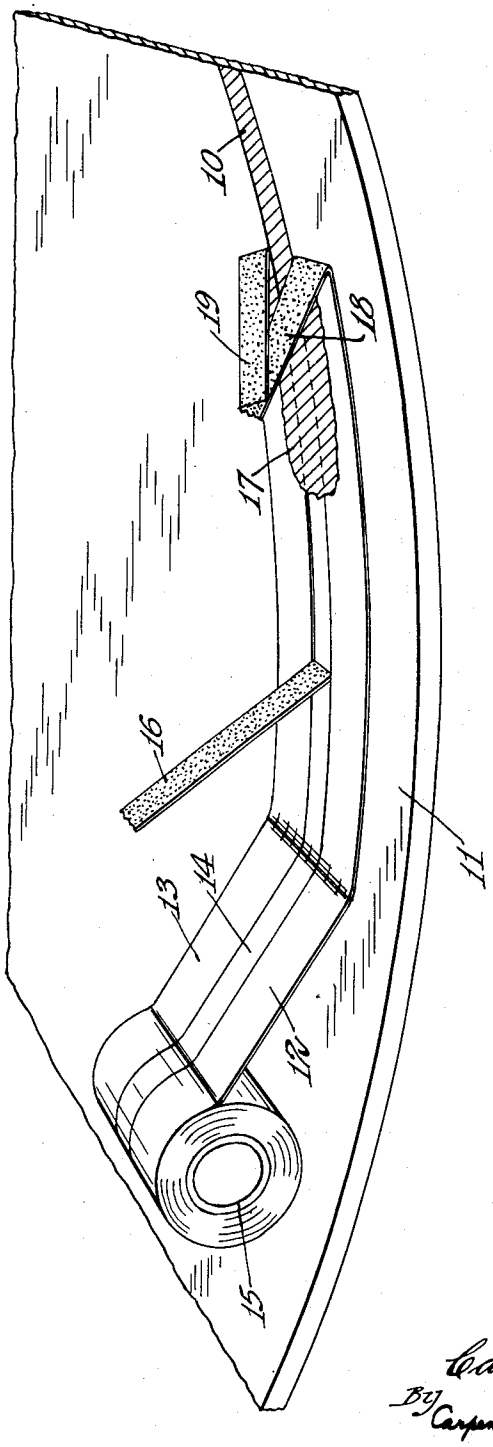
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ROLL OF PRESSURE-SENSITIVE ADHESIVE STRIPING TAPE

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ROLL OF PRESSURE-SENSITIVE ADHESIVE STRIPING TAPE

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1 Claim. (Cl. 206—59)

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This invention relates to a roll of normally tacky and pressure-sensitive adhesive tape suitable for the masking of surfaces prior to painting of stripes and similar designs thereon. The roll consists of a series of three, five, or a higher odd number of contiguous individual strips of masking tape wound on a single core, as described more in detail hereinbelow.

The use of normally tacky and pressure-sensitive adhesive tape (masking tape) for masking or protecting areas to be left unpainted, and for making sharp lines of demarcation between differently colored painted areas, is well known in the painting and decorating art. Such masking tapes have been described in U. S. Patents Nos. 1,760,820, 2,227,444, 2,236,527, 2,410,078, 2,410,089, 2,438,195. They have a unified paper backing coated on the inside face with a rubber-resin type pressure-sensitive adhesive which is stably and aggressively tacky. These tapes can be unwound from rolls without delamination or offsetting of adhesive.

Where narrow painted stripes are required in a surface, two separate strips of such masking tape are commonly placed separately along the two edges of the proposed stripe. Paint or lacquer is then applied, as by brushing or spraying, and the strips of tape are removed, leaving a sharp-edged line or stripe of the paint or equivalent coating material along the unmasked area. The method requires two separate applications of tape and frequently results in uneven striping, since it is difficult to space the strips of tape accurately.

A previously proposed improvement in the striping art contemplates placing two strips of adhesive-coated tape and an intervening uncoated spacing strip on an adhesive-coated carrier web to provide a two-layer tape construction. The exposed adhesive-coated surface of the two-layer tape is pressed against the surface which is to be painted, and the adhesive-coated carrier web, together with the adhering spacing strip, is peeled away, leaving the two lengths of adhesive tape adhered to the surface and in accurately spaced position for striping. Such a two-layer tape is bulky in the roll, requires double the amount of adhesive needed for the functional use of the tape, and in addition is difficult to assemble.

In another construction, a length of masking tape capable of being torn longitudinally along straight lines is employed in preparation for striping, a central longitudinal section being torn from the adhered tape to provide a masked stripe area for painting. Tape having an easily torn cloth backing is one example of such a material. The torn edges of the cloth produce irregularities or fuzziness in the edges of the paint stripe, a condition which prevents the use of such methods where sharp-edged paint lines or stripes are required, as is usually the case.

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It is therefore an object of the present invention to provide means for masking a sharp-edged stripe area rapidly, accurately and economically.

This and other objects are accomplished, in accordance with my invention, by assembling a plural odd number of individual strips of normally tacky and pressure-sensitive masking tape in edge-to-edge relationship and wound in convolute roll form on a single core, in such a way that the tacky adhesive layers of the separate strips become cohered together along the contiguous edges and hold the strips in that relationship during unwinding from the roll and application of the composite tape to a surface to be decorated. The cohesive bond between contiguous edges is readily and cleanly broken upon removal of the central strip or strips prior to application of paint or analogous coating.

The discovery that edge cohesion between adhesive layers in a multiple-strip structure such as hereinabove described is sufficient to permit the composite tape being unwound from the roll and applied to surfaces without preliminary separation of the individual layers forms the basis of the present invention, and is particularly surprising in view of the complicated and less effective methods which, prior to this invention, were considered to be essential in producing the desired results.

The accompanying drawing is a perspective view of a roll of the slitted tape and illustrates its use.

This drawing indicates the formation of a painted curved stripe 10 on a flat surface 11, such as a portion of an automobile body, with the aid of a composite striping tape such as hereinbefore described, and consisting of masking strips 12 and 13, and spacing strip 14, the three strips being in edge-to-edge relationship and wound up in convolute roll form on a single core 15. In the figure, the central strip 14 is represented as being partly stripped or peeled back from between masking strips 12 and 13, thus exposing the normally tacky and pressure-sensitive adhesive surface 16. A coating of paint or lacquer 17 is applied over the area of surface 11 thus exposed and over the adjacent areas of tape strips 12 and 13. These latter strips are subsequently also removed by peeling, as indicated, the adhesive-coated surfaces 18 ad 19 of the strips 12 and 13 being thus exposed, leaving the paint stripe 10 in place on the surface 11. The paint stripe 10 has sharply defined edges because of the complete absence of tearing and fuzzing of the fibrous backing of the tape along the lines between the several individual sections, and is of constant width because of the use of the spacing strip 14.

While constant width stripes are a feature of the preferred embodiment of the invention illustrated in the drawing, it will be apparent that areas having desired re-occurring irregularities

may be defined by suitable modification of the composite tape. For example, slitting may be in regular or irregular wavy or zigzag lines rather than in straight lines as shown; or various other patterns may be provided. Multiple stripes or designs may also be obtained, using composite tapes having more than one removable spacing strip. While mechanical dispensers for attaching the composite tape to various surfaces may be employed if desired, the product of this invention is easily and quickly applied by hand, and provides a means of obtaining, by unskilled amateur painters and decorators, accurately dimensioned, smooth and sharply defined painted stripes and patterns.

One preferred way in which the tape roll of the present invention may readily be assembled is by slitting the several individual strips of masking tape from a wider strip simultaneously and then winding them directly on a single core or reel. Several composite rolls may thus be produced simultaneously from a single stock roll of adhesive-coated tape. Preferably, a thin and flexible masking tape comprising a layer of normally tacky and pressure-sensitive adhesive firmly bonded to one surface of an impregnated creped paper unified fibrous backing, which is coated on the other surface with a low-adhesion backsize, is used as the base stock. Slitting may be accomplished by means of circular knives running over a hardened score roll, the tape being passed between the knives and the hardened surface. When first slit, the individual strips are completely severed from each other. After they have been wound up in the roll, and particularly after sufficient storage time has elapsed to allow the normally tacky and pressure-sensitive adhesive to flow slightly, the individual strips are found to be cohered together along the contiguous slit edges to such an extent that the composite strip may be unwound from the roll and applied to surfaces without separation. Individual strips may then be lifted from the surface and disengaged from the composite strip, without roughening the edges of the adjacent individual strips and without disturbing their placement, to provide an area having definite and sharp boundaries and which is ready for paint application.

The adhesive may be one of the various rubber-resin type pressure-sensitive tape adhesives, well known in the art, which are water-insoluble and aggressively tacky. Various examples are given in the previously cited patents. These adhesives have a rubbery base of natural or synthetic rubber which provides cohesion (internal strength) and elasticity (a retractive force when stretched and retraction when released after stretching); and this rubber base is modified by blending with a compatible tackifier resin (such as rosin or ester gum) which serves to increase adhesion (tackiness) and decrease cohesion, with an attendant increase of stretchiness (elongation under low stresses) and decrease of elasticity. These rubber-resin tape adhesives have a proper four-fold balance of adhesion, cohesion, stretchiness and elasticity, which permits adhesive tape coated therewith to be aggressively and stably tacky and yet be capable of being stripped back from smooth surfaces to which temporarily applied without delamination or offsetting of adhesive. These tape adhesives are termed "eucohesive" by which it is meant that they are more cohesive than adhesive such that offsetting or transfer of adhesive material does not result when the tape coated therewith is unwound from rolls or removed from surfaces to which temporarily applied, and the tape can be handled without transfer of adhesive material to the fingers. Certain synthetic polymers are inherently tacky and eucohesive and possess the above-mentioned four-fold balance of properties, and can be used as pressure-sensitive tape adhesives, thus being equivalents of the rubber-resin adhesives and hence they may be regarded as being of the rubber-resin type. An example is a 75:25 copolymer of 2-ethyl-butyl-acrylate and ethyl acrylate.

The rubbery bases used include crude natural rubber, Buna-S type synthetic rubber, and polyisobutylene (Vistanex). The tackifier resins include rosin, ester gum, pure hydrocarbon terpene resin of 85° C. melting point ("Piccolyte"), and hydrogenated indene-coumarone resin of 150° C. melting point ("Nevillite resin"). Zinc oxide can be included as an opacifying and reinforcing pigment when transparency is not needed. Carbon black can be included to give a black color, and titanium dioxide pigment to give a brilliant white color. Various chromatic pigments can be included to produce desired colors. The adhesive is prepared for coating by churning together the rubber (cut into pieces) and the resin in a volatile hydrocarbon solvent (such as heptane) present in proportion to impart a suitable coating viscosity.

While unified paper backings are most commonly employed in masking tapes (as illustrated by the previously cited patents), use can also be made of non-fibrous film backings (c. f. U. S. Patents Nos. 2,156,380, 2,177,627, 2,328,057, 2,328,066, 2,444,830). All such backings are referred to as "non-woven" to distinguish from cloth backings, which are undesirable and which provide fuzzy fiber and thread tips at the edges of the tapes.

Having now described various embodiments of my invention for purposes of illustration, but without intent to be limited thereto, what I claim is as follows:

A roll of normally tacky and pressure-sensitive masking tape consisting of a plural odd number of individual strips of said tape in edge-to-edge relationship wound in convolute roll form on a single core, each of said strips being comprised of a non-woven flexible backing coated on the inner face with a layer of rubber-resin type pressure-sensitive adhesive, said adhesive layers of said individual strips being cohered together along the contiguous edges so as to hold the strips in said edge-to-edge relationship during unwinding from the roll and application of the composite tape to a surface, but being readily separable after application of the tape on stripping away a central strip of said tape.

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