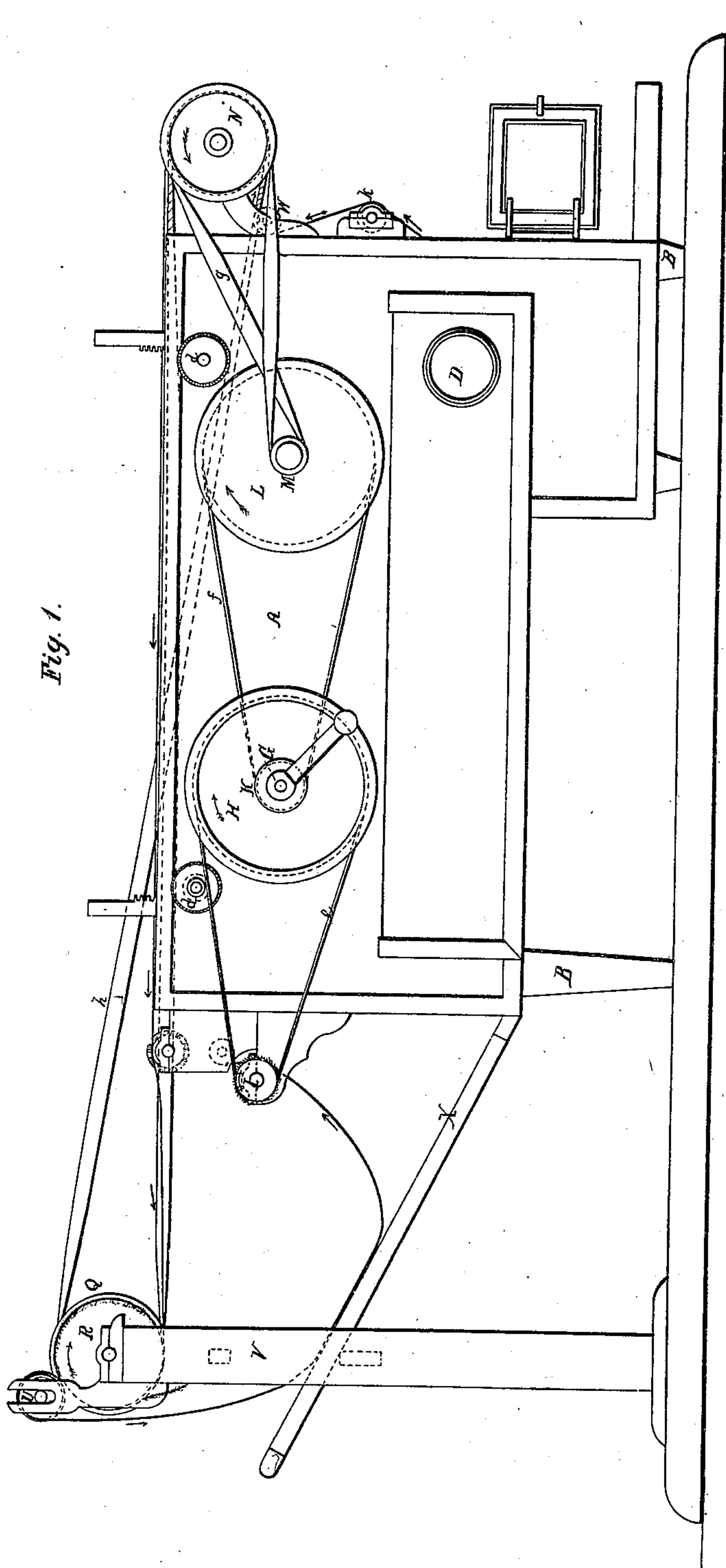


Sheet 1-3 Sheets.

R. Preston.
Cloth Drying Mach.

N^o 10,522.

Patented Feb. 14, 1854.



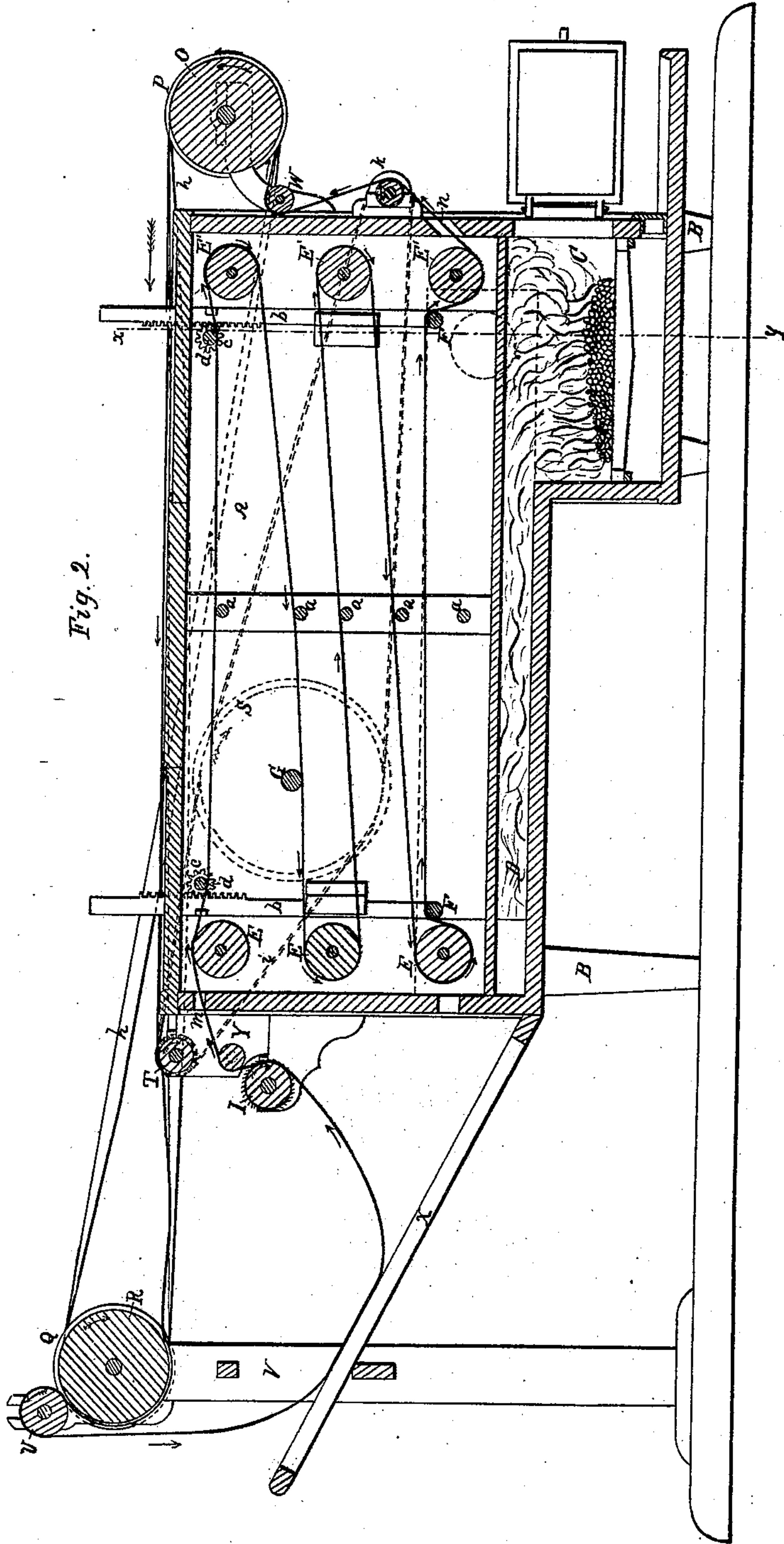
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R. Preston.

Cloth Drying Mach.

N^o 10,522.

Patented Feb. 14, 1854.



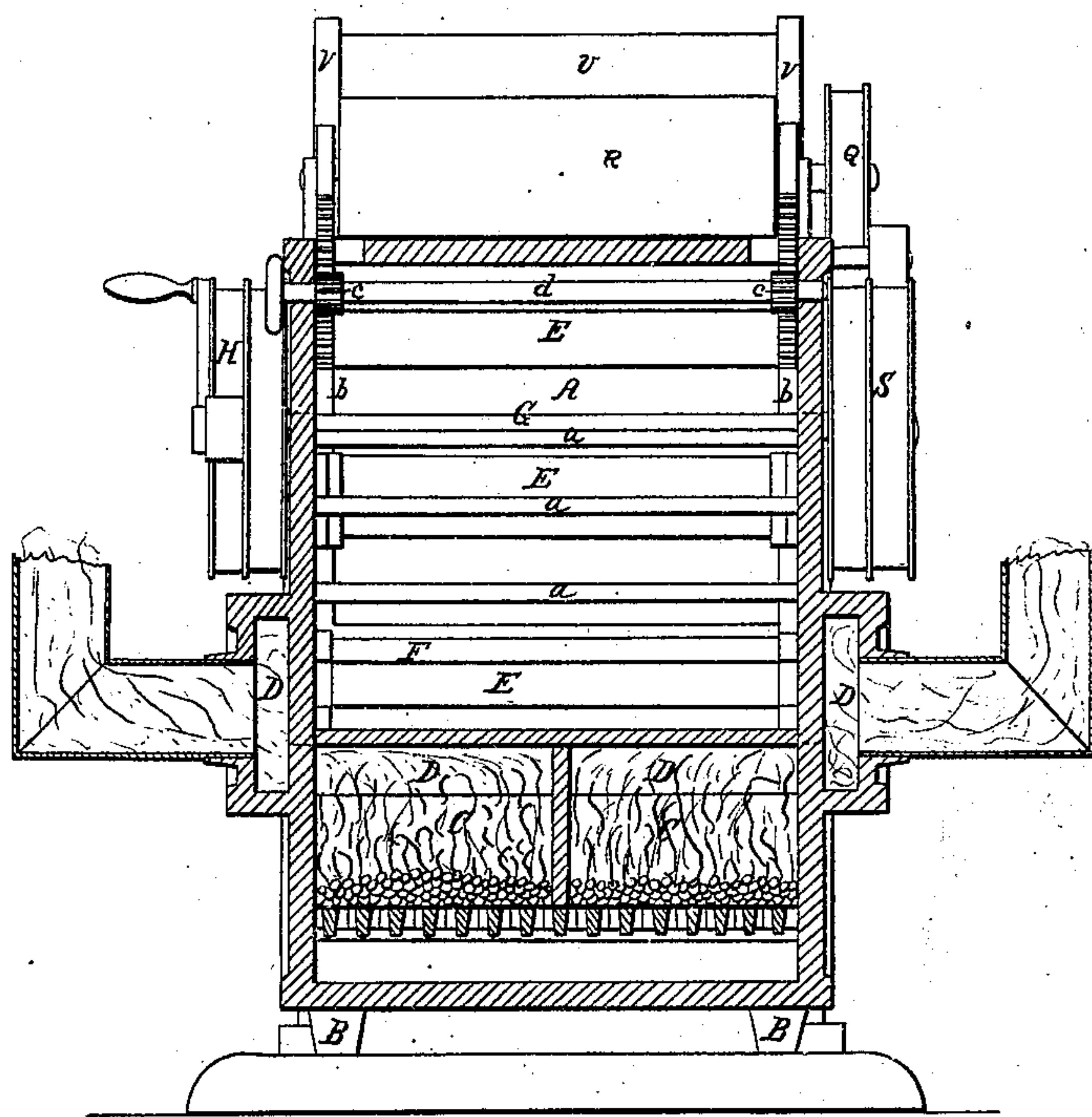
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Nº 10,522.

Patented Feb. 14, 1854.

Fig. 3.



UNITED STATES PATENT OFFICE.

ROBERT PRESTON, OF NORTH POWNAL, VERMONT.

DRYING CLOTH.

Specification of Letters Patent No. 10,522, dated February 14, 1854.

To all whom it may concern:

Be it known that I, ROBERT PRESTON, of North Pownal, in the county of Bennington and State of Vermont, have invented certain new and useful Improvements in Apparatus for Drying Woolen Cloths; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1, is a side elevation of my improved apparatus. Fig. 2, is a longitudinal vertical section of the same, taken nearly in a central plane; and Fig. 3, is a transverse vertical section, taken in the plane indicated by the line, *x. y*, in Fig. 2, and looking in the direction of the red arrow.

Similar letters of reference indicate corresponding parts, in each of the several figures.

At different stages in the manufacture of woolen cloth the piece requires to be dried, and this is commonly done by stretching it on tenter frames, which are placed in the open air. Drying in this manner is a process which occupies considerable time.

The objects of my invention are, to dry the cloth more quickly, and thus expedite the manufacture; also, to conduct the drying operation within the factory, which is more convenient; and further, to leave the nap smooth, after drying.

To enable those skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

A, is a large box or chamber, which has large openings in the top and openings, *m*, *n*, at the ends, which are long enough and deep enough to admit the cloth to be dried. It may be of plate or cast iron or other material, and is supported by standards, B, B. Under the front part of the chamber, A, there are furnaces, C, C, from which flues, D, extend to the back end, and then return along the sides to enter any suitable shaft. Within the chamber at opposite ends, are two series of rollers, E, and E', each series consisting of an equal number of rollers, arranged at some distance apart, in a vertical row. These rollers extend all across the chamber, and have journals, which turn freely in suitable bearings in the sides thereof. There is also another series of rollers, *a*, of smaller diameter, placed at about the middle of the chamber, and, in

addition to these, there are two rollers, F, whose journals are fitted to the lower ends of vertical slides, *b*, which are capable of being adjusted in suitable rabbets, in opposite sides of the chamber, by racks on one of their edges, which gear with pinions, *c*, on shafts, *d*, which are capable of being turned from the outside of the chamber.

G, is a shaft, which works in suitable bearings in the sides of the chamber, through which it passes, receiving rotary motion from any first mover. It carries, at its left hand end, a belt-pulley, H, which gives motion by a belt, *e*, to a nap-laying card cylinder, I, which works in bearings at the back of the exterior of the chamber, and also a smaller pulley, K, (shown dotted in Fig. 1,) which communicates motion by a belt, *f*, pulleys, L, and, M, and belt, *g*, to the pulley, N, on the shaft of a large roller, O, whose journals work in bearings at the upper part of the front of the exterior of the chamber. On the end of the shaft of the roller, O, opposite to the pulley, N, there is a pulley, P, which communicates motion by means of a belt, *h*, to a pulley, Q, on the shaft of a roller, R, of similar size to, O, the latter roller having its journals resting in bearings in standards, V, at a short distance from the back of the chamber. The shaft, G, carries, at its right hand end, a double pulley, S, which gives motion by a belt, *i*, to a brush cylinder, T, at the back of the chamber, and, by another belt, *j*, to a smoothing roller, *k*, in front of the chamber.

U, is a roller, whose journals work in guides in the upper part of the standards, V, and which is allowed to fall by its own weight to the roller, R. W, is a roller hung in bearings in front of the chamber, below the roller, O.

Y, is a small roller hung in bearings at the back of the chamber, above the nap-laying card cylinder I.

X, is an inclined platform, extending upward from the lower part of the back of the chamber and supported, at its back or upper end by the standards, V.

The operation of the apparatus is as follows:—Fire is made in the furnaces to heat the chamber. The piece of cloth is passed between the rollers, R, and U, then over the latter roller, from whence it is carried partly around the nap-laying card, then over the roller, Y, and through the opening, *m*, into the chamber, A, through which it

passes several times back and forth around the rollers, E, E', and then passes out at *n*. While in the chamber the several layers are kept apart by the rollers, *a*, and the bottom layer is raised to a proper distance from the bottom of the chamber, to prevent injury by too intense heat, but still to get the full benefit of the heat, by the rollers, F, which are adjusted by the pinions, *c*, and racks. After leaving the chamber the cloth is conducted over the outside of the smoothing-roller, *k*, by which it is spread evenly, and then it is conducted over the roller, W, and around the roller, O, from whence it passes over the top of the chamber, A, and over the brush, T. It has now made the circuit of all the rollers, and the ends may be loosely stitched together. The revolution of the several rollers, as described, will cause the cloth to move continuously through the chamber, in the direction of the arrows shown in Fig. 2, as long as may be desired or as long as is necessary to evaporate all the moisture. When the piece is of greater length than the circuit of the rollers, the slack part fall on the inclined platform, X. Cold air constantly enters the chamber at the bottom through the opening *n*, where the cloth comes out, and through another opening, *v*, at the opposite end, and this air becoming heated escapes through the openings already mentioned, at the top of the chamber. The draft thus created quickly

carries off all the evaporated moisture. The cold air entering at the bottom will prevent injury to that part of the lower layer of cloth which passes under the bottom rollers, E, E', and cannot be raised above a certain height from the bottom of the chamber. The cloth, while passing through the drying-chamber, is kept at a proper tension, and always kept straight, the nap is properly laid by the card, I, before it enters the chamber, and it is smoothed, after leaving, by the brush, T, the said card and brush revolving at a greater speed than that at which the cloth moves.

Having thus described my invention and the manner in which I have essayed the same with success, I will now state what I claim and desire to secure by Letters Patent.

I claim—

The arrangement for bringing the bottom layer of the cloth within the drying chamber, to a suitable distance from the bottom of the chamber, so that it may be exposed to a proper, and not too intense, heat, consisting of the rollers, F, which are adjustable by racks and pinions, or their mechanical equivalents, substantially as herein described.

ROBERT PRESTON.

Witnesses:

B. E. BROWNELL,
RICHMAN BROWNELL.