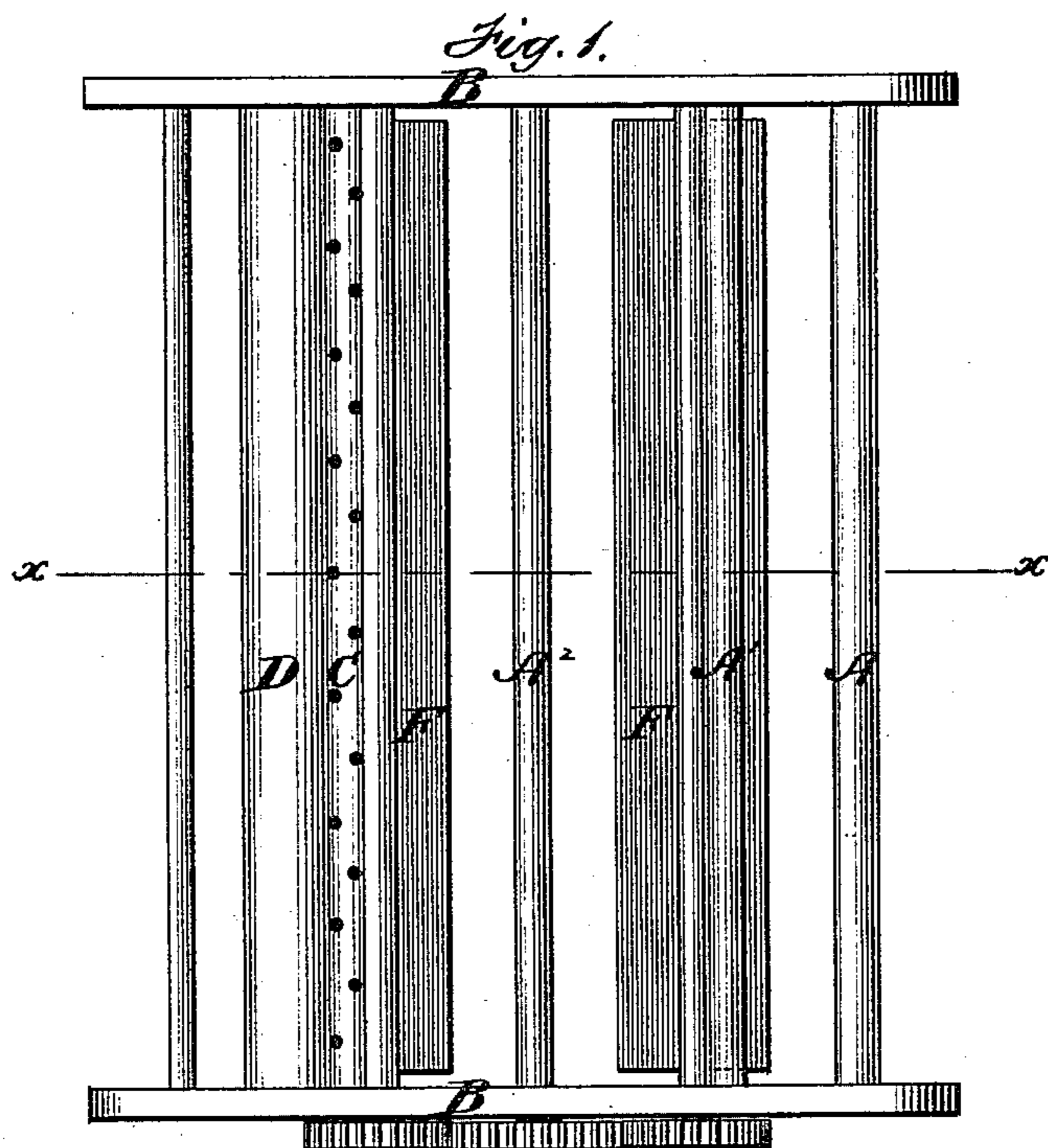


W. HEBDON.

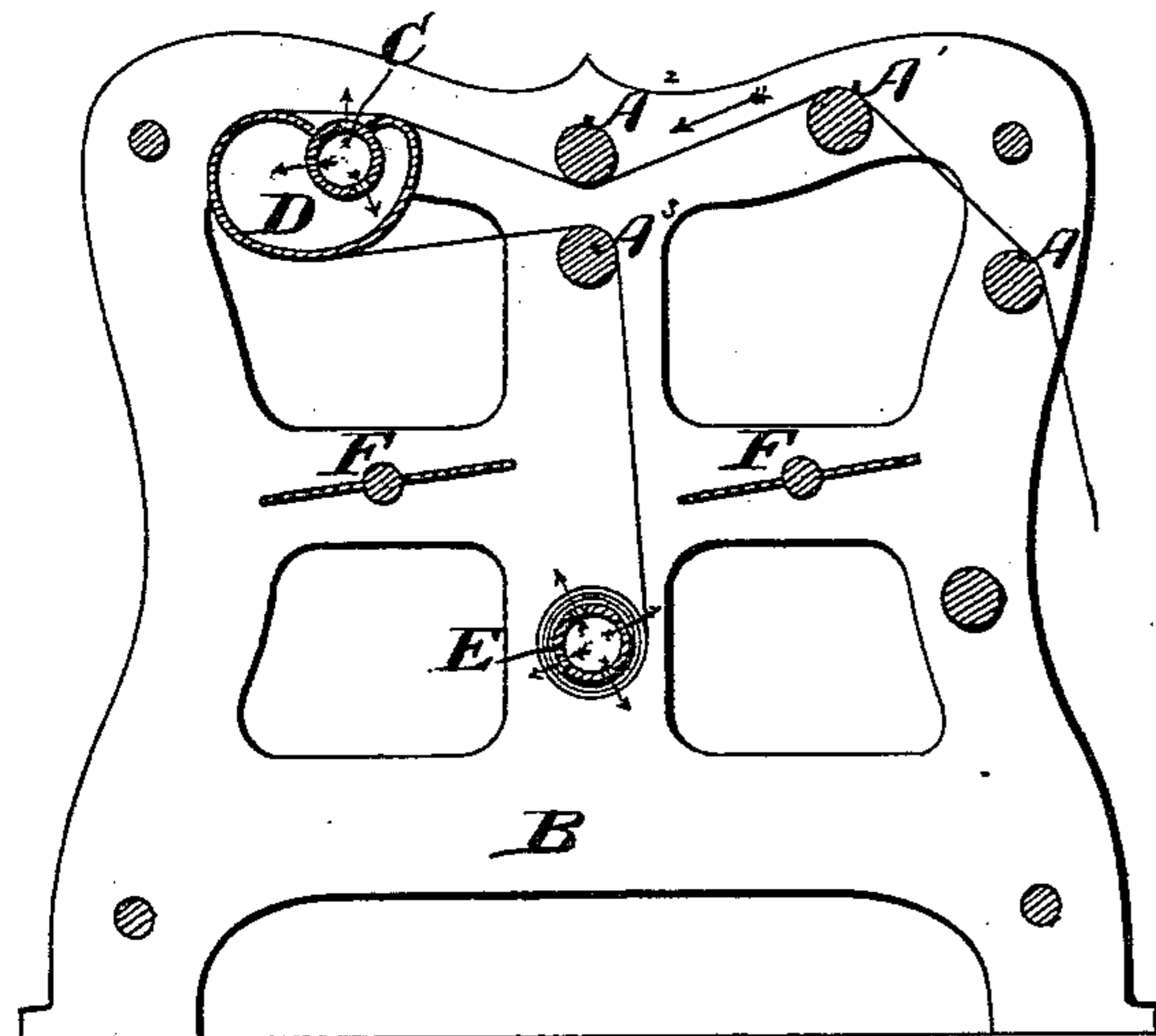
Cloth-Steaming, Smoothing and Drying.

No. 165,576.

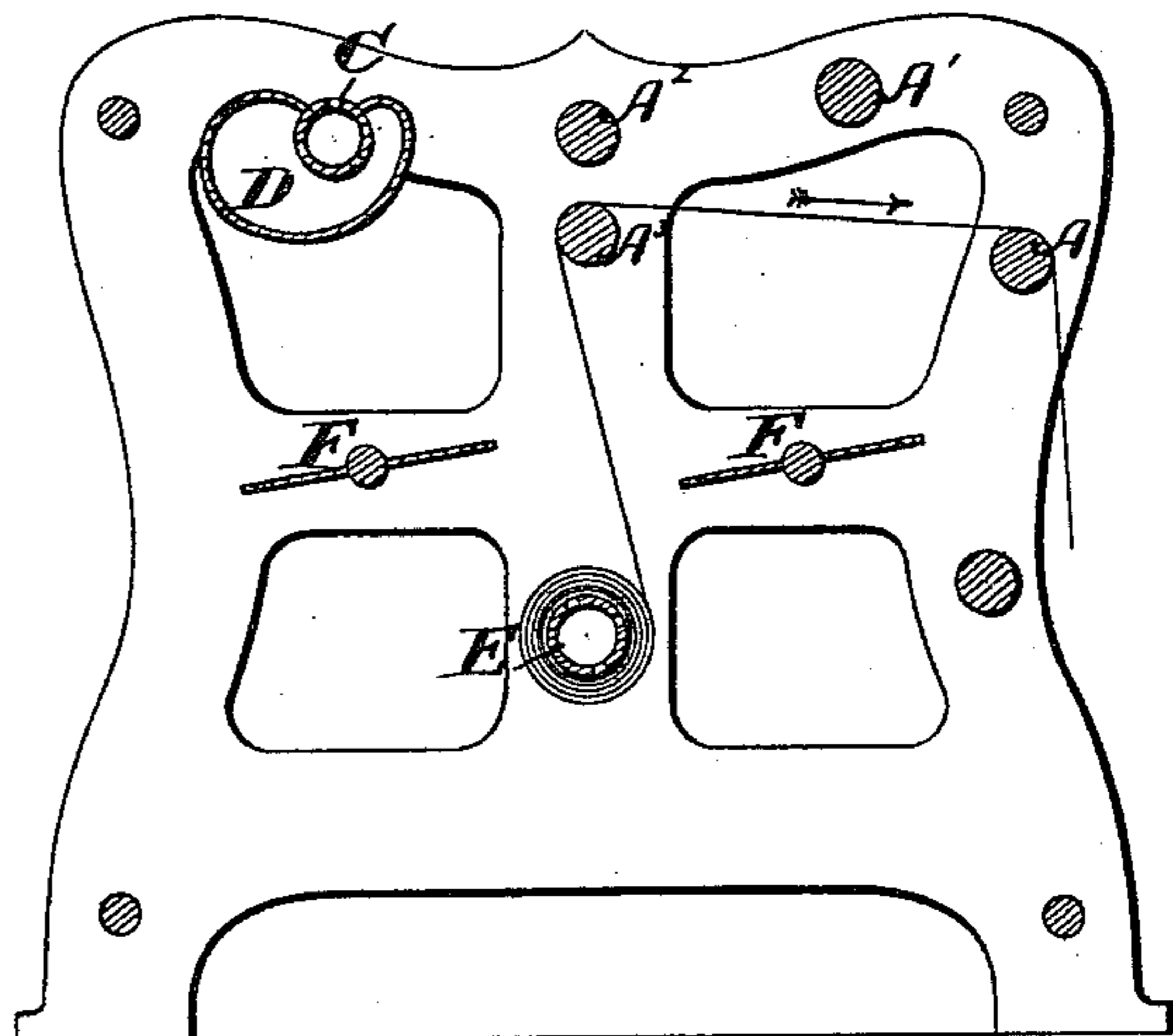
Patented July 13, 1875.



*Fig. 2.*



*Fig. 3.*



Witnesses.

Saml. M. Barton.

A. E. Denison

Inventor.

William Heddon

by his attys

C. D. Wright & Brown

# UNITED STATES PATENT OFFICE.

WILLIAM HEBDON, OF BOSTON, ASSIGNOR TO HIMSELF AND A. Y. CONVERS,  
OF TAUNTON, MASSACHUSETTS.

## IMPROVEMENT IN CLOTH STEAMING, SMOOTHING, AND DRYING.

Specification forming part of Letters Patent No. 165,576, dated July 13, 1875; application filed  
May 7, 1875.

*To all whom it may concern:*

Be it known that I, WILLIAM HEBDON, of Boston, in the county of Suffolk, and State of Massachusetts, have invented certain Improvements in Machines for Steaming, Smoothing, and Drying Cloth, of which the following is a specification:

In the accompanying drawing forming a part of this specification, Figure 1 is a top plan view of a machine embodying my invention. Fig. 2 is a section through line *xx*, Fig. 1, representing the cloth undergoing the steaming and smoothing operations; and Fig. 3 a similar section, representing the cloth undergoing the drying operation.

In the operation of sponging cloth by steam, it is the practice to force steam through the cloth, thus raising the nap and opening the pores, leaving the cloth in a rough and damp state, and requiring special smoothing and drying operations to finish it. It has been usual heretofore to manipulate the cloth by hand to smoothen and dry it after steaming, thus occupying much time, besides involving labor. My invention has for its object to enable all the parts of the steam-sponging operation—viz, the steaming, smoothing and drying—to be performed mechanically, and on one machine. To this end my invention consists, first, in the combination in one machine of suitable devices for steaming, smoothing, and drying cloth; and, secondly, in the improved process of sponging cloth, all of which I will now proceed to describe.

In the drawings,  $A A^1 A^2 A^3$  represent a series of parallel rollers journaled in suitable end frames or supports,  $B B$ , and so located with reference to the steaming, smoothing, and drying devices about to be described, as to properly guide the cloth to and from said devices, substantially as shown in Figs. 2 and 3.  $C$  represents a perforated stationary steam-pipe, supported between the upper portions of the frames  $B$  in a position parallel with the rollers  $A A^1$ , &c. The pipe  $C$  is preferably partially inclosed in a smoothing-chamber,  $D$ , the upper portion of the pipe being exposed so as to discharge steam upwardly into cloth passing over it, while the remainder of its perfor-

ations discharge steam into the chamber  $D$ , which is thus heated. The chamber  $D$  is so formed as to have a smooth convex outer surface in cross-section. The cloth to be sponged is passed in open width over the perforated steam-pipe  $C$ , in the direction indicated by the arrow, Fig. 2, and receives a preliminary steaming, the steam passing through the pores of the cloth as it passes along, and raising and roughening the nap. From the pipe  $C$  the cloth passes around the smooth, heated surface of the chamber  $D$ , which is so located with reference to the perforated pipe  $C$  and roller  $A^3$  as to subject the cloth to a large extent of its heated surface. The roughened nap of the cloth is smoothed by its passage over the smoothing-chamber, and the cloth then passes over the roller  $A^3$  and descends to a perforated revolving cylinder,  $E$ , on which it is wound in open width and steamed in bulk, the cylinder being provided with a suitable steam-inlet. This second steaming completes the sponging and shrinking of the cloth, and does not roughen the nap, owing to the cloth being wound upon the cylinder. The cloth is now ready to be removed from the cylinder  $E$ , but being saturated with steam it is necessary to remove the steam before folding the cloth. For this purpose I employ two or more fans, located on opposite sides of the path the cloth takes in passing from the cylinder  $E$  to the folding-table. These fans are of any desired form, and are rotated by the motor of the perforated cylinder  $E$ , or in any desired manner. The cloth, in passing between the fans as it is unwound from the cylinder  $E$ , has its surplus steam expelled, and may be conducted to a folding-table over the guide-rollers, substantially as shown in Fig. 3.

This machine, as a whole, constitutes a convenient apparatus for performing all the parts of the steam-sponging operation, much time and labor being saved by its employment. I do not desire to confine myself to the precise arrangement of parts with relation to each other, as any convenient arrangement adapted to subject cloth to the successive action of steaming, smoothing, re-steaming, and drying devices may be employed.

I have preferred to connect the perforated stationary pipe C and smoothing-chamber D on account of convenience. They may, however, be made separately, if desired, and provided with independent steam-connections, the only requisite being to subject the cloth to the action of the smoothing-chamber after it passes the steam-pipe C.

I claim as my invention—

1. The combination, in a cloth steaming or sponging machine, of a stationary perforated steam-pipe, C, a smoothing-chamber, D, and a revolving perforated steam cylinder, E, substantially as and for the purposes specified.

2. The combination, in a cloth steaming or sponging machine, of the stationary perfor-

ated steam-pipe C, smoothing-chamber D, revolving perforated cylinder E, and drying fans F F, substantially as described, for the purpose specified.

3. The process of steam sponging cloth, consisting essentially in steaming in single thickness, smoothing, steaming in bulk, and drying, substantially as described.

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

WILLIAM HEBDON.

Witnesses:

C. F. BROWN,

A. E. DENISON.