

(No Model.)

2 Sheets—Sheet 1.

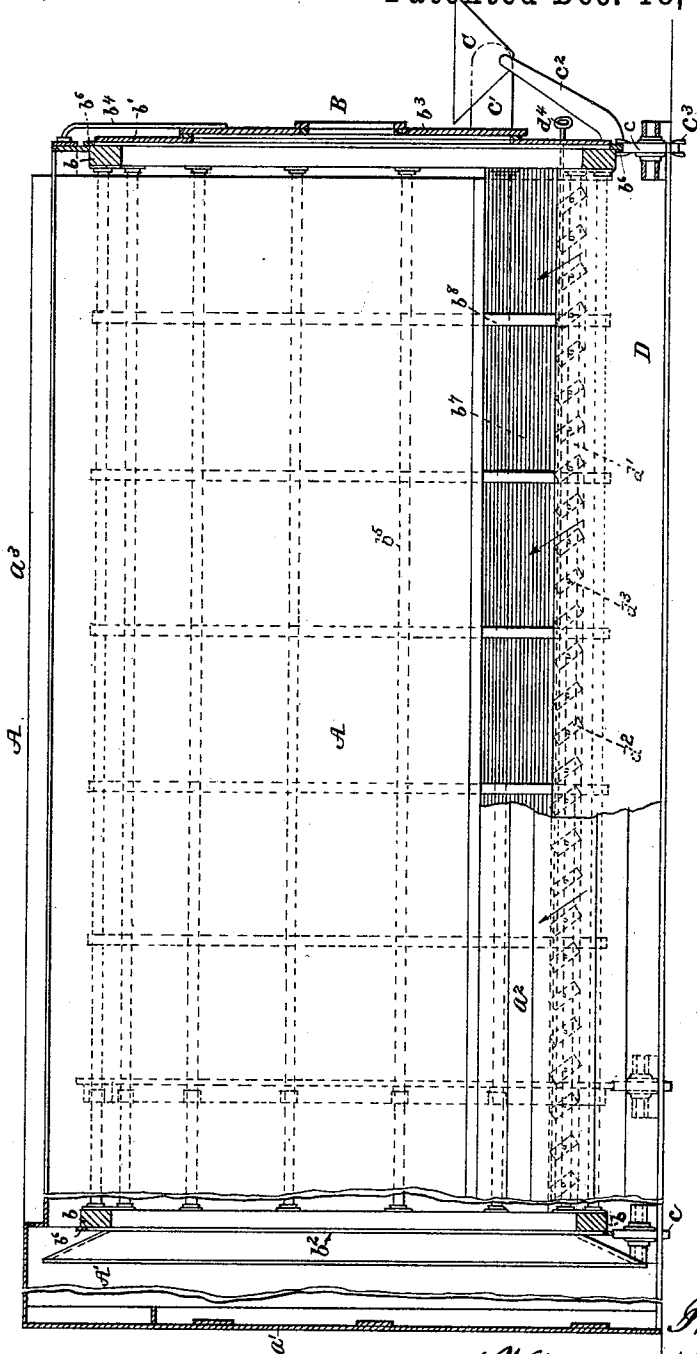
W. NELSON & E. BOWEN.

WOOL DRYING APPARATUS.

No. 394,714.

Patented Dec. 18, 1888.

FIG. 1.



Attest:

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FIG-2-

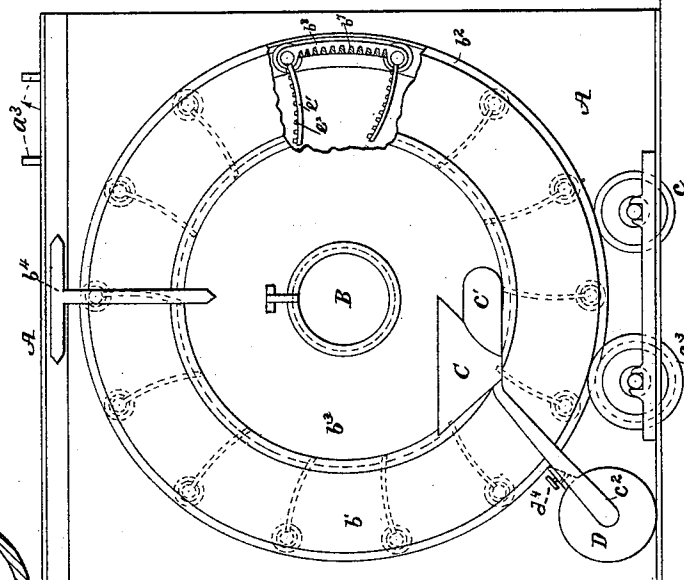


FIG-4-

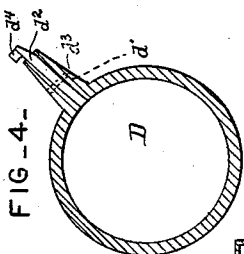
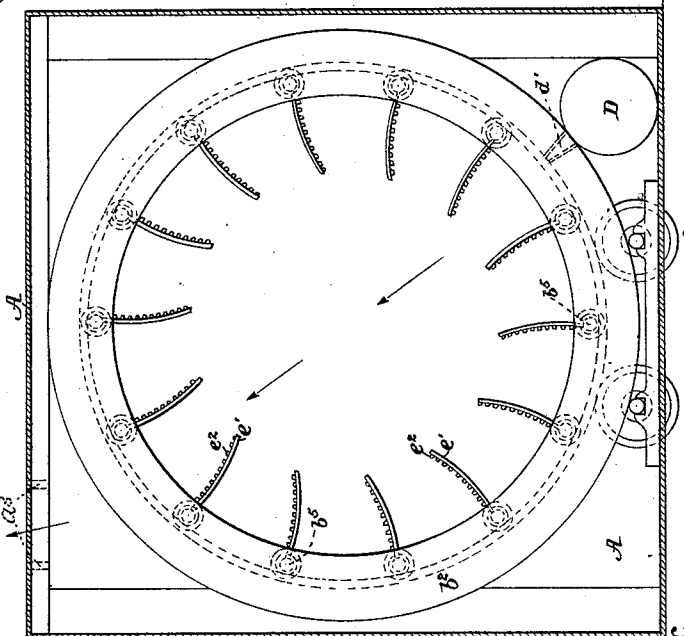


FIG-3-



Attest:

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UNITED STATES PATENT OFFICE.

WILLIAM NELSON AND EUGENE BOWEN, OF TOMOANA, NEW ZEALAND.

WOOL-DRYING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 394,714, dated December 18, 1888.

Application filed May 14, 1888. Serial No. 273,895. (No model.) Patented in New Zealand July 29, 1887, No. 2,455; in Victoria August 25, 1887, No. 5,265; in New South Wales August 27, 1887, No. 148; in Tasmania September 5, 1887, No. 483/9; in England September 19, 1887, No. 12,709, and in Queensland September 26, 1887, No. 324.

To all whom it may concern:

Be it known that we, WILLIAM NELSON and EUGENE BOWEN, citizens of the colony of New Zealand, both residing at Tomoana, in the provincial district of Hawke's Bay, in the said colony, and subjects of Her Majesty Queen Victoria, have invented a new and useful Improvement in Machinery or Apparatus for Drying Wool, (for which we have obtained the following patents: New Zealand, No. 2,455, bearing date July 29, 1887; Victoria, No. 5,265, bearing date August 25, 1887; New South Wales, No. 148, bearing date August 27, 1887; Tasmania, No. 483/9, bearing date September 5, 1887; Great Britain, No. 12,709, bearing date September 19, 1887, and Queensland, No. 324, bearing date September 26, 1887,) of which the following is a specification.

Our invention relates to wool-drying machinery in which a sparrowed drum revolves in a casing, the wool being dried in the said drum by means of a blast of air forced from a longitudinal slit in a longitudinal air-trunk, essentially as described in a specification filed by us in application for United States Letters Patent filed May 14, 1888, Serial No. 273,894, and we will describe our invention as applied to the machine described in that specification. In the said machine the blast from the air-trunk aforesaid simply dried the wool without expelling it from the drum, the expulsion of the dried wool being effected from time to time by means of a blast from an air-pipe opening into the drum at the feed end thereof.

Now our present invention consists of the modification hereinafter described in the aforesaid air-trunk, whereby we are enabled to dispense with the air-pipe above referred to and to effect both the drying of the wool and the expulsion of the dried wool continuously by means of the blast from the said air-trunk.

According to our present invention we do away with the air-pipe above described and we mount in the slit of the said air-trunk movable partitions hereinafter termed "feathers," by which the said slit is divided into a series of parts. These feathers turn on pivots and are jointed at their upper ends to a

connecting-rod, by means of which they can be moved simultaneously as required, so as to place them in an inclined position, so that the wool as it is dried is continuously expelled by the blast from the air-trunk, which blast impinges upon the wool at such an angle as to propel it through and expel it from the said drum at a speed proportioned to the angle at which the feathers are set. The connecting-rod aforesaid passes through a hole in the fixed part of the feed end of the casing, so as to be readily operated by the workman who feeds in the wool, the projecting end of the said rod being marked with a graduated scale, which indicates the angle at which the feathers are set. An aperture is formed in the casing at this part to admit the wool to be dried, which is thrown into a hopper communicating with the said aperture by means of an inclined chute, the feed being assisted by a blast of air from the upper end of a small pipe, the lower end of which communicates with the main air-trunk, which supplies the longitudinal air-trunk aforesaid.

We prolong the casing of the machine so as to form at the discharge end a small chamber, which receives the wool as it is blown out of the drum, the said chamber being closed by a door, by opening which access is gained to the said chamber for the removal from time to time of the accumulated dried wool.

Having now described the nature of our invention, we will proceed to describe the manner in which the same is to be performed, reference being had to the accompanying drawings, and to the letters and figures marked thereon.

Figure 1 is a side elevation, partly in section, of a drying-machine having the present invention applied thereto, one of the flap-doors a^2 being shown partly broken away in order to exhibit the interior of the machine. Figs. 2 and 3 respectively represent the feed and discharge ends of the drum; and Fig. 4 is a cross-section on a larger scale, showing the air-trunk and feathers.

The same letters indicate the same parts in the several figures.

A A is the casing of the machine, which is

prolonged at A', so as to constitute a discharge-chamber; a' being the door thereof.

B is the feed end of the drum, which is constructed with an internal flange, b', to keep the wool from getting to the friction-rollers. An external flange, b², is put on the discharge end for the same purpose.

b³ is a fixed central disk by which the feed end of the drum is closed, the said disk being suspended by an iron strap, b⁴.

C is a feed-hopper, the chute c' of which leads into the drum.

c² is a pipe for blowing in air to assist the feed, the lower end of which pipe opens into the air-trunk D, in the slit d' of which the feathers d² d² are mounted on pivots d³ d³.

d⁴ is a connecting-rod to which the said feathers are jointed, one end of which rod passes through a hole in the casing and is marked with the scale hereinbefore described.

a³ is the longitudinal opening through which the heated air escapes from the casing.

The ends of the drum are composed of wooden rings b, strengthened by iron bands b⁶, which run on rollers c c³, the latter being grooved, as shown. The tubes d⁵ extend from end to end of the drum and are secured to the rings b. The spaces between these tubes are filled by longitudinal bars b⁷, secured to rings b⁸. To the tubes b⁵ are secured inwardly-projecting curved arms e', to which are attached longitudinal strips e², forming shelves for catching up the wool and exposing it to the action of the air-blast as the drum rotates.

The action of the machine is as follows: The workman sets the aforesaid feathers at such an inclination or angle as to regulate the speed at which the blast from the air-trunk D propels the wool through the drum according to the dampness of the wool. If it be very damp the feathers are but slightly inclined from a vertical position, so as to cause the wool to travel slowly; but if it be comparatively dry the feathers are set at a greater inclination, so that the blast shall impinge upon the wool more obliquely, and thus cause it to travel faster. Having thus arranged the feathers, the workman starts the drum, which may be driven by a belt passing over ring b at the feed end, or in any other convenient way, and throws the wet wool by handfuls into the hopper C and turns on the blast through the pipe c². The wool is thus passed into and through the drum, being dried during its passage and expelled into the discharge-chamber A' by the blast from the longitudinal air-trunk D, from which chamber the dried wool is cleared from time to time as it accumulates.

The wool may be fed into the drum and carried away by endless creepers or any other suitable mechanical contrivance instead of being fed in and removed by hand, as hereinbefore described.

Although our invention is especially applicable to the machine described in our aforesaid specification, it will be obvious that the principle of mounting feathers on pivots in the slit of a longitudinal air-trunk may be applied to such air-trunks (other than that described in our aforesaid specification) as are or may be so arranged relatively to drying-drums that a blast directed by the said feathers obliquely upon the wool in the drum shall expel such wool, as hereinbefore described.

Having thus described the nature of our invention and the manner in which the same is to be performed, we wish it to be understood that we do not limit ourselves to the precise details hereinbefore described, as they may be varied without departing from the nature of our said invention; but

We claim as our invention—

1. In a drying-machine, the combination, with the revolving drum and air-trunk having a slit or opening for the passage of air into said drum, of a series of inclined feathers mounted in said slit or opening, substantially as described.

2. The combination, with the revolving drum and air-trunk having a longitudinal opening for the passage of air into said drum, of a series of feathers pivotally mounted in said slit or opening and a rod for setting said feathers at any desired angle, substantially as described.

3. The combination of the revolving drum having an opening for the admission of the material to be dried, the hopper at said opening, the air-trunk, the inclined feathers for directing air from said trunk into said drum in an oblique direction, and the connection from said air-trunk to said hopper for assisting the feed, substantially as described.

4. The combination of the revolving drum, the air-trunk having a longitudinal slit, the series of feathers pivotally mounted therein, and the discharge-chamber at one end of the drum, substantially as described.

WILLIAM NELSON.
EUGENE BOWEN.

In presence of—

FRANCIS LOGAN,
Notary Public, Napier, New Zealand.
JOHN ROCHFORD,
Law Clerk, Napier, New Zealand.