H. D. OSTERMOOR.

DRIER.

No. 191,997. Patented June 12, 1877.

Fig. 1.

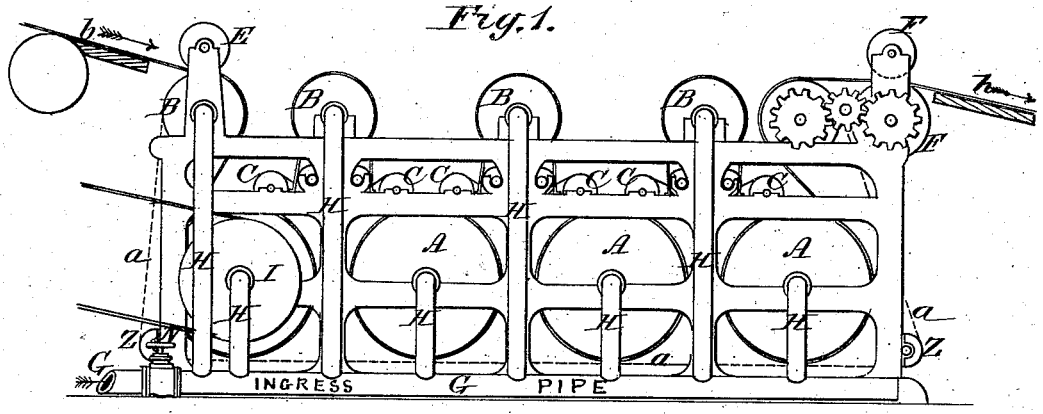


Fig. 3.

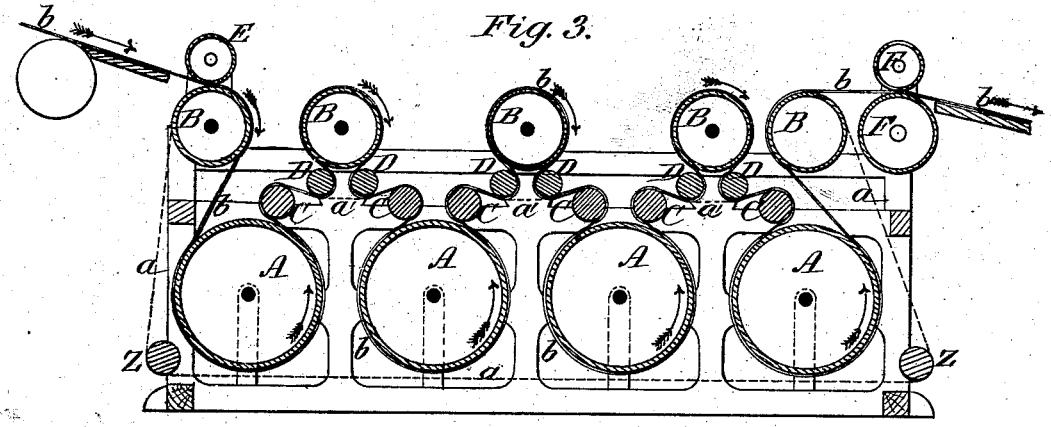
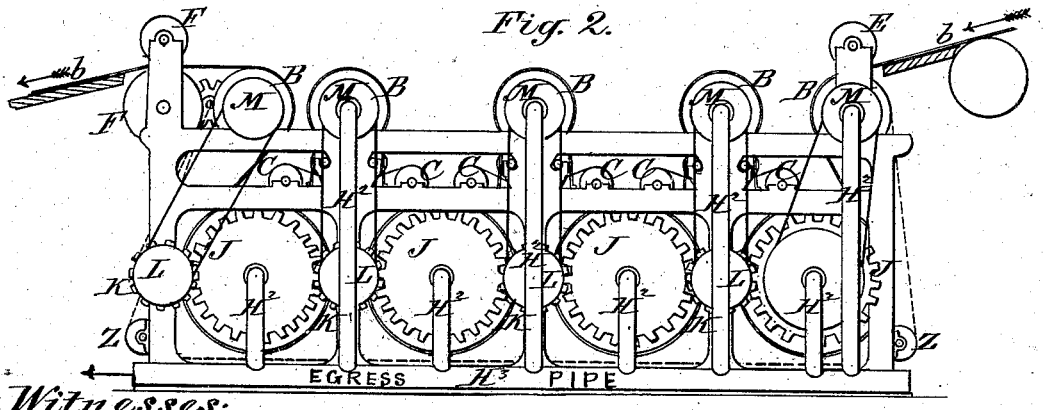


Fig. 2.

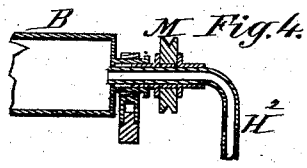


Witnesses:

J. Wes. Wagner

Floyd Norris.

Fig. 4.



H. D. Ostermoor

by Johnson & Johnson

Attys.

UNITED STATES PATENT OFFICE.

HENRY D. OSTERMOOR, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN DRIERS.

Specification forming part of Letters Patent No. **191,997**, dated June 12, 1877; application filed May 11, 1877.

To all whom it may concern:

Be it known that I, HENRY D. OSTERMOOR, of Brooklyn, Kings county, and State of New York, have invented certain new and useful Improvements in Machines for Drying and Preparing Cotton-Felt for the manufacture of mattresses, pillows, cushions, &c., which improvements are fully set forth in the following specification and accompanying drawings.

My improved machine is specially designed for drying and preparing felt known as "elastic felt," and used in the manufacture of mattresses, pillows, cushions, and the like, the object being to obtain the greatest operating-surface within the least space, and so distributing the heat required for the drying-cylinders as to render the machine practically free from the danger of overheating, and at the same time effect a large saving in expense of machinery and fuel.

This I accomplish by a new organization of drying-cylinders, consisting of an under and an upper series, arranged in horizontal but not in vertical planes, and adapted to cause the sheet-felt to pass under the lower drying-cylinders and over the upper drying-cylinders, whereby the sheet-felt is dried on its opposite sides and otherwise finished, during its passage through the machine, with a smooth and glossy surface.

The drying-cylinders are revolved with positive motions, and the steam, entering at one end through separate branch pipes, passes through and out at the opposite ends of said cylinders, and escapes through separate branch pipes, so that each row of the cylinders has only to dry one side of the felt, and does not require for this purpose such a high degree of heat as would endanger destruction by fire.

Referring to the drawings, Figure 1 represents a side elevation of a machine for drying cotton-felt embracing my invention; Fig. 2, an elevation of the opposite side of the machine; Fig. 3, a vertical longitudinal section of the same, and Fig. 4 shows the connection of the hollow journals and fixed steam-pipe.

A suitable oblong rectangular frame of iron is adapted to support in bearings two horizontal rows of hollow drying-cylinders, the lower row A being the largest, and the upper row B the smallest, and arranged vertically between each pair of the lower row, there being sufficient room between the lower ones to admit of the proper working of a carrying-apron and the felt. Between the rows of cylinders are small rolls C, arranged on each side of the upper cylinders, and above these rolls are other rolls, D, arranged in pairs contiguous to the under surface of the upper cylinders.

The carrying-apron *a* is endless, and passes over the front top end cylinder, under the lower front cylinder, over the rolls C, and under the rolls D, so that it does not touch the upper cylinders, as shown at *a'*, Fig. 3, nor, in returning, does it touch the lower cylinders. A compressing-roll, E, is arranged at the receiving end of the machine to press upon the upper end cylinder, and feed and compress the sheet-felt *b* as it is received from the carding-engine. At the delivery end of the machine there are calender-rolls F, between which the dried felt passes, and has its surface finished and again compressed.

The sheet-felt is carried by the apron over the front end top cylinder, under the lower cylinder, up over the rolls C, under the rolls D, and over the next top cylinder, and so on to the end of the machine, where it is delivered between the calender-rolls, and cut into suitable lengths for use.

The steam for drying the felt is introduced by a side pipe, G, from which rise branch pipes H, which enter the hollow axis of the cylinders, as shown in Fig. 4, through which cylinders the steam passes, and escapes at the opposite ends through a similar arrangement of pipes, H^2 H^3, the joints of the cylinders and pipes being made steam-tight in any suitable manner. By this arrangement the steam enters all the cylinders at one side of the machine and passes out at the other, each revolving cylinder having a fixed branch-pipe connection by hollow journals and stuffing-boxes.

All the drying-cylinders have positive motions, the lower front one being driven by a pulley, I, Fig. 1, and the others of the row, on the opposite side of the machine, by spur-gears J on the hollow journals, connected by pinions K on short shafts, provided each with a pulley, L, from which bands lead to pulleys M

on the hollow journals of the upper cylinders, whereby each cylinder is caused to have the proper motion in the proper direction to carry the apron continuously around and the felt continuously forward under the lower and over the upper cylinders. The lower one of the calender-rolls is driven by spur-gear from the last upper drying-cylinder, as shown in Fig. 1, an intermediate pinion being arranged to give the proper motion.

The inlet side pipe is provided with a cut-off cock, N, to cut off the steam from the cylinders. By this construction and arrangement of upper and lower rolls C D, both sides of the sheet-felt are kept in almost continuous contact with the surface of hot revolving cylinders, and given a smooth and well-formed surface, with a perfectly-dried and elastic body.

The felt is made about four feet wide, and is cut into suitable lengths and put up in bales for the trade. The cotton comes directly from the carding-room, passes over a hollow cylinder, where it is glazed with dextrine. Then another layer of carded cotton is added to that which is glazed, the two uniting and forming one sheet. It then passes over a chain through the compressing and the drying cylinders, as stated. All the cylinders are run by the same driving-shaft and at the same speed, so as to carry the felt about fifteen feet per minute. It may be increased to eighteen and reduced to twelve, if desired. The carrying-apron passes from the top end cylinders over lower end rolls Z, so that the returning side of the apron does not touch the lower cylinders. The machine may be used for drying other articles beside cotton-felt.

I claim—

1. A machine for drying and preparing cotton-felt, consisting of an upper and a lower row of hollow cylinders, heated by steam, an intermediate row of rolls, C, a series of pairs of rolls, D, adapted to hold the felt to the hollow cylinders, a carrying-apron, and compressing and calendering rolls, all constructed, arranged, and operating substantially as herein set forth.

2. The fixed supply and escape pipes and their branches, arranged upon opposite sides of the machine, in combination with hollow revolving cylinders, having hollow journals, as set forth.

3. The spur-gear J and pulleys M, arranged upon the hollow journals of the revolving steam-drying cylinders, and the lower intermediate pinions K and pulleys L, in combination with the driving-pulley and the drying-cylinders, as set forth.

4. The endless carrying-apron *a*, arranged, as described, to pass forward, under, around, and in contact with the lower cylinders A, under and without touching the upper cylinders B, and held away, at its returning side, from said lower cylinders by the end rolls Z Z, as set forth.

In testimony whereof I have hereunto set my hand in the presence of two witnesses.

HENRY D. OSTERMOOR.

Witnesses:

M. P. HUTCHISON,

EDWIN F. COREY.