

D. SCRYMGEOUR.
Machine for the Manufacture of Thick Paper.
No. 196,542 Patented Oct. 30, 1877.

Fig. 1.

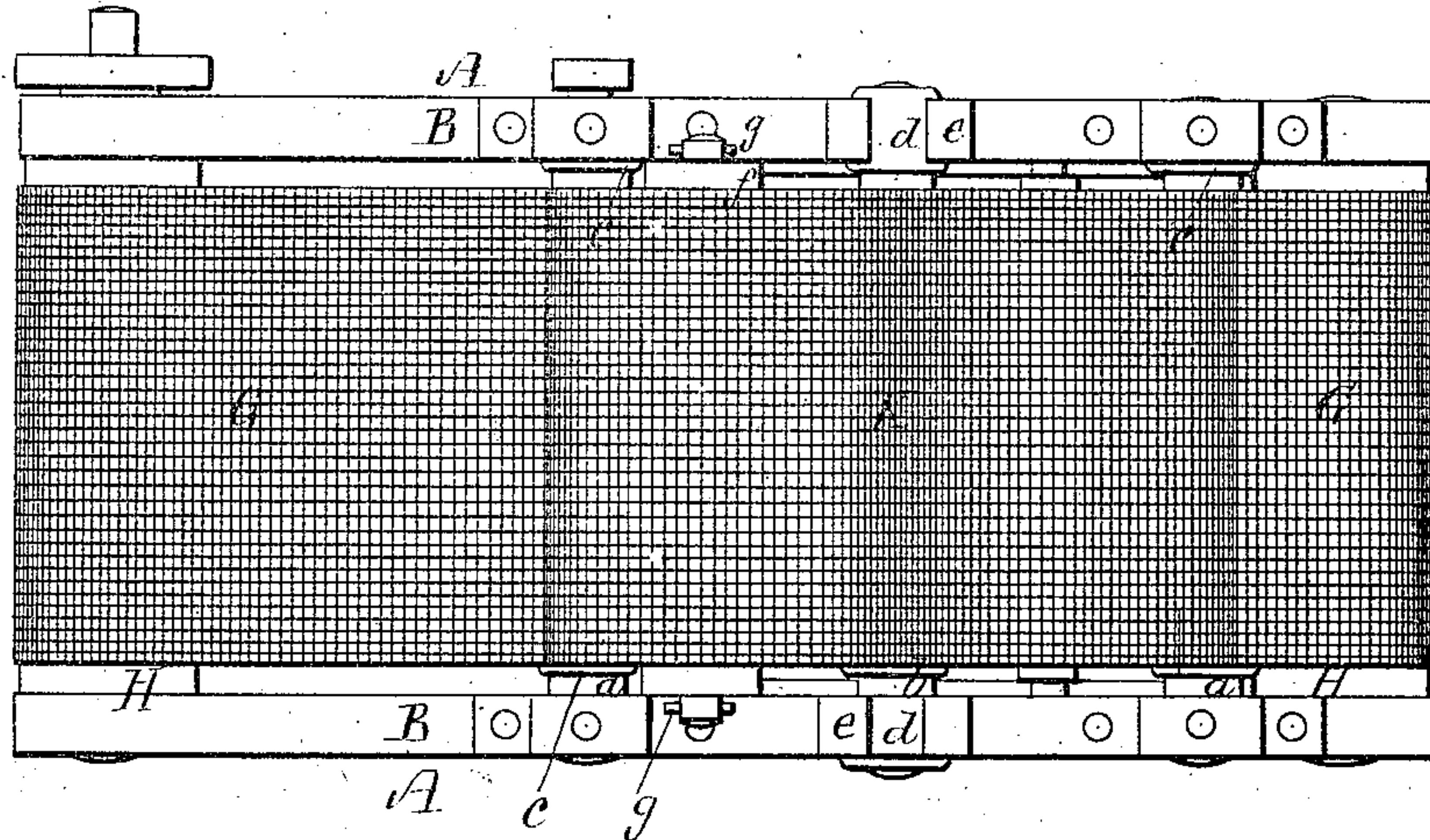
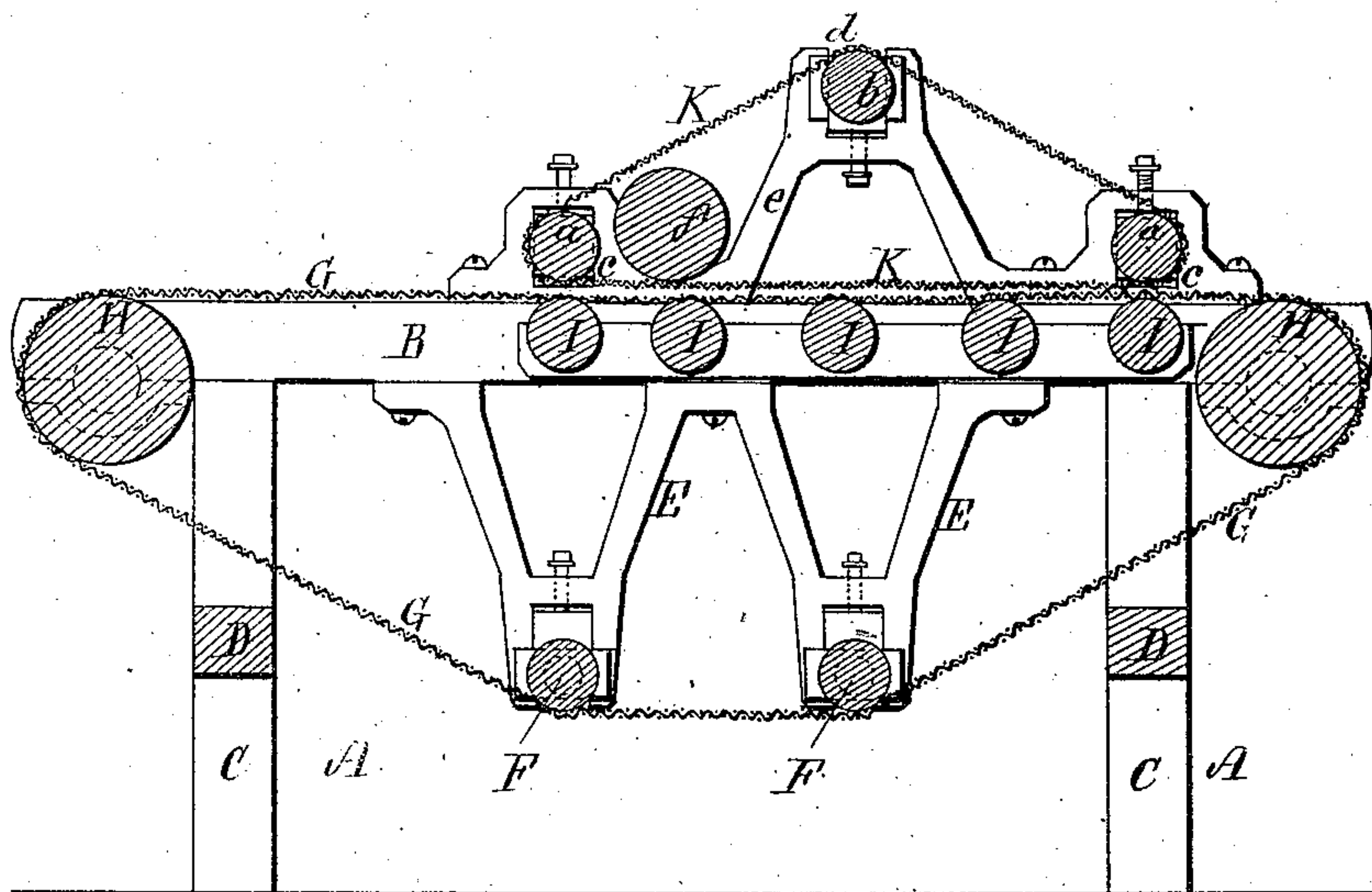


Fig. 2.



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UNITED STATES PATENT OFFICE.

DAVID SCRYMGEOUR, OF BOSTON, ASSIGNOR TO WILLIAM T. COOK, OF
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IMPROVEMENT IN MACHINES FOR THE MANUFACTURE OF THICK PAPER.

Specification forming part of Letters Patent No. 196,542, dated October 30, 1877; application filed
August 3, 1877.

To all whom it may concern:

Be it known that I, DAVID SCRYMGEOUR, of Boston, Suffolk county, Massachusetts, have invented certain Improvements in Fourdrinier Paper-Machines, of which the following is a specification:

This invention relates to means for providing a more effectual method of extracting water from paper-pulp in Fourdrinier paper-machines than the suction-boxes now universally employed to effect such object; and the invention, which may be employed as a substitute for or in combination with such suction-boxes, consists in an endless reticulated or foraminous apron disposed over the ordinary wire-cloth apron of the machine, and traveling in the same direction, and preferably at the same rate of speed, as the latter, the space which intervenes between the two aprons being adjusted to the desired thickness of the sheet of pulp, and being of such depth that as the web of pulp, after traveling from between the "deckle-straps," so called, and saturated with water, passes between such aprons, the water in the pulp is expressed by the pressure, and escapes through the interstices of the two aprons.

The purpose of my invention is to produce a homogeneous sheet of pulp for the manufacture of boot and shoe stiffenings, and other hollow or irregular articles, which shall be very much thicker than has heretofore been produced in paper-making machines; and I have found, in extended experiments on a large scale, that the mechanical pressure between the two reticulated aprons above alluded to has the effect of expressing water from a much thicker body or sheet of pulp than is possible to produce by the suction principle.

The drawings accompanying this specification represent, in Figure 1, a plan, and in Fig. 2 a vertical and longitudinal section, of a portion of a Fourdrinier paper-making machine with my improvements added.

In the said drawings, A A represent upright housings, composed of top horizontal rails B B, end standards C C, and cross-bars D D, each housing being formed with two hangers, E E, to support a pair of horizontal

parallel stretching-rollers, F F, whose journals revolve in boxes in said hangers, such boxes being adjustable, in order that the slack of the endless woven-wire apron proper of the paper-machine which is shown at G may be taken up and the apron kept taut.

At each end of the housings A A are disposed horizontal parallel guide or support rollers H H, whose journals revolve in bearings or boxes affixed to the rails B, while intermediate between these rollers, and with their upper surfaces in the same horizontal plane as those of the rollers H H, are a series of idle-rolls, I I, which serve to support the upper part of the apron G. The said apron G travels about the rollers F F, H H, and I I, &c., as shown in Fig. 2 of the drawings, and is to represent a portion of the ordinary woven-wire apron universally employed in paper-machines to receive the wet pulp from the screen, and guide the web until the water is practically extracted from it, the auxiliary or additional apron, which constitutes the subject of my present improvement, being situated, preferably, immediately after the deckle-straps or the "dandy-roll" which may be employed thereat.

My auxiliary apron is shown, at K in the accompanying drawings, as composed of woven wire-cloth, like the lower apron G, and travels about three support-rolls, a, a, and b, the two former being disposed horizontally, and in parallelism over and slightly above the lower apron G, and with their journals revolving in boxes c c, affixed adjustably to the top of the rails B, while the third roller, b, is likewise horizontal and parallel to the others, and is disposed over them, and has its journals supported in boxes d d, applied adjustably to standards e e, erected upon the top of the rails B, the manner of applying the boxes of the rollers a, a, and b to the housings of the machine enabling the apron K to be kept in a taut condition.

A heavy idle-roll, f, may be disposed over and resting upon the top of the lower portion of the apron K and guided in upright bearings g, such roller serving, in addition to the tension of such apron, to keep the latter down upon the web of pulp which passes between

the two aprons, and two or more of such rolls may be employed, if found desirable.

The adjustable manner of applying the boxes of the various rollers which support and guide the two reticulated aprons enables the space intervening between such aprons to be varied as occasion requires, in order to accommodate webs of pulp which may vary in thickness; or to change the degree of pressure exerted upon such pulp.

As the main purpose of my present machine is to manufacture large quantities of shoe-stiffenings, or other articles which require a pulp of uniform thickness, the positions of the various rolls would be seldom changed, except to take up the slack of the aprons.

Heretofore, in the manufacture of such articles, which I have produced in large quantities, I have found it impossible, with any paper-machine in use, to produce a single sheet of pulp of the desired thickness, but have been compelled to unite several sheets.

As before stated, I am enabled, by the employment of the apron K, to produce a much thicker homogeneous web or sheet of pulp than has been possible prior to my invention, and I consider my invention to consist in the employment, in combination with a Fourdrinier or other analogous paper-making machine, of an auxiliary or additional reticulated or foraminous apron, substantially as stated.

The extended surface which the apron K presents to the web of pulp prevents the crushing or displacement of the latter, which would

occur were rollers merely employed to obtain a pressure, and such apron may be employed in connection with the ordinary "suction-boxes," or take the place of the latter, as shown in the accompanying drawings.

A limit to the functions or powers of suction-boxes consists in the fact that the pulp in the lower part of the web which passes over them clogs or obstructs the escape of water from the upper part, and the suction is not of sufficient power to overcome it.

By the employment of two reticulated aprons, between which the web passes, and thus affording an escape for the water upon both sides of the web, as well as exerting great pressure upon such web, I am enabled to thoroughly extract the water from all the pulp which will flow upon the apron proper of a machine.

I claim—

The combination, with the endless wire-cloth shake-apron of a Fourdrinier paper-machine, of an auxiliary reticulated apron disposed over the first, and operating with it in such manner that the web of pulp passes between the two, and is subjected to pressure, which expresses the water, and permits it to escape from both sides, substantially as and for the purposes stated.

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Witnesses:

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