

M. FIRTH & J. ROBERTSHAW.
COMBING MACHINE.

Patented Dec. 29, 1891.

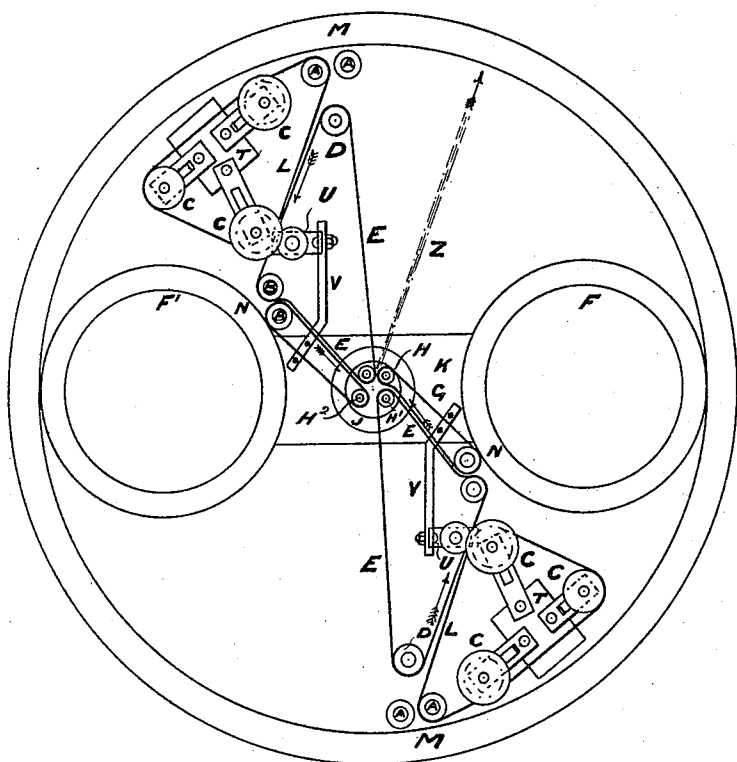


FIG. 1.

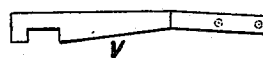
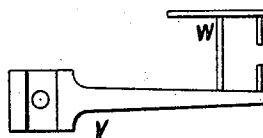


FIG. 4.

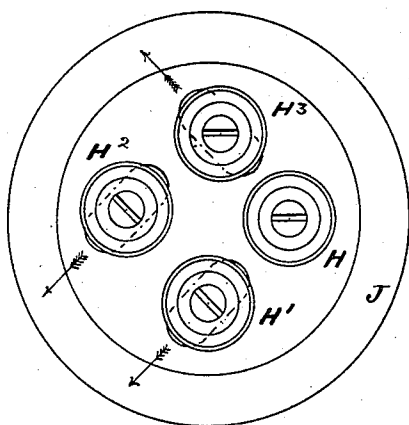


FIG. 2.

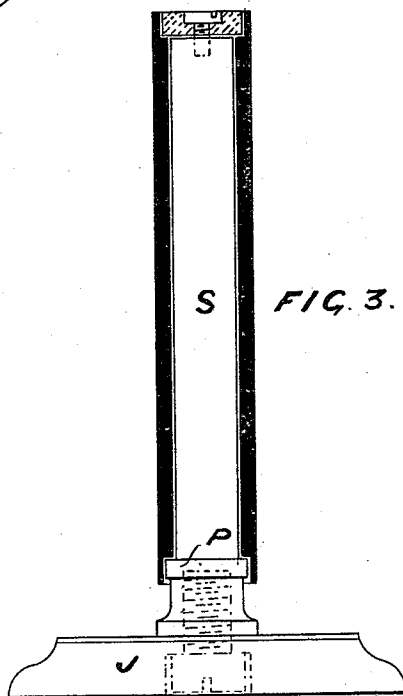


FIG. 3.

Witnesses:
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By James L. Norris,
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UNITED STATES PATENT OFFICE.

MICHAEL FIRTH AND JOSEPH ROBERTSHAW, OF BRADFORD, ASSIGNORS TO
HENRY WALTON WHITEHEAD, CHARLES WHITEHEAD, AND JOHN HENRY
WHITEHEAD, OF LEEDS, ENGLAND.

COMBING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 466,227, dated December 29, 1891.

Application filed May 12, 1891. Serial No. 392,520. (No model.) Patented in England June 1, 1889, No. 9,082.

To all whom it may concern:

Be it known that we, MICHAEL FIRTH and JOSEPH ROBERTSHAW, subjects of the Queen of Great Britain and Ireland, residing at Bradford, in the county of York, England, have invented certain Improvements in Combing-Machines, (for which we have obtained Letters Patent in England, No. 9,082, dated June 1, 1889,) of which the following is a specification.

10 The object of our invention is to obviate the liability of fibers collecting around and forming a "lap" upon either of the drawing-off rollers mounted near each small circular comb, which on coming in contact with the
15 pins of the adjacent comb-circle bends, breaks, or otherwise damages them to such an extent as to render them useless for the proper and effectual clearing of the fiber, and also by our combination to be enabled to dispense with
20 the revolving funnels hitherto mounted near the said drawing-off rollers and near the center of the machine by which the several slivers are collected and combined, and thereby to prevent some of the fibers being twisted
25 around or laid across the remaining portion of the sliver, thus producing straighter and more valuable cleared fiber or "top."

In the drawings, Figure 1 represents a diagram plan of the comb-circles and drawing-off rollers of a "Noble's" combing-machine arranged according to our invention. Fig. 2
30 is a detail plan of the four center rollers; Fig. 3, a sectional detail of one of the center rollers, and Fig. 4 detail views of an arm for traversing the additional endless aprons.

35 The drawing-off rollers A and B and the stretching-rollers C and D on each side of the machine are mounted and operated somewhat in the usual manner; but in addition to the main endless aprons E, working around the
40 respective drawing-off rollers B for removing the sliver or cleared fiber from the adjacent small comb-circles F or F', we place an auxiliary endless apron G around the other roller
45 B of each pair and upon the respective additional stretching-rollers H and H², mounted by preference upon a circular plate J, secured near the center of the machine.

50 The circular plate J is secured to the cross-plate K of the machine. The rollers H', H²,

and H³, mounted on the circular plate J, are adjustable in the direction of the respective arrows in slots (see Fig. 2) cut in the said plate in order to admit of regulation to suit the varying thicknesses of the endless aprons. 55 The rollers H' H² H³ are adjustable in the slots by the screws which connect such rollers with the circular plate J, as will be obvious by reference to Fig. 2.

The rollers H and H' of one series and H² 60 and H³ of the other series are so placed on the circular plate J as to allow the respective endless aprons G to run in contact with the other or ordinary aprons E. The endless aprons E and L run in contact, as hitherto, 65 convey in the direction of the arrows the slivers drawn from the large circle at M M. The slivers drawn from the small circles at N N pass along with the before-mentioned slivers between the aprons G and E toward the
70 center of the machine, where all are combined on passing between the rollers H and H³.

The slivers drawn from the large and small circles and combined at or near the center of the machine in the manner described may be 75 conveyed therefrom in the direction shown at Z, thus dispensing with the usual revolving funnels about the center of the machine and preventing the fiber coming in actual contact with the drawing-off rollers, thereby rendering it impossible to lap around the same and damage the comb-pins of the small circles.

The rollers upon plate J are mounted upon a central spindle S, having a collar P formed thereon near the bottom somewhat larger in 85 diameter than the spindle and a similar collar attached by a screw at the top. Each roller is recessed at the ends to such diameter as to correspond with the collars, which form the bearing-surface, and by which arrange- 90 ment loose fiber is not so liable to lap around the ends of the rollers, as is the case with rollers mounted in the ordinary manner.

The stretching or carrying rollers C of each series are mounted to the tables T of any or- 95 dinary traversing apparatus in a similar manner as hitherto, and in order that the additional endless aprons G may be traversed at the same time and in the same direction we attach to each roller-bracket U an arm V, 100

having one end formed, as at W, to embrace the additional apron, so that as the brackets U, moving the arms V and endless aprons, will move likewise.

5 What we claim as our invention is—

In a combing-machine, the combination, with the comb-circles, the drawing-off rollers, the stretching-rollers arranged near the center of the machine, and the main endless
10 aprons, of the auxiliary endless aprons extending around the drawing-off and stretching rollers and moving, respectively, in jux-

taposition to the main endless aprons for conducting the slivers to the center of the machine and delivering them therefrom, substantially as described. 15

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

MICHAEL FIRTH.

JOSEPH ROBERTSHAW.

Witnesses:

JNO. GILL,

E. H. BODEN.