

(No Model.)

J. DUNLAP.

MACHINE FOR SHRINKING HAT BODIES AND OTHER ARTICLES.

No. 344,257.

Patented June 22, 1886.

Fig. 2.

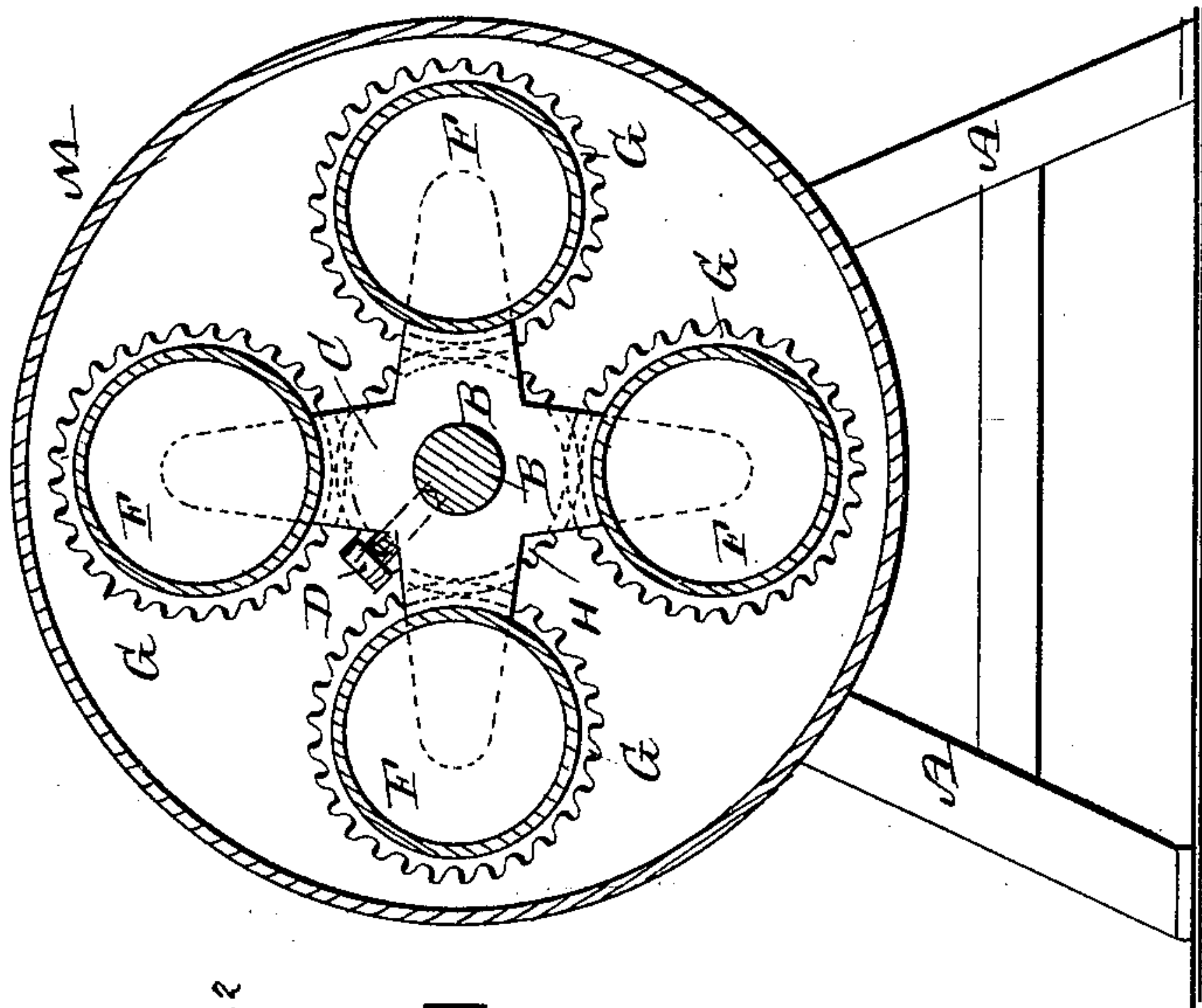
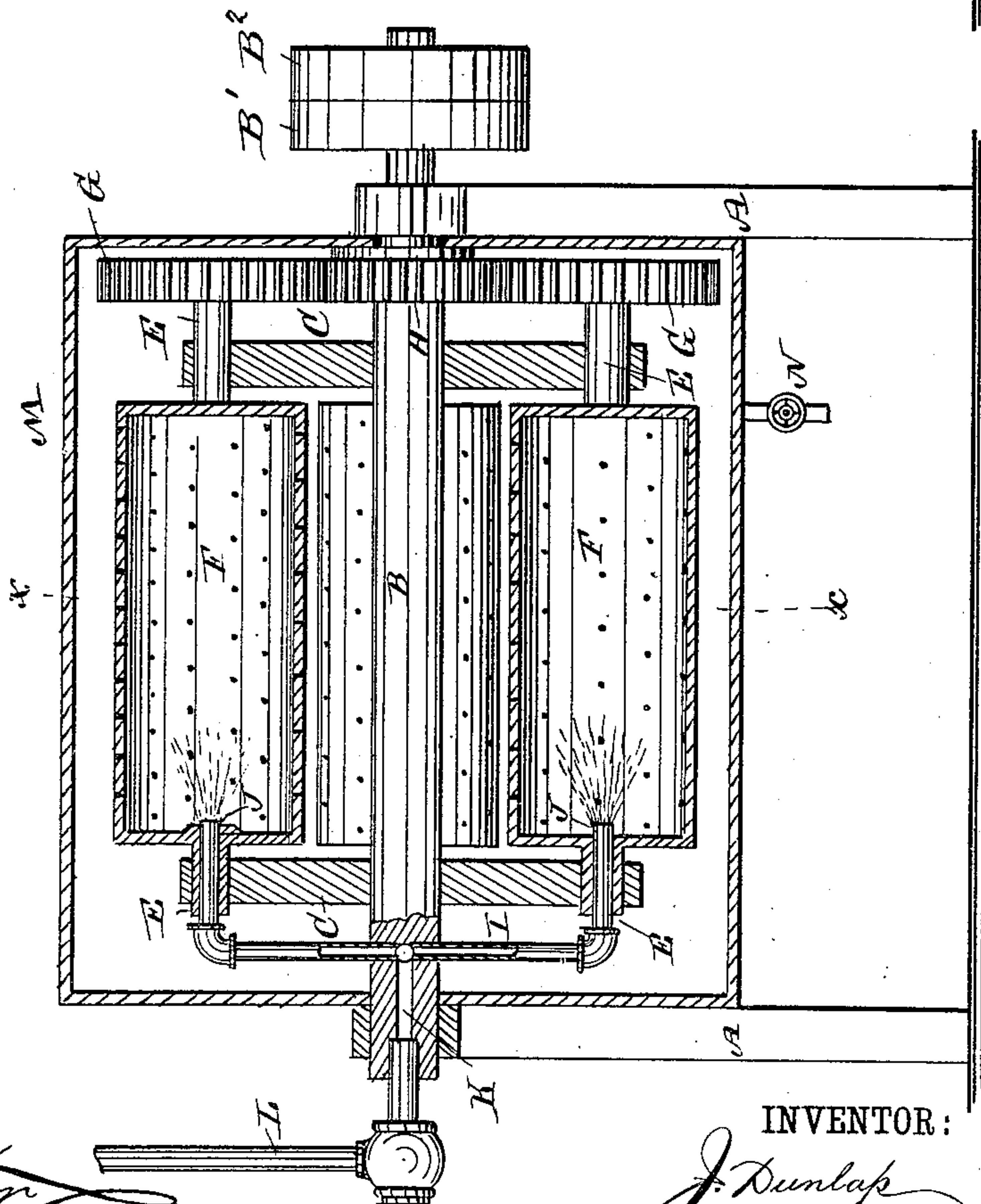


Fig. 1.



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# UNITED STATES PATENT OFFICE.

JAMES DUNLAP, OF BOSTON, MASSACHUSETTS.

## MACHINE FOR SHRINKING HAT-BODIES AND OTHER ARTICLES.

SPECIFICATION forming part of Letters Patent No. 344,257, dated June 22, 1886.

Application filed August 7, 1885. Serial No. 173,827. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES DUNLAP, of Boston, (Charlestown,) in the county of Suffolk and State of Massachusetts, have invented a new and Improved Machine for Shrinking Hat-Bodies and other Articles, of which the following is a full, clear, and exact description.

The object of my invention is to provide a new and improved machine for treating felt hat-bodies and other articles by steam to cause them to shrink, which machine is simple in construction works rapidly, perfectly, and economically.

The invention consists in a machine constructed with a revolving shaft carrying arms on which perforated drums are mounted which are revolved by suitable gearing, and into which steam is conducted by suitable pipes.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in both the figures.

Figure 1 is a longitudinal sectional elevation of my improved machine for shrinking felt hat-bodies and other articles. Fig. 2 is a cross-sectional elevation of the same on the line *x x*, Fig. 1.

On the two upright frames or standards A the shaft B is journaled, and on one end of the same the fixed and loose belt-pulleys B' B<sup>2</sup> are mounted. On each end of the shaft a cross-shaped arm, C, is mounted centrally, and held in place by a set-screw, D, and in the ends of the corresponding arms the end pivots, E, of cylinders F are journaled, which cylinders have numerous perforations and have plain or ribbed inner surfaces. On one pivot E of each cylinder F a cog-wheel, G, is mounted, and the said cog-wheel engages with a smaller or like cog-wheel, H, preferably smaller, attached to the stationary bearing of the shaft B, and does not revolve. The opposite pivots are hollow, and through each a steam-pipe, J, passes, which pipes J are connected by pipes I with the bore K of the shaft B, into which bore steam is conducted by a pipe, L.

The several cylinders, cog-wheels, &c., are surrounded by a wooden or metal drum or cylinder, M, which may be fixed or may revolve with the shaft B.

The operation is as follows: The hat-bodies,

&c., are placed in the cylinders F and the shaft B revolved. Steam is admitted into the several cylinders and acts upon the hat-bodies, which are forced by the centrifugal force against the inner surfaces of the cylinders F, and acted on by the centrifugal force of the entire revolving mechanism. Two centrifugal forces thus act on the hat-bodies. The water of condensation is thrown out of the cylinder F through the apertures in the same and collects in the drum M, from which it is drawn through the pipe N. The steam is then shut off and the cylinders revolved, whereby the water is all expelled and the hat-bodies dried.

The machine has a great capacity. The shrinkage is perfect and even. The material is not injured, and better work with less labor is obtained in the subsequent operations.

I am aware that it is not new to admit steam into the revolving drum or cylinder of a felt-ing-machine through a bore in one of its journals; also, that a ribbed cylinder has been placed within a plain cylinder, the hat-bodies or other felt articles being acted upon by the ribbed surface of the inner cylinder, and I do not claim such as of my invention.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A machine for shrinking hat-bodies and other articles, consisting of a series of hollow cylinders mounted to revolve in arms on a revolving shaft, the said hollow cylinders being constructed to receive the articles within them, substantially as herein shown and described.

2. In a machine for shrinking hat-bodies and other articles, the combination, with a revolving shaft, of arms on the same, cylinders mounted to revolve on the arms, and gearing for revolving the hollow cylinders, the said hollow cylinders being constructed to receive the articles within them, substantially as herein shown and described.

3. In a machine for shrinking hat-bodies and other articles, the combination, with a shaft mounted to revolve, of arms on the same, cylinders mounted to revolve on the arms, gearing for revolving said cylinders, and pipes for conducting steam into the cylinders, substantially as herein shown and described.

4. A machine for shrinking felt articles,

consisting of a rotary shaft, arms secured thereto, and perforated hollow cylinders mounted on said arms and rotating with and on said arms, substantially as set forth.

5 5. In a machine for shrinking hat-bodies and other articles, the combination, with a revolving shaft, of arms on the same, cylinders journaled on the arms, gearing for revolving said cylinders, pipes for conducting  
10 steam into the cylinders, and a drum surrounding the cylinders, substantially as herein shown and described.

6. The combination, with the revolving

shaft B, of the arms C on the same, the cog-wheel H, fixed to the stationary bearing of the shaft B, the cylinders F, mounted on the arms  
15 and each having a cog-wheel on one pivot, which cog-wheels engage with the stationary cog-wheel on the bearing of the shaft, and of pipes in the other pivots, substantially as  
20 herein shown and described.

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Witnesses:

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