April 9, 1946. C. Q. GLASSEY 2,398,303

VACUUM PRINTING FRAME GASKET

Filed Nov. 9, 1944

FIG. 1.

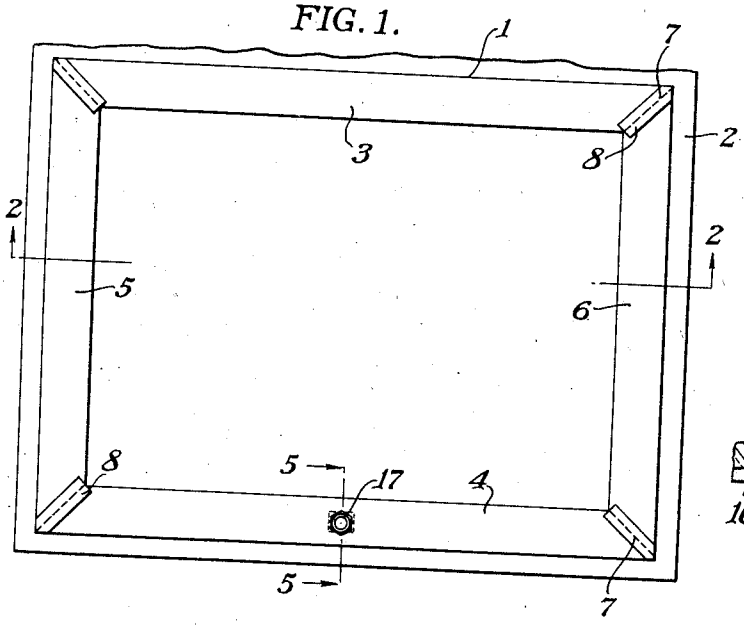


FIG. 5.

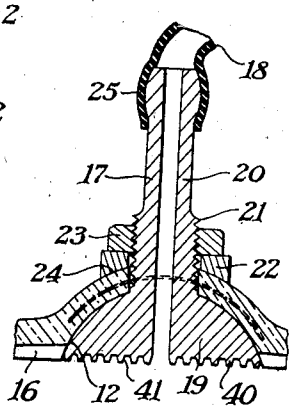


FIG. 2.

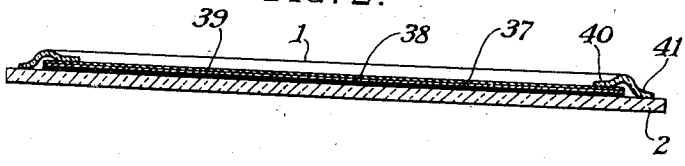


FIG. 2A.

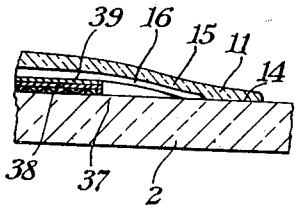


FIG. 3.

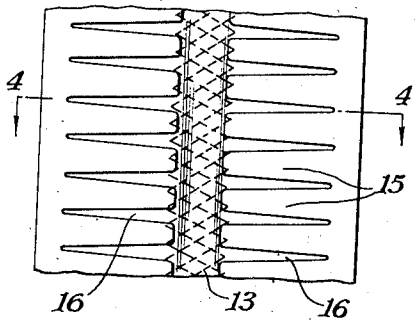


FIG. 4.

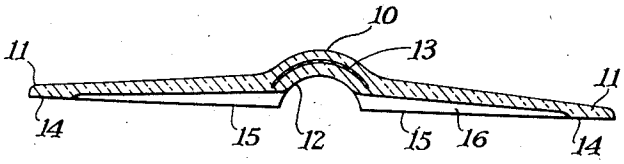


FIG. 6.

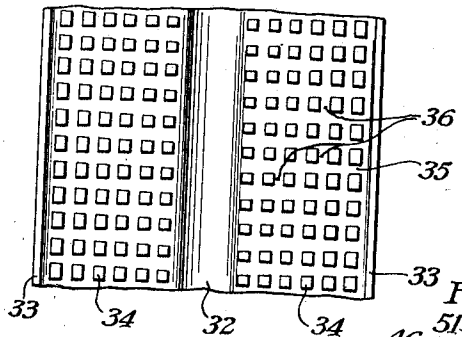
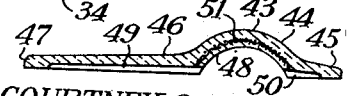


FIG. 7.



COURTNEY Q. GLASSEY
INVENTOR

BY Merton M. Perrine
Grant H. Stewart
ATTORNEYS

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VACUUM PRINTING FRAME GASKET

Courtney Q. Glassey, Rochester, N. Y., assignor to Eastman Kodak Company, Rochester, N. Y., a corporation of New Jersey

Application November 9, 1944, Serial No. 562,706

8 Claims. (Cl. 95—76)

This invention relates to photography and more particularly to vacuum printing frames. One object of my invention is to provide material from which a relatively air-tight gasket may be readily constructed. Another object of my invention is to provide a gasket for vacuum printing frames from which air may be evacuated so as to hold a printing negative and sensitized member in intimate contact. Another object of my invention is to provide a flexible gasket with a reinforced air channel which will prevent the collapse of the air channel under normal working conditions. Other objects will appear from the following specification, the novel features being particularly pointed out in the claims at the end thereof.

At the present time it is difficult to obtain rubber gaskets for vacuum printing frames, and it is likewise difficult to obtain suitable gaskets for the many different sized printing frames now in use, the gaskets being made of a suitable rubber substitute. Most vacuum printing frame gaskets are in the form of a rectangle so that air may be evacuated from the space lying between the sides of the rectangle, which is normally covered by a negative, a sensitive film, and sometimes a rubber blanket and a means for permitting the air to pass out to the gasket such as a crinoline piece of material which is of sufficiently coarse weave to permit air to pass therethrough.

Certain plastic materials have been found suitable for use in making vacuum gaskets as, for instance, Vinylite, preferably with considerable plasticizer. Such a material is sufficiently elastic and can be produced in extruded form or by extruding and rolling with suitable forming dyes.

I prefer to provide a gasket having a suitable cross-sectional area in strip form because such material can readily be cut by the individual user mitering the corners and covering them with a suitable tape such as surgeon's tape or cellulose tape.

It is not necessary that vacuum gaskets be absolutely air tight although this is desirable. Usually there may be some slight leakage, but by reducing the air pressure between a negative and a piece of sensitized material, the two will be held in excellent printing contact.

Coming now to the drawing wherein like reference characters denote like parts throughout:

Fig. 1 is a top plan view of a vacuum printing frame equipped with a gasket constructed in accordance with and embodying a preferred form of my invention;

Fig. 2 is a transverse section taken on line 2—2 on Fig. 1;

Fig. 2A is an enlarged fragmentary sectional view of an edge of my improved form of gasket overlying a portion of the printing material and a glass supporting plate. This view shows the largest size of film and negative that can be used in the gasket;

Fig. 3 is an enlarged bottom plan view of a section of a preferred form of gasket;

Fig. 4 is an enlarged transverse section through the strip gasket material and taken on line 4—4 of Fig. 3;

Fig. 5 is an enlarged fragmentary section, through a vacuum line connection this view being taken on line 5—5 of Fig. 1;

Fig. 6 is a view similar to Fig. 3 but of a second embodiment of my invention; and

Fig. 7 is a cross section of a gasket strip constructed in accordance with a third form of my invention.

My invention broadly comprises forming a strip of material in the form of a band or ribbon having the desired cross-sectional area and using such strip material to form a frame from which air may be evacuated. I prefer to form this strip of material of a suitable plastic material such as Vinylite with a relatively large amount of plastic so that the strip material will be quite flexible. I prefer to reinforce at least the main air channel in the strip so that it will not collapse in ordinary use.

Referring to Fig. 1, a vacuum gasket 1 is shown positioned on a printing frame which may consist of a glass plate 2. The frame 1 in this instance is generally rectangular in shape and it may consist of a top strip 3, a bottom strip 4, and two side strips 5 and 6. These strips may be mitered at their ends so that the joint 7 between the ends may lie in close contact and may be so held by means of cement or adhesive tape 8, so that the rectangular shape may be retained. The tape should be of such a nature that a substantially air-tight joint may result.

The strip material of which the frame 1 is made may, as shown in Fig. 4, consist of a band which has a relatively thick center portion 10 tapering to a relatively thin edge 11 at each side. The center portion 10 is preferably in the form of an arch so that there is an inverted channel 12 down the center of the strip. To prevent this arch from collapsing, I prefer to provide reinforcing 13 which can conveniently be made of a metal wire mesh fabric or other material which is somewhat flexible throughout its

length but which is nevertheless sufficiently rigid to prevent the arched center portion 10 from collapsing under normal use.

The extreme edges 11 of the strip are provided with flat portions 14 along the entire length of the strip, these flat portions being formed as shown so as to lie in a plane. From the flat portions the ribs 15 extend inwardly, as shown in Fig. 3, to the inverted channel 12. Like the edges 14, the ribs 15 are also adapted to normally lie in a plane; but like the edges 14 they may lie flat on layers of material such as sensitized material, negative material, and the like, when these materials are placed on the glass plate 2. The ribs 15 leave air channels 16 between them so that when air is evacuated from the main channel 12, air may also pass through the transverse channel 16 leading to the main channel 12.

As indicated in Figs. 1 and 5, one or more of the rectangular members forming the frame 1 may be provided with a ferrule 17 which forms a connection between the channel 12 and a tube 18 leading to the air evacuating apparatus. Such apparatus may consist of a water aspirator, a filter pump, or a vacuum line, preferably with a vacuum reservoir.

The ferrule 17 is preferably made so that it may be attached by an operator who can make up his own vacuum frame from the strip material if he desires to do so. It may include a hemicylinder 19 of a size to fit into the inverted channel 12 with a tubular member 20 extending upwardly therefrom. The bottom surface of the ferrule 40 should rest upon the glass or film to support the gasket against the weight of the flexible vacuum line 18. This surface 40 must pass air freely; it may be knurled or formed with cross channels 41 as shown. This tubular member is threaded at 21, and by placing a washer 22 over the threaded portion, the ferrule may be attached in place by turning down a nut 23 on the threaded portion to clamp the parts tightly in position. The washer 22 is preferably provided with a lower surface 24 which is partially cylindrical in shape so as to closely fit the center portion 10 of the strip material. The tubular member 20 is provided with a bulbous end 25 of diameter less than the inside diameter of the nut 22 to receive the air evacuating tube 18.

In Fig. 6 I have shown a modified form or pattern for the strip material which may be used to make a frame. In this form of my invention there is a central inverted channel 32 similar to channel 12 in the first described embodiment of my invention. The extreme edges 33 of the material are similar to the edges 14 in that they normally lay in a plane. I provided a plurality of projections 34 which may be of uniform or gradually increasing height toward the channel 32, leaving transverse channels 35 and longitudinal channels 36 between the projections. Thus, the projection 34, like the ribs 15, support the sides of the strip material away from contact with the glass plate 2 or the material laid thereon so that air may be freely evacuated from almost the entire cross section of the strip material.

Referring to Fig. 2, when it is desired to make a print an operator may lay on the printing frame 2 a sheet of crinoline 37, a sensitive film 38, and a negative 39 to be printed. He may then lay the gasket 1 so that one side 40 of the gasket lies over the crinoline, sensitive film and negative, and so that the other side 41 lies against the glass plate. The aspirator or other air evacuating device is then turned on so that air may be drawn through the tube 18 and the ferrule 17 from the inverted channel 12, thereby removing air from the interstices of the crinoline and from between the sensitive film and negative, drawing these parts into intimate contact in a well known manner. The printing frame may be then subjected to light to form an image on the sensitized material, and the vacuum line may be released, permitting the materials to be removed from the printing frame. If it is desirable to print through the plate glass 2, the same arrangement can be used except that the crinoline would not be used, the sensitized material would be placed in the middle, and the negative would be placed against the glass plate. A sheet of cellulose acetate or other relatively airproof flexible sheet may be placed over the film and negative and air evacuated in the manner above described.

If desired, the cross section of the strip material may be unsymmetrical. The inverted channel may be anywhere between the edges and the transverse air channels on one edge may be longer than on the other or even omitted from one side. Fig. 7 shows a strip with the greatest thickness at 43 from which the thickness tapers at 44 toward one edge 45 and tapers at 46 toward the other edge 47. Edges 45 and 47 are differentially spaced from the channel 48 in the thick portion 43. Transverse channels 49 are longer than transverse channels 50. Reinforcing wire screen 51 may be used to strengthen the channel 48.

While I contemplate providing strip material from which the individual operator may make up his own vacuum gasket, I also may provide the gaskets themselves and may cement the mitered corners together rather than merely cover the corners with adhesive tape.

While I have described a preferred embodiment of my invention, it is obvious that various embodiments may be made without the parting from the scope of the appended claims.

I claim:

1. A vacuum printing frame gasket comprising a strip of flexible plastic material having a cross section tapering in thickness from thin edges inwardly to a thick portion between the two edges, an arched wall forming an inverted channel extending through the thick portion of the strip and air passageways extending from the inverted channel toward at least one of the edges of the strip, the extreme edges both including flat surfaces adapted to lie in contact with a supporting surface.

2. A vacuum printing frame gasket as defined in claim 1 characterized by reinforcing material supporting the inverted channel extending through the strip.

3. A vacuum printing frame gasket as defined in claim 1 characterized by reinforcing material supporting the inverted channel extending through the strip, said reinforcing material being spaced from the outside of the arched wall for forming the inverted channel.

4. A vacuum printing frame gasket as defined in claim 1 characterized by foraminous metallic reinforcing embedded in the arched wall forming the inverted channel.

5. A vacuum printing frame gasket comprising a strip of flexible plastic material having a cross section tapering in thickness from the center outwardly to the two edges, an arched wall forming an inverted channel extending through the center of the strip and air passageways extending from the inverted channel toward the edges

of the strip, the extreme edges both including flat surfaces adapted to lie in contact with a supporting surface, and means for evacuating air from the inverted channel including a threaded ferrule having a flange on the inside of the arched wall forming the channel and extending through the wall and including a nut clamping the arched wall therebetween.

6. A vacuum printing frame gasket adapted for use in holding a negative and sensitized film flat on plate glass and comprising a frame of plastic strip material having a cross section tapering from a thick center portion to thin edge portions on each side, an arched center wall forming an inverted channel, and air passages transverse of the inverted air channel extending from the thin edge portions to the inverted channel, the extreme edge portions having flat bottom surfaces adapted to lie on the plate glass and negative laid thereon to form a substantially air-tight connection therewith, and means for removing air from the inverted channel and air passageways.

7. A vacuum printing frame gasket adapted for use in holding a negative and sensitized film flat on plate glass and comprising a frame of plastic strip material having a cross section tapering from a thick center portion to thin edge portions on each side, an arched center wall forming an inverted channel, and air passages transverse of the inverted air channel extending from the thin edge portions to the inverted channel, the extreme edge portions having flat bottom surfaces adapted to lie on the plate glass and negative laid thereon to form a substantially air-tight connection therewith, and supporting ribs lying between the transverse air passageways and having a surface normally lying in the plane of the flat bottom surfaces of the edges of the strip, and means for removing air from the inverted channel and air passageways.

8. A vacuum printing frame as defined in claim 6 characterized by metal reinforcing for the inverted channel extending through the center of the frame strip to prevent the collapse thereof.

COURTNEY Q. GLASSEY.