J. F. BREWER.

METHOD OF PRINTING UPON IRREGULAR SURFACES.

APPLICATION FILED JUNE 9, 1919.

1,326,843. Patented Dec. 30, 1919.

Fig 1.

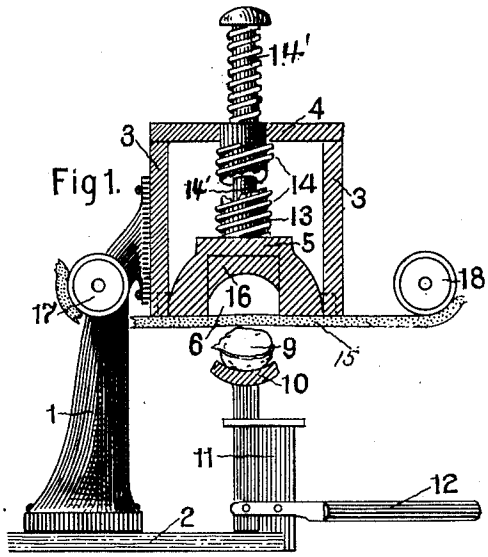


Fig 2.

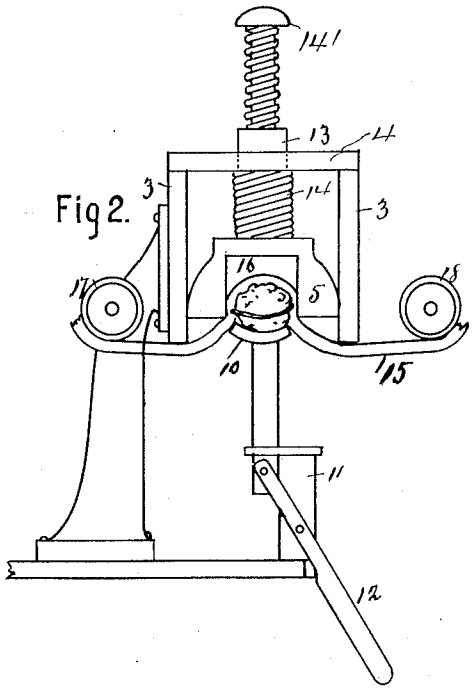


Fig. 3.

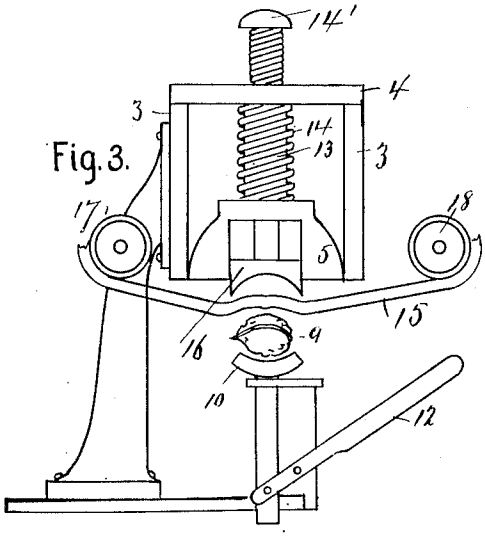
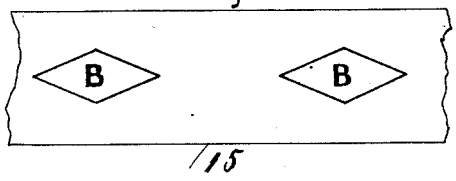


Fig. 4.



Inventor

James F. Brewer

By Geo H. Evans

Attorney

UNITED STATES PATENT OFFICE.

JAMES F. BREWER, OF GLENDALE, MARYLAND.

METHOD OF PRINTING UPON IRREGULAR SURFACES.

1,326,843. Specification of Letters Patent. Patented Dec. 30, 1919.

Application filed June 9, 1919. Serial No. 302,747.

To all whom it may concern:

Be it known that I, JAMES F. BREWER, a citizen of the United States, residing at Glendale, in the county of Prince Georges and State of Maryland, have invented certain new and useful Improvements in Methods of Printing Upon Irregular Surfaces, of which the following is a specification.

My invention relates to the art of printing or marking upon articles having varying irregular surfaces.

The object of my invention is to provide a novel method of marking articles having varying irregular surfaces, more especially such articles as English walnuts. It has been found desirable to affix a trade-mark upon English walnuts and there is up to the present time no method or means known which is capable of successfully printing upon such an indented and irregular curved surface. This is rendered all the more difficult, owing to the fact that the surface irregularities of every walnut differ, no two being alike. Manifestly type cannot be employed for printing upon such surfaces nor can elastic transfer material, for in the latter case should sufficient pressure be employed to force the material into the indentations of the shell the latter would be broken or its halves separated and the meat would become rancid. The stretching of such material would, moreover, so distort the design or characters to be transferred to the nut as to render the same blurred and illegible. I have discovered, however, that if a plastic substance is used which is capable of receiving a printed character from an impression device, and of being pressed therewith into the rough uneven surface of the shell that a clear and even reproduction of such character will be applied to such shell. It is, of course, necessary that such a printing or transfer surface shall have, in addition to its plasticity and capacity of receiving and transferring a character, the quality of not adhering to the shell and sticking in the crevices and indentations. Furthermore, it should only receive the printing ink on its surface and not absorb it and so permit the ink to be removed by scraping off a thin layer. Furthermore, the plastic material may have its surface readily reformed to receive a succeeding impression. A substance having the above properties and capabilities is found in the well known article sold on the market as modeling clay and bearing the trade-mark "Plasticine." It has many other qualities rendering it a highly acceptacle printing surface for the purpose described; such, for instance, as its quality of not drying out and becoming friable and frangible like putty does, it forms a soft bed for the nut while in the act of printing and it may be regulated as to its degree of plasticity by change of temperature.

Of course, irregular surfaces other than walnut shells may be marked or printed upon by my invention.

To illustrate a simple apparatus for carrying out my improved method reference is made to the accompanying drawing, in which:

Figure 1 is an elevation of a printing mechanism with a walnut in position for being printed upon.

Fig. 2 is a fragmentary view, showing the nut being printed upon.

Fig. 3 is a like view showing the nut as it is being ejected, together with the printing portion of the plastic material.

Fig. 4 is a view showing a strip of the plastic material containing on its surface matter to be transferred to the nut.

An upright frame or standard 1 is mounted upon a base 2, and at one side of the upper end of frame 1 is a vertically disposed guideway comprising parallel guide bars 3—3, connected at their upper ends by a crossbar 4. Between these guide bars is mounted a vertically sliding bed 5 recessed on its lower working face, as shown at 6, to allow the plastic printing surface 15 to be forced therein by the nut or article 9 as the latter is forced up by a pressure cup 10, mounted on a standard 11, and having an operating lever 12. The sliding bed 5 has a tubular post 13 on its upper side and a spring 14 encircles said post and holds the bed 5 down with a yielding pressure. A plunger rod 14′ extends down through crossbar 4, tubular post 13 and center of bed 5 and carries at its lower end a concaved ejector 16 lying within the upper part of the said recess 6 and forming the upper curved end thereof.

Guide rolls 17, 18 are provided at opposite sides of the guide frame.

As illustrated, the plastic printing surface 15 is in the form of a sheet and the design or character will be applied to the under side thereof in any suitable manner. Such applying of transfer printing characters to

sheets, endless belts and the like formed of elastic material is well known. as is also the inking mechanism in one or more colors, and, therefore, I do not illustrate the same.

To carry out my method by the illustrative apparatus shown the design will first be applied in transferable ink to the lower face of the plastic sheet 15 in several places, a nut will be placed in the lower or pressure cup and the sheet will be placed under the concave bed 5 and over the nut in the cup 10. The cup 10 will be raised and in turn will raise the nut and cause it to force the overlying character bearing portion of the sheet 15 into the concave bed 5 against the resistance of the spring 14. In so doing the plastic material will enter every crevice and indentation in the shell of the nut and will transfer the design to the sunken as well as the raised portions of the shell. All of the portions of the shell engaged by the ink will be printed upon, regardless of how irregular and interrupted the surface may be, and the design transferred to the nut will be found to be an exact counterpart of that on the plastic sheet. No appreciable distortion or blurring of the character or design appears. Instead of being stretched and distended like an elastic printing surface would be were it forced into irregular crevices and so distort the characters to be transferred, I find that the design appears to be projected bodily in a straight line into printing contact with the nut, regardless of the fissured character of its surface. Finally, the sheet and nut are forced out by the ejector, as in Fig. 3, and the sheet moved along for the next impression. The plastic printing surface will be re-formed by rolling, scraping or otherwise, according to its form. If in the form of a roll a scraper could be used to scrape off a thin layer and a roller could smooth the surface.

So far as I am aware, I am the first to discover and use a plastic substance as a printing or transfer surface in contradistinction to the elastic rolls, sheets, belts, and the like of rubber composition, gelatin composition, &c.

An elastic printing surface will, moreover, require such a pressure to force it into the nut crevices that the shell will be cracked or broken, but with my plastic surface the most fragile hollow articles may be printed upon.

The method of printing upon the surface of articles varying to such an extent as the surfaces of English walnuts by applying a transferable character, design or the like to the face of a plastic body and then bringing such character-bearing surface and the surface of the article together and applying such relative pressure as to force the character bearing portion of the plastic body into contact with all of the sunken and raised portions of the article to cause the transfer of such character or design thereto, I believe to be new, regardless of the means by which such bringing together of the printing surface and article is effected. Then the re-forming of the plastic mass, instead of simply washing off the ink, is new with me.

What I claim is:

1. The method of printing upon articles having varying irregular surfaces, which consists in providing a printing surface of plastic material, applying a transferable character thereto and then bringing the article and the character bearing portion of the plastic printing together to cause the plastic material to conform to the irregularities of the surface of the article and transfer the character thereto.

2. The method of printing upon articles having varying irregular surfaces, which consists in providing a printing surface of plastic material, applying a transferable character thereto, then bringing the article and the character bearing portion of the plastic surface together with sufficient force to cause the latter to conform to the irregularities of the surface of the article and transfer the character thereto, then separating the article and printing surface and re-forming the plastic surface to receive another impression.

3. The method of printing upon articles having a varying irregular surface, which consists in providing a plastic printing surface with a transferable character, then bringing the article and the plastic printing surface together between two concave surfaces with sufficient force to cause the plastic material to conform to the irregularities of the surface of the article and transfer the character thereto, then separating the two concave surfaces and ejecting the plastic material and nut simultaneously from the concavity they occupy.

In testimony whereof I affix my signature.

JAMES F. BREWER.