

Oct. 25, 1949.

M. A. CHAVANNES

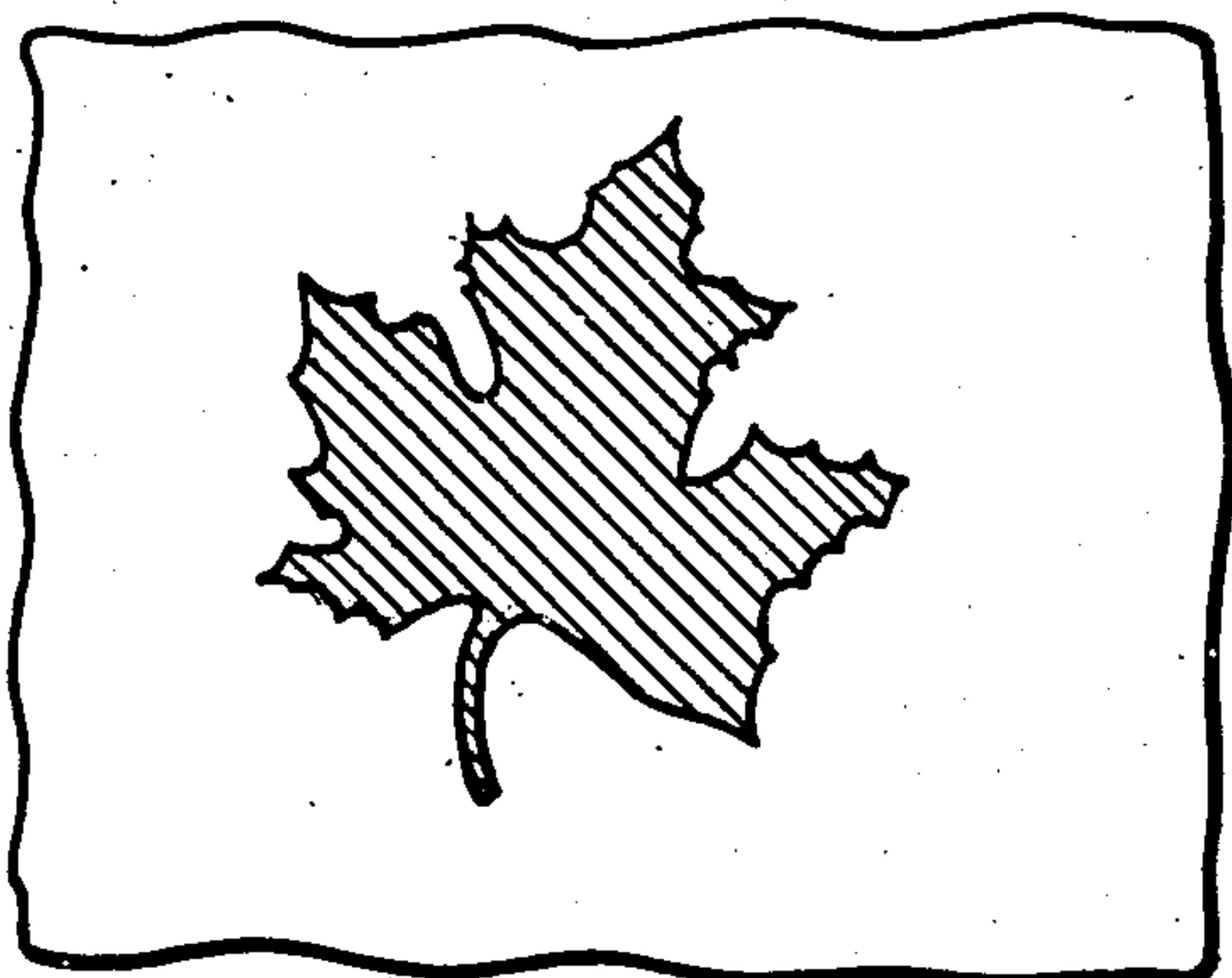
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METHOD FOR PRODUCING FILMS BEARING DESIGNS

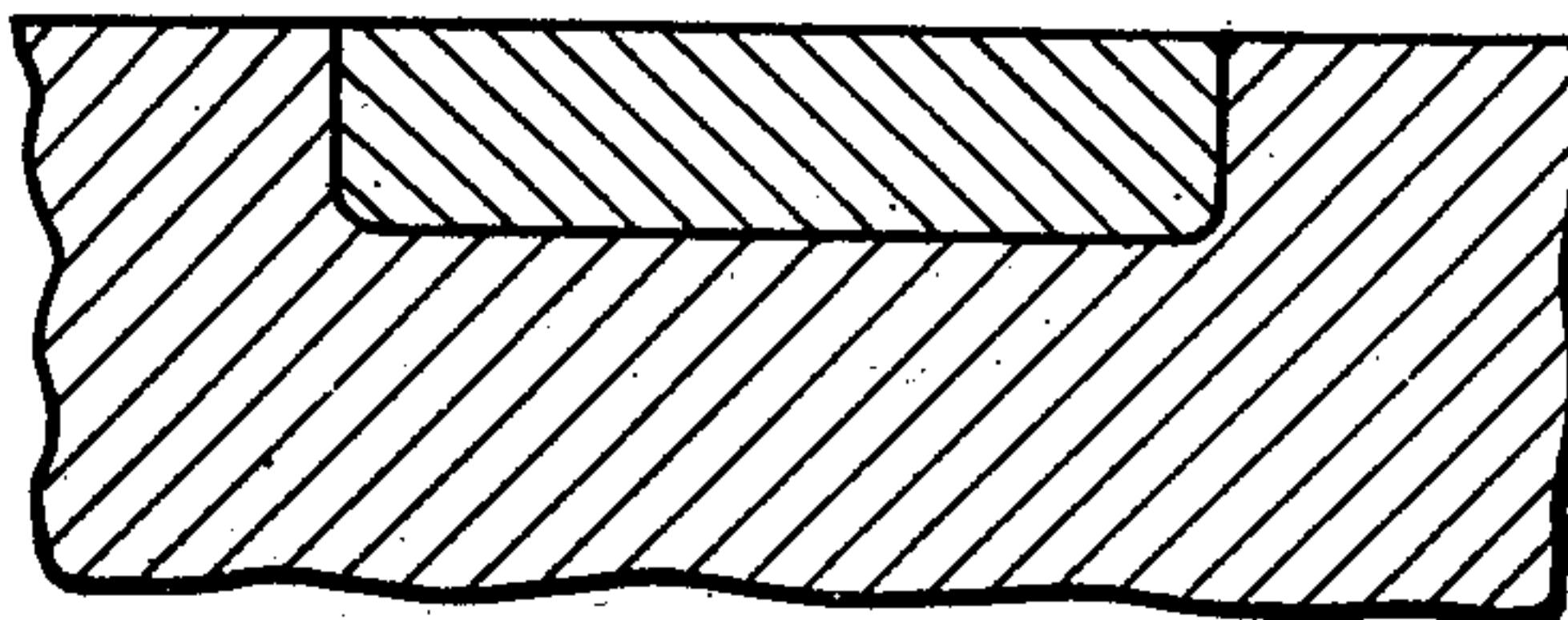
Filed March 22, 1946

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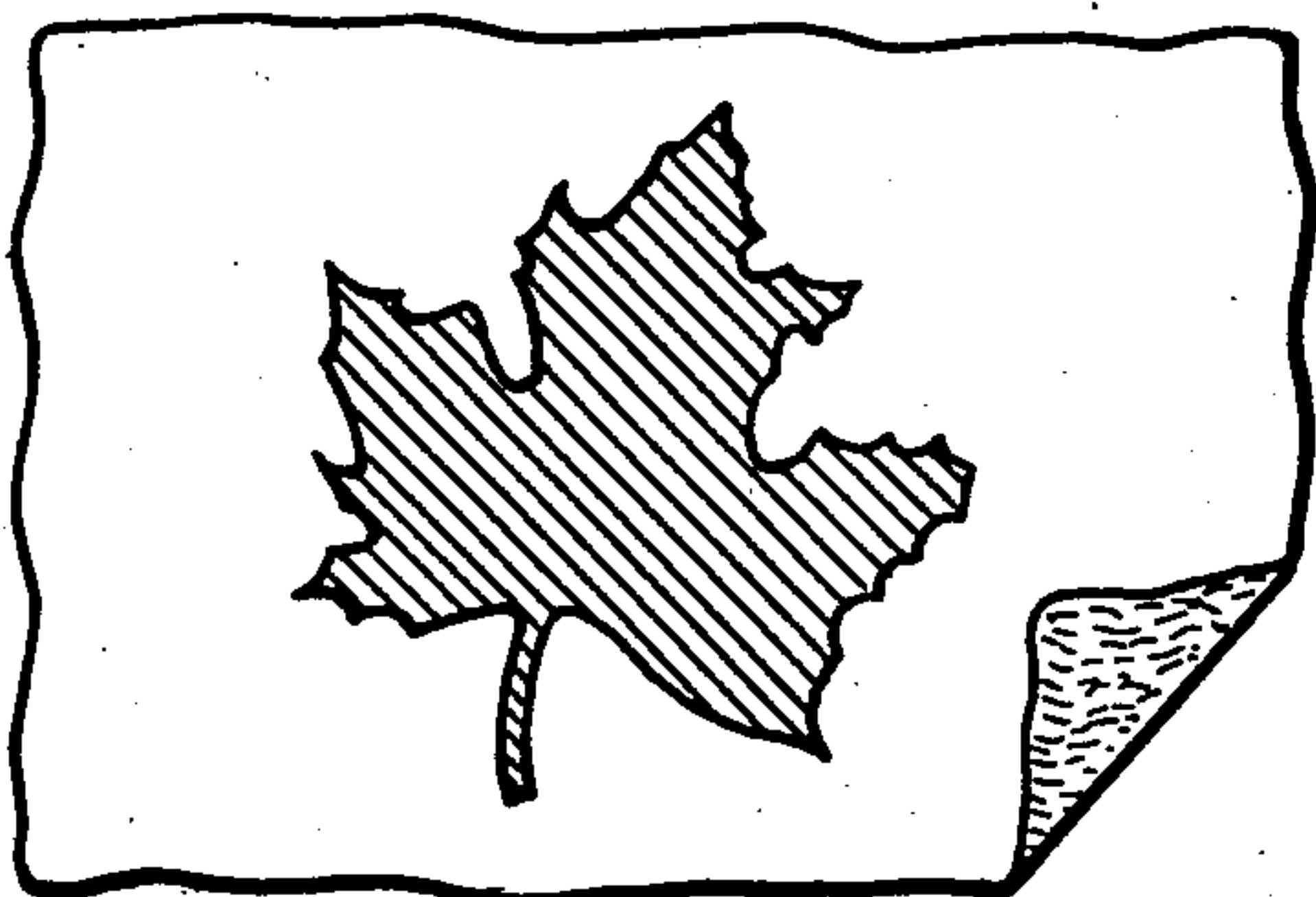
*Fig. 1.*



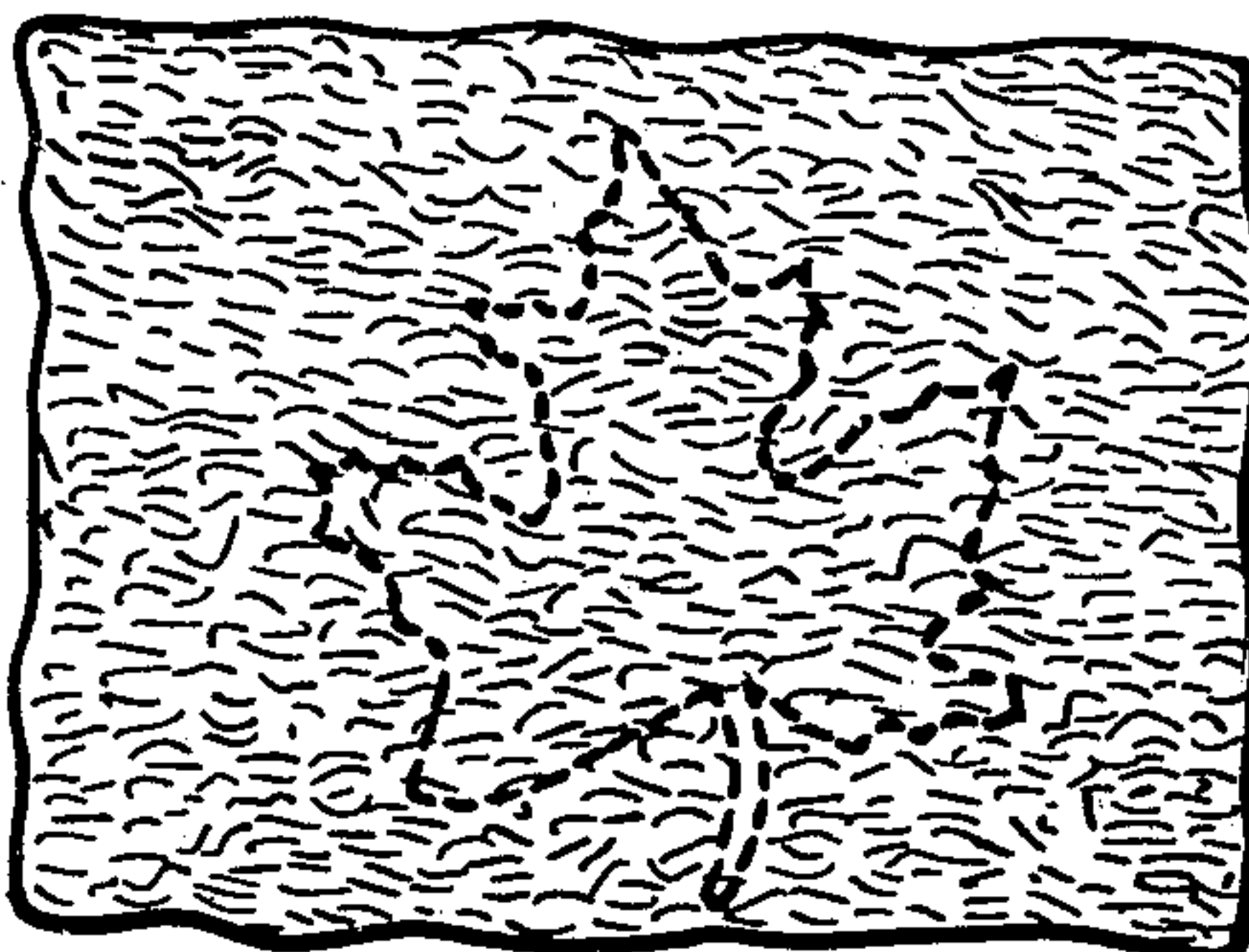
*Fig. 2.*



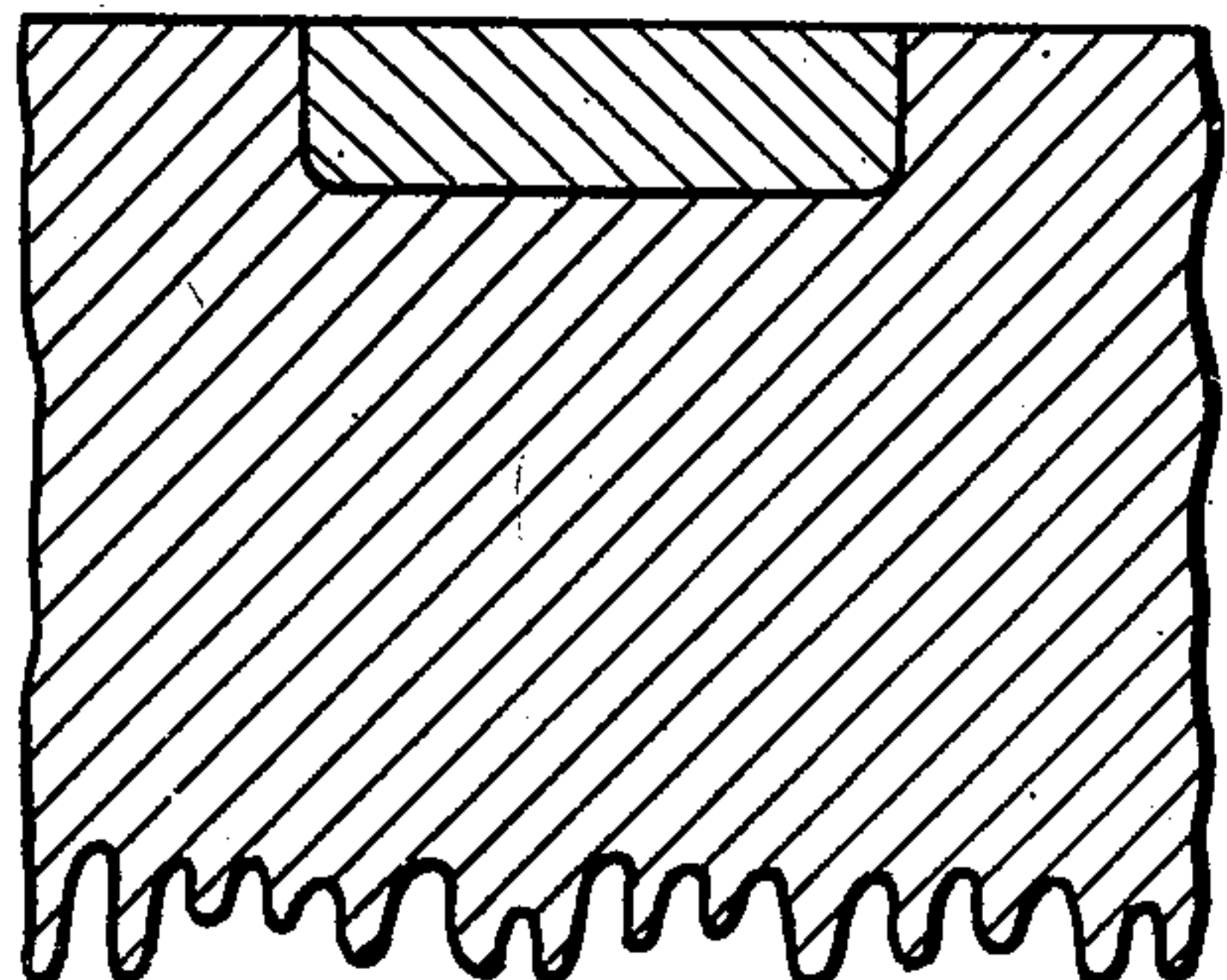
*Fig. 3.*



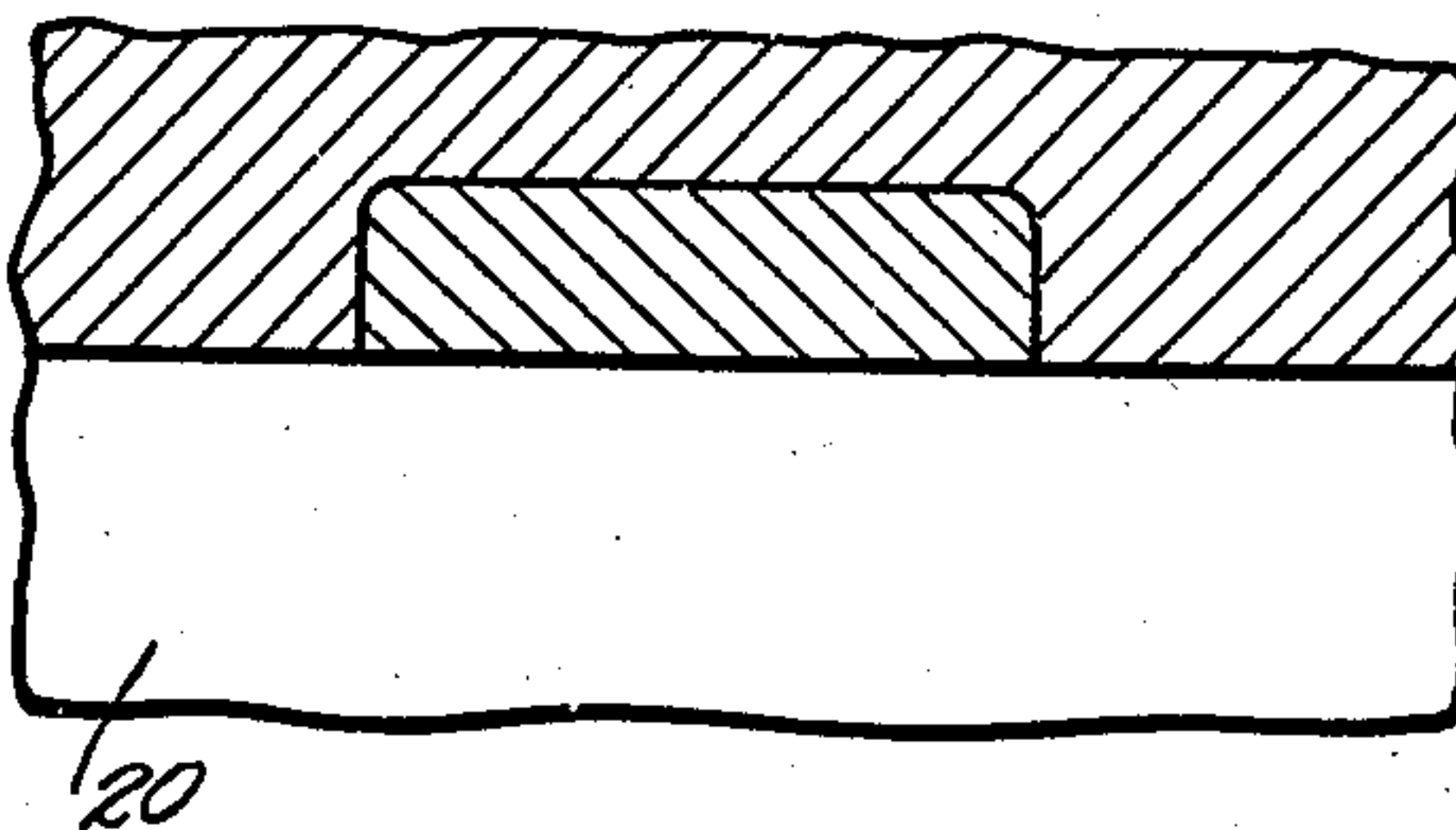
*Fig. 4.*



*Fig. 5.*



*Fig. 6.*



INVENTOR.  
MARC A. CHAVANNES  
BY  
*H. C. Rose*  
ATTORNEY

Oct. 25, 1949.

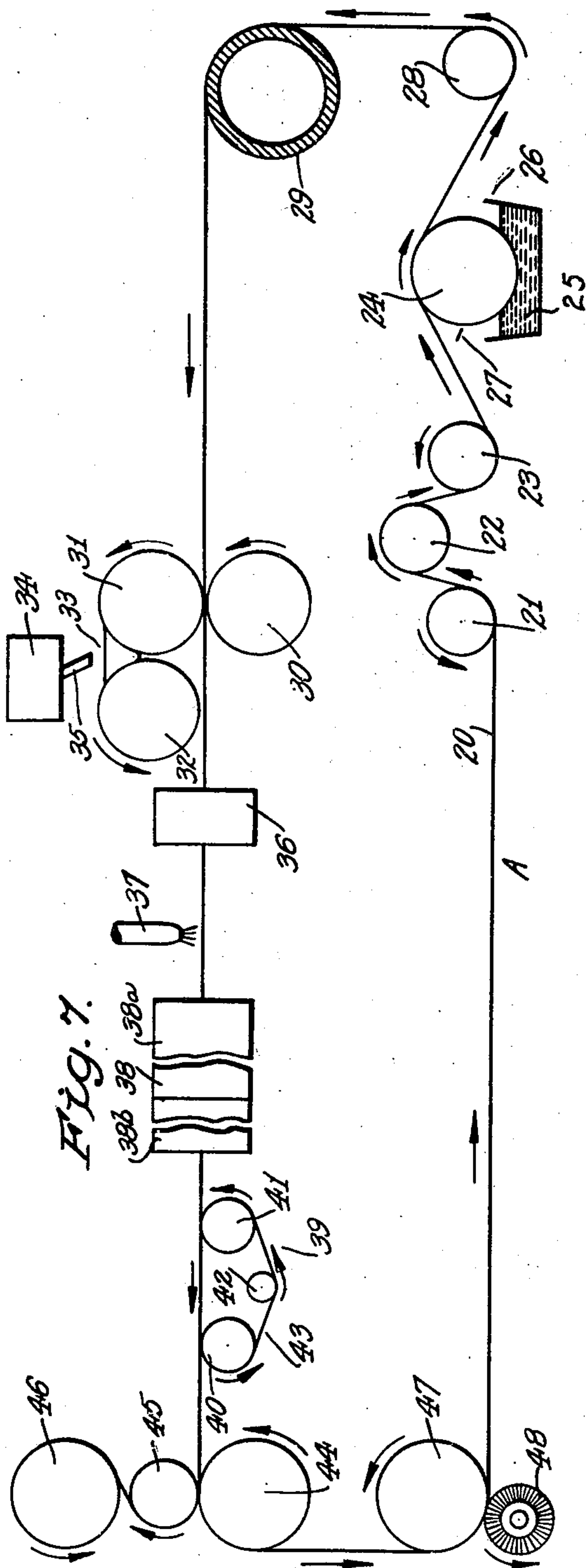
M. A. CHAVANNES

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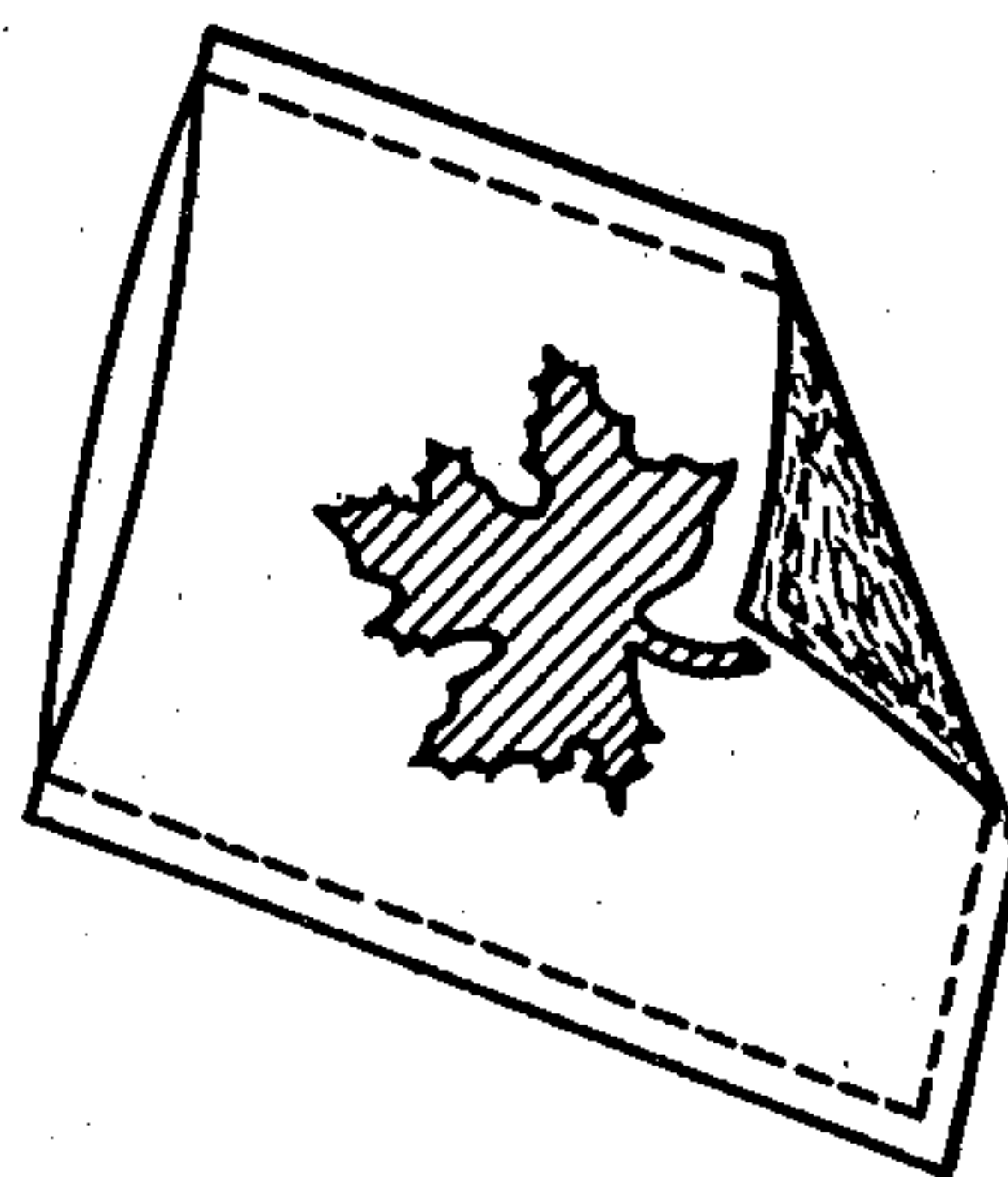
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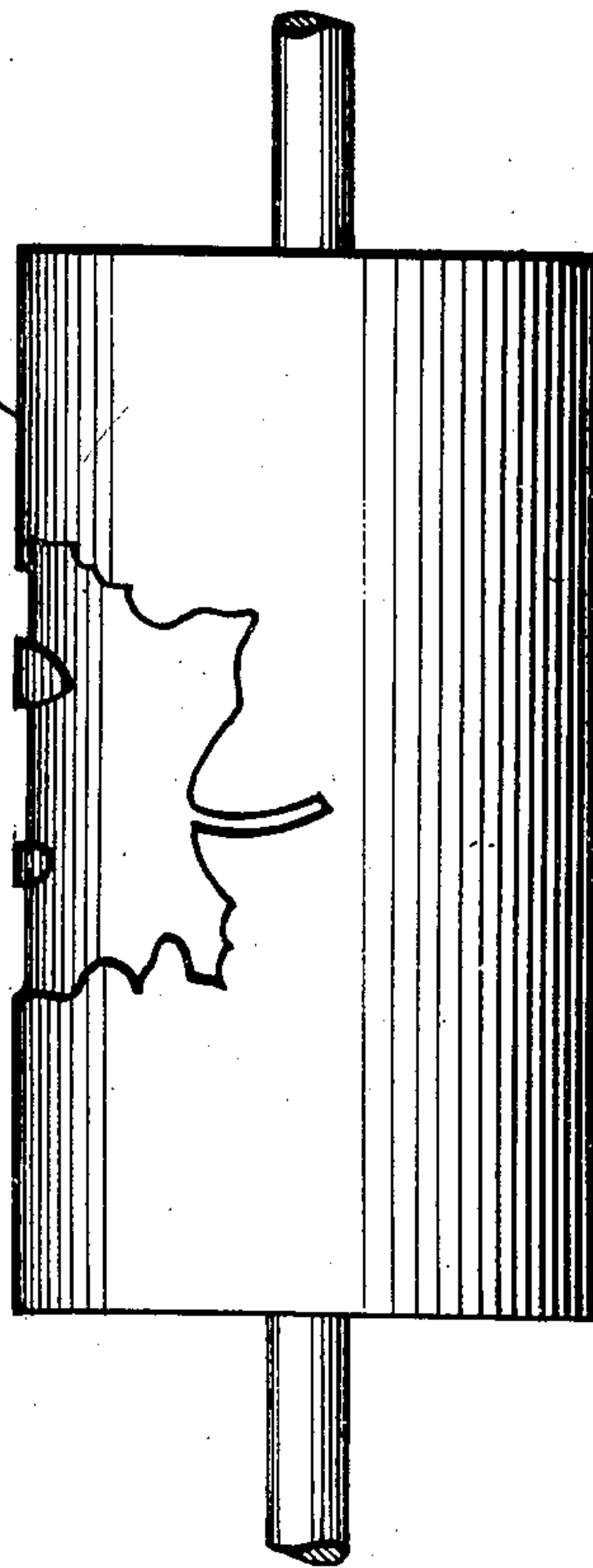
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*Fig. 9.*



*Fig. 8.*



INVENTOR.  
MARC A. CHAVANNES  
BY  
*H. C. Hise*  
ATTORNEY



## UNITED STATES PATENT OFFICE

2,486,258

## METHOD FOR PRODUCING FILMS BEARING DESIGNS

Marc A. Chavannes, Lisbon, Conn., assignor to  
Chavannes Industrial Synthetics, Inc., New  
York, N. Y., a corporation of Delaware

Application March 22, 1946, Serial No. 656,432

8 Claims. (Cl. 18—57)

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This invention relates to a process for producing film bearing designs.

There have in the past been numerous attempts to print designs on flexible films, but various difficulties have been encountered. For example, it is quite difficult to cause the designs to register properly because of the flexibility and elasticity of the film. Also, the solvents ordinarily used in the inks or other substances from which the designs are printed frequently attack the film, and this produces undesirable effects, such as causing the film to buckle or become irregular. It has also been found difficult to cause the printed design to remain permanently on the film.

An object of the present invention is to produce a flexible film bearing any desired design or printed effect in any number of colors, with proper registering of various parts of the design.

Another object of the invention is to produce a flexible film bearing a design which will permanently remain, in spite of mechanical wear of the surface of the film.

An important feature of one embodiment of the invention is that a flexible film may be produced having a design embedded in one side thereof, the design having an exposed surface flush with the surface of the film on that side. Unlike films having a design in relief, such a film may be subjected to considerable wear without significant injury to the design. As compared with a design in relief, the design of a film produced by teachings of the present invention is more resistant to solvents accidentally spilled thereon, because of its embedded arrangement.

A further feature of the invention is that the design portion of the film may be integrally bonded with the supporting portion.

Another object of the present invention is to produce a film bearing a design, the film being free from stresses so as to be capable of lying flat on a plane surface—that is, to produce a designed film which is not buckled or irregular.

Another object of the present invention is to produce an ornamental film bearing a design or printed effect on one side and bearing an undulated or frosted effect on the other side.

Another object of the invention is to produce jacket-like articles having walls of flexible film, with a design or printed effect on a side of one wall and an undulated effect on a side of the other wall.

Further objects, features and advantages will appear from the detailed description set forth below by way of illustration, which will now be giv-

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en in conjunction with the accompanying drawings in which:

Fig. 1 is a plan view of a film having embedded in one side a printed design, the opposite side being smooth.

Fig. 2 is an enlarged fragmentary cross sectional view of such a film as that shown in Fig. 1, showing the design with exaggerated thickness.

Fig. 3 is a plan view of a face of a film bearing an embedded design, said film having on its other face an undulated surface, a corner of the film being folded back.

Fig. 4 is a plan view of the undulated surface of the film shown in Fig. 3.

Fig. 5 is an enlarged cross-sectional view of a film such as that shown in Figs. 3 and 4, showing the design with exaggerated thickness.

Fig. 6 is a fragmentary cross-sectional view of a carrier bearing a design over which a film-forming substance has been applied.

Fig. 7 is a schematic view in side elevation of apparatus for continuously producing a film bearing a design embedded in one surface, the figure including elements which may be used to produce an undulated effect on the other surface of the film.

Fig. 8 is a plan view of one of the rollers shown in Fig. 7.

Fig. 9 is a view of a bag having a design on one side and an undulated effect on the other side.

The present invention is especially applicable for producing film comprising a main body or supporting portion and a design portion embedded in a side thereof, both portions being of a wide possible variety of film-like materials. The design and also the supporting portion may be formed from dispersions, emulsions or solutions of almost any film-forming substance which may be put into a fluid or liquid state, such as vinyl resins, cellulose derivatives, natural or synthetic rubber, waxes and paraffins, polyamides, and the like.

The teachings of the present invention make it possible to form a design from a solution which includes a relatively important amount of solvent for the supporting portion of the film. It may be noted that difficulties arise if attempts are made to print a design on a previously-formed film, with such a substance, since the film would be attacked or partly dissolved by the solvent in the solution from which the design portion is formed.

For the sake of illustration, it may at first be assumed that it is desired to produce a film having a supporting portion formed from an organosol including a copolymer of vinyl acetate and vinyl chloride, with a colored design embedded



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therein, the design being formed from a solution including this same resin. In the illustration, means will be described for producing a film with a smooth surface opposite the surface bearing the design, such as is illustrated in Figs. 1 and 2, and means will also be described for producing a film such as that illustrated in Figs. 3, 4 and 5 which differs from the film in Figs. 1 and 2 in that the side opposite the design is undulated. It is to be noted that in Fig. 2 the entire thickness of the film is not shown, only a fragmentary section of the film being shown near the side bearing the design. The thickness of the design portion has been greatly exaggerated in proportion to its width in order to emphasize its embedded nature.

In Fig. 5 there is a similar exaggeration of the thickness of the design relative to its width. The entire thickness of the film is shown in this figure in order to illustrate the undulated surface opposite the design.

Reference is made to Fig. 7. The apparatus makes use of a continuously advancing carrier 20, upon which the film will be formed. In the present illustration it may be assumed that the carrier is in the form of an endless belt, and is of a metallic substance, such as nickel.

Alternatively, the carrier could be in the form of a web, being unwound from one reel and after being used, wound up on another reel. It could be formed of strong relatively heavy paper having applied to one or both of its surfaces a firmly adhering coating of a base material capable of providing a smooth surface to which the film to be formed thereon will be likely to adhere. The coating of base material should be of such composition that it will not be attacked by solvents or diluents of coatings which will be applied thereto. For further details of the carrier, reference may be made to pending application Serial No. 635,982 filed December 19, 1945, in the name of Marc A. Chavannes and George T. Traut.

The apparatus may be considered first at station A. At this point the carrier is uncoated, if of metal, or if of some material such as paper which makes use of a permanently adhering base coating, the carrier is uncoated except for this permanent base coating.

The carrier 20 in the illustration moves in a generally counterclockwise direction around the entire loop, being moved by means to be described at a later point. From station A it passes through a set of tensioning rollers 21, 22 and 23, and then passes over an engraved roller 24. This roller is mounted so as to be partly submerged in film-forming substance 25, held in a container 26, and is caused to rotate in a clockwise direction by the motion of the carrier over it.

Reference is made to Fig. 8 which is a plan view of the engraved roller 24. It is observed that this roller carries a design in intaglio. The design may be of many different forms; that is, it may comprise a plurality of small designs, or may be in the form of lettering, fine lines such as lace-work, a silhouette, dots such as a halftone picture, or may take other forms. It may be continuous, or discontinuous with openings within same.

The film-forming substance 25 may, as previously stated, be of a wide variety of compositions. As an illustration, in case it is desired to produce a white design, it may comprise a vinyl resin such as a copolymer of vinyl acetate and vinyl chloride, for example the product of Carbide and Carbon Chemicals Corporation known as VYNS, or a similar product, a plasticizer such as

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dioctyl phthalate, a solvent such as methyl ethyl ketone, and a pigmenting material such as titanium dioxide. These substances have satisfactorily been combined in the following proportions:

	Parts by weight
Vinyl acetate-chloride copolymer (VYNS) ---	100
Dioctyl phthalate -----	33
Methyl ethyl ketone -----	1000
Titanium dioxide -----	50

In general the design may be formed from a resinous-like, paint-like, lacquer-like, ink-like or rubber-like substance. It may include resins such as the vinyl resins, a solvent such as methyl ethyl ketone, hexone, cyclohexanone, acetone, or a mixture of these solvents, with or without a diluent such as xylol or the like. A plasticizer may be used or not, as desired. The plasticizer may, for example, include dioctyl phthalate, dibutyl sebacate, castor oil, or the like. Fillers and pigmenting agents may be added if desired. The term "pigmenting agent" as used in the present application will be understood to cover dyes, phosphorescent and fluorescent materials, metallic flakes, other coloring material, opaque substances such as carbon black and chalk, and the like.

Instead of using a solution as the film-forming substance 25, as previously stated, this substance may be an organosol emulsion, dispersion, or other fluid film-forming substance.

As the roller 24 rotates in the film-forming substance 25, a coating of this substance is applied to this roller. A doctor blade 27 is pressed against the roller so as to remove said film-forming substance from said roller in areas other than the depressed regions where the design exists.

As the carrier 20 passes over the roller 24, this coating of film-forming substance is applied to the then lower surface of the carrier in an area corresponding to the configuration of the desired design. The carrier is then passed under a guide roller 28, which contacts the uncoated surface of the carrier. The carrier then passes over a heating roller 29, the purpose of which is to dry the design, at least partially. This drying step may in some cases be omitted, if care is taken not to smear the design at later stages in the process. The heating roller 29 may conveniently be provided with steam pipes which pass longitudinally through it, or with other means for heating same.

If desired, several designs may be printed on the carrier, in various colors, taking care that the designs register in the proper manner. A wide variety of means may be used for applying the design to the carrier. Thus the design may be printed with apparatus of the rotogravure type, or of other types.

The carrier bearing its design is then passed through a coating apparatus, and a layer of film-forming substance formed over the design. This layer may be continuous, and will ordinarily extend beyond the design and contact the carrier in certain areas directly.

The coating apparatus may be of a wide variety of forms. In the arrangement shown, the carrier may be advanced by a driven, rubber-coated roller 30, rotating counterclockwise, pressed against the lower, uncoated, surface of the carrier. Cooperating with this roller is a roller 31 pressed against the upper surface of the roller at its line of tangency with the roller 30. Roller 31 has a smooth, preferably metallic surface. As indicated, this roller 31 rotates in a counterclockwise direction so as to oppose the motion of the carrier, but since roller 30 has a



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rubber surface and roller 31 a smooth, metallic surface, roller 30 grips the carrier and advances it to the left, while the surface of roller 31 is merely wiped across the surfaces of the carrier and design.

A roller 32, preferably having a smooth, metallic surface on the left of roller 31 above the carrier, cooperates with roller 31 and is adjacent but not tangent thereto, nor is it tangent to the carrier. As indicated, roller 32 rotates in a counterclockwise direction. A trough 33, partly formed by rollers 31 and 32, together with means not shown for damming up the ends of the trough, is provided for holding a film-forming substance and applying the same to roller 31.

This film-forming substance will form the main or supporting portion of the finished film. The wide variety of its possible composition has previously been indicated.

Since it is generally desired that the design not be smeared, no diluent or solvent should be used in this film-forming substance which would appreciably attack or which is a good solvent for the previously-formed designs. In certain exceptional cases, this principle will be disregarded in order to produce intentional smearing.

The substance from which the supporting portion of the film is formed should have an adhesive affinity relative to the substance from which the design is formed, and preferably should form an integral bond with same. On the other hand, both the design and the supporting portion should be only lightly adhesive to the carrier in order that they may be readily stripped.

In the present case it may be assumed that the film-forming substance to be used as the supporting portion of the film is an organosol. This organosol may be made by known methods, and various formulas may be used. An illustrative formula for the organosol may comprise a vinyl acetate-chloride copolymer, a plasticizer, a relatively high boiling diluent and a lower boiling diluent. The vinyl acetate-chloride copolymer may conveniently be the product of Carbide and Carbon Chemicals Corporation known by the trade name VYNV-1, or a similar product. Dioctyl phthalate is a satisfactory plasticizing agent. Xylol, or the similar product, Solvesso, the latter being a trade name of Standard Oil Company of New Jersey, may satisfactorily be used as a relatively high boiling diluent, and as a lower boiling diluent, Apco, a product of the Anderson Pritchard Oil Company, or a similar product, may be used. These substances have been successfully combined in the following ratio

Parts by weight	
Vinyl acetate-chloride copolymer (VYNV-1)	1000
Dioctyl phthalate	500
Xylol or Solvesso	200
Apco	490

In a manner well known in the art, to prepare an organosol of the above substances, the various components are milled together in a ball or pebble mill for a considerable length of time and at a controlled temperature. The time of grinding and the optimum temperature will be determined by the nature and ratio of the components. As an example, grinding for about 24 hours may be necessary, and for some mixtures the temperature should be about 100° F.

The organosol may be held in a mixing vat 34 and supplied to the trough 33 through a pipe 35. An even coating of organosol is thus applied to the roller 31 and is smeared as a continuous layer

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by this roller onto the upper surface of the carrier 20 bearing the design.

In Fig. 6 is shown a fragmentary cross-sectional view of the carrier 20 bearing the design over which film-forming substance has been applied. It is observed that the view shows neither the lower surface of the carrier nor the upper surface of the layer of film-forming substance, but shows the arrangement by which the design portion and the continuous layer of film-forming substance over it rest on the upper surface of the carrier during the process of forming the film.

In case it is desired to produce a film bearing a design on one side, and having a smooth opposite face, the carrier may now be passed through a drying and fusing oven, and the film stripped from the carrier. If, however, it is desired to produce a film having the side opposite the design undulated, as shown in Figs. 3, 4 and 5, the carrier may be passed through a short oven such as 36 in Fig. 7, or other heating means where the film is exposed to a controlled temperature for a brief period of time, and then a swelling agent may be applied to the film, such as by a spray 37. In some cases the undulated effect may be obtained without the use of a heating means represented by the oven 36. For more complete details of the method for obtaining an undulated surface and the type of swelling agent to be used, reference is made to the pending application Serial No. 635,982 previously mentioned.

The oven 36 and the spray 37 would be eliminated if undulations are not desired. The carrier is then in any case passed through an oven 38 with drying and fusing sections 38a and 38b, which operate in a conventional manner.

To the left of the oven 38 there may be provided a suction apron generally indicated by the numeral 39. This apron may comprise a roller 40 driven by means not shown, a guide roller 41, an idler roller 42, and a perforated belt 43 cooperating with said rollers. The carrier 20 rests on the belt 43, and means not shown are provided for creating a subatmospheric pressure underneath the perforated belt, so that the carrier is sucked or drawn down against the belt 43. Since the belt is driven in a generally counterclockwise direction as shown, it advances the carrier to the left as desired.

The carrier is then passed over a guide roller 44. There is provided a roller 45 which cooperates with the roller 44 in stripping the film from the carrier, and a reel 46 on which the film is wound.

The carrier is then passed around a driven guide roller 47, and there may be provided a driven buffing brush 48 at this point the purpose of which is to clean the carrier so that it will be ready to begin its circuit anew.

It is to be observed that an important feature of the present invention is that the design is actually embedded in one side of the film, and the surface of the design is flush with the surface of the film on that side.

Because of various practical considerations, the design should preferably be at least 1/100 mil and not greater than 1 mil in thickness. The supporting portion is preferably not more than 10 mils thick and on the other hand may be extremely thin. One of the advantages of the present invention is the possibility of producing quite thin films bearing an embedded design.

A number of modifications of the present in-



vention are possible. Thus the supporting portion of the film may include a fluorescent or phosphorescent material, and the design may include a relatively opaque substance which will act as mask or shield, preventing or diminishing the transmission of light emitted by the fluorescent or phosphorescent material.

The background and the design may be of contrasting colors. There may be a number of designs of different colors, all embedded in the same film. Various combinations of fillers and pig-  
menting agents may be included in the design and in the supporting portion.

In order to secure a colored design with a rich or vivid appearance, it may be desired to incorporate a high concentration of coloring agent. In this connection, one of the features of the present invention is that the design may be made of a material somewhat similar to the supporting portion of the film, but the lower molecular weight; for example, both may include copolymers of vinyl acetate and vinyl chloride, but by using the components in different proportions, copolymers of different average molecular weights may be obtained. These copolymers will have the desirable feature of adhering strongly one to the other, but the one of the lower molecular weight will be more soluble than if it were of a higher molecular weight. Since a high concentration of resin is important in the design in order to bind a high concentration of coloring material, it is possible in this way to obtain rich, vivid colors by causing large quantities of resin to go into the solution from which the design is printed.

Another modification of the present invention is to make the design and supporting portion of the same type of material, except for possible differences in color. In this way they will have the same melting point, and there is no danger of the design being melted off of the supporting portion during such operations as ironing the film. Similar results may be obtained by using different substances which have approximately the same melting point.

Another modification of the invention is to produce an intentionally smeared design. In this case it is only necessary to use, in the film-forming substance of which the supporting portion is made, a good solvent for the design. Various artistic patterns may be obtained in this manner.

In case it is desired to form the supporting portion from a solution instead of from an organosol, and no smearing is desired, the solvent used in the upper or supporting portion should be a poor solvent for the design. This may sometimes be accomplished by using in the design and in the supporting portion polymers or copolymers which are similar but of different average molecular weight, using a higher molecular weight in the design than in the supporting portion.

Reference is made to Fig. 9. It is possible by the teachings of the present invention to produce a jacket-like or bag-like article having two walls of film which are united in one region and separable in another region, one of said walls bearing an embedded design. If desired, the other wall may have an undulated surface, as in Fig. 9. To produce such an article a design of film-forming substance is first formed on a carrier and may then be dried. A layer of a film-forming substance which is adhesive relative to said design is then formed over said design in the desired shape of one wall of the article, and this layer may then be dried. A coating

of a substance which is relatively non-adhesive to said layer is then applied to an area of said layer, leaving an area exposed, such as at the margin. This non-adhesive coating may then be dried. Another layer of a film-forming substance, which may be the same as that of which the first layer was formed, is then applied over said non-adhesive coating and to the exposed area of the first layer in the shape of the other wall of said article. The article may then be dried, fused and stripped from the carrier, it no undulations are desired. If undulations are desired, before drying the last layer of film-forming substance completely, a swelling agent will be applied to its surface. For further detail of means for forming such a jacket-like article, reference is made to pending application Serial No. 651,028 filed February 28, 1946, in the name of Marc A. Chavannes, along with the previously-mentioned application Serial No. 635,982, referred to therein, relating to the undulations produced. If desired, a whole series of connected jacket-like articles can be formed from continuous layers of film-forming substances on a carrier, and these layers severed at the proper points to form the desired articles. This would be an alternative procedure to that of forming the layers of film-forming substances in the shape of the desired walls.

Another modification of the present invention is to produce labels having printed or other designs embedded therein. To produce such articles a plurality of designs could be formed on the carrier of pigmented film-forming substance, dried, and a continuous layer of a film-forming substance formed over these designs. This layer may then be dried, and the various labels may be severed at the proper points.

A still further modification is to form films having embedded designs, such as those shown in Figs. 1 and 2, by the method described, and then to form another film over the article on the side bearing the embedded design. This last-formed film may be so thin as to be non-self-supportable.

A still further modification of the invention is to produce a film bearing a design embedded in one side thereof, and a design in relief on the other side. In this case, a film bearing an embedded design would first be produced by the steps described above, and before stripping the film from the carrier, a design may be printed on the top side of the film. Variations in the relative registration of the top design with the embedded design may be used to obtain useful and ornamental effects.

In one embodiment of the invention the film-forming substances from which the design portion and the supporting portion, respectively, are formed are so chosen that when dried the design portion is more elastic than the supporting portion. This feature, in addition to the embedded feature of the design, improves the durability or permanence of the design.

While a suitable form of apparatus and mode of procedure, to be used in accordance with the invention, and various improved products resulting therefrom have been described in some detail, and certain modifications have been suggested, it will be understood that numerous changes may be made without departing from the general principles and scope of the invention.

I claim:

1. A method of producing a flexible film bearing a design, comprising the steps of printing, on a



permanent, smooth surface of a continuously-advancing carrier, a design of a film-forming substance comprising a vinyl resin and a solvent therefor, drying said design, said surface being only lightly adhesive to vinyl resin when the latter is dried thereon, forming over said design and over exposed portions of said surface of said carrier a continuous layer of a film-forming organosol comprising a vinyl resin, a plasticizer, and a diluent, said organosol being sufficiently inert in relation to the dried design not to cause smearing thereof, drying said layer, fusing said layer, to form a strippable, self-supportable film which adheres to said dried design more strongly than said design adheres to said surface, and stripping said dried and fused layer together with said design as a continuous operation from said permanent, smooth surface of said carrier by applying tension to said layer in a direction away from said carrier.

2. A method of producing a flexible film bearing a design, comprising the steps of printing, on a permanent, smooth surface of a carrier, a design of a fluid substance including a vinyl resin, drying said design, said surface being only lightly adhesive to vinyl resin when the latter is dried thereon, forming over said design and over exposed portions of said surface of said carrier a continuous layer of a film-forming organosol comprising a vinyl resin, a plasticizer, and a diluent, said organosol being sufficiently inert in relation to the dried design not to cause smearing thereof, drying said layer, bonding said dried layer permanently to said design by heating said layer and said design to a fusing temperature, and stripping said dried and fused layer together with said design from said permanent, smooth surface of said carrier by applying tension to said layer in a direction away from said carrier.

3. A method of producing a flexible film bearing a design, comprising the steps of printing, on a permanent, smooth coated surface of a continuously-advancing paper carrier, a design of a film-forming substance comprising a copolymer of vinyl acetate and vinyl chloride and a solvent therefor, drying said design, said surface being only lightly adhesive to vinyl resin when the latter is dried thereon, forming over said design and over exposed portions of said surface of said carrier a continuous layer of a film-forming organosol comprising a copolymer of vinyl acetate and vinyl chloride, a plasticizer, and a diluent, said organosol being sufficiently inert in relation to the dried design not to cause smearing thereof, drying said layer, fusing said layer, to form a strippable, self-supportable film which adheres to said dried design more strongly than said design adheres to said surface, and stripping said dried and fused layer together with said design as a continuous operation from said permanent, smooth, coated surface of said paper carrier by applying tension to said layer in a direction away from said carrier.

4. A method of producing a continuous web of flexible film bearing multicolored embedded designs accurately repeated along its length, comprising the steps of printing in registered relationship differently colored designs of fluid substances including vinyl resin, on a smooth, design-receiving, coated surface of a flexible paper carrier bearing a permanent coating, drying said designs on said surface, said surface being but lightly adhesive to vinyl resin when the latter is dried thereon, thereafter applying to exposed portions of said surface of said carrier and over

said designs an uninterrupted layer of film-forming organosol comprising a copolymer of vinyl acetate and vinyl chloride, a plasticizer, and a diluent, said organosol being sufficiently inert in relation to the dried designs not to cause smearing thereof, drying said film-forming organosol and fusing same to said designs with the aid of heat, thereby forming a self-supportable film bonded to said designs more strongly than said designs are bonded to said surface, and stripping said film together with said designs from said permanently coated surface of said carrier without destroying said surface, by pulling said film and said carrier apart.

5. A method of producing decorated film, comprising printing on a permanent, smooth surface of a continuously advancing carrier, multicolored half-tone designs in registered relationship of film-forming substances, each including a vinyl resin, drying said designs, said surface being only lightly adhesive to vinyl resin when the latter is dried thereon, casting over the designs and over exposed portions of said surface of said carrier a continuous layer of a film-forming organosol comprising a vinyl resin, a plasticizer and a diluent, said organosol being sufficiently inert in relation to the dried designs not to cause smearing thereof, drying said layer, fusing said layer, to form a strippable self-supportable film which adheres to said dried designs more strongly than said designs adhere to said surface, and stripping said dried and fused layer together with said designs as a continuous operation from said permanent, smooth surface of said carrier by applying tension to said layer in a direction at an angle to said carrier.

6. A method of producing a flexible film bearing a colored design, comprising the steps of printing directly on a permanent, smooth surface of a continuously advancing carrier, at least one design of at least one film-forming substance comprising a copolymer of vinyl acetate and vinyl chloride serving as a binding resin, a solvent therefor, and a colored pigment, said surface being only lightly adhesive to vinyl resin when the latter is dried thereon, casting over said design and over exposed portions of said surface of said carrier a continuous layer of a film-forming organosol comprising a copolymer of vinyl acetate and vinyl chloride, a plasticizer and a diluent, said organosol being sufficiently inert in relation to the dried design not to cause smearing thereof, drying said layer, fusing said layer to form a strippable self-supportable film which adheres to said dried design more strongly than said design adheres to said surface, and stripping said dried and fused layer together with said design as a continuous operation from said permanent smooth surface of said carrier by applying tension to said layer in a direction away from said carrier, said first-mentioned copolymer of vinyl acetate and vinyl chloride being of lower average molecular weight than that of said second-mentioned copolymer.

7. A method of producing a flexible film having on one side an embedded design and on the opposite side undulations visible to the naked eye, comprising the steps of printing, on a permanent, smooth surface of a continuously-advancing carrier, a design of a film-forming substance comprising a vinyl resin and a solvent therefor, drying said design, said surface being only lightly adhesive to vinyl resin when the latter is dried thereon, forming over said design and over exposed portions of said surface of said carrier a continuous layer of a film-forming organosol comprising a vinyl resin, a plasticizer, and a diluent, said organosol being sufficiently inert in relation to the dried design not to cause smearing thereof, drying said layer, fusing said layer, to form a strippable self-supportable film which adheres to said dried design more strongly than said design adheres to said surface, and stripping said dried and fused layer together with said design as a continuous operation from said permanent smooth surface of said carrier by applying tension to said layer in a direction away from said carrier, said first-mentioned copolymer of vinyl acetate and vinyl chloride being of lower average molecular weight than that of said second-mentioned copolymer.



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continuous layer of a film-forming organosol comprising a vinyl resin, a plasticizer, and a diluent, said organosol being sufficiently inert in relation to the dried design not to cause smearing thereof, applying to the exposed surface of said layer a swelling agent comprising an organic solvent for said vinyl resin to cause undulations visible to the naked eye in said exposed surface only, drying said layer, fusing said layer to form a strippable, self-supportable film which adheres to said dried design more strongly than said design adheres to said surface, and stripping said dried and fused layer together with said design as a continuous operation from said permanent, smooth surface of said carrier by applying tension to said layer in a direction away from said carrier.

8. A method of producing jacket-like articles having at least two walls of flexible film united in a first region but separable in a second region, one of said walls having a flexible design embedded in a surface thereof, said method comprising the steps of printing on a carrier a design of a film-forming substance comprising a vinyl resin, drying said design, applying a layer of a film-forming organosol over said design and over exposed portions of said carrier, said organosol comprising a vinyl resin, a plasticizer and a diluent and being sufficiently inert in relation to the dried design not to cause smearing thereof, drying said layer, applying to an area of said layer so as to leave an area exposed, a separator-coating of a substance which will not strongly

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adhere to said dried first layer, applying a layer of a film-forming substance on at least part of the area of said coating and on at least part of the exposed area of said layer, said last-mentioned film-forming substance being capable of forming a permanent adhesive bond when dried in contact with said exposed area of said first-mentioned layer and being at least temporarily adhesive in relation to said separator-coating but being prevented by said coating from adhering to said first-mentioned layer in the region of said coating, drying said last-applied layer, and stripping said layers from said carrier.

MARC A. CHAVANNES.

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