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G. DARNELL ET AL
PAINT SPRAY MASKING DEVICE

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FIG. 1.

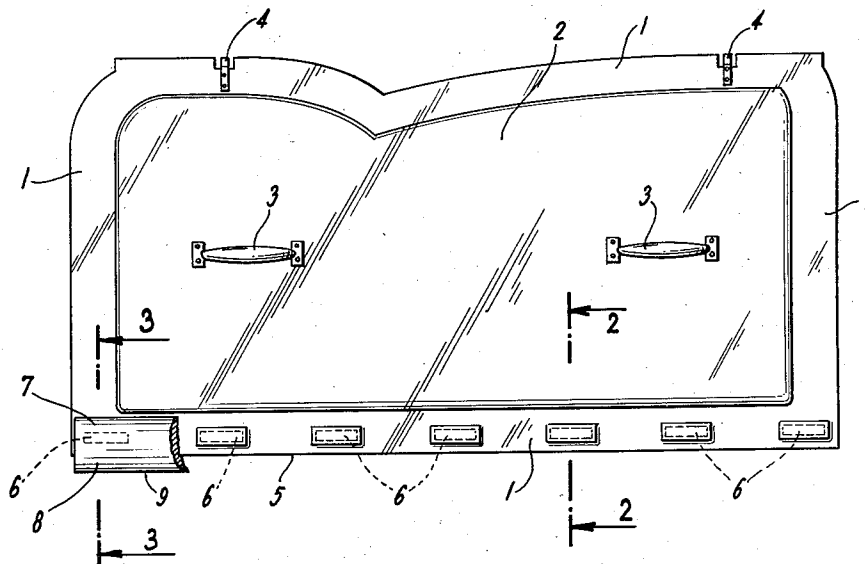
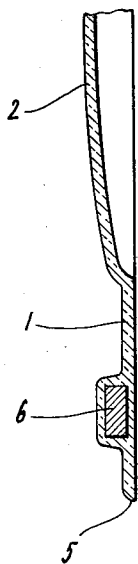


FIG. 2.

FIG. 3.

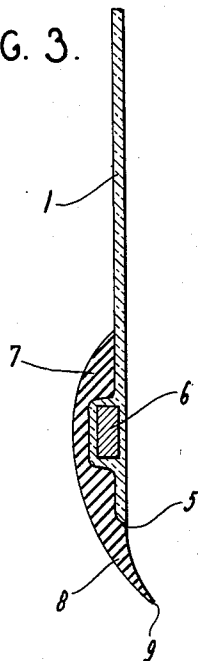
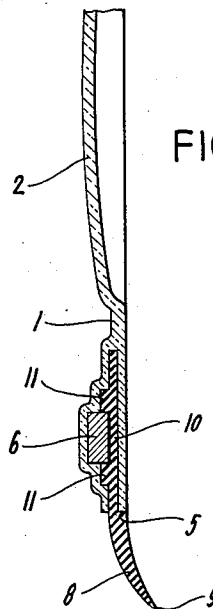


FIG. 4.



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PAINT SPRAY MASKING DEVICE

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9 Claims. (Cl. 118—505)

This invention relates to improvements in paint spray masking devices, and more particularly to improvements in non-metallic paint spray masking devices employed for masking predetermined areas of a ferrous metal body.

The use of masking tape, combined if desired with sections of paper or other material, to mask or cover areas of a surface while painting or spraying the surrounding areas thereof is of course well known. In present day mass production methods, in which large numbers of similar objects must be painted or sprayed in similar manner and appearance, the use of masking tape in painting or spraying each of such objects would entail a great expenditure in time, labor and material. This is particularly true, for example, in the automobile industry in which present day demand requires the use of two, three or more colors on different parts of the automobile body. Similar problems are of course involved in the production of other articles of manufacture. It is accordingly highly desirable to employ other masking means more readily adapted to repeated application to and removal from the objects to be painted.

In the automobile paint spraying trade, such masking means have been devised and have found widespread use. Such masking devices consist of a resin-reinforced glass fiber laminate shaped and molded to conform with the particular section of the auto body to be masked, e. g. door, fender, or part thereof or the like and provided with handles to facilitate handling. Whenever possible, the masking device is provided at its periphery with metal clips located to coincide with holes previously made in the auto body for subsequent attachment thereto of ornamental metal moldings. While such clips serve to hold the mask in proper position, they are generally insufficient to enable the attainment of a sharp line of demarcation. Further, the usual location of ornamental metal moldings on an auto body generally prevents use of such clips on more than an upper or lower edge of the masking device, whereby the opposite edge not provided with clips tends to swing out or away from the body during the spraying operation. This tendency is in many cases aggravated by the curve or belly of the modern auto body. For example, a masking device for the lower part of a door or fender, temporarily fastened to the body with clips at the upper edge of the device, will tend to swing away from the body due to the inward curvature or bellying of the lower part of the door or fender.

It is an object of this invention to provide an improved non-metallic paint spray masking device. Another object of this invention is the provision of such a device which will remain in contact with an auto body or other surface in the absence of the usual metal clips. Still another object of this invention is the provision of such a device the edge of which is provided with means for maintaining tight contact with a surface in order to enable the attainment of a sharp line of demarcation between the painted area and the masked area. Other objects and advantages will appear from the following description and accom-

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panying drawing in which preferred embodiments of masking devices made in accordance with this invention are shown for illustrative purposes only.

In the drawing:

Fig. 1 is a front view of a masking device for the upper part of an auto body door, improved in accordance with this invention by the provision of permanent magnetic elements along the lower edge thereof;

Fig. 2 is a sectional view taken on the line 2—2 of Fig. 1, illustrating one method of mounting a permanent magnetic element adjacent the edge of the masking device;

Fig. 3 is a sectional view taken on the line 3—3 of Fig. 1, showing for illustrative purposes only, as a further feature of the invention, an edge of a masking device provided with a knife-like, semi-rigid molding element directed inwardly towards the body to be masked, in combination with a permanent magnetic element; and

Fig. 4 is a sectional view of an alternative method for providing the edge of the masking device with a permanent magnetic element and a knife-like, semi-rigid molding element as above described.

Referring now to Figs. 1 and 2 of the drawing, the masking device will be seen to comprise an outer rim 1, shaped to conform with and remain in contact with the periphery of the surface area to be masked, and an inner portion 2, shaped to remain in spaced relationship to the remaining surface area to be masked, whereby to avoid interference caused by any surface irregularities and the like in such surface area with the desired action of the masking device. Metal clips 4 are positioned at the upper edge of the mask to coincide with and fit into holes previously made in the door for the subsequent installation of an ornamental metal molding, and the device is provided with handles 3 to facilitate handling of the device during use. As thus far described, the drawing illustrates the structure heretofore commonly employed in the trade. The instant invention includes the provision of permanent magnetic elements 6, composed of 1" oblong bars, shown embedded in the masking device adjacent the lower edge 5.

The sectional view in Fig. 3, taken along lines 3—3 of Fig. 1, illustrates a further feature of the invention in the provision of a knife-like, semi-rigid molding element 7 directed inwardly at 8 and terminating in a relatively sharp knife-like edge 9. As shown, the molding element is recessed to fit snugly over the protruding permanent magnetic element, and may be cemented, molded, stapled, riveted or otherwise fastened in position.

The sectional view in Fig. 4 illustrates an alternative method of providing edge 5 of the device with a semi-rigid molding element 10 directed inwardly at 8 and terminating in a knife-like edge 9. In this embodiment, permanent magnetic element 6 overlies the molding element, which is provided with keys 11 or is otherwise recessed to receive the permanent magnetic element.

It will be readily understood that more than one edge or all edges of the masking device may be provided with permanent magnetic elements, that the permanent magnetic elements may be of any desired size and shape and in any desired number depending upon the force required to hold the edges of the mask in contact with the body to be covered. In fact, a single permanent magnetic element of the required length, shape and size may be employed. The permanent magnetic element may be composed of natural or artificial material possessing relatively permanent magnetic properties, the most important of these materials being for example, magnetite, hard iron or steel, cobalt, nickel, manganese, and mixtures and alloys of these and other metals such as Alnico, Heusler's alloy, and the like. Such elements adjacent an edge of the masking device of the instant invention, by exerting

a magnetic force on the body to be masked, usually a ferrous metal such as iron or steel, act in the desired manner in holding the mask in contact with said body. It will however be understood that the said body may be composed partly or principally of non-magnetic or dia-magnetic substances, such as plastics, wood, glass, plaster, paper, textiles, compositions of various chemicals, certain metals, and the like so long as such body is provided in proper locations (e. g. adjacent the permanent magnetic elements in the mask) temporarily or permanently with magnetic substances or materials, e. g. having paramagnetic properties, responsive to the magnetic forces of said permanent magnetic elements in the masking device herein to permit functioning thereof in the desired manner. Such substances are well known to science, and need not be enumerated here, although it should be apparent that stronger magnetic substances will permit a more secure attraction between the masking device and the body to be masked. As employed herein and in the appended claims, the term "body provided with a magnetic substance" includes magnetic bodies, or non-magnetic bodies provided with a magnetic substance as described above.

It will also be understood that the structure shown in Figs. 1 and 3 is given for illustrative purposes only, and that in actual practice, entire edge 5 along one or more sides of the device may be uniform in being devoid of or provided with knife-like, semi-rigid molding element 7 or 10. Where said knife-like, semi-rigid molding element 7 or 10 is incorporated in the masking device, the line of demarcation between the painted area and the masked area hereinbefore described will be formed by the knife-like edge 9 of said molding element. The molding element may be of any desired cross-sectional shape and configuration, and of any desired material, so long as it has the required semi-rigidity or flexibility, inward direction and knife-like edge whereby, in combination and cooperative relationship with the inward force exerted by the permanent magnetic element, the edge of the masking device is tightly sealed against the body being masked. Thus, although the drawing illustrates the molding element as being curved, it may instead be of any other cross-sectional length, thickness and shape, such as a wedge-like, chisel-like, or other symmetrical or unsymmetrical configuration. A tight seal is particularly important when a slow-drying film former is being sprayed, such as an enamel, which would otherwise tend to run, flow or spread underneath the edge of the mask, and when a particularly sharp line of demarcation is required, for example in cases where the line will not be later covered by an ornamental metal molding strip. The attainment of such a tight seal is further facilitated when the material of which the knife-like molding element is made is of a rubbery or compressible nature or consistency, in order to better conform with minute surface irregularities in the body. Any such material may be employed which is durable and resistant to the paint, lacquer, enamel, or other film-forming substance being applied. While nylon, vinyl or polyethylene plastics are preferred, any other natural or synthetic rubber, resin, polymer or plastic may be employed which has the above-described properties. The molding element may be formed in known manner by extrusion or otherwise.

The masking device is formed in known manner, for example by applying successive layers or laminates of glass fiber in matted, felted, woven or any other form, each layer being coated and impregnated with polyester or other resin, to a sample or specimen of the body to be masked. The body is first treated with a wax and/or parting compound, or combination thereof, inert and resistant to the action of the impregnating resin, in order to permit ready removal of the masking device from the sample on which it is formed or molded. Similarly, the inner portion of the area to be masked is first covered with a layer of material having the thickness required to

form in the masking device an outer rim 1 conforming to the outer portion of the body surface area to be masked, and an inner portion 2 in spaced relationship thereto. Permanent magnetic elements 6 are preferably molded into position adjacent edge 5 between the first and second layers of resin-reinforced glass fiber, the mask generally being composed of about 4 such layers. It will be understood however that more or fewer layers may be employed, that foraminous material other than glass fiber, or no such material at all, may be employed for reinforcement, that the masking device may be made transparent, colored, smooth or textured, or provided with means for conveying intelligence such as instructions, advertisements and the like, and that the permanent magnetic elements may be otherwise affixed adjacent the edge of the device, as for example by application with the aid of cement, clips, rivets, bolts, screws or the like, without departing from the scope of the instant invention. Similar considerations apply with respect to the provision, when required, of a knife-like, semi-rigid molding element as above described.

In putting the improved masking device of the instant invention into use, the worker simply lifts it with handles 3 and places it in position on the body to be masked. The edges of the device provided with permanent magnetic elements will immediately be pulled towards and held in contact with said body during the painting or spraying operation. Wherever possible, the device should be provided with metal clips 4 in order to permit more accurate positioning of the device on the said body.

This invention has been disclosed with respect to preferred embodiments only, and various modifications and variations thereof will become obvious to the person skilled in the art. It is to be understood that such modifications and variations are to be included within the spirit and purview of this application and the scope of the appended claims.

What we claim is:

1. A device for masking prescribed surfaces of a ferrous metal body comprising a rigid masking body molded to conform to at least marginal portions of said prescribed surfaces and including plural resin-reinforced laminae, and a number of spaced-apart permanent magnet elements embedded between adjacent laminae along at least one edge of said masking body, the magnetic forces between said permanent magnet elements and said ferrous metal body being effective to maintain said one edge of said masking body in masking contact with said ferrous metal body.

2. A device for masking prescribed surfaces of a ferrous metal body comprising a rigid masking body molded to conform to at least marginal portions of said prescribed surfaces and including plural resin-reinforced laminae, a molding element extending along one side of said masking body and terminating in a masking edge, said masking edge being knife-like, semi-rigid and directed inwardly relative to said body, and a number of spaced-apart permanent magnetic elements embedded between adjacent laminae along said one side of said masking body, the magnetic forces between said permanent magnet elements and said ferrous metal body being effective to maintain said masking edge of said masking body in masking contact with said ferrous metal body.

3. A device for masking prescribed surfaces of a ferrous metal body comprising a rigid resin-reinforced laminar masking body having its inner face molded to conform to at least marginal portions of said prescribed surfaces and including an inner lamina and at least one other lamina, and a number of spaced-apart permanent magnetic elements embedded between said inner lamina and said one other lamina along at least one edge of said masking body, said magnetic elements extending rearwardly from respective inner surfaces disposed substantially parallel to said inner face of said masking body whereby said magnetic elements do not interfere with the

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conformity of said masking body to said ferrous metal body, the magnetic forces between said permanent magnet elements and said ferrous metal body being effective to maintain said one edge of said masking body in masking contact with said ferrous metal body.

4. A device for masking prescribed surfaces of a ferrous metal body comprising a masking body having at least marginal portions of its inner face molded to conform to at least marginal portions of said prescribed surfaces, and at least one permanent magnet element mounted along at least one edge of said masking body, the magnetic forces between said permanent magnet element and said ferrous metal body being effective to maintain said one edge of said masking body in masking contact with said ferrous metal body.

5. A device for masking prescribed surfaces of a ferrous metal body comprising a masking body having marginal portions of its inner face molded to conform to marginal portions of said prescribed surfaces, a molding element extending along one side of said masking body and terminating in a masking edge, said masking edge being knife-like, semi-rigid and directed inwardly relative to said body, and at least one permanent magnet element mounted along said masking edge of said masking body, the magnetic forces between said permanent magnet element and said ferrous metal body being effective to maintain said masking edge of said masking body in masking contact with said ferrous metal body.

6. A device for masking prescribed surfaces of a ferrous metal body comprising a rigid masking body molded to conform to at least marginal portions of said prescribed surfaces, a molding element extending along one side of said masking body and terminating in a masking edge, said masking edge being knife-like, semi-rigid and directed inwardly relative to said body, and a number of spaced-apart permanent magnet elements mounted on said masking body along said one side of said masking body, the magnetic forces between said permanent magnet elements and said ferrous metal body being effective to maintain said masking edge of said masking body in masking contact with said ferrous metal body.

7. A device for masking prescribed surfaces of a ferrous metal body comprising a rigid masking body having marginal portions molded to conform to at least marginal portions of said prescribed surfaces and an inner portion shaped to remain in spaced relation to the remaining portions of said prescribed surfaces, said body including plural resin-reinforced laminae and a number of spaced-apart permanent magnet elements embedded between adjacent laminae along at least one edge of said masking body, the magnetic forces between said permanent magnet elements and said ferrous metal body being effective to maintain said one edge of said masking body in masking contact with said ferrous metal body.

8. A device for masking prescribed surfaces of a ferrous metal body comprising a rigid resin-reinforced

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laminar masking body having marginal portions of its inner face molded to conform to at least marginal portions of said prescribed surfaces and an inner portion shaped to remain in spaced relations to the remaining portions of said prescribed surfaces, said body including an inner lamina and at least one other lamina, a molding element extending along one side of said masking body and terminating in a masking edge, said masking edge being knife-like, semi-rigid and directed inwardly relative to said body, and a number of spaced-apart permanent magnet elements embedded between said inner lamina and said one other lamina along said one side of said masking body, said magnetic elements extending rearwardly from respective inner surfaces disposed substantially parallel to said inner face of said masking body whereby said magnetic elements do not interfere with the conformity of said masking body to said ferrous metal body, the magnetic forces between said permanent magnet elements and said ferrous metal body being effective to maintain said one edge of said masking body in masking contact with said ferrous metal body.

9. A device for masking prescribed surfaces of a ferrous metal body comprising a rigid resin-reinforced laminar masking body having its inner face molded to conform to at least marginal portions of said prescribed surfaces and including an inner lamina and at least one other lamina, a molding element extending along one side of said masking body and terminating in a masking edge, said masking edge being knife-like, semi-rigid and directed inwardly relative to said body, and a number of spaced-apart permanent magnet elements embedded between said inner lamina and said one other lamina along said one side of said masking body, said magnetic elements extending rearwardly from respective inner surfaces disposed substantially parallel to said inner face of said masking body whereby said magnetic elements do not interfere with the conformity of said masking body to said ferrous metal body, the magnetic forces between said permanent magnet elements and said ferrous metal body being effective to maintain said one edge of said masking body in masking contact with said ferrous metal body.

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