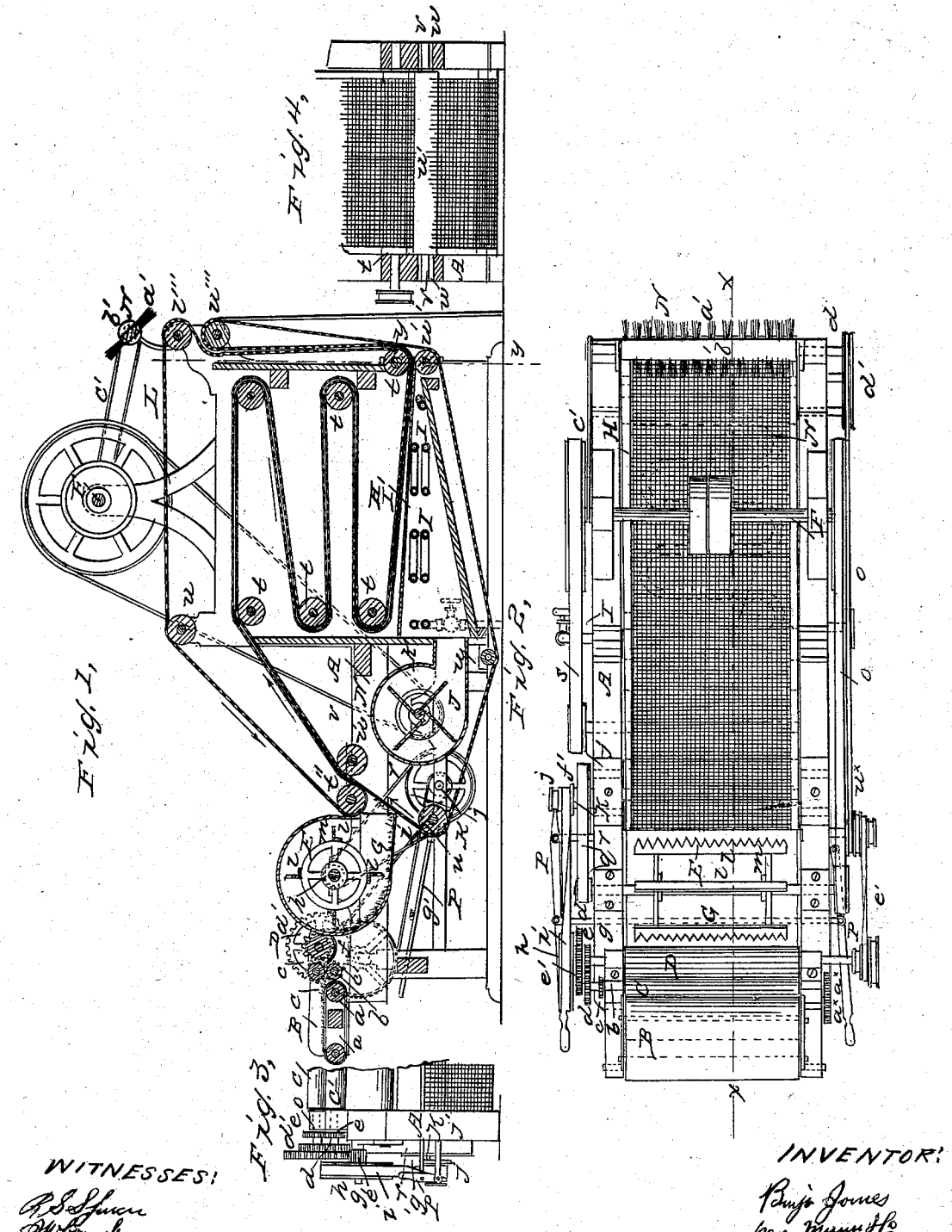
B. JAMES.

Wool Drier.

No. 32,424. Patented May 28, 1861.



WITNESSES:

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UNITED STATES PATENT OFFICE.

BENJAMIN JAMES, OF WORCESTER, MASSACHUSETTS.

IMPROVEMENT IN MACHINES FOR DRYING WOOL, &c.

Specification forming part of Letters Patent No. **32,424**, dated May 28, 1861.

To all whom it may concern:

Be it known that I, BENJAMIN JAMES, of Worcester, in the county of Worcester and State of Massachusetts, have invented a new and Improved Machine for Drying Wool and other Stock Preparatory to the Manufacture of the Same into Suitable Fabrics; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a longitudinal vertical section of my invention, taken in the line *x x*, Fig. 2; Fig. 2, a plan or top view of same; Fig. 3, an elevation of a part of the front of the machine; Fig. 4, a vertical section of a portion of same, taken in the line *y y*, Fig. 1.

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

The object of this invention is to obtain a simple, compact, and efficient machine for drying wool and other stock preparatory to the manufacture of the same into textile and other or similar fabrics.

The invention consists in the employment or use of elastic pressure-rollers with a feeding device, and also in the employment or use of endless aprons arranged in relation with the picker and a chute, so as to receive the stock in a manner most favorable to the drying thereof.

The invention further consists in a novel arrangement of certain rollers pertaining to the endless aprons, whereby the escape of heated air from the lower part of the drying-chamber is prevented.

The invention still further consists in a novel arrangement of the driving mechanism whereby certain portions of the working parts of the machine may be stopped when necessary while other portions are allowed to operate.

To enable those skilled in the art to fully understand and construct my invention, I will proceed to describe it.

A represents a framing, which may be constructed in any proper way to support the working parts of the machine, and B is a horizontal feed-apron, which is placed at the front part of the framing A and on suitable rollers, *a a*, which are shown in Fig. 1.

C C′ are two elastic pressure-rollers, which are placed one over the other in the same axial plane, and at the inner end of the apron B, the "bite" of the rollers C C′ being in line with the upper part of the apron B. The rollers C C′ may be of india-rubber or other suitable elastic material, placed on proper shafts, *b b*, which are connected at one end by gears *c c*, the driving-power being applied to the shaft *b* of the lower roller, C′, by means of gears *d e d′ e′*, one of which, *d*, is on the shaft *b* of the lower roller, and another, *e*, on the shaft of a fluted roller, D, which is placed over a concave or apron, *f*, that is in line with the bite of the rollers C C′. The gear *d′* is also on the shaft of the fluted roller D, and the gear *e′*, which is on a shaft, *g*, meshes into *d′*, the shaft *g* having a pulley, *h*, on it, which is driven by a belt, *i*, from a pulley, *j*, on a shaft, *k*, at the lower part of the framing A. (Shown clearly in Fig. 2.) The apron B is driven by gears $a^{\times}$ from the upper roller, C.

On the framing A there is placed a rotary picker, E. This picker may be constructed in the usual or in any proper way. It is represented in the drawings, Figs. 1 and 2, as being formed of serrated bars *l*, attached to the peripheries of wheels *m m*, which are placed on a shaft, *n*, the serrated bars *l* being parallel with the shaft *n*.

The picker E is rotated by a belt, *o*, from a driving-shaft, F, on the upper part of the framing, and one end of the picker-shaft *n* has a pulley, *q*, on it, around which a belt, *r*, passes, said belt also passing around a pulley, *j′*, on the shaft *k*.

G is an apron or chute, which is placed below the picker E, and is of concave form, as clearly shown in Fig. 1, and H is a box which is placed in the framing A, and has steam or hot-air pipes I in its lower part, the pipes I being coiled or arranged in any proper way within the box H. Within the box H, and just over the pipes I, there is placed a perforated plate or partition I′. This perforated plate serves to equalize the heat or current of warm air in its passage up through box H.

J is a rotary fan or blower, which is placed within a suitable box, K, in the framing, said box communicating with the lower part of the hot-air box H, as shown in Fig. 1. The fan or blower J is driven by a belt, *s*, from the shaft F.

L M represent two endless aprons, which run in contact within the hot-air box H, and work over rollers *t*, as shown clearly in Fig. 1.

The apron L, besides working over the rollers *t*, works over a roller, *v*, and the apron M, besides working over the rollers *t*, works over rollers *u*. The arrangement of the aprons and rollers is fully shown in Fig. 1.

The direction of the movement of the aprons L M is indicated by the arrows in Fig. 1, and the two aprons pass out of the hot-air box H between two rollers *t' u'*, the lower one of which, *u'*, has its journals *v'* fitted in vertical slots *w*, to admit of a vertical adjustment or movement of said roller *u'*.

The two aprons L M come in contact between two rollers, *t'' u''*, just above the end of the apron or chute G, and they pass out of contact between two rollers, *t''' u'''*, at the upper part and outer side of the box H. The aprons are constructed of some open material—as wire-cloth or other suitable substance—the object being to allow the heated air to pass through the aprons. I do not confine myself to any particular form or construction of aprons.

On the upper part of the framing A there is placed a revolving stripper, N. This stripper is formed by placing brushes *a'* in a shaft, *b'*, which is directly over the roller *t'''* of the apron L, and the shaft *b'* is rotated by a belt, *c'*, from the driving-shaft F. The rollers *t* are rotated and the aprons L M moved by a belt, O, which passes around each one of the pulleys *d''* on the axes of the rollers *t* and around a pulley, $u^{\times}$, on one of the rollers *u* of the apron M. The fluted roller D is rotated by a belt, *e'*, from one of the pulleys $u^{\times}$. The pulley *j* is placed loosely on the shaft *k*, and is connected to the pulley *j'* on said shaft by a clutch, *f'*, the pulley *j* being moved laterally on shaft *k* by means of either of two levers, P P, said levers being connected by a rod, *g'*.

The operation of the machine is as follows: The stock to be dried is placed on the apron B, the latter conveying it to the elastic rollers C C', which compress a considerable quantity of moisture from the stock. The fluted roller D takes the stock from the bite of the rollers C C' and carries it around over the concave *f*, the picker E taking the stock from roller D and throwing it down the chute G and on the apron M at a point just below the rollers *t'' u''*. The stock is thrown on the apron M in a loose light state and in an even and uniform manner, and is carried between the two aprons down through the box H, which is a drying-chamber, air being forced up through it by the rotary fan J, the air being heated by the pipes I. This heated air passes through the two aprons and the stock which is between them, and the latter is consequently dried in an expeditious and perfect manner. By having the lower roller, *u'*, of the pair *t' u'*, between which the aprons leave the box H, movable said roller is allowed to yield or give to conform to the unequal thickness of the layer of stock between them, the rollers keeping in contact with the aprons to prevent the escape of heated air.

The dried stock is discharged from between the two aprons between the two rollers *t''' u'''*, and the stripper N prevents any stock passing around with the apron L. In case at any time it should become necessary to stop the aprons L M intermittingly to effect a thorough drying of the stock, the operator or attendant by actuating either lever P throws the pulley *j* out of gear with pulley *j'*, and the rollers C C', fluted roller D, and apron B stop, and also the endless aprons L M, while the fan J rotates. This stopping intermittingly of the aprons L M is important, as it enables the attendant to subject certain portions of the stock a greater or less period to the drying process, as may be desired.

The two aprons L M keep the stock in their layers while subjected to the drying process, and thereby insure a rapid and thorough drying of the stock.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The employment or use, for the purpose specified, of the two endless aprons L M, arranged to work or move in contact, substantially as shown, and used in connection with the endless feeding-apron B, fluted roller D, concave *f*, and picker E, or an equivalent feeding device to convey the stock between the aprons.

2. The adjustable roller *u'*, when used in connection with the stationary roller *t'* and endless aprons L M and placed in such relation with the drying-chamber H as to operate as and for the purpose set forth.

3. The elastic pressure-rollers C C', when used in connection with the feed-apron B, fluted roller D, picker E, and chute G, for the purpose of properly presenting the stock to the endless aprons.

4. The arrangement, as described, of the pulleys *j j'* with the belts *i o* O and the gearing *d e d' e'*, of the rollers C C' D, substantially as shown, to admit, when desired, of the stopping of the aprons L M and feeding mech anism, for the purpose specified.

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Witnesses:

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