

I. S. BUNNELL.
 ART OF PRODUCING PRINTING MEDIUMS.
 APPLICATION FILED OCT. 16, 1915.

1,237,239.

Patented Aug. 14, 1917.

2 SHEETS—SHEET 1.

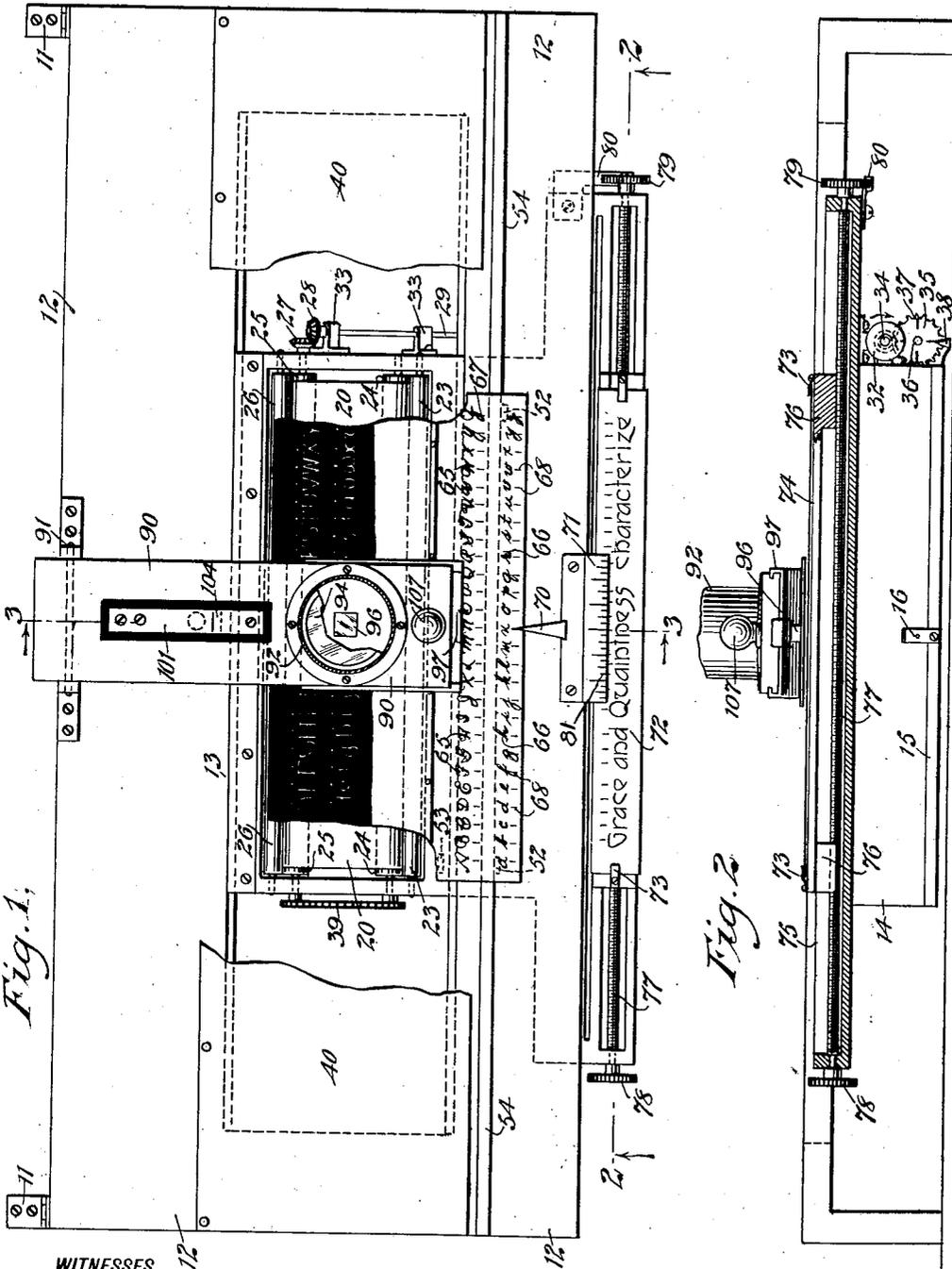


Fig. 1.

Fig. 2.

WITNESSES

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INVENTOR

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 ATTORNEYS

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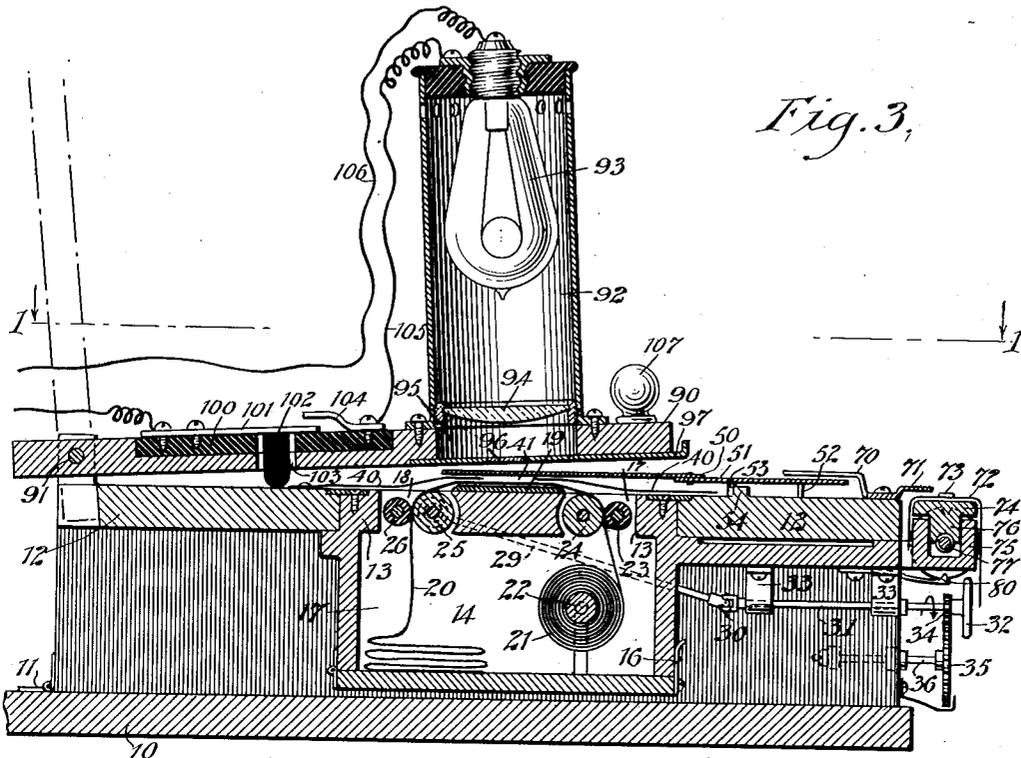


Fig. 3.

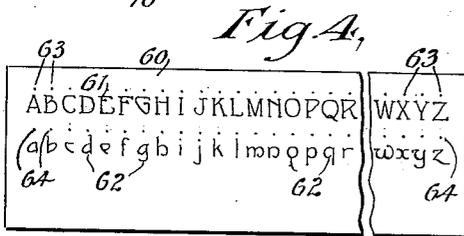


Fig. 4.

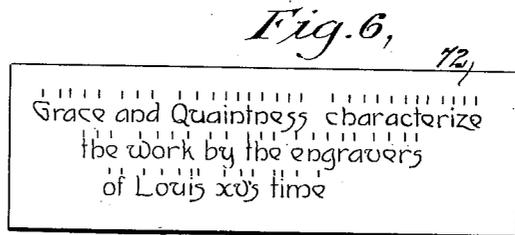


Fig. 6.

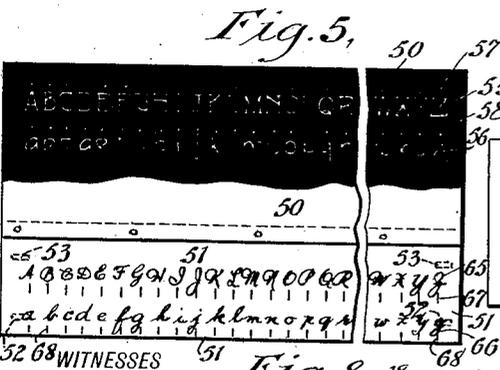
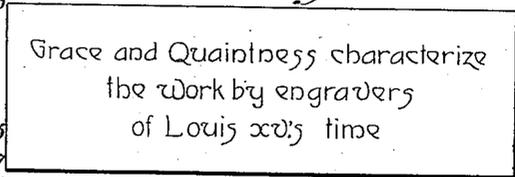


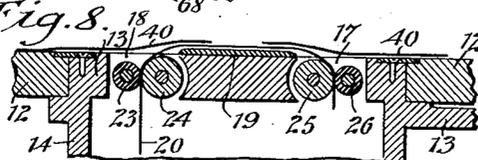
Fig. 5.

Fig. 7.



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Fig. 8.



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UNITED STATES PATENT OFFICE.

ISAAC S. BUNNELL, OF EAST ORANGE, NEW JERSEY.

ART OF PRODUCING PRINTING MEDIUMS.

1,237,239.

Specification of Letters Patent. Patented Aug. 14, 1917.

Application filed October 16, 1915. Serial No. 56,297.

To all whom it may concern:

Be it known that I, ISAAC S. BUNNELL, a citizen of the United States, and a resident of East Orange, in the county of Essex and State of New Jersey, have invented new and useful Improvements in the Art of Producing Printing Mediums, of which the following is a full, clear, and exact description.

An object of the invention is to provide certain new and useful improvements in the art of producing printing media to be printed from, especially numerals, words and sentences composed of fancy letters and other characters, the finished printing media produced being used for reproduction by any of the well known forms of reproduction such as raised surface printing, offset printing, lithography, photogravure, steel or copper plate intaglio printing, photo-gelatin printing and the like. Another object is to permit the use of the finished product, in case no extra copies are desired, as a show card, price tag, bulletin or similar article. Another object is to provide a simple apparatus which can be readily manipulated by a practically unskilled person to produce the desired printing media or display article.

In order to accomplish the desired result, use is made of a method which includes the reproduction of original fancy characters on a negative, printing photographically and successively from this negative on a sensitized surface selected ones of the said fancy characters in assembled relation according to the printed matter desired, and developing the said film. In order to carry this method into effect use is made of an apparatus, comprising a support for a sensitized film, a negative provided with fancy characters in spaced relation one to the other, and a source of light having a field capable of containing at a time but a single one of the said fancy characters, the said support, the said negative and the said source of light having movement one relatively to the other to allow of making successive exposures of the selected ones of the said fancy characters on the film and in assembled relation to the printed matter desired.

A practical embodiment of the invention is represented in the accompanying drawings forming a part of this specification, in

which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a plan view of the apparatus with parts broken out;

Fig. 2 is a sectional front elevation of the same on the line 2—2 of Fig. 1;

Fig. 3 is an enlarged cross section of the same on the line 3—3 of Fig. 1;

Fig. 4 is a plan view of the original sheet showing an alphabet of fancy capital and small letters of the alphabet with the centering or positioning marks associated therewith and as produced by the artist;

Fig. 5 is a plan view of the photographic negative produced from the artist's original and attached to a movable support provided with a second set of capital and small letters of the alphabet, and with positioning marks, the letters and positioning marks on the movable support being in register with the corresponding letters and positioning marks on the negative;

Fig. 6 is a plan view of an outline copy of the matter to be reproduced from the negative shown in Fig. 5 or from an enlarged or reduced photographic print of the original shown in Fig. 4;

Fig. 7 is a plan view of the finished product; and

Fig. 8 is a cross section of a part of the apparatus and showing the use of a sheet of sensitized film instead of a roll film, as illustrated in Fig. 3.

The improved apparatus is mounted on a base 10 connected by hinges 11 with the rear end of a frame 12 normally resting on the base 10 and adapted to be swung upwardly for the purpose hereinafter more fully explained. On the top of the frame 12 is mounted to slide sidewise a carriage 13 provided with a depending box 14 having a hinged bottom 15 normally held in a closed position by a suitable fastening device 16. The carriage 13 is provided in its top with a front opening 17 and a rear opening 18, and on the said top intermediate the said openings 17 and 18 is mounted a pad 19 of felt or other suitable cushioning material. Over this pad 19 passes a sensitized surface, preferably in the form of a sensitized film 20 (or photographic paper) which extends down through the openings 17 and 18 into

the box 14. The film may be in the form of a sheet as shown in Fig. 8, or in the form of a roll 21 removably mounted on a suitable bearing 22 held on the bottom 15 of the box 14. The film extends from this roll 21 upward between feed rollers 23 and 24 extending within the opening 17 and journaled at their ends in the top of the carriage 13. The rear end of the film 20 passes between feed rollers 25 and 26 extending within the opening 18 and journaled at their ends in the carriage 13. One end of the feed roller 25 (see Fig. 1) is provided with a bevel gear wheel 27 in mesh with a bevel gear wheel 28 secured on the rear end of a shaft 29 connected by a universal joint 30 with a shaft 31 extending to the front of the apparatus and provided at its front end with a wheel or a handle 32 under the control of the operator for turning the shaft 31 and consequently the shaft 29 to rotate the feed roller 25 with a view to feed the film 20 rearwardly over the pad 19 whenever it is desired to do so, as hereinafter more fully explained. The shafts 31 and 29 are journaled in suitable bearings 33 attached to the carriage 13. On the front end of the shaft 31 is secured a pinion 34 in mesh with a gear wheel 35 secured on a shaft 36 journaled on the carriage 13. On the face of the gear wheel 35 (see Fig. 2) are arranged equally spaced indicating marks 37, preferably four in number, and on which indicates a pointer 38 fixed on the carriage 13. Thus by observing the indicating marks 37 the operator can readily determine the distance the film 20 is fed forward at the time of turning the handle 32. The feed roller 24 is geared with the feed roller 25 by a gearing 39 (see Fig. 1) such as sprocket wheels and sprocket chain to cause the feed roller 24 to turn in unison with the feed roller 25.

In order to protect the sensitized film 20 against light, use is made of a protective opaque cover 40, of rubber or other suitable fabric material and attached at its rear edge to the frame 12 and extending over the carriage 13 onto the front portion of the frame 12, as plainly indicated in Figs. 1 and 3. The cover 40 is provided at its middle directly over the film portion overlying the pad 19 with an opening 41 for the passage of light, as hereinafter more fully explained.

A negative 50 extends over the opaque cover 40 of the opening 41 and this negative 50 is made of transparent material and is attached at its front edge to a plate 51 provided at its under side with front and rear lugs 52 and 53 resting on the top of the frame 12 near the front thereof, the lugs 52 and 53 being adapted to abut against a ledge 54 forming part of the frame 12 and extending lengthwise thereof intermediate

the sets of lugs 52 and 53 to limit the forward and rearward sliding movement of the plate 51 and to guide the same in its side-wise movement with either set of lugs 52 or 53 in engagement with the ledge 54.

The negative 50, as shown in Fig. 5, is provided with an alphabet of fancy capital letters 55 and an alphabet of fancy small letters 56, and each of the letters 55 of the alphabet has associated therewith but spaced therefrom a centering or positioning mark 57, preferably located directly above the exact middle of the corresponding letter. A similar centering or positioning mark 58 is associated with each of the small letters 56. The letters 55 and 56 and their positioning marks 57 and 58 are photographically produced from an original 60 in which the capital and small letters 61 and 62 of the alphabet together with the positioning marks 63 and 64 are drawn by an artist in spaced relation one to the other, as plainly indicated in said Fig. 4. It is understood that the letters of the alphabet 55 and 56 and the negative 50 are reproduced either on the same scale or on a larger or a smaller scale than the letters 61 and 62 of the artist's original 60. The letters 55 and 56 are spaced apart a distance corresponding to that of the transverse movement of the holder 51 so that either set of letters 55 or 56 can be moved in register with the opening 41 on shifting the plate 51 rearwardly or forwardly according to whatever capital or small letter is required at the time for reproduction on the film 20.

On the top of the plate 51 are arranged the capital and small letters 65 and 66 of the alphabet and with the said letters are associated centering or positioning marks 67, 68, preferably in the form of lines below the middle of the letters 65, 66, the lines 67 and 68 being arranged in spaced relation with each other and in transverse alinement with the letters 55 and 56 and their positioning marks 57, 58 on the negative 50. On the positioning marks 67 and 68 indicates a pointer 70 fixed on a gage 71 attached to the frame 12, and the gage 71 extends over a copy 72 removably attached by clips 73 to the top of a holder 74 mounted to slide lengthwise in a suitable guideway 75 formed on the front of the carriage 13. The under side of the holder 74 is provided with half nuts 76 in engagement with a screw rod 77 extending lengthwise in the guide way 75 and journaled in the ends thereof, the terminals of the screw rod 77 being provided with hand wheels 78, 79 either of which may be taken hold of by the operator to turn the screw rod 77 in either direction with a view to shift the holder 74 and with it its copy 72 to the left or the right according to the direction in which such hand wheel 78 or

79 is turned. The hand wheel 79 is preferably provided on its peripheral face with equidistant notches any one of which is adapted to be engaged by a spring click 80 (see Figs. 1, 2 and 3) to indicate equal divisions of one revolution of the screw rod 77 and to hold the screw rod 77 against accidental turning. The gage 71 previously mentioned is provided on top with a line graduation 81 corresponding to the threads per inch of the screw rod 77 to enable the operator to correctly position and space the letters of the alphabet or to rearrange the lines on the copy 72.

The copy 72 is in the form of a piece of tracing paper on which are successively traced in rough outline selected ones of the fancy characters 55, 56 and their positioning marks 57 and 58 in assembled relation according to the printed matter desired, as will be readily understood by reference to Fig. 6.

Above the negative 50 extends an arm 90 pivoted at its rear end at 91 to the top of the frame 12, and on the free end of the arm 90 is mounted a cylindrical lamp casing 92 containing in its upper portion a source of light, preferably in the form of an electric lamp 93. In the lower portion of the casing 92 is mounted a lens 94 for directing the rays of light from the lamp 93 through an opening 95 in the arm 90 and through a stop 96 onto and through the negative 50 to photographically print a corresponding letter 55 or 56 on the film 20, which letter is at the time encompassed by the stop 96 without, however, encompassing the positioning mark 57 or 58 of the particular letter. The stop 96 is mounted in a suitable holder 97 removably held on the underside of the arm 90.

Normally the arm 90 is held in raised position with the lamp 93 extinguished, but when the arm 90 is swung downward to position the stop 96 directly over the top of the negative 50 and to press the latter downward on the cover 40 then the lamp 93 is automatically lighted, and for this purpose the following arrangement is made: On the top of the arm 90 in the rear of the casing 92 is arranged a block 100 of rubber or other insulating material, and on top of this block 100 is attached a contact spring 101 connected with one electrode of a source of electrical energy such as a battery and the like. From the free end of the contact spring 101 extends downwardly a pin 102 of an insulating material and passing through an opening 103 formed in the block 100 and the arm 90, the bottom of the pin 102 resting on the top of the frame 12 to normally hold the arm 90 in the raised position shown in Fig. 3. The free end of the contact spring 102 is adapted to engage a fixed contact 104 attached to the block 100, and

this contact 104 is connected by a wire 105 with the lamp 93 connected by another wire 106 with the other electrode of the source of electrical energy previously mentioned. Thus normally the circuit for the lamp 93 is open, but when the arm 90 is swung downward by the operator then the spring 101 moves in engagement with the contact 104 thus closing the circuit for the lamp 93 to light the latter. When the operator releases the arm 90 the latter returns to its normal raised position, as shown in Fig. 3, by the action of the contact spring 101 and consequently the contact spring moves out of engagement with the contact 104 and the circuit for the electric lamp 93 is broken. The front of the arm 90 is preferably provided with a suitable knob 107 adapted to be taken hold of by the operator for swinging the arm 90 downward, as previously explained.

The operation is as follows:

A sample of the work to be done is illustrated in Fig. 7. The operator makes a sample copy 72 in rough outlines from the letters 55 and 56 and places the corresponding positioning marks 57 and 58 accurately under the roughly traced letters. This copy 72 is now fastened in place on the holder 74 by the use of clips 73 and then the operator turns the screw rod 77 so as to shift the holder 74 lengthwise until the left-hand edge of the copy 72 is in transverse alinement with the left-hand edge of the film 20, as indicated in Fig. 1. The operator now shifts the carriage 13 sidewise until the positioning mark of the first letter "G" registers with the middle graduation mark 81 and consequently with the pointer 70. The operator next shifts the plate 51 transversely until the lugs 53 abut against the back of the ledge 54, as shown in Fig. 3, and then the operator shifts the plate 51 sidewise until the positioning mark of the letter "G" of the row of letters 65 is in register with the pointer 70 so that the letter "G" of the row of letters 55 is now directly below the stop 96. The operator next takes hold of the knob 107 and swings the arm 90 downward so that the stop 96 is directly above the letter "G" of the row of letters 55 but the positioning mark of this letter is out of the field of the stop 96. When the arm 90 reaches lowermost position the contact spring 101 engages the contact 104 to close the circuit for the electric lamp 93 so that the rays of light print the letter "G" on the sensitized film 20, and when this has been done the operator releases the knob 107 to allow the arm 90 to return to uppermost position whereby the lamp 93 is extinguished. The operator next moves the carriage 13 to the left until the positioning mark of the letter "r" on the copy 72 coincides with the middle mark of the graduation 81 and consequently with the

pointer 70 and then the holder 51 carrying the negative 50 is shifted first transversely until the lugs 52 abut against the front edge of the ledge 54, as shown in Fig. 1.

5 The holder 51 is then shifted to the left until the positioning mark 68 of the letter "r" of the row of letters 66 registers with the pointer 70 and the operator again swings the arm 90 downward to cause a print of this letter on the film 20, after which the arm 90 is again released, as above explained.

10 The above described operation is repeated for the several small and capital letters of the words "Grace" and "Quaintness characterize" appearing in one line. As shown in Fig. 1, the printing has proceeded to the letter "n" in the word "Quaintness" and it will be noticed that the letter "n" of the copy 72 is in register with the middle mark of the graduation 71, and the letter "n" of the alphabet of small letters 66 is in register with the pointer 70 and hence the letter "n" of the alphabet of small letters 56 is in register with the stop 96.

15 When the end of the first line has been reached the operator turns the handle 32 to feed the film 20 rearwardly over the pad 19 the desired distance for the next line and which distance is readily indicated by the marks 37 and the pointer 38 observed by the operator. The operator now shifts the copy 72 rearwardly so that the next line appears on top of the holder 74, and as the first letter in the second line of the copy 72 is "t" the operator shifts the carriage 13 to the right until the positioning mark of this letter "t" registers with the middle mark of the graduation 81 and consequently with the pointer 70. The operator now shifts the plate 51

20 sidewise until the positioning mark 68 of the letter "t" of the row of letters 66 registers with the pointer 70, and then the above described operation is repeated, that is, the operator successively presses and releases the button 107 for causing a printing of the letter "t" on the film 20 at the proper place, as indicated in the copy 72. It is understood that the operator by shifting the holder 74 independently of the carriage 13

25 can provide a larger or a smaller space between adjacent letters and also leave out words that appear on the copy if it is desired to do so, as will be understood by comparison of the copy 72 and the product shown in Fig. 7. Thus the word "the" is left out in the second line and the spacing of the words in the second and third lines is made different from the same lines in the copy 72. When the printing has been completed as above described then the operator

30 swings the arm 90 upward and rearward into an approximately upright position, as indicated in dotted lines in Fig. 3, and then the operator swings the frame 12 upward so

as to gain access to the box 14 which is now 65 opened at its bottom 15 to allow removal of the exposed portion of the film 20. An unexposed portion of the film 20 can also be again passed over the pad 19 and between the feed rollers 25, 26 for making exposures 70 for another piece of work. The parts are then returned to normal position and the copy 72 is removed from the holder 74 and replaced by another one for new work. The exposed film is developed in the usual man- 75 ner and can then be either directly used when no extra copies are required for show cards, price tags, bulletins and the like, but when extra copies are desired then the product is reproduced by raised surface printing, 80 offset printing, lithography, photogravure, steel or copperplate intaglio printing or by photogelatin printing or any other suitable process of reproduction.

From the foregoing it will be seen that 85 the desired character can be accurately reproduced in a comparatively short time thus rendering the reproduction exceedingly economical. It will also be noticed that the apparatus can be readily manipulated by a 90 person with ordinary intelligence thus dispensing with the services of a high priced artist. Furthermore, the original characters as drawn by an artist can be reproduced in the same scale or in a larger or smaller 95 scale and the characters can be readily assembled into words and sentences in any quantity or as often as desired. Lined, stippled and other unusual effects can be easily secured by interposing a negative, 100 containing lines, stippling and the like, between the negative 50 containing the characters and the sensitized film 20, or the character can be printed full strength with the same letter appearing in stippling or the 105 like a little to the right or to the left, above or below, by printing this character first as it is and then moving the film the required distance and printing again through a lined, stippled or a similar negative. It 110 is understood that in any case the character of the original alphabet is retained with the desired fidelity and the work of one operator is practically as good as that of another. 115

By the arrangement described, a printer is enabled to have at his disposal a larger number of originals having fancy alphabets, sets of ornaments and the like, than is now possible, because the space required for storage is only a small fraction of and the initial cost is much less than the equivalent amount of type would be.

It is expressly understood that under the term "fancy characters" is understood any 120 character or ornament that is not contained in the usual printers' fonts.

It is also understood that by "sensitized

film" any sensitized surface is included whether such surface is on a sheet, a metal plate, on glass, on stone, or on any other available material.

5 Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. The method for producing fancy printing media for reproducing, which includes
10 reproducing original fancy characters on a negative, then selectively and successively tracing on a separate sheet several of the characters from the said negative to form
15 a rough outline copy of the words or sentences according to the printed matter desired, then printing photographically and successively from this negative on a sensitized film selected ones of the fancy characters in assembled relation according to the
20 said copy, and developing the film.

2. The herein described method for producing fancy printing media for reproducing, which consists in photographically reproducing on a transparent sheet a set of
25 fancy characters from an original on the same or on a different scale to form a negative, then selectively and successively tracing on a separate sheet several of the characters from the said negative to form a
30 rough outline copy of the words or sentences according to the printing matter desired, then photographically printing successively selected ones of the said fancy characters of the negative on a sensitized
35 film in the order of the said copy, and finally developing the said film.

3. The method for producing fancy printing media for reproducing, which includes producing original fancy characters
40 on a negative, then tracing successively in rough outline on a guiding copy selected ones of the fancy characters in assembled relation according to the printed matter desired, then printing photographically and
45 successively from the negative on a sensitized film selected ones of the fancy characters optionally in the order and spaced relation indicated on the said copy and then developing the said film.

50 4. The method for producing fancy printing matter for reproducing, which includes producing original fancy characters each having a centering mark, then producing photographically a negative of the said
55 characters and their centering marks, then printing photographically and successively from this negative on a sensitized film selected ones of the fancy characters with the centering marks out of the printing field and with the selected fancy characters in assembled relation to the printed matter desired, and then developing the said film.

5. The method for producing fancy printing matter for reproducing, which in-

cludes producing original fancy characters 65 each having a centering mark, then producing photographically a negative of, the said characters and their centering marks, then tracing successively in rough outline on a guiding copy selected ones of the said fancy 70 characters and their centering marks in assembled relation according to the printed matter desired, then photographically printing from this negative on a sensitized film the fancy characters with the centering 75 marks out of the printing field and with the fancy characters in approximately the order and spaced relation indicated on the said copy, and then developing the said film.

6. An apparatus for producing printing 80 matter, comprising a support for a sensitized film, a negative provided with fancy characters in spaced relation one to the other, each character having a positioning mark associated therewith, and a source of 85 light having a field capable of embracing at a time but a single one of the said fancy characters with the positioning mark out of the field, a copy holder adjustable on the said support and adapted to support a rough 90 outline copy of the printing matter desired, the said support, the said negative, the said copy holder, and the said source of light having movement one relatively to the other to allow making successive exposures of 95 selected ones of the said fancy characters on the film and in assembled relation to the printing matter on the said copy.

7. An apparatus for producing printing matter, comprising a support for a sensitized 100 film, a negative provided with fancy characters in spaced relation one to the other, a source of light having a field capable of embracing at a time but a single one of the said fancy characters, the said support, the said 105 negative and the said source of light having movement one relatively to the other to allow of making successive exposures of selected ones of the said fancy characters on the film and in assembled relation to the printed 110 matter desired, and a holder adapted to hold a guiding copy of the printed matter desired and arranged in adjustable relation to the said film and the said negative.

8. An apparatus for producing printing 115 matter, comprising a movable carriage adapted to support a sensitized film, a transparent negative movable on the carriage and provided with fancy characters arranged in spaced relation one with the other, each 120 character having associated therewith a positioning mark, the negative extending over the said film and a source of light arranged above the said negative and having a field capable of embracing but a single selected 125 one of the said fancy characters at a time with the positioning mark of the selected character out of the said field.

9. An apparatus for producing printing matter, comprising a movable carriage adapted to support a sensitized film, a transparent negative movable on the carriage and provided with fancy characters arranged in spaced relation one with the other, the negative extending over the said film, a source of light adapted to coact with the said negative and having a field capable of embracing but a single selected one of the said fancy characters at a time, the said source of light being normally inactive, and means carrying the said source of light for rendering the source of light active on moving the said means in printing relation with the said negative.

10. An apparatus for producing printing matter, comprising a movable carriage adapted to support a sensitized film, a transparent negative movable on the carriage and provided with fancy characters arranged in spaced relation one with the other, the negative extending over the said film, a source of light having a stop and mounted to move up and down, the stop being normally above the said negative and the said source of light when in normal raised position being inactive and means for rendering the source of light active on moving it downward with the stop in contact with the negative.

11. An apparatus for producing printing matter, comprising a frame, a carriage mounted to travel on the said frame and adapted to support a sensitized film, a negative movable on the said frame and extending over the said film, the said negative being provided with fancy characters in spaced relation one to the other, the negative having centering marks associated with the source of light movable up and down on the said frame and having a stop directly above the said negative, to encompass at a time one of the said fancy characters without its centering mark, a copy holder sidewise movable on the said frame and adapted to hold a copy of the printed matter desired, a gage fixed on the frame adjacent the copy holder, and a fixed pointer indicating on the said negative.

12. An apparatus for producing printing matter, comprising a frame, a carriage mounted to travel on the said frame and adapted to support a sensitized film, a negative movable on the said frame and extending over the said film, the said negative being provided with an alphabet of capital and small fancy letters in spaced relation one to the other, the negative having a centering mark associated with each of the said fancy letters, the said negative also having a second set of small and capital letters, and a transverse arm pivoted at its rear end on the said frame to swing up and down, an electric lamp mounted on the free end of the

said arm, a lens, and a stop mounted on the said frame in projecting relation with the said lamp, a circuit closer for the said lamp and controlled by the movement of the said arm, the said stop being adapted to encompass one of the said fancy letters without its centering mark, on swinging the arm downward and closing the circuit for the lamp, a copy holder movable on the said frame and adapted to hold a copy of the printed matter desired, a fixed gage for the said copy, and a fixed pointer indicating on the said second set of letters and their centering marks on the said negative.

13. An apparatus for producing printing media comprising a frame, a carriage mounted to travel on the said frame and adapted to carry a sensitized surface, a negative mounted to slide on the said frame and provided with fancy characters, any one of which is adapted to be positioned over the said sensitive surface, a source of light confined over the fancy character in register at the time with the said sensitized surface, a copy holder mounted on the said carriage and moving with the same, and a gage fixed on the frame and having graduations and a pointer, the graduations indicating on the copy held by the said holder and the pointer indicating on the said negative to position any one of the characters relatively to the said sensitive surface.

14. An apparatus for producing printing media, comprising a frame provided with a ledge, a carriage mounted to travel on the said frame and adapted to carry a sensitized surface, a plate slidable on the said frame and having two spaced sets of lugs either of which is adapted to abut against the said ledge to guide the plate in its sliding movement, a negative attached to the said plate and provided with an alphabet of capital and small letters in spaced relation one to the other and arranged in two rows spaced apart corresponding to the said sets of lugs to allow of positioning any one of the said capital or small letters relatively to the said sensitized surface, and a source of light having a field capable of embracing the selected and positioned letter.

15. An apparatus for producing printing media provided with a negative provided with an alphabet of capital and small fancy letters in spaced relation one to the other, the negative having a centering mark associated with each of the said fancy letters, the said negative also having a second alphabet of capital and small letters each provided with a centering mark, the corresponding letters of the two alphabets and their centering marks being arranged opposite each other.

16. An apparatus for producing printing media provided with a negative having an

image thereon of an alphabet of fancy letters, and a positioning mark associated with each of the said fancy letters and spaced therefrom and a holder carrying the said negative and provided with an alphabet 5 having corresponding letters and positioning marks and in alinement with the said corresponding ones.

In testimony whereof I have signed my name to this specification in the presence of 10 two subscribing witnesses.

ISAAC S. BUNNELL.

Witnesses:

THEO. G. HOSTER,
PHILIP D. ROLLHAUS.