July 18, 1933. T. JELLOW 1,918,269

METHOD OF AND APPARATUS FOR SAND BLASTING INTAGLIO DESIGNS IN STONE AND THE LIKE

Filed Aug. 21, 1931 3 Sheets-Sheet 1

Fig. 1.

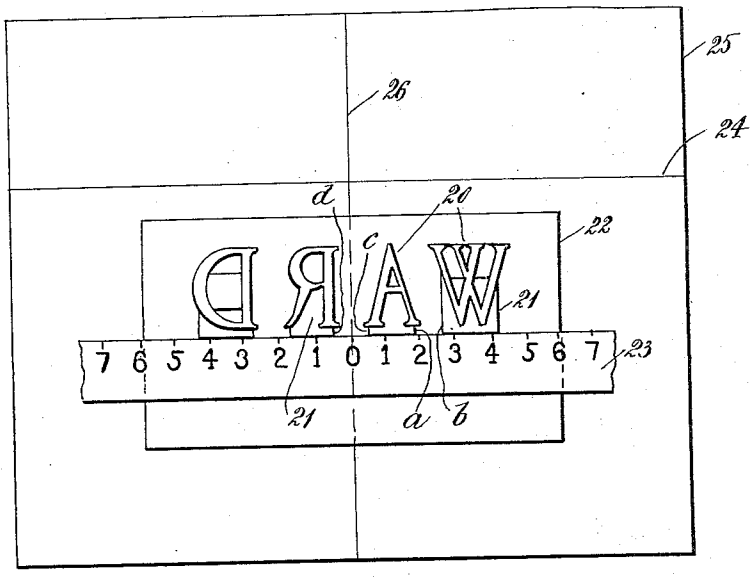
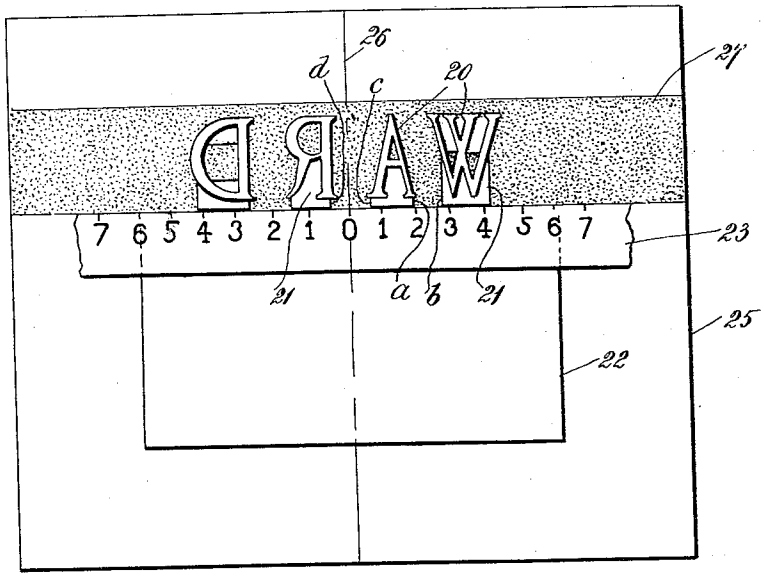


Fig. 2.



INVENTOR
Timothy Jellow
By Geo. E. Woodworth
ATTORNEY

July 18, 1933. T. JELLOW 1,918,269

METHOD OF AND APPARATUS FOR SAND BLASTING INTAGLIO DESIGNS IN STONE AND THE LIKE

Filed Aug. 21, 1931 3 Sheets-Sheet 2

Fig. 3.

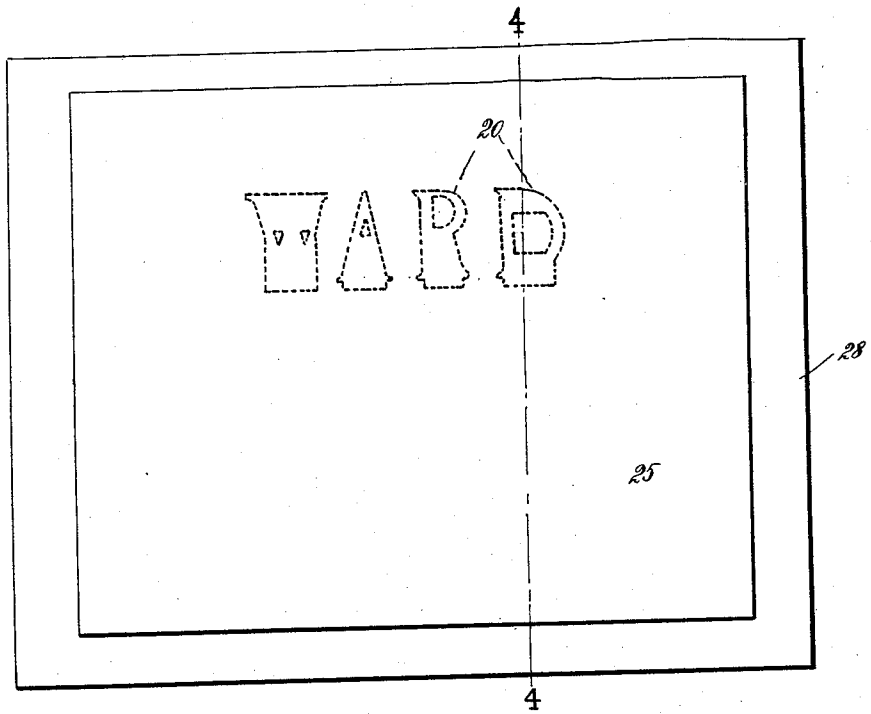


Fig. 4.

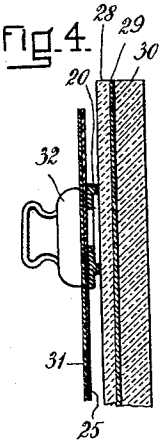


Fig. 5.

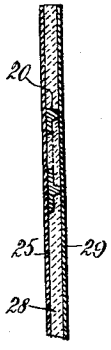


Fig. 6.

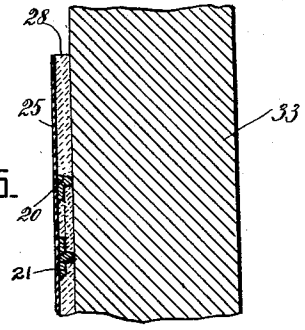
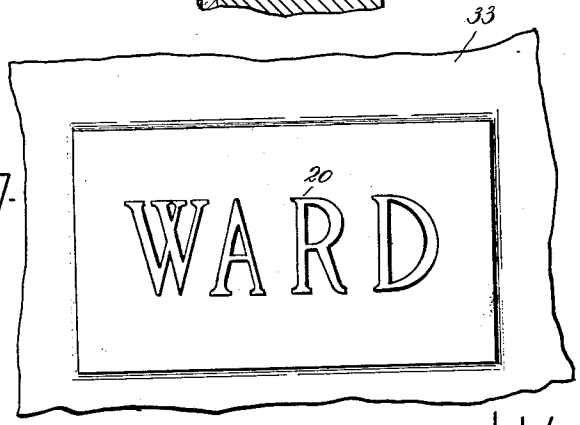


Fig. 7.



INVENTOR
Timothy Jellow
By Geo. K. Woodworth
ATTORNEY:

July 18, 1933. T. JELLOW 1,918,269

METHOD OF AND APPARATUS FOR SAND BLASTING INTAGLIO DESIGNS IN STONE AND THE LIKE

Filed Aug. 21, 1931 3 Sheets-Sheet 3

Fig. 8.

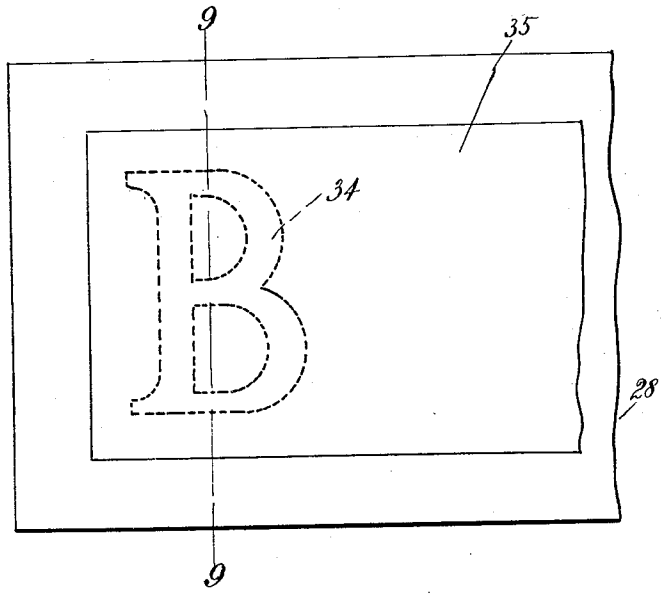


Fig. 9.

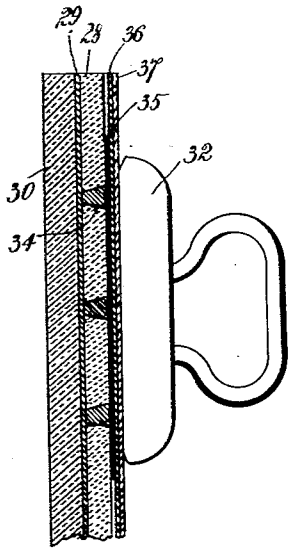


Fig. 10.

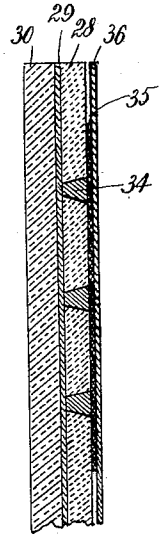
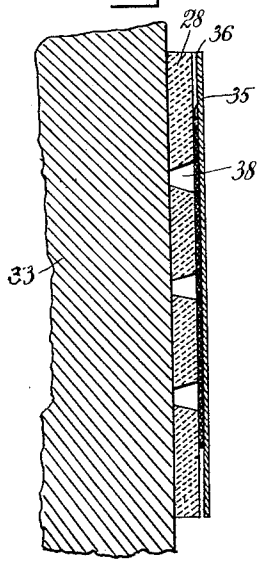


Fig. 11.



INVENTOR
Timothy Jellow

BY

ATTORNEY

Patented July 18, 1933 1,918,269

UNITED STATES PATENT OFFICE

TIMOTHY JELLOW, OF QUINCY, MASSACHUSETTS; HELEN HARTLEY JELLOW, OF CAMBRIDGE, MASSACHUSETTS, ADMINISTRATRIX OF SAID TIMOTHY JELLOW, DECEASED

METHOD OF AND APPARATUS FOR SAND-BLASTING INTAGLIO DESIGNS IN STONE AND THE LIKE

Application filed August 21, 1931. Serial No. 558,428.

Heretofore in blasting intaglio designs in surfaces, as for example, inscriptions in monumental stones, it has been customary to flow a protective coating of gelatinous material around die members placed on the stone surface, or to press such die members into such coating placed on the stone, or to cut a stencil therein. In application Serial No. 353,095 filed by myself and another, I have disclosed a process whereby die members of friable material are sunk into a protective coating of gelatinous material on the stone, and the design or inscription so formed subjected to the sand-blasting operation.

In the practice of all of the prior methods, it is necessary to adjust the die members forming the inscription or other design in the sand-blast room itself, and I have found that in carrying out the process described in the application above mentioned, a thin film of the gelatin composition is invariably left between the bottom of the die member and the stone surface.

It is much more convenient to form the design or inscriptions in the drafting room, or some place other than the sand-blast room, and I have found in practice that the thin film aforesaid is very undesirable, especially when blasting a design in stone having a hammered surface.

It is therefore the object of the present invention to provide a method of forming designs or inscriptions in stone surfaces according to which the design may be formed in a sheet of gelatin composition, or the like, outside the sand-blast room, and then handed to the workman for transfer to the stone. In carrying out my process, the thin film of gelatin composition above mentioned is entirely eliminated and the inscription or design is true to the dies employed on stone having a hammered or roughened surface, as well as a smooth or polished surface.

Another object of my invention is to provide a formed pattern consisting of die members sunk into a sheet of gelatin composition whereby the inscription or design may be transferred by sand-blasting to a stone surface.

A further object of my invention is to provide letters having spacing lugs so arranged that when the distances between the lugs of two adjacent letters are equal, the letters will be properly spaced, irrespective of their different shapes and width.

In the drawings which accompany and form a part of this application I have illustrated an apparatus whereby my invention may be practiced, and also the various steps comprising said method, but it is to be understood that my method is broader than mere apparatus and may be practiced by a variety of means.

In the drawings—

Figure 1 is a plan view showing several die members in the form of letters arranged on a lay-out sheet;

Fig. 2 is a similar view showing said letters after transfer to a sheet of paper or vellum, a portion of which has been coated with shellac or other suitable adhesive for securing the letters thereto;

Fig. 3 is a plan view showing said lay-out sheet inverted over a sheet of gelatin composition, or the like;

Fig. 4 is a section taken on the line 4—4 of Fig. 3 and representing the first step of sinking the letters into said gelatin sheet;

Fig. 5 is a similar section showing said gelatin sheet after the letters have been sunk thereinto;

Fig. 6 is a section illustrating said design-forming member, that is, the gelatin sheet with the letters sunk therein, applied to the stone surface to which the design is to be transferred;

Fig. 7 is a plan view showing the inscription cut by sand-blasting into a monumental stone;

Fig. 8 is a fragmentary plan view of a modified form of apparatus whereby my invention may be practiced;

Fig. 9 is a transverse section taken on the line 9—9 of Fig. 8;

Fig. 10 is a similar section showing the die-member sunk into the gelatin sheet;

Fig. 11 is a section showing the stencil formed after the die-member has been withdrawn, said stencil being applied to a stone.

In the particular drawings selected for more fully disclosing the principle of my invention, 20 represent die-members, herein shown as letters formed preferably of friable material, such as plaster of Paris, porcelain and the like. Such die-members and the method of making the same are well known and need no further description here. In adjusting letters used to form inscriptions,

considerable care must be taken in spacing the same so as not to spoil the artistic effect of the finished work. As the letters of the alphabet differ considerably in width and configuration, an artistic spacing of die letters prior to the sand-blast operation requires considerable time. One feature of my invention consists in so forming the die-letters that the spacing of the same involves merely mechanical and not artistic skill. Formed integral with each letter is a spacing lug 21 and the width of said lugs are so chosen that when the distances between the proximate edges of the lugs on each pair of adjacent letters are equal, the letters themselves will be artistically and properly spaced. In the present instance, for example, the space between the proximate edges *a* and *b* of the lugs forming part of the letters W and A is equal to the space *c*, *d* between the proximate edges of the lugs forming parts of the letters A and R, etc.

It will be obvious that by designing the letters in such manner that the spacing thereof can be accomplished merely by mechanically adjusting to equality the spaces between the lugs as aforesaid, much time will be saved in forming the pattern and unskilled labor may be employed.

In order to lay out the die-members used to form the desired design I prefer to proceed as follows, having particular reference to the use of die-members in the form of letters: The letters are placed in reverse order on a layout sheet 22 of paper or other suitable material, and then by means of a scale of any suitable type, such as shown at 23, the letters are aligned and the spaces between the proximate edges of each of the spacing dies are equalized.

The lay-out sheet is then moved forwardly to a point near the horizontal line 24 ruled on the sheet 25 of tracing paper, vellum, or the like, on which sheet a vertical centering line 26 has also been drawn. The lay-out sheet is so adjusted that the center of the inscription coincides with the center line 26 of the sheet 25, and then the letters are pushed forwardly by means of the scale 23 to the sheet 25 over a layer 27 of shellac or suitable adhesive whereby the letters are affixed to said sheet, the lower edges of the spacing lugs being in alignment with the horizontal line 24 (Fig. 2). A steel rod of suitable length and width is now placed over the letters to hold them in position and the same operation is repeated to form, and secure to the vellum sheet, the other words or lines making up the inscription.

The letters, words and rows of words forming the inscription are now firmly attached to the vellum sheet, and the latter is placed in reversed position over a sheet 28 of adhesive gelatin composition, the die-members being, of course, face down on the gelatin sheet. Such sheets which are sand-blast resisting are articles of commerce and need no further description, except to say that in the present instance they are of the same thickness as the letters or other die-members employed. As indicated in Fig. 3, the composition sheet 28 preferably is slightly larger than the vellum sheet 25 to which the die-members have been attached, as aforesaid.

The next step in the process is to sink the die members into the gelatin sheet and this may be done, as indicated in Figs. 4 and 5, by placing the gelatin sheet which is furnished with a coating of tough paper or vellum 29 on a solid surface 30, laying over the paper sheet 25 a piece of blotting paper, canvas or the like, 31, soaked with water, and pressing the latter with a heated member such as an electric hand-iron 32, thereby softening the gelatin composition until the letters have sunk through the gelatin to the sheet 29 on the bottom thereof. A weight such as a steel rod is then placed on each line of letters until the gelatin has cooled and hardened which requires a very short time.

By the steps above recited, there is now formed a device in the nature of a stencil consisting of a gelatin sheet having the friable die-members sunk therein and covered on the two sides thereof by sheets of tough paper or vellum 25, 29. This article of manufacture which is hereinafter designated by the term "sandwich" is substantial, will bear considerable handling, and may readily be transported from place to place, without the slightest danger of impairing the accuracy of adjustment of the die-members. Preferably it is made in the drafting-room or some other convenient place and transported to the sand-blast room for transfer of the inscription formed therein by the die-members to a stone or other surface by sand-blasting. Obviously, such sandwich may be made up long prior to use in the sand-blast room and may be made in quantity with standard inscriptions and kept in stock until wanted.

While I have described the process of sinking the die-members in the gelatin sheet by the use of moistened canvas, or other suitable fabric, the same result may be accomplished without the use of water, the canvas or other fabric or blotting paper being pressed with the electric iron or other heating member without being moistened, thereby eliminating the development of steam and preventing the possible formation of air pockets in the gelatine.

It will be noted that in the finished sandwich, the letters or other die-members have been pressed through the gelatin sheet so that the bottoms of the letters are in contact with the vellum sheet 29 and that the thin film referred to in the application above mentioned as being formed between the bottom

of the letters and the stone surface when said letters are pressed into a gelatin sheet formed or placed on the stone, is usually absent. Sometimes, however, when old gelatin sheets are used, a thin skin of gelatin forms over the face of the letters and between the same and the vellum sheet 29, but such skin is readily removed immediately before the sand-blasting operation.

The sandwich formed as aforesaid is transported to the sand-blast room and given to the operator in place of the drawing with which such operator heretofore has been supplied. The sandwich is then laid on a smooth surface with the paper coating 29 up and covered with wet burlap or other suitable fabric. After a short time the moisture from such burlap is absorbed by the paper coating 29 which may then be readily pulled off the sandwich, and the exposed surface of the gelatin is then sprayed with hot water to remove any film that may have been formed over the face of any of the letters and also to render the gelatin sheet sufficiently adhesive to be affixed to the stone. Referring to Fig. 6, the gelatin sheet from which the paper coating 29 has been removed is shown affixed to the stone 33, the surface of said stone having been moistened with hot water immediately before applying the inscription-forming member thereto.

The sand-blast applied to said inscription-forming member destroys the vellum or other paper cover 25 and the friable letters, cutting into the stone the inscription formed by the dies, as indicated in Fig. 7.

As above intimated, my process may be practiced by various means and is not limited to the die-members above described of friable material, it being possible to use metallic members such as shown at 34 in Fig. 8, such metallic members preferably having beveled edges. Metallic letters or other die-members are adjusted on a lay-out sheet such as 22, but are placed thereon from left to right, instead of being reversed in position, like the friable letters. After they have been adjusted, a strip of adhesive tape 35 is placed over the bases thereof to hold them against relative movement, a sheet of gelatin composition is then placed on a plate of glass, or other hard surface, the line of die-members affixed to the tape is laid on top of the gelatin sheet, a sheet of paper 36 such as tracing paper is placed over the strip of tape and a sheet of blotting paper, canvas or the like 37, is put over the sheet 36, as indicated in Fig. 9, and then the letters are sunk into the gelatin sheet by an electrically heated iron, or other suitable member, the function of the sheet 36 being to prevent the sheet 37 of blotting paper or canvas from adhering to the gelatin or strip of adhesive. After the letters have been sunk into the gelatin with their faces against the paper coating 29 thereof, the protecting sheet 37 is removed (Fig. 10) and after the gelatin has cooled, the said sheet 29 is sponged off, as above described in connection with the preceding embodiment of my invention, whereupon the surface of the inscription-forming member is sponged and the letters are removed therefrom, leaving a stencil consisting of the gelatin sheet, having therein the openings 38 corresponding to the shape of the die-members, and the tape 35 and paper 36 on the upper face thereof. The gelatin being elastic, the letters are readily removed therefrom, especially if they have been oiled previously to being sunk therein. Although in the present instance, the letters are shown as beveled and their bases are broader than their faces, the elasticity of the gelatin sheet permits their ready removal therefrom. The stencil so formed is now applied to the stone 33 in the manner above described in connection with Fig. 6 and the stone is now ready for the sand-blasting operation.

Having thus described two forms of apparatus whereby my invention may be practiced by way of illustration only, and without limiting my invention thereto, what I claim and desire to secure by Letters Patent is:

1. A stencil for use in sand-blasting a design or inscription in stone comprising a sheet of sand-blast resisting composition, friable die-members embedded therein, and sheets of paper adhesively secured to the respective faces thereof, said die-members having their upper and lower faces in contact with said sheets, respectively.

2. A stencil for use in sand-blasting a design or inscription in stone comprising a sheet of sand-blast resisting composition, die-members embedded therein, and sheets of paper adhesively secured to the respective faces thereof, said die-members having their upper and lower faces in contact with said sheets, respectively.

3. The process of sand-blasting a design or inscription in stone which consists in spacing friable die-members to form said design or inscription, securing said members so spaced to a paper sheet, inverting said sheet and attached members and imposing the same upon the upper surface of a sheet of sand-blast resisting composition having a paper sheet adhering to the lower face thereof, embedding said members in said sheet of composition with the lower faces thereof in contact with the paper sheet on the lower face of said sheet of composition, stripping the paper sheet from the lower face of said sheet of composition, applying said sheet of composition to the surface of a stone, and subjecting the same to the action of a sand-blast.

TIMOTHY JELLOW.