J. A. H. HATT.

PROCESS AND APPARATUS FOR MAKING PRINTING PLATES.

APPLICATION FILED JAN. 17, 1912.

1,151,460.

Patented Aug. 24, 1915.

3 SHEETS--SHEET 1.

Fig. 1.

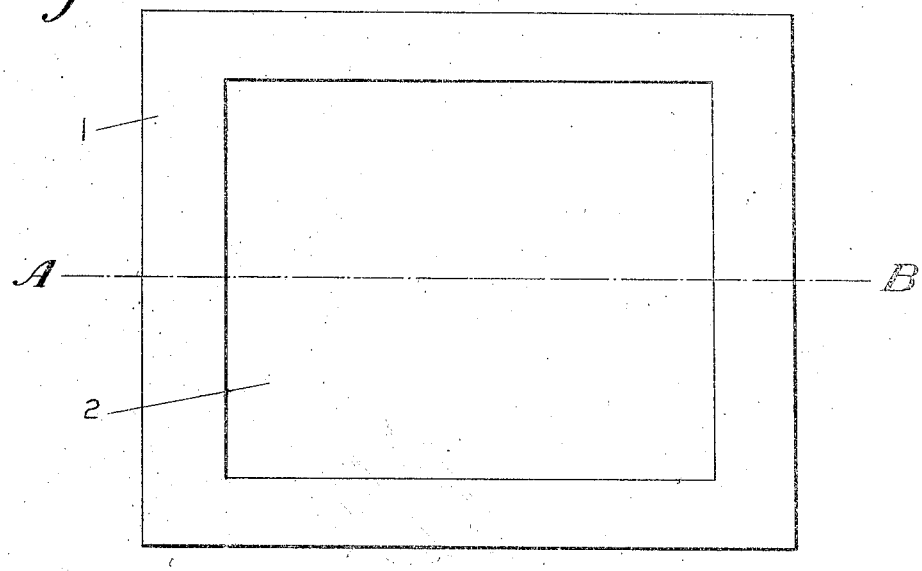


Fig. 2.

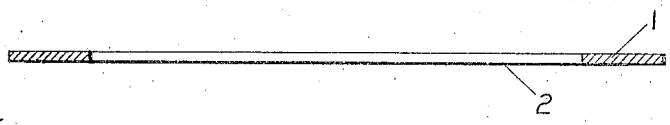
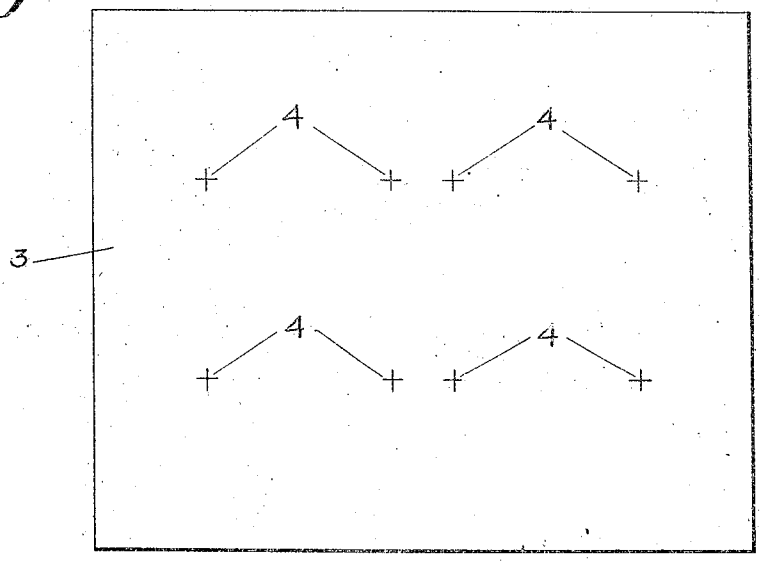


Fig. 3.



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3 SHEETS—SHEET 2.

Fig. 4.

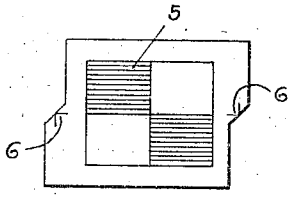


Fig. 5.

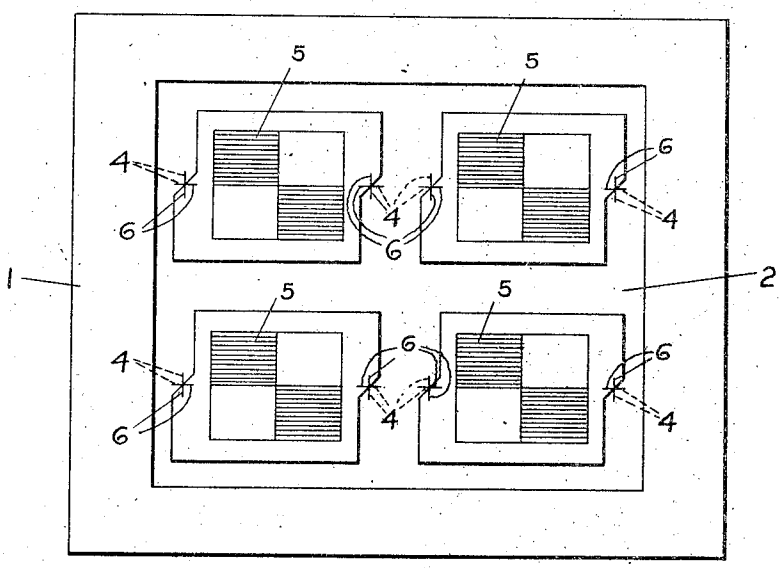
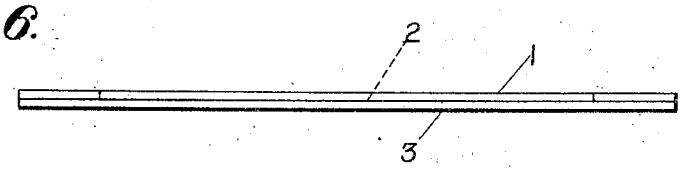


Fig. 6.



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3 SHEETS—SHEET 3.

Fig. 7.

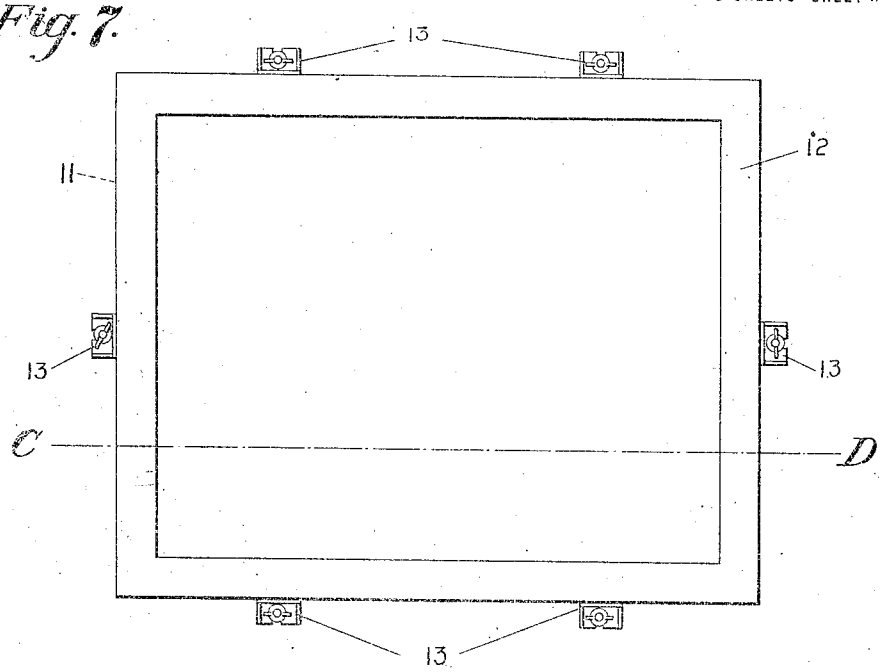


Fig. 8.

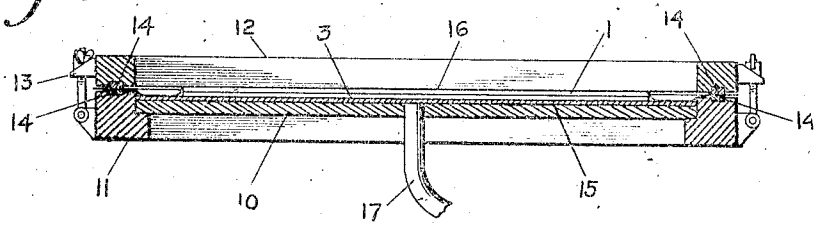
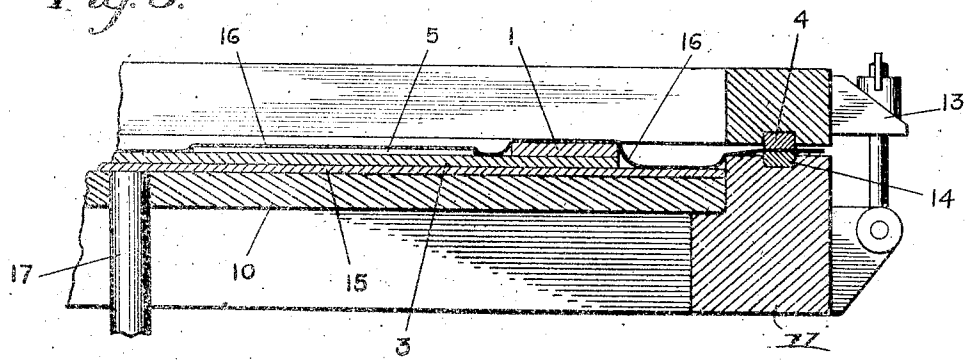


Fig. 9.



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UNITED STATES PATENT OFFICE.

JOSEPH ARTHUR HENRY HATT, OF NEW YORK, N. Y., ASSIGNOR TO HUGO KNUDSEN, OF BROOKLYN, NEW YORK.

PROCESS AND APPARATUS FOR MAKING PRINTING-PLATES.

1,151,460. Specification of Letters Patent. Patented Aug. 24, 1915.

Application filed January 17, 1912. Serial No. 671,761.

To all whom it may concern:

Be it known that I, JOSEPH ARTHUR H. HATT, a citizen of the United States, residing in the borough of Brooklyn, in the city and State of New York, have invented certain new and useful Improvements in Processes and Apparatus for Making Printing-Plates, of which the following is a specification.

The invention relates to a process and apparatus for accurately registering designs in making transfers to the sensitized surface of a printing plate by the action of light, although in certain of its aspects the invention may be found suitable for use otherwise than by the action of light.

It has been found in practice that it is difficult and practically impossible to retain thin paper or other suitable transparent or light transmitting media always of precisely the same size when used as a design carrying element after having the designs cemented or otherwise fastened thereto and placed in the printing frame, or exposing table, or when there are changes in the humidity of the atmosphere. As a result, there is variation or shifting in the registration of the design or designs which is destructive of first class results in high grade printing, and this is especially the case in multi-color work.

The present invention is intended to overcome these difficulties, as will more fully appear hereinafter, and other objects of the invention will be set forth hereinafter or will be obvious herefrom to those skilled in the art, and the manner and means of their attainment is pointed out in the appended claims.

The invention consists in the novel steps and processes, and likewise in the parts, apparatus, constructions, combinations and improvements herein shown and described.

The features of this invention are distinguished by the claims over the features in my co-pending application of even date, Serial Number 671,762.

The accompanying drawings, illustrate the manner of carrying out my process and also certain means and apparatus which may be employed therein.

Of the drawings:—Figure 1 is a plan view of the stretching frame for the transparent design carrying sheet; Fig. 2 is a section on the line A—B of Fig. 1; Fig. 3 is a view of the templet or guide plate by which the designs are registered upon the transparent design carrying sheet; Fig. 4 is a view of a design with its registering marks adapted to coöperate with those on the guide plate; Fig. 5 shows the stretching frame and the transparent design carrying sheet located over the guide plate and a plurality of designs registered or positioned upon the design carrying sheet preparatory to being attached thereto in such registered position; Fig. 6 is a view looking at Fig. 5 from the edge; Fig. 7 is a view of a printing frame or exposing table during the transfer or impression of the design to a printing plate by the action of light; Fig. 8 is a section on the line C—D of Fig. 7; and Fig. 9 is a fragmentary view corresponding to Fig. 8 but enlarged and exaggerated in size to show the relation of the parts.

Referring to the accompanying drawings, a frame 1 of thin, flat material which possesses the necessary rigidity, and which I preferably construct of aluminum, has a central opening therein. Filling the frame 1, and fastened firmly thereto around its edges is a thin flexible sheet 2 of transparent material. The sheet 2 is drawn very taut, and is in such condition securely fastened to the frame 1 at all its edges by cementing or in other suitable manner. Thus the sheet 2 is kept taut and in uniform position at all times.

A templet or guide plate 3 is employed, and thereon registering marks 4 are placed in such relation as to properly position a design or a plurality of designs with respect to each other. The guide plate may be of stone or metal or other suitable material which is not affected to any practical degree by temperature and atmospheric changes.

The design 5, that is, the design bearing sheet or element 5, is provided with registering marks 6 of suitable form to coöperate with the marks 4 so as to locate the design, or the designs, with reference to each other where a plurality are placed upon one printing plate. As shown in the drawings, the registering marks 4 on the guide plate 3 are in the form of cross lines preferably at right angles, and the design 5 is shown with the cross lines thereon corresponding to one half of the cross lines 4 of the guide plate, that is, with the portions of the two lines at right angles from their common point or point of

crossing outwardly to one end of each. It will be understood, however, that other forms of coöperating registering marks may also be employed so far as concerns many features of the invention.

In Figs. 5 and 6 of the drawings, the frame 1 with the transparent design carrying sheet 2 attached thereto is shown arranged over the guide plate 3, and a plurality of designs 5 positioned upon the transparent sheet 2 by means of the registering marks 4 of the guide plate and registering mark 6 of the design. The registering marks 4 upon the guide plate 3 are visible through the transparent sheet 2, and the designs 5 are brought into registry therewith by means of the registering marks 6, as will be clear from Fig. 5 of the drawings. The designs 5 are then attached by an adhesive in registered position to the sheet 2, and are thus in fixed registry with respect to the frame 1, with respect to the registering marks 4 upon the guide plate 3, and also with respect to each other. Likewise the designs for successive colors in multi-color printing can also be registered accurately with each other.

For multicolor work one or more frames 1 with sheets 2 would be employed, the guide plate 3 serving to uniformly position the designs for each successive color upon the corresponding sheet 2 and also with respect to each other upon said sheet. In such case repeated use of frame or frames 1 and sheet 2 will be made in connection with the guide plate 3 to position the design or designs thereon, the designs then remaining in fixed position until impressed upon the printing plate for the particular color.

In Figs. 7 and 8 the application or use of the registering frame 1 carrying the design is shown in connection with an exposing table for transferring the design to the sensitized surface of a printing plate. In Fig. 7 the exposing table has a bottom or support 10 fixed to a suitable frame 11. An open frame 12 is clamped firmly against the frame 11 by clamps 13, there being a resilient element 14 therebetween to constitute an air tight joint. Said exposing table is also shown with a flexible air tight or sealing sheet through which the light is projected to impress the design upon the plate. Said sheet is generally similar to that shown in application for patent Ser. No. 651,079, filed Sept. 25, 1911 by Hugo C. Knudsen.

In Fig. 9 of the drawings certain of said parts are shown on an exaggerated scale for the sake of clearness. The floor 10 of the exposing table carries the printing plate 15 with its sensitized or light sensitive surface uppermost. Upon the surface of the plate the frame 1 is placed with the thin transparent design carrying sheet 2 in contact with the plate. Fastened in proper relative or registered position upon the transparent sheet 2 are the designs 5. The flexible air tight sheet 16, is clamped between the frames 11 and 12, thereby forming an air tight light-transmitting closure over the plate within the frame. Suitable air exhausting means are provided, shown herein as a tube or conduit 17 leading from said space between the flexible sheet 16 and the floor or support 10 of the exposing table to a suitable vacuum creating device.

What I do claim as my invention and desire to secure by Letters Patent, is:—

1. The process of registering a plurality of designs with reference to each other and making printing plates by light action therefrom which comprises placing registering marks upon a guide plate, placing registering marks upon a plurality of design sheets, placing a transparent sheet over said guide plate, registering said design sheets relatively to each other upon said transparent sheet by means of the registering marks upon said guide plate, attaching said registered design sheets to said transparent sheet, exhausting the air from between said transparent sheet and said sensitized surface of said printing plate to bring them into closer contact and exposing the sensitized surface of a printing plate to the action of light through said design sheets while so attached to said transparent sheet.

2. The combination with an exposing table having a support for a sensitized printing plate, of a rigid frame provided with a taut design carrying transparent sheet attached to and extending across said frame adapted to rest upon the sensitized surface of the plate, and a transparent flexible impervious sheet extending over said frame and having its edges sealed air tight to said frame.

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

JOSEPH ARTHUR HENRY HATT.

Witnesses:
JOHN D. MORGAN,
ROSE MENK.