July 5, 1927. 1,634,617

F. HART

METHOD AND MEANS FOR PRODUCING AND AFFIXING SIGNS TO MATERIALS

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Fig. 1

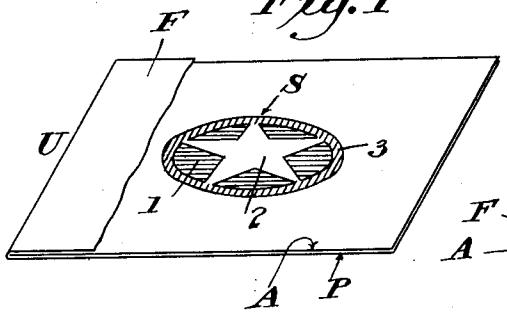


Fig. 4

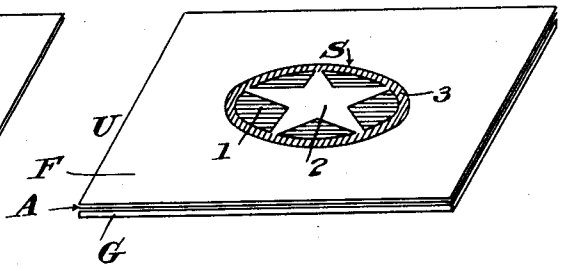


Fig. 2



Fig. 5



Fig. 3

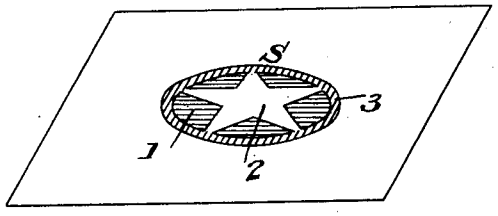


Fig. 6

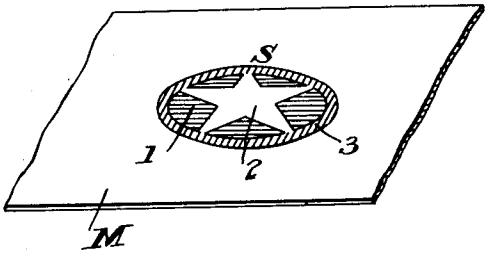
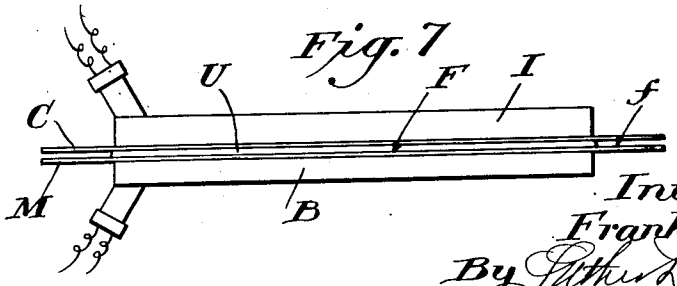


Fig. 7



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UNITED STATES PATENT OFFICE.

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METHOD AND MEANS FOR PRODUCING AND AFFIXING SIGNS TO MATERIALS.

Application filed January 14, 1926. Serial No. 81,351.

This invention relates to and has for a main object the provision of an improved method and means for producing and applying detached painted or printed artistic representations upon flexible materials, such as imitation leather and other materials, and is particularly adapted for use in connection with the materials of which tire covers are made, whereby the printed matter may be permanently affixed to the material for display purposes in a single operation. It will be understood, however, that the means and method herein shown and described is capable of use for other purposes and on other materials than those herein mentioned, with equally good results.

In the art of sign painting and kindred matters, it has been found difficult, if not quite impossible to so affix painted or printed sign matter or artistic representations on imitation leather or other fabric of which tire covers in particular are made, in such a manner that the applied matter will not rub off, and this is due in part to the character of the coating on the fabric and the fact that the paint will not adhere to the coated surface of the fabric.

It is therefor an object of my invention to provide means for accomplishing the above named result in a permanent manner, together with other new and novel means and methods which may be carried out economically and artistically and in a short period of time and in a single operation. Still other objects will appear as the description of my means and method progresses.

In the accompanying drawings I have shown diagrammatically the several steps of my improved method together with the means employed, by reference to which a clear understanding of the same may be had.

In said drawings:

Fig. 1 is a perspective view of a temporary carrier consisting of a sheet of absorbent paper, on which a detached sign is adapted to be formed in super-posed position, with films of certain character underlying and overlying the sign.

Fig. 2 is a longitudinal section of the same.

Fig. 3 is a perspective view of the completed sign detached from the paper base.

Fig. 4 is a perspective view, similar to Fig. 1, but showing a modified method and means in which a sheet of glass, celluloid or other element is employed as a carrier in lieu of the paper base.

Fig. 5 is a longitudinal section of the same.

Fig. 6 is a perspective view of the completed sign detached from the glass.

Fig. 7 is a side elevation of the sign, a sheet of material to which the same is in the process of being applied, and the means for affixing the sign to the material.

It will be understood that in carrying out the objects of my invention I may accomplish the same result by the employment of either of two forms, substantially similar in effect, but differing slightly in the relation of the several steps of the process.

In the one form the signs are formed in reverse or negative order on temporary carriers of absorbent sheets of paper which have previously been coated with a gum or other substance soluble in water, so as to provide an elastic film over the paper when dry, upon which the printed matter or sign may be painted, printed or otherwise formed. After the printed matter has dried for a period of time, it is coated with a suitable substance, providing a flexible and permanent protecting film, which when dry, will render the printed matter complete and in readiness for application to any material upon which it is desired to be placed.

In the alternate and modified method as shown in the drawing, in lieu of the absorbent paper carrier I may use a sheet of glass, which is first coated with the gum or other substance soluble in water, in the same manner as in the other form, after which a second coating of a suitable substance is placed over the soluble substance of the film and the sign is painted or printed thereon when the second film is dry, and an outer protecting film may be also provided over the surface of the sign or printed matter.

In this latter method the first film may be dissolved by placing the entire superposed structure in water, which will leave the sign carried on the second film in readiness for application to the desired material in the usual manner.

In the first mentioned method it will be understood that the printed matter is carried on the paper as a backing or base, until the same is transferred to a permanent position on the material, whereas in the last named method the paper base is eliminated and the printed matter is carried on a flexible film which, for purposes hereinafter stated adapts the same readily for transfer to material on which the sign is to be placed. All

of the steps in the two methods will be hereinafter more fully described as follows, with particular reference to the drawings.

As shown in Figs. 1, 2 and 3, P represents a carrier of absorbent paper which is adapted to be coated with a suitable substance such as gum arabic or dextrin, which is soluble in water and provides a film as at A over one side of the sheet of paper P. Thereafter a printed symbol, sign or other matter as at S is painted or printed on the film A in one or more colors, super-posed one on the other, as for instance, I have shown as a symbol or sign a star inscribed within a circle. In this case the background of the symbol as at 1 may be of one color, the body of the star 2 of another color, and the circumscribing circle 3 a still different color, and the one or more colors of the sign would be placed on the film A, one after another in superposed relation. It will be understood that the sign or symbol S is placed in reverse or negative order on the film A. Thereafter, when the sign S is thoroughly dried, by natural or artificial means, the entire surface of the sign S is coated with a substance having a base of linseed oil or other suitable substance which has been previously treated with a substance such as cobalt linoleate, and has a consistency about like honey. This substance may also have added to it a sufficient quantity of ordinary paint drier so that it will quickly dry after its application to the completed sign, and is of such a character that it will retain a certain degree of elasticity and flexibility without cracking or breaking.

Now, as has been previously stated, while my method is particularly desirable and advantageous in placing artificial signs or symbols on fabrics, it may be made of or on other materials or surfaces which have been enameled, painted, or coated with a substance containing varnish or linseed oil. Thus, it will be seen that the outer side of the artificial sign constructed as hereinbefore stated is provided with the outer film F, having the base of linseed oil, varnish, or other element contained in the enamel of the material to which the sign is applied, and due to the fact that the film F and the varnished surface of the material to which the sign is to be applied contain linseed oil or other ingredients having a natural affinity for each other, said film and the outer coating of the material or surface to which a sign is to be applied will readily unite when heat and pressure are applied. That is to say, that a varnished surface even when completely dry has what is known in the art as a certain "tack", which is a tendency to cause articles to adhere to it to a slight extent, but this tendency or quality is not sufficient in a natural state to cause a sign as at S to be applied directly to the material without artificial treatment and the application of heat and pressure, so, in order to permanently effect a bond between the sign S and the varnished surface of the material to which the sign is applied, it is necessary, as shown in Fig. 7 or otherwise, to apply a certain amount of heat for a certain length of time, and this may be done as shown by placing the material M to which the sign is is to be applied on a flat base which may be heated, over which the completed sign unit as at U is placed upside-down, with the outer film F in contact with the outer varnished surface *f*. Over the material M may be placed a moistened cloth C, after which an ordinary iron or hot plate as at I is placed over the cloth C, so as to provide pressure, heat and moisture simultaneously.

The application of heat as hereinabove stated, through the medium of the members B and I, serves to vulcanize the completed detached sign unit U to the material M by reason of the heat and pressure applied, and at the same time by means of the moist cloth C to steam said unit so as to dissolve the gum on which the sign is carried, thus rendering the paper carrier P readily removable after the sign is affixed to the material M. In this connection it will be understood that in other methods for applying the signs to fabric or materials a number of operations are required to effect the permanent bonding of the sign to the material, and one of said operations is to apply heat by placing a fabric on which the sign has been previously painted or stenciled in an oven for a sustained length of time, so as to cause the sign to permanently adhere to the material, whereas in my improved method the signs are affixed in a single operation by means of pressure, heat and moisture simultaneously applied, and as stated, the signs may be prepared in quantities in detached units temporarily carried on the absorbent sheets of paper and transferred quickly and permanently to the material when and as necessary.

After being affixed to the material M the transferred and super-posed sign will appear in positive order on the face of the material M, and the material of which the sign S is made will be permanently attached to and bonded with the enamel coating of the material M so that it will not be removed or defaced by ordinary wear and use.

It should be understood that the substances of which the films A and F are made are of such character that the films when dry will not creak or break, but will be flexible. Also, in the application of the sign to the material M, the paper base P may be removed from the sign before the application of heat thereto, by placing the completed unit in water so as to dissolve the film A.

In the other form of process the several steps are substantially the same as described, except that certain of the steps are reversed and the sign units S are temporarily formed on a glass carrier G, instead of a paper carrier P. Thereafter the soluble film A is placed on the glass G and the film F, having the linseed oil base, is placed super-posed on that portion of the film A on which the sign S is to be placed, after which the sign S is formed in positive order on the film F and the completed unit U is then in readiness for application to the material M, but in this form or method it is preferable that the unit U be removed from the glass G by dissolving the film A, as soon as the sign has sufficiently dried. This is done by immersing the several units in water, which will quickly dissolve the film A, so that the glass is readily detached therefrom. In this latter method it will be observed that the film F is on the bottom of the sign S, instead of on the top, and when the sign is to be applied to the material M the sign is placed right-side up on the material M, so that a moist or dry cloth C, as may be found necessary, will be interposed between the iron I and the sign S, and the pressure and heat when applied simultaneously, will serve to unite the substance of the film F to the outer substance of the film *f*, of the material M, and thus permanently affix the sign S to the material M.

I desire it to be understood that the method herein shown and described constitutes a distinct step in the art of applying painted or printed symbols, signs, legends or other matter to fabric materials or fabrics such as imitation leather or other materials having enameled surfaces. Heretofore it has been necessary to apply such matter to the material by stenciling, painting or printing the sign matter on the tire covers, and subjecting the same to heat so that the varnish embodied in the paint or ink of the sign matter will unite with the varnish of the material M, whereas it will be observed in my process herein described, I am enabled to manufacture signs, symbols, legends, indicia or other matter in readiness for application to material in quantities, so that the same may be applied by persons either skilled or unskilled in the art, by following stated directions, and thus eliminate much inconvenience, expense and trouble in the application of such matter to the materials, but it will be understood that, although this method readily lends itself to the scheme of application named, the same may be employed advantageously in factories or shops in which the carrying materials are made.

Other advantages and benefits of my method will readily appear to those skilled in the art, and I conceive it to be possible to modify or change my method within the scope of the appended claims without departing from the spirit of my invention.

What I claim is:

1. The method of applying signs to enameled textile material which consists in super-posing the sign matter on a film of flexible material containing an ingredient of the enamel on said textile material, and applying heat and pressure thereto for fusing the sign to the enamel.

2. The method of applying signs to material which consists in super-posing the sign matter on a film of flexible material containing linseed oil as a main ingredient, applying the sign to a material having a surface coated with a substance containing linseed oil, and applying pressure and heat simultaneously to the sign and the receiving material for effecting a bond between the adjacent sides of the sign and material.

FRANK HART.