

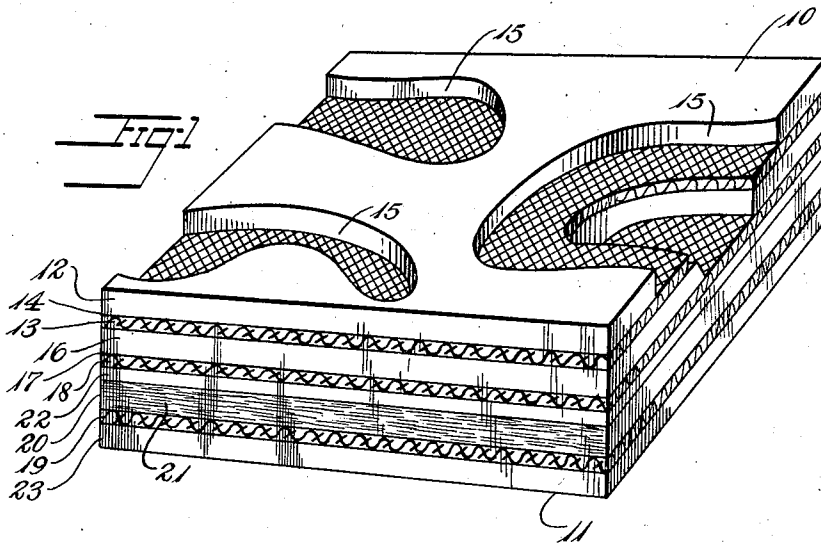
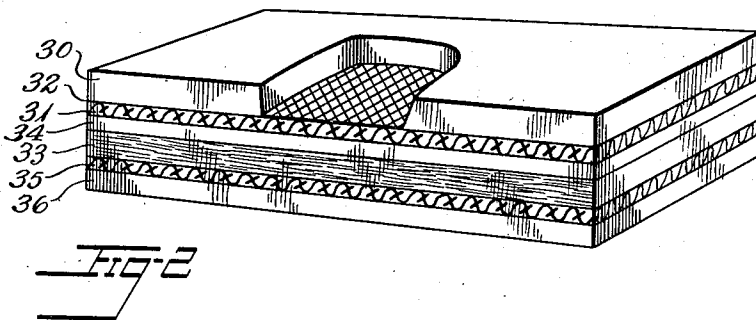
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ENGRAVER'S GUM

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ENGRAVER'S GUM

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This invention relates to engravers gum and is especially useful in the art of printing.

In the printing of many materials such as fabrics, rough surfaced papers, straw board containers, wood, and sheet metal surfaces, it is desirable to provide printing plates of resilient material which will conform to the surface to be printed. For speed and convenience in printing it is desirable to provide flat plates which may be bent and secured to a cylinder of the printing press. Sheet material for this purpose having a printing surface of resilient rubber composition and a backing of textile material has been used for the purpose. The printing face has usually been of rubber material which may be cut away easily or engraved, and its adhesion to the backing has preferably been such that the areas cut from the facing may be peeled clean from the fabric backing. In some cases where the spaces between printing areas are great, more than one removable layer has been provided so that the material may be removed or stripped in steps where desired.

The removal of one or more layers of rubber material over areas of the sheet naturally weakens the sheet and increases its stretchability. It has been proposed to provide the sheet with backing layers of metal to prevent stretching of the sheet but such a construction has not been satisfactory due to the difficulty of uniformly forming the engraved sheet to cylindrical form, the metal tending to bend more easily at one place than at another, and the fact that the metal is permanently extensible and not elastic.

It has also been proposed to use a reinforcement of perforated metal with the result that the metal has had the objection of being bent more easily along rows of perforations than at other places and has made the provision of a true cylindrical printing face impossible.

It has also been proposed to use a reinforcement of screen wire or woven wire netting but due to the crimp of the wires the material has been too stretchable and the same difficulties have been encountered as with other metal reinforcements.

While woven fabric has been used as a reinforcing material, the crimp of the threads in the fabric has caused such stretch of the sheet as to permit satisfactory use of such engraver's gum only for one color work or in colors when register of different impressions was not necessary.

The present invention aims to overcome the faults of engraver's gum of prior constructions.

The principal objects of the invention are to provide an improved engraver's gum, to provide an engraver's gum which may be used effectively for color register printing, to provide increased resistance to stretch, to provide uniform flexibility, and to prevent migration of vulcanizing

ingredients from the reinforcing layer to the face material of the sheet.

These and other objects will appear from the following description and the accompanying drawing.

Of the drawing:

Fig. 1 is a perspective view of a sheet of engraver's gum embodying the invention prepared for printing, the drawing showing the material to a greatly magnified scale for clarity of illustration.

Fig. 2 is a similar view showing another sheet of different construction also embodying the invention.

In accordance with the invention a stretch-resisting backing is provided comprising rubber material prepared to give this characteristic with flexibility.

Good results have been obtained by semi-hard rubber composition containing fibrous material for resisting stretch of the sheet. The invention also contemplates the use of a barrier layer of soft rubber composition to prevent migration of vulcanizing ingredients from the semi-hard rubber composition to the printing and cushioning layers.

Referring to the drawing which illustrates two examples of constructions embodying the invention which may be embodied in many different constructions and is not limited to the embodiment shown, and first with reference to Fig. 1, the numeral 10 designates the printing face, and the numeral 11 the supporting face, of a sheet of engraver's gum embodying the invention. At the printing face is an impression layer 12 of resilient close grained material of rubber-like composition. While soft vulcanized rubber compositions may be employed for this layer which must have the properties of resilience, attraction for the ink employed, resistance to swelling, ease of engravability, and resistance to wear, where oily or greasy inks are employed it is desirable to employ a synthetic rubber material such as a copolymer of butadiene and acrylonitrile as a base for compounding this layer as such material has greater resistance to swelling and loss of strength when in contact with printers inks.

The lower face of the impression layer 12 is supported by a reinforcing layer 13 of rubberized fabric, and these layers are separable at their interface 14 by a force varying between 4 and 10 pounds per linear inch to permit stripping away the areas not desired for printing as indicated at 15. The interface 14 is known as the "first stripping level."

When there is great spacing between printing areas, it is desirable to provide another layer 16 of resilient material which may be removed if necessary to prevent printing-up of the removed areas, and necessitating a "second stripping level"

17. The layer 16 is known as a cushion layer and may be of the same material as the impression layer 12 or of ordinary soft vulcanized rubber composition having the desired cushioning properties and readily capable of being peeled at the second stripping level.

A reinforcing layer of rubberized fabric 18 is provided at the second stripping level to facilitate separation of the rubber material and to provide stability and strength and another layer 19 of similar fabric is spaced therebelow. While these fabric layers provide strength and flexibility, the unavoidable crimp of the threads of which they are woven provides undesirable stretchability of the sheet. To provide resistance to stretchability, a layer 20 of relatively non-stretchable rubber composition is provided between the layers 18 and 19. This layer is formed of a semi-hard rubber composition having a high percentage of straight unwoven fibers 21 extending in the plane of the sheet and preferably having considerable overlap of the fibers. A suitable composition may be prepared by grinding and milling unvulcanized trimmings of rubberized cord or fabric removed from tires and other rubber and fabric articles and adding suitable vulcanizing ingredients such as sulfur to increase the hardness of the resulting composition. The milling and sheeting of the material in a thin layer of about .030 inch thickness lays the fibers in the direction of the sheet and in overlapping relation while the semi-hard rubber provides additional resistance to stretch and binds the fibers together to provide a substantially non-stretchable layer while, at the same time, the fibers reduce shrinkage of the semi-hard rubber composition.

To provide against migration of the sulfur and other vulcanizing ingredients from the layers 20 to the cushion layer 16, which migration might cause hardening of such cushion layer and increase resistance to stripping it from the fabric layer 18, a thin layer 22 of soft rubber composition low in sulfur content is employed as a barrier layer on the under side of the fabric layer 18 to which it may be applied by calendering, whereby the barrier layer through its ability to absorb vulcanizing ingredients retards migration of the latter to the printing and cushioning layers.

As it is necessary to hold the thickness of the material within close limits, a surfacing layer 23 of rubber composition is provided at the supporting face. This layer is of material which may be ground away to provide the desired thickness without "wooling up." A rubber composition similar to the material of wringer rolls is suitable for this purpose as it may be ground away leaving a smooth level surface. Preferably this layer contains a high percentage of materials such as factice and whiting which facilitate grinding thereof.

In the embodiment of the invention illustrated in Fig. 2, the cushion and second stripping level are omitted. The impression layer 30 is of the same composition as the layer 12 of Fig. 1 and is mounted on a layer 31 of fabric providing a stripping level 32 at the interface. The layer 33 is of the same fibrous semi-hard rubber composition as the layer 20 of Fig. 1 and the barrier layer 34, fabric layer 35, and surfacing layer 36 correspond to the layers 22, 19, and 23 respectively of Fig. 1.

In either of the embodiments shown the fibrous

layer of semi-hard rubber permits flexing of the sheet without segregation of bending and provides sufficient resistance to stretch of the sheet, even after portions of the impression surface have been removed, to permit use of the material in multi-color and other printing operations where close registry is required.

Where the fabric layers 18 or 31 are relatively thick the barrier layer 22 or 34 may be omitted.

Variations may be made without departing from the scope of the invention as it is defined by the following claims.

We claim:

1. Sheet engraving gum comprising an impression layer of removable resilient material selected from a group consisting of natural and synthetic rubber compositions, said layer having an impression face and a back face defining a stripping level, and a substantially inextensible backing therefor, said backing comprising a layer of fabric at said stripping level, a substantially nonstretchable layer of semi-hard rubber composition containing vulcanizing ingredients and fibers below said fabric layer, and a barrier layer of soft-rubber composition therebetween adapted to absorb vulcanizing ingredients, whereby said barrier layer acts to retard migration of vulcanizing ingredients from said composition containing fibers to said impression layer.

2. Sheet engraving gum comprising an impression layer of removable flexible vulcanized material providing an impression face, a flexible substantially inextensible backing therefor, said backing comprising a substantially non-stretchable layer of semi-hard composition containing a vulcanizing ingredient and unwoven fibers, and a barrier layer of soft rubber composition low in sulfur content interposed between said impression layer and said backing to retard the migration of vulcanizing ingredients from the backing layer to the impression layer.

3. Sheet engraving gum comprising an impression layer of removable material selected from a group consisting of natural and synthetic rubber compositions, at least one layer of woven fabric providing at least one stripping level beneath the impression layer, a substantially non-stretchable backing layer of semi-hard rubber composition containing unwoven fibers beneath said fabric layer, a reinforcing layer of fabric beneath the backing layer, and a surfacing layer of soft rubber composition beneath said reinforcing layer.

4. Sheet engraving gum comprising an impression layer of removable material selected from a group including natural and synthetic rubber compositions, said layer having an impression face and a back face at a stripping level, at least one layer of woven fabric providing at least one stripping level beneath the impression layer, a backing layer beneath the fabric layer comprising semi-hard rubber composition containing fibers and a vulcanizing ingredient, a barrier layer of soft rubber composition of low sulfur content interposed between said backing layer and said impression layer to bar migration of said vulcanizing ingredient from said backing layer to said impression layer, a reinforcing layer of fabric beneath said backing layer, and a surfacing layer of rubber composition beneath said reinforcing layer.

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