Sheet 1 - 2 Sheets.

J. Andrews.

Felling Machine.

No. 3900 Patented Jan. 31, 1845.

Fig. 1

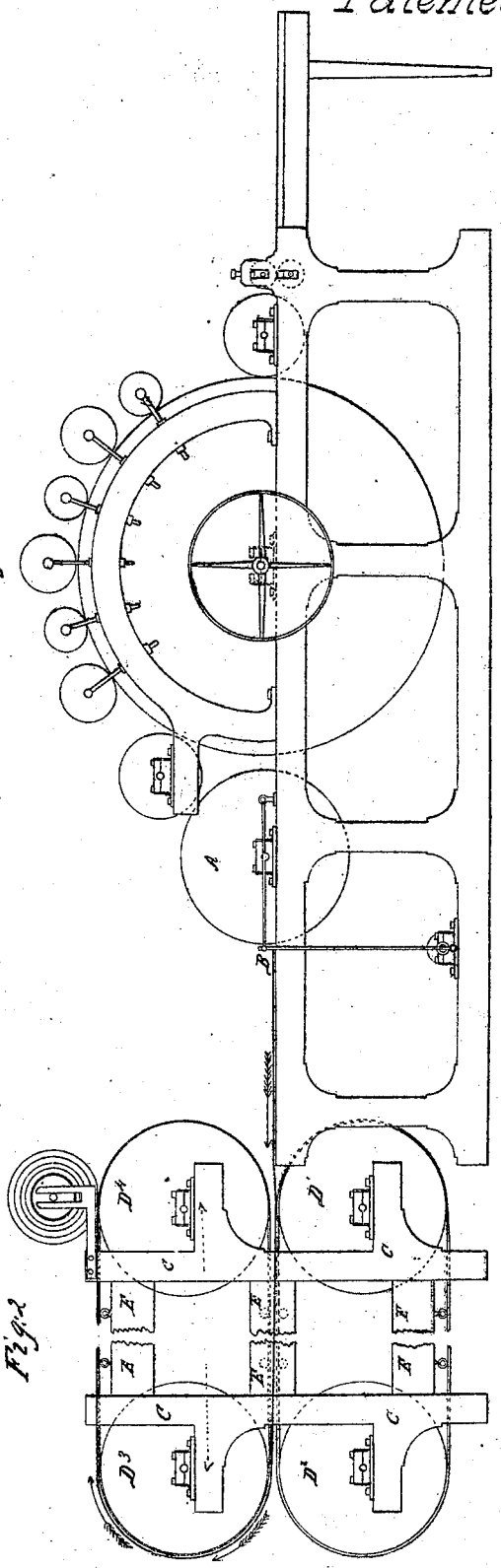

Fig. 2

Witnesses

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Sheet 2-2 Sheet.

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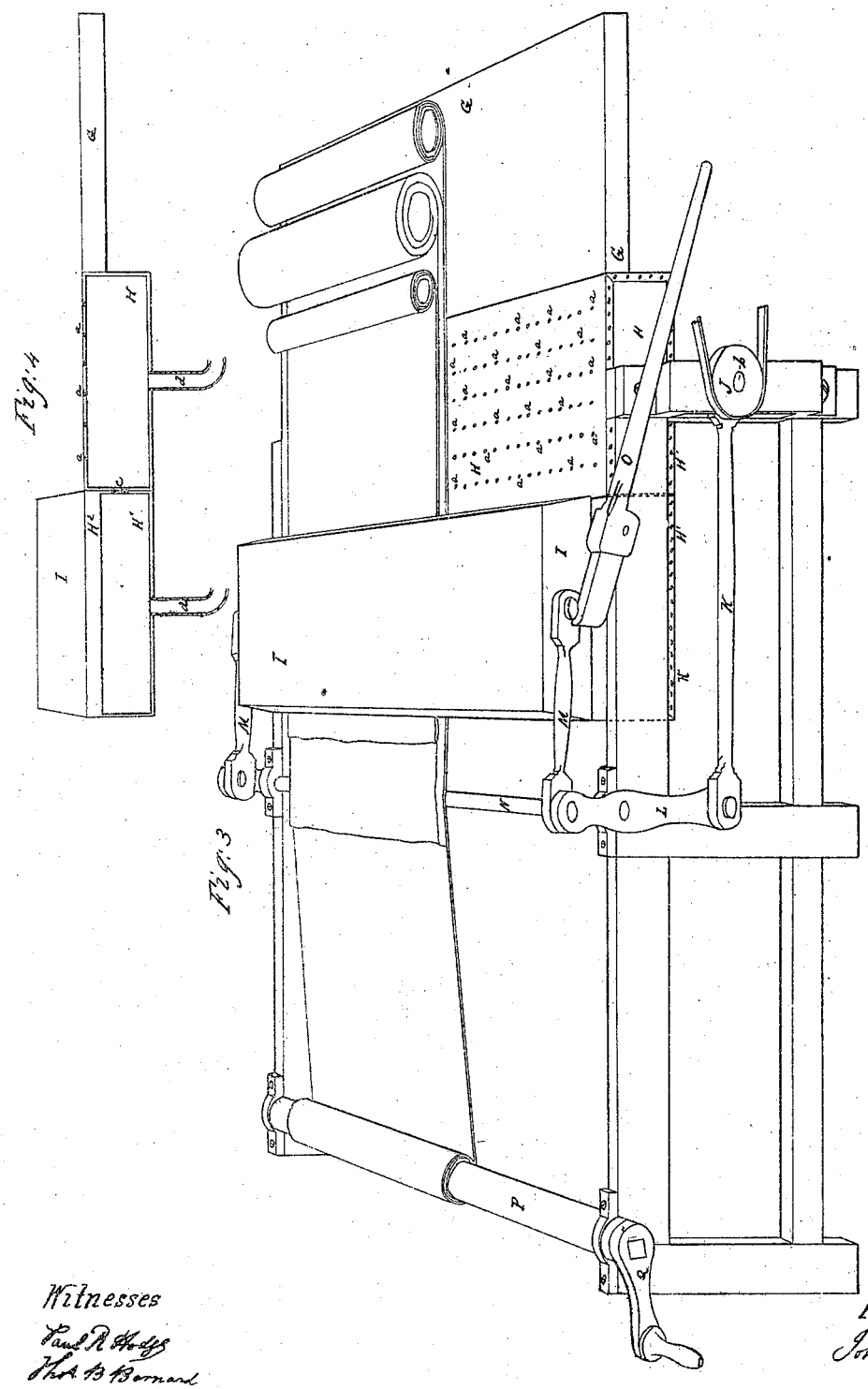

Witnesses
Paul R Hodges
Thos A B Bernard

Inventor
John Andrews

UNITED STATES PATENT OFFICE.

JOHN ANDREWS, OF BELLEVILLE, NEW JERSEY.

APPARATUS FOR FELTING CLOTH.

Specification of Letters Patent No. 3,900, dated January 31, 1845.

To all whom it may concern:

Be it known that I, JOHN ANDREWS, of Belleville, in the county of Bergen and State of New Jersey, have made certain new and useful Improvements in Apparatus for the Manufacturing of Cloths of Wool or other Analogous Materials by the Process of Felting; and I do hereby declare that the following is a full and exact description thereof.

In the accompanying drawings, Figure 1, is a side elevation of an ordinary carding machine, for carding the wool, fur, or other material, of which the cloth is to be made. The machine which I have used is a hundred inches wide, though this of course may be varied, but by giving to it this width I am enabled to manufacture cloths which eshall be two yards wide when finished.

A, is the doffer cylinder, and B, the doffer, which are the same with those of other carding machines, and do not, therefore, require to be described. The sheet, or wadding, of wool taken off by the doffer is carried from the carding machine directly on to an apparatus which I call a creeper, shown in Fig. 2. This consists of two endless aprons, one of them situated immediately over the other, and which pass around rollers, D, D; the gudgeons of these rollers may run in cast-iron pieces, C, C, which make a part of the frame of the instrument. E, E, are rails of wood which connect the pieces, C, C; these are represented as cut off, but they should be about fifteen yards long; the two endless aprons, therefore, will carry a sheet of wadding of about thirty yards in length. The arrows and the blue line show the direction of this sheet, which is first carried from D', to D^2, on the lower endless apron, and when it reaches this point it is turned up so as to pass around the end of D^3, of the upper apron, whence it passes to D^4. It is then wound on a shaft, which rests on the upper endless apron, as shown at F; in this state it is ready to be transferred to the felting machine, which I will now describe.

Fig. 3, is a perspective representation of the felting machine. G, G, is a table on the front of it upon which the roll of carded wadding, F, is to be laid preparatory to its being felted; during the operation of felting, the sheet delivered from the cards is to be embraced between two cloths of the width of the machine. In this drawing, the roll of carded wool, or wadding, and the cloths between which it is to be embraced while being felted, are shown as extending over only about one half of the machine; they are so represented for the purpose of showing the construction of the operating parts the more distinctly. The felting machine is made to correspond in width with the carding machine, say a hundred inches wide, or rather more, and the material that is being operated upon extends, therefore, from one side of it to the other.

H, H, is a box formed of plates of iron, and which is about eighteen inches wide, and five, or six, inches deep, and of such length as to extend from side to side of the machine; the top of this box is perforated with numerous holes, as shown at *a*, *a*, *a*, through which the steam escapes that is to be admitted into the box through a steam pipe entering its lower side. Behind the box, H, there is another, also, H′, furnished with a pipe for supplying steam, and like it in all respects, excepting that it is without holes through its top plate, and that it is rendered true by planing its upper surface. These two boxes stand on the same level. The steam which is admitted into this second, or rear, box passes out through the holes, *a*, *a*, in the box, H, along with that admitted into it, there being a tubular opening from one of them to the other, for that purpose. Immediately above the rear box, is a reciprocating platen, or rubber, I, I, made of cast-iron, and of great weight, being about five inches thick. The under side of this rubber, as well as the upper side of the box that sustains it, is planed, and they have each, therefore, a true surface; but though planed, they are not ground together, or rendered actually smooth by any other process, the slight inequalities left by the planing tool aiding in, and being necessary to, the felting operation. A short, vibratory motion of about two hundred times in a minute, and to the distance of about one fourth of an inch, is to be given to the platen, or rubber, I, I; this may be communicated to it by a whirl, J, on the crank shaft, *b*, which through the intermedium of the connecting rod, K, rocks the lever, L, from the upper end of which a connecting rod M, proceeds to the platen I, and vibrates it. A rock shaft, N, extending to the opposite side of the machine gives a like motion to the opposite end of the

platen. O, is a lever, of which there is one at each end, for lifting the platen when requisite. In Fig. 3, the lower edge only of the box H′, is seen, but it is shown distinctly in Fig. 4, which is a vertical cross section through the middle of the boxes H, and H′, and through the tables G and the platen, or rubber I. The top of this box H′, is of considerable thickness as shown at H^2, this is necessary, as it has to be planed, and is to sustain a heavy weight. The channel of communication between the boxes is seen at *c*, and *d*, *d* are the pipes through which they are supplied with steam.

In carrying on the process of felting with this machine, the sheet of wadding is to be placed between two cloths, and its end spread out upon the perforated steam box, H, which will rapidly bring it into a state proper for felting; the platen, I, is then to be raised, and the part so prepared passed under it; another portion of the unfelted material is thereby brought over the perforations, *a*, *a*, and the platen being let down, the first portion of the sheet will be felted. In the course of about four, or five, minutes, more or less, the platen is to be again raised, and another portion of the unfelted sheet passed under it, and so on in succession until the whole piece has undergone this operation, when it is ready for the action of the fulling stocks.

The lowermost of the inclosing cloths is made to wind around a roller, P, at the back of the machine, by turning the winch Q, which serves to draw the cloth regularly under the felter. The uppermost cloth may be drawn back as the felting proceeds, and need not, therefore, be of any considerable length.

I have described one piece only as being felted at the same time, but the number of pieces that I sometimes actually submit to this operation is four, and this number may be perfectly felted at one operation, a thing that cannot be done by any other felting machine.

Having thus, fully described the nature of my improvements in the machinery, or apparatus, for manufacturing cloth by felting, and shown the manner in which the same operates, what I claim therein as new, and desire to secure by Letters Patent, is—

The manner herein described and represented of combining and arranging the steam box, H, with its perforated top, the second steam box H′, in the rear thereof, and the reciprocating platen, or rubber, by which it is surmounted, so as to coöperate in the process of felting, in the manner herein set forth.

It will be manifest that a single steam box might be made to answer the purpose of the two, but the two are preferred as being less cumbrous, more easily made, and answering the purpose betten than one of double size.

JOHN ANDREWS.

Witnesses:
THOS. P. JONES,
EDWIN L. BRUNDAGE.