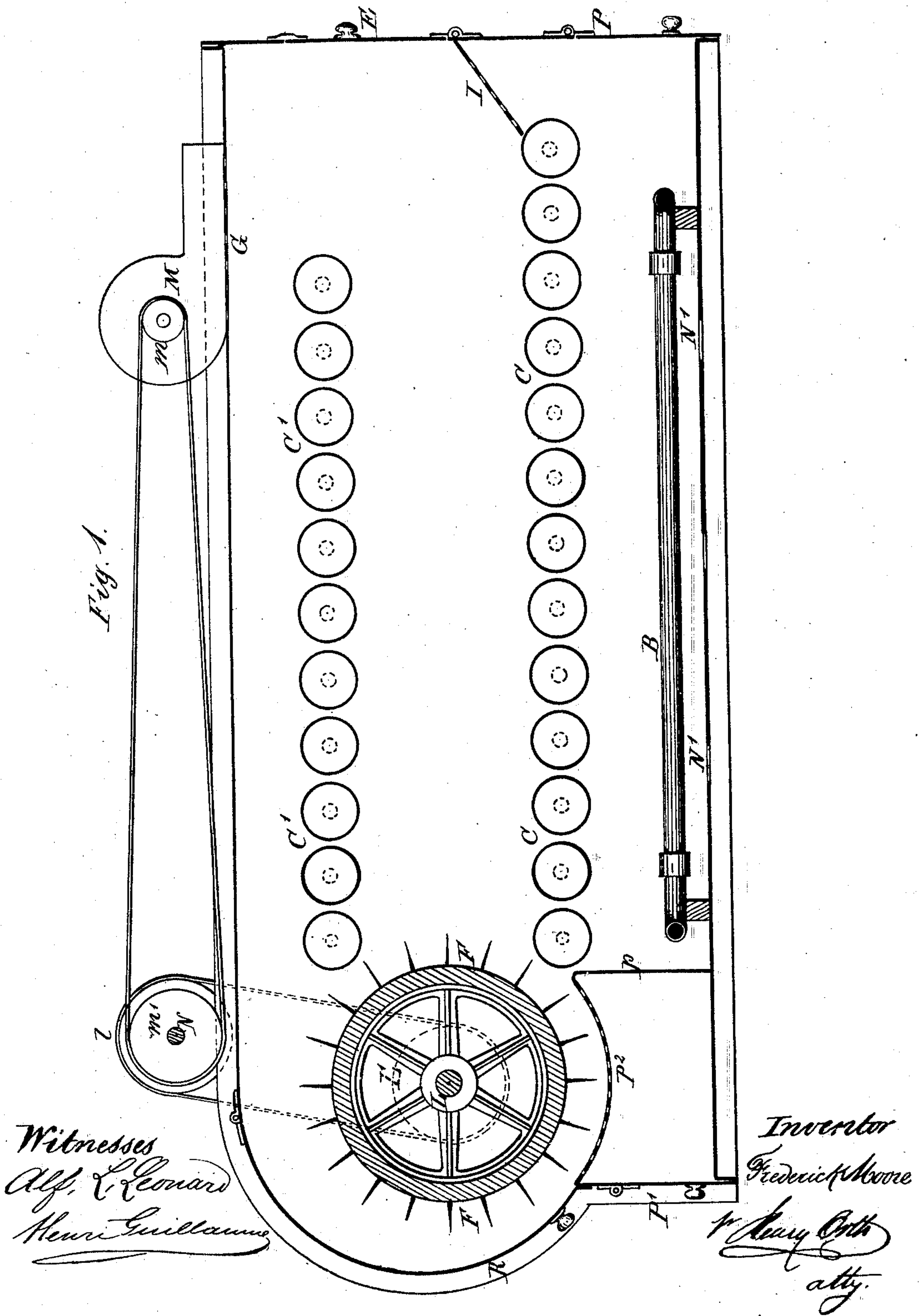


F. MOORE.
Wool-Dryers.

No. 197,487.

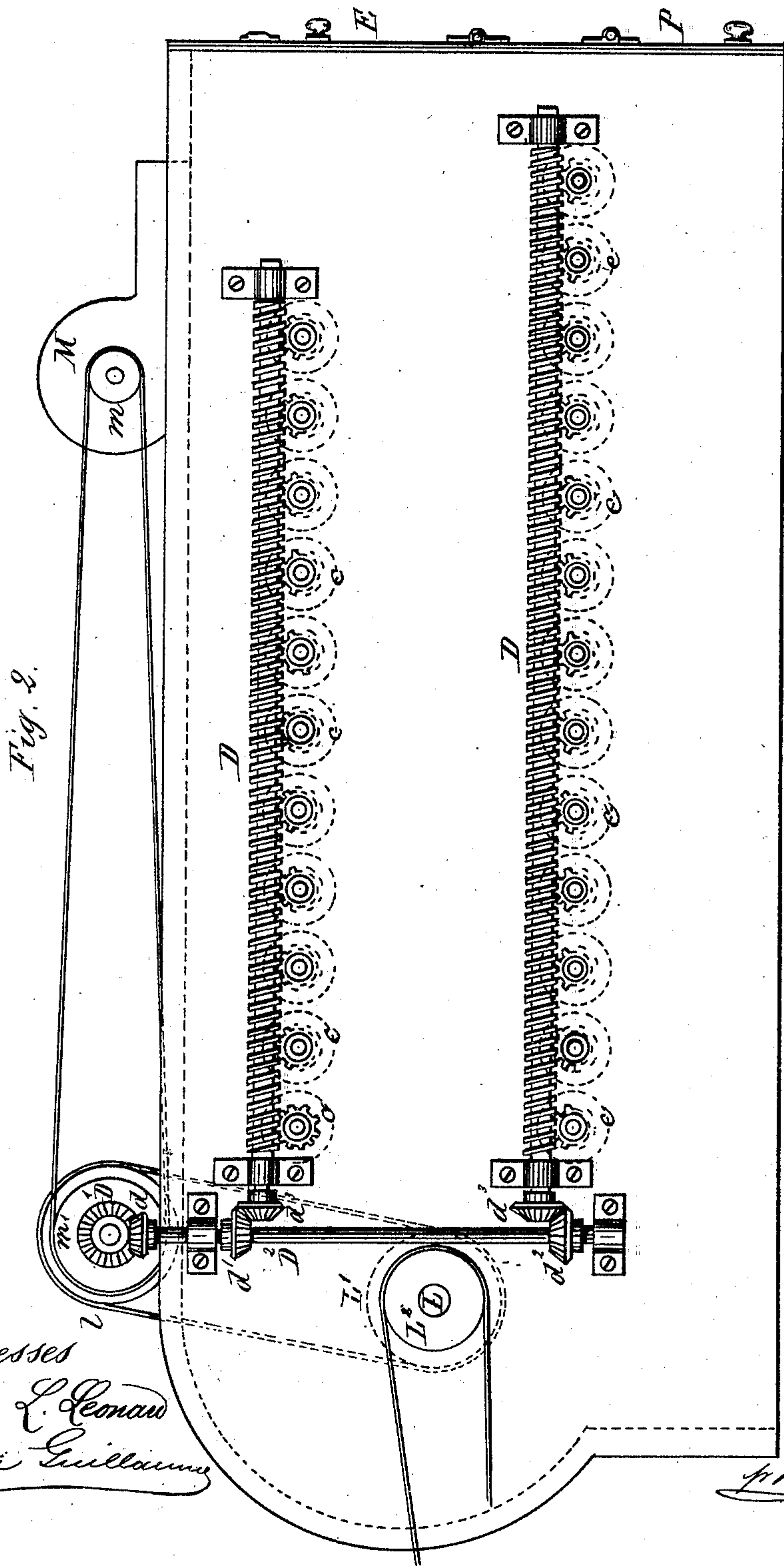
Patented Nov. 27, 1877.



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Witnesses
Alf. L. Leonard
Henri Guillaume

Inventor
Frederick Moore
per Henry Orth
att'y.

UNITED STATES PATENT OFFICE.

FREDERICK MOORE, OF TROWBRIDGE, ENGLAND.

IMPROVEMENT IN WOOL-DRIERS.

Specification forming part of Letters Patent No. **197,487**, dated November 27, 1877; application filed August 24, 1877.

To all whom it may concern:

Be it known that I, FREDERICK MOORE, of Trowbridge, in the county of Wilts, England, dyer, have invented certain Improved Machinery for Drying and Bumbling Wool; and I do hereby declare that the following is a full, clear, and exact description thereof, that will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

The object of this invention is to dry wool after it has undergone the washing or dyeing process, and this I effect in a more expeditious way than can be effected by any plan now in use.

My improvements consist, chiefly, in combining the bumbling and drying apparatus, so as to perform the two operations simultaneously, by which means the wool is freed from any dust that may be left therein after washing or dyeing, so that by one operation the wool is rendered fit for manufacture without going through any further dusting process.

In the accompanying drawing, the machine is represented in sectional elevation at Figure 1, and in side elevation at Fig. 2.

The machine consists of a suitable framework, paneled with sheet-iron, so as to form a close box or chamber. The lower part of the box or chamber is fitted with an arrangement of steam or hot-water pipes, B B, or other heating apparatus, for raising and maintaining a high temperature within the box. The box is also furnished with two rows of metal rollers, C C', and upon these rollers the wool is placed when introduced into the machine. On the shafts of these rollers are wheels working in a worm, D, causing the rollers to revolve, the worm receiving its motion from the bumble-shaft L by means of bevel-gearing; or other ways of driving the rollers may be readily adopted. A space is left at the end of the machine for the bumbling wheel or cylinder F, which is of a diameter to suit the depth from the top of the upper row of rollers to the bottom of the lower one.

Traveling aprons may be used instead of the rollers C C', if desired.

The operation is as follows: On commencing to feed the wet wool to the machine, the oper-

ator closes the door R and opens the door E, through which he throws in a quantity of wool, which is carried forward by the lower set of rollers C, steam having first been admitted to the heating apparatus, and the machine set in motion by means of the driving-pulley L², receiving motion from any suitable prime motor. The pulley L² is mounted on the bumbling-wheel shaft L, carrying at its other end a pulley, L¹, which communicates motion to the pulley l, mounted on one end of a counter-shaft arranged on top of the machine. This counter-shaft N carries also a pulley, m', which communicates motion to the pulley m on the fan-shaft to operate the fan M. On the other end of the shaft N a bevel-wheel, D¹, is mounted, gearing with a bevel-pinion, d, mounted on the upper end of a vertical spindle, D², which has its bearings in brackets on the side of the machine, as shown in Fig. 2. The vertical spindle also carries two bevel-pinions, d¹ d², meshing with similar pinions d³, mounted on the outer ends of the worms D, which serve to impart motion to the upper and lower series of carrying-rolls by means of the pinions c, mounted on their axes. In this manner the whole of the mechanism is set in motion from the bumbling-wheel shaft L.

The quantity of wool thrown in is carried forward by the lower row of rollers until it reaches the bumble, which takes and throws it onto the top of the upper row of rollers, by which it is carried back to the feeding end, and drops down onto the inclined plate I, and thence to the lower row of rollers. The operator continues to throw in wet wool until the portion first thrown in has traversed the machine and commences to fall down from the top row of rollers onto the inclined plate I. He then closes the door E, and allows the circulation of the wool to continue until it is thoroughly cleaned and dried. The door R is then opened, and it will be readily seen that the bumble F, instead of taking up the wool and throwing it onto the top row of rollers, will drive it out at the open door into a receptacle placed ready for it. The bumble F, being provided with iron teeth, opens the wool, and by its action frees it from any dye or other dust remaining therein.

The further to assist the drying process, an exhaust-fan, M, is connected with the top of

the machine, for the purpose of carrying off the vapor arising from the wool by reason of the high temperature to which it is subjected. Fresh air is supplied at the lower part of the machine in corresponding quantity through openings N' , and becomes heated by passing over the steam-pipes B, or other heating medium already referred to. The fan N, while exhausting the damp air, is prevented from drawing out the wool by means of a screen or grate, G. Doors P and P^1 , at the bottom of the box, allow of the dust being periodically removed therefrom.

It must be understood that one of the peculiar advantages of this machine is, that from the time the wool is introduced into the drying-chamber of the apparatus until it is discharged, it is kept continually in motion, the bumble F continually taking the wool from the lower set of rollers or apron and throwing it onto the top set of rollers or apron, thereby agitating or disturbing it, so as to allow the heat to penetrate through the whole mass without baking the wool or drying the surface of it only, as is the case when the wool simply lies at rest over a heated surface. This improved drying apparatus consequently obviates the difficulty of getting heat through the mass, and at the same time clears the wool of any dust and dirt that may remain therein.

I claim—

1. In a combined wool drying and bumbling machine, the combination of the casing hav-

ing doors E R, the screens I P^2 G, air-inlets N' , and an exhaust-fan and heating apparatus located within said casing, the bumbling-wheel, and two superposed series of carrying-rolls, all constructed and operating to carry the wool continuously from one series of rollers to the other, subjecting the wool at each rotation to the action of the bumbling-wheel until thoroughly cleansed and dried, substantially as described, for the purpose specified.

2. The combination of the casing and the screens I P^2 with the carrying-rolls and the bumbling-wheel, substantially as described, for the purpose specified.

3. The combination of the bumbling-wheel, the carrying-rolls, and the exhaust-fan with the pulleys L l, counter-shaft N, pulleys $m' m$, bevel-wheel D^1 , spindle D^2 , pinions $d d^1 d^2 d^3$, worms D, and pinions c, all constructed and operating substantially as described, for the purpose specified.

4. The combination of the casing, the screens I P^2 , the heating apparatus, the bumbling-wheel, the carrying-rolls C C', and an exhaust-fan provided with a perforated screen, G, all constructed and operating substantially as described, for the purpose specified.

In testimony that I claim the foregoing I have hereunto set my hand and seal.

FREDERICK MOORE. [L. S.]

Witnesses:

WM. WHITELEY,
J. W. TASKER.