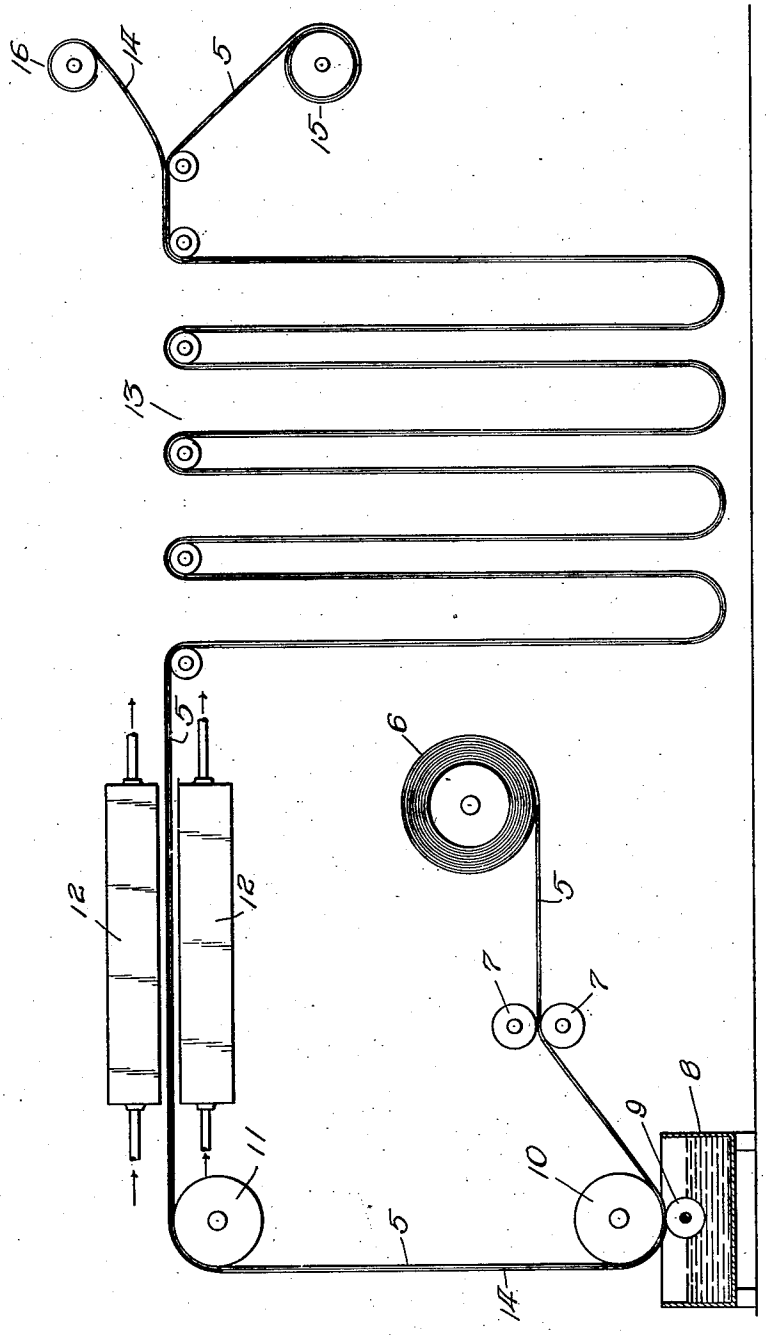
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W. HOSKINS

ART OF PREPARING SHEET GELATIN MATERIAL

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UNITED STATES PATENT OFFICE.

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ART OF PREPARING SHEET GELATIN MATERIAL.

Application filed May 22, 1922. Serial No. 562,726.

To all whom it may concern:

Be it known that I, WILLIAM HOSKINS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Art of Preparing Sheet Gelatin Material, of which the following is a specification.

The present invention relates to the art of preparing sheet gelatin material and more particularly continuous sheets of very thin, hardened gelatin, particularly suitable as a wrapping for food products, color filters, and the like.

Attempts have hitherto been made to produce sheets and films of gelatin material, both hardened and unhardened, by means of a flexible base of metallic material, such as zinc, iron, and the like. It has been found, however, that such materials can be used only for short periods, as they rapidly acquire surface characteristics resulting in imperfect film formation, which may be due either to imperfect adhesion during the formation of the film or to too great adhesion during the stripping of the film, in blemishes in the film due to the corrosion of spots on the surface of the base, and in many other defects. In carrying out the present invention, these disadvantages are overcome, and other advantages are gained, as will be apparent from the following description of the invention, illustrated by the accompanying drawings, in which:

Figure 1 is a diagrammatic view of apparatus suitable for carrying out the invention.

Referring more particularly to the drawings, the numeral 5 indicates the film-forming base, which is preferably flexible and may suitably be fed from the roll 6. The film-forming base is of impressionable, non-metallic material, preferably of a cellulose nitrate plastic (such as celluloid), a cellulose acetate plastic, or a plastic of other suitable cellulosic ester material. The surface of this base may be formed to provide the desired surface upon the gelatin film formed thereon. It may, for example, be perfectly smooth or may present a design of any desired character, such as a repetition of a representation of a trade-mark, or for scientific uses, a replica of a diffraction grating, or the like. The base 5 may suitably be led through feed rollers 7 to a suitable film-applying device, which may be of any desired construction. In the form illustrated, it is diagrammatically shown as a container 8 for the gelatin solution, in which is mounted a rotating roller 9, mounted partly below and partly above the surface of the solution in container 8. Directly above the film-applying roller 9 is mounted a supporting roller 10, which may bear upon the roller 9 with any desired, variable pressure. The base film 5 passes between the film-applying roller 9 and the supporting roller 10, and is given a smooth, even coating of the gelatin solution by the roller 9. The base material 5 then passes upward over a roller 11, and thence may be carried between moderately heated radiators 12, 12 to a festoon dryer, indicated at 13. After passing the film-applying device, the flexible base 5 carries with it the coating of gelatinous material, indicated by the numeral 14, and this coating gradually dries and hardens upon the surface of the base 5, forming a dense, hardened film. After passing through the festooning device, the gelatin film 14 is stripped from the flexible base, the latter being formed into a roll 15 and the gelatin film being formed into a roll 16.

The gelatin solution applied for the formation of the film may suitably be one containing a hardening agent. For example, an aqueous solution containing say from 10 to 15% of gelatin and from ½ to 2% of commercial (40%) formaldehyde may be employed. From 5 to 8% alcohol may be added to increase the fluidity of the solution and accelerate its drying, and suitable softening agents and preservatives may be included. For example, from $\frac{5}{10}$ to 2% of glycerine may be used as a softening agent and from $\frac{1}{10}$ to 2% of phenol as a preservative. Other softening agents, such as sulfonated castor oil, magnesium chloride, calcium chloride, etc., may be used, and any desired preservative may be employed. Any desired hardening agent may likewise be employed, for example, hexamethylenetetramine, chrome alum, etc. It is readily apparent that dyes or opaque pigments may be incorporated in the solution to produce desired effects in the film.

Although a solution may be employed in which a hardening agent is incorporated

with the gelatin in the gelatin solution, it is readily apparent that the hardening agent may be supplied by a separate treatment, the gelatin coated base being subsequently carried through a solution of the hardening agent, which may be, for example, a 4 to 6% of formaldehyde, or through its vapor.

In the drying of the gelatin film upon a base of the character described, it is found that the adhesion of the gelatin to the base is so great that the contraction due to drying and to hardening can take place substantially only in the thickness of the film with the result that the film formed is dense and firm. In its contraction, it reproduces perfectly any marks or impressions formed in the base, so that the film may be given any desired surface pattern.

Although the invention has been described in connection with a band or ribbon of the base material, it is readily apparent that it may be formed as a continuous belt, upon the surface of which the film of gelatin is formed and hardened in the same manner as above described. The specific details of apparatus and process above set forth are not intended to be regarded as limitations upon the scope of the invention, except in so far as included in the accompanying claims.

The base material may likewise be formed as a surface coating upon a fabric or cellulose material, as is readily apparent.

I claim:

1. The method of forming a gelatin film which comprises continuously applying a coating of gelatin solution to the surface of a traveling cellulose-ester plastic base, supplying a hardening agent in said coating, drying the coating while adhering to the traveling base and stripping the dried coating therefrom as a continuous dense, coherent film.

2. The method of forming a gelatin film which comprises applying a coating of a gelatin solution to the surface of a traveling band of cellulose-ester plastic material, supplying a hardening agent therein, drying the coating while adhering to the traveling band and stripping the dried coating therefrom as a continuous, dense coherent film.

3. The method of forming a gelatin film which comprises impressing a superficial design upon the surface of a cellulose-ester plastic base, applying a coating of gelatin solution to said surface, supplying a hardening agent in said coating, drying the coating while adhering to the base and stripping the dried coating therefrom as a dense, coherent film reproducing the design impressed upon the base.

WILLIAM HOSKINS.