Aug. 7, 1956 E. C. SCHOECH 2,757,608

APPARATUS FOR APPLYING LETTERING AND DESIGNS

Filed Nov. 4, 1950

FIG. 1

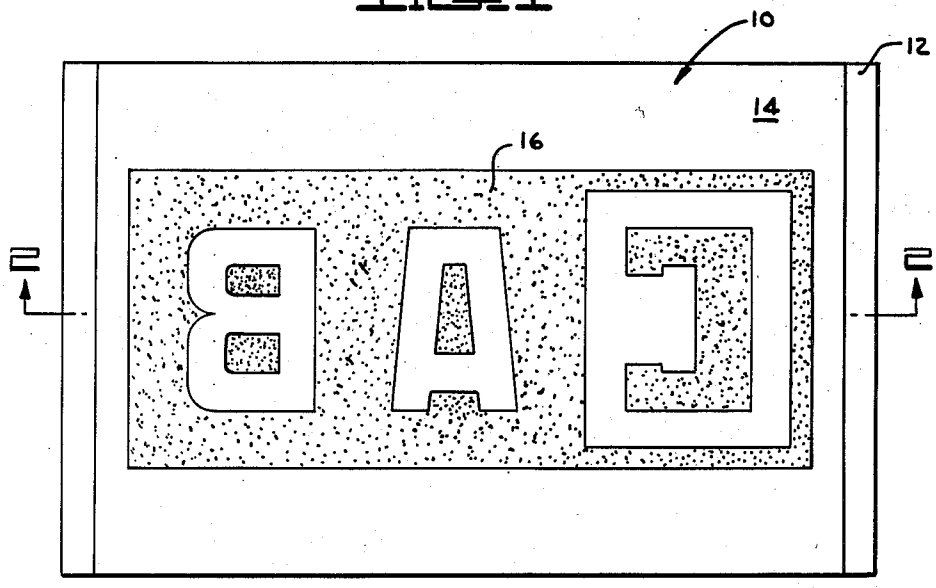


FIG. 2

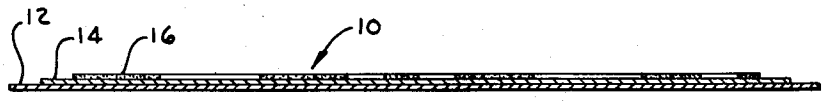


FIG. 3

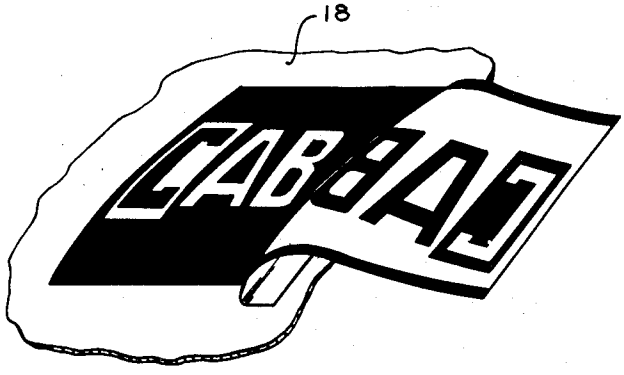
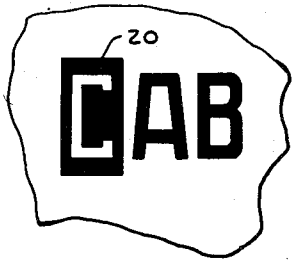


FIG. 4



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APPARATUS FOR APPLYING LETTERING AND DESIGNS

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5 Claims. (Cl. 101—128.2)

This invention relates generally to a method and means for applying lettering and more particularly, but not exclusively, to a mask and a method for using the same in applying lettering or other indicia on vehicle bodies and the like with sprayed paint.

At the present time, it is customary to paint names and other identifying and advertising indicia on the bodies of vehicles, such as trucks, without the aid of any mask or similar device. It is desirable that such indicia or design be highly uniform and neat, particularly when the same indicia is to be used on large fleets of trucks. It is also necessary that such method of applying the indicia be inexpensive, quick and easy.

Previously, attempts have been made to apply these designs to vehicle bodies with the aid of stencils or similar devices which required the use of ties to hold the center of the letters in place or with the aid of a silk screen to print or paint directly upon the vehicle body. Stencils for this purpose have had the disadvantage that the ties necessary to interconnect central portions of letters and the like must be removed before painting or the painted letters must be subsequently retouched to cover the unpainted areas caused by the ties. The silk screen method is entirely impractical and unsatisfactory for use on a curvate surface or surfaces having irregularities, such as rivet heads and the like.

It is, accordingly, an important object of this invention to provide a quick, easy and economical method and mask to aid in applying lettering and other indicia on surfaces, such as on the bodies of commercial vehicles.

Another object of this invention is to provide a mask or similar device provided with the desired lettering or other indicia for use with the above method and which is free of interconnecting ties such that the entire design may be simultaneously painted or sprayed on the surface after applying the mask to the surface without the time consuming operation of removing such ties before spraying.

Another object is to provide a mask of the above type which may be readily and economically manufactured in large quantities, preferably on short notice, and which is characterized by its durability so that a relatively large stock of masks may be produced at one time without fear of deterioration of the masks prior to their ultimate use.

Another object is to provide a method and mask therefor in which the finished lettering or other indicia produced in accordance with this invention have a high quality and uniformity, and more particularly, in which the edges of the painted areas of the design are smooth and even, such as is essential when painting designs and advertising matter on fleets of commercial vehicles.

Another object of this invention is to provide a method and mask therefore which may be used with excellent results without requiring highly skilled labor.

Other objects of this invention will appear in the following description and appended claims, reference being

had to the accompanying drawings forming a part of this specification wherein like reference characters designate corresponding parts in the several views.

In the drawings:

Fig. 1 is a plan view of a mask embodying the features of the present invention, looking in the direction of the adhesive coated side of the mask.

Fig. 2 is a sectional view taken substantially on the line 2—2 of Fig. 1.

Fig. 3 is a perspective view of a mask embodying the features of the present invention shown applied to a surface to be painted, the backing member being illustrated partially removed from the adhesive coated portions of the mask preparatory to painting the surface.

Fig. 4 is a plan view of a surface which has been painted in accordance with the present invention, the mask shown in Figs. 1–3 inclusive being already removed.

Before explaining the present invention in detail, it is to be understood that the invention is not limited in its application to the details of construction and arrangement of parts illustrated in the accompanying drawings, since the invention is capable of other embodiments and of being practiced or carried out in various ways. Also it is to be understood that the phraseology or terminology employed herein is for the purpose of description and not of limitation.

The method of applying lettering or other indicia to a surface in accordance with the present invention comprises generally the application of a mask to the surface to be painted; removing the backing member of the mask to expose portions of the surface to be painted and leaving other parts of the mask on the surface to cover and protect the adjacent portions of the surface; painting, such as by spraying, the exposed areas of the surface; and subsequently, removing the remaining parts of the mask from the painted surface, such as by a suitable solvent.

The above method involves the use of a novel mask which comprises a plurality of plies including a backing member formed preferably of wax paper or similar material, a layer of a coating composition covering at least portions of the wax paper and adapted to adhere to a limited extent to the surface of the wax paper, and a layer of adhesive on the coating composition covering at least portions of the coated layer and having a configuration such that its outline defines exposed areas therein which, when painted, will form the desired lettering or other indicia. The materials forming the various layers are such that when the adhesive part of the mask is placed against and adheres to a surface to be painted and the backing member is subsequently removed, the adhesive layer will remove and free the contacting portions of the coating composition layer. The outline of the adhesive layer and the remaining outer coating of the so-removed coating composition layer thus form the desired design, the coating composition being substantially impervious to the subsequently applied paint and thus prevents paint from coming in surface contact with the adhesive and the covered surface.

With particular reference to Figs. 1 and 2 of the drawings, a mask **10** is shown embodying the features of the present invention and comprises a backing member **12** formed of wax paper or similar material, and a layer **14** of a coating composition adapted to adhere to the wax paper to a limited extent. The mask **10** also includes a layer **16** on the coating composition layer **14** of adhesive material and having a configuration such that its outline forms the word CAB. It will be noted that the letter C is formed by the adhesive material so that when painted, the letter is formed by the outline of the painted area **20** (see Fig. 4), whereas the letters A and B are formed by the outline of the adhesive material and thus,

the exposed areas are in the form of the desired letters.

The backing member **12** may be formed of any suitable material which will adhere, at least to a limited extent, to the coating composition **14** and will release the portion of the coating composition which is in contact with the adhesive upon removal of the same from the surface **18** to be painted. The backing member **12** is preferably transparent so as to permit a visual check on the removal of the desired portions of the mask during application thereof and to facilitate joining separate masks when the design is of sufficient proportions to warrant the use of a plurality of composite masks. As mentioned above, wax paper has been found satisfactory as a backing member.

The coating composition **14** for the backing member **12** is formed from shellac, powdered starch and a volatile solvent, such as alcohol. To these compositions is preferably added a small quantity of coloring to make the coating visible and to aid in the satisfactory application of the mask **10** to the surface **18** to be painted.

It is advisable to mix only the required amount of the coating composition solution which is desired for immediate use, since the mixture will deteriorate in solution. However, when it is applied to the wax paper, the solvent quickly evaporates and the remaining layer will retain its desired properties indefinitely. Thus, coated paper may be made up considerably before its ultimate use.

The starch serves many important functions in this coating composition. It increases the brittleness of the coating when dry such that, when the backing member is removed, the portions of the coating composition adhering to the adhesive breaks cleanly and evenly along the design outline. This provides a smooth, even-painted design. The starch-containing coating dries with a dull, relatively rough finish, thus assuring an intimate surface adherence with the adhesive layer. The starch also assists in penetration of the coating so as to permit water to contact the adhesive prior to painting the exposed surface.

The alcohol in the coating composition, such as methyl alcohol, provides a suitable solvent for the starch and shellac and is sufficiently volatile so that the time required for drying the coating composition layer is minimized and the alcohol vapors, during vaporization, tend to leave small surface voids in the layer to improve its surface contact with the subsequently applied adhesive.

The following is an example of a suitable composition for the coating layer:

Example I

Shellac	lb.	1
Methyl alcohol (95% by weight)	gal.	1
Powdered starch	lb.	1

The above ingredients are mixed thoroughly, such as by stirring at room temperature, and the resultant solution is applied in a thin coating to the backing material, as for example with a camel's-hair brush. The coating is then permitted to dry.

The following other coating compositions have been found suitable for the present invention:

Example II

Shellac (3 lbs./gal. alcohol solution)	pint	1
Denatured alcohol (90% by wt.)	pints	2
Starch	ounces	7

Example III

Shellac (3 lbs./gal. alcohol solution)	pint	1
Denatured alcohol (90% by wt.)	pints	2
Starch	ounces	14

Example IV

Shellac (3 lbs./gal. alcohol solution)	pint	1
Methyl alcohol (95% by wt.)	pints	2
Starch	ounces	7

Example V

Shellac (3 lbs./gal. alcohol solution)	pint	1
Ethyl alcohol (70% by wt.)	pints	2
Starch	ounces	7

Example VI

Shellac (3 lbs./gal. alcohol solution)	pint	1
Denatured alcohol (90% by wt.)	pints	2.5
Starch	ounces	7

Example VII

Shellac (3 lbs./gal. alcohol solution)	pint	1
Ethyl alcohol (70% by wt.)	pints	2
Powdered chalk	ounces	7

It has been found that in using one pint of shellac-alcohol solution containing three (3) pounds of shellac/gallon of solution, the additional alcohol may be varied between about 1 pint and 3 pints without adversely affecting the quality of the coating. The range of concentration for the starch is approximately 5 ounces to 14 ounces using the same quantity of shellac.

A suitable adhesive in accordance with the present invention comprises gelatin, sugar, dextrin, glycerin, water and, if desired, a small portion of coloring matter. The color is normally desired to aid in detecting any defects which may occur in applying the printed adhesive and preferably contrasts with the color used for the coating composition.

The relative proportions of the various ingredients may vary to some extent, depending primarily on the particular conditions of temperature and humidity. Both gelatin and sugar absorb water, and, in general, the concentration of either gelatin or sugar may be varied to provide a satisfactory adhesive for varying atmospheric conditions. Generally, the glycerin concentration is varied. From 5 to 15 per cent of glycerin is normally a sufficient range to compensate for most atmospheric variations. In a hot and dry climate, a greater percentage of glycerin is most desirable, whereas in a cool or humid climate, a lesser amount is generally preferred.

The following is an example in parts by volume and percentage by weight of a suitable adhesive for use with the present invention:

Example VIII

	Parts by Vol.	Percent (by wt.)
Gelatin	4	6.6
Sugar	4	8.9
Dextrin	24	26.5
Glycerin	6	15.1
Water	16	40.4
Color	1	2.5

The above ingredients may be compounded by first thoroughly mixing the gelatin and sugar while in the dry state. Twelve (12) parts of hot water and three (3) parts of glycerin are then stirred into the dry gelatin and sugar mixture. The 24 parts of dextrin is then dissolved in four (4) parts of cold water, forming a thick paste, and the remaining three (3) parts of glycerin is mixed with this paste. The two separate solutions are then mixed together and stirred into a homogeneous mixture. The color is then added to the adhesive mixture.

The above composition should be heated for approximately 15 minutes with occasional stirring. A vessel such as a double boiler is especially suited for this purpose.

The above composition contains an extra amount of water to facilitate the mixing procedure and to allow for loss by evaporation while heating.

The gelatin in the above composition may be varied from about 3 to about 9 parts depending upon the particular atmospheric conditions under which the adhesive is to be used.

The adhesive is subsequently painted on the coated backing member by any of the known methods, such as a silk screen method, and is permitted to dry to the desired tackiness. The adhesive will remain in this condition over long periods of time. If it is desired to use the mask shortly after the application of the adhesive, the latter may be rapidly dried by directing a current of warm air over the same.

The coloring matter suitable in the above composition is preferably water soluble and may be of the commercial show card type.

The above adhesive is an ideal medium for printing. It does not creep or run and thus prints with clean, sharp outlines that remain exactly as applied to the coated backing member. The adhesive is free of fibrous or stringy matter, in contrast to most adhesives, which matter is unsatisfactory for this purpose, since it normally mars the outline of the printed matter and prevents obtaining sharp, clean painted letters. When using a silk screen for the printing, it does not clog the mesh and works with ease through the mesh. In addition, there is no fear of damage to the screen, since water will readily and easily remove the adhesive when desired.

The above adhesive is also highly useful, since it may be manufactured in large quantities substantially in advance of its ultimate use. It is very stable against fermentation and other deteriorating actions over long periods of time. Also, it may be stored in an open container at moderate temperatures.

The following are additional examples in per cent by weight of suitable adhesive compositions useful in the present invention:

Example IX

	Per cent
Dextrin	42
Water	30
Glycerin	8
Gelatin	6
Sucrose	14

Example X

	Per cent
Dextrin	39
Water	43
Glycerin	7
Gelatin	11

Example XI

	Per cent
Dextrin	44
Water	18
Glycerin	8
Sucrose	30

The above composition has fair printing qualities with a silk screen and good transfer qualities at approximately 70° F. and 65% relative humidity. However, the composition was found to be excessively wet at somewhat higher humidities. Also, the cohesive ability of the film or the ability of the coating composition film to hold together during transfer is relatively poor without the aid of gelatin.

Example XII

	Per cent
Dextrin	31
Water	39
Glycerin	12
Gelatin	8
Sucrose	10

Example XIII

	Per cent
Dextrin	32
Water	37
Glycerin	7
Gelatin	8
Glucose	16

In using a mask made in accordance with the above method, the mask is positioned in the desired place on the surface to be painted and the tacky adhesive side of the mask is pressed against the surface.

A rubber roller or similar tool may be rolled over the outer surface of the mask and pressures applied thereto to insure intimate contact between the surface to be painted and the entire adhesive coated portions of the mask.

To remove the backing member along with the portions of coated layer not in contact with the adhesive, it is generally preferable to loosen one edge of the mask and peel the same toward the opposite edge thereof, as shown in Fig. 3 of the drawings. While the layer of coating composition generally breaks cleanly and evenly along the entire border or outline of the adhesive layer, should portions thereof remain over the area which should be exposed, such portion may be readily removed by rubbing with a soft cloth without in any way disturbing the adhesive coated portion of the mask.

Before painting the exposed area, the remaining portions of the mask are preferably partially saturated with water, such as by placing a damp sheet of paper against the mask for a short time, generally for approximately five minutes. While the adhesive coating is water soluble, the coating composition layer prevents dissolution thereof. The mask, after partial saturation, is very soft and pliable. The mask retains the moisture for relatively long periods of time while the moisture on the exposed area quickly evaporates. The mask is then ready for painting, such as with a spray gun or similar device.

After the exposed areas have been painted and the paint is dried, the mask with portions of paint thereon, may be readily removed by simply wiping or washing the same.

While the mask of the present invention has been described for use primarily in painting letters or designs on surfaces, such as the bodies of commercial trucks or the like, the mask is not limited in any way to this use, but instead, is suitable for extensive and varied uses wherever it is desired to reproduce designs and indicia of like nature. Moreover, the mask is not limited to use with sprayed paint, although it is particularly suited to this purpose.

It is believed apparent from the foregoing that the mask disclosed herein permits a quick, easy and economical means for applying lettering and other indicia on surfaces, such for example as on the bodies of commercial trucks and the like. The mask disclosed herein is immediately ready for the application of paint after the backing member is removed and the remaining portions thereof are wetted, since the mask does not require the use of special interconnecting ties to hold inner portions of letters and the like. The mask may be manufactured in large quantities a substantial period prior to their ultimate use, since both the coating composition layer and the adhesive layer are very stable against atmospheric deterioration.

Due to the brittleness and other inherent qualities of the coating composition, the mask will aid in the production of high quality, uniform painted signs and the like, since the coating breaks cleanly and sharply from the wax paper backing member along the outline of the adhesive layer while adhering intimately to those portions of the backing member that are not covered with adhesive. For the above reasons, the mask may be applied and the desired indicia painted on surfaces by relatively unskilled labor.

Having thus described my invention, I claim:

1. A masking device for applying indicia to a surface comprising a wax paper backing member, a coating layer

covering at least a portion of said backing member, said coating layer being formed from a solution comprising:

Shellac	lb.	1
Powdered starch	lb.	1
Methyl alcohol (95% by weight)	gal.	1

and an adhesive layer covering at least a portion of said coating layer and having a configuration whereby the outline thereof forms the desired indicia, said adhesive consisting of the following in approximate percentage by weight:

Gelatin	6.6
Sugar	8.9
Dextrin	26.5
Glycerin	15.1
Water	40.4
Color	2.5

the bond between said coating layer and said adhesive layer being substantially greater than the bond between said backing member and said coating layer.

2. A masking device for applying indicia to a surface comprising a wax paper backing member, a coating layer covering at least a portion of said backing member, said coating layer being formed from a solution comprising approximately:

Shellac (3 lbs./gal. alcohol solution)	pint.	1
Powdered starch	oz.	5–14
Alcohol	pints.	1–3

and an adhesive layer covering at least a portion of said coating layer and having a configuration whereby the outline thereof forms the desired indicia, said adhesive consisting of the following in approximate percentage by weight:

Gelatin	6–11
Sugar	10–30
Dextrin	31–44
Glycerin	7–12
Water	18–43

the bond between said coating layer and said adhesive layer being substantially greater than the bond between said backing member and said coating layer.

3. A masking device for applying indicia to a surface, comprising a backing member, a coating layer covering and adhering to at least a portion of the surface of said backing member, and an adhesive layer covering at least a portion of said coating layer and having a preformed configuration whereby the outline thereof forms the desired indicia, the bond between said coating layer and said adhesive layer being substantially greater than the bond between said backing member and said coating layer so that the adhesive layer with a portion of the coating layer thereon may be applied directly to the surface and remain in contact therewith when the backing member is removed along with the portion of the coating layer not in contact with the adhesive layer, said coating layer being formed from a solution comprising shellac, starch and a volatile solvent therefor.

4. A masking device for applying indicia to a surface, comprising a backing member, a coating layer covering and adhering to at least a portion of the surface of said backing member, and an adhesive layer covering at least a portion of said coating layer and having a preformed configuration whereby the outline thereof forms the desired indicia, the bond between said coating layer and said adhesive layer being substantially greater than the bond between said backing member and said coating layer so that the adhesive layer with a portion of the coating layer thereon may be applied directly to the surface and remain in contact therewith when the backing member is removed along with the portion of the coating layer not in contact with the adhesive layer, said coating layer being formed from a solution comprising:

Shellac	lb.	1
Methyl alcohol	gal.	1
Powdered starch	lb.	1

5. A masking device for applying indicia to a surface, comprising a backing member, a coating layer covering and adhering to at least a portion of the surface of said backing member, and an adhesive layer covering at least a portion of said coating layer and having a preformed configuration whereby the outline thereof forms the desired indicia, the bond between said coating layer and said adhesive layer being substantially greater than the bond between said backing member and said coating layer so that the adhesive layer with a portion of the coating layer thereon may be applied directly to the surface and remain in contact therewith when the backing member is removed along with the portion of the coating layer not in contact with the adhesive layer, said coating layer being formed from a solution comprising approximately:

Shellac (3 lbs./gal. alcohol solution)	pint.	1
Powdered starch	oz.	5–14
Alcohol	pints.	1–3

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