(No Model.) 2 Sheets—Sheet 1.

J. LONGMORE & W. L. WATSON.

COMBING MACHINE.

No. 497,380. Patented May 16, 1893.

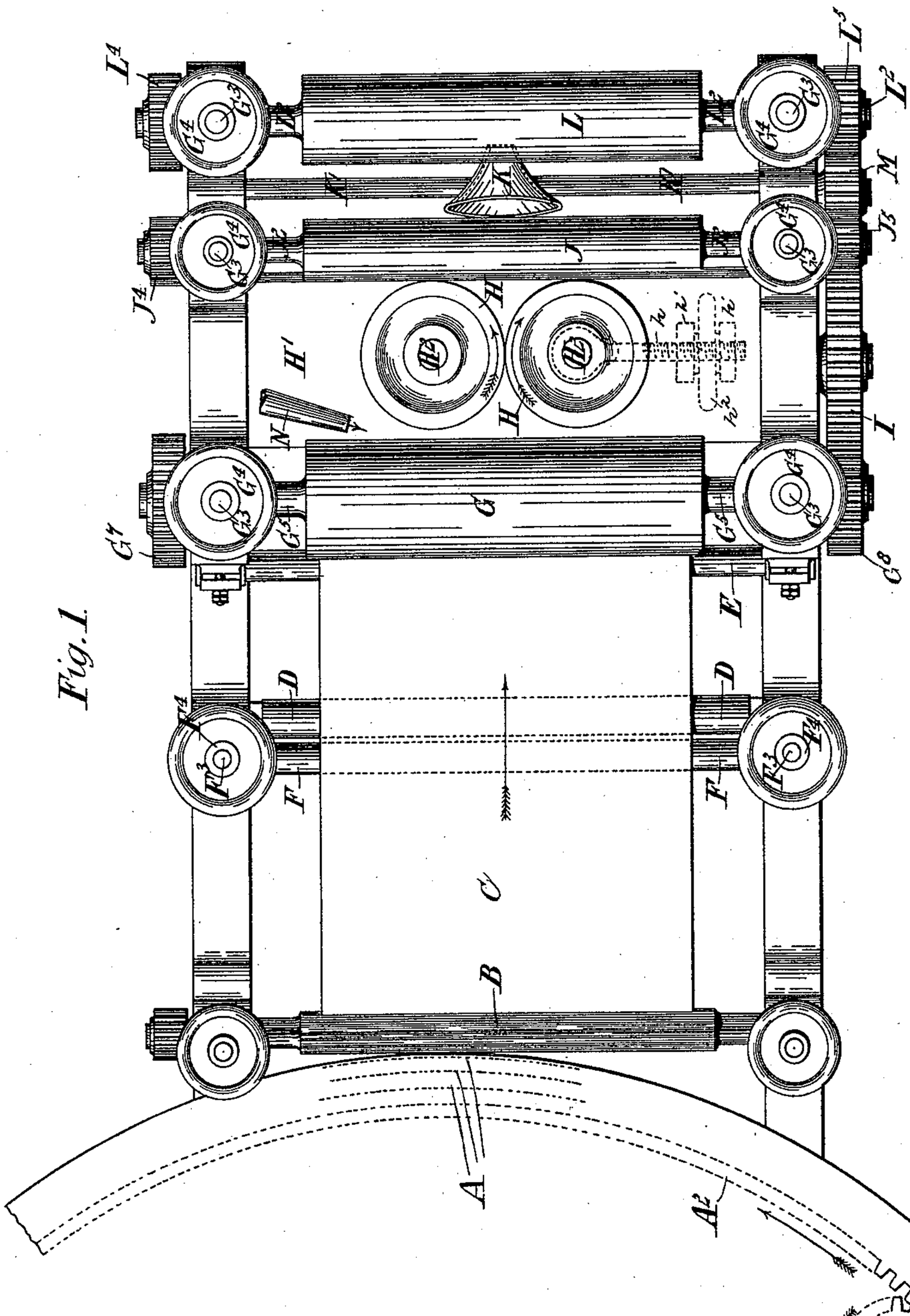

Fig. 1.

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

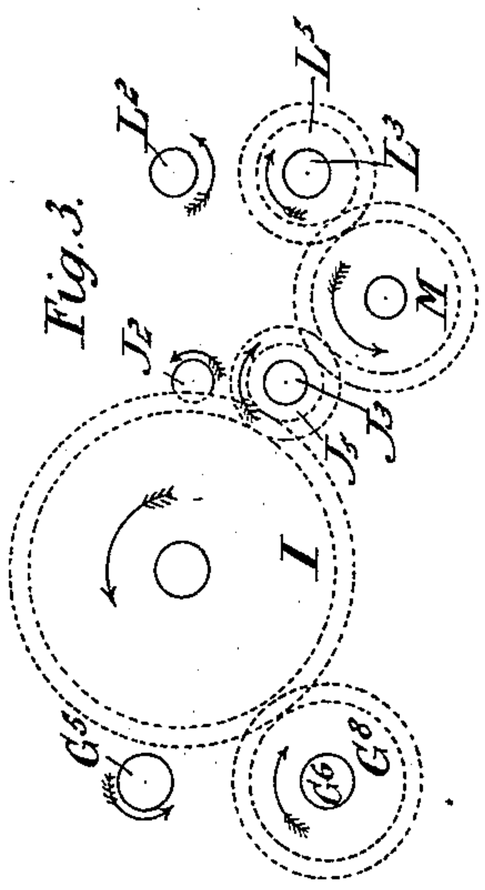
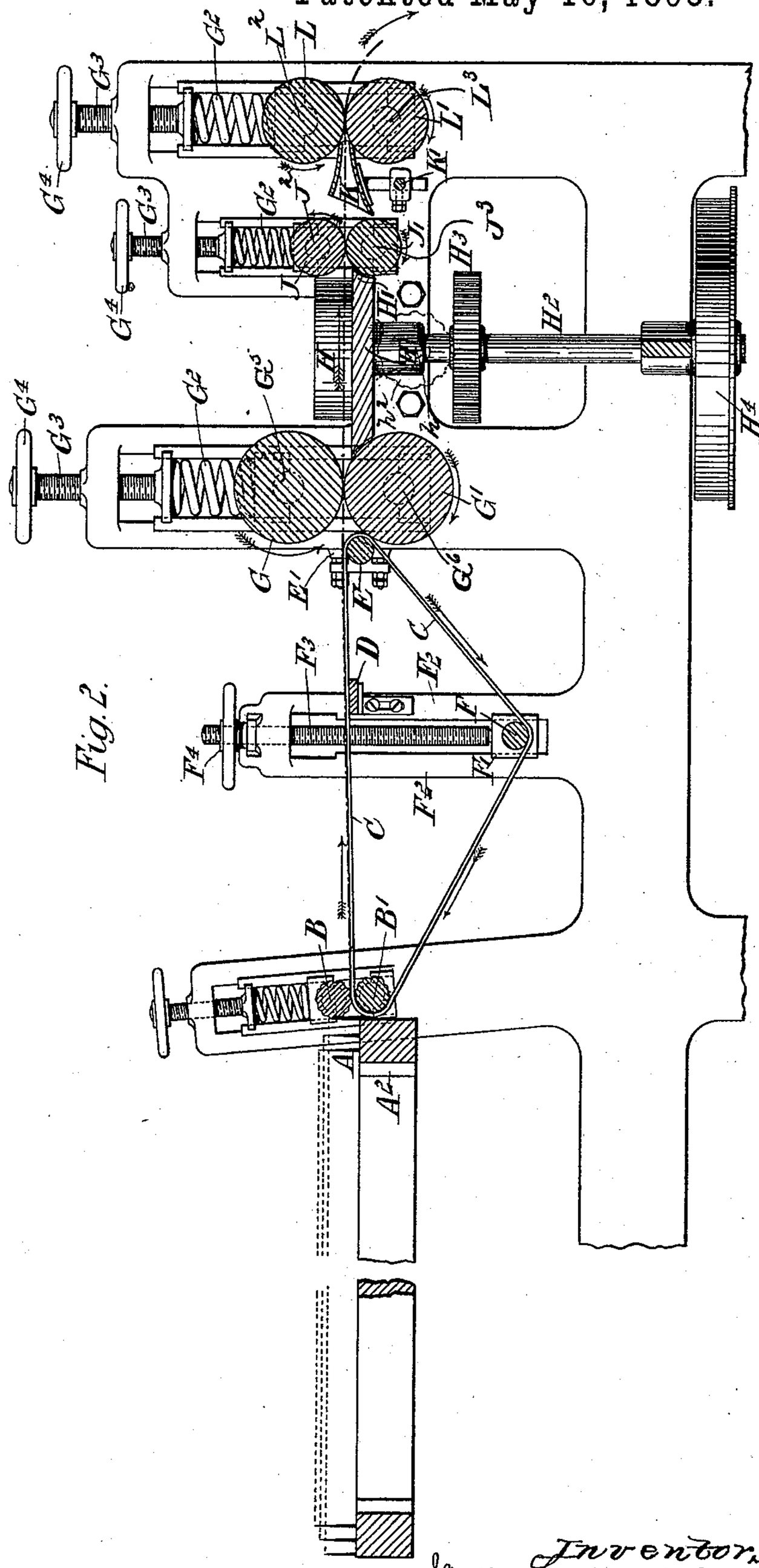


Fig. 2.



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UNITED STATES PATENT OFFICE.

JAMES LONGMORE AND WILLIAM LIVINGSTONE WATSON, OF LONDON, ENGLAND.

COMBING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 497,380, dated May 16, 1893.

Application filed October 17, 1891. Serial No. 408,972. (No model.) Patented in England March 25, 1890, No. 4,682.

To all whom it may concern:

Be it known that we, JAMES LONGMORE and WILLIAM LIVINGSTONE WATSON, both subjects of the Queen of England, residing at London, in England, have invented certain new and useful Improvements in Combing-Machines, (for which we have obtained Letters Patent of Great Britain, No. 4,682, dated March 25, 1890,) of which the following is a specification.

This invention relates to combing machines of that class wherein the fibers are carried around on a circular carrier or comb outside which the said fibers project in tufts and from which they are drawn off by the pressure of a fluted roller (tangentially disposed to the circular comb) on an endless leather apron or drawing-off leather. Hitherto the removal of the film or fiber from the apron has been directly effected by means of a rotating funnel which condensed and formed the film into a sliver and through which it was drawn by drawing rollers between which the sliver was nipped. With many fibers there is a great difficulty in effecting this removal of the film from the apron in a continuous manner so as to cause no breaking of the sliver on account of the sorting of the fibers which occurs in drawing off from the circle, the longer fibers being delivered on one side of the apron and the short on the other thus destroying cohesion.

Our invention has for its object to overcome this difficulty, and it consists in certain novel details of construction and combinations and arrangements of parts, all as will be now described and pointed out particularly in the appended claims.

In the accompanying drawings:—Figure 1 is a plan and Fig. 2 a central longitudinal section of the apparatus constructed according to this invention. Fig. 3 is a diagrammatic view of a portion of the driving gear thereof.

Like letters indicate like parts throughout the drawings.

A is the circular carrier or comb which is slowly rotated by a pinion A′ engaging with the internal rack A^2 as is usual in say the Lister combing machine.

B B′ are the usual fluted drawing-off rollers and C the endless drawing-off leather or apron which passes around the roller B′ over the support bar D and around rollers E and F the former of which is journaled in stationary bearings E′ and the latter in bearings F′ which are adjustable in slotted standards F^2 by a screw F^3 and screw nut F^4 so as to enable the tension of the leather C to be increased or decreased.

G G′ are the papering rollers the upper one (G) of which is pressed downward or to the lower one by a spring G^2 at each end of its shaft with more or less pressure according to the position of the screw G^3 which may be adjusted by the hand wheel G^4 or the roller may act by its own weight. The shafts G^5 G^6 of rollers G G′ are geared together at one end by pinion G^7 only one of which is seen in Fig. 1, and at its other end the shaft of the lower roller has secured on it a pinion G^8 which gears with a wheel I.

H are two vertical rollers rotating above the plate H′ and the shafts H^2 of which are geared together by toothed wheels H^3 one only of which is shown in Fig. 2. One of the shafts H^2 is provided with a band pulley H^4 or some other equivalent by which rotary motion may be transmitted to it. If desired the shafts H^2 may extend upward from the rollers H instead of downward as in the drawings, and be there provided with gear wheels H^3 and pulley H^4 but the arrangement shown in the drawings is more convenient.

J J′ are another pair of horizontal rollers the upper of which like G before described and L hereinafter described is by springs G^2 and screws G^3 yieldingly and adjustably pressed down on to the lower of its pair of rollers.

K is the guiding funnel which is adjustably secured in a cross bar K′.

L L′ are the delivering rollers. At one side of the machine the shafts J^2 J^3 of rollers J J′ are geared together by pinions J^4 one only of which can be seen in Fig. 1, and at the oppo-

site side of the machine the shaft J^3 of roller J′ has secured on it a pinion J^5 which is in gear with the before mentioned wheel I and also with the wheel M. This wheel M gears with the pinion L^5 secured on one end of the shaft L^3 of roller L′ the opposite end of this shaft being geared with the shaft L^2 of the upper roller L by pinions L^4 the upper of which only is shown in Fig. 1.

N is a nozzle through which air is blown so as to direct the short side of fibers to the middle of or between the rollers H.

The before described gearing and pulley H^4 may receive motion from any convenient source or they may be coupled up with the gearing of the combing machine in conjunction with which the apparatus is to operate and when operated in this manner the fibers projecting outward from the comb A are seized by the rapidly rotating rollers B B′ and pressed hard down upon the surface of leather C by which they are carried to the calendering or "papering" rollers G G′ as indicated by the dot and dash line in Fig. 2, at which place the rollers G G′ draw or "doff" the fibers from off the leather C. The rollers G G′ press upon the film of fibers passing between them with such a degree of pressure that the film becomes "papered" or consolidated throughout its width. At the outlet side of the rollers G G′ the blast of air delivered by nozzle N blows the short fibers toward the center of the apparatus so that they will readily enter between the rollers H by which the fibers are still further consolidated and formed into a comparatively loose sliver. After this sliver has passed between the rollers J J′ by which the fibers are still further consolidated and the sliver made harder or more compact it passes through the guide or funnel K and is delivered by the rollers L L′ into a sliver can or other receptacle.

Formed upon the lower side of the plate H′ are two depending lugs *h′*, through which passes a rod or bolt *h* screw threaded for a portion of its length, and formed at the opposite end with an eye which embraces the shaft H^2 carrying one of the rolls H. Mounted upon the rod *h* between the depending lugs *h′* is a hand wheel h^2, by turning which the rolls may be adjusted, as will be readily understood, the plate H′ being of course slotted to allow the shaft H^2 to move slightly.

We claim—

1. In a mechanism for drawing off fibers from a combing machine, the combination with the drawing off apron and condenser, of the blast nozzle acting on the film of fiber between the apron and condenser whereby the edge of the film is compacted; substantially as described.

2. In a mechanism for drawing off fibers from a combing machine, the combination with the drawing off apron, calendering or "papering" rolls, condenser and delivering rolls, of the blast nozzle acting on the film of fiber between the calendering or "papering" rolls and condenser; substantially as described.

3. In a mechanism for drawing off fibers from a combing machine, the combination with the comb, drawing off rollers arranged tangentially thereto, drawing off apron, condenser and delivering rolls, of the air blast nozzle acting on the side of the film last delivered to the drawing off rolls, whereby the shorter fibers are compacted and the integrity of the film preserved; substantially as described.

4. In a mechanism for drawing off fibers from a combing machine, the combination with the drawing off apron, calendering or papering rolls, and vertically arranged rolls H, of the fixed funnel in rear of said rolls H and the delivering rolls; substantially as described.

In testimony whereof we have hereto set our hands in the presence of the two subscribing witnesses.

JAMES LONGMORE.
WILLIAM LIVINGSTONE WATSON.

Witnesses to the signature of James Longmore:

JOSEPH G. NORDEN,
THOS. HEATH.

Witnesses to the signature of William Livingstone Watson:

JNO. D. TANNAHILL,
W. F. WARREN.