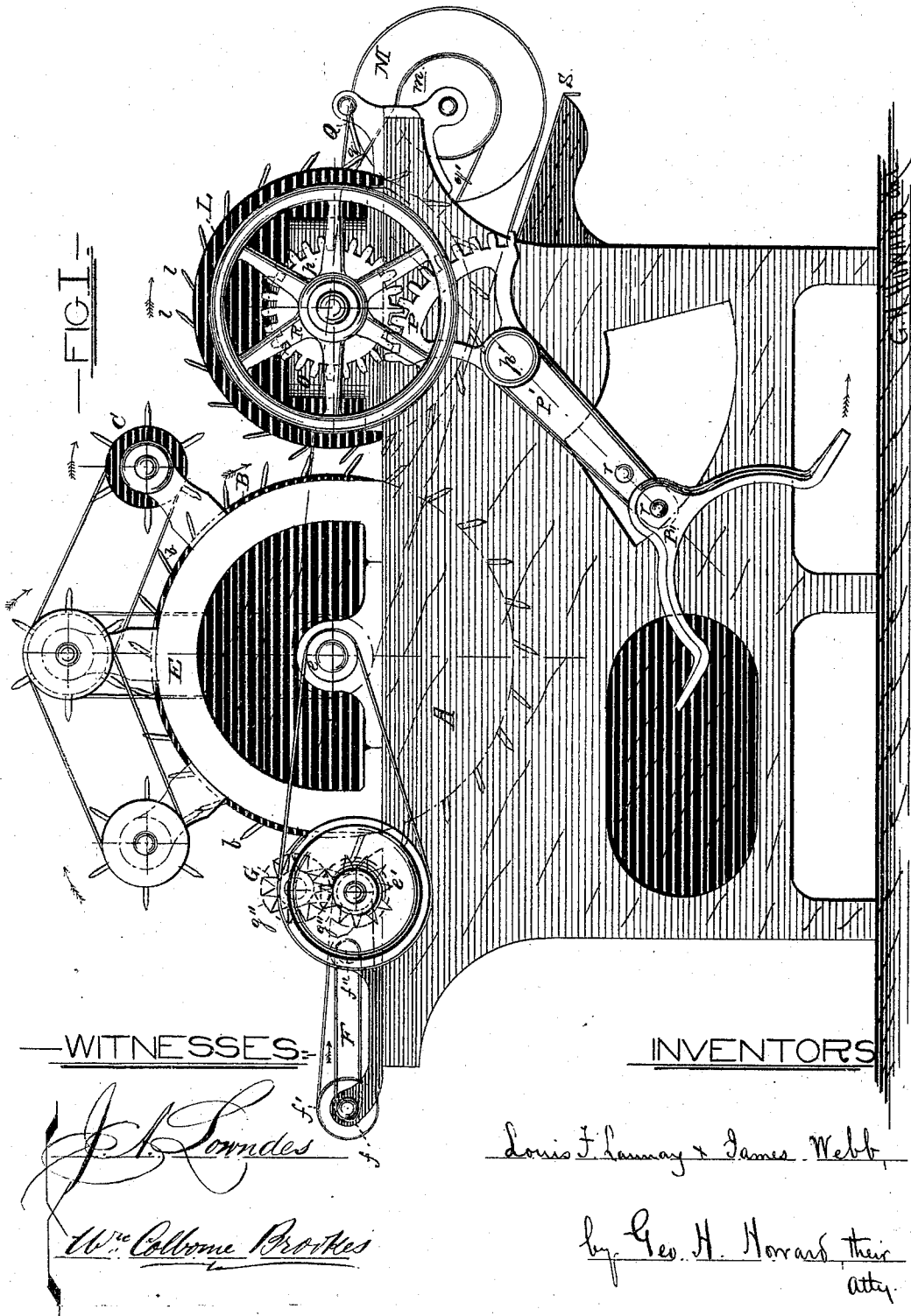


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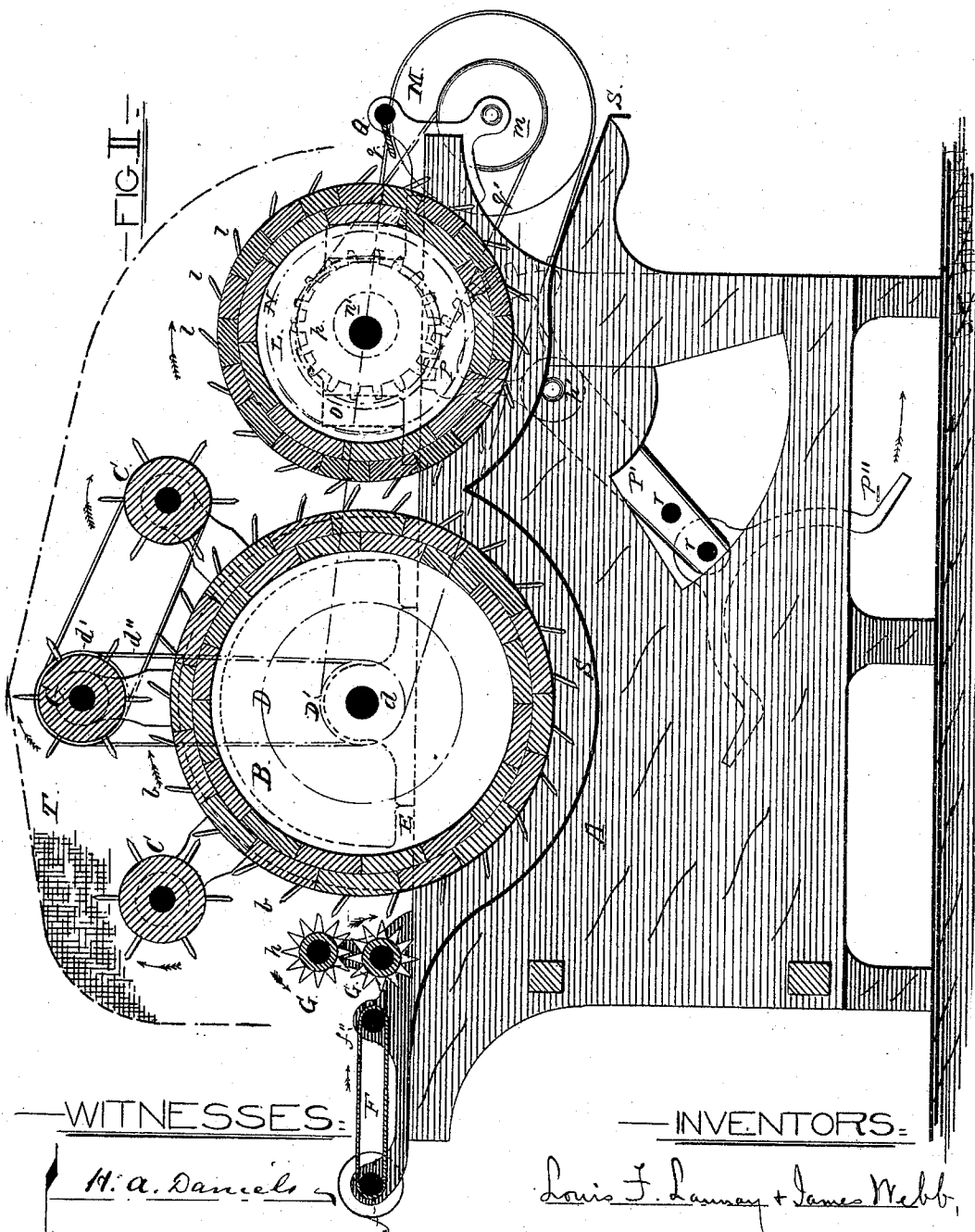


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-WITNESSES:

H. a. Daniels

Wm. Colburn Brooks

-INVENTORS-

Louis J. Lumsay + James Webb

by Geo. H. Norcross, their
Attorney

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By Geo. H. Morris, their Atty.

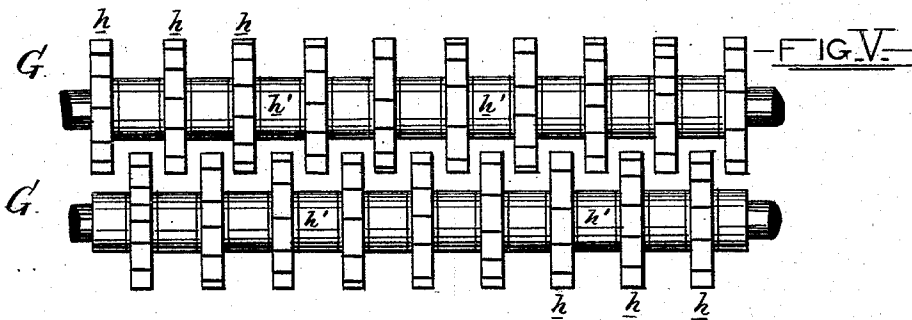
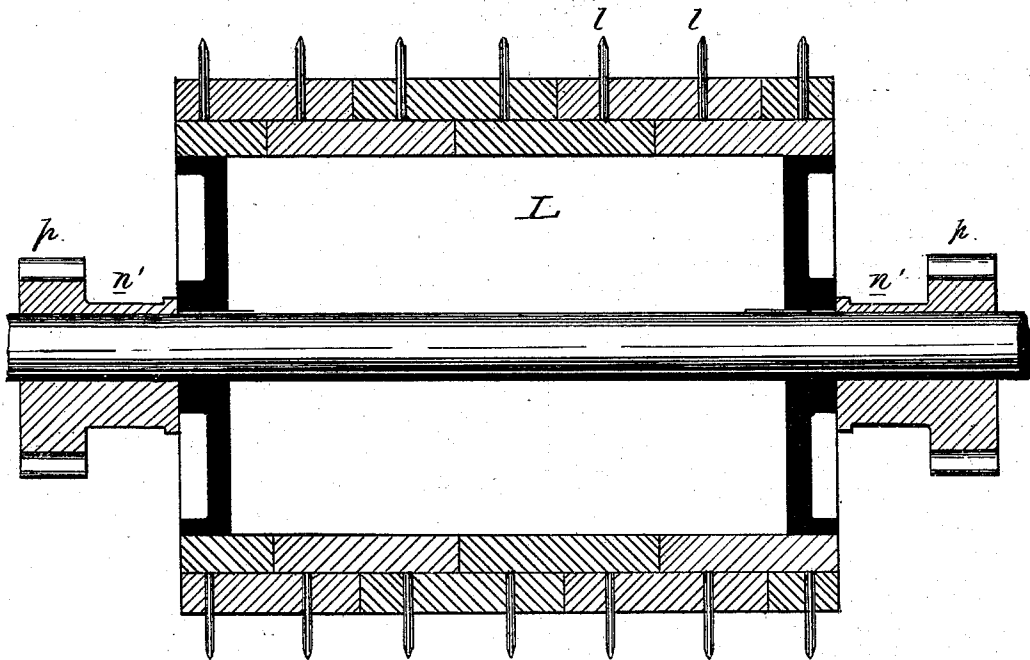
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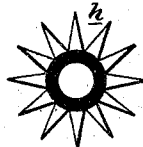
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—FIG. IV—



WITNESSES:

J. A. Dorrdes
Wm. Calhoun Brooks



—FIG. VI—

—INVENTORS—

Louis F. Lannay + James Webb

By this atty Geo. H. Howard

UNITED STATES PATENT OFFICE.

LOUIS F. LANNAY AND JAMES WEBB, OF BALTIMORE COUNTY, MD.

IMPROVEMENT IN MACHINES FOR PICKING CURLED HAIR, &c.

Specification forming part of Letters Patent No. 127,354, dated May 28, 1872.

To all whom it may concern:

Be it known that we, LOUIS F. LANNAY and JAMES WEBB, both of the county of Baltimore and State of Maryland, have invented certain Improvements in Machinery for Picking and Carding Curled Hair and other like fibrous articles, of which the following is a specification; and we do hereby declare that the same is a full, clear, and exact description of our said invention, reference being had to the accompanying drawing and to the letters of reference marked thereon.

In the following descriptive outline of our invention it will be seen that it relates to a machine for the purposes above named, having, together with other parts hereinafter enumerated, two drums or cylinders provided with teeth, which drums or cylinders are made to revolve in the same direction, the teeth of the one acting in conjunction with those of the other in the picking and carding process for which they are designed. The first drum or cylinder revolves within a stationary bearing, and during the operation of picking and carding never ceases its revolutions. The second drum or cylinder, which is smaller in diameter and runs more slowly than the other, is mounted upon a shaft having its bearings of eccentric character, which allow the second drum or cylinder to be adjustable. Fixed over the top of the first drum or cylinder, and running in the same direction, although much more slowly, are three small rollers, also provided with teeth, which are designed to assist in the picking and carding process. The hair, after having undergone a preparation hereinafter described, is placed upon an endless cloth tray, which moves toward two irregularly-constructed toothed rollers, by which the hair is caught, and thence brought into contact with the teeth and surface of the first drum or cylinder. The three small rollers, revolving immediately over the first drum or cylinder, are provided with teeth projecting into the spaces between the teeth thereof, and which pick or card that portion of the hair not touched by the teeth of the first drum or cylinder. The hair having collected upon the teeth and surface of the first drum or cylinder, so that it comes into contact with the teeth of the second drum or cylinder, it is immediately taken up by them. They, like those of the small rollers, project into the

spaces existing between the teeth of the first drum or cylinder. When the hair has collected upon the teeth and wrapped around the surface of the second drum or cylinder, it is supposed to be in a picked, carded, or finished condition, and means must be now taken by which it is removed from the machine in the form of a bat, ready for shipment or sale. To accomplish this result, we provide that the shaft of the second drum or cylinder, which is central, revolves in bearings which themselves are eccentric. Attached to these bearings, and eccentric with the shaft of the second drum or cylinder, are small gear-wheels, which are made to revolve by means of foot-treadles having attached to their top toothed segments gearing into the wheels. By pushing the foot-treadles to a certain position the second drum or cylinder is thrown apart from the first, a sufficient space being created between them to prevent the teeth of either coming into contact with the hair upon the teeth and surface of the other. The teeth of the second drum or cylinder are thus brought so as to operate in conjunction with a stationary comb or series of teeth, the teeth of the second drum or cylinder projecting into the spaces existing between the teeth of the comb. A quick reverse movement is given to the second drum or cylinder by means of a hand-wheel upon its shaft, and in its revolutions the hair upon the teeth and surface of the second drum or cylinder is caught by the teeth of the stationary comb. The hair thus separated and disengaged from the second drum or cylinder falls upon a tray beneath, and thence to the floor. In the further description of our invention which follows, due reference must be had to the accompanying drawing, in which—

Figure 1 is a side elevation of our invention. Fig. 2 is a vertical longitudinal section of the same. Fig. 3 is a plan view of the same. Fig. 4 is an enlarged view of the adjusting mechanism as applied to the second drum or cylinder. Figs. 5 and 6 are enlarged views of the feeding-rollers.

Similar letters of reference indicate similar parts of our invention.

A is the frame of the machine. B is the first drum or cylinder, of which *b b* are the teeth. These teeth are formed of round steel, with sharpened points, and do not project from the

surface of the first drum or cylinder as though radiating from the center thereof, but are fitted thereto at an angle to its surface found to be best adapted to the purpose for which they are designed. Motion is given, in the direction indicated, to the first drum or cylinder, and also to the entire machine, by means of the pulley D. By the agency of the small pulley *d* upon the shaft of the first drum or cylinder, the pulley *d'*, and driving belt *d''*, motion is imparted in the direction indicated to the center one of the three rollers C, and thence, by other pulleys and belts, to the other two rollers C, which are all driven in the same direction. The rollers C are adjustable in their bearings, which project from and slide within the semicircular frame E. G G are irregularly-constructed toothed rollers, which, revolving in the opposite directions indicated, carry the hair to the teeth of the first drum or cylinder. Motion is transmitted to the lower roller G from the shaft of the first drum or cylinder by means of the pulley *e* thereon, the pulley *e'* upon the shaft of the roller, and their belt. A reciprocal motion is given to the upper roller by the lower one through the agency of the small gears *g''*. These rollers are composed of a series of pointed or toothed rings, *h*, which are separated a short distance from each other upon their shafts by washers *h'*, and are so constructed that a view from one end of the roller to the other will exhibit an appearance of irregularity existing in the positions of the points or teeth. The points or teeth *h* of the two rollers G are further so disposed of that those of the one roller project into the space formed by the separating-washers *h'* between the teeth of the other. The object of the entire disposition of these points or teeth is to imitate as far as practicable the position and operation of the human fingers in a similar capacity, the particular uses of which are the tearing apart and separating of the fibers of the material before it is subjected to the picking and carding process. F is the endless cloth tray, which, during the operation of the machine, constantly moves in the direction indicated. It is caused to move by the revolutions of the shaft *f*, the pulley of which, *f'*, is driven from that, *g'''*, upon the shaft of the lower roller G. The tray in its movement revolves and returns over the shaft or spindle *f''*. L is the second drum or cylinder, of which *l* are the teeth. They are similarly formed and placed at a like angle to the surface from which they project as those of the first drum or cylinder. They are, however, so distributed as to extend within the spaces existing between the teeth of the first drum or cylinder.

Motion is given to the second drum or cylinder in the following manner: A pulley, D', upon the shaft of the first drum or cylinder, drives, by its belt, a large pulley, M, upon a counter-shaft. Upon this same shaft is a flanged pulley, *m*, small in diameter, which in turn drives, by its belt, a larger flanged pulley, N, upon the shaft of the second drum

or cylinder, giving motion thereto. While the shaft upon which the second drum or cylinder L revolves is central within it, the shaft is itself within eccentric bearings *n'*. These eccentric bearings rest within pedestals *o* attached to the frame of the machine.

Connected to the eccentric bearings *n'* *n'* are small gear-wheels *p p*. Gearing into these wheels are toothed segments of circles P P, one upon each side of the frame of the machine, and, being connected with bodies P', are joined together by tie-rods *r r*. These bodies P' have bearings or pivots *p'*, upon which they vibrate. At the lower extremities of the bodies P' of the segments are double foot-treadles P'', either half of which is to be used with respect to the direction the segments are required to move. By pushing the treadle over to the right or left to the extent it is allowed to vibrate, a part of a revolution is given to the segmental parts P P and a half revolution to the gears *p p*. By this motion the second drum or cylinder L can either be brought toward the first drum or cylinder B or the stationary comb or series of teeth Q. The teeth *q* of this series, it will be seen, project slightly downward, and come within the spaces existing between the teeth of the second drum or cylinder.

The process to which the hair is subjected before the commencement of the picking and carding process is the following: Its fibers are first spun by machinery into twists, then steamed, and afterward partially untwisted. The hair is then torn apart into suitable lengths. We will now suppose the machine to be in motion, and the picking and carding process begun. The hair is first placed in the condition described across the endless cloth tray F, by which it is carried to the rollers G. By the operation of these, in consequence of their peculiar construction, hereinbefore described, the twist is separated or torn apart, without injury, however, to the fibers of the hair. The hair is now caught upon the teeth of the first drum or cylinder revolving in the direction indicated. The teeth of the rollers C also assist in the process, and by their revolutions prevent what might ensue were they stationary—the clogging of the hair among the various teeth. After the hair has collected upon the teeth and surface of the first drum or cylinder, the teeth of the second, revolving in the same direction, now operate upon it, and by their position further assist in and complete the process. The hair upon the teeth and surface of the second drum or cylinder is now ready to be removed therefrom and entirely disengaged from the machine. The treadle is thrown over in the direction indicated, and the teeth *l* brought into such position with reference to those, *q*, of the stationary comb Q as to project into the spaces *q''*, as represented. At the same time, and by the same movement, the flanged pulley N is brought nearer to the pulley M upon the counter-shaft, and the driving-belt *q'* consequently slackened, which

causes the revolutions of the second drum or cylinder to cease. All other parts of the machine, however, continue in motion without interruption. A reverse motion is then quickly given to the second drum or cylinder L by means of the hand-wheel R, when, by the operation of the teeth *l* and *q* in conjunction with each other, the hair is loosened from the teeth and surface of the second drum or cylinder, and is caused to fall upon the tray S, by which it is guided from the machine to the floor. The tray S extends the entire length of the machine under the drums B and L; its use, among others, being to shield the machinery from dust arising from the floor. The tops of the drums B and L are covered by a wire-gauze, T, we finding it necessary to provide apertures through which the dust from the hair and other sources may rise from the machine. Otherwise the quality of the hair would be damaged by the dust settling among its fibers.

It is obvious from the foregoing description of our invention that it is our object to produce a machine for a picking and carding process which shall be continuous in its movements, and that in the production of this machine we have accomplished the following results: The fibers of the hair are first separated as by human fingers, then thoroughly picked and carded, and, lastly, the lot which is finished is removed from the machine while the separating, picking, and carding process is proceed-

ing without any interruption whatever. It is therefore apparent that no time is lost in the carding process or in the removal of the material.

Having thus described our invention, what we claim as new, and wish to secure by Letters Patent, is—

1. The combination, with the toothed drum or cylinder B, of the second toothed drum or cylinder L, adjustable as, described, by means of the eccentric bearings *n' n'* upon its shaft, and within the pedestals *o o*, and the small gear-wheels *p p*, substantially as and for the purpose hereinbefore specified.

2. The combination of the two rollers G G, constructed and operating together substantially in the manner shown and described, and for the purpose set forth.

3. The toothed segments P P, with their bodies P' P' and treadles P'' P'', connected by the tie-rods *r r*, vibrating on the pivots *p' p'*, as described, in combination with the small gears *p p* and eccentric bearings *n' n'*, substantially as shown and described; and for the purposes specified.

LOUIS F. LANNAY.

JAMES WEBB.

Witnesses to LANNAY's signature:

P. R. MITCHELL,

N. MARCHANT.

Witnesses to WEBB's signature:

WM. H. BROWN,

C. M. HUGHES.