets-Sheet 3



INVENTOR.
CHARLES M. LAMB
BY
ATTORNEY.

Sept. 12, 1933. C. M. LAMB 1,926,983

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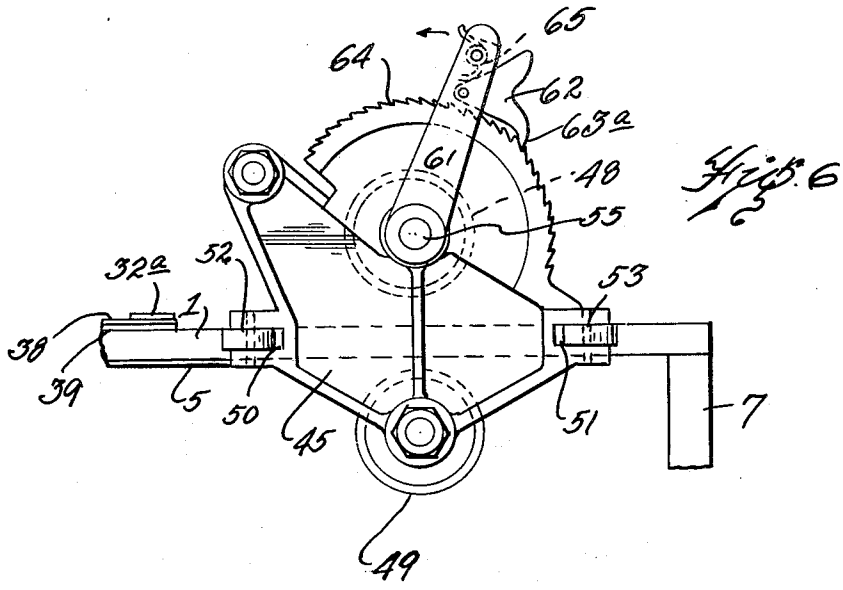


Fig. 6

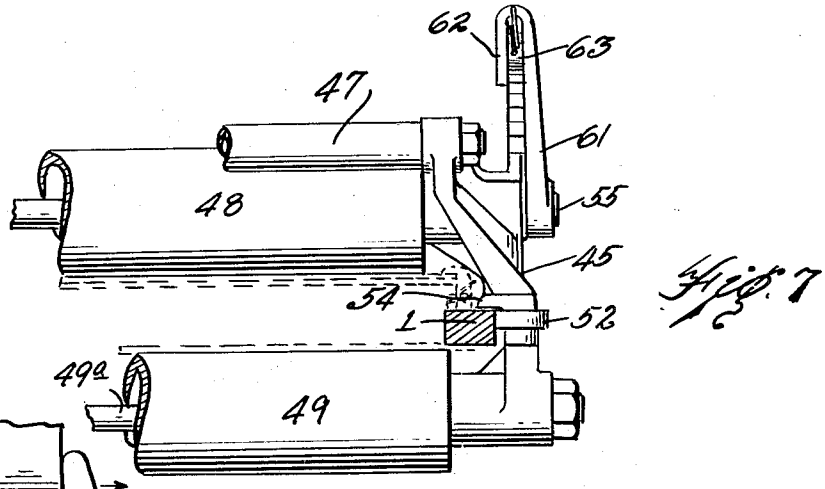


Fig. 7

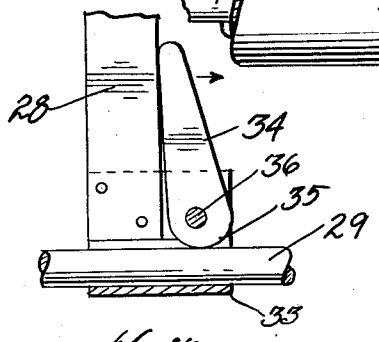


Fig. 8

INVENTOR.
CHARLES M. LAMB

BY

ATTORNEY.

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PRINTING MACHINE

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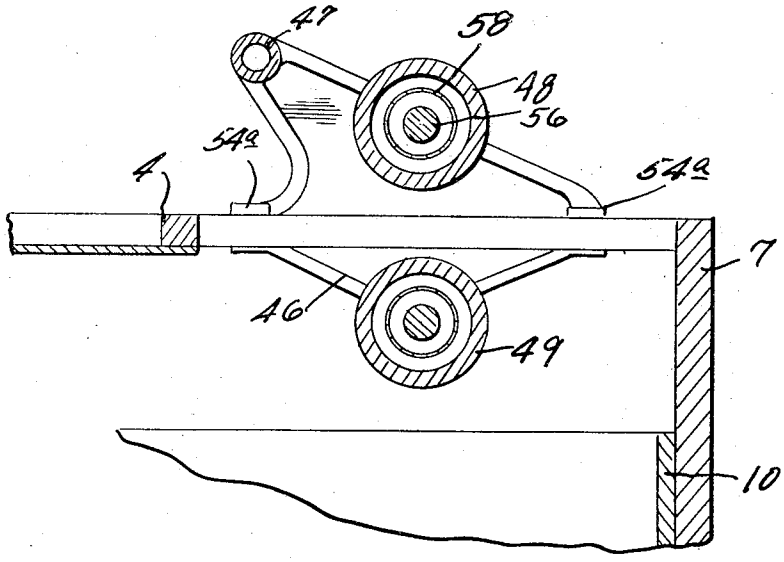


Fig. 9

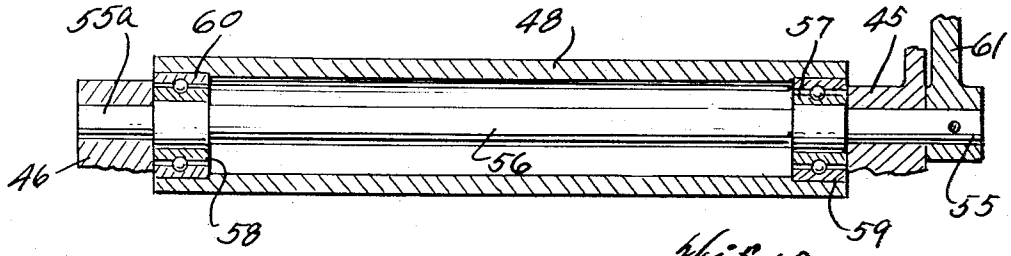


Fig. 10

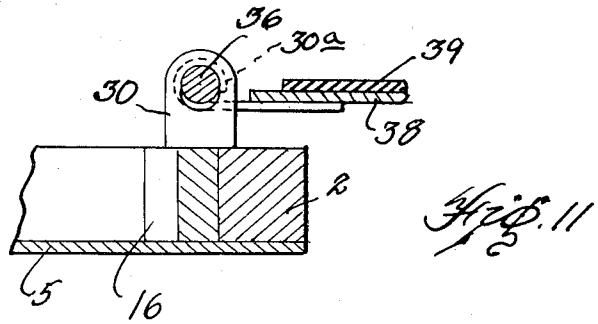


Fig. 11

INVENTOR.
CHARLES M. LAMB

BY

ATTORNEY.

Patented Sept. 12, 1933 1,926,983

UNITED STATES PATENT OFFICE

1,926,983

PRINTING MACHINE

Charles M. Lamb, Pasadena, Calif., assignor to Line-O-Scribe, Inc., Adrian, Mich., a corporation of Michigan

Application March 28, 1930. Serial No. 439,794

27 Claims. (Cl. 101—269)

This invention relates to printing machines, more particularly adapted for the printing of display cards of various kinds. It has generally been the practice heretofore to provide show cards or display cards of various types either by hand drawing or by printing the same in an ordinary printing press requiring the services of an expert typesetter and printer. This invention seeks to provide a printing machine for the use of merchants and others requiring display cards, for instance for counters, that may be used with complete success by persons quite unskilled in the printer's art, for instance by the usual clerk in stores of retail merchants requiring continual change of display cards at a minimum of cost for such cards.

Ordinary printing presses heretofore used in the printing of display cards have heavy and cumbersome bed plates and expensive and intricate mechanism requiring careful adjustment and necessitating the setting of the type in a form required to be locked in the press. All of these features by my invention are eliminated, and the object of the invention therefore is to provide a simple and inexpensive device comparatively light in weight to secure portability and providing an impression member operable by hand to cause the impression to be made on the card by means of a roller adjustable in relation to the card to vary the pressure and/or to accommodate various thicknesses of card or paper to be printed.

An additional object of the invention is to provide a printing machine in which a pair of rollers are provided in an assembled unit and spaced an adjustable distance apart, the upper roller riding over the card or a cover member therefor and the lower roller running beneath the bed on which the type are positioned whereby the card and type are subject to a line pressure sufficiently great to produce the desired printing impression whereby any flexing of the bed or supporting elements for the type is prevented at the point or line of application of pressure, the arrangement being such that the rollers are moved across the card so that the entire matter is caused to be printed progressively rather than by application of the pressure over the entire card surface as is usually the practice. By this arrangement I am able to provide a light weight structure more or less flexible in character and still secure a perfect impression.

A further object of the invention is to provide a machine of the general character stated having a bed plate with a surrounding frame or rail of a character utilizable in supporting the type in place. Previous presses required the type to be set up and locked in a form and the form positioned in the press.

A feature of my invention is in the provision of a construction in which the frame surrounding the bed plate becomes part of the form and arranged to sustain cross bars and means whereby the type may be set up and locked or secured in the machine and another feature of the invention is in the provision of such a means that further is permissible of the positioning of the type or printing plates at any position on this bed surface.

A further object and feature of the invention resides in the provision of a machine having a type bed and means for setting and securing the type in a predetermined position in which the bed bears a series of diagrams or lines indicative of the various sizes of cards within the capacity of the machine to print whereby a guide is provided enabling the operator to set the type in the machine in any desired position relative to the various sizes of cards or sheets that may be printed in the machine and thus predetermine the position the printed matter will occupy in the sheet or card.

A further object of the invention is to provide a machine of the character stated having the bed for supporting the type in a relatively locked position and a means on which the card to be printed may be placed in a printing relationship with the printing surface but spaced therefrom during the period of positioning the card, the holder element or elements bearing marks indicative of the various sizes of cards within the capacity of the machine corresponding to those on the bed of the machine whereby in placing the card in the holder a guide is provided enabling the operator to position the card in the desired printing relationship while out of contact with the type faces.

It is further a feature and object of the invention to provide a card holder that is of such character as to flex or yield as the printing rolls are moved across or over the card permitting the card to come to impression contact with the type faces.

An additional feature and object of the invention is in the provision of means of a character adapted to support the card spaced from but in a relative printing relation with the printing surface and capable of adjustment relative to the printing surface to enable the operator to properly locate the portion of the card on which the impression will be made.

A further feature and object of the invention is in the provision of a flexible cover member overlying the card during the making of the impression with which the holder element or elements are detachably connected during the taking of the impression whereby, after an impression has been made, the cover member may be removed and thereby automatically removing the card but maintaining the card in its relative registration with the type whereby after the impression has been made the card may be examined without disturbing the relative relationship of the card in its holder and other type faces thus permitting the cover to be returned to place and a second or a number of subsequent impressions made. This permits an inspection of the printed card which if unsatisfactory also permits a reinking of the type and a return of the card impressions and also permits subsequent impressions under an increased pressure through the adjustment of the distance apart of the pressure rollers.

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

Fig. 1 is a perspective view of the machine with the card holder and retainer or cover member raised to show the printing bed.

Fig. 2 is an enlarged cross section of the machine taken on line 2—2 of Fig. 1 showing the flexible cover and card holder member in printing relationship.

Fig. 3 is a longitudinal section taken through the bed, type and card holder member on line 3—3 of Fig. 2.

Fig. 4 is a similar section showing the pressure rollers in the impression relationship.

Fig. 5 is a plan view of the machine showing the manner of securing the type in place on the bed.

Fig. 6 is an end view of the roller unit showing the means for adjusting the distance apart of the rollers.

Fig. 7 is an edge elevation of the same end of the roller unit.

Fig. 8 is a detail showing one of the card holders and its manner of connection to the supporting rod.

Fig. 9 is a section through the impression roll and part of the bed on line 9—9 of Fig. 5.

Fig. 10 is a longitudinal section of the adjustable roller.

Fig. 11 is a sectional view on line 11—11 of Fig. 5 showing the means of hinging the cover member to the frame of the bed.

The machine in its preferred form is rectangular in shape, it having a rectangular frame consisting of the side rails 1 and 2 and end rails 3 and 4 at the opposite ends respectively. At the bottom edges of these rails is secured a sheet metal bed plate 5 as will be understood from Fig. 2. This plate 5 is preferably of flexible sheet metal and provides a surface on which the type are to be positioned as will be understood from Fig. 5. This bed is supported on a base consisting of the end members 6 and 7 and a connecting bottom member 8 extending therebetween whereby the bed of the machine is spaced from this member 8. At a convenient point intermediate the ends 6 and 7 of the supporting structure is a cross bar 9 providing a space between said member and the end member 7 for receiving a drawer 10 in which the fonts of type, inking rollers etc., may be conveniently stored. It is to be understood the drawer is in slidable relation with the side members 7 and 9 and it is further to be understood that the side rails 1 and 2 extend beyond the cross rail 4 at the forward end or the machine so that the type bed is shorter than the framework as defined, the side rails of which extend beyond the cross member 4 and are supported upon the end member 7 of the base or supporting structure. This arrangement provides an end space on which the impression element indicated generally at 11 may be moved subsequent to taking an impression or while positioning the type and placing the card previous to making the impression.

The type are to be set up directly on the bed plate 5 and for this purpose the bed plate is provided with a diagram consisting of the inner rectangle and surrounding rectangular spaces of different colors as for instance 12, 13, 14 and 15 providing outlines of the same size as the various standard sizes of cards that may be printed in the machine. One of the features of this invention is to provide a guide means on the bed plate whereby the type may be set up on the bed plate in any desired position on a diagram of the same size as the card on which the impression is to be made.

I have described the guide marks or diagrams as being of rectangular form and differently colored but the character of the diagram is not material except that the diagram of whatever nature should enable the operator to set the type on the bed plate and diagram thereon to occupy the same space on the diagram as the type impression will occupy on the corresponding size of card to be printed.

A further feature of the invention is in the means for setting the type on the bed plate in a locked position. As previously stated, it is usual to set the type in the form and lock the form in the press but I have provided a construction of bed plate which in effect provides the form for holding the type. For this purpose each of the side rails for practically the entire length of the bed plate between the cross bars 3 and 4 is provided with equidistantly spaced lugs 16 providing notches to receive the ends of cross bars 17 and 18 shown in Fig. 5.

These are metal angle bars having end portions 19 that fit in the spaces between the lugs and it will be evident that these ends 19 of the two bars 17 and 18 may be set in any of the aligned notches between the lugs 15 of opposite side rails 1 and 2 of the machine. It will be noted in Fig. 5 that the type are set between the two bars 17 and 18 there being blocks 20, 21, 22, 23 and 24 positioned between the two lines of type shown to properly space the lines and that locking wedges 25 and 26 are provided between the bar 18 and the last spacing strip or block to place the type under pressure and thus lock the same in place on the bed plate. It is also to be noted from Fig. 5 that in the case illustrated the type are set in relation to the inner colored rectangular guide 12 on the bed plate and that, due to the way the type are set and held in place, these lines of type may be positioned toward the top or bottom of the guide diagram 12 and thus predetermine the position which the impression will occupy on the card.

The card to be printed is laid over the face of the type on the supporting elements 27 and 28 which consist of the flexible metal strips pivoted on the rod 29 supported on the side rail 2 by the

hinge elements 30, 31 and 32 in the construction shown. These bars 27 and 28 at the hinged ends are provided with a sheet metal end portion 33 in each case engaging about the the rod 29 and carrying the pivoted locking element 34 which, in the position shown in Fig. 8 and, due to the circular portion 35 being eccentric to the axis 36 of the member 34, releases the bar to longitudinal movement on the rod, and by turning this member 34 in the direction of the arrow, binds the bar to the rod.

By this arrangement, the card holder elements 27 and 28 may be spaced a greater or less distance apart depending upon the size of the card that is to be held, and it is to be understood that additional bars of similar construction may be utilized if desired. After the type is set, as shown in Fig. 5, these bars 27 and 28 are turned thereover with their free ends resting on the side rail 1. Normally the lower faces of these bars occupy a plane slightly above the printing face of the type indicated at 37 in Fig. 2. Both these bars preferably bear on the upper faces differently colored portions 12^a, 13^a, 14^a and 15^a so positioned that when the bars are laid over the bed and type thereon, these colored portions lie directly above the corresponding colored portions or guide, 12, 13, 14 and 15 on the bed plate. The operator, when the bars are laid over the bed plate as stated, may then place the card of certain size on these bars in registration with the colored guide diagram of the same size on the bed plate. Thus, the card occupies the same position relative to the printing surface as the printing surface bears to the respective guide diagram on the bed plate. However, as will be readily understood, the type may be set up in any specific relation with either of the diagrams on the bed plate and the card may be differently disposed in view of the fact that the elements 27 and 28, which support the card during the printing operation, may be moved to carry the card to such position that the impression on the card will not be in the same relative place as is indicated by the position the type or printing surface occupies relative to any particular guide diagram.

After the card is positioned on these holder elements 27 and 28 it is desired to detachably secure the same in position to prevent displacement on the holder either accidentally or through operation of making the impression thereon. For this purpose I preferably employ the flexible cover plate 38 which is preferably of sheet metal lined on the inner face with a rubber or other yieldable pad 39. Each of the members 27 and 28 is provided with a spring latch 40 on the outer end thereof as will be understood from Fig. 2. This latch consists of a block 41 which, when the parts are in the position shown in Fig. 2, is supported directly on the upper face of the side rail 1 supporting the free end of the bar 27 and 28 at the said end at the same height above the bed plate as it is supported at the hinge end by the rod 29. Each block 41 has a slot 42 at the end in which the latch member 40 is pivoted and a spring 43 is provided tending to force the latch over the edge of the cover plate 38. The upper edge of both these latch members 40 for the members 27 and 28 is rounded as shown and thus when the bars 27 and 28 have been laid over the printing bed and the card 44 placed thereon in the desired position the cover member may be then turned downwardly over the card in which movement the latch members 40 are caused to automatically snap over the edge of the cover clamping the card between the cover and the bars 27 and 28. This securely holds the card in the predetermined position relative to the printing surface and the machine is then ready to make the impression it being understood that the type has been inked with a hand roller previous to the positioning of the cards on the holder members.

The holder members thus perform an important function in the placing of a card in that the card may be freely handled by the operator while on the bars to position the same as may be desired without fear of smudging the card due to the fact that it is sustained above the face of the type and out of contact therewith. Thus, the operator is free to manipulate the card as may be desired while supported on the holders and to position the same in the desired relative relationship with the printing surface and/or with the respective guide diagram on the bed plate.

The card holder in the construction shown thus consists of a cover member and two or more bars 27 and 28 between which the card is clamped. The invention, however, is not restricted to the use of a full cover member although that is the preferable construction but whatever construction is utilized the essential characteristic resides in such an arrangement that the card, when once located by the operator, is clamped in a position relative to the printing surface and/or the guide diagram and on elements which will flex in the passage of the pressure roller thereacross to cause an impression to be made on the card by the type and that will permit the card to be raised for examination subsequent to the impression having been made and returned to original position in exact registration with the printing surface for subsequent impressions if desired.

The impression unit 11 consists of the end castings 45 and 46 between which extends a tie rod 47 providing a handhold for the operator to draw the unit across the cover when the latter is in the position shown in Fig. 2. Also supported between these members or castings is an upper roller 48 preferably of metal and a lower roller 49 also of metal, the shaft $49a$ of which provides a tie rod between the two end members 45 and 46 beneath the side rails 1 and 2. Each end casting is formed with a slot 50 and 51 on its opposite side edges to receive rollers 52 and 53 respectively turning on a vertical axis and engaging the side face of the respective side rails 1 and 2 of the bed which prevent any material endwise movement of this impression unit relative to the bed plate. This end casting 45 is provided with inwardly extending lugs 54 which extend over the top of the rail 1 and similarly disposed lugs $54a$ on the casting 46 extend over the rail as will be seen in Fig. 5. The upper roll 48 is less in length than the lower roll 49 in the construction shown and the lower roll is designed to ride in contact with the bottom surface of the sheet metal bed plate 5 while the upper roll is designed to ride over the surface of the cover plate 38 to make an impression. The lower roll 49 therefor supports the bed plate approximately along the line of pressure of the upper roll on the type or cover.

By such arrangement I am able to avoid the use of a heavy bed plate structure usually required in ordinary printing presses and can use light flexible material due to the fact that the type impression is made by a line contact of the roller 48 progressing across the respective sur-

face in fixed relation with the supporting roller 49 and the parts are therefore not permitted to relatively flex in making the impression of the type on the card. For this reason the impression unit is capable of being varied in position vertically relative to the side rails 1 and 2. When out of impression position and in the position shown in Fig. 5 the lugs 54 of the element 45 and 54ª of the element 46 support the unit and on the side rails, in moving the impression rollers from this front end position of Fig. 5 over the cover member and the bed plate 5 in printing the card, the impression unit may vary in vertical position relative to the side rails due to any inequalities of surface of the cover member or varying thickness of cards to be printed or other irregularities such as the position of the plane occupied by the various type faces some of which may be slightly higher than others. All of these mechanical irregularities in construction do not detrimentally affect the resultant printing operation and, due to the fact that the card is held between the cover member and the holder bars 27 and 28, the card cannot be displaced by successive printing movements of the impression member which is adapted to traverse the bed plate and cover from one end to the other or any portion thereof.

To permit the impression unit to traverse the side rails from end to end and across the cover member, it is to be noted that the lugs 54 on the end casting 45 and lugs 54ª on the end member or casting 46 of the impression unit extend over the face of the respective side rails 1 and 2 only for a portion of the width thereof. The reason for this is that the end blocks 41 on the card holders 27 and 28 require to lay on the upper face of the rail 1 as suggested by dotted lines in Fig. 7 and likewise the hinge elements 30, 31 and 32 on the rail 2 are spaced from the outer side face thereof permitting the lugs 54 and 54ª to freely pass along the respective side rails. The lugs do not bear on the side rails in the printing operation their function being to support the impression unit when moved to the forward end of the machine off from the printing bed or type container. When the rolls are in engagement with the bed and upper surface of the card or cover member, the impression unit is suspended solely by those members and the mounting of this impression unit is such as to permit the same to occupy various positions in a vertical plane.

It has heretofore been stated that when the card is in place as shown in Fig. 2, it is held out of contact with the printing surface by the cover member and the supporting bars 27 and 28. These are flexible in character and are supported only at the opposite side edges and in moving the impression unit across the same in making an impression these card holding members are flexed sufficiently to cause the face of the card to engage the inked face of the type.

Preferably, to insure sufficient flexibility, the hinge elements 30, 31 and 32 secured to the bed plate, as indicated in Fig. 11, have an aperture for the rod 29 slightly greater in diameter than the diameter of the rod which will permit the edge of the cover member to be depressed but it is to be noted that the corresponding hinge elements 30ª, 31ª and 32ª on the cover fit the rod as do also the elements 33 for the respective card holder bars 27 and 28. Thus, there is no relative movement of the bars 28 relative to the cover member but they may jointly move toward or from the type face through movement of the impression rollers thereacross. It is to be noted further that the roller 48 is spaced from the end casting 46 as shown clearly in Fig. 5 so that the adjacent end of the roller rides in engagement with the surface of the cover, while these hinge elements as the impression element is drawn thereacross, lie in the space between the end casting 46 and end of the roller 46. This is likewise true at the opposite end. The roller 48 is spaced a sufficient distance from the end casting 45 to permit the latch members 40 to pass between the end of the roller and the casting 45. The relationship of the members 27 and 28, the cover member 33 and the card 44 to the type face previous to the movement of the roller thereover is shown in Fig. 3 and Fig. 4, and it will be noted that the card face 44 particularly on the line of the roller contact is brought into printing contact with the type face.

It will also be seen in these views that the bars 17 and 18, the spacing elements or blocks 20, 21, 22, 23 and 24 and the wedge blocks 25 and 26 are less in height than the type 37. Thus, the supporting bars 27 and 28 may extend across the bed plate at any point other than that occupied by the type and more than two holder elements may be provided if desired. A feature of this invention that is secured by this general arrangement of holders and the member or members to be clamped thereby by the catch 40 is not only that the card is held from displacement during the printing operation but also in order that, after the impression element has been run across the bed plate and card and cover member and returned to the position shown in Fig. 1 or Fig. 5, the holder members may be turned upwardly as shown in Fig. 1 permitting the impression to be observed while the card is held in its relative position to again register with the type face when turned downwardly thereover for further submission to the pressure roller to insure a proper impression. One reason for such arrangement is that it sometimes happens that the face of one or more type is a little lower than others and may not be as well inked as the remainder. Therefore, after the first impression is made and the cover raised as shown in Fig. 1, the type may be again inked, the cover and card returned to printing position and the impression rollers again run across the cover member one or more times to prevent unevenness appearing in the impression on the card as the successive movements of the impression rollers across the cover and bed plate will press out any irregularities either in the surface of the card to be printed or irregularities in the type faces.

A satisfactory impression is thus insured before the card is removed from its fixed position on the holders. It is also a feature of this invention to provide an adjustment of the distance between the rollers. The purpose of this adjustment is to increase the pressure if desired or to vary the distance between the rollers required by reason of the difference in thicknesses of the cards to be printed. This adjustment is of value in that if the card discloses an imperfect impression on being raised to a position for observation as in Fig. 1, the rollers may be adjusted to a little less distance apart to increase the pressure for successive printing movements of the impression rollers and thus any imperfections in the type impression may be eliminated. This adjustment of the distance apart of the rollers is secured by the mechanism shown more clearly in Figs. 6, 7, 9 and 10.

In Fig. 6 it will be noted that the longitudinal

axis of the roller 48 is eccentric to the supported end 55 of its shaft. In the longitudinal section of the roller, shown in Fig. 10, it will be noted that the end portions 55 and 55a for the shaft 56, which are supported in bearings in the respective end members 45 and 46, are eccentric to the portion 56 of the shaft extending therebetween, and that this shaft adjacent the inner faces of the end castings 45 and 46 respectively has attached thereto inner ball races 57 and 58. The cylindrical outer face of the respective inner ball races therefore is eccentric to the axis of the respective end portions 55 and 55a of the shaft.

The outer ball races 59 and 60 for the respective inner races are secured in the end of the roller 48. As will be noted more particularly from Figs. 6 and 7, a lever 61 is attached to the shaft end 55 extending radially outwardly therefrom and has a return bent end 62 spaced therebetween to receive a spring restrained pawl 63. This pawl, as will be seen clearly in Fig. 6, has a toothed or pointed end 63a to engage the ratchet teeth of the arcuate rack 64 formed as a component part of the end member 45. By moving the arm 61 in the direction of the arrow shown in Fig. 6, the distance between the rollers 48 and 49 is decreased but any pressure tending to spread the rollers, as for instance through movement of the compression unit across the bed plate in making the type impression, is prevented due to engagement of the pawl in the teeth of the ratchet 64 and thus, to increase the distance apart between the rollers, it is necessary for the operator to grasp the pawl and release the same in order to turn the arm in a direction the reverse of that shown by the arrow in Fig. 6. A spring 65 tends to maintain the pawl in engagement with the ratchet. Due to the end portions 55 and 55a being mounted eccentrically to the portions of the shaft supporting the inner ball races, the roller is adjusted to an equal degree at both ends.

This is the preferred form of roller adjusting mechanism but various changes may be made in this mechanism without departing from the spirit and scope of the invention defined by the appended claims as various means for adjusting the spacing of the rollers may be utilized.

The roller 49 in the construction shown is non-adjustable, it merely being rotatable on bearings similar to that provided for the roller 48 the axis of rotation of which is the axis of the shaft 49a supporting the rollers.

In recapitulation, the operation of the device is as follows: The type or printing plates are set in the desired relation directly on the bed plate 5 in the desired position. The diagram enables the operator to position the type as may be desired as the diagram provides a guide to indicate the position the type impression will occupy on the card of the size to be printed thereby. The type are supported in place on the bed which provides the form in which the type are locked as has previously been described and then the card holder elements are laid over the face of the type. The card holders are also marked correspondingly to the marks on the bed so that the position of the edge of the card toward either side rail of the bed may be placed in registration with the marks on the card holder which are above but in vertical alignment with the corresponding marks on the bed. The ends of the card may be positioned by the operator through observation of the relative position thereof in the relation to the marks on the bed plate therebelow for the size of the card being printed. Thus, the card may be accurately positioned in registration with the marks on the bed plate relative to which the type have been set.

The next step is to lock the card in place. This may be accomplished in various ways but preferably by means of the cover plate as heretofore described which is turned down over the card and holders and with which the holders are detachably connected by means of the latch elements 40 whereupon the card is securely held in its predetermined relative position and yet may be turned as indicated in Fig. 1 out of printing position without loss of registration. After placing the card and turning the cover member and card holders upwardly as shown in Fig. 1, the type and/or plates are inked and the cover member laid downwardly thereover but in spaced relationship with the inked face of the type as will be understood from Fig. 2. This is an important feature because where a number of cards are to be printed from the same set up it is necessary to position each card and lock the same in place before the impression is made and therefore the card holders are arranged to normally hold the card above the printing face of the type permitting manipulation thereof without fear of smudging the card. When the type has been inked the cover member and card holders are turned downwardly thereof as indicated in Fig. 2 and the impression unit consisting of the adjustably spaced rollers heretofore described is drawn across the bed plate one or more times and then returned to inoperative position at the end of the bed, the cover raised thus raising the card to position for observation of the impression and if imperfect the card may be returned again for successive operations of the impression unit and under increased pressure if desired.

The fact that the cover member and card holders are fixed to a common rod insures these two members maintaining their relative locked position under the operation of the impression unit and the looseness of the bearing for the rod provided on the side rail 2 permits vertical movement of the cover member and card holders and thus any differences in the height of the printing face from the upper face of the bed plate on which they rest is compensated for. By this is meant not only differences that may occur between type of the same font but also differences that may exist in the heights of different fonts of type. This mounting of the rod is shown more particularly in the sectional view Fig. 11. The bed plate itself as previously stated is of sheet metal and therefore flexible in character as is also the cover member and card holders. The type container therefore has upper and lower flexible walls but nevertheless a perfect impression is secured by reason of the adjustably fixed spacing of the roller members which are moved across the upper face of the cover member and the lower face of the bed plate.

By the general arrangement described the type and/or printing plates may be set up on the bed plate and the entire layout is visible so that the operator can set the same relative to the guide means provided or may rearrange it after having set it in approximate position for which purpose the wedge members require to be loosened slightly to enable the redisposition of the type without varying the general relationship thereof and then the same may be relocked.

This ability to set the type directly in the machine which is to print the same therefore has

an important function particularly for unskilled persons for use of which this device is designed, and the arrangement provides a means for locking the type practically identical in result with that in use in the forms usually used with printing presses. By my arrangement therefore the form which is an inherent part of the machine is as large as the largest card to be printed and is adjustable in a manner to securely hold even a single type in locked position. Also by use of this method of and means of locking the type in place the type are well supported and held under pressure from lateral displacement tending to be produced by movement of the impression roller thereacross by reason of its line of pressure contact being moved progressively across the flexible container and set type.

By reason of light weight of material that may be used the apparatus is portable and a further advantage is secured in that due to the lightness in weight the frame may be arranged to receive one or more drawers for carrying fonts of type, plates, inking rollers and like paraphernalia required for apparatus of this kind and thus with holders for such material and the printing apparatus itself are assembled in a single portable unit.

From the foregoing description it is believed evident that the various objects of the invention are attained by the preferred form of construction described, and that the various changes in the construction and arrangement of the parts may be made without departing from the spirit and scope of the invention as set forth in the appended claims.

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

1. In a printing machine, a flexible bed plate providing a support for type or plates to be printed, means for holding a card or the like in spaced relation over the printing surface, a flexible cover member for the card and holder by depression of which the card is moved to printing contact with the printing surface, and a pair of adjustably spaced rollers one extending beneath the bed plate and one in parallel relation therewith over the cover member adapted to be moved across the device to cause a deflection of the cover member to print the card, the lower roller supporting the bed plate from deflection at the line of pressure application as the rollers are moved across the device, and means for fixedly holding the rollers in the adjustably spaced position.

2. In a printing machine, a flexible bed plate and a flexible cover therefor providing a container for type or printing plates, the upper and lower walls of which are flexible, means associated with the cover for holding a card in spaced printing relationship with the type, an impression element movable across the container including a roller for contacting the cover, and a roller for contacting the under surface of the bed plate by which the bed plate is held from deflection on the line of application of pressure in the printing operation, and means for maintaining the rollers an adjustably fixed distance apart.

3. In a printing machine, a bed plate of flexible character on which the type or printing plates may be positioned for the printing operation, a card holder for holding the card spaced from the type face and in the desired printing relationship therewith, a flexible cover for the card and bed plate, the cover and bed plate providing a flexible walled container for the type, an impression element consisting of a frame work, a roller supported thereby and extending beneath the bed plate in contact therewith, and a parallel roller for contacting the cover, means for varying the distance apart of the rollers, the said impression element being adapted to be drawn across the bed plate and cover to cause a printing impression, the rollers supporting the bed plate from deflection during the printing operation.

4. In a printing machine, a bed plate and a cover member of flexible sheet metal between which the type are positioned, means for holding a card therebetween in spaced printing relationship with the type, an impression element consisting of a framework, and a pair of spaced rollers adjustable as to distance apart adapted to be drawn across the bed plate and cover, the lower roller supporting the bed plate from deflection and the upper roller causing a deflection of the cover member and moving the card to pressure contact with the type in a vertical plane cutting the line of contact of the rollers with the bed plate and cover member respectively whereby at the time pressure is imposed on the type the same are held from deflection, and means for fixedly holding the rollers the adjusted distance apart.

5. In a printing machine, a bed plate of sheet metal, a peripheral framework thereabout, the opposite side rails of which have notches therein, the side rails extending beyond the bed plate at one end, a supporting base for the bed plate supporting the side rails in spaced relation with the bed plate, a type supporting means including bars extending between the notches of the bed plate, means for locking the type in relationship therewith, a card holder adapted to support a card over the type face in spaced relation therewith, and an impression element comprising opposite end frames for riding the said side rails of the bed plate and extensions, a roller extending between the end plates and beneath the side rails and another roller extending between the end frames above the side rails, means for adjusting the upper roller toward or from the lower roller, the said impression element being movable along the side rails with the lower roller in contact with the under surface of the bed plate and the upper roller in pressure contact with the card holding element to produce an impression on the card by the type, the holder element being hinged at one side of the bed plate permitting the holder to be turned upwardly to observe an impression or turned downwardly thereover in registration with the type whereby succeeding inkings and impressions may be made, the extensions of the end rails providing a supporting means for the impression element between the printing operations.

6. In a printing machine, a sheet metal bed plate including a peripheral framework and side rails extending therebeyond at one end, a supporting means for the bed plate at opposite ends for spacing the same from a supporting surface, the side rails of the bed plate extending above the surface thereof providing a space in which the type may be positioned for the printing operation, a card holder hinged to one of the side rails of the bed plate and adapted to be turned downward thereover to support a card and permit the positioning thereof while in spaced relationship with the printing surface, a sheet metal cover member hinged to the bed plate and adapt-

ed to be turned over the card holder to hold the card between the holder and the cover whereby the cover may be turned upwardly carrying the card therewith in a predetermined position on the holder or downwardly over the bed plate to position the card in printing relationship, and an impression element consisting of the end frames and a pair of spaced rollers therebetween adjustable as to distance apart normally occupying a position on the extended side rails when in non-printing position and movable along the side rails with the lower roller contacting the under surface of the bed plate and the upper roller contacting the cover member to cause a printing impression between the card and the type and thereafter to be returned to its normal non-printing position to permit examination of the printed card or removal thereof and positioning of another card for a successive operation.

7. In a printing machine, a bed plate on which the type may be directly set, means associated with the bed plate adapted to hold the type in set relationship at any predetermined position thereon, a card holder by which the card may be positioned in the desired relationship with the type and spaced from the printing face thereof or moved from such position, and an impression element including a non-yielding roller movable across the machine to cause an impression of the type on the card, and means for holding the roller in an adjustably fixed position relative to the type face during the printing operation.

8. In a printing machine, a bed plate on which printing members may be positioned and secured thereon for the printing operation, means associated with the bed plate on which a card may be positioned in spaced relation with the printing surface in relative printing relation therewith, the said card supporting means being of a character to be deflected by pressure to permit the card to engage the face of the type, and an impression element for causing the card to contact the printing surface under pressure, said impression element being adjustably fixed in position to predetermine the printing pressure to be applied.

9. In a printing machine, a bed plate on which printing members may be positioned and secured thereon for the printing operation, means associated with the bed plate on which a card may be positioned in spaced relation with the printing surface in relative printing relation therewith, the said holder being of a character to be deflected by pressure to permit the card to engage the face of the type, and an impression element for causing the card to contact the printing surface under pressure, and means for varying the pressure of the impression element, said means including means for fixedly holding the impression element in set position.

10. In a printing machine, a bed plate on which the type may be positioned, a card holding device adapted to occupy a position over the bed plate to support a card thereon in spaced relation with the printing surface and thereby permitting the positioning of the card in the desired printing relationship therewith, means for securing the card in its predetermined position relative to the holder whereby the holder may be turned to expose the impression surface of the card and returned to predetermined spaced relationship with the type face, an impression element adapted to apply pressure to cause printing contact between the card and the printing surface, the holder being deflectible under the pressure of the impression element and operating to lift the card from contact with the printing surface when the impression element is removed, said impression element including a roller for causing the printing impression, and means for maintaining the roller in an adjustably fixed position to thereby predetermine the printing pressure.

11. In a printing machine, a bed plate having a diagram thereon relative to which printing members may be predeterminedly positioned, means for supporting the printing members for the printing operation, means for supporting a card in a predetermined relationship with the diagram and in spaced relationship with the printing members, and an impression element for causing printing contact between the card and the printing surface.

12. In a printing machine, a bed plate having a diagram thereon relative to which printing members may be predeterminedly positioned, the diagram being of a character whereby the type may be set in a desired position for the several sizes of cards which the machine is adapted to print, a card holder having marks thereon corresponding to the various marks of the bed plate enabling the operator to place the card in the holder in practical registration with the diagram relative to which the type has been set on the bed plate whereby the impression on the card will bear the same relationship thereto as the type does to the diagram of the bed plate, said holder being of a character to enable the card to be positioned over the printing members and in a spaced relationship therewith or turned from such position and means for causing a printing impression to be made on the card.

13. In a printing machine, a bed plate on which the type are to be secured for a printing operation, the bed plate being marked in a manner to indicate the several sizes of show cards which the machine is adapted to print whereby the type may be positioned predeterminedly in relation to a desired size of card, a card holder by means of which a card of any certain size may be positioned practically in registration with the respective part of the diagram relative to which the type have been positioned whereby the impression on the card will occupy the same position thereon as the type occupies relative to the diagram, said holder being of a character to enable the card to be positioned over the printing members and in a spaced relationship therewith or turned from such position and means associated with the bed plate to cause a type impression to be made on the card.

14. In a printing machine, a bed plate on which type may be positioned, a card holding device adapted to support a card in printing relationship with the type and spaced therefrom, one of the said elements being movable to permit printing contact between the card and the printing surface, and an impression element including a framework movable relative to the bed plate and a pair of non-yielding rollers adjustably fixed as to distance apart, one roller being movable beneath the bed plate to support the same as the other moves thereover in printing the card.

15. In a printing machine, a bed plate on which type or plates may be positioned for printing, a flexible card holding device in hinged relation therewith permitting the card to be positioned in printing relationship and out of contact with the type or turned to permit observation thereof while held in the predetermined relationship therewith, a flexible sheet in hinged re-

lation with the bed plate adapted to be turned over the card holding device in contact with the card or sheet, latch means for securing the holding device to the flexible sheet and means for applying pressure to the holding device consisting of rollers movable across the sheet to produce a printing contact of the card with the type.

16. In a printing machine, a bed plate on which the type and plates to be printed may be set, means associated with the bed plate for holding the set type in a predetermined relationship, a flexible card holding device by which a card to be printed is held in the desired printing relation and out of contact with the set type for the printing operation, a hingedly mounted flexible sheet adapted to be turned over the card holding device to contact with a card thereon, means for securing the holding device to the flexible sheet to thereby secure the card in desired position thereon and means for causing a pressure contact between the card and the type face, the hinged relation of the flexible sheet permitting removal of the card from printing position for examination of the impression and return thereof to registration with the printing surface for a subsequent impression.

17. In a printing machine, a bed plate on which the type may be positioned for the printing operation, a card holder hinged to the bed plate and adapted to be turned thereover providing a support on which the card may be placed in any desired relationship with the type face while in spaced relation therewith, means for securing the card in predetermined position on the holder, an impression element adapted to apply pressure to the card and holder to move the card to printing contact with the type, the holder element being flexible to permit deflection thereof under the operation of the impression element, said impression element comprising a pair of rollers adjustably fixed as to distance apart supported by the bed plate and movable as a unit transversely of the bed plate during the printing operation.

18. In a printing machine, a bed plate on which the type or printing plates may be positioned, a card holder adapted to be positioned over the bed plate to support a card thereon in spaced relation with the printing surface and permitting the positioning of the card in the desired relation with the set type, means for securing the card in its predetermined position on the holder whereby the holder may be displaced to permit examination of the impression surface thereof and returned to the predetermined relationship with the type face, and an impression element adapted to apply pressure to force the card to printing contact with the printing surface to cause an impression thereon, the holder being arranged to be depressed under the pressure of the impression element and to lift the card from contact with the printing surface when the impression element is removed, said impression element comprising a pair of rollers adjustably fixed as to distance apart supported by the bed plate and movable as a unit transversely of the bed plate during the printing operation.

19. In a printing machine, a bed plate on which type may be directly set, means for supporting the type in set relationship on the plate, a card holder adapted to support the card in spaced relationship above the type face to permit the card while out of contact with the type to be predeterminedly positioned relative thereto, means for locking the card in the holder, said means including a hinged element with which the holder is associated permitting the card to be raised out of printing position to observe the printed face of the card or to return the same to printing position in relative registration with the type, and an impression element adapted to cause an impression to be made on the card by the type, said impression element comprising a pair of rollers adjustably fixed as to distance apart supported by the bed plate and movable as a unit transversely of the bed plate during the printing operation.

20. In a printing machine, a bed plate on which the type are set directly in a predetermined position, a card holder adapted to support a card in spaced printing relation with the type face, a cover member hinged to the bed plate and adapted to be turned over the card, means for securing the cover member and holder together to hold the card in a fixed position, the cover member and holder being flexible to permit deflection thereof under pressure to cause a type impression to be made thereon, and a roller element adapted to be moved over the cover member to cause the impression to be made.

21. In a printing machine, a bed plate of flexible sheet metal on which printing plates and type may be positioned for the printing operation, a card holder for supporting a card in a predetermined spaced relationship with the printing face of the type or plates, a cover member of flexible sheet metal hinged to the side of the bed plate adapted to be turned over the card and holder therefor, means for detachably securing the holder to the cover whereby the card is fixedly held in a predetermined printing relationship with the type when the cover is turned over the card and bed plate, an impression element including a frame and a pair of adjustably spaced rollers adapted to be moved in parallel relation over the bed plate and cover member respectively to print the card and prevent deflection of the bed plate under the pressure of the printing operation.

22. In a printing machine, a bed plate of flexible sheet metal on which the printing plates and type may be positioned, a card holder including a hinged member adapted to be laid over the bed and to support a card thereon above the type thereby permitting the card to be positioned while out of contact with the type in a predetermined relationship therewith, a flexible cover member in hinged relation with the bed plate adapted to be turned over the card and holder element to clamp the card in its predetermined place in the holder and permitting the card, holder therefor and cover to be turned upward as a unit to observe the card after the impression has been made or to return the same to printing position with the impression thereon in registration with the type, and an impression element consisting of rollers adjustable as to distance apart, one extending beneath the bed plate and the other thereover and adapted to be moved over the bed plate and cover member to cause a deflection of the card holder and cover to print the card, the rollers engaging the respective opposite sides of the cover member and bed plate preventing deflection of the bed plate at the point of pressure application between the rollers.

23. In a printing machine, a bed plate of flexible sheet metal on which type or printing plates may be directly set in printing position, a pair of bars extending across the bed plate and adapted to be adjusted in position longitudinally

thereof providing in conjunction with the bed plate a form in which the type may be locked, means for supporting a card over the said type in predetermined relationship therewith, and an impression element including a roller movable thereover to cause a printing impression on the card and a second roller movable in contact with the under side of the bed plate in a fixed spaced relation with the first roller.

24. In a printing machine, a type supporting element of flexible sheet metal on which the type are held in printing relation, means for supporting a card or other element to be printed in the desired printing relationship with the type, a flexible cover member having a padded surface positionable over the card, and a roller impression device for traversing the type supporting element and cover member thereby causing a printing impression of the type on the card, said impression device being of a construction to prevent flexing of the bed plate by the roller.

25. In a printing machine, a rectangular framework, a bed plate provided thereon terminating short of one end of the framework and providing a support for printing members, notched side rails for the bed plate portion, means including bars having end portions adapted for engagement in respective aligned notches of the side rails for holding set printing members in position on the bed plate, a card supporting device including a gripper of a character permitting the card to be positioned in predetermined relation with the type or raised therefrom for inspection, and a roller impression element supported by the framework and movable on the framework to beyond the bed plate to permit the positioning or examination of a card thereon and movable on the framework from such position for causing a printing impression between the card and the printing members.

26. In a printing machine, a bed plate on which printing elements may be positioned, a device for holding the sheet to be printed consisting of a metal plate, adjustable means for securing a sheet in a predetermined relationship on the plate whereby successive sheets may be positioned for registration with the printing members, said plate being hingedly supported and turnable to position a card over the printing elements and supported by the metal plate in spaced relation therewith or turned from such position subsequent to the printing operation to permit removal of the printed sheet and introduction of a second sheet, and manual means for applying pressure to the plate while holding the card in the printing relationship to thereby cause the card to contact the printing elements under a uniform pressure throughout the printing surface.

27. In a printing machine, a bed plate on which printing elements may be positioned, a metal plate having a smooth unbroken surface hingedly supported relative to the bed plate and manually turnable to printing position thereon or to a position away therefrom, adjustable means carried by the plate for securing a sheet to be printed thereon in predetermined position for registration with the printing elements when the plate is turned to position the sheet to be printed thereover, and means for applying pressure to the plate when in printing position to cause printing contact between the printing elements and the sheet.

CHARLES M. LAMB.