

No. 822,479.

PATENTED JUNE 5, 1906.

E. H. ROONEY.  
COMBING MACHINE.

APPLICATION FILED JULY 7, 1905.

5 SHEETS—SHEET 1.

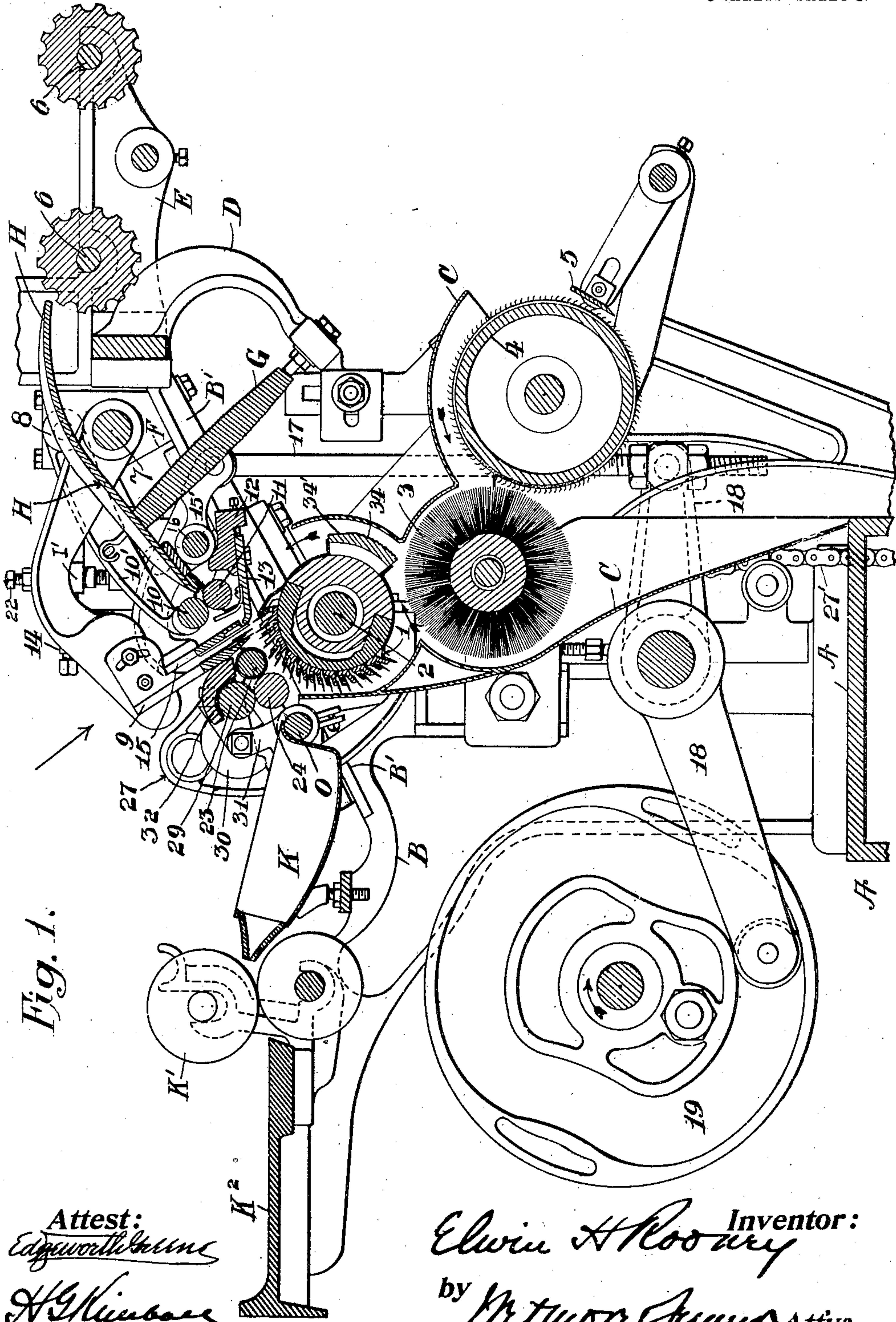


Fig. 1.

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by *Metson & Jones* Attys.

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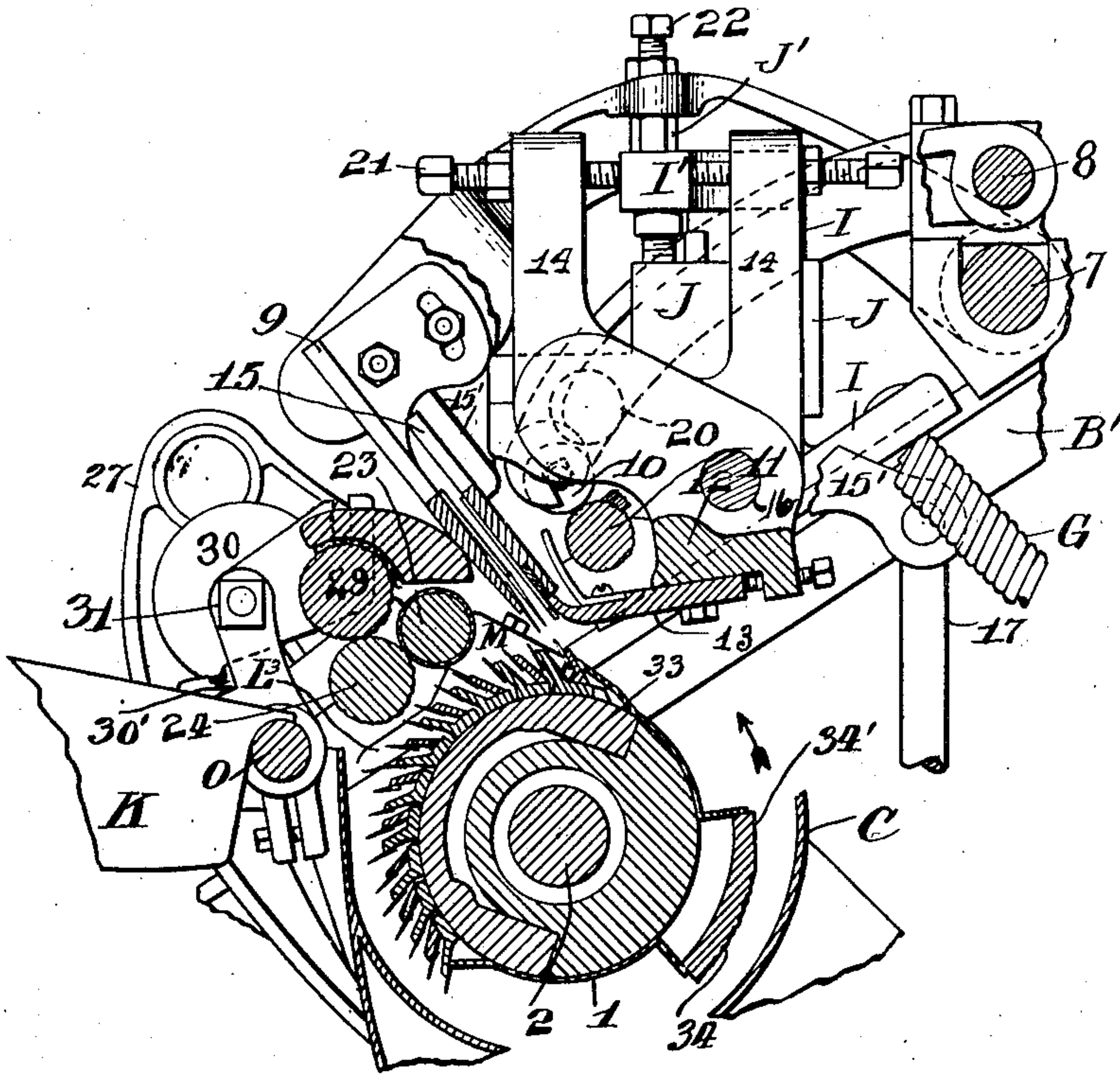
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5 SHEETS—SHEET 2.

*Fig. 2.*



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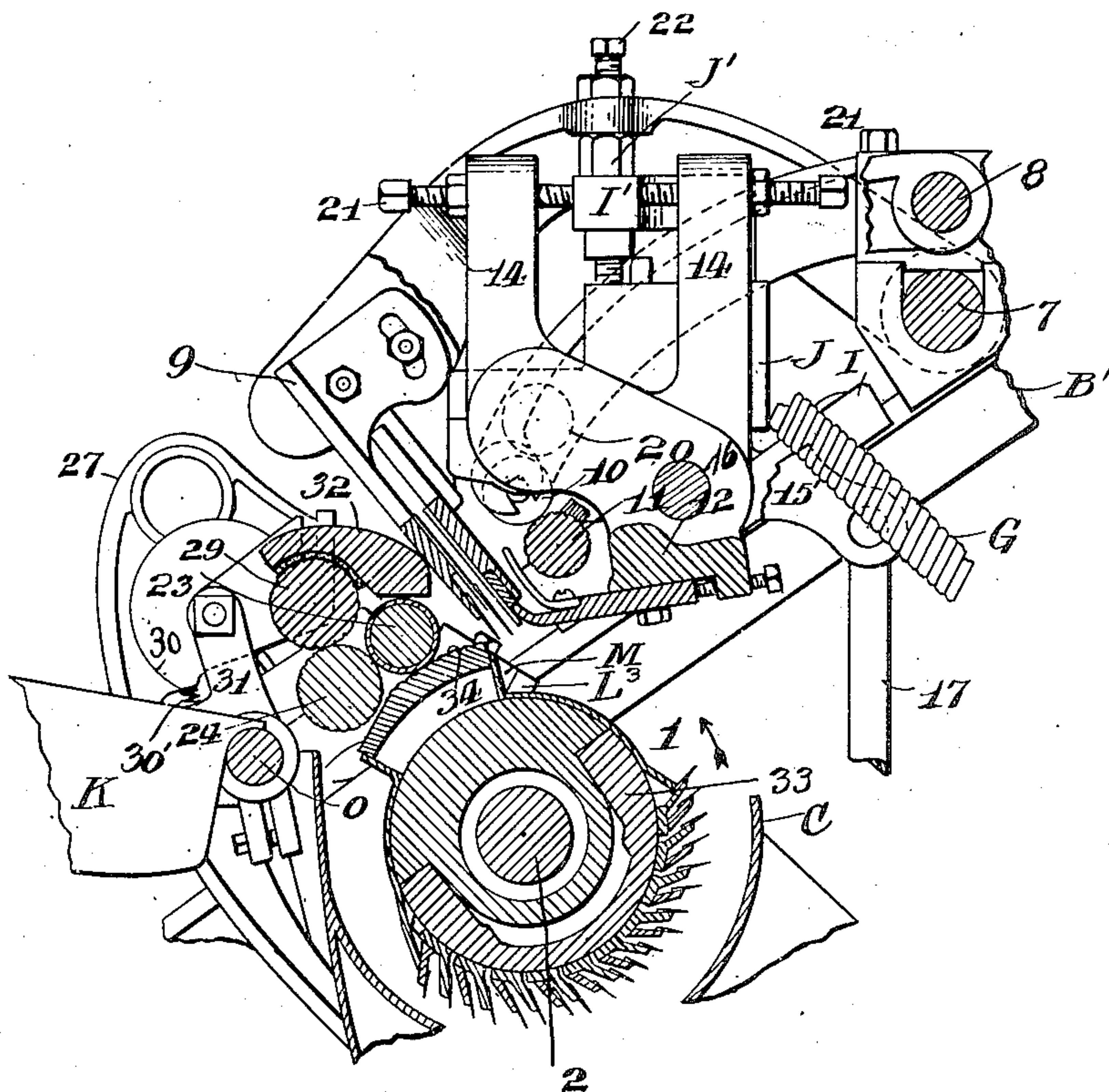
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5 SHEETS—SHEET 3.

*Fig. 3.*



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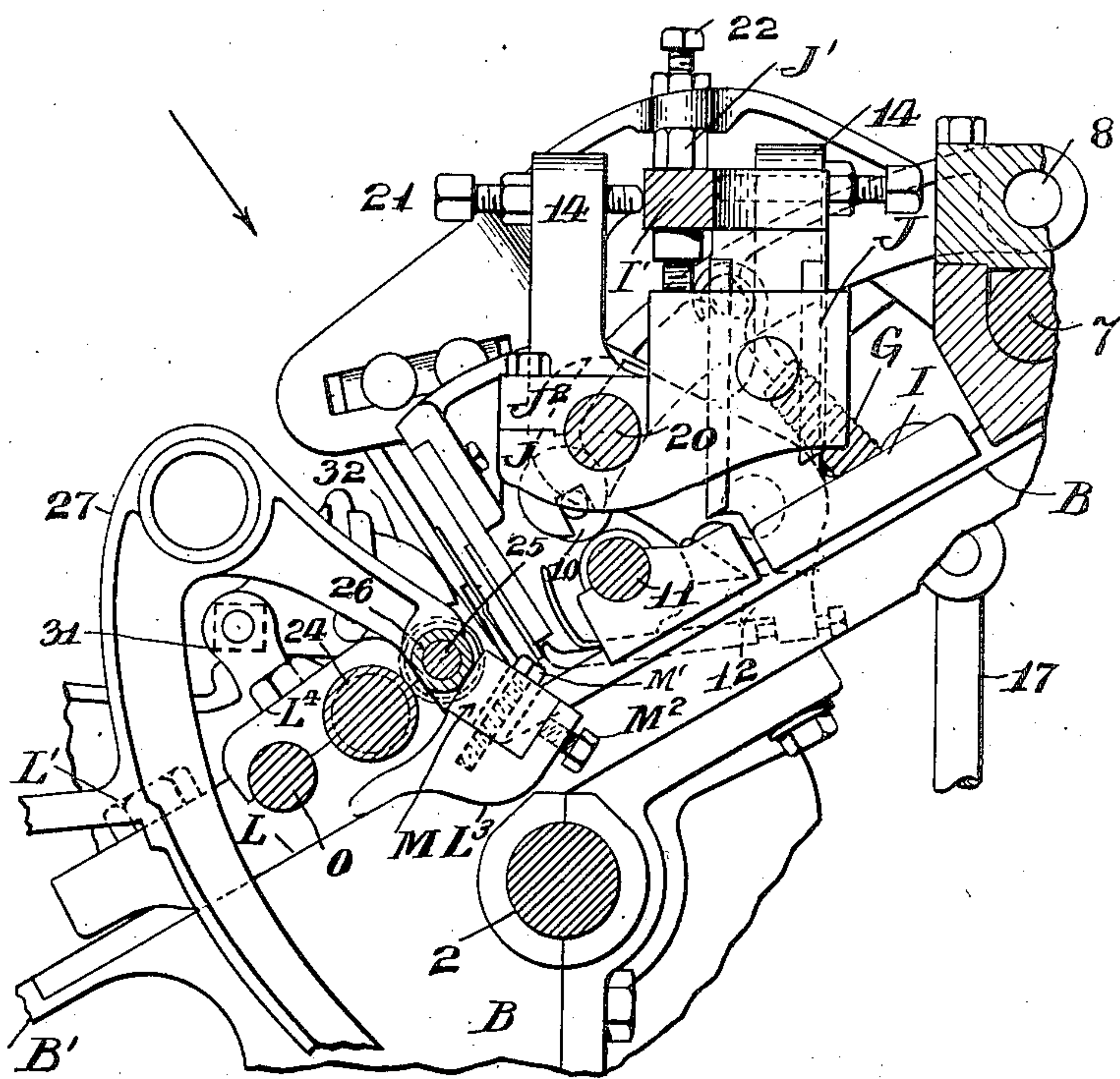
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5 SHEETS—SHEET 5.

*Fig. 5.*



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# UNITED STATES PATENT OFFICE.

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## COMBING-MACHINE.

No. 822,479.

Specification of Letters Patent.

Patented June 5, 1906.

Application filed July 7, 1905. Serial No. 268,682.

*To all whom it may concern:*

Be it known that I, ELWIN H. ROONEY, a citizen of the United States, and a resident of New Bedford, Massachusetts, have invented certain new and useful Improvements in Combing-Machines, of which the following is a full, true, and concise specification.

The present invention relates to machines for combing cotton and similar fibrous material, and more particularly to cotton-combing machines which operate upon the principle of the well-known Heilmann comber; and the invention consists in the several features of improvement hereinafter fully described and in combinations and subcombinations of the same, whereby the operation and construction of the said machines are simplified and their efficiency materially increased.

Referring to the accompanying drawings, which form a part hereof and in which like reference characters designate like parts throughout, Figure 1 is a vertical transverse sectional view taken through the central portion of one of the combing-heads of a machine embodying this invention. Fig. 2 is a similar and enlarged view of the combing-cylinder and associated parts. Fig. 3 is a view similar to Fig. 2, but showing the combing-cylinder in a different angular position. Fig. 4 is a view of the adjacent intermediate portions between two combing-heads looking in the direction of the arrow of Fig. 1 and with parts removed and broken away to show interior constructions. Fig. 5 is a vertical transverse section on lines 5-5 of Fig. 4, showing the relations of the several shaft-journals and the supports for the leather detaching-roller.

Referring to Fig. 1, the frame of the machine consists of a main horizontal girder A, extending the length of the machine for the common support of the several combing-heads thereof, and a series of intermediate upright supports B, which are mounted on the girder between each of the heads forming the direct supports for the several operating parts. Inasmuch as all of the heads are identical in construction, only one is herein fully illustrated; but it will be understood, of course, that the machine may comprise any desired number of them. In the figure referred to the combing-cylinder 1 is carried on the main combing-shaft 2, which revolves constantly in fixed bearings in the direction

of the arrow when the machine is in operation and the combings or noyls are removed by the usual means of a cylinder cleaning-brush 3, doffing-cylinder 4, and doffer-comb 5, these parts being suitably driven in the directions shown from the usual gear-head located at one end of the machine (not herein shown) and being also inclosed in a removable casing C. The upper portion of the intermediate supports B are inclined and provided with frame-arms B', to the extremities of which are secured the brackets D and also the brackets E, upon which the lap-roll shafts 6 are carried. Adjacent to these brackets each supporting-arm B' carries a journal-seat F for the hinge shafts or pins 7 and 8 of the top comb 9 and upper lap-feed roller 10, respectively. The lower lap-feed roller 11 is formed upon the usual lap-feed shaft extending the length of the machine, journaled on the support B, and the upper roller 10, is pressed against the roller 11 by the springs G, which are connected between the arms 10' and the brackets D, above referred to.

The lap is fed intermittently in the usual manner by the lap-rolls 6 down the apron or chute H into the lap-feed rollers 10 and 11, which rollers are suitably actuated from the gear-head to advance the lap a proper distance toward and into the jaws of the nipper mechanism presently referred to.

The above-described parts are well known in machines of this order and for this reason are not considered to require illustration or explanation further than that already given.

According to the present invention the nipper mechanism just mentioned is stationary with respect to the frame and the several parts of the head; but it is capable, however, of accurate adjustment in different directions. It is comprised of a nipper-frame 12, which carries the lower jaw 13 or cushion-plate and a pair of forked arms 14 14 at each end. The upper movable jaw or nipper-knife 15 is secured to the ends of the lever-arms 15' 15', which are pivoted on a cross-shaft 16, carried by the nipper-frame between the arms 14 thereof, and the connecting-rod 17 joins the tails of the arms 15' with a cam-crank 18, suitably driven by the cam 19. The adjustable support for the nipper-frame (shown more clearly in Figs. 2, 3, and 5) comprises a pedestal I, formed with a base which



is adjustably bolted to the frame-arm B', and a vertical column which terminates in two lateral abutment-arms I'. (Shown in top view in Fig. 4.) A pillow-block J is mounted to slide vertically on each side of the column I, being adjustable thereon by means of set-screws J' J', secured to rotate without axial movement in apertures in the abutment-arms I' I' of the fixed column I. The nipper-frame is provided with gudgeons or pivots 20 at opposite ends, which are respectively seated in the pillow-block at each end of the head and retained therein by means of ordinary cap-plates. (Shown at J<sup>2</sup>.) The arms 14 14 of the frame extend upwardly so as to be located, respectively, on opposite sides of the abutments I' and oppositely-disposed set-screws 21 21, respectively carried by said arms, engage with opposite sides of the abutments, as shown in the drawings. By reason of the construction just described the nipper-frame 12 and its cushion-plate may be rigidly fixed upon the frame of the machine, but is capable, however, of a nice adjustment in different planes. In operation the cushion-plate is located just clear of the combing-cylinder and at a distance from the detaching and drawing-off rollers, presently described, which is appropriate for the length of staple under treatment. The top comb 9 is also stationary, being mounted idly on the hinge-pin 7, as stated, and provided with arm projections 9', which overlap the abutments I' and are adjustably supported thereupon by means of set-screws 22, which therefore determine the extent to which the needles of the top comb penetrate into the staple which passes beneath it.

In the operation of the machine the ends of the staple which project from the jaws of the nipper mechanism are combed by the teeth or needles of the revolving-needle half-lap 33 in the usual manner and are then engaged by the detaching half-lap or fluted segment 34, which coöperates with the leather detaching-roller 23 to separate the staple from the lap, at the same time dragging it through the row of teeth of the stationary top comb 9, which is adjusted to be just clear of the path of the said segment. The staple is then overlapped or pieced upon the tail ends of the last previously combed staple and passes as usual from between the intermittently-rotated detaching-roller 23 and drawing-off roller 24 into the funnel-shaped sliver-can K, whence it emerges as a round sliver which passes through calendering-rolls K' to the sliver-apron K<sup>2</sup>.

The drawing-off roller 24 is formed on a continuous shaft common to the several heads of the machine and is intermittently rotated about two-thirds of a revolution forward and one-third of a revolution backward each time it receives a detachment of staple, such motion being imparted to it by special

piecing cams and pawls located in the gear-head of the machine and not herein shown. The said shaft is journaled in a pillow-block L, saddled over and adjustably secured to the frame-support B by the bolt L', and on each side of the said block there is provided a bracket-arm L<sup>3</sup>, Figs. 4, 5, which may conveniently be formed integrally therewith. The extremities of the arms L<sup>3</sup> are rabbeted to form an inclined shelf for carrying a bearing-block M, which block is adjustable toward and from the path of rotation of the fluted segment 34 by means of set-screws M' M<sup>2</sup>, respectively, passing through a slot in and bearing against the bottom of the said block. It will be observed from Fig. 4 that there is a bracket-arm, such as L<sup>3</sup>, at the opposite ends of each head of the machine and that their function is to serve as a fixed, although adjustable, support for the leather-covered detaching-rollers 23. The latter are formed in the ordinary manner with their gudgeons 25 surrounded by sleeves 26, which rest against the inclined upper surface of the fixed bearing-blocks M, and the leather-covered body of the roller rests against the fluted body portion of its drawing-off roller 24, as indicated in Fig. 3 and also as shown in dotted lines in Fig. 5. The roller 24 and the bearing-block M constitute, in effect, a fixed crotch, in which the detaching-roller is contained and into which it is yieldingly pressed by means of the weighted stirrups 27, which are located close to the bracket-block L and bear against the gudgeon-sleeves 26 between collars thereon and directly over the bearing-blocks M, as shown in Fig. 4. The stirrups are connected with their weights, which are not shown, by means of the chains 27', Fig. 1. The brass clearing-off roller 29 is journaled in pivoted horsetails 30 so as to be almost directly over the roller 24, and it is kept in uniform constant contact therewith by means of its gravity or a spring 30', or both. The specific form of the horsetail, however, is not a part of the present invention and being fully disclosed in another application will not be described herein further than to explain that it is carried by a yoke 31, which contains the spring 30' and is adjustably mounted on the frame of the machine or on the longitudinal rod O, which is secured to the bracket-block L by the cap-bolt L<sup>4</sup>. It will be observed that the bracket-block L thus constitutes the supporting member for all three of the rollers, which serve to detach and deliver the combed staple into the sliver-pan, and being adjustable upon the frame B is therefore available for setting the said rollers at any desired position toward or from the jaws of the nipper mechanism without disturbing their relative positions; but by reason of the auxiliary adjustability of the bearing-block M the detaching-roller 23 may be relatively adjusted with respect to



the other rollers at any desired distance from the combing-cylinder. The clearing-cover 32, which has its bottom side lined with soft material, like felt, is supported in notches in the horsetails at each end of the head and rests upon the clearing-off roller 29 in the usual manner; but by reason of the fact that the top comb 9 is stationary and that the leather detaching-roller 23 also has substantially no lateral movement this cover is permitted to abut against the top comb, so as to fill up the space or gap between the same and the clearing-off roller, thereby not only protecting the interior parts, but also preventing the draft of air which the revolving cylinder tends to produce around the leather detaching-roller. Moreover, the mounting of the detaching-roller 23 upon fixed supports, which are formed close to and as a part of the frame-supports B, renders it possible to locate the stirrups 27 and horsetails 30 at wider distances apart, which permits the brass clearing-off roller 29 to have as long a working face as the other rollers, thereby increasing the width of the lap without increasing the distance between the intermediate supports B.

The combing-cylinder has its needle half-lap 33 formed with rows of combing-needles secured to it in the ordinary manner, so that their points determine a locus which is cylindrical and concentric with the shaft 2, and at its opposite side it carries a detaching half lap or segment 34, shown herein as fluted, which is also cylindrical and concentric with the shaft 2, but the radial distance between the exterior surface of the segment and the axis of the shaft is greater by a slight difference—approximately one-sixteenth of an inch—than the radial distance between the locus of the needle-points and the axis of the shaft, so that the segment is radially higher on the combing-cylinder than the points of the needles. This difference in radial height of the segment over the needle half-lap permits it to engage with the detaching-roller 23, which is so adjusted on its fixed supports that its staple-engaging surface is located in a fixed position just clear of the needles. At the moment of engagement the roller 23, which is driven by reason of its constant frictional contact with the drawing-off roller 24, is being rotated at the same surface speed and in the same direction as the segment, and the free ends of the staple which project from the nipper-jaws are caught and nipped between the segment and roller, being thereby detached from the lap and carried over toward the drawing-off roller 24, where they are laid or overlapped upon the tail ends of the previously-combed staple, as above described. In practice it is impossible for an effectual nipping-pressure to be obtained between the segment and detaching-roller without providing for a certain amount of yield

in one or the other of these parts. This yielding movement, which may be very slight, is preferably allotted to the detaching-roller, for which purpose the latter is held by the yielding pressure of the weighted stirrups on its fixed end supports and against the roller 24, as above fully described, and the forward edge of the revolving segment is beveled, as shown at 34', so that it will run under and engage the roller without undue shock. It is found to be satisfactory to adjust the detaching-roller 23 about one thirty-second of an inch from the path of the needle half-lap, and the beveled edge of the fluted segment has therefore but to lift the roller the additional thirty-second of an inch in order to bring it into pressing engagement against its cylindrical surface. While the detaching-roller actually does have a slight lateral movement, yet such movement is only a movement of yield such as must necessarily exist between any two parts which are adapted to nip and pinch an article inserted between them. For practical purposes the detaching-roller is substantially stationary or fixed, and in the following claims I have so referred to it as distinguished from other machines in which it is moved laterally first into engagement with the segment and then out of the path of the needles.

When the staple has been detached and conducted into the rollers 23 and 24, the latter continue their forward rotation and then immediately reverse and rotate backwardly about one-third of a complete revolution or one-half of their forward rotation in the usual manner, during which operations the nipper-knife has opened and the lap has been fed forward a proper distance by the mechanism already described. By the time the nipper has again closed the needle half-lap will have revolved around and again begun its action on the staple projecting therefrom. By reason of the fact that the lower nipper-jaw or cushion-plate 13 is normally fixed in its proper position with respect to the cylinder and does not, therefore, have to be depressed in order to carry the projecting staple toward the cylinder the time required for the nipper mechanism to get ready for the needle half-lap, as well as the power required to operate the nipper mechanism, and the vibration of these parts, are reduced to a minimum. Moreover, the leather detaching-roller 23, having its fixed position of action out of the range of the needle half-lap, is immediately in position for the next detaching operation as soon as the back edge of the fluted segment has left it, and the time and mechanism heretofore required for moving it from one position to another are accordingly reduced. This consideration in respect of eliminating movement of the several parts, and thereby saving time, permits the interval on the combing-cylinder between the needle half-



lap and the segment to be reduced a proportionate amount, which means, in effect, that the combing-cylinders may carry an additional number of rows of combing-needles, and, furthermore, the reduction of the number of moving parts and the extent of their movement adapts the machine for running at high speeds with economy and efficiency.

The stationary top comb is located as close as practicable to the nipper-knife, and its row of downwardly-pointed teeth is immediately superior to the tuft of staple projecting from below the same. During the combing operation the staple remains in this relative position beneath the comb; but it is subsequently raised by the comparatively high detaching-segment into the teeth of the comb, so that the tail ends of the staple, which have been held in the grip of the nipper-jaws, are certain to receive a thorough combing or straightening as they pass forwardly to the piecing mechanism. The comb is free to be swung back on its pivot whenever desired for the purpose of removing the dirt and lint collected by it.

Having described my invention, what I claim, and desire to secure by Letters Patent of the United States, is as follows:

1. In a cotton-combing machine, the combination with means for nipping the lap and combing the forward ends of the staple, of a segment revolving about a fixed axis and a detaching means supported in a substantially fixed position wherein it is engaged by said segment and coöperates therewith to detach the staple from the lap.

2. In a cotton-combing machine, the combination with means for nipping the lap and combing the forward ends of the staple, of a cylindrical segment revolving about a fixed axis and adapted to encounter said forward ends, a roller normally supported in position to be engaged by said ends and by said cylindrical segment and adapted to coöperate with the latter to detach the staple from the lap, and means for pressing said roller and revolving cylindrical segment relatively toward each other.

3. In a cotton-combing machine, the combination with means for nipping the lap and combing the forward ends of the staple, of a cylindrical detaching half-lap adapted to encounter the free ends of the staple, a roller-support normally fixed with respect to the frame of the machine, a roller resting thereon in position to be engaged by said free ends and by said detaching half-lap, and yielding means acting on said roller and pressing it against its fixed support.

4. In a cotton-combing machine, the combination of means for nipping the lap and combing the projecting ends of the staple, with a detaching-segment adapted to encounter said ends, a detaching-roller having its staple-engaging surface located in fixed position

in the path of said segment and adapted to yield under the engagement thereby.

5. A cotton-combing machine, comprising means for nipping the lap and combing the free ends of the staple, a drawing-off roller suitably actuated to effect the piecing of the staple, normally fixed roller-supports and a detaching-roller resting thereon and against said drawing-off roller, in combination with a detaching-segment revolving about a fixed axis and adapted to encounter the said free ends and nip the same against the detaching-roller.

6. In a cotton-combing machine, a drawing-off roller suitably actuated to effect the piecing of the staple, inclined roller-supports rigidly mounted on the frame of the machine and forming a fixed crotch with said drawing-off roller, in combination with a detaching-roller seated in said crotch, and a combing-cylinder comprising a detaching half-lap concentrically mounted thereon adapted to engage the detaching-roller and nip the staple thereagainst.

7. In a cotton-combing machine, a nipper mechanism comprising a stationary cushion-plate, means for combing the staple projecting therefrom, and detaching mechanism comprising a revolving member adapted to encounter the staple and nip it against a detaching-roller, in combination with said detaching-roller having its staple-engaging surface located in a substantially fixed position wherein it is engaged by said revolving member, and means for establishing a nipping pressure between said member and roller.

8. In a cotton-combing machine, a nipper mechanism having a stationary cushion-plate, and a combing-shaft revolving in fixed bearings and having a half-lap and detaching-segment thereon, in combination with a detaching-roller having its staple-engaging surface located in a substantially fixed position free of said half-lap but adapted to be engaged by said segment and by the staple and means acting upon said roller to press it against the said segment.

9. In a cotton-combing machine, stationary means for holding the lap, and means for combing the projecting staple comprising a revolving needle half-lap and a stationary top comb located respectively on opposite sides of said staple.

10. In a cotton-combing machine, mechanism for holding the lap and means for combing the staple projecting therefrom comprising a revolving needle half-lap and a stationary top comb in combination with piecing means located at a fixed distance from said top comb, and means for closing the space between said piecing means and said top comb.

11. In a cotton-combing machine, mechanism for holding the lap and means for combing the staple projecting therefrom



comprising a stationary top comb and revolving needle half-lap, located respectively on opposite sides of said staple, in combination with detaching and piecing means, and a clearing - cover mounted on said piecing means in contact with said top comb.

12. In a cotton-combing machine, a nipper mechanism comprising a stationary cushion-plate and means for combing the staple projecting therefrom comprising a revolving needle half-lap and a stationary top comb located respectively on opposite sides of said staple, in combination with means for detaching the staple from the lap and piecing the same with previously-detached staple.

13. In a cotton-combing machine, a revolving combing-cylinder bearing a needle half-lap and a detaching half-lap, in combination with means for holding the end of the lap comprising a nipper-frame adjustably mounted on the frame of the machine and normally secured in a fixed position with respect to said cylinder.

14. In a cotton-combing machine, a combing-cylinder revolving on a fixed axis and bearing a needle half-lap and a detaching half-lap, in combination with means for holding the end of the lap, comprising a nipper-frame mounted in a fixed position with respect to said cylinder, and detaching and piecing means for the combed staple, located at a fixed distance from said nipper-frame.

15. In a cotton-combing machine, a nipper mechanism, and combing means comprising a revolving needle half-lap and a stationary top comb respectively located on opposite sides of the staple projecting therefrom, in combination with a detaching mechanism comprising a revolving segment and a detaching-roller normally mounted in a substantially fixed position wherein it is encountered by said segment.

16. In a combing-machine of the Heilmann type, a nipper mechanism having a stationary cushion-plate and a combing means comprising a revolving needle half-lap and stationary top comb located respectively on opposite sides of the staple projecting from said nipper mechanism, in combination with detaching and piecing mechanism for said staple located in a substantially fixed position and at a fixed distance from said cushion-plate.

17. In a cotton-combing machine, a combing-cylinder comprising a needle half-lap and a detaching half-lap carried thereon, and respectively located at different radial distances from the axis of said cylinder.

18. In a cotton-combing machine, a combing-cylinder comprising a needle half-lap and a detaching-segment carried thereon, the said segment being disposed at a greater radial distance from the axis of said cylinder than said half-lap.

19. In a cotton-combing machine, a comb-

ing-shaft, a needle half-lap borne thereon and a detaching segment also borne thereon but at a greater radial distance from the axis thereof than said half-lap and having its forward margin beveled in combination with a detaching-roller mounted on a fixed support in the path of said beveled segment.

20. In a cotton-combing machine, a combing-cylinder comprising a half-lap and a detaching-segment carried thereon at a greater radial distance from the axis of the cylinder than said half-lap and beveled on its forward margin in combination with a detaching-roller mounted on a fixed support free of said half-lap, but in the path of the beveled segment and yielding means holding said roller upon its support.

21. In a cotton-combing machine, a combing-shaft, a needle half-lap borne thereby, a detaching-segment also borne by said shaft at a greater radial distance from the axis thereof than said half-lap, in combination with nipper mechanism comprising a stationary jaw mounted close to the path of said segment, and a movable jaw cooperating with said stationary jaw to hold the lap in the path of said segment.

22. In a cotton-combing machine, a combing-shaft and a needle half-lap borne thereby, a segment also borne by said shaft at a slightly greater radial distance therefrom than said half-lap, in combination with nipper mechanism comprising a stationary jaw adjacent to the path of said segment and a detaching-roller having its staple-engaging surface located in a substantially fixed position wherein it escapes said half-lap but is engaged by the segment and cooperates therewith to draw the staple from the nipper mechanism.

23. In a combing-machine of the Heilmann type, a combing-shaft mounted to rotate in fixed bearings, a needle half-lap borne thereon and a detaching half-lap also borne thereon but at a slightly greater radial distance from the axis thereof than said needle half-lap, in combination with a roller mounted on fixed supports and having its staple-engaging surface normally clear of said needle half-lap but adapted to be encountered by said detaching half-lap.

24. In a cotton-combing machine, a combing-shaft, a needle half-lap borne thereon and a detaching-segment also borne thereon but at a greater radial distance therefrom than said half-lap, in combination with a drawing-off roller, a detaching-roller mounted in constant contact with said drawing-off roller and in position to be clear of said half-lap but to be engaged by said segment and adapted to yield under such engagement.

25. In a cotton-combing machine, means for combing and detaching the staple, in combination with a nipper mechanism for holding the lap comprising a stationary nipper-



frame, pivoted means by which said frame is supported, and means for adjusting the same on its pivotal axis toward and from the said detaching means.

5 26. In a cotton-combing machine, means for combing the staple and detaching the same, in combination with a nipper mechanism having a normally stationary frame, pivotally mounted on the machine-frame, arms  
10 on said nipper-frame on opposite sides of an abutment of said machine-frame and oppositely-acting adjusting means carried by said arms and adapted to engage the abutment for adjusting and securing the nipper-frame.

15 27. In a combing-machine of the Heilmann type, roller-supports for the top detaching-roller consisting of brackets rigidly mounted on the frame of the machine at the opposite ends of said roller and having supporting-  
20 surfaces inclined toward the drawing-off roller.

28. In a combing-machine of the Heilmann type, the combination of the frame-supports at the ends of a head, with bracket-blocks  
25 rigidly mounted on said supports, laterally-extended bracket-arms on said blocks provided with surfaces adapted to receive the ends of the top detaching-roller.

29. In a cotton-combing machine, roller-  
30 supports for the detaching-roller comprising bracket-blocks rigidly secured to the machine-frame, laterally-extending bracket-arms on said blocks at the opposite ends of said roller, and adjustable bearings carried by said arms.

35 30. In a cotton-combing machine having intermediate frame-supports between the heads thereof, supporting mechanism for the detaching-rollers comprising blocks saddled over said intermediate supports and two lat-  
40 eral bracket-arms on each of said blocks disposed respectively on each side of the frame-supports and providing seats for the gudgeons of said rollers.

31. In a cotton-combing machine, a de-  
45 taching-roller and supporting-arms holding the gudgeons thereof, in combination with downwardly-impelled stirrups bearing against said gudgeons in the vertical planes of said arms.

32. In a combing-machine, a vertical 50 frame-support at each end of a combing-head, pedestals on said supports, a stationary nipper-frame secured by its ends to said pedestals and a top comb supported by said pedestals in fixed position with respect to  
55 said nipper-frame, wherein it is engaged by the staple while the latter is being detached.

33. In a combing-machine, a nipper mechanism having a stationary cushion-plate, and a stationary top comb adjacent thereto, in  
60 combination with a revolving combing-cylinder having a combing half-lap adapted to comb the staple projecting from the nipper mechanism below said stationary top comb and a detaching half-lap radially higher on  
65 said cylinder than the combing half-lap adapted to encounter said staple and lift the same into the teeth of said top comb.

34. In a combing-machine of the Heilmann type, a drawing-off roller, fixed roller-sup-  
70 ports at the ends thereof and a detaching-roller mounted on said supports in contact with said drawing-off roller, in combination with downwardly-impelled stirrups bearing against the end gudgeons of said detach-  
75 ing-roller in the vertical planes of said roller-supports, a clearing-roller also in contact with said drawing-off roller and means for holding the same, located close to said stir-  
80 rups.

35. In a combing-machine, a combing-shaft bearing a needle half-lap, a drawing-off roller, and a detaching-roller mounted with its staple-engaging surface in a substantially fixed location and in constant contact with  
85 said drawing-off roller, in combination with a detaching member borne by said combing-shaft at a greater relative height thereon than the needle half-lap and driven by said shaft at a surface speed equal to that of the said  
90 detaching-roller.

In testimony whereof I have signed my name to the specification in the presence of two subscribing witnesses.

ELWIN H. ROONEY.

Witnesses:

CLIFFORD B. ARNOLD,  
OSCAR L. OWEN.