

March 17, 1936.

H. W. LAMB

2,034,584

SHOW CARD MACHINE

Filed June 7, 1934

3 Sheets-Sheet 1

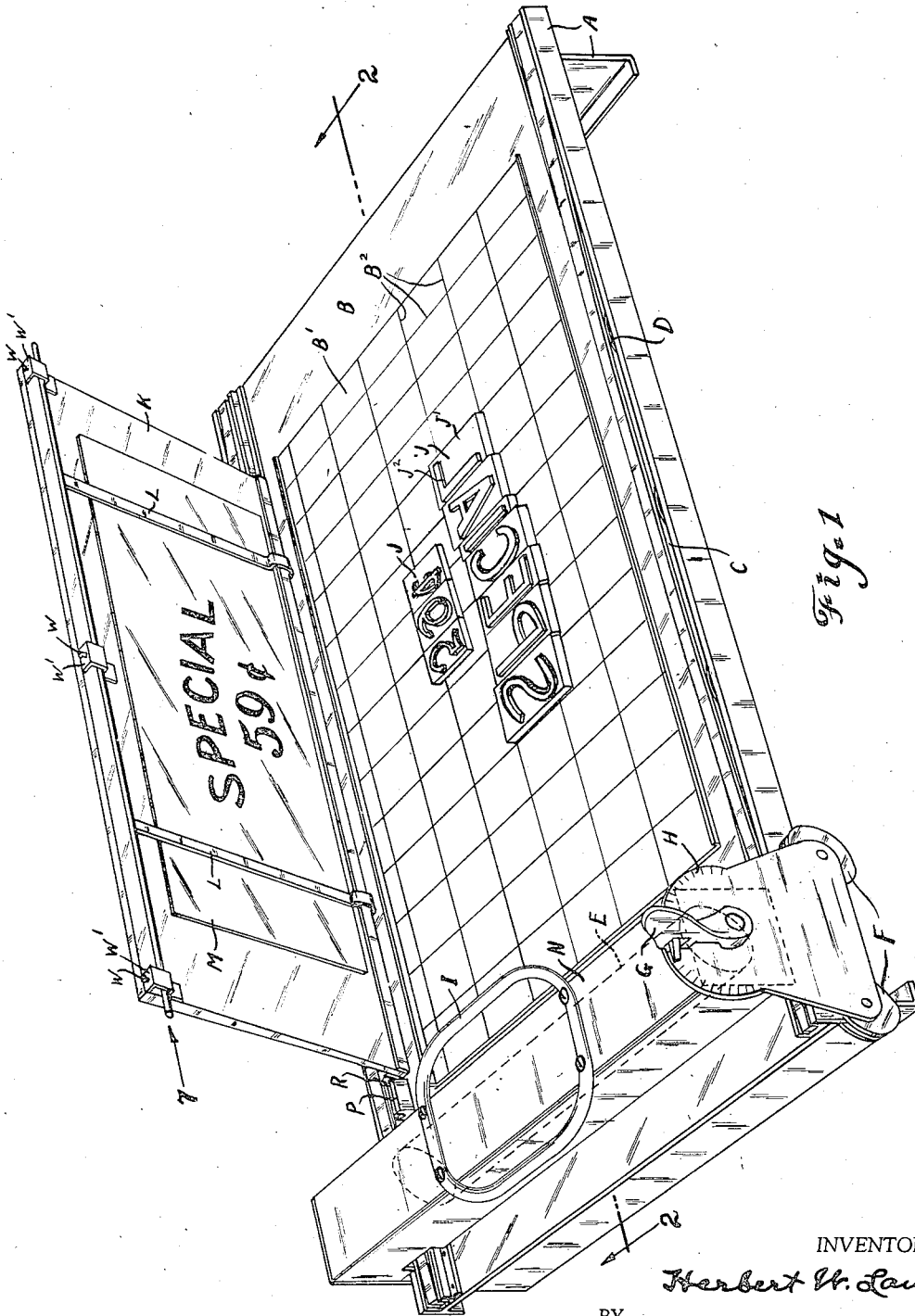


Fig. 1

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3 Sheets-Sheet 2

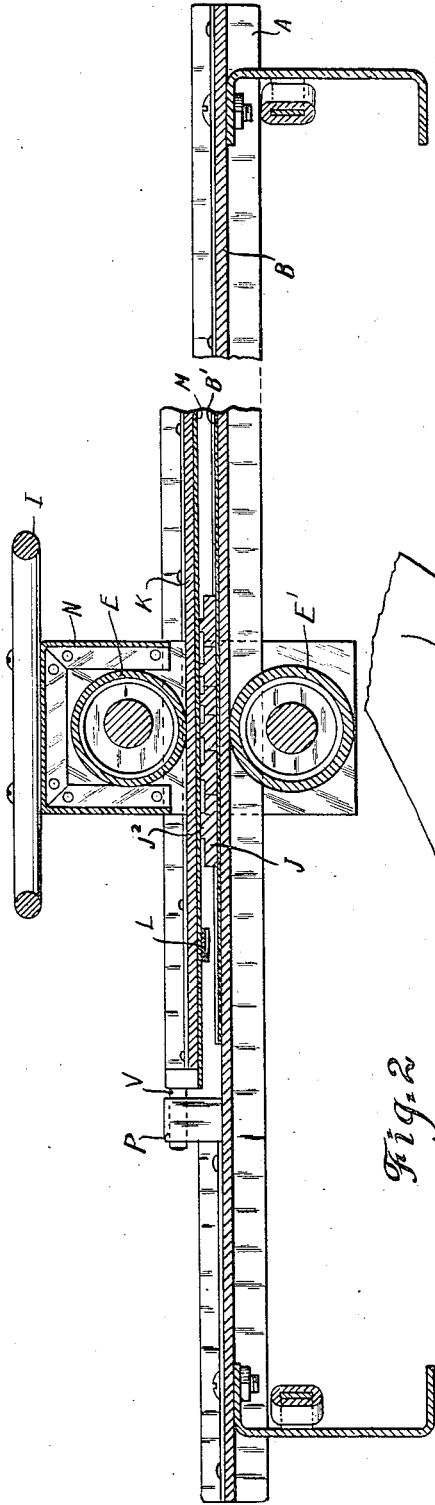


Fig. 2

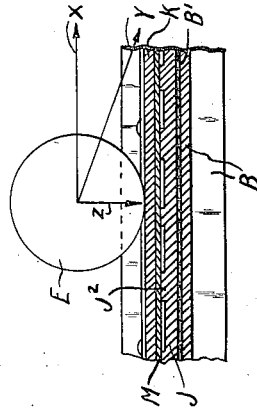


Fig. 4

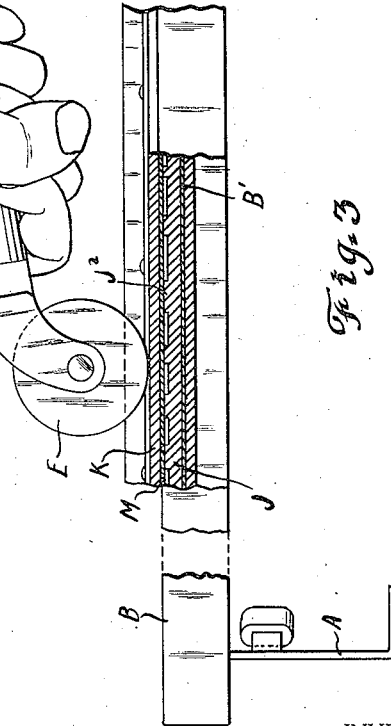


Fig. 5

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3 Sheets-Sheet 3

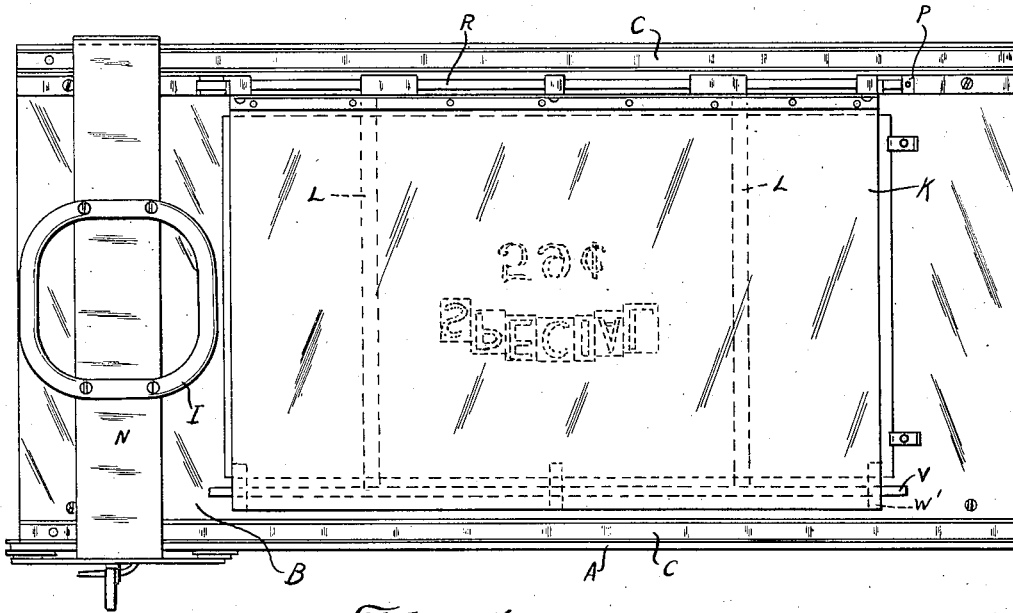


Fig. 5

→ **NOW NOW**

Fig. 6

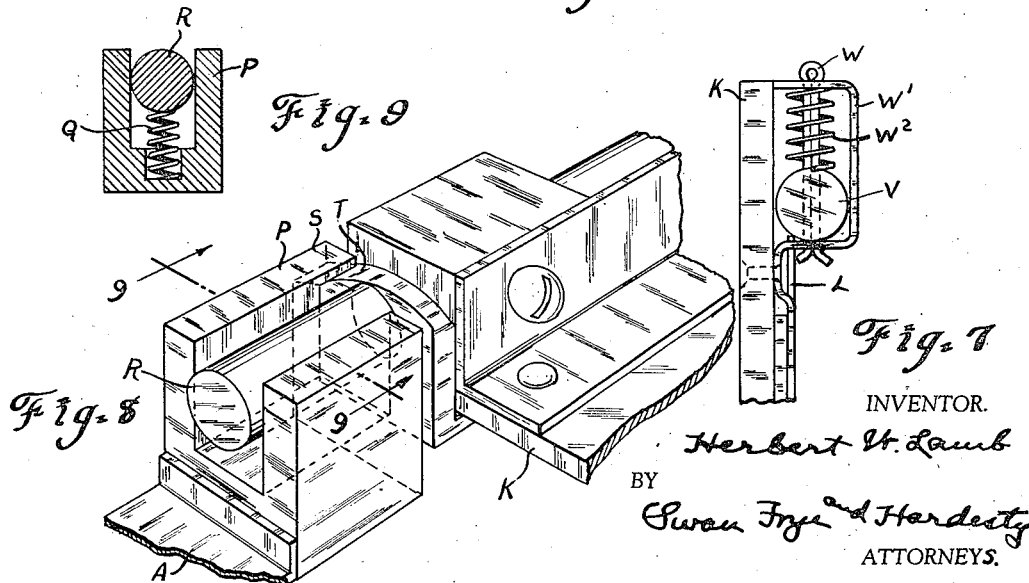


Fig. 7

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# UNITED STATES PATENT OFFICE

2,034,584

## SHOW CARD MACHINE

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Application June 7, 1934, Serial No. 729,355

9 Claims. (Cl. 101—269)

This invention relates to printing mechanism, and has for its object an improved organization of parts adapted especially for the printing of display or advertising cards from rubber or rubber faced type.

In contrast with the ordinary printing operations, wherein metal type is used and where hundreds or perhaps thousands of copies of comparatively closely printed text are to be struck off, the printing of show or advertising cards, preferably from rubber or rubber-faced type, presents problems far removed from the ordinary printing operations just mentioned. Not only are comparatively few cards of any particular design or wording needed, as for example, for the display of particularly advertised bargains in various sections of a department store, but in addition, for the sake of attracting customers' attention, often fantastic designs both in letters and figures are needed, and when they have served their purpose for the particular display desired, are in many cases of no further use.

The preparation of such type in metal is so far more expensive than similar outlinings in rubber that considerations of expense, because of the temporary and limited use of the cards involved, dictate the use of rubber or rubber-faced type.

If such character of type were to be used in a direct impression press, that is, where the plane of the type-supporting bed as well as of the printing surface of the type approaches and recedes from the sheet to be printed in a substantially perpendicular direction, or at least where the impact of the type against the sheet is simultaneous throughout the set-up design or wording, the distortion of the rubber faces of the type form and chosen design would be of negligible consequence, if indeed it occurred at all. However, considerations of cheapness of apparatus and rapidity of production, and of quick substitution of one design for another, point to the traveling roller pressure method as the most feasible for effecting the imprinting of the design upon the sheet or card.

Here again difficulties are encountered as regards the use of rubber-faced type as contrasted with other type, in that the travel of the compression roller, whether hand-operated or in case the roller be a correlated part of the mechanism in that as the roller precedes from one end of the sheet to the other, whether directly resting thereupon or upon an interposed blanket, the net applied pressure as transmitted to the sheet and type surfaces is in a direction generally acutely angled to the planes thereof, and consequently

there is a tendency for the relatively yielding rubber type surface to spread or be distorted from its true position in the direction in which the roller is traveling instead of truly perpendicularly. This is true whether the letters or figures appearing in the design be circular, as for example an "O" or whether they be straight-lined, as for example an "N"; in either case those sections of the letters in which there are intermediate vertical portions—assuming the roller to be traveling from one side of a sheet to the other—are pushed out of alignment, so that in addition to the intended design of the letter or figure, there is an undesired cloud or shading present at the side of the letter contours in question. Furthermore, it often happens when rubber type is being used that despite the utmost care, the first impression upon the paper due to the applied pressure thereon is not sufficiently uniform to completely transfer the design to the paper or card, and a second impression is necessary. Provision must therefore be made for permitting the inspection of a card thus supposedly thoroughly printed upon before its removal from its registering position with respect to the type, which has already made a partial impression, in case it becomes necessary to indulge in a second pressure operation.

To obviate the objections to such conditions, while taking full advantage of the opportunities of economical operation and rapid production and substitution of the designs which it is desired shall appear upon the display cards, I have devised the apparatus forming the subject matter of this disclosure; its structure and working principles are illustrated in the accompanying drawings, in which

Figure 1 is a perspective of one form of my improved construction, showing a card in position with respect to the other operative parts, and with the type arranged in desired relation for the printing of the design desired.

Figure 2 is a lengthwise sectional elevation, showing the relation of the various operative parts to one another, being taken along the line 2—2 of Figure 1 and looking in the direction of the arrows there shown.

Figure 3 is a fragmentary elevational view, partly in section, of a complete apparatus, varying from Figure 1 in that it suggests the possibility of using a hand roller, instead of the correlated roller members shown therein.

Figure 4 is a fragmentary and partly sectioned view similar to Figure 3, but intendedly diagrammatic, in that it is designed to bring out the

normally acting directions of the roller-applied force upon subjacent cover and sheet and type members.

Figure 5 is a plan view of the device shown in Figure 1, the cover being lowered, and some of the parts then subjacent thereto being shown in dotted lines.

Figure 6 makes use of the letters spelling the word "NOW" to show, in the two representations embodied in this figure, the normal or unclouded impression which is desired, and the blurred or distorted impressions due to the warping of the type under roller-applied pressure.

Figure 7 is a detail view taken from Figure 1 and looking in the direction of the arrow 7 thereon, showing the preferred form of spring catch for holding the sheet-supporting clips in holding position on the under face of the cover.

Figure 8 is a fragmentary perspective on an enlarged scale showing a preferred form of demountable hinge or trunnion support for the pivoted lateral edge of the sheet-supporting cover.

Figure 9 is a detail elevational view, largely in section, taken along the line 9—9 of Figure 3 and looking in the direction of the arrows there shown.

A represents a supporting base or frame, and B the bed plate of my improved printing mechanism. Along either side of the bed plate are positioned spring rails C urged upwardly at their center portions by the leaf springs D, along which the ends of the top roller E are designed to travel. In the form shown in Figure 1 the top roller E is rotatably supported in a frame N, which spans the breadth of the frame A and extends sufficiently therebeneath for the lower rollers F to engage against the corresponding under surface of the frame, so that, subject to the adjustment of the top roller by means of the eccentrically operating catch G which works upon the ratchet face H of the frame, the desired degree of compression can be exerted upon the bed plate B and its supported type, sheet or card and cover members hereinafter to be discussed, as the roller-supporting frame is moved lengthwise of the frame B by manual draw upon the handle I.

The top surface of the bed plate is preferably provided with a waxy or sticky surfacing B<sup>1</sup> and if desired, with an arrangement of intersecting guide lines B<sup>2</sup> for facilitating the positioning of the type. A pure or unvulcanized rubber surface may also be employed for this purpose. This surface is of such stickiness or adherent character that once the type is placed thereon it is reliably held in position but removable by intentional manually applied pressure. On its top surface are arranged the several type blocks J; generally some of them are large, as for example the display of a price for an article named in comparatively small letters; these are positioned on the bed plate to form in reverse the design desired to be imprinted, but in any event they are of such size as compared with the supporting blocks J<sup>1</sup>, that the rubber or similarly flexible printing surfaces J<sup>2</sup> are very appreciably spaced from one another, so that, as brought out in Figure 2 there are alternated elevations due to the depressions where there is no inking surface present, which make the yielding of the edges of the rubber letters under roller pressure almost inevitable as regards any presently known apparatus for counteracting this tendency.

Along one lateral edge of the bed plate is hingedly supported a cover member K, which is provided with clips L for temporarily holding a sheet or card M in position on the under surface of the cover when the latter is lowered over and into contact with the type surfaces. Bearing in mind the unreliability of securing a complete imprint from rubber type, especially if a relatively thick card is to be imprinted, and the resultant necessity of perhaps securing two impressions from the same type set-up, which of course must register, it will be obvious that this cover efficiently serves this purpose, in that when raised up to inspection position of its supported sheet and then again lowered against the type surfaces, the already printed or partly printed design on the card will be returned to true registry with the arranged type design.

Since, however, if the sheet or card be a thin one, and if the remarked-upon spaces between the surfaces of the type elements be quite large, even a sheet or card is often inadequate to prevent a laterally flexing pressure upon the rubber type units as the roller passes over the sheet, or even over an ordinary printing blanket positioned over the sheet. This tendency is brought out in Figure 4, wherein the arrow X represents the horizontal direction of travel of the roller over the bed plate and its supporting parts, the arrow Y represents the type-distorting acute-angular pressure as received from the roller, while the arrow Z represents the truly perpendicular direction of received pressure which would not result in any lateral distortion of the type. If the material of which the cover is made be too thin or too yielding, the resultant effect of the roller's traveling pressure thereover is undulatory, and this, not being absorbed by the sheet or card or even by a flexible blanket, is accordingly transmitted, even through the card or sheet, to the soft-surfaced type, whose margins on the far side of each letter from that initially feeling the roller's pressing influence are more than likely to be bulged or distorted, in the manner illustrated by the second one of the illustrative representations of "NOW" shown in Figure 6, which contrast very unfavorably with the regular and clean-cut letterings in the left-hand one of the representations of this word. The further the actual inked surfaces of the several type elements are spaced from one another, the worse this condition is likely to be, since for example the wide spaces desired between the quite large letterings on a sale or display card often leave valleys or spaces between them of such size that the roller would often tend to sink very appreciably beneath the plane of its normal and intended pressure level. And when its continued travel would bring it to the edge of the next type letter or figure encountered, the deforming impact upon the normal contours thereof as the roller rides over its near edge to resume its ordinary pressure level would additionally distort the rubber or other soft material of which its printing surface is formed.

It is also worthy of remark that this elimination of any transmitted acute-angular pressure contributes as well to the maintenance of the type units in their desired and arranged position on the waxy top surface B<sup>1</sup> of the bed plate. The use of this latter is advisable, in place of any locked-up form of type set-up, because of the small number of impressions of display cards of any particular design would render a resort to

the latter prohibitively expensive, both in time and as to the apparatus needed.

I, therefore, exercise considerable care in the determination of the character of the cover, which may be of some stiffened fabric or wall board material, either of which is sufficiently rigid, as compared with the pressure from the top roller, to translate any acute- angularly directed force into a truly perpendicular force before it reaches the distortable type surfaces, as well as to resist any tendency to an undulatory flexing of the cover. In either case only the truly perpendicular pressure components are transmitted to the sheet and type surfaces, the acutely angular forces being absorbed within the body or mass of the cover. In this manner and by such means I have found it possible to accurately and economically print display cards from the relatively cheap rubber type without the probability of encountering a distorted impression upon the card when supposedly finished.

I desire it to be understood that the specific method of assuring the swinging action of the cover member, so that its supported card will reliably register with the type design, is comparatively immaterial; either a true hinge connection with the bed plate frame, or a pivotal or a trunnion connection may be resorted to, without departure from the intended scope of this disclosure. Some such connection between the cover and the bed plate seems preferable and conducive to quick operation of the device.

The preferred form of operative connection between the sheet-supporting cover and the base plate is illustrated in a rather enlarged scale in Figures 8 and 9. Rising from the edge of the base plate near either end of the cover K are trough-like members or cradles P, in the base or central web of each of which is positioned a rather light helical spring Q, upon which the ends of the lateral bar R of the frame of the cover K rest, being accordingly pressed lightly upward. These bar ends R may be lifted from the cradles and inserted therein quite easily when the cover K is in uplifted or vertical position or nearly so; but long before the lowering of the cover over the type has been completed, the shoulders S on the cover's frame, adjacent the bar ends R have engaged under the projections T on the cradles so that the bar ends R are then held down, against the upward thrust of their springs Q, and cannot be lifted out of the cradles until the cover member has again been raised. Thus an accurately locating hinge or pivoting construction is afforded for guiding the swing of the cover, no matter how many times it may be raised or lowered. But if removability of the cover be a matter of minor importance, any suitable form of hinge or pivot connection between the cover and the bed plate may be resorted to.

And in Figure 7 there is illustrated a desirable but by no means essential form of catch mechanism for locking the bar V, on or near the swinging edge of the cover K, in position over the outer or free ends of the sheet-holding clips L. The bar V which is slidably traversed by the cotter pin W in each of the cages W' being yieldingly held in the depressed position shown by the action of the helical spring W<sup>2</sup>. When it is desired to release the ends of the sheet-holding clips L, slight finger pressure upon the bar V in the direction of the extreme edge of the cover K suffices to overcome the pressure of the springs W<sup>2</sup>, so that the bar V as a whole is moved clear of engagement over the ends of the clips L.

What I claim is:

1. In an apparatus for printing display cards, in combination with a bed plate, a top surfacing therefor comprising a film of sticky material adapted to resist the unintended displacement of substitutable type elements from their several located positions thereon, removable type blocks having their printing faces of relatively flexible material and their base portions adapted to be adherently engaged by the sticky coating on the bed plate, a hingedly supported cover member of fibrous material adapted to be swung over or away from contact with the flexible type faces as arranged, means appurtenant said cover member for detachably securing a card in desired position thereon, and a pair of correlated roller members acting respectively upon the under surface of the bed plate and upon the top surface of the cover member, whereby as said rollers are moved lengthwise thereof the printing pressure exerted upon the cover member and its then subjacent card by the upper one of said roller members is transmitted to the card and the then engaging type surfaces in a direction substantially perpendicular to the planes of said parts.

2. In a mechanism for printing with rubber-faced type, in combination with a frame and a bed plate supported thereby, an adhesive coating for the top surface of said bed plate adapted to effect the temporary anchorage of type units in their intended location thereon, a cover member of fibrous material hingedly supported by said frame in position to be swung over and into substantial parallelism with the plane of the printing faces of the positioned type elements, means for removably positioning a card upon the under surface of said cover member, and a pair of correlated roller members adapted to act upon the top surface of said cover member and upon the under surface of said bed plate when moved lengthwise thereof, whereby due to the interposition of said cover member a truly downward pressure is transmitted to its supported and then subjacent card and upon the printing surface of the type elements.

3. Apparatus for enabling accurate printing impressions to be made from rubber-faced type, comprising, in combination with a bed plate for supporting the type and roller means for effecting a printing pressure by movement thereof lengthwise of the bed plate and of the sheet to be imprinted, a hinged cover member of fibrous material positioned in operative relation to said bed plate and its supported type, said cover member being provided with means for holding the sheet during the printing operations and being limitedly flexible only, whereby the pressure due to the passage of the roller means thereover is transmitted to the sheet and its inked type in a direction substantially perpendicular to the planes thereof.

4. Means for preventing the flexing of the printing surface of rubber-faced type due to the progressive pressure of a roller member movable lengthwise thereof and of a sheet to be printed, comprising, in combination therewith and with a bed plate for supporting the type units in desired relation to one another, a cover member of fibrous material for temporarily holding in position a sheet whose imprinting is desired, said cover member being hingedly connected with the bed plate structure, and being adapted to transmit the rolling pressure upon its upper surface to the then subjacent sheet and type surfaces only in

a direction substantially perpendicular to the planes thereof.

5 5. Means for enabling accurate printing im-  
 10 pressions to be taken from rubber-faced type,  
 15 comprising, in combination therewith and with a  
 20 supporting bed plate therefor means applied to  
 the top surface of the bed plate for adherently  
 holding the type units against displacement from  
 their several selected positions on said bed plate,  
 a hinged cover member of fibrous material for  
 removably supporting a sheet to be printed, and  
 roller means for effecting a traveling pressure  
 upon the top surface of the cover member, the  
 body of said cover member being adapted to  
 15 translate within itself into pressure acting sub-  
 20 stantially perpendicularly to the plane of the  
 sheet and of the type surfaces the initially  
 acutely angled pressure received by its top sur-  
 face due to the travel of the roller member there-  
 over.

6. Means for utilizing the pressure of an ap-  
 25 plied roller member to effect the accurate im-  
 printing of a sheet from rubber-faced type, com-  
 30 prising, in combination therewith and with a bed  
 35 plate for supporting the type in arranged posi-  
 tion an adhesive coating on the top surface of the  
 bed plate for maintaining the individual type  
 blocks against displacement from their selected  
 positions on said bed plate, a cover member of  
 fibrous material hingedly supported in position to  
 be lowered over the arranged type surface, said  
 cover member being adapted to removably hold  
 a sheet in suitable impression-receiving position  
 and being adapted to transmit the pressure re-  
 ceived from the roller to the then subjacent sheet  
 and type surfaces only in a direction substantially  
 perpendicular to the planes thereof.

7. In a roller impression printing mechanism,  
 40 including a bed plate provided with an adherent  
 coating on its top surface, type positionable there-  
 on, and means for effecting a traveling impres-  
 sion lengthwise of a sheet and of the arranged  
 type, a cover member of fibrous material swing-  
 45 ably positioned along one edge of the bed plate  
 and adapted to be lowered to a position of sub-  
 stantial parallelism therewith, said cover having

means for supporting a sheet on its under face  
 during the printing operation thereby positioning  
 the latter directly over the exposed printing sur-  
 faces of the type, and being adapted to serve as  
 a buffer between the traveling impression roller  
 and the then subjacent sheet and type, whereby  
 the angularly acting forces exerted upon its sur-  
 face by the movement of the roller are translated  
 into truly perpendicular pressures upon the sheet  
 and the type surfaces.

8. In a printing mechanism, means for pre-  
 10 venting the deforming flexion of rubber faced  
 type when used in association with a traveling  
 impression roller, comprising, in combination  
 therewith and with a supporting bed plate, a  
 15 hingedly supported fibrous cover member of  
 appreciable thickness and of slightly flexible  
 character adapted to removably hold a sheet on  
 its under surface and to have its upper surface  
 traversed by such impression roller when the  
 20 cover member is lowered over the type, said cover  
 member serving to accurately locate the sheet  
 with respect to the type and to absorb within its  
 mass the angularly directed forces derived from  
 the passage of the roller over its top surface,  
 25 thereby permitting only truly perpendicularly  
 directed forces to reach the sheet and the type  
 surfaces.

9. In a printing mechanism employing rubber-  
 30 faced type and relying upon the action of a  
 traveling roller member for its imprinting pres-  
 35 sure, the combination therewith and a bed plate  
 having an adhesively coated top surface whereon  
 the type units are selectively positioned of a  
 hingedly supported cover member of fibrous ma-  
 40 terial provided with means for supporting a sheet  
 on its under surface when lowered to position of  
 substantial parallelism with the plane of the type  
 surfaces, said cover member being adapted to  
 absorb within its mass the angularly directed  
 45 strains to which its upper surface is subjected due  
 to the movement of the roller thereover, and  
 thereby transmitting to the then subjacent sheet  
 and type elements only a substantially perpen-  
 dicular pressure.

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