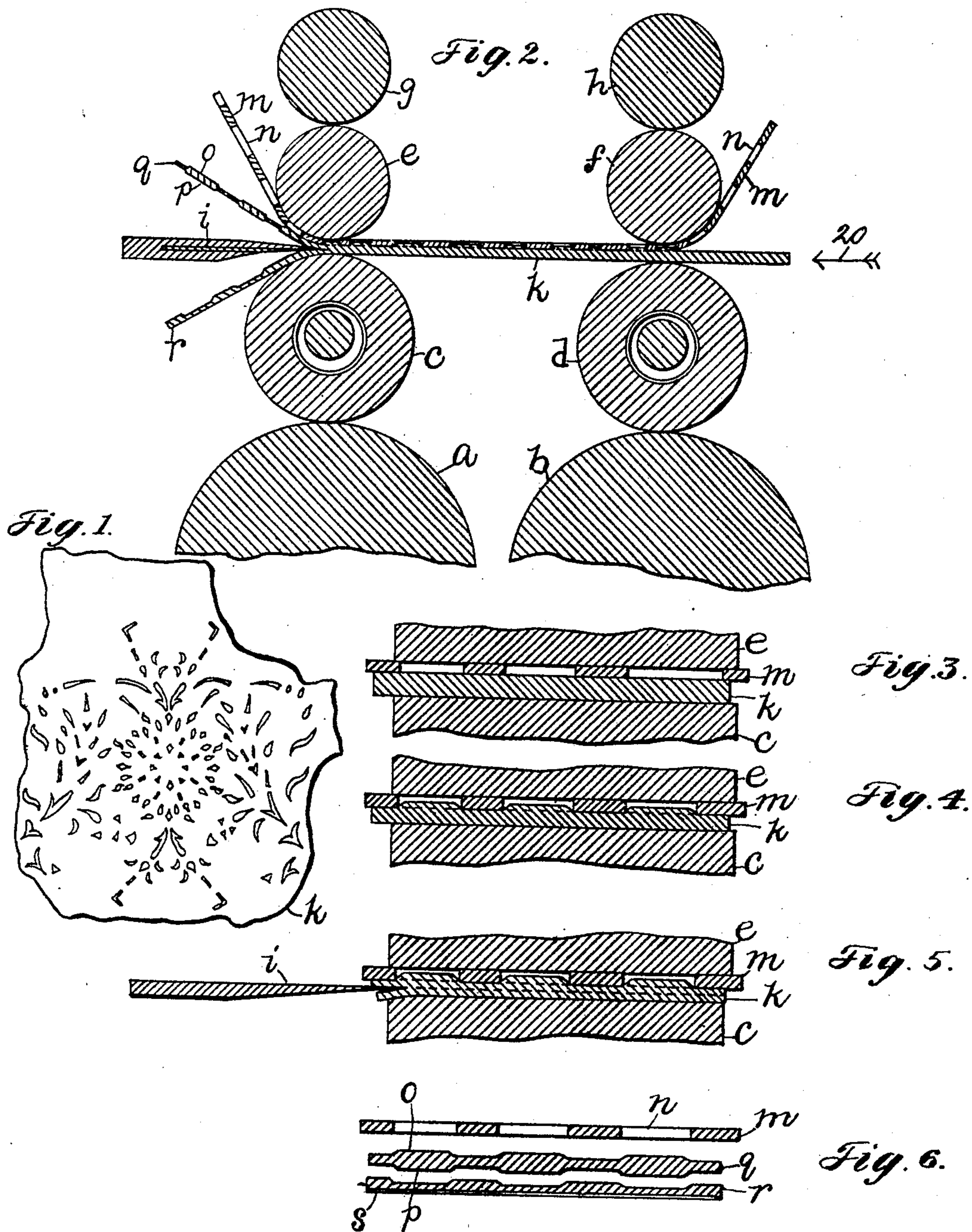


No. 795,359.

PATENTED JULY 25, 1905.

F. W. MOORE.
EMBOSSED FIBROUS MATERIAL.
APPLICATION FILED JUNE 23, 1904.



Witnesses
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UNITED STATES PATENT OFFICE.

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EMBOSSSED FIBROUS MATERIAL.

No. 795,359.

Specification of Letters Patent.

Patented July 25, 1905.

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To all whom it may concern:

Be it known that I, FREDERICK W. MOORE, a citizen of the United States, residing in Lynn, in the county of Essex and State of Massachusetts, have invented an Improvement in Embossed Fibrous Material, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention relates to a flexible sheet or layer of fibrous material having formed thereon a design in relief on both surfaces. The sheet or layer of fibrous material may be of leather, felt, &c., and when of leather and provided with a design said sheet or layer is useful for ornamental and decorative purposes as well as for useful purposes—such, for instance, as cushions, chair-seats, carriage-tops, uppers of boots, shoes, and slippers, &c.

In order that the invention may be clearly comprehended, I will hereinafter refer to the sheet or layer as a "skin," which is substantially soft and flexible and is subjected to compression to form a design on the surface of the material and is then split or cut to form two layers or sheets, one of which is provided with the design in relief on both surfaces and the other of which is provided with the design in intaglio. These and other features of this invention will be pointed out in the claims at the end of this specification.

Figure 1 represents a sufficient portion of a skin embodying this invention to enable it to be understood; Fig. 2, a sectional view of a sufficient portion of an apparatus employed for producing the skin shown in Fig. 1; Figs. 3, 4, 5, and 6, details in section to be referred to, which illustrate the method of making the skin shown in Fig. 1.

In Fig. 2 I have shown one form of apparatus with which the ornamented skin shown in Fig. 1 may be produced. The apparatus consists of two rubber bed-rolls *a b*, two ring-rolls *c d*, two gage-rolls *e f*, two pressure-rolls *g h*, and a belt-knife *i*. The bed-roll *a*, the ring-roll *c*, gage-roll *e*, pressure-roll *g*, and belt-knife *i* are and may be such as commonly employed on a belt-knife splitting-machine, and the bed-roll *b*, ring-roll *d*, gage-roll *f*, and pressure-roll *h* are of similar construction, and I prefer to use them to obtain additional pressure upon the skin *k* and to keep the pattern *m* in proper position.

The pattern *m* may and preferably will be an endless belt of suitable material and is provided with perforations, recesses, or openings *n* of the proper shape or outline to form the desired design in the skin *k*, which is fed through the machine in the direction indicated by the arrow 20 in Fig. 2. It will be understood that the pattern *m* is moved in the same direction as the skin, and when the latter passes between the gage-rolls *f e* and ring-rolls *d c* it is subjected to substantially severe compression except those parts which are to form the design, which parts are substantially uncompressed or compressed materially less and are forced into the recesses or perforations in the pattern, thereby forming on one surface of the skin the design in relief with relation to the compressed portion of said surface. The skin while under compression is split or cut by the knife *i*, and owing to the fact that the substantially uncompressed portions of the skin are softer than the compressed portions the cut effected by the knife is irregular—that is, instead of the skin being split or cut at a uniform depth from the upper surface of the compressed portion of the skin it is deeper at the uncompressed portions—so that the portion of the skin in design is in relief on both surfaces with relation to the compressed portions of said surfaces, as represented in Figs. 2 and 6, the projecting portions *o* constituting the design on the upper surface and the projecting portions *p* constituting the design on the lower surface of the skin. While the upper layer *q* split from the skin is provided with the design in relief on both surfaces, the lower layer *r*, if the skin is of sufficient thickness, is provided with the design in intaglio, as represented in Figs. 2 and 6. In some instances it may be desirable to reinforce the skin with a backing *s*, of cloth or like material, when the skin is thin, or two thin skins may be used, one forming the backing for the other, as described in United States Patent No. 708,382, granted to me September 2, 1902.

By reference to Figs. 1 and 6 it will be seen that the portion of the layer or sheet forming the design in relief on both surfaces is materially thicker than the remaining or plain compressed portion of the said sheet or layer, which is of material advantage, inasmuch as the portion of the sheet or layer in design is rendered more permanent and is su-

terior to a design in relief on one surface only of the sheet or layer.

It will readily be seen that in cases where the sheet or layer is subjected to wear the design is brought out more permanently on one surface when the opposite surface rests against a solid or rigid backing, inasmuch as the portion in relief on the surface in contact with the solid backing is pressed outward, and thereby raises the portion in relief on the outer or exposed surface of the sheet or layer.

The layer *r* having the design in intaglio is also useful for ornamental and structural purposes and may be colored and finished in any suitable or well-known manner.

While I may prefer to use a pattern separate from the gage-roll, I do not desire to limit myself in this respect, as the pattern might be made in the gage-roll itself.

The openings *n* in the pattern may be of sufficient number, size, and shape to produce a design of simple component parts, or they may be such as to produce a variegated design composed of a plurality of different component parts or figures.

The sheet or layer of fibrous material provided with a design and embodying this invention is soft and flexible, thereby enabling it to be employed for decorative and useful purposes, such as above specified.

I claim—

1. As an improved article of manufacture, a flexible sheet or layer of fibrous material having a plurality of portions of one surface compressed below other portions of the same surface to form on said surface a design of the uncompressed portions, and having a plurality of portions of its opposite surface corresponding to the compressed portions of the first-mentioned surface removed to form of the uncompressed portions the same design on said opposite surface, substantially as described.

2. As an improved article of manufacture, a skin having a plurality of portions of one surface compressed below other portions of the same surface to form on said surface a design of the uncompressed portions, and having a plurality of portions of its opposite surface corresponding to the compressed portions of the first-mentioned surface removed to form of the uncompressed portions the same design on said opposite surface, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FREDK. W. MOORE.

Witnesses:

JAS. H. CHURCHILL,

J. MURPHY.