

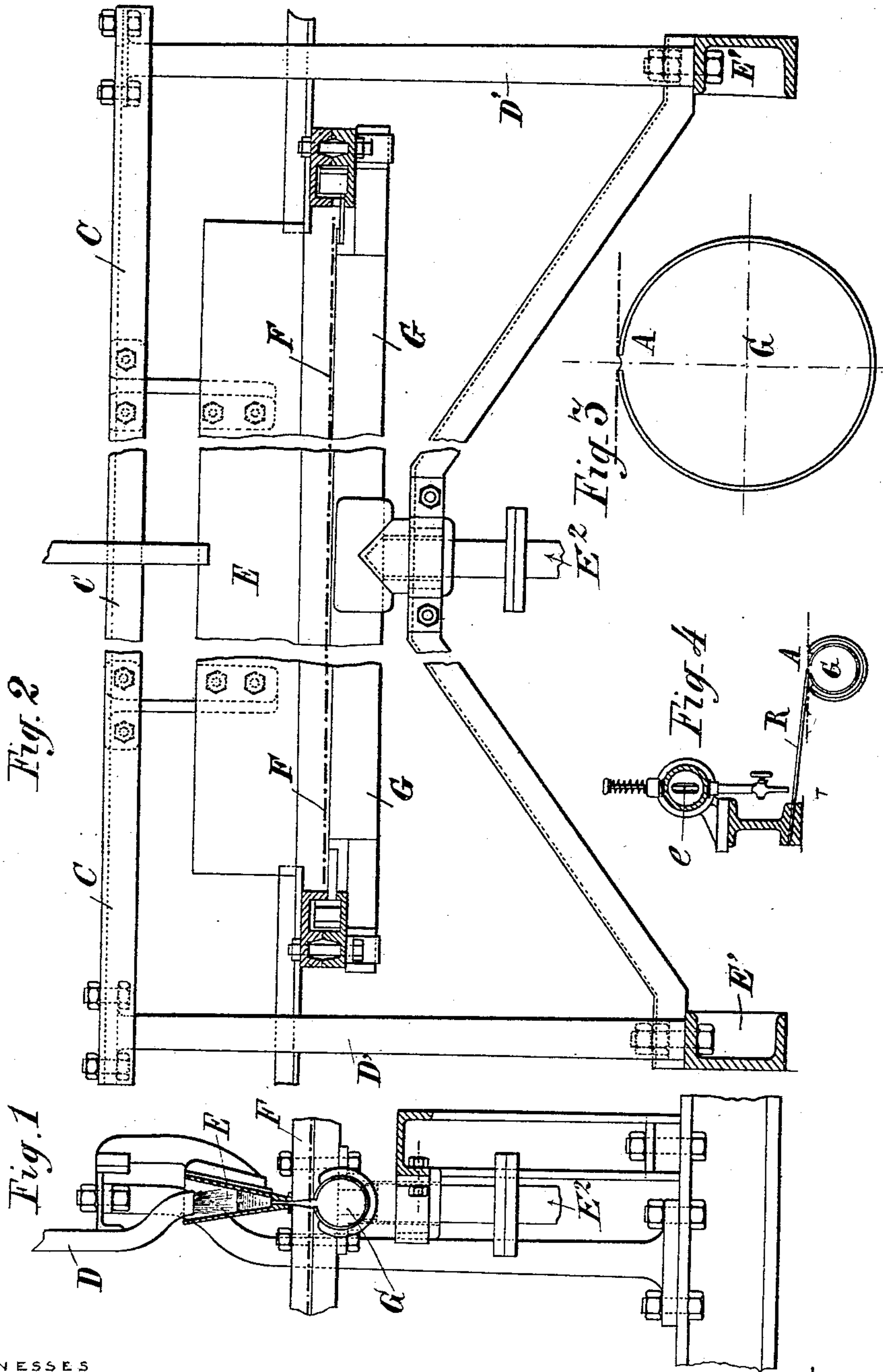
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Patented Dec. 27, 1898.

H. DAVID.
APPARATUS FOR MERCERIZING.

(Application filed June 7, 1898.)

(No Model.)



WITNESSES

W. B. Corwin
Giles Moore

INVENTOR

Henri David,
By Geo. A. Whitney
att'y.

UNITED STATES PATENT OFFICE.

HENRI DAVID, OF PARIS, FRANCE.

APPARATUS FOR MERCERIZING.

SPECIFICATION forming part of Letters Patent No. 616,606, dated December 27, 1898.

Application filed June 7, 1898. Serial No. 682,823. (No model.)

To all whom it may concern:

Be it known that I, HENRI DAVID, a citizen of the French Republic, residing at Paris, in the Department of the Seine, France, have invented certain new and useful Improvements in Apparatus for Mercerizing Woven Fabrics, of which the following is a full, clear, and exact description.

This invention relates to apparatus to be employed for the purpose of preventing shrinking and for stretching woven fabrics during the process of mercerization and subsequent processes. For this purpose I may employ any suitable construction of tentering or equivalent stretching machine, in combination with elements whereby the mercerization, the squeezing, and the washing of the cloth may be successively effected while the cloth is continuously maintained in the stretched condition. It will be possible also by these improvements to effect the mercerization successively by solutions of progressive densities if a plurality of the mercerizing elements be employed. In like manner it will be possible to employ in the same machine a plurality of the squeezing and of the washing elements. The cloth may be treated with a single or a double passage through the machine, and in the latter case the upper active elements may be repeated at will or as may be required during the second passage of the cloth through the machine.

The mercerization of the fabric is effected in the following manner: The mercerizing liquid is distributed upon the upper surface of the cloth, which is below subjected to suction, so that the liquid is forcibly drawn through the substance of the cloth in such a manner that every fiber is thoroughly impregnated. The suction may be produced by any suitable means which will produce a more or less perfect vacuum. Such apparatus is commonly known and used already for similar purposes and need not be here further described.

In the accompanying drawings, to which reference will hereinafter be made, Figure 1 represents a vertical transverse section of one of the elements which I may employ; Fig. 2, a partial vertical transverse section of an ordinary tentering-machine, showing the element, Fig. 1, arranged thereon; Fig. 3, a cross-

section of the suction-pipe, drawn to an enlarged scale; and Fig. 4, a vertical transverse section of a modified construction of the element.

The elements to be employed for mercerization and for washing may be similarly constructed. Each element is composed of two parts arranged one directly above the other, as shown by Fig. 1, or, as shown by Fig. 4, in two parallel vertical planes. In the latter case the liquid from the upper part E falls upon an inclined plane R, over which it will flow in a uniform sheet to the edge *r*, whence it flows upon the cloth F, through which it is immediately and continuously sucked through the longitudinal opening A in the aspiration or suction pipe G. The inclined plane may be adjustable, so that its front edge *r* may be brought more or less over the opening A, and thus vary to a corresponding degree the force of the suction.

In the construction represented by Fig. 1 the mercerizing liquid (or water, as the case may be) is supplied through the pipe D, whence it flows into the receiver E, in the bottom of which there is a series of ajutages which distribute the liquid upon the face of the cloth below, or, as shown by Fig. 4, the liquid may be delivered to a pipe which is substituted for the receiver E. With either construction the liquid may be delivered either direct upon the cloth or upon the before-described inclined plane and the ajutages may be controlled by taps. Immediately above each ajutage there may be arranged a clearer *e*, which may consist of a rod held up by a spiral spring wound around it and of such a length that when pushed down by hand it will pass into and clear any obstruction from its ajutage. (See Fig. 4.)

Inasmuch as the liquid will not fully reach the selvages of the cloth which are held by the tentering-chains, I may supply this deficiency of impregnation by means of supplementary elements or by any isolated arrangement whatever placed upon each side of and above the machine immediately before or behind the liquid sheet. This supplementary device may be fed also from E, and this will not make any difference in the finished fabric so far as regards the result of mercerization.

The operation of the apparatus is as fol-

lows: The cloth, unrolled as usual, passes at the end of the machine over the usual stretching or tension staves which establish and maintain the necessary longitudinal tension.

5 The selvages are then in the usual manner seized and held by the points or grippers on the tentering-chains, which may be arranged at such a distance that the cloth holds its untreated width a little more or a little less.

10 The impregnation by the mercerizing solution is made at G and subsequently the washing at a second element of similar construction arranged farther along the machine. An intermediate element may be interposed, which

15 may consist of the suction-pipe G and its slot A, its object being to withdraw from the cloth any surplus liquid coming from the mercerizing element.

It is not essential that the washing on the

20 machine should be very thorough, because the simple passage of water through the cloth will so dilute any mercerizing solution left therein that it will thereafter be inoperative to produce shrinkage.

25 It is necessary to provide two chambers in which a more or less complete vacuum is produced and into which the aspirated liquids flow through the pipe E², one for the mercerizing liquid and one for the washing water or

30 liquid.

The receiver or pipe E may be supported on the machine by means of the bearer C, which is fixed upon the framing E' of the machine by means of standards D'.

35 When the ajutages are provided with taps, as hereinbefore described, the width of the liquid-supply to accommodate various widths of cloth may easily be regulated by closing or opening some of these taps on each or either

40 side of the machine. The width of the suction is also regulated by shortening or length-

ening the slot A in the pipe G by means of adjustable cover plates or slides, as is well understood.

Having now particularly described and as- 45
certained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. In tentering and similar cloth-stretching machines, a pipe or receiver with ajutages 50
for supplying liquid to the upper surface of the cloth in motion, and a suction-chamber immediately below the cloth having a single slot in line with the ajutages into and by means of which the liquid is forcibly drawn 55
through the cloth, substantially as set forth.

2. In tentering and similar cloth-stretching machines, a pipe or receiver with ajutages, an inclined plane receiving the liquid from 60
said ajutages and a suction-chamber immediately below the front edge of the inclined plane between which and the opening of the suction-chamber the cloth passes, substantially as and for the purpose set forth.

3. In tentering and similar cloth-stretching 65
machines, the combination and arrangement with one or more elements each consisting of a pipe or receiver with ajutages supplying liquid to the upper surface of the cloth and a suction-chamber below the cloth having a sin- 70
gle slot in line with the ajutages, of one or more single suction-chambers for extracting surplus liquid arranged in contact with the under side of the cloth and having a single slot over which the cloth is drawn, substan- 75
tially as set forth.

In witness whereof I subscribe my signature in presence of two witnesses.

HENRI DAVID.

Witnesses:

HENRY DANBERY,
EDWARD P. MACLEAN.