

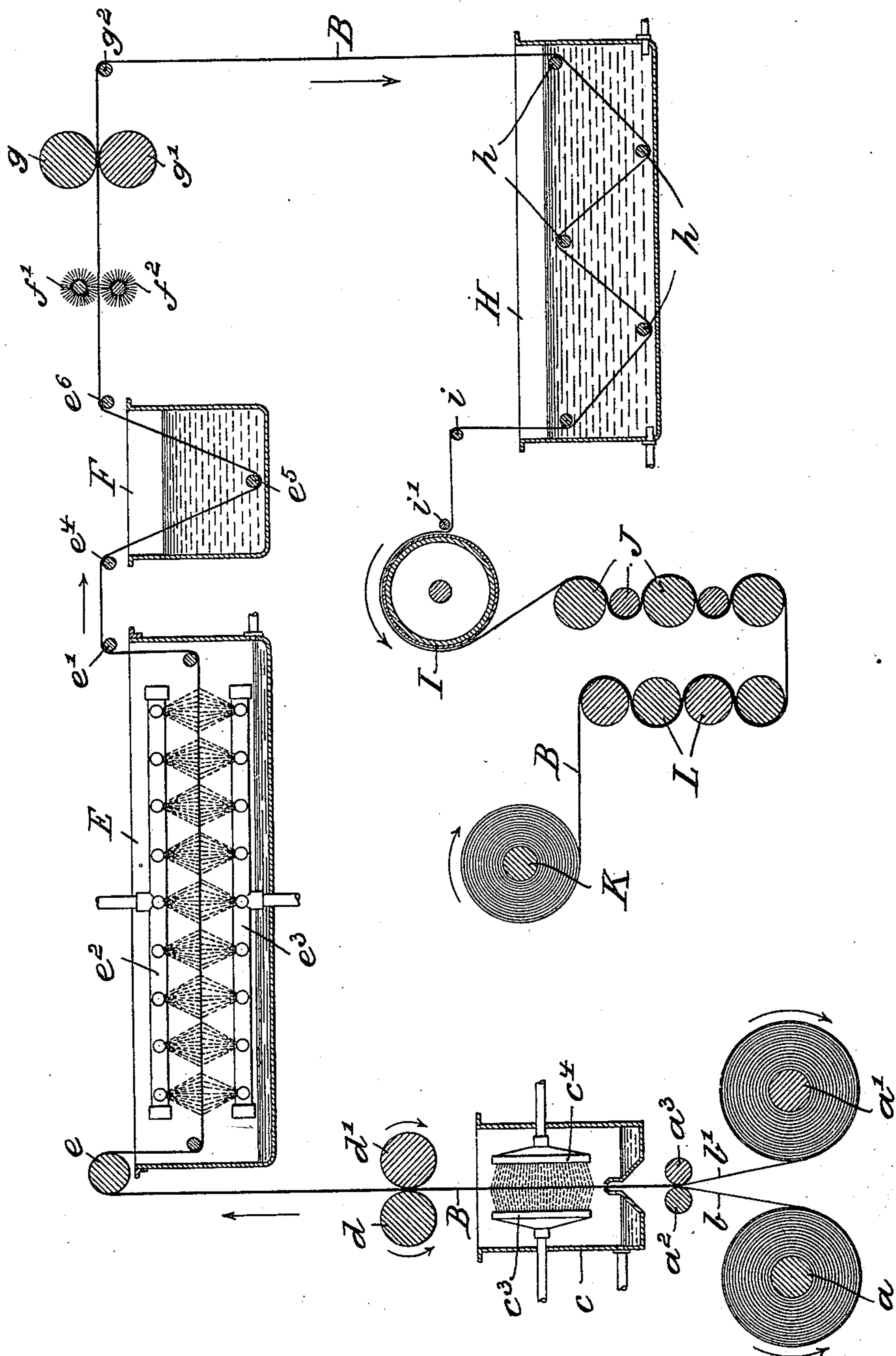
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Patented Feb. 12, 1901.

G. S. & C. FALKENSTEIN.  
MANUFACTURE OF ARTIFICIAL LEATHER.

(Application filed Oct. 13, 1900.)

(No Model.)



Witnesses:  
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# UNITED STATES PATENT OFFICE.

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## MANUFACTURE OF ARTIFICIAL LEATHER.

SPECIFICATION forming part of Letters Patent No. 667,770, dated February 12, 1901.

Application filed October 13, 1900. Serial No. 32,921. (No specimens.)

*To all whom it may concern:*

Be it known that we, GEORGE S. FALKENSTEIN, a subject of the Emperor of Germany, and CHARLES FALKENSTEIN, a citizen of the United States, both residing at the city of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in the Manufacture of Artificial Leather and in the Method of Producing the Same, of which the following is a specification.

Our invention has relation to the manufacture of artificial leather and to the method of producing the same.

The nature, scope, and characteristic features of our invention will be more fully understood from the following description, taken in connection with the accompanying drawing, forming part hereof, illustrating diagrammatically, a preferred form of an apparatus adapted for the conduct of the method of our said invention.

Referring to the drawing, *a* and *a'* represent rolls of materials to constitute the back *b* and face *b'* of the sheet B, which is to become by subsequent treatment artificial leather. The back *b* is a textile material—such as muslin, linen, or the like—and the face *b'* is a matted or loosely-felted cellulose material—such, for instance, as cotton-batting. The sheet B passes between pressure-rolls *a*<sup>2</sup> and *a*<sup>3</sup> to and through a tank *c*, within which are preferably arranged two atomizers *c*<sup>3</sup> and *c*<sup>4</sup>, facing each other, so that an acid-bath or mixture, composed of two-thirds of sulfuric acid to one-third of muriatic acid, more or less, in the tank *c* may be presented by means of these atomizers to both faces of the sheet B in its passage through the said tank *c*, whereby the textile backing and cellulose face are formed into a homogeneous sheet having a leather-like face and textile back. Beyond the tank *c* the sheet of combined and united materials pass between pressure-rolls *d* and *d'* and then over the guide-rolls *e* and *e'* through a chamber or vat E, provided with spraying devices *e*<sup>2</sup> and *e*<sup>3</sup>, arranged in opposite directions to each other, and which spraying devices are adapted to deliver to the respective sides or faces of the sheet B a fluid,

consisting of water containing a certain proportion of soda or ammonia for the purpose of removing or washing out all traces of acid from the said sheet. The sheet of combined materials then passes over guide-rolls *e*<sup>4</sup>, *e*<sup>5</sup>, and *e*<sup>6</sup> into and through a tank F, containing a solution composed of thirty parts of glycerin, one hundred parts of linseed-oil, ten parts of flour, and five parts of degreas, more or less, constituting what is termed a “liquid-filler” material or solution. The sheet B is permitted to absorb sufficient of the filler to make its face soft, pliable, and pulpy, like leather, and then after leaving the vat or tank F passes between the brushes *f*<sup>1</sup> and *f*<sup>2</sup>, whereby any surplus of filler carried therewith will be removed prior to the passage of the fabric between pressure-rolls *g* and *g'*. The sheet B then passes over a guide-roll *g*<sup>2</sup>, through a series of guide-rolls *h*, located in the tank H, containing a suitable dyeing material or materials, and beyond which the sheet passes over guide-rolls *i* and *i'* and around a steam or heated drying-roll I, whereby the sheet, having been dyed, is thoroughly dried and passes over and around calender-rolls J of different diameters, as clearly illustrated. The previously-treated materials in sheet form, after passing through the goffering, enameling, embossing, or graining rolls L to assume the condition of artificial leather, pass on to the lay-up roll K, ready for use as a substitute for leather.

The use of sulfuric and muriatic acids in the relationship to each other given affords excellent results, because not only is the cellulose face *b'* converted into a leathery and spongy substance, but the textile back *b* is also firmly united to the face *b* to reinforce the same. We, however, wish it to be understood that we do not confine ourselves to the precise proportions of materials either as to the acid-bath or the filler solution, because both of which may be varied to a greater or less extent without departing from the spirit and scope of our invention.

Having thus described the nature and objects of our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The improvement in the art of making



artificial leather, which consists in subject-  
ing a backing of textile material and a facing  
of loosely matted or felted cellulose material,  
such as cotton-batting, to a bath of combined  
5 sulfuric and muriatic acids, to cause the tex-  
tile backing and cellulose face to unite into  
a sheet having a leather-like face and a tex-  
tile back, substantially as and for the pur-  
poses described.

10 2. The improvement in the art of making  
artificial leather, which consists in subject-  
ing a backing of textile material and a facing  
of loosely matted or felted cellulose material,  
such as cotton-batting, to a bath of combined  
15 sulfuric and muriatic acids, then removing  
all traces of free acids therefrom and finally  
subjecting the treated material to the influ-  
ence of a suitable filler, whereby the textile  
backing and cellulose face are formed into a  
20 sheet having a leather-like face and a textile  
back, substantially as and for the purposes  
described.

3. The improvement in the art of making  
artificial leather, which consists in subject-  
25 ing a backing of textile material and a facing  
of loosely matted or felted cellulose material,  
such as cotton-batting, to a bath of combined  
sulfuric and muriatic acids, to cause the back-  
ing and facing to unite, then removing all  
30 traces of free acids therefrom, then subject-  
ing to the influence of a liquid filler for soft-  
ening the face of the united materials, and  
then subjecting the filled face to finishing op-

erations, substantially as and for the pur-  
poses described.

35 4. The improvement in the art of making  
artificial leather, which consists in subject-  
ing a backing of textile material and a facing  
of loosely matted or felted cellulose material,  
such as cotton-batting, to a bath of combined 40  
sulfuric and muriatic acids, then to the in-  
fluence of a filler, and finally subjecting the  
filled material to finishing operations, sub-  
stantially as and for the purposes described.

5. The improvement in the art of making 45  
artificial leather, which consists in subject-  
ing a backing of textile material and a facing  
of loosely matted or felted cellulose material  
to the influence of a bath of combined sul-  
furic and muriatic acids, removing all traces 50  
of free acids therefrom, in a bath of water  
and soda or ammonia, then subjecting to the  
influence of a liquid filler consisting of glyce-  
rin, linseed-oil, flour and degreas for soften-  
ing the face of the united materials and then 55  
subjecting the filled face to finishing opera-  
tions, substantially as and for the purposes  
described.

In testimony whereof we have hereunto set  
our signatures in the presence of two subscrib- 60  
ing witnesses.

GEORGE S. FALKENSTEIN.  
CHARLES FALKENSTEIN.

Witnesses:

J. WALTER DOUGLASS,  
WILHELM VOGT.