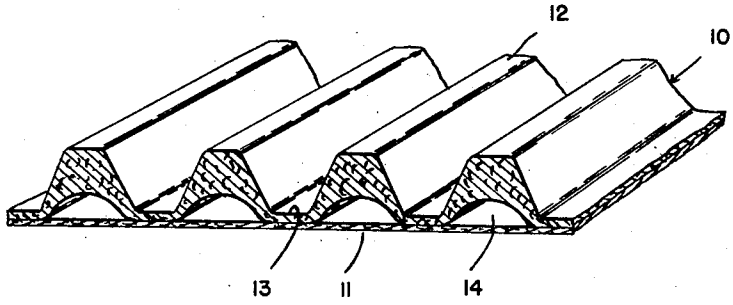
July 30, 1940. E. L. PERRY 2,209,537

CORRUGATED SHEET

Filed May 10, 1937

FIG.1.



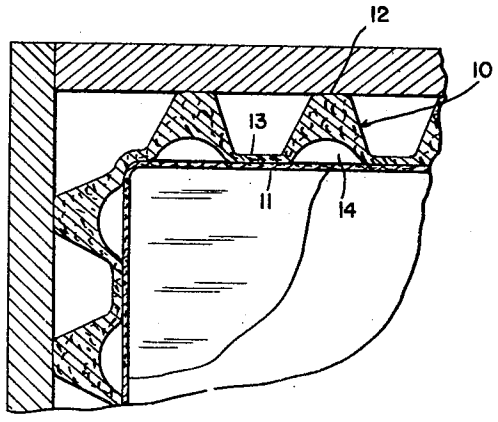
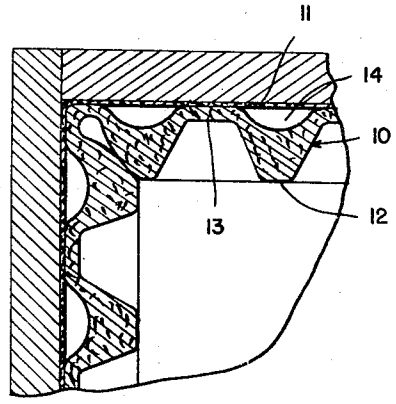


FIG.2.

FIG.3.



INVENTOR

EUGENE L. PERRY

BY

Whittemore Hulbert & Belknap

ATTORNEYS

Patented July 30, 1940

2,209,537

UNITED STATES PATENT OFFICE

2,209,537

CORRUGATED SHEET

Eugene L. Perry, Rochester, Mich.

Application May 10, 1937, Serial No. 141,818

3 Claims. (Cl. 154—55)

This invention relates generally to improvements in corrugated sheets and refers more particularly to corrugated sheets of the type employed as a protective wrapper, or as a filler in shipping containers.

One of the principal objects of the present invention consists in the provision of a relatively simple and inexpensive corrugated sheet sufficiently flexible to permit the same to readily conform to irregular surfaces and at the same time possessing the cushioning qualities required to effectively support an article within a shipping container in spaced relation to the walls of the latter.

Another advantageous feature of the present invention resides in the provision of a corrugated sheet formed of relatively loosely felted material and having the corrugations of substantially the same density as the material between the corrugations. By virtue of this construction, the corrugations provide the cushioning qualities desired and the material between the corrugations permits the sheet to be readily deformed to correspond to the contour of the article it is desired to support in the container.

A further object of this invention consists in increasing the cushioning qualities of the corrugations by recessing the latter and in applying a flexible backing sheet to the material of sufficient rigidity to reinforce the corrugated sheet.

The foregoing, as well as other objects, will be made more apparent as this description proceeds, especially when considered in connection with the accompanying drawing, wherein:

Figure 1 is a sectional perspective view of a corrugated sheet of material constructed in accordance with this invention;

Figures 2 and 3 are cross sectional views of two different applications of my improved corrugated sheet.

Referring now more in detail to the several figures of the drawing, it will be noted that my improved corrugated sheet of material comprises a corrugated section 10 and a backing 11 permanently secured to the side of the section 10 opposite the side from which the corrugations 12 extend. In the present instance, the corrugated section 10 is formed of felted paper fibers and the corrugations are felted to a greater extent than the portions 13 of the material between the corrugations. In order to provide a high degree of flexibility and at the same time impart the desired cushioning qualities to the sheet, the corrugated section 10 is relatively loosely felted and each of the corrugations 12 are recessed opposite the backing 11 in the manner designated by the reference character 14. In other words, the density of the corrugations 12 is substantially the same as the density of the material 13 between the corrugations and this construction may be readily secured by reducing paper pulp in accordance with the teachings in my copending application Serial No. 142,020, filed May 11, 1937. With the particular method of manufacture included in the above application, as well as with other methods of reducing paper pulp, the corrugations 12 and the portions 13 between the corrugations are not compressed, with the result that the corrugations 12 not only possess maximum cushioning qualities, but the sheet may be readily deformed at the portions 13 to the contours shown in Figures 2 and 3 of the drawing.

Inasmuch as the fibers of the section 10 of the sheet are not compressed, it follows that the sheet is relatively porous or cellulous in nature and in order to impart strength to the section 10 without destroying the resilient nature of the sheet, the backing 11 is applied to the underside of the section 10. This backing may also be formed of paper pulp and, in actual practice, may be applied to the section 10 before the latter has thoroughly dried so that the backing will adhere to the section 10 and form an integral construction therewith. It will, of course, be understood that the fibers of the backing sheet 11 are more dense than those embodied in the corrugated sheet in order to impart the desired strength to the sheet and at the same time afford sufficient flexibility to permit bending the sheet of material in accordance with the illustrations in Figures 2 and 3 of the drawing. It will also be understood that in some cases, the section 10 may afford the desired results without the backing 11 and, in instances of this character, this backing is merely omitted.

Thus, from the foregoing, it will be noted that I have provided a corrugated sheet of material wherein the corrugations possess sufficient body to prevent collapsing under pressure but, at the same time, possess the required resiliency to absorb or dampen any shocks imparted thereto. It will also be noted from the above that my improved corrugated sheet is inexpensive to manufacture since it may be formed of paper pulp derived by reducing waste paper. It will further be noted from the foregoing description, that although the corrugated sheet is formed of a relatively loosely felted material to afford the cushioning qualities desired, nevertheless, the backing imparts the requisite strength to the sheet to

permit a wide diversification of the uses of the sheet.

What I claim as my invention is:

1. A sheet of flexible felted material capable of conforming to irregular surfaces and having longitudinally extending corrugations spaced laterally from each other, each corrugation having a longitudinally extending recess in the underside thereof to enhance the cushioning qualities of the corrugation, and connecting portions intermediate said corrugations having substantially the same composition and density as the corrugations, the material in said corrugations being substantially thicker than the material in said connecting portions whereby the relatively thick corrugations provide resilient supporting means and the relatively thin connecting portions are adapted to be flexed to bend the sheet longitudinally.

2. A sheet of flexible felted material capable of conforming to irregular surfaces and having longitudinally extending generally U-shaped corrugations spaced laterally from each other, and connecting portions intermediate said generally U-shaped corrugations having substantially the same composition and density as the generally U-shaped corrugations, said generally U-shaped corrugations being relatively thick to provide resilient supporting means, and said connecting portions being substantially thinner than said generally U-shaped corrugations to enable them to be readily flexed to bend the sheet longitudinally.

3. A sheet of flexible felted material capable of conforming to irregular surfaces and having inverted generally U-shaped corrugations extending longitudinally of the sheet and spaced laterally from each other, connecting portions extending between the leg portions of adjacent U-shaped corrugations and having substantially the same composition and density as the U-shaped corrugations, the material in said U-shaped corrugations being substantially thicker than the material in said connecting portions whereby the relatively thick U-shaped corrugations provide resilient supporting portions and the relatively thin connecting portions provide flexible portions adapted to be flexed to bend the sheet longitudinally, and a relatively thin reinforcing sheet of flexible material united to the sheet of felted material opposite the side of the latter from which the inverted U-shaped corrugations extend.

EUGENE L. PERRY.