(No Model.)

G. M. STEVENS & H. J. CHISHOLM.

PROCESS OF MANUFACTURING FIBROUS WARE.

No. 246,569. Patented Aug. 30, 1881.

Fig. 1.

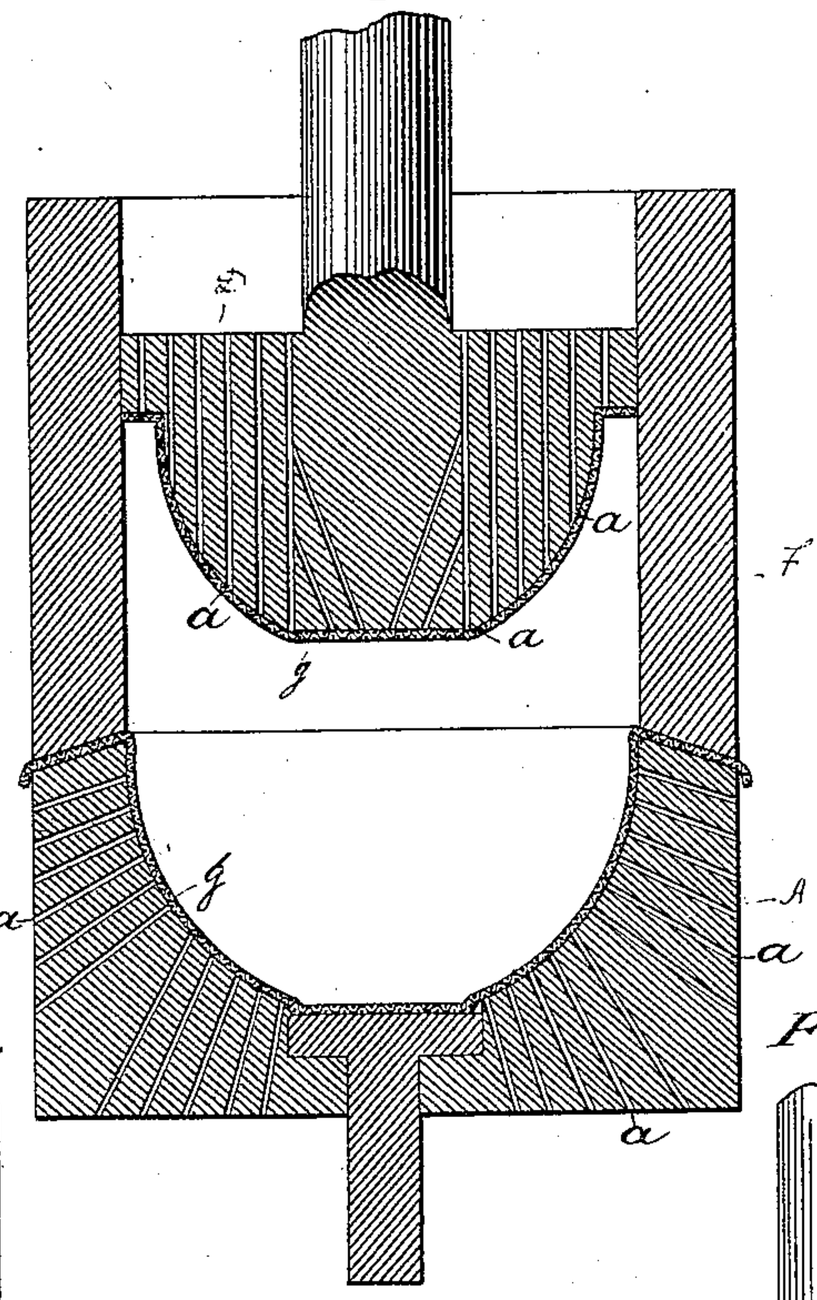


Fig. 2.

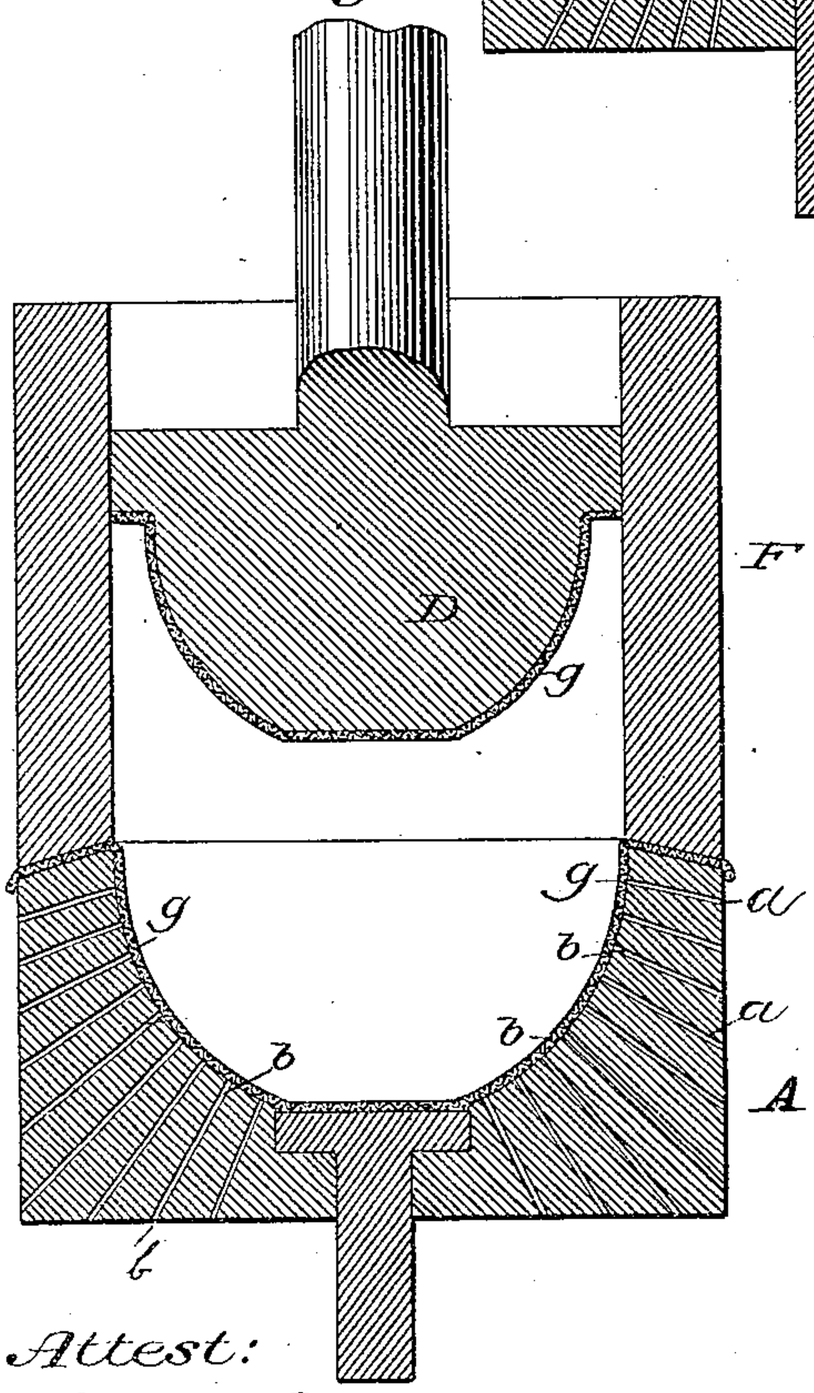
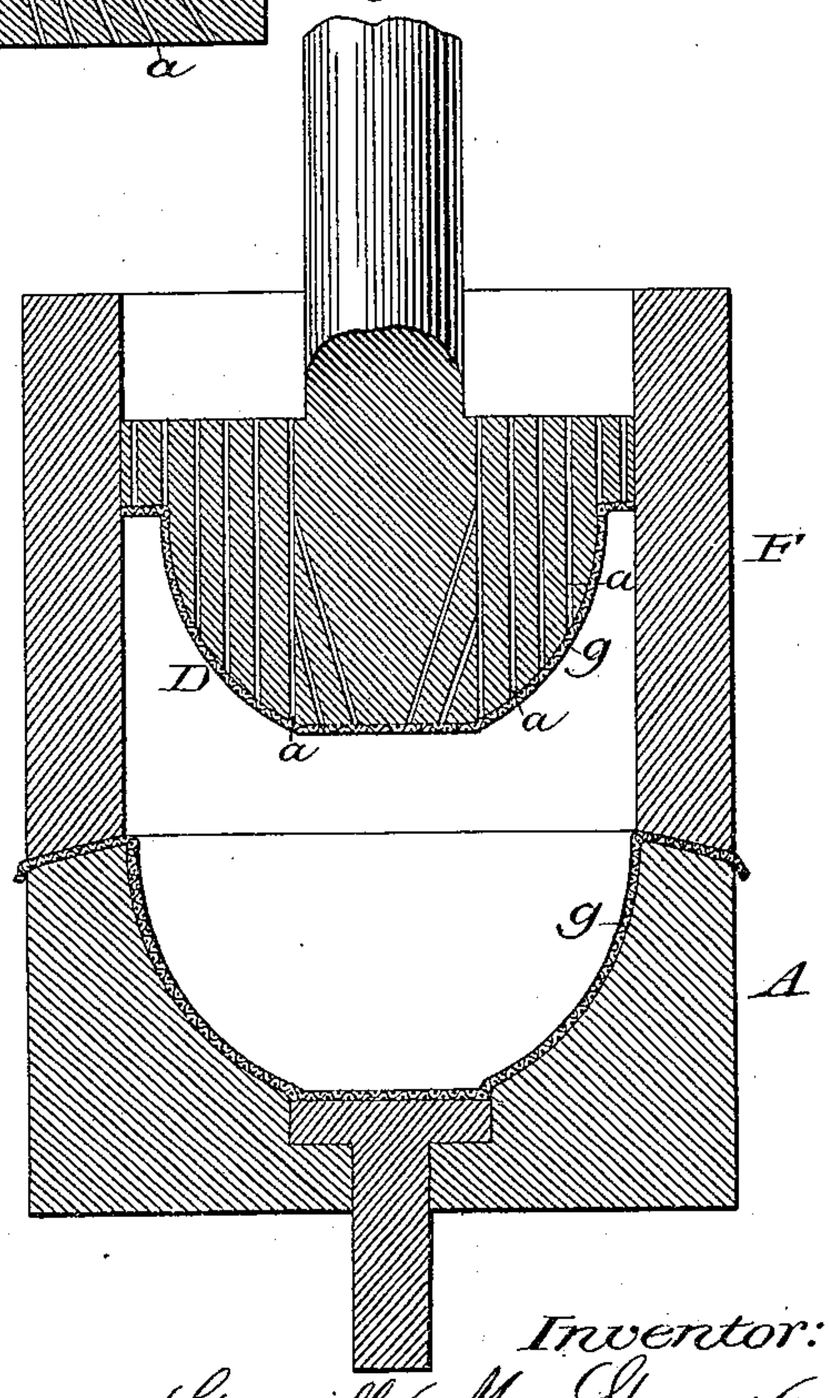


Fig. 3.



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UNITED STATES PATENT OFFICE.

GRENVILLE M. STEVENS, OF DEERING, AND HUGH J. CHISHOLM, OF PORTLAND, MAINE.

PROCESS OF MANUFACTURING FIBROUS WARE.

SPECIFICATION forming part of Letters Patent No. 246,569, dated August 30, 1881.

Application filed June 2, 1881. (No model.)

To all whom it may concern:

Be it known that we, GRENVILLE M. STEVENS and HUGH J. CHISHOLM, respectively of Deering and Portland, in the county of Cumberland and State of Maine, have invented a new and useful Improvement in a Process for Manufacturing Fibrous Ware; and we do hereby declare that the following is a full, clear, and exact description of the same.

Our invention relates to the making of articles from fibrous pulp, and is an improvement upon the invention for which Letters Patent were granted to us on the 23d day of November, 1880, and reissued on the 1st day of March, 1881, No. 9,598.

Our present improvements relate to dies of the same general character, more especially for pressing articles having a concave surface, the dies in every case operated in connection with a flexible drainer, such as that described in our said patent.

The accompanying drawings represent, in Figure 1, a central vertical section of our improved apparatus, and in Figs. 2 and 3 sectional views of modifications.

In the drawings the female die is represented at A, the male die at D, the flexible drainer at *g*, and the casing in which the male die works at F.

In our former patent, heretofore mentioned, the water expelled from the pulp by the pressure of the dies was caused to pass up over the edge of the lower or female die, being expelled through notches in the edge thereof, or through the interstices of the felt or chamois-skin which constitutes the flexible drainer. We have discovered that for some purposes this flexible drainer may be made to operate advantageously in connection with perforated dies.

In Fig. 1 we have shown the male die perforated, as represented at *a a*. These perforations extend up through said die into the hollow interior of the case, so that when pressure is applied the water is expelled from the space below the die through the flexible drainer, which covers the surface of the die, and through the perforations into the interior. It will be understood that in this case the male die is provided with an independent flexible covering, such as chamois-skin or felt, or like substance, which will retain the particles of fibrous pulp but will permit the water to pass through. The flexible drainer must be placed over the end of the die before it is introduced into the case F, it being understood that the case F, being in place on the lower die, is filled with the liquid or semi-liquid pulp.

If the form of the dies admit of it, the flexible drainer may be cut so as just to cover the end of the male die, said die fitting closely, under such conditions, within the case F; or the male die may be made slightly smaller than the interior diameter of the case F, and the edges of the flexible drainer may be pressed between the die and the interior of said case. For some kinds of work this construction will be sufficient to discharge the water from the pulp, the cavity above the male die being sufficient to hold all that is expelled from the pulp while in the process of condensation. Such expelled water may, however, be conducted out of the interior of the case by any suitable pipe leading therefrom. In some cases it may be necessary to provide other means for the more rapid escape of the water, and the lower or female die may be perforated, as shown in Fig. 2. In this latter case the water is expelled both through the male and female dies, the upper or male die having also perforations. (Not shown in Fig. 2.) The holes in the female die are indicated at *b*, and they may be placed in any part of the die or throughout its whole extent, approaching very nearly to the top. In both cases, whether the male die alone be perforated or both the male and female dies, we propose to cover them with the flexible drainer, and arrange it as shown in our said patent, so that while the escape of the water is in part through the perforations, it may also escape over the edges through the border of the flexible drainer.

In Fig. 2 we have shown the female die perforated nearly to the top, and the male die made solid, the former being covered with the flexible drainer. In this case the flexible drainer may be compressed around the edges between the male die and the case F, and when the die is subjected to pressure water from the

pulp may escape by percolation through the drainer in the space between the die and the case.

In Fig. 3 we have shown the male die alone perforated, the female being left solid.

We are aware that perforated dies for pressing paper articles are not new.

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

1. The female die A, perforated, as described, and provided with a flexible drainer, in combination with the case F and male die D, substantially as described.

2. The perforated die D, provided with flexible drainer, in combination with case F and female die A, substantially as described.

3. The combination of case F, perforated die D, provided with drainer over the inner surface, and perforated die A, and drainer *g*, spread within, all as shown and described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

GRENVILLE M. STEVENS.
HUGH J. CHISHOLM.

Witnesses:
GEORGE W. VERRILL,
BYRON D. VERRILL.