

June 7, 1955

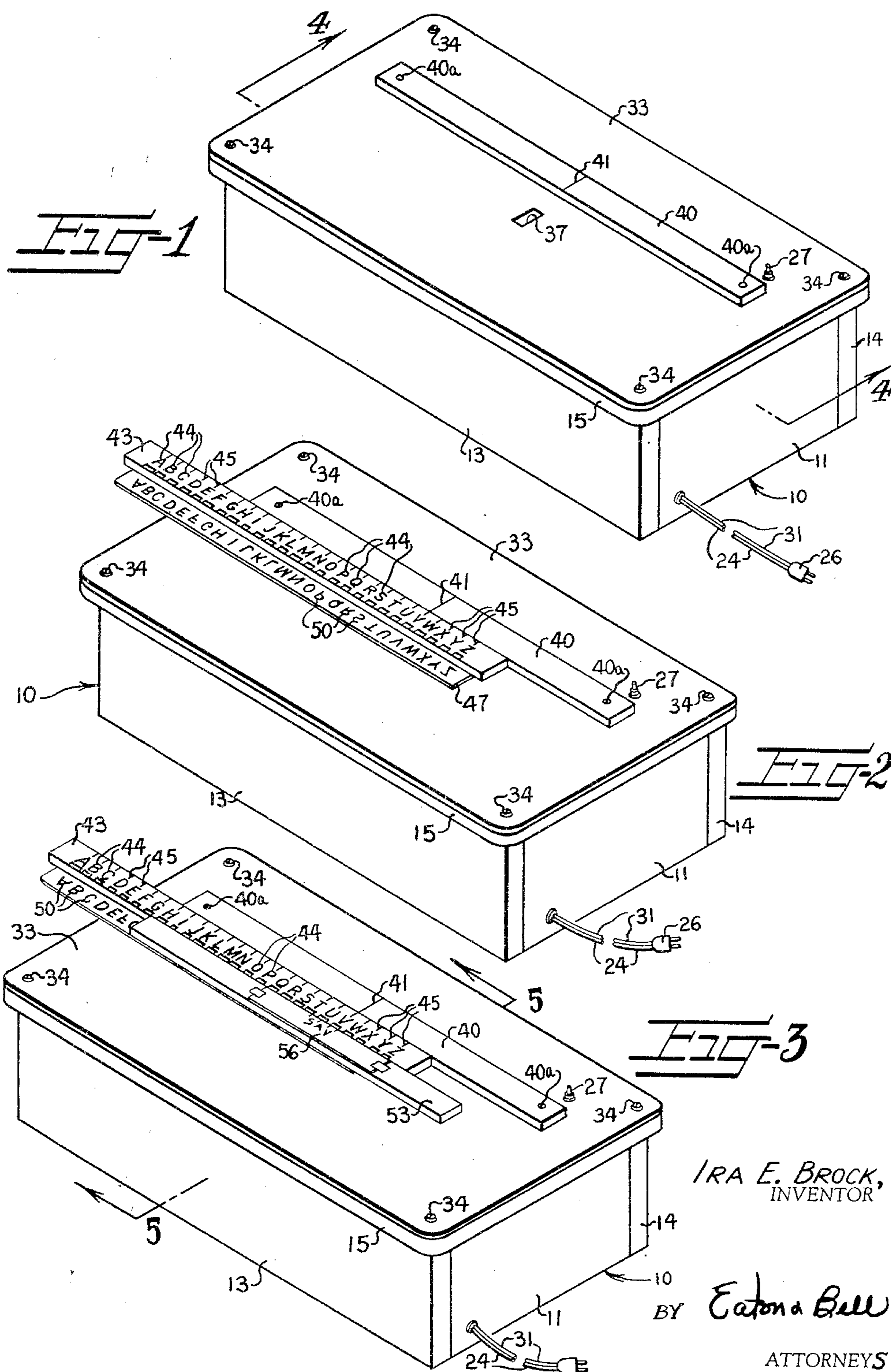
I. E. BROCK

2,709,952

PHOTOGRAPHIC LETTER LAYING - OUT DEVICE

Filed May 22, 1952

2 Sheets-Sheet 1



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-10
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ATTORNEYS

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2 Sheets-Sheet 2

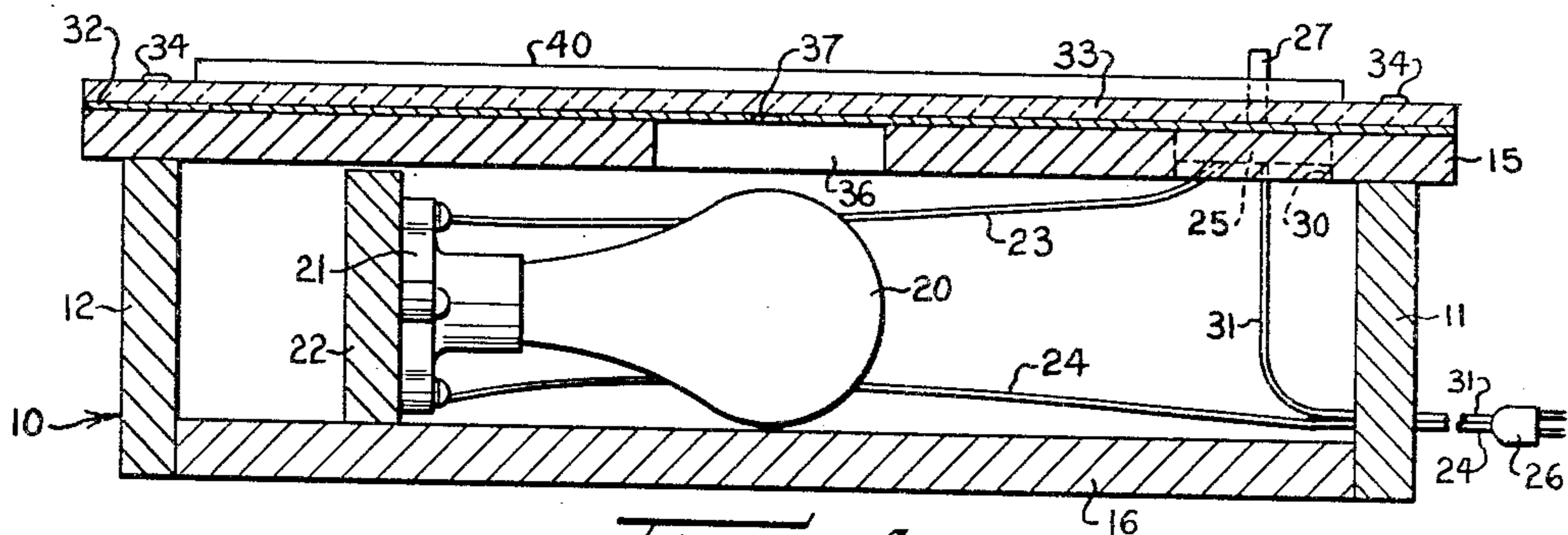


FIG-4

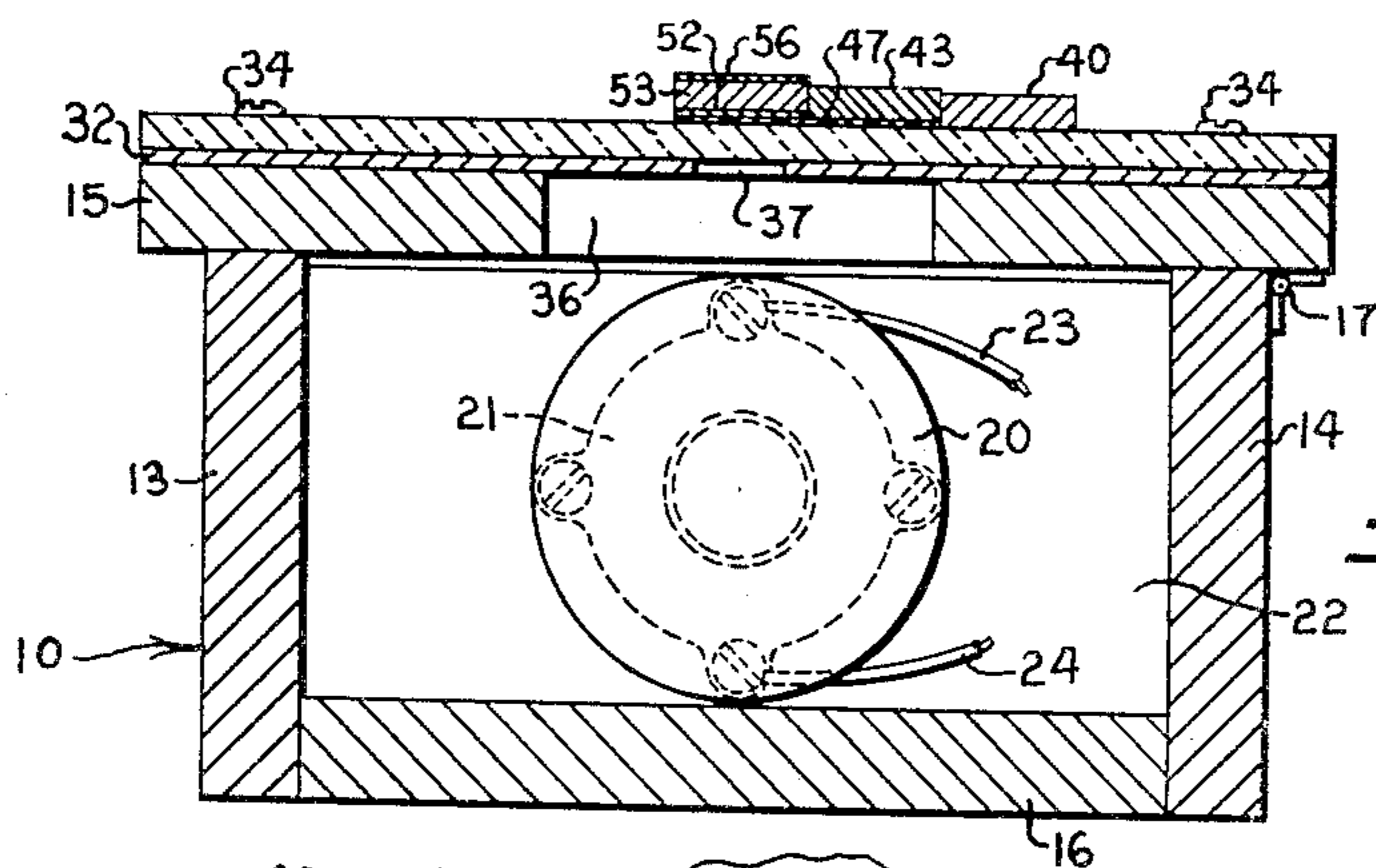


FIG-5

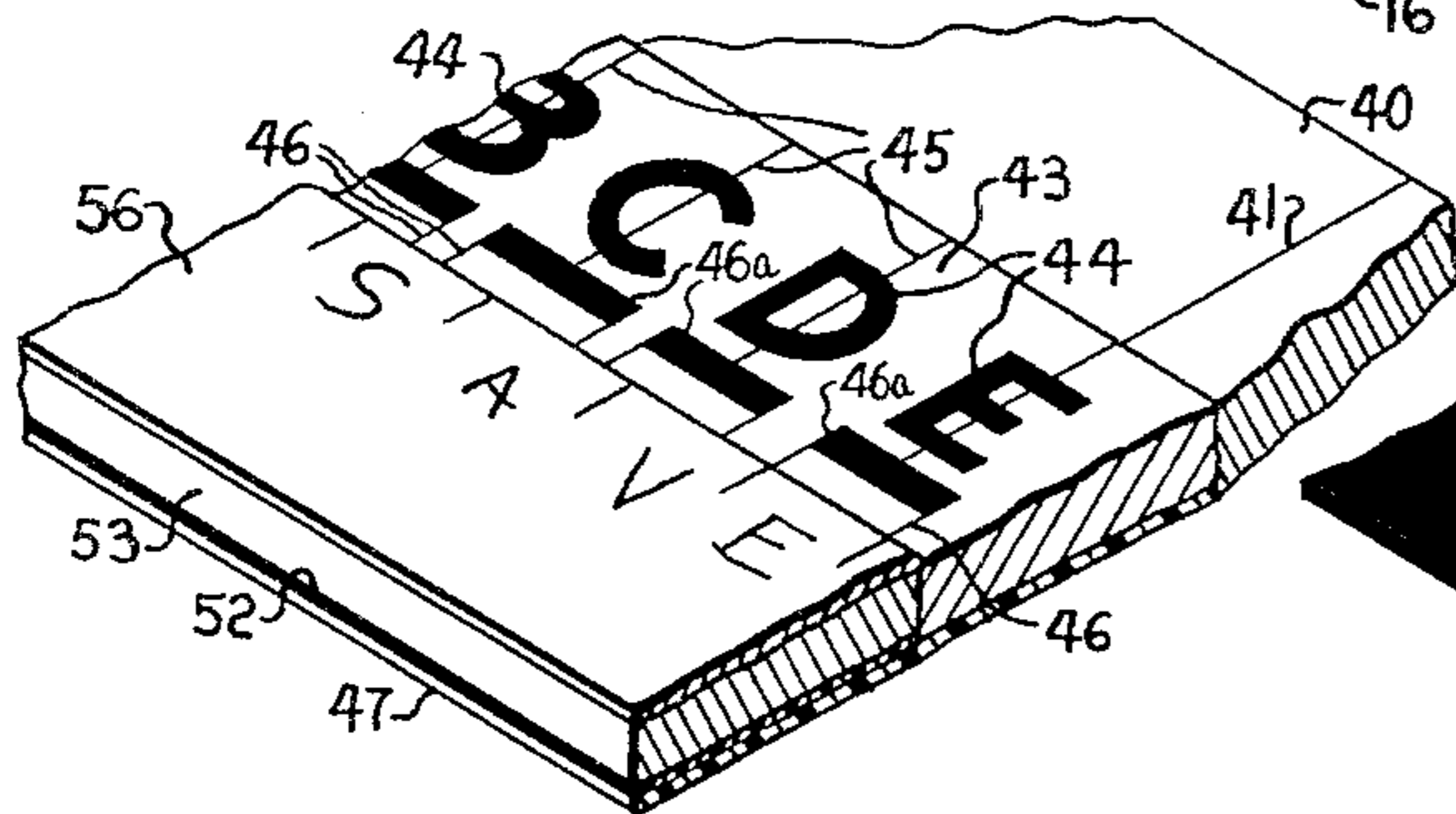


FIG-7

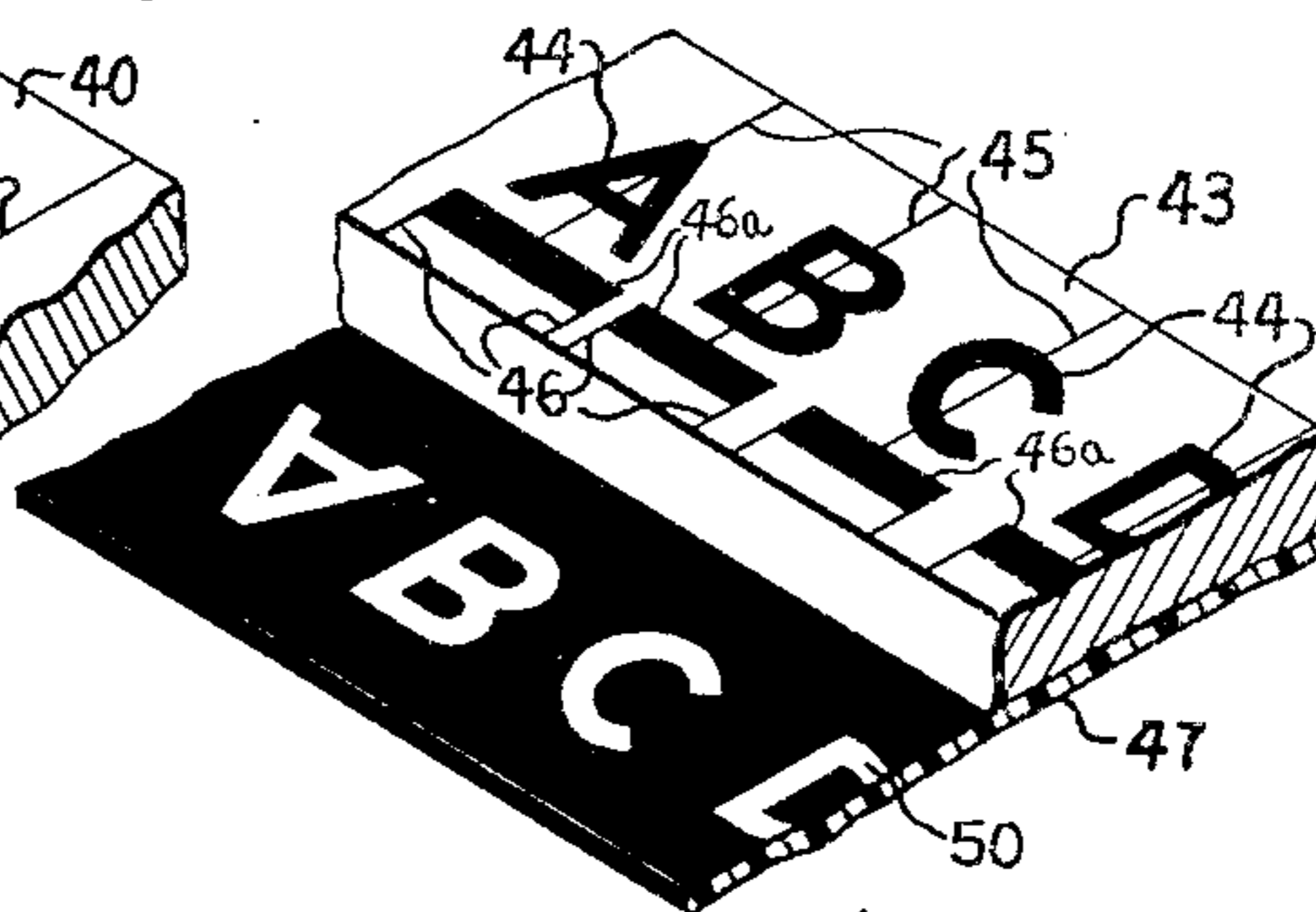


FIG-6



FIG-8

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2,709,952

PHOTOGRAPHIC LETTER LAYING-OUT DEVICE

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1 Claim. (Cl. 95—4.5)

This invention relates to devices for reproducing letters or other characters photographically and more especially to a novel photographic contact printer.

In the practice of commercial art, many attempts have been made to perfect means to reproduce letters or other characters in design preparatory to placing the lettering on the sheet after the picture or other motif has been completed. Heretofore, there have been two general processes utilized in placing the lettering on the sheet; one of these processes has required the necessity of having a printer or type-setter set up the desired arrangement of letters to form the word to be applied to the layout sheet and to subsequently print a proof of the words which were thereafter placed on the sheet. This is commonly termed letterpress printing. The other process has required the positioning of individual letters or other characters on the sheet, arranging them in straight lines by the use of suitable guides and the like and then pasting them to the sheet. It is evident that both of these processes are quite time consuming and, therefore, quite expensive.

The primary object of this invention is to overcome such defects by providing a simple means to print a series of letters or other characters in accurate relationship to each other by a photographic process and wherein the letters or other characters are printed on a sensitized paper, with the result that a strip of paper having the letters or characters thereon may be placed on the layout sheet and a single sheet of the sensitized paper may contain a complete sentence or any desired number of prearranged letters or other characters thereon.

More specifically, it is an object of this invention to provide a photographic contact printer in the form of a box having a manually controlled light source therein and wherein the top wall of the box is provided with a relatively small opening or window, preferably rectangular in shape, and adjacent which a guide is fixed to the cover or top wall of the box. The guide is provided with a register mark thereon disposed in alinement with the opening in the top wall of the box and a novel form of composing stick in the form of an elongated relatively thin bar is adapted to be positioned against the guide bar.

This composing stick has a row of a plurality of letters or other characters on one face thereof and the other face of the composing stick has thereon a thin elongated strip of opaque material which serves as a negative and has transparent letters or other characters formed therein, the portion thereof having the letters therein extending outwardly from one side edge of the composing stick and the letters or other characters thereon being alined with and coinciding with the letters or other characters on the first-named face of the composing stick proper. The letters or other characters on the negative are necessarily inverted or in the reverse of the corresponding letters or characters on the composing stick proper and are so positioned that, upon any one of the letters or characters on the composing stick proper

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being alined with the register mark on the guide, the corresponding letter or character on the negative will be positioned above the opening in the top wall of the contact printer.

Thus, a strip of sensitized paper may be positioned with its sensitized face downwardly upon the exposed portion of the negative and held in place by a suitable proof retaining stick to which the sensitized paper may be secured, by any suitable means such as adhesive tape or the like. By successively registering a predetermined series of letters or characters with the register mark on the guide and subjecting the negative to the light source each time a desired letter or character is positioned in alinement with the register mark, any desired series of letters or characters may be printed on the sensitized paper.

Each time a letter or other character is thus printed, the operator may mark each successive letter or character printed on the upper surface of the sensitized paper or proof retaining stick or on a suitable strip of paper applied to the upper surface of the latter bar, and may, thus, determine the proper spacing for each letter or other character to be printed on the sensitized paper on the reverse or lower side of the sensitized paper retaining bar.

Thus, clear solid black letters or characters are formed in the proof and are accurately arranged in proper spaced relation to each other as well as being arranged in a straight line on each of the proofs. It is contemplated that a number of different types of composing sticks may be employed which have different sizes and types of letters or characters thereon and which may be interchanged during the printing of a single strip of sensitized paper to accordingly vary the characters printed on the sensitized paper whereby any style of printing known to the typographic art may be printed on a single sheet of sensitized paper and whereupon the sheets of sensitized paper with the letters or characters thereon may be mounted directly on the layout sheet.

Some of the objects of the invention having been stated, other objects will appear as the description proceeds, when taken in connection with the accompanying drawings, in which:

Figure 1 is an isometric view of the improved photographic printing apparatus;

Figure 2 is an isometric view similar to Figure 1 and also showing the improved composing stick in one position upon the upper wall or cover of the photoprinting box;

Figure 3 is a view similar to Figure 2, but also showing the proof-positioning bar resting in one position upon the exposed portion of the negative attached to the composing stick;

Figure 4 is an enlarged longitudinal vertical sectional view taken substantially along the line 4—4 in Figure 1;

Figure 5 is a transverse vertical sectional view taken along the line 5—5 in Figure 3;

Figure 6 is an enlarged fragmentary isometric view of the composing stick and the negative attached thereto dissociated from the contact photoprinting device;

Figure 7 is a fragmentary view similar to Figure 6 but showing the relationship between the guide carried by the photoprinting device and the composing stick and also showing the proof-carrying stick positioned upon the negative and against the composing stick;

Figure 8 is a fragmentary view of the proof-carrying stick looking at the bottom surface thereof and showing a proof or film secured thereto after it has been completed by means of the present apparatus.

Referring more specifically to the drawings, the photographic contact printing device is shown in the form of a box or casing broadly designated at 10 and which has end

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walls 11 and 12, front and rear walls 13 and 14, a top wall or a hinged cover 15 and a bottom wall 16, all of which may be made from a relatively light weight material such as wood, plastic or the like. The top wall of cover 15 is hingedly connected, as by hinges 17, to the rear wall 14 to permit access to the interior of the box 10 and which a suitable light source shown in the form of an incandescent lamp 20 is provided.

The incandescent lamp 20 is mounted in a suitable receptacle 21 which is suitably secured to a transverse partition 22 extending between and being suitably secured to the front and rear walls 13 and 14. The receptacle 21 has wires 23 and 24 connected to opposite sides thereof, the corresponding ends of the wires 23 and 24 being connected to a manually operable switch 25 and a plug 26 respectively. The plug 26 is adapted to be connected to a suitable source of electrical energy, not shown.

The switch 25 has a manually depressible, resiliently mounted plunger 27 thereon which slidably penetrates the upper wall or cover 15 of the box 10 and which is adapted to be depressed by an operator for completing a circuit to the incandescent lamp 20 as desired. The switch 25 is suitably secured to the upper wall or cover 15, the cover 15 being provided with a cavity 30 in which the switch 25 is secured. There are many types of switches which may be employed and, preferably, a snap-switch is to be used in association with the present invention. Since the switch 25 is conventional, a detailed illustration and description thereof is deemed unnecessary.

Opposite ends of a wire 31 are connected to the plug 26 and the switch 25. The upper surface of the cover 15 has a sheet of opaque material 32, such as heavy black paper, thereon and upon which a transparent plate 33 is positioned, the transparent plate and the sheet of opaque material being secured to the upper surface of the cover 15 by any suitable means such as screws 34. The transparent plate 33 may be made from glass, plastic or the like.

It will be observed in Figures 1, 4 and 5 that the cover 15 has a relatively large opening 36 therethrough and the sheet of opaque material 32 also has a relatively small opening 37 therethrough which coincides with the opening 36 to permit the light rays from the incandescent lamp 20 to pass through the openings 36, 37 and the transparent plate 33.

It is evident that the sheet of opaque material 32 and the transparent plate 33 may be omitted and the opening 36 then made relatively smaller than that shown, if desired. However, the relatively thin sheet of opaque material 32 is provided to limit diffusion of the light rays passing through the openings 36 and 37 and the transparent plate 33 is provided to insure that a smooth uninterrupted surface is provided on which the composing stick, to be presently described, may have free sliding movement.

Now, the window formed by the opening 37 is preferably located at the longitudinal center of the cover 15 and somewhat forwardly of the transverse center of the cover 15. Spaced rearwardly from the window formed by the opening 37, as observed through the transparent plate 33, is a guide bar 40 which is suitably secured to the plate 33 as by screws 41. This guide bar 40 should have a straight uninterrupted front edge and is preferably relatively thin and provided with a register mark or line 41 thereon for purposes to be presently described. This completes the structure of the photo-contact printing device 10.

Referring to Figures 2, 3, 5, 6 and 7, it will be observed that I have provided a novel form of composing stick 43 which is preferably made from a light weight material such as wood and the like and should be rectangular in cross-section. This composing stick 43 has a row of letters, numerals or other characters thereon, each of which is indicated at 44 and the composing stick

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43 is also provided with a register mark 45 for each of the letters or characters 44, which register marks are centrally disposed relatively to each character and extend at least from the rear or upper edges of the letters or characters 44 to the rear edge of the composing stick 43.

Now, as is well known, some letters or characters may be of greater width than others and, accordingly, the composing stick 43 is provided with a pair of letter-breadth register marks 46, each pair of these letter-breadth register marks 46 being spaced from each other a distance equivalent to, or slightly greater than, the width of the corresponding letter or character 44. It will be most clearly observed in Figures 6 and 7 that these letter or character-breadth marks 46 extend from the front edge of the composing stick 43 inwardly to a point adjacent the bottom or front edge of the corresponding letter or character 44. In order to assist the operator in quickly discerning the register marks 46 corresponding to any corresponding character 44, a heavy base line 46a is preferably provided beneath each letter and spanning corresponding pairs of lines or marks 46.

The composing stick has a relatively thin negative 47 adhesively or otherwise secured to the lower surface thereof which may be made from Celluloid, plastic or any other desired material and which is substantially of the same length as the composing stick 43. It will be observed that this negative 47 is of a substantially greater width than the width of the composing stick 43 and extends substantially beyond the front edge of the composing stick 43.

The exposed portion of the negative 47 has a row of letters or other characters thereon, each of which is indicated at 50. Depending upon the type of proof desired, the negative 47 may be transparent with black letters or other characters 50 thereon, as shown in Figure 2, or the negative 47 may be opaque with the letters or other characters 50 either being transparent or cut out from the negative 47 as shown in Figure 6. It will be noted that these letters or characters 50 are inverted or are formed in the reverse of the corresponding letters or other characters 44 on the composing stick 43, and the letters or characters 50 are spaced from the rear or guiding edge of the composing stick 43 sufficiently so that a letter or other character 50 will register with the window formed by the opening 37 in the sheet of opaque material 32 when the rear or guiding edge of the composing stick 43 is positioned against the guide bar 40 and when the register mark 45 corresponding to the letter or other character 44 is alined with the register mark 41 on the guide bar 40.

It is evident that the negative 47 should be as thin as is practicable in order to minimize diffusion of the light rays when they are caused to penetrate the opening 37 and the corresponding letter or other character 50 on the negative 47 or the area around the letter, as the case may be, to thereby produce a clear solid black print on the sensitized paper or film when it is positioned upon the exposed portion of the negative 47 as will be presently described.

Referring particularly to Figure 8, there will be observed a proof 52 formed of a strip of sensitized paper or film which is suitably removably secured to proof-carrying stick or bar 53 by any suitable means, such as strips of thin cellophane adhesive tape 55. Any type of adhesive tape may be employed for removably securing the strip of sensitized paper or film 52 to the lower surface of the proof-carrying stick 53. It is evident, however, that the thinner the adhesive tape 55, the more clear will be the letters or other characters reproduced on the strip of sensitized paper or film 52.

It will be observed in Figure 3 that the proof-carrying bar or stick 53 is preferably of substantially the same length, width and thickness as the composing stick 43

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so the proof-carrying stick 43 or bar 53 may be positioned upon and moved in sliding engagement with the upper surface of the exposed front portion of the negative 47, and against the front edge of the composing stick 43. It will be further observed in Figures 3, 5 and 7 that the upper surface of the film or proof-carrying stick or bar 53 has a transposing strip 56 of relatively thin material, such as paper, suitably secured to the upper surface thereof. A strip of paper having one of its surfaces provided with a suitable adhesive may be used for the transposing strip 56, if desired, so the transposing strip 56 may be adhesively secured to the upper surface of the proof-carrying bar or stick 53.

Although the composing stick 43 and the negative 47 are shown in the drawings as being provided with upper case letters thereon, it is evident that a plurality of similar composing sticks and negatives may be provided wherein different types of letters, numerals or other characters may be provided on each of the composing sticks and these composing sticks may be interchanged during the forming of a single proof as desired.

Method of operation

Assuming that the commercial artist desires to paste a series of letters or other characters on a layout sheet in preparation for an engraver or printer, a strip of film or other sensitized paper such as the strip 52 shown in Figure 8, is secured to the lower surface of the proof-carrying bar or stick 53 in the manner described and he then selects a composing stick, such as the composing stick 43, having the desired type of letters, numerals or other characters thereon, whereupon the operator then places the composing stick 43, the negative 47 and the carrying bar 53 on the plate 33 of the contact printing box 10 with the rear edge of the composing stick 43 against the guide bar 40 as shown in Figures 2, 3 and 5.

The transposing strip 56 is preferably of the same length as the strip of film or sensitized paper and should be positioned above and in vertical alinement with the proof 52. Further assuming that the operator desires to reproduce the word "SAVE," for example, the register mark 45 above the letter "S" in the row of letters 44 is positioned in alinement with the guide mark or register mark 41 on the guide bar 40.

The proof-carrying stick 53 is then moved relative to the composing stick 43 to position the desired portion of the proof, sensitized paper or film 52 and, of course, the transposing strip 56 in proper relation to the corresponding letter alined with the registration mark 41. By positioning the letter "S" in alinement with the registration mark 41, this positions the corresponding letter "S" in the row of letters or other characters 50 on the negative 47 in register with the window formed by the cut-out or opening 37 in the sheet of opaque material 32.

When the character to be reproduced is in its proper place, the character or sufficient of its outline is sketched on the transposing strip 56 substantially as shown in Figure 7 and pencil indications are also made on the transposing strip 56 which coincide with the corresponding pair of registration marks 46 below the character to be reproduced. The operator then closes the switch 27 for the desired interval to cause light rays to pass through the opening 37 in the sheet of opaque material 32, the transparent plate 33 and the character to be reproduced, thus subjecting the sensitized paper or film 52 to the light rays to form the desired letter or character thereon.

The operator then moves the proof-carrying bar or stick 53 until the right-hand pencil indication previously made on the transposing strip 56 registers with the left-hand register mark of the next succeeding character which, in this instance, is the letter "A." The composing stick 43 is then also moved to aline the registration mark 45 above the letter "A" with the register mark 41 on the guide bar 40. The operator then again closes the switch 27 for the desired interval and forms another pencil indi-

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cation on the transposing strip 56 in alinement with the right-hand register mark 46 adjacent the letter "A."

The operator also sketches the character thus reproduced on the transposing strip 56 adjacent and between the pencil indications made on the transposing strip 56 which define the corresponding character in the row of letters or characters 44. The procedure is then repeated until the desired number of letters or other characters have been photographed and the transposing strip 56 is then removed from the proof-carrying stick or bar 53. The proof is then subjected to the usual solutions for developing the same and then the series of letters, words, or other characters may be pasted on the commercial artist's layout sheet.

It is thus seen that I have provided a simple, economically constructed and operated device for reproducing rows of accurately spaced characters on a single sheet or strip of sensitized paper or film and wherein the spacing of the letters or other characters on the strip of sensitized material or film is determined by judgment of the eye of the operator without the control of any mechanical means. The most important features of the apparatus are its simplicity and economy of construction and operation since, heretofore, similar characters have been reproduced by very complicated machines or projectors or it has been necessary to reproduce each character independently of the other and to subsequently arrange the individual characters in proper spaced alinement to each other when they were applied to the layout sheet. Of course, upon the commercial artist making an error, it has often been necessary to discard the layout sheet whereas if an error is made in properly arranging the characters on the strip of sensitized paper or film 52, it is merely necessary to discard this relatively small strip of material and replace the same with another.

It is evident that the cutouts or clear areas formed by the row of letters or other characters 50 in the negative 47 may be formed with ornamental patterns or the like thereon, or if desired, a strip of transparent adhesive tape may be applied to the upper and/or lower surfaces of the exposed portion of the negative 47, which tape could be provided with opaque figures or other ornamentations thereon to be superposed over the cutout letters or other characters when the letters or other characters are reproduced on the strip of sensitized paper or film 52.

The term "layout sheet" as used in the specification is to be construed as the finally prepared drawing or picture made by the commercial artist preparatory to photographic reproduction of the entire sheet for engraving and for any desired printing process.

In the drawings and specification there has been set forth a preferred embodiment of the invention and, although specific terms are employed, they are used in a generic and descriptive sense only and not for purposes of limitation, the scope of the invention being defined in the claim.

I claim:

In an apparatus for reproducing rows of accurately spaced characters on sensitized paper, film or the like having a contact printing box including a top wall provided with a relatively small opening therein through which light rays may be directed from within said box, the combination of a guide bar fixed to the upper surface of said top wall, a composing stick, an opaque negative secured to the lower surface of the composing stick and extending outwardly beyond a first edge thereof to form an exposed portion, said composing stick being of substantially greater thickness than the negative, a second edge of said composing stick being adapted to be positioned against said guide bar, the composing stick having a row of characters thereon, a coinciding row of transparent areas defining characters on the exposed portion of said opaque negative, a first register mark on said guide bar alined with said opening in the top wall of said box, said opening being spaced from the guide bar so that

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the row of characters formed in the exposed portion of the negative are alined with said opening in the top wall of the box, a second register mark adjacent each character and adjacent said second edge of the composing stick, a third pair of register marks adjacent the first edge of said composing stick and adjacent each of said characters on the composing stick, each of said third pairs of register marks being spaced from each other a distance substantially the same as the width of the corresponding character, a proof carrying stick adapted to support said sensitized paper on the bottom surface thereof, and a transposing strip secured to the upper surface of said proof carrying-stick whereby a series of successive characters may be reproduced on the sensitized paper by suc-

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cessively positioning the second register marks on the composing stick with the first register mark on the guide bar and, as each successive character is reproduced, pencil indications may be made on the transposing strip indicating the position of each successively formed character to thereby permit accurate spacing of the characters and the forming of the characters in a straight line when reproduced.

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