M. MARSHALL.

Machines for Disintegrating Fabrics.

No. 144,685. Patented Nov. 18, 1873.

Fig. 1.

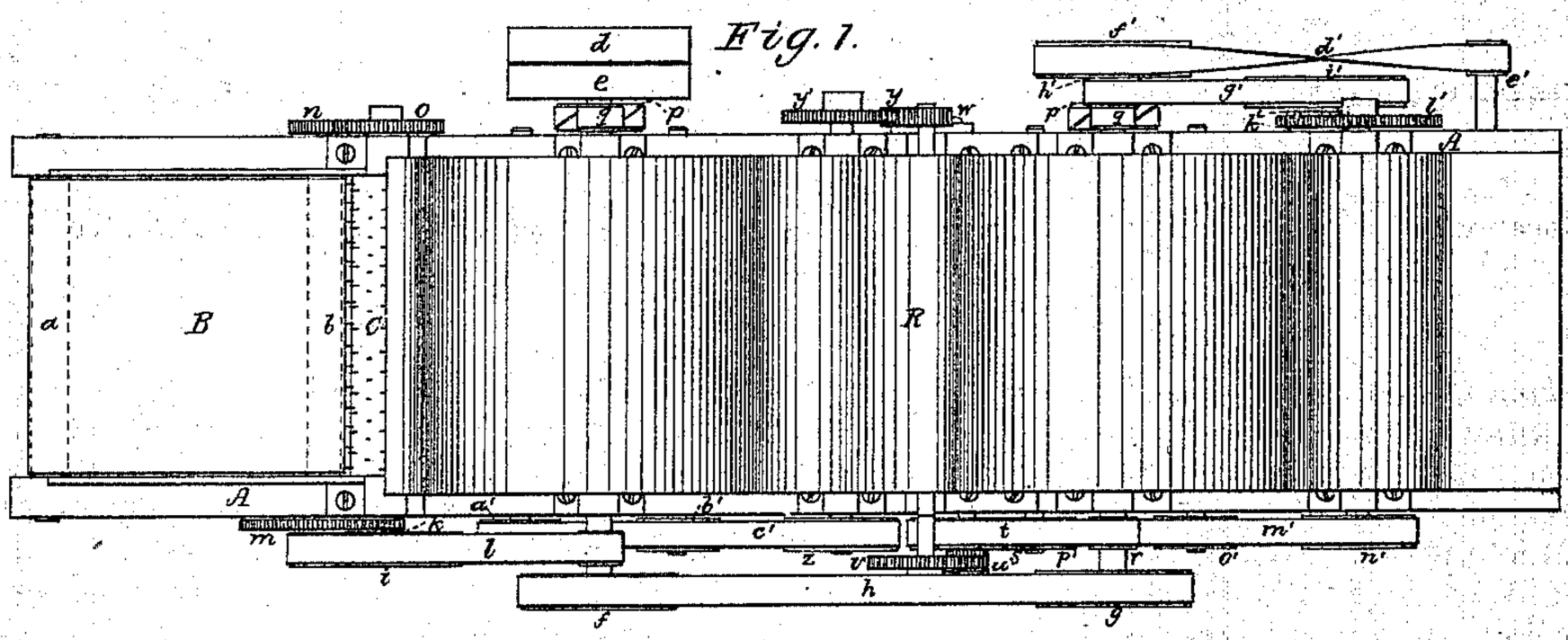


Fig. 2.

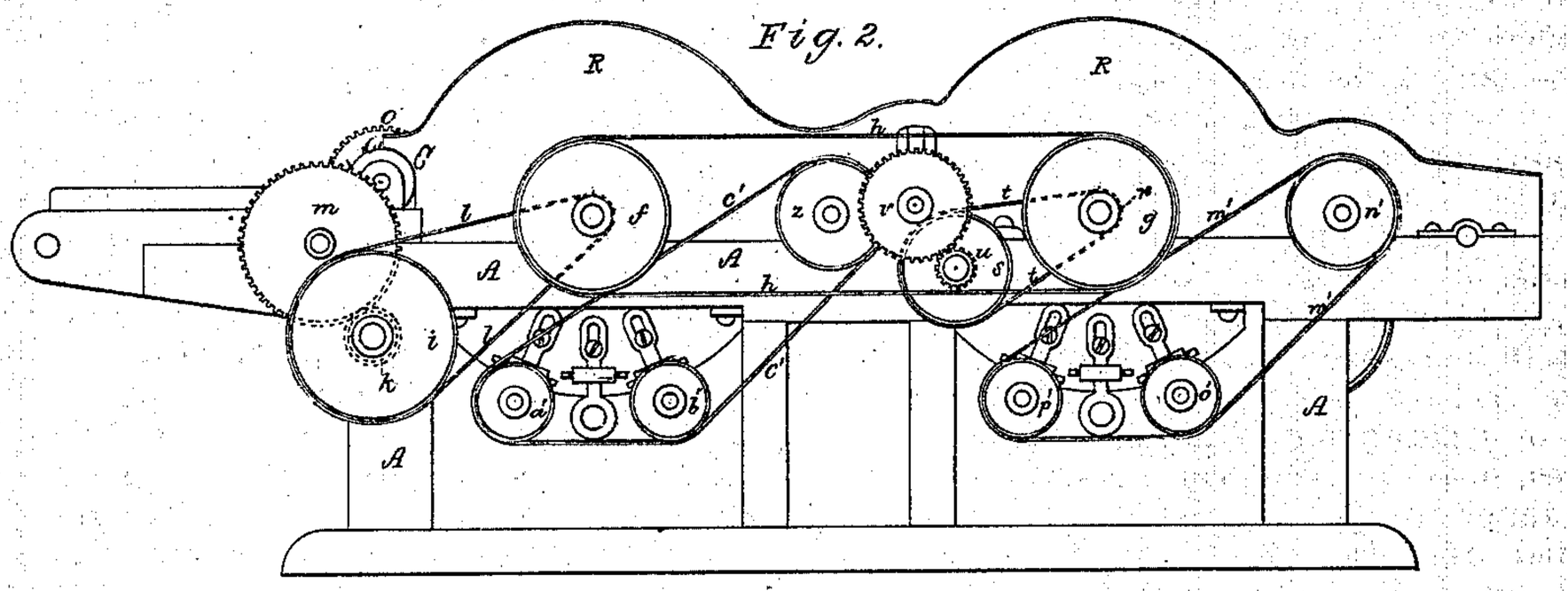


Fig. 3.

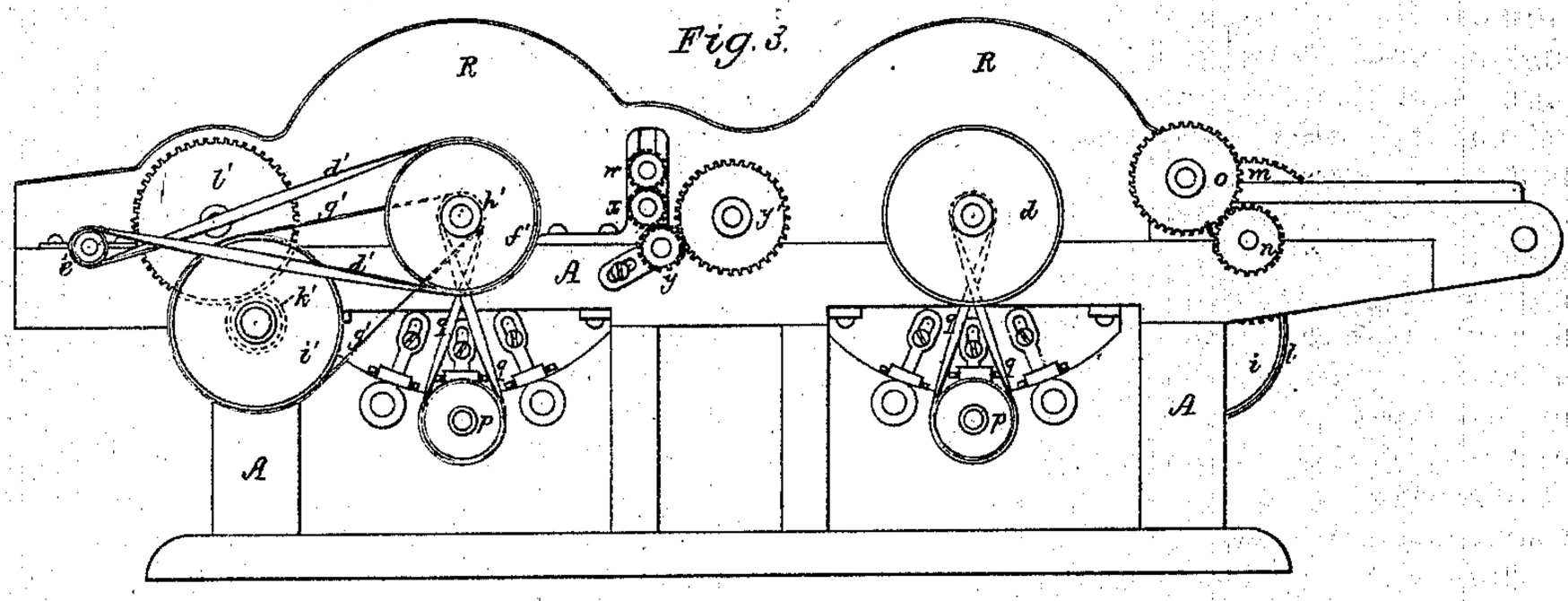
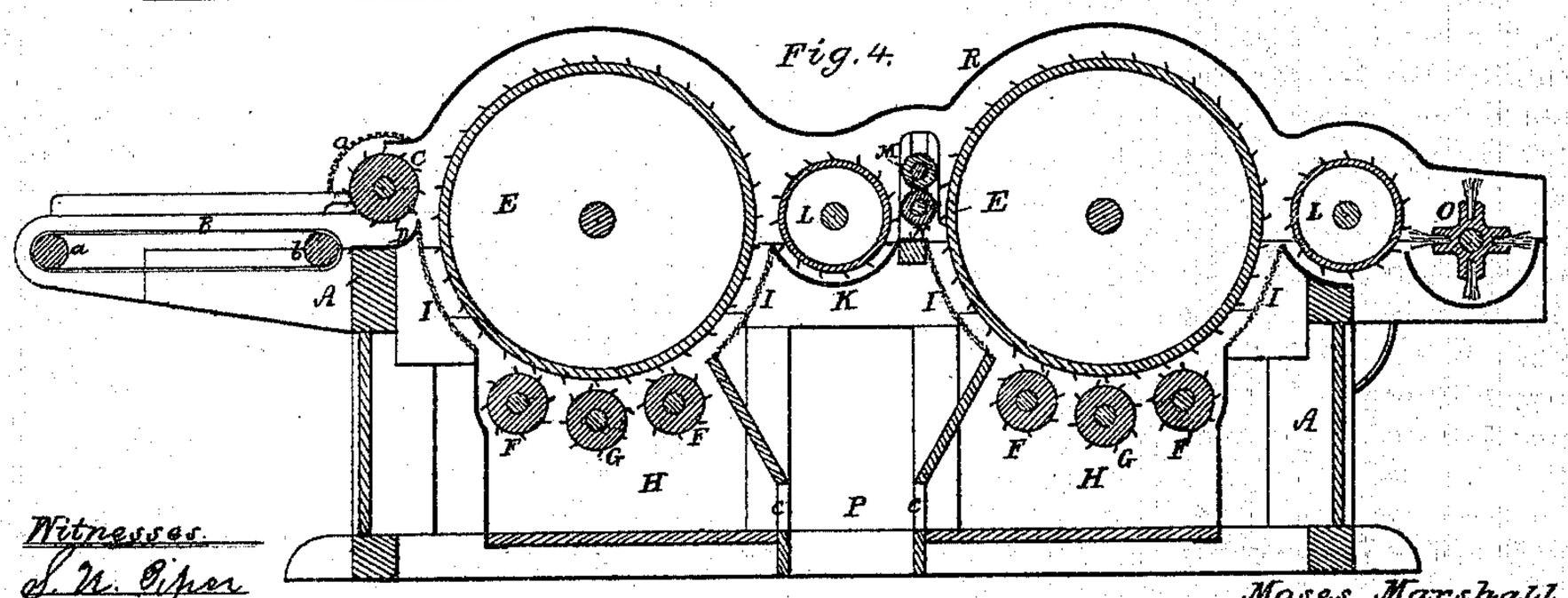


Fig. 4.



Witnesses.
S. N. Piper
J. R. Snow

Moses Marshall.
by his attorney.
N. W. Eddy

UNITED STATES PATENT OFFICE.

MOSES MARSHALL, OF LOWELL, MASSACHUSETTS, ASSIGNOR TO HIMSELF AND DAVID LANE, OF SAME PLACE.

IMPROVEMENT IN MACHINES FOR DISINTEGRATING FABRICS.

Specification forming part of Letters Patent No. **144,685**, dated November 18, 1873; application filed July 19, 1873.

To all whom it may concern:

Be it known that I, MOSES MARSHALL, of Lowell, of the county of Middlesex and State of Massachusetts, have invented a new and useful Machine for Separating Broken-Up Wefts of Woven Cloth from the Warps thereof, or broken-up warps from the wefts, as circumstances may require; and I do hereby declare the same to be fully described in the following specification and represented in the accompanying drawings, of which—

Figure 1 is a top view, Fig. 2 an elevation of one side, and Fig. 3 an elevation of the other side, of it. Fig. 4 is a longitudinal section of such machine.

Cloth to be treated by this machine is first to have each of the wefts or weft-threads broken or separated into many short lengths or pieces, so as to disconnect the warp-threads in a manner to admit of their being readily separated from one another, and the fibers thereof untwisted and reduced to the state analogous to that in which they were before being spun, such being to enable them to be respun or used for other purposes in the arts. Cloth usually so operated on has a woolen warp and cotton weft, the latter being the part to be so broken.

In the drawing, A denotes the frame of the machine, while B is an endless or feed apron arranged at the rear part thereof, and supported in two rollers, *a b*. In advance of the said apron is a toothed roller or cylinder, C, arranged over and close to a concave bar, D. Next, in advance of the said roller C is a main toothed cylinder, E, provided with one or two workers, F F, and a "stripper," G, these latter being smaller toothed cylinders, and arranged underneath the main cylinder, and within a chamber, H, also disposed under such main cylinder, and in the frame, all as shown. From the front and rear sides of the said chamber wire-gauze grates I I extend up about the main cylinder to the concave bar D, and to a trough, K, extending underneath a toothed receiving-cylinder, L, arranged in advance of the main cylinder, as shown. In front of such cylinder L is a pair of feed-rollers, M N, and in advance of these is another main toothed cylinder, E, provided with a set of workers, F F, a stripper, G, a chamber, H, grates I I, and a toothed receiving-cylinder, L, all like those hereinbefore described, there being next in advance of the said cylinder L a rotary brush, O. From each of the chambers H there is an opening, *c*, leading into an intermediate space, P, open at bottom. To this space an air-suction apparatus may be applied to draw air down through the machine into the two chambers H H, and thence out of them by the openings *c*, such being to carry off, or aid in carrying off, the waste of the machine. Instead of using the mechanism which is in advance of the first receiving-cylinder L, I sometimes compose the machine of the rotary brush O and the mechanism in rear of the feed-rollers, thereby dispensing with the feed-rollers, the second main cylinder E, the second receiving-cylinder, and the workers and strippers of such second main cylinder, in which case I apply the brush to the first receiving-cylinder L in the manner in which it is shown applied to the second cylinder L.

For operating the several toothed cylinders, feeding-apron, brush, and feed-rolls, mechanism such as represented is used—that is to say, on the shaft of the main toothed cylinder E first described is a fast pulley, *d*, and a loose pulley, *e*. There is also another pulley, *f*, on such shaft, about which pulley, and a similar pulley, *g*, on the shaft of the second main cylinder E, is an endless belt, *h*. Furthermore, around the main cylinder-shaft, and a pulley, *i*, carrying a gear, *k*, an endless belt, *l*, is arranged. The gear *k* engages with another gear, *m*, fixed on the shaft of the inner supporting-roller of the endless apron. On said shaft is another gear, *n*, which engages with a gear, *o*, on the shaft of the toothed roller *c*. Around the shaft of each of the main cylinders E E, and also about a pulley, *p*, fixed on the shaft of the next adjacent stripper G, a crossed belt, *q*, runs. On the shaft of the second main cylinder E is a pulley, *r*, about which and a pulley, *s*, a belt, *t*, extends. A gear, *u*, fixed to the pulley *s*, engages with another gear, *v*, on the shaft of the lower of the feed-rollers M N, upon whose shafts are connecting-gears *w x*. The gear *x* engages with a gear, *y*, which engages with a gear, *y'*, on the shaft

of the receiving-roller L. On this latter shaft is a pulley, *z*, about which, and two pulleys, *a'* *b'*, fixed on the shafts of the first set of workers, a belt, *c'*, travels. The rotary brush gets its motion from an endless crossed belt, *d'*, which goes around a pulley, *e*, on the shaft of the brush and another pulley, *f'*, fixed on the shaft of the second main cylinder E. Furthermore, a belt, *g'*, goes around a pulley, *h'*, on the said main cylinder-shaft, and another pulley, *i'*, carrying a gear, *k'*, to engage with a gear, *l'*, fixed upon the shaft of the front toothed cylinder L. Finally, an endless belt, *m'*, going about three pulleys, *n' o' p'*, fixed on the shafts of the said roller L, and the second set of workers, serves to impart motion to the latter. After laying the material upon the endless apron, the latter will convey it to the receiving toothed cylinder. In going through the machine, the long unbroken threads will be subject to the action of the toothed cylinders, by which they will be untwisted and picked apart, the broken threads or wefts being separated and discharged. Finally, the warps reduced to loose fibers will be ejected from the machine by the rotary brush.

I make no claim to an endless apron, feed-rollers, toothed cylinders, a tray, a comb, and a foraminous cover, arranged and combined as represented in the United States Patent No. 127,354, in which is described a machine for picking curled hair; in which machine the dust is thrown out of the foraminous cover or top of the machine, while the hair is being treated by the toothed cylinders and comb, and driven along the tray. In my machine I have no such tray, and I have but one feed-apron and one rotary brush. To render my machine a duplication of the other would require another feed-apron and another rotary brush, if such a device is in any way to be considered as an equivalent for the comb of the hair-picking machine. My machine is for operation on a material different from curled hair, and to treat it in a different manner from what it is when subjected to the action of the said hair-picking machine. Therefore,

I claim—

1. The combination of the feeding-apron B, one or more delivery-rollers, C, two main toothed cylinders, E E, their workers and strippers F F F F G G, grates I I I I, feed-rollers M N, receiving toothed rollers L L, and rotary brush O, all arranged and operated, or provided with operative mechanism, substantially as specified.

2. The three chambers H H P, arranged and communicating as described, in combination with the grates I, the two series of workers and strippers F G, the main and auxiliary toothed cylinders E C L, the feed-rollers M N and apron B, and the rotary brush O, all arranged and provided with operative mechanism substantially as specified.

MOSES MARSHALL.

Witnesses:

R. H. EDDY,

J. R. SNOW.