

July 8, 1930.

H. W. LAMB ET AL

1,770,140

PRINTING MACHINE

Filed April 13, 1928

6 Sheets-Sheet 1

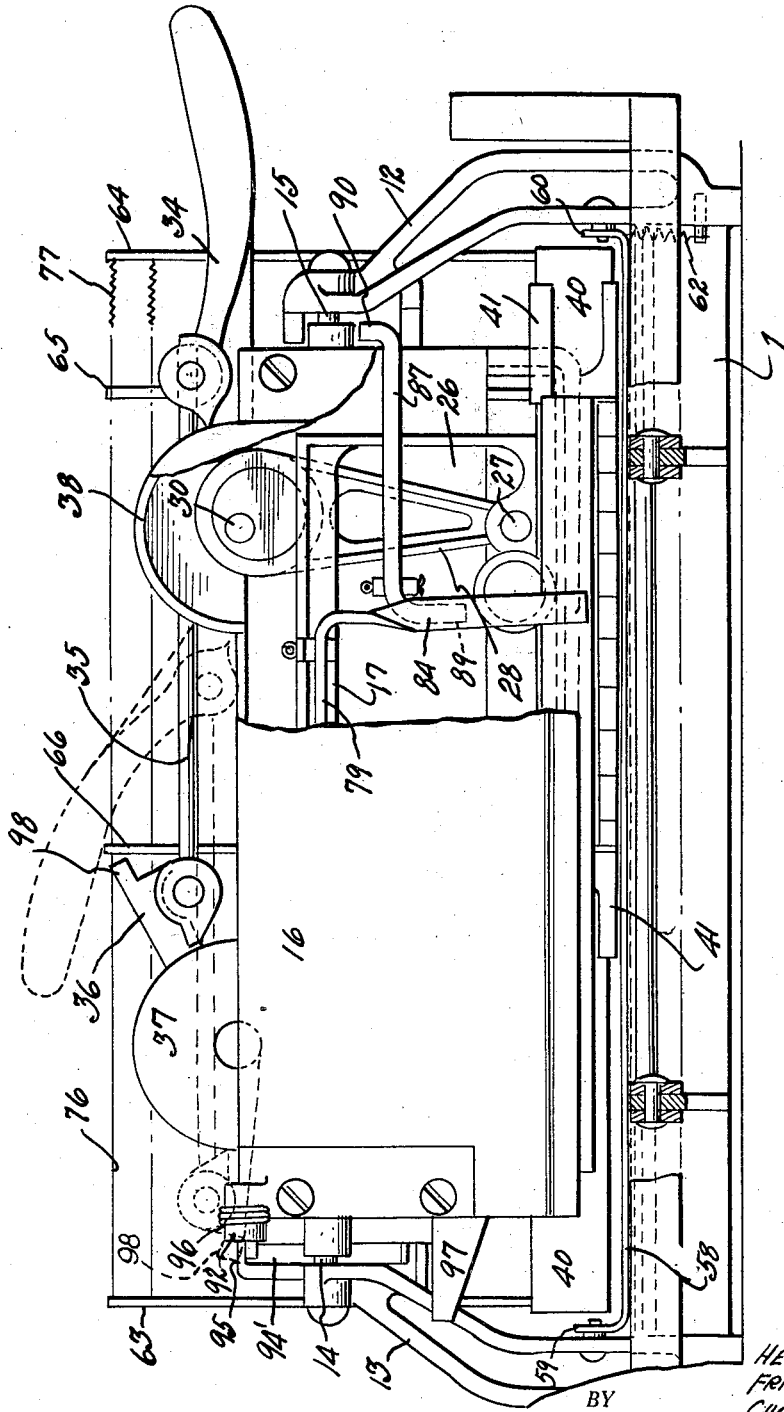


Fig. 1

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6 Sheets-Sheet 2

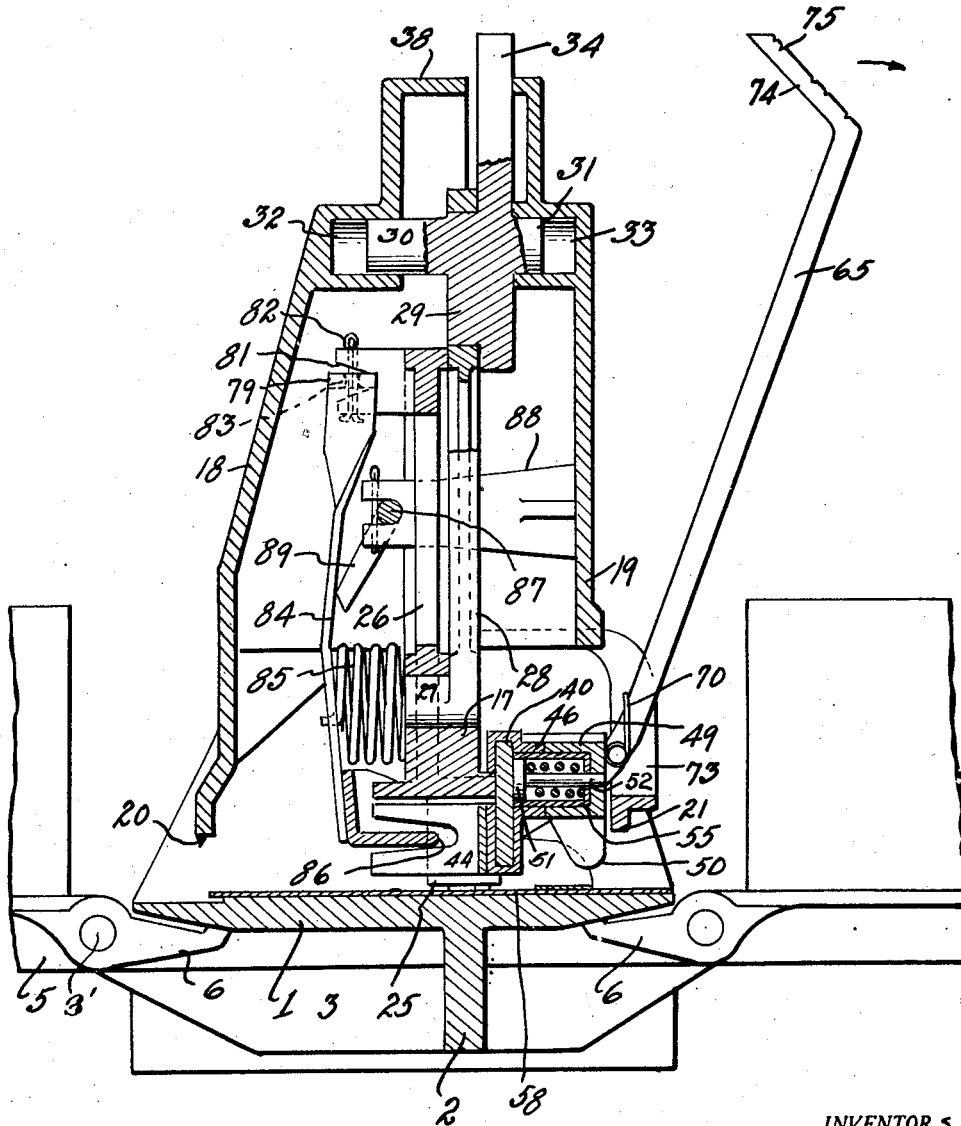


Fig. 2

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PRINTING MACHINE

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6 Sheets-Sheet 3

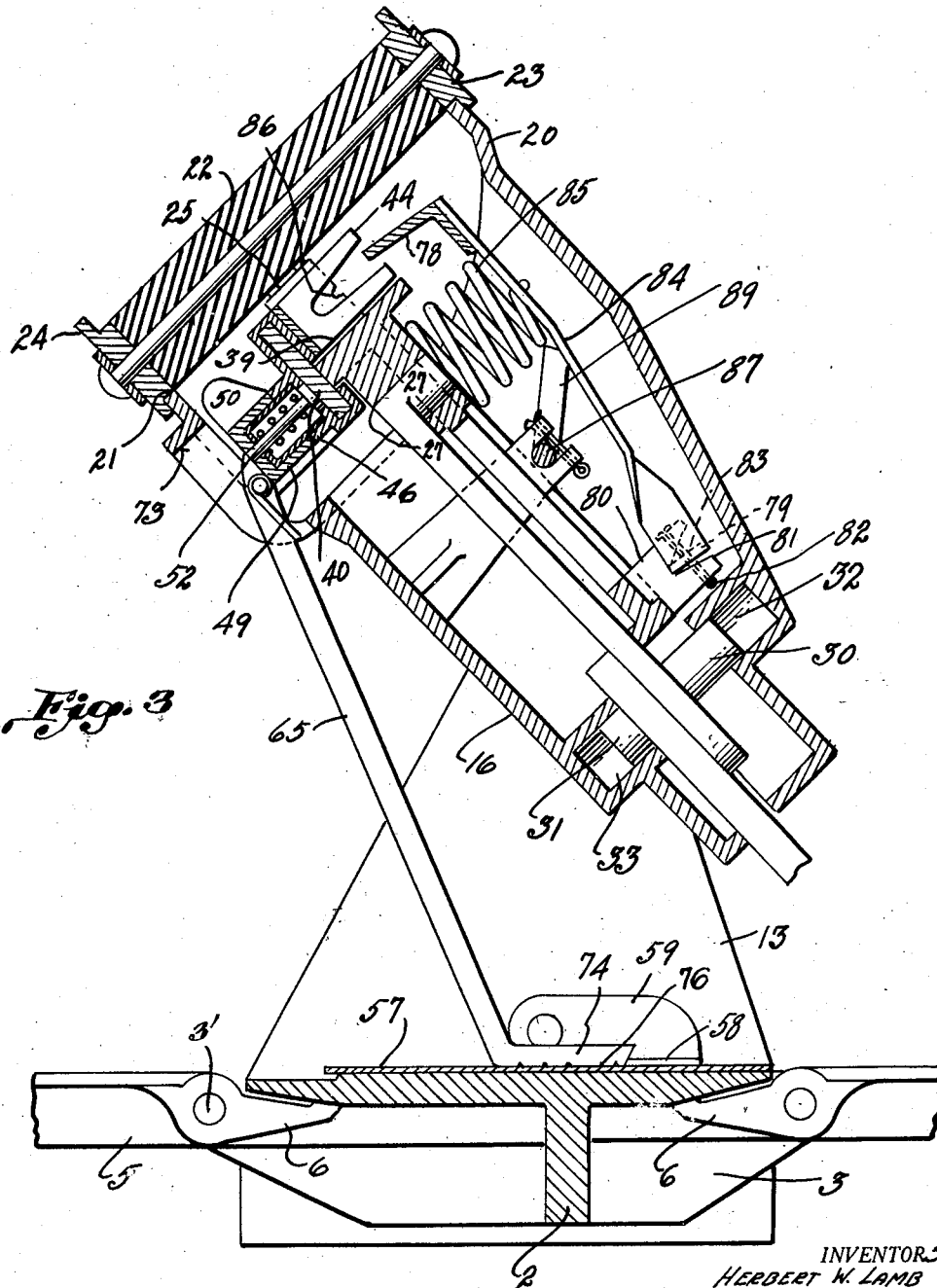


Fig. 3

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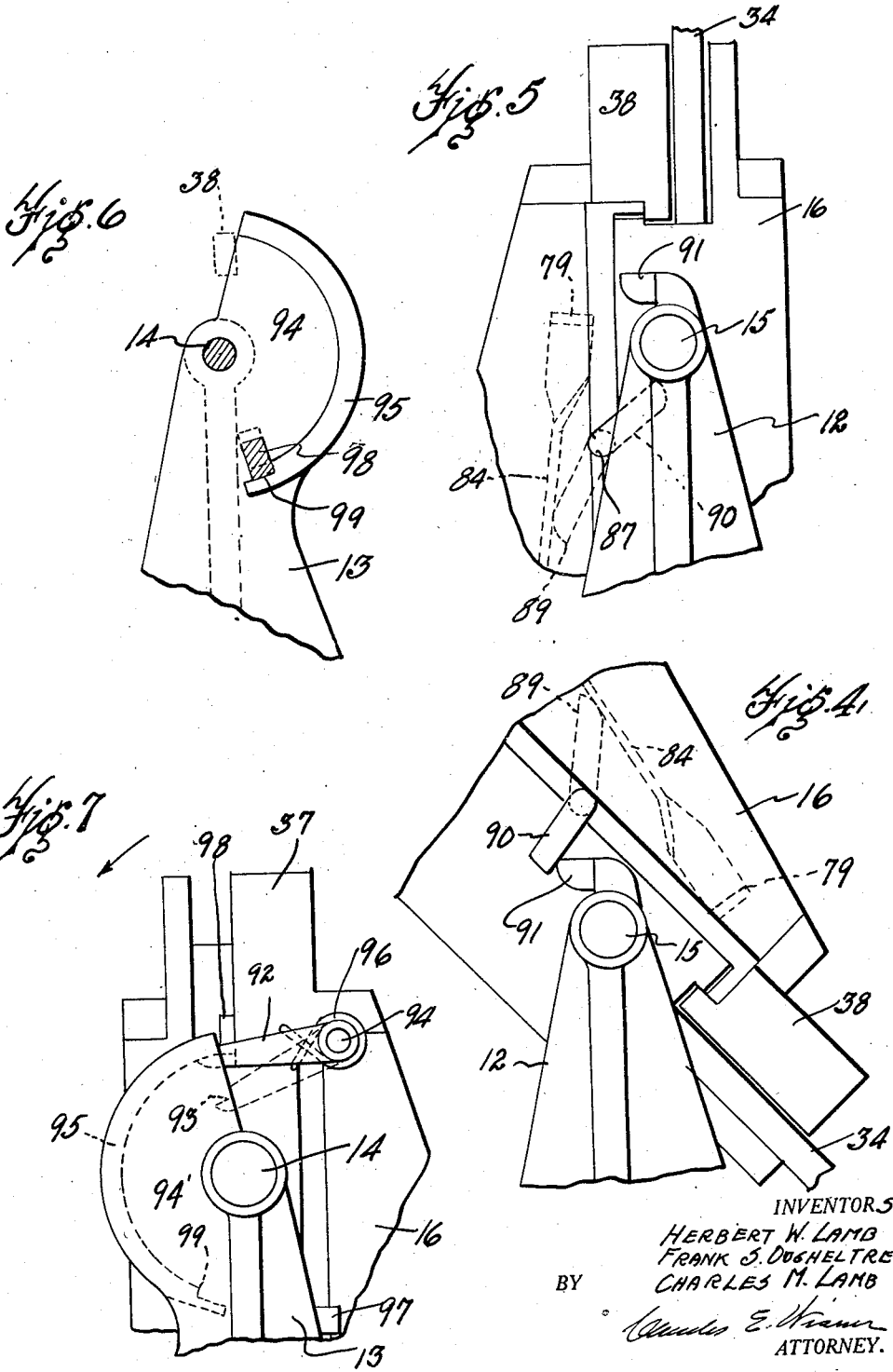
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6 Sheets-Sheet 4



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PRINTING MACHINE

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6 Sheets-Sheet 5

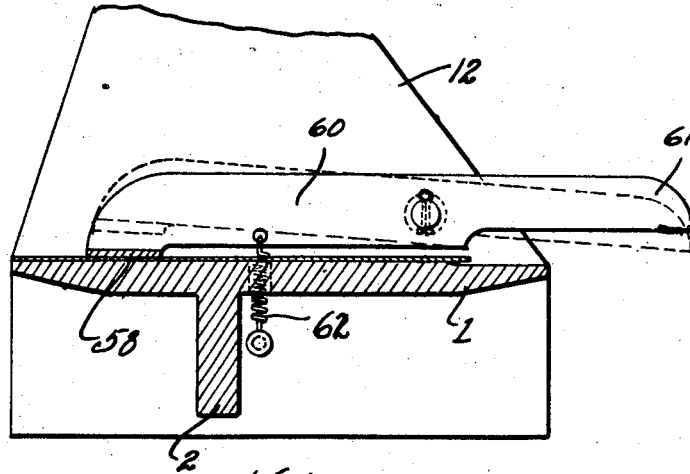


Fig. 8

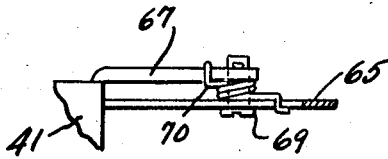


Fig. 11

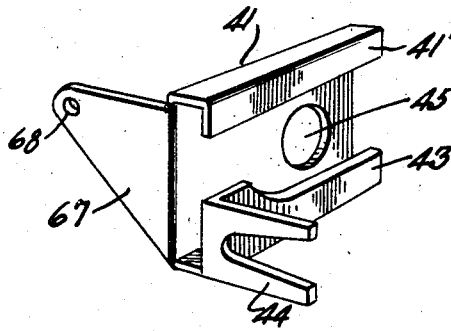


Fig. 9

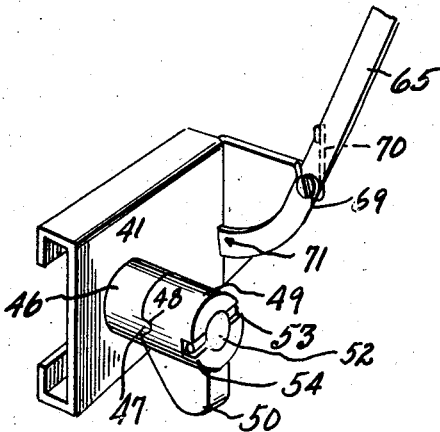
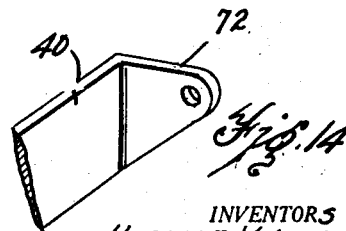


Fig. 10



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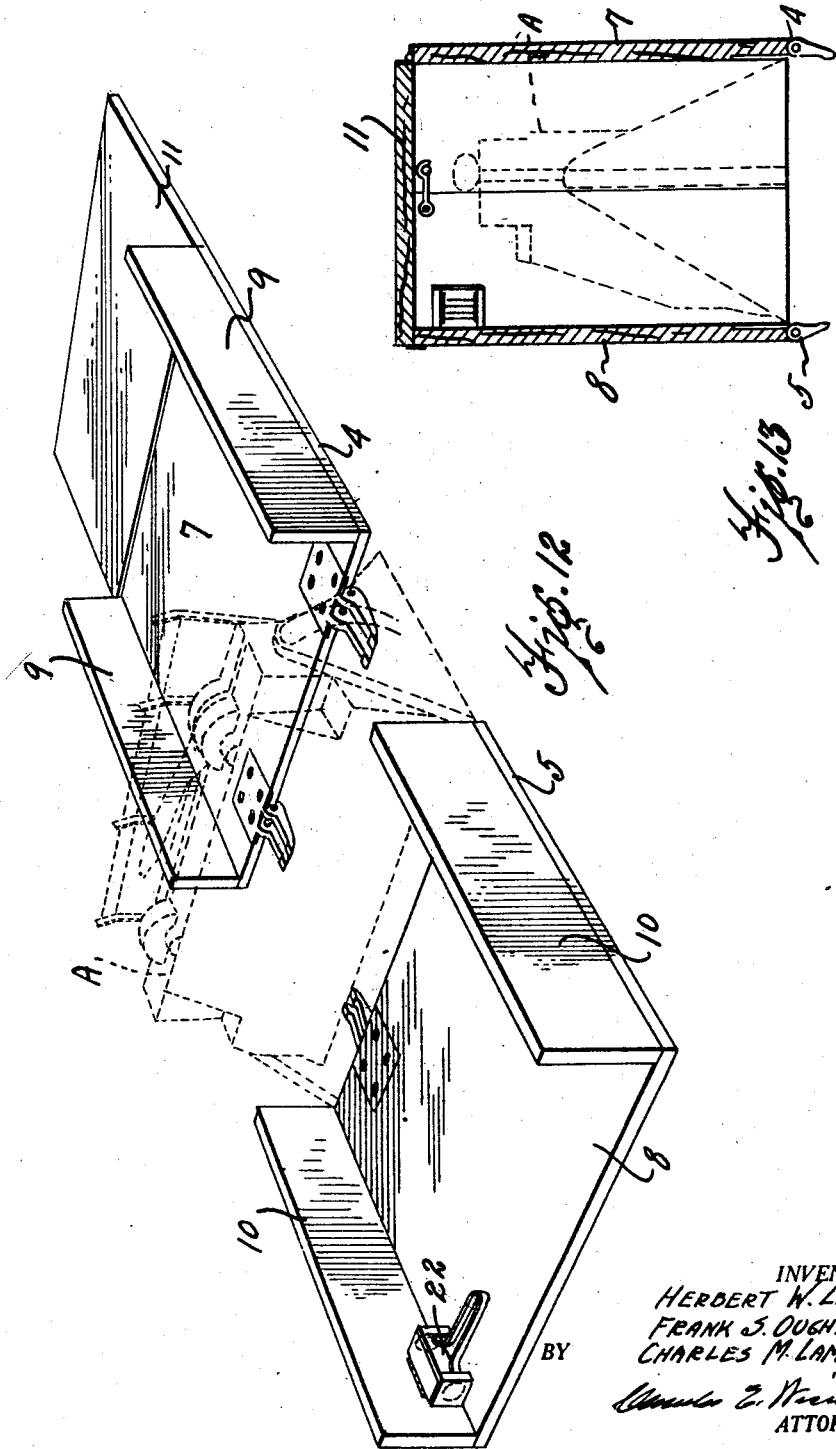
July 8, 1930.

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PRINTING MACHINE

1,770,140

Filed April 13, 1928

6 Sheets-Sheet 6



UNITED STATES PATENT OFFICE

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PRINTING MACHINE

Refile for abandoned application Serial No. 149,335, filed November 19, 1926. This application filed April 13, 1928. Serial No. 269,790.

This invention relates to printing machines and more particularly to machines for the economical printing of display cards of various kinds and is a refile of application Serial No. 149,335, filed November 19, 1926, disclosing the same invention.

Heretofore, display cards have usually been printed in the ordinary printing presses, which require the setting of the type in a form and the mounting in the press. If only a few cards are required, this is an expensive method. This is particularly burdensome in department stores, for instance, where each day there are new display cards required on the counters for various types of goods which are the features of that day's sales. This invention seeks to provide a machine for the printing of display cards of this general character that does not require a typesetter's services or an expensive press and an operator such as heretofore has been necessary.

The principal features of the invention may be listed as follows—

A type holder movable to printing and non-printing positions, and when in the latter position exposing the type for removal, or permitting the insertion of new type.

When the holder is in non-printing position, the type is not locked and may be easily removed by movement transverse to the line of type.

Movement of the holder to printing position locks the type against displacement.

The type holder itself is releasably locked in the two positions.

Means is provided to indicate the position of the impression on the printing surface. Preferably this is done when the type is in non-printing position.

Provision is made for inking the type when in non-printing position. For this purpose a runway is provided for an ink roller to be run over the type.

To hold the type together lengthwise, adjustable abutments are provided which engage the ends of the type and are frictionally held in adjusted position. The means to indicate the area of the impression may be carried by these abutments and movable

therewith. The machine is designed to employ type of the usual construction.

Hinged to the base of the machine are side members adapted to be swung to upright positions to thereby enclose the machine, or swung to horizontal positions to provide a card-holding table.

Other objects and features of the invention will be apparent from the description taken in connection with the drawings, in which—

Fig. 1 is a front elevation partly broken away showing our improved machine.

Fig. 2 is a section taken on line 2—2 of Fig. 1 showing the parts in the printing position.

Fig. 3 is a view similar to Fig. 2 with the machine turned to position for the inking or the setting of type.

Fig. 4 is an end elevation showing the swinging head and a trunnion therefor and the means employed to release the type when the head is swung to non-printing position.

Fig. 5 is a similar view showing the head swung to the printing position with the type locked in place.

Fig. 6 is a detail showing the means for releasably holding the head in non-printing position while the type is being set.

Fig. 7 is an end elevation of the swinging head and trunnion of the end opposite that shown in Fig. 4 and showing the means for releasably securing the head in the printing position.

Fig. 8 is a section of the table showing the means for holding the display card in place.

Fig. 9 is a detail of the slide member for positioning the set type in the holder.

Fig. 10 is a detail in perspective of the reverse side of the member shown in Fig. 9 and showing the method of mounting the indicator bar thereon as hereinafter described.

Fig. 11 is a plan view of a portion of the member shown in Fig. 10 showing the mounting of the indicator bar.

Fig. 12 is a view of the case used in conjunction with the machine, the machine itself forming a part of the case which folds thereover.

Fig. 13 is a section through the folded parts.

Fig. 14 is a detail of the end of the bar forming part of the type holder.

5 Stated in a general way, the machine illustrated by the drawings comprises a head 16 that is pivoted to swing from the printing position shown in Fig. 2 to a non-printing position, shown in Fig. 3, wherein the type
10 25 is accessible for removal or replacement. A type holder 17 is mounted within the head and can be reciprocated (when the head is in the position shown in Fig. 2) to take an impression on the sheet 57. When the head
15 is swung to the non-printing position shown in Fig. 3, the position of the printing impression on the sheet 57 is indicated by the end portions 74 of arms 65 and the cords 76 carried thereby. The type may be inked by
20 a hand operated ink roller 22, rolled back and forth on the tracks 20 and 21. A detailed description of this embodiment of the invention will now be given:—

The machine consists of a base 1 which is preferably of metal having a longitudinal
25 rib 2 and cross ribs 3. A rod 3' is carried by the cross members adjacent each edge of the base 1 to form a pivotal mounting for the side members 4 and 5. These members 4
30 and 5 form hinge members having terminal ends 6, 6 in each case that limit the movement of the side members to the horizontal position as shown in Fig. 2 and, as is shown in
35 Fig. 2 and Fig. 13, each member 7 and 8 having corresponding side bars 9, 9 and 10, 10 on opposite edges which, as shown in Fig. 13, when the parts are in upright position enclose the printing machine indicated at A in
40 dotted lines. The member 7 has a hinged cover plate 11 which, when the parts are folded together to enclose the machine as shown in Fig. 13 covers the top of the case.

This described arrangement of the cover or casing is not a necessary part of the printing machine but may be conveniently provided therewith to keep the machine free
45 from dust and dirt when not in use and to form tables for the cards to be printed before and after being printed.

50 The printing machine proper in addition to the base 1 has the end members 12 and 13 extending upwardly therefrom and each provided with a journal at its upper end to receive the pivot pins 14 and 15 respectively
55 provided on what we have termed the head 16. This head as will be understood more clearly from Figs. 2 and 3 is adapted to be swung from the vertical position shown in
60 Fig. 2 to a position at an angle to the vertical as shown in Fig. 3 with the bottom end of the head open and exposing the type holder 17 which is movably supported in the head 16. The head is preferably of hollow cast form as shown having the front and rear
65 side members 18 and 19 finished at the lower

edges 20 and 21 respectively to provide a runway and guide for an ink roller 22. This roller has end wheels 23 and 24 respectively to ride on these finished end members, the wheels being flanged as shown and riding in
70 engagement with the side faces of these end portions 20 and 21 to prevent endwise movement of the roller relative to the type faces 25. This member 17 which we have termed
75 the type holder is reciprocable in the head 16, and preferably formed of metal, and for the sake of lightness is in the nature of a rectangular frame having its central portion cut away as at 26. The lower longitudinal
80 member of this type holder 17 has an aperture providing a socket for a pin 27 provided at the lower end of the pitman 28, the upper end of which has a circular aperture in which is positioned the eccentric 29.

The eccentric has stub shafts 30 and 31 on
85 opposite sides rotatably supported in bearings 32 and 33 respectively provided at the top of each side frame 18 and 19. There are two eccentrics each being positioned adjacent
90 opposite ends of this type holder frame 17, only one of which is fully shown in Fig. 1. The eccentric 29 has a handle member 34 by means of which it may be turned and has pivoted thereto a bar 35 which in turn is
95 pivoted to the lever 36. This lever 36 is to be understood as being pivotally mounted in the same manner as the handle 34, and provided with an eccentric similar in all general respects to the eccentric 29. By turning the
100 handle 34 from the position shown in full lines in Fig. 1 to the position shown in dotted lines the type holder frame is raised or lowered. The eccentric on the lever 36 is housed in a semi-circular projection 37 corresponding to the housing 38 for the eccentric 29.
105 Both of these housings are preferably formed integrally with the head 16.

By the described arrangement of parts therefore the levers 34 and 36 being pivotally supported in the head 16 and provided with
110 eccentrics on each of which is mounted a pitman 28 exactly similar for both eccentrics the turning of the levers will raise or lower the type holder 17 due to these pitmen 28 being pivotally connected with the type holder.
115 This mechanism is utilized to produce the impression with the type when the head is in the printing position shown in Fig. 2. As hereinafter described, means is provided to prevent the head from swinging on its pivot during the time the impression is being made.

The recess for the type is provided by the flat lower face 39 of the member 17 and a bar
120 40 rigidly secured thereto in any desired manner having a face at a right angle to the face 39 as shown in Figs. 2 and 3. Therefore, these parts lying in the relation stated are, when the head is swung to the position
125 shown in Fig. 3, arranged to support the

type 25 loosely laid on this face 39 and against the bar 40.

It is quite essential that the line of set type should be positioned properly relative to the space on the card in which the impression is to be made and this is accomplished in the following manner—

Firstly—the card to be printed, which is indicated at 57 in Figs. 2 and 3, is placed on the bed or base 1 of the machine and the card is held in place on the base by a light sheet metal bar 58 which extends longitudinally of the bed and has at one end the rearwardly extending ear portion 59 pivoted to the upright 13 at the opposite end has a similar portion 60 pivotally mounted to the opposite upright 12. This latter structure is shown more clearly in Fig. 8 and as is there shown the portion 60 has an extension 61 providing a handle by depression of which the bar 58 may be raised from the face of the card to permit its introduction and upon release the bar 58 is held in forcible contact with the card by a spring 62. This card is preferably placed when the type head is turned to the non-printing position shown in Fig. 3 thus giving the operator, who stands to the left of the device as shown in Fig. 3, free view of the card.

To indicate to the operator where the impression will be made on the card, we have provided a guide means which consists of two end bars 63 and 64 and two intermediate bars 65 and 66 as is to be understood from Fig. 1. These bars, as more clearly shown in Figs. 2, 3 and 11, are pivotally supported relative to the head, the two end bars 63 and 64 being pivotally mounted at the opposite ends respectively of the bar 40 while the intermediate bars 65 and 66 are pivotally mounted on the slides 41 to turn on the same axis as the end bars.

The intermediate bars are mounted as shown in Figs. 10 and 11. As shown in Figs. 2, 3 and 9, the slides 41 are formed of sheet metal having inturned flanges 41' and 43 which secure them to the bar 40 but readily permit slidable movement. An aperture 45 is formed in the side of the slide, and around this a projecting hollow cylindrical member or boss 46 (Fig. 10) is secured as by welding. A cylindrical sleeve 55, closed at one end, is mounted within the boss 46 and fitted within the sleeve 55 is a plunger 51 having a guide stem 52 extending rearwardly through an aperture provided in the end of the sleeve 55. A coil spring 56 is fitted around the stem, and bears at one end against the plunger 51 and at the other against the end of the sleeve 55.

Referring to Fig. 10, a cap 49 is fitted over the outer end of the sleeve 55 and is provided with an aperture through which the stem 52 projects. A transverse pin 53 secured to the end of the stem 52, seats in notches 54 in the

end of cap 49. The boss 46 is provided with a cam lug 48, fitting a corresponding recess in the cap 49. From the foregoing it will be apparent that when the cap 49 is pulled away from the boss 46, the plunger 51 will be retracted within the sleeve 55, and the spring will be compressed between the plunger and the inner end of the sleeve. Upon release of the cap 49 the spring will urge the plunger inwardly and as shown in Figs. 2 and 3, will bear against the member 40 and frictionally hold the slide 41 in position. Furthermore, by merely twisting the cap slightly the lug 48 will be forced out of its recess and the spring will hold the parts in the unlocked position so that the device can be moved back and forth until the desired final position is located. Then a slight twist of the cap 49 will positively anchor the slide 41 in position. Each of the members 41 being provided at its rear side with a rearwardly projecting integral part 67 having an aperture 68 for the pivot screw or pin 69. This pin 69 passes through an aperture provided in each of the respective bars 65 or 66 and is fastened in the aperture 68 of the respective slide member 41. A coiled spring 70 is provided about the pivot pin, one end of which lies over the edge of the member 67 and the other end of which engages the upper side of the bar and the tension of the spring tends to move its respective bar 65 or 66 away from the machine as indicated by the arrow in Fig. 2.

Each bar, however, is limited in this movement by action of its spring by reason of its having a terminal portion 71 shown clearly in Fig. 10, which, by action of the spring, engages against a stop which, in the case of the two bars 65 and 66, is the back of the respective slide and in the case of the end bars 63 and 64 is the rear side of the bar 40. As shown in Fig. 14 the bar 40 is understood to have at each end an ear 72 corresponding to the part 67 of the slides 41 and arranged to support the end bars in a similar manner to the mounting of the bar 65 shown in Fig. 10. Thus the two end bars 63 and 64 are pivotally supported by the bar 40 and the intermediate bars 65 and 66 are pivotally supported on the same axial line as the end bars and mounted on the two slides respectively. Thus, in moving the slides longitudinally of the type holder to position the line of type for the printing, these end bars are carried in fixed relation with the type and extend outwardly and upwardly at an angle to the head 16 as shown in Fig. 3. The side plate 19 of the head as will be understood from Fig. 2, is formed with an aperture 73 for the bar 65 for instance and is provided with a similar aperture through which each of the said bars extend. Each of these bars 63, 64, 65 and 66 has an end portion 74 provided with a series of notches 75 on its outer face in which threads 76 lie. This series of threads, as

more clearly shown in Fig. 1, are to be understood as being fastened to the end bar 63 for instance and connected with the end bar 64 by a spring 77 for each thread to maintain the same taut. It will be noted that these threads may be moved from one notch to the other of the several notches of which each part 74 of these bars is provided.

These threads when the head is swung to the position shown in Fig. 3 are brought to close association and practically contact with the face of the card 57 on which the impression is to be made. The spacing of the threads and the reason that the threads are arranged to be moved from one of the lines of notches to another is to indicate different heights of type. Therefore, if a large type is to be used the threads are spaced farther than if smaller type is to be used. Depending upon the position the letter occupies on the type block the uppermost or outermost thread at the end of the thread supporting portions 74 of the bar may be changed to indicate the top line to be occupied by the printed letters and the other threads being movable to indicate the position that will be occupied by the bottom line of the impression with any of the different sizes of type that may be used with the machine. Therefore, these threads lie across the face of the sheet to be printed on while the machine is in non-printing position and during the setting of the type and the threads thus indicate the top and bottom lines that will be occupied by the impression while the end portions 74 of the bars 64 and 65 respectively indicate the length of the line to be printed on the card or sheet 57. Thus, in setting the type the operator has a means to guide him in positioning the type in the holder—that is, he may position it longitudinally of the type recess and thus is able to determine what portion of the card surface will receive the impression.

By moving the card relative to the thread lines the position of the printing from the top or bottom of the sheet to be printed may be determined. Therefore, the operator in setting the type merely makes up his line of type, brings the slide members 41 from the opposite ends of the line of type together to engage the type and hold them in proper contact and then may move the line as a whole by releasing both the slide members 41 through operation of the respective friction plungers 51 in the manner described and thus by means of the bar ends 74 and threads 76 know, while the type is being set, exactly where the impression will later be made on the sheet 37. These bars 63, 64, 65 and 66 are preferably spring-pressed outwardly as shown in order that they may yield in closing the case as shown in Fig. 13 and in coming in contact with the sheet to be printed on which may differ in thickness.

It is necessary that the type after being set in the manner described should be firmly held in place for the printing operation and for this purpose we have provided a locking device which consists of the bar 78, L shaped in cross section as shown in Figs. 2 and 3, and extending longitudinally of the type holder and supported thereon by means of a bar 79. This bar is supported at the upper end of the holder 17 in lugs 80 extending toward the front of the machine. This bar is preferably a flat bar and lies loosely in a V shaped notch 81 of the lugs 80 and pins 82 are provided extending into an aperture 83 formed in the body of the bar to prevent its displacement.

The bar 79 has two end portions, one of which is indicated at 84 in Figs. 1, 2 and 3, that are duplicate in form, with their lower ends attached to the locking bar 78. Coiled tension springs 85 are each attached respectively at one end of the arms 84 of the locking device and at the other to the holder 17 and tend to swing the locking bar to the position shown in Fig. 2. The bar is preferably of metal and enters the space between the arms 44 of each of the slides, with the forward edge of the bar engaging a notch 86 with which each type is provided. This notch is provided in the type and always a certain distance from the back of the type block. When the parts are in the position shown in Fig. 2 the type are forcibly held against the bar 40 of the type recess thus assuring the alignment of the type and due to the bar entering the notch of the type are prevented from any movement downwardly or outwardly from the type recess. It is therefore to be seen that the slide members 41 are not relied upon solely to hold the type in place but that a positive locking means is employed in addition to these slide members.

It is of course evident that the type should be locked in place when the head is in printing position as shown in Fig. 2, and that they must be unlocked in order to remove the same and introduce new type when the head is in the non-printing position shown in Fig. 3. Therefore, this lock member is arranged to automatically lock and unlock the line of type. For this purpose we provide what we term an actuator 87 that is pivotally supported in the head by inwardly extending lugs 88 provided on the rear wall 19 and notched at the end to receive the body of the actuator 87.

The actuator 87 has a downwardly bent end 89 positioned at the rear of one of the arms 84 of the lock member and the opposite end extends through the end of the swinging head shown in Fig. 1 and terminates in an inwardly and upwardly bent end portion 90 as shown in Figs. 4 and 5. Fig. 5 shows an end elevation of the head at its swivel point and the upper end of the standard 12 on which it is pivoted. It will be noted from

Fig. 1 that this end 90 extends into space between the end of the swinging head 16 and the stationary standard 12 and in Figs. 1, 4 and 5 it will be noted that the standard 12 has at its upper end a lug 91 which lies in the path of movement of the end 90 of the actuator in swinging the head from the position shown in Fig. 5 to that shown in Fig. 4. It will be seen from the relationship of the parts in Fig. 5 for instance that this head may turn on the trunnion for a considerable part of its turning movement before the end 90 of the actuator comes in contact with the lug 91. Thus, the type are held in locked position by the bar 78 until the head has been turned nearly to non-printing position shown in Fig. 3 but as it approaches this position this end 90 of the actuator engages the lug 91 and, during completion of the turning to the non-printing position, the end 90 of the actuator 87 is turned causing the end portion 89 to be thrust outwardly against the arm 84 of the lock member which, being swiveled in the lug 80, swings outwardly bringing the lock bar 78 to the relative position shown in Fig. 3 releasing the type and permitting the same to be readily removed from the type space or recess.

Likewise when the head is to be swung back to printing position the first initial part of movement of the head releases the end 90 of the actuator and permits the springs 85 to draw the lock bar 78 to locking position with the type and thus holds the same in the locking position during the remainder of its movement and until its return to the position shown in Fig. 4. Thus, at all times when the type recess is in such position that the type could become displaced by gravity the type are forcibly held in position.

Another essential feature of this construction is a means to lock the head in either the printing or non-printing position, in the non-printing position to free the operator's hands for the removal and the setting of the type and inking thereof and in the printing position to prevent any possible movement of the head on its axis during the printing operation which if permitted would tend to smear the impression to be made. To lock the head in the printing position there is provided a spring-pressed arm 92 which is provided with a notch 93 at its outer end and is pivotally supported at 94 on the head as is shown in Fig. 7. This is at the end of the swinging head 16 adjacent the vertical supporting arm 13 and the movement of the head relative to the trunnion is in the direction of the arrow shown in the said figure. The supporting arm 13 is provided at its upper end with a member 94' having a semi-circular inwardly extending flange 95.

When the head is in the position shown in Fig. 7 the pivoted arm 92, due to the action of its spring 96, engages the end of the flange

95 which holds the head 16 from movement in the direction of the arrow and thus the head is held in vertical position it being held from movement in the direction to opposite sides of the vertical by means of a lug 97 on the end of the head 16 which engages the stationary arm or standard 13 when the head is in printing position. Therefore, when in the position shown in Fig. 2 the head is held from turning in either direction and at this time the lever 34 may be turned from the position shown in dotted lines in Fig. 1 to that shown in full lines to cause the type to make the impression.

In order to prevent possibility of turning of the head on the trunnions until such time as the type have been raised from contact with the surface on which the impression is made, we have provided a means to turn the lever arm 92 from its locked position shown in full lines in Fig. 7 to the unlocked position shown by dotted lines in the said figure. This is accomplished by the provision of the lug or extension 98 on the arm 36, shown in Fig. 1, which is attached to the eccentric corresponding to the eccentric 29 shown in full lines in the said figure. It will be seen from Fig. 1 that in movement of the lever 34 to the position shown in dotted lines the lever 36 is turned from the position shown in full lines to that shown in dotted lines thus bringing the lug 98 to the position shown in dotted lines in the semi-circular flange 94' at the left side of Fig. 1.

This is the position of the part 98 shown in Fig. 7 and it is to be noted that it extends outwardly from the said head to lie across the upper edge of the spring actuated arm 92 and thus, at the final movement of the lever 36, this lug 98 moves the arm 92 to unlocked position permitting the head to swing in the direction shown by the arrow in Fig. 7 and in so swinging the upper face of the lug 98 turns beneath the semi-circular flange which holds the levers 34 and 36 in the position shown in dotted lines in Fig. 1 preventing any reciprocable movement of the type holder. This lug 98, in the swinging of the head 16 to non-printing position, traverses the semi-circular flange until the lug reaches the notch 99 therein. This relationship of parts is shown in Fig. 6 and it will be readily seen that the lug 98 enters its notch at the time the head has reached its non-printing position Fig. 3 and retains the head in that angular position and thus the head is automatically held stationary permitting the operator to remove or introduce type in the holder therefor or ink the type and place the sheet in position for the next impression. It is to be noted that when the spring-pressed arm 92 is moved downward to dotted position shown in Fig. 7 it is held in that position by reason of the member 98 running beneath the flange 95 and thus the member 93 is spring-pressed out-

wardly against the flange automatically by the arm 92 and seats in the notch 99 without thought on the part of the operator.

It is therefore necessary for the handle member 34 to be depressed slightly from its dotted position in Fig. 1 toward the head to release the member 98 from the notch 99 whereupon the head may be readily swung upon its trunnions in the direction the reverse of that shown by the arrow in Fig. 7 to bring the head to the printing position shown in Fig. 3. At this time the lug 98 on the lever 36 is moved upward by means of the arm 92 swinging to locked position shown by full lines in Fig. 1.

The operation of the device is simple in the extreme as will be realized from the foregoing description. The type, when the head is in the non-printing position, are readily insertible in the V trough or recess provided therefor and are merely loosely laid in place and set in any desired position longitudinally of the type way as may be determined by the position it is desired that the impression be made upon the sheet 57, the operator being guided as to such position of the impression by the guide fingers or ends 74 of the bars carrying the threads or wires 76 which lie contiguous to the face of the sheet, the threads indicating the position of the impression relative to the top or bottom of the sheet while the bar ends indicate the lateral position that will be occupied by the impression from the type in the position determined by the slides 41. After the setting of the type and with the parts in the position shown in Fig. 3, the operator grasps the handle 34, which is in the relative position shown by dotted lines in Fig. 1, and by moving it in an upward direction as the parts are positioned at this time the lock member 98, which has retained the head in non-printing position, is released from the notch 99 permitting the head to swing.

As the head is turned counter to the direction of the arrow shown in Fig. 7, the lug 98 rides out from beneath the flange 95 and the arm 92 automatically through operation of its spring takes the position shown in full lines in Fig. 7. The head, when in the position shown in Fig. 2, is thus held from turning backward by this arm 92 or forward to further extent by the lug 97 shown in Figs. 1 and 7. Thus the head is rigidly held from turning in either direction and the lever 34 may now be turned from the position shown in dotted lines to that shown in full lines in Fig. 1 moving the type holder downwardly by reason of the turning of the eccentrics in the pitmen 28 and producing the impression on the sheet at the point the guide wires and threads have indicated. The lever 34 is then moved backwardly to the point to release the arm 92 and the head swung to the position in Fig. 3, the type being locked as

before described while the head is in the printing position and being automatically unlocked as the head is brought to non-printing position. The type may then be removed or they may be reinked for a succeeding impression through use of the ink roller which, as above described, rides on the edges of the side plates 18 and 19 forming the head. Upon the setting of a new line of type the inking step must be taken before the head is unlocked and turned to printing position.

The device may print in colors and this is permitted or possible in the structure shown due to the way in which the type may be loosely placed in the recess therefor—that is, let it be assumed that one desires to have a capital letter in red and the remainder of the word or line to be printed in black. This merely requires that the capital letter be set in the type recess and the remainder of the letters be spaced a sufficient distance therefrom each preferably in contact with the respective slide 41 at opposite ends of the line. With the part that is desired to be printed in one color separated from the part or line of type that is to be printed in another color the operator may use a roller with one color of ink and ink one part of the divided work or line and with another roller ink the other part with different color whereupon the line of type or word may be set to place by means of the slides with the guides thereon in the manner heretofore described and the head turned which locks the type in their final position and the head in printing position and the impression made as heretofore described.

It is to be understood that this invention is not confined to the details as specifically described herein but that changes may be made in the design and arrangement of the parts without departing from the spirit and scope of the invention as is set forth in the appended claims.

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—

1. In a printing machine, a horizontal bed on which a sheet to be printed may be positioned, standards extending upwardly therefrom, a head mounted to swing on the standards from printing to non-printing position, a type holder carried by the head, said head having an open lower side permitting free introduction of type to the holder when the head is turned to non-printing position, means for locking the type in the holder, and means for reciprocating the holder when the head is in printing position to cause the type to produce the printing impression.

2. In a printing machine, a bed on which a sheet to be printed may be positioned, a head mounted to swing relatively thereto to a print-

ing or a non-printing position, a type holder carried by the head made accessible for the setting of the type on the turning of the head to non-printing position, means caused to lock the type in the holder by turning the head to printing position, and means for moving the holder to cause a type impression on the sheet positioned on the bed.

3. In a printing machine, a bed on which a sheet to be printed may be positioned, a head mounted to swing relatively thereto to a printing or a non-printing position, means for locking the head in either of the said positions, a type holder carried by the head and accessible for the setting of type when the head is in non-printing position, means for locking the type in the holder, and means for causing movement of the holder relative to the head to cause a type impression on the sheet positioned on the bed.

4. In a printing machine, a bed on which a sheet to be printed may be positioned, a head mounted to swing relatively thereto to a printing or a non-printing position, automatic means for locking the head in the printing position, automatic means for locking the head in the non-printing position, a type holder carried by the head accessible for the setting of type when the head is in non-printing position, means for locking the type in the holder, said holder being reciprocable relative to the head, means preventing reciprocation of the holder while the head is in non-printing position, said means being automatically released as the head is turned to printing position, and a handle for reciprocating the holder to cause a type impression on the sheet positioned on the bed.

5. In a printing machine, a bed on which a sheet to be printed may be positioned, a head mounted to turn relatively thereto to printing or non-printing position, a manually releasable means for locking the head in the non-printing position, a type holder mounted for reciprocable movement in the head and accessible for the setting of type when the head is in non-printing position, the said locking means maintaining the holder from reciprocation while the head is in non-printing position and released when the head is in printing position, and means for moving the type holder to produce a type impression on the sheet while the head is in printing position.

6. In a printing machine, a bed on which a sheet to be printed may be positioned, a side member hingedly supported at each side of the bed adapted to be turned to upright position to enclose the machine, and means sustaining the said members when turned to horizontal position with the inner faces practically occupying the same plane as the bed, said members providing upon one side means for holding a stack of sheets to be printed, and

upon the other side providing a holder for the printed sheets.

7. In a printing machine, a bed on which a sheet to be printed may be positioned, a head mounted to swing thereover to a printing or a non-printing position, a type holder accessible for the setting of type when the head is in non-printing position, means at each end of the set type for holding the same in close association, said means being movable longitudinally of the type holder, means indicating on the face of the sheet while the head is in non-printing position the space on which the type will make an impression in the later printing operation, and means for moving the holder to cause a type impression when the head is in printing position.

8. In a printing machine, a bed on which the sheet to be printed may be positioned, a head pivotally supported thereby to be turned to a printing or a non-printing position, a type holder having a way in which type may be set, means at each end of the way movable to engage opposite ends of the set type to hold the same in close association and providing a means for moving the line of type to any position longitudinally of the way therefor, a guiding means brought to close association with the face of the sheet by turning the head to non-printing position and indicating the space that will be occupied by an impression from the type as positioned in the way, said guide means including a means for indicating the space to be occupied by the impression relative to the top or bottom of the sheet, means for locking the type in the determined position, and means operable when the head is in printing position for producing a type impression on the sheet.

9. In a printing machine, a bed on which a sheet to be printed may be positioned, a head adapted to be turned from a printing position over the sheet to a non-printing position exposing the face of the sheet to view, said head including a way in which a type may be set, means brought to position by turning the head to non-printing position indicating the space on the sheet in which the set type as positioned in the way will produce an impression in the printing operation, and means for causing the type to produce an impression on the sheet when the head is in printing position.

10. In a printing machine, a bed on which a sheet to be printed may be positioned, a head adapted to be turned from a printing position over the sheet to a non-printing position exposing the face of the sheet to view, a type carrying means supported by the head in which the type may be set, said head having a way accessible for the setting of type therein when the head is in non-printing position, means brought to position by turning the head to non-printing position indicating

the space on the sheet in which the set type as positioned in the way will produce an impression in the printing operation, type locking means caused to lock the type by the initial movement of the head from the non-printing toward the printing position, said locking means being held in locked relation until the head is returned to non-printing position, and means for causing the type to produce an impression on the sheet actuable when the head is in printing position.

11. In a printing machine, a bed on which a sheet to be printed may be positioned, a head adapted to be turned from the printing position over the sheet to a non-printing position exposing the face of the sheet to view, said head including a way in which type may be set, means operable by the positioning of the set type in the way for indicating the space on the sheet in which the set type will produce an impression in the printing operation, releasable means for locking the head in the printing position, means operable when the head is in printing position for moving the set type to impression contact with the face of the sheet, means whereby the act of retracting the type from contact with the sheet releases the head from its locked position, and means for maintaining the type in the retracted position while the head is turned from the printing position.

12. In a printing machine, a bed on which a sheet to be printed may be positioned, a head having an open side and adapted to be turned on a horizontal axis from the vertical printing position over the sheet to non-printing position at an angle to the vertical with the open lower side in accessible position, a type holder supported in the head having a way positioned substantially at the said open side of the head, releasable means for locking the head in the said non-printing position, locking means for the type caused to be moved to unlocked position by turning the head to non-printing position and to automatically assume locked relationship with the said type through the initial part of the movement of the head from non-printing toward printing position, said type holder being movable toward or from the axis of the head, means for retaining the holder at its least distance from the said axis while the head is in other than vertical printing position, said means being released when the head is in the printing position, and means for moving the type holder away from the said axis to cause a type impression on the sheet when the head is in printing position.

13. In a printing machine, a horizontal bed, an arm extending upwardly therefrom at each end thereof, a head pivotally supported in the said arms, a type holder reciprocatably carried in the head, a way in the holder for type, said head having an open lower side

and the way being adjacent the opening thereof, said head being adapted to be turned to non-printing position at an angle to the vertical or to printing position vertically over the bed, means for locking the head in the non-printing position, said way being formed by the face of the holder and a bar extending longitudinally thereof at a right angle to the said face, a pair of slide members mounted on the said bar adapted to be moved to engage opposite ends of a line of set type, a lock means for the type consisting of a locking bar extending longitudinally of the holder adjacent the way, means for pivotally supporting the said bar to swing about an axis parallel with the axis of the head, spring means tending to move the locking bar to engage a groove with which the type are provided and locking the same in the set position, said type holder being reciprocatably in the head to move the same toward or from the axis of the head, means for moving the said holder from the head to cause a type impression, said means including a pair of eccentrics, a pitman for each eccentric connected with the said holder and means including a handle for turning the eccentrics simultaneously, an actuator for said lock device consisting of a bar rotatably supported on the said holder having one end bent to extend to adjacent a part of the locking device and the opposite end inwardly bent to extend to adjacent one of the said trunnions, and a lug on the standard adjacent the said trunnion engaged by the said last named bent end when the head is turned to non-printing position thereby turning the actuator on its axis and moving the locking bar outwardly from engagement with the type against the tension of the spring.

14. In a printing machine, a base or bed on which the sheet to be printed may be positioned, a pair of arms extending upwardly from the bed to the opposite ends thereof respectively, a head pivotally supported in the upper ends of the said arms to swing on a horizontal axis, a type holder carried by the head, one of said arms having an inturned semi-circular flange, a spring-actuated lever at the end of the head adjacent the said flange adapted to automatically engage the flange when the head is in vertical position preventing turning of the head in one direction from said vertical position, means preventing the head from being turned in the other direction on its axis thereby locking the said head from movement to either direction when in vertical position, means for moving the said type holder to cause a type impression and to retract the same, said means including a pivoted lever adapted to engage the said spring-actuated arm on completion of retraction of the type holder and thus release the head to be turned in one direction from the vertical position, and a notch in the

said flange engaged by the said end of the lever when the head has been swung to predetermined position providing accessibility to the type holder.

5 15. In a printing machine, a bed on which a sheet to be printed may be positioned, a head pivotally supported to swing from a printing position over the sheet to non-printing position, automatically operating means for locking the head in the printing position and automatic means for locking the head in the non-printing position, and a type holder carried by the head and adapted to be moved to cause a type impression to be made on the sheet when the head is in the printing position, said means for locking the head in printing position being releasable to permit swinging of the head by said means for moving the type holder through operation thereof to retract the type in contact with the sheet.

16. In a printing machine, a bed having a horizontally positioned surface for supporting the sheet to be printed, a head pivotally supported thereabove to swing from vertical printing position over the sheet to non-printing position at an angle to the vertical exposing the face of the sheet to view, a type holding means in the said head, means for determining through the positioning of the line of the type the space on the sheet in which the type impression will be made, releasable means for locking the head in the non-printing position, and means for locking the head from swinging in either direction when it is in the vertical printing position over the face of the sheet.

17. In a printing machine, a bed having a horizontal surface on which the sheet to be printed may be positioned, a head pivotally supported thereover to swing from vertical printing position over the sheet to non-printing position in which the face of the sheet is exposed to view, a type holder reciprocatably supported in the head, means operable through the positioning of a line of type in the holder for determining the space on the sheet in which the type impression will be made, releasable means for securing the head in non-printing position, means for locking the head from turning on its pivot in either direction during the printing operation, and means for moving the type holder to cause a type impression to be made while the head is locked from turning.

18. In a printing machine, a bed having a horizontal surface on which a sheet to be printed may be positioned, means for holding the sheet thereon, a head mounted thereabove adapted to swing on a horizontal axis from vertical printing position to non-printing position, said head having an open lower side, a type holder reciprocatably in the head having a way for the setting of the type adjacent the said open side, said space being made

accessible for the setting of the type when the head is turned to non-printing position, the arrangement providing that the head on being turned to non-printing position exposes the sheet to be printed to view, means associated with the said way and movable to position the type thereon having portions extending to adjacent the face of the sheet while the head is in non-printing position to indicate the space on the sheet in which the set type will make an impression, releasable means for locking the head in its non-printing position, means for locking the head in vertical printing position, means for moving the type holder to cause an impression to be made, said means being associated with the means for locking the head in vertical position in a manner to prevent movement of the type holder for the making of the impression until the head is in vertical position.

19. In a printing machine, a bed on which a sheet to be printed may be positioned, a head adapted to be turned from a printing position over the sheet to a non-printing position exposing the face of the sheet to view, said head including a way in which type may be set while the head is in non-printing position, means brought to position through the positioning of the said type longitudinally of the way indicating the space on the sheet in which the set type will produce an impression in the printing operation, said means including a pair of arms having end portions lying adjacent the face of the sheet while the type are being set indicating the approximate position occupied by the ends of the impression to be made by the set line of type, and means extending from one of the said ends to the other indicating approximately the top and bottom line that the printing will occupy on the face of the sheet.

20. In a printing machine, in combination, an impression surface, a type holder, a head supporting said holder and movable to carry said holder to a plurality of positions, in one the holder being adjacent said surface and movable to and from the same to make an impression while the head is stationary, and in another the type being exposed and accessible for removal or replacement by movement thereof transverse to the line of type, said head having an opening at least co-extensive with the area of the type faces to permit the insertion and removal of the type, and means to lock the type in the holder.

21. In a printing machine, a bed on which a sheet to be printed may be positioned, a head mounted to swing relatively thereto to a printing or a non-printing position, automatic means for locking the head in the printing position, automatic means for locking the head in the non-printing position, a type holder carried by the head accessible for the setting of type when the head is in non-printing position, said holder being recipro-

catable relative to the head, means preventing reciprocation of the holder while the head is in non-printing position, and means to reciprocate the holder to cause a type impression on the sheet positioned on the bed.

22. In a printing machine, in combination, an impression surface, a type holder mounted for movement to a printing position and a non-printing position and also mounted for reciprocating movement, means for releasably locking the holder in non-printing position and from reciprocation while in said position, the means locking the holder against reciprocation being released when the holder is moved to printing position, and means for reciprocating the holder to take an impression when the holder is in printing position.

23. In a printing machine, a bed on which a sheet to be printed may be positioned, a head mounted to swing thereover to a printing or a non-printing position, a type holder accessible for the setting of type when the head is in non-printing position, means at each end of the set type for holding the same in close association, said means being movable longitudinally of the type holder, and means for moving the holder relative to the head to cause a type impression while the head is maintained in printing position.

24. In a printing machine, a bed on which a sheet to be printed may be positioned, a head adapted to be turned from the printing position over the sheet to a non-printing position exposing the face of the sheet to view, said head including a way in which type may be set, releasable means for locking the head in the printing position, means operable when the head is in printing position for moving the set type to impression contact with the face of the sheet, means whereby the act of retracting the type from contact with the sheet releases the head from its locked position, and means for maintaining the type in the retracted position while the head is turned from the printing position.

25. A printing machine including in combination, an impression surface, a frame, a type holder mounted on the frame for movement relative thereto, said frame being movable to carry said holder to a plurality of positions, in one the holder being adjacent said surface and movable to and from the same to take an impression while the frame is stationary, and in another the type being exposed and accessible for removal or replacement, and means to indicate the position of the impression on said surface when the holder is in type-exposed position.

26. A printing machine including in combination, an impression surface, a frame, a type holder mounted on said frame for movement relative thereto, said frame being movable to carry said holder to a plurality of positions, in one the holder being adjacent said surface and movable to and from the

same to take an impression while the frame is stationary, and in another the face of the type being exposed and accessible for removal or replacement by movement transversely of the line of type.

27. The combination recited in claim 25 with adjustable end abutments engaging the ends of the line of type to hold the type together.

28. A printing machine including in combination, an impression surface, a type holder movable to two positions in one of which it is adjacent said surface and movable to and from the same to take an impression, and in another the type is exposed and accessible for removal and replacement, said holder having a seat for the type consisting of two members adapted to contact with the bottom and one side respectively of the type, adjustable means engaging the ends of the line of type to hold the type together, and means to lock the type against movement transversely of the line thereof.

29. A printing machine including in combination, an impression surface, a type holder movable to two positions, in one of which it is adjacent said surface, and movable to and from the same for taking an impression, and in the other the face of the type is exposed and accessible for removal and replacement, and a runway positioned for an ink roller to be run over the same to ink the type when the holder is in non-printing position.

30. A printing machine including in combination, a member having an impression surface, a type holder member mounted to be moved to and from said surface, and means moved into position as the type holder moves away to indicate the position of the impression on said surface.

31. A printing machine including in combination, a member having an impression surface, a type holder member mounted to be swung to and from said surface, and means moved into position as the type holder swings away to indicate the position of the impression on said surface.

32. A printing machine including in combination, a member having an impression surface, a type holder member, means for bringing said members together to take an impression and then separating them, means for locking the type in position while the impression is taken, one of said members being mounted for swinging movement to and from the other, and means for automatically releasing said locking means as said member is swung away.

33. A printing machine including in combination, a member having an impression surface, a type holder member, one of said members carrying a type unit and the other carrying the unit to receive the impression, means for bringing said members together to take an impression and then separating

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them, means for locking one of the units in position while the impression is taken, and means for automatically releasing said locking means when the members are separated.

34. A printing machine including in combination, a member having an impression surface, a type holder mounted to be moved to a printing position and a non-printing position, slidable devices adapted to engage the ends of the line of type as set in the holder, arms to said devices and having terminal portions adapted to lie close to said impression surface when the holder is in non-printing position, the spacing of said terminal portions being substantially the same as the length of the line of type, whereby said portions serve to indicate the position of the impression on said surface.

In testimony whereof we sign this specification.

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