

No. 811,817.

PATENTED FEB. 6, 1906.

I. BEST.
MACHINE FOR COMBING WOOL.
APPLICATION FILED APR. 12, 1905.

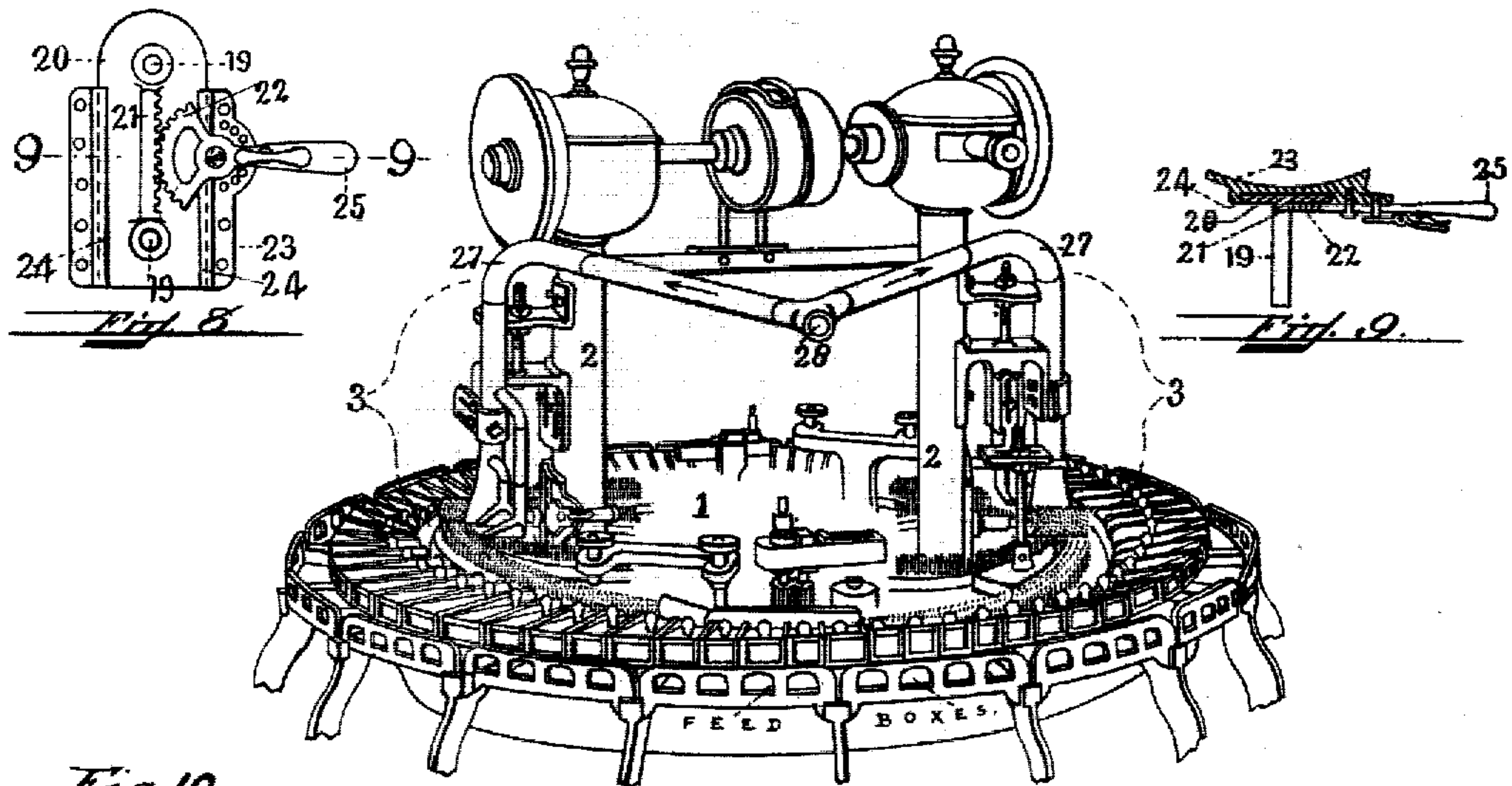


Fig. 10.

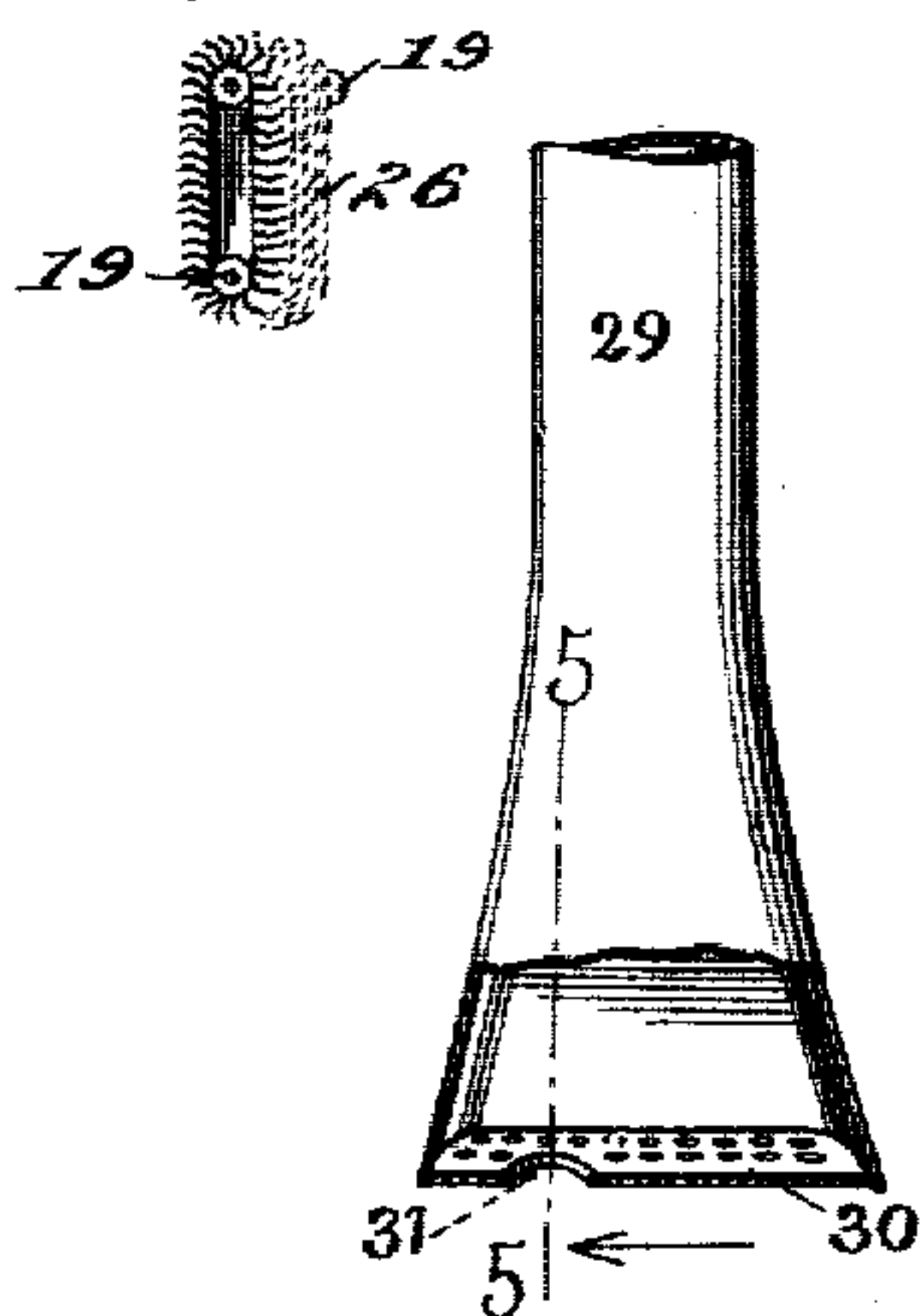


Fig. 4.

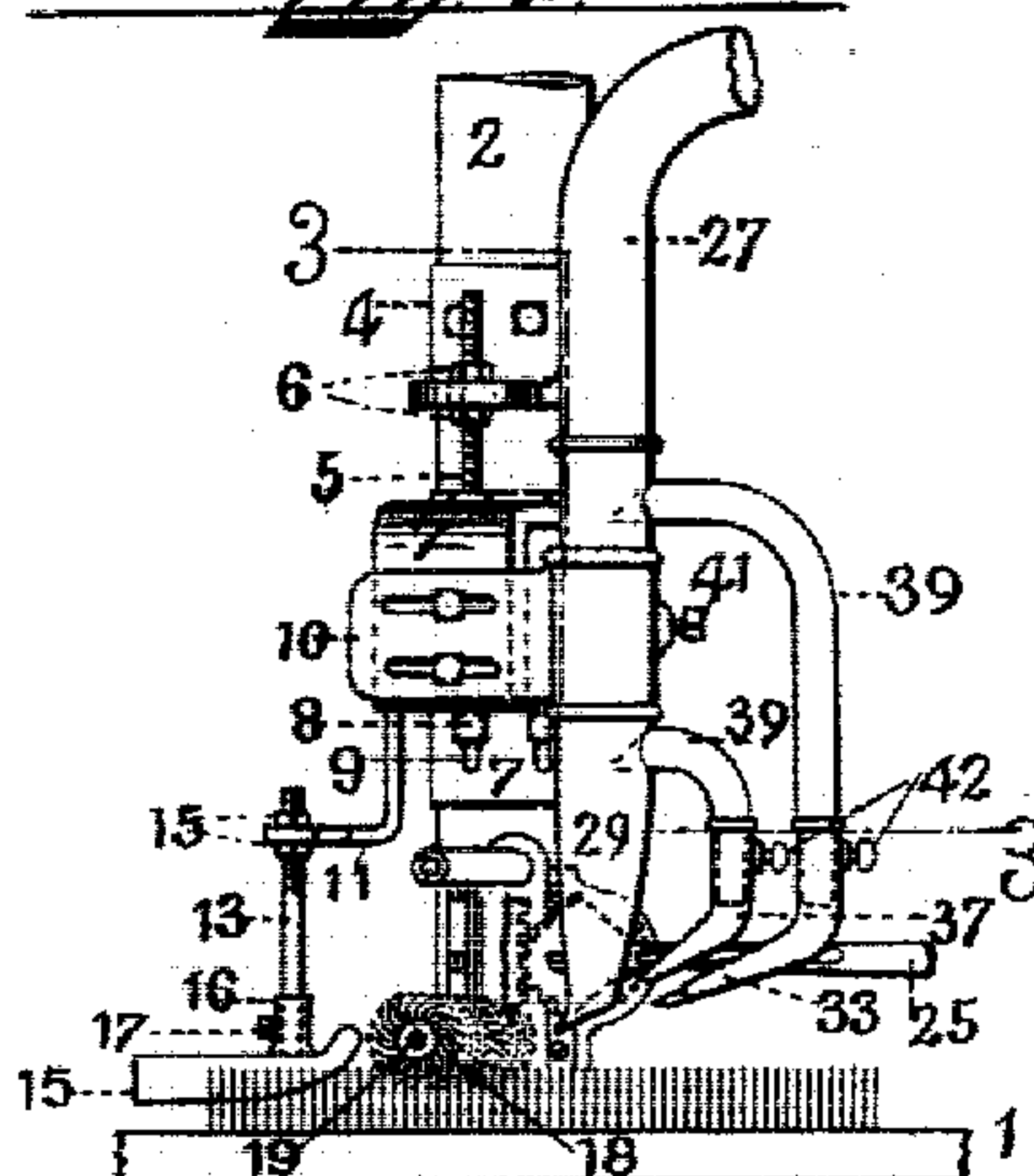


Fig. 2.

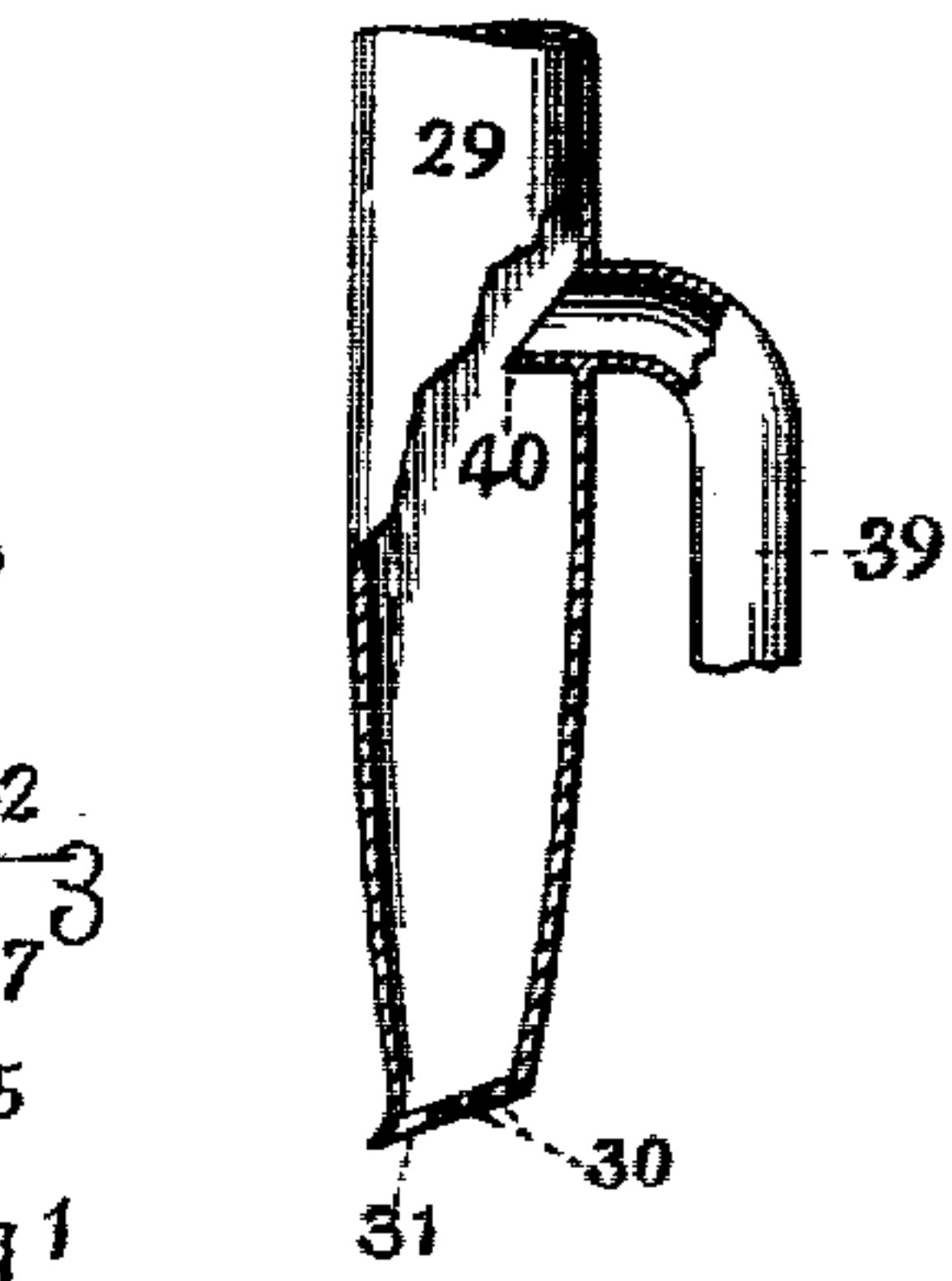


Fig. 5.

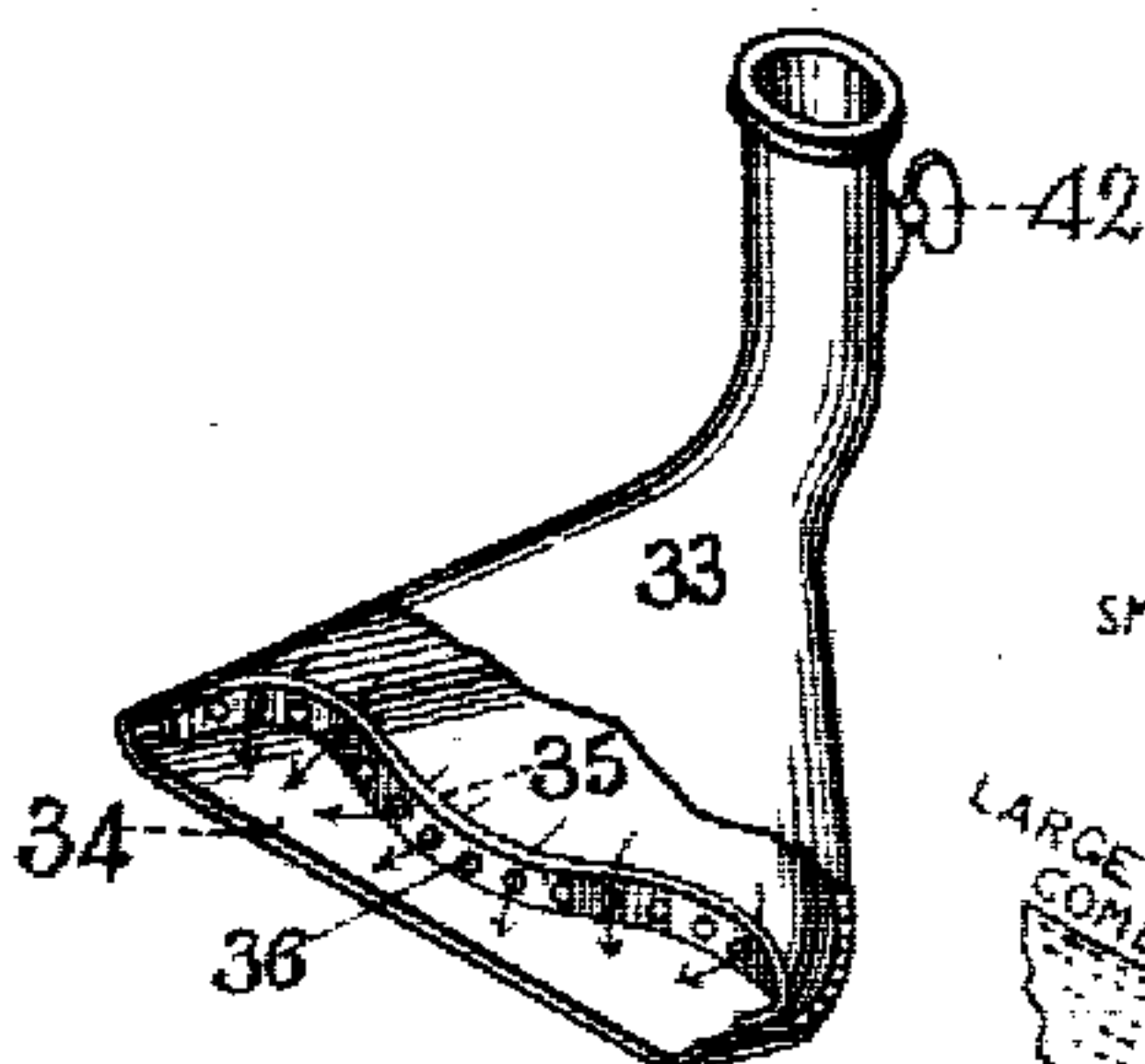


Fig. 6.

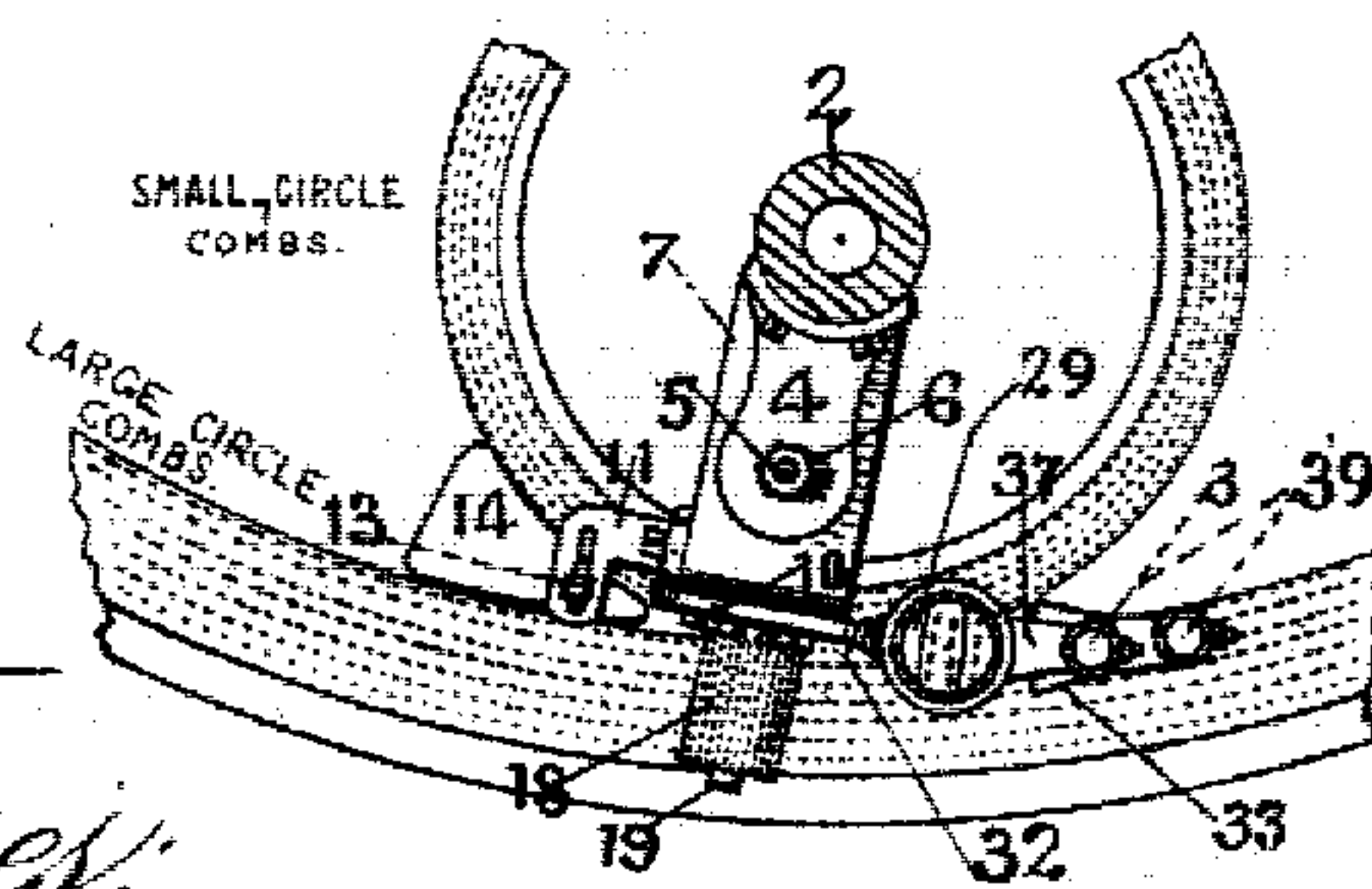


Fig. 3.

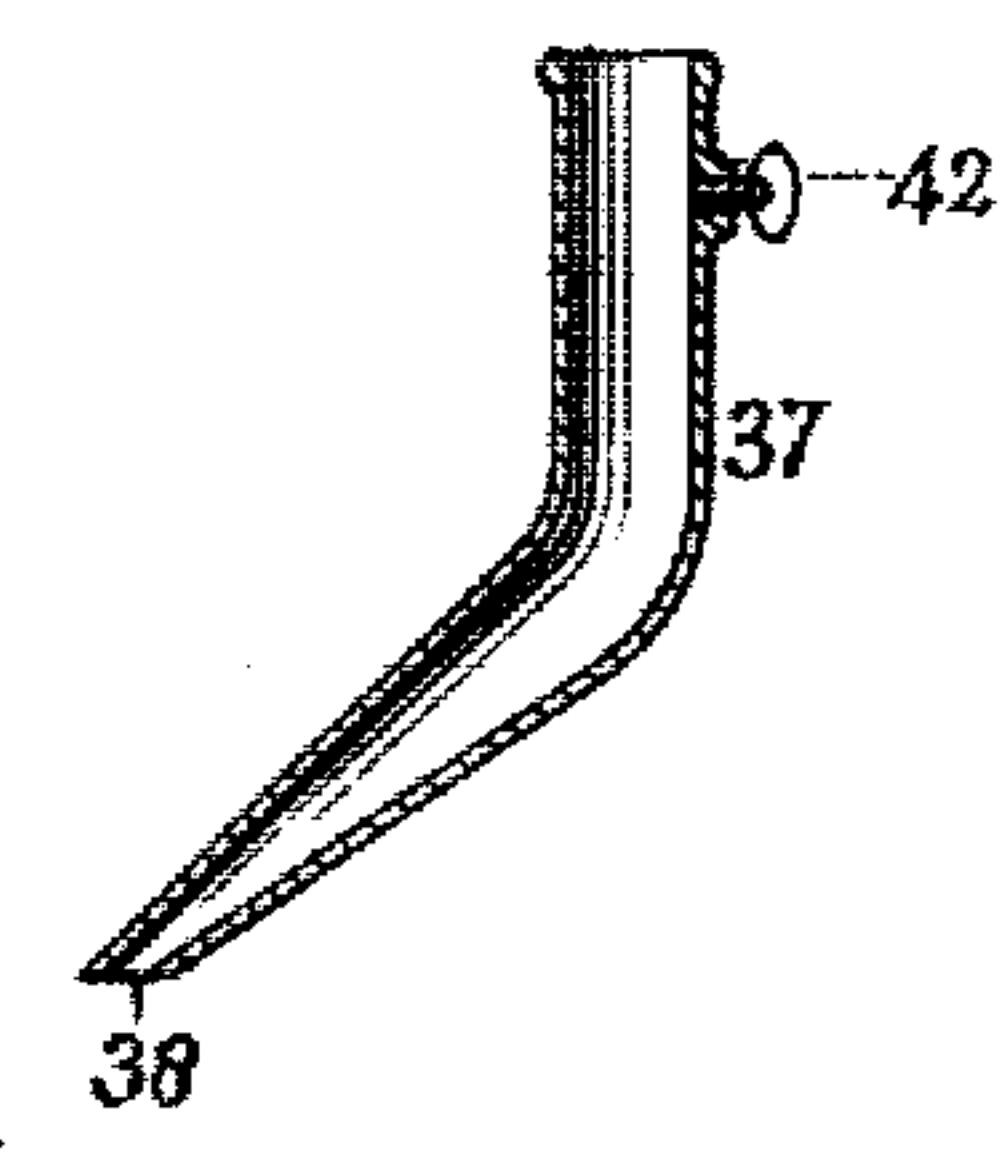


Fig. 7.

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UNITED STATES PATENT OFFICE.

ISAAC BEST, OF ESSEX, MASSACHUSETTS.

MACHINE FOR COMBING WOOL.

No. 811,817.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, ISAAC BEST, a citizen of the United States of America, and a resident of Lawrence, in the county of Essex and Commonwealth of Massachusetts, have invented certain new and useful Improvements in Machines for Combing Wool, of which the following is a specification.

My invention relates to improvements in wool-combing machines; and the object of my improvement is to provide adequate means to force through an elastic medium the wool into the combs. A brief summary of the present way of securing this result may be appropriately introduced as follows, assuming this description to refer to the "Noble" comb: The large and small circles herein illustrated move in tangential paths relative to each other, and they carry concentric rows of vertical pins constituting in their entirety the combs. A complete set comprises one large and two small circles situate within the area of the larger, the small circle of pins almost contacting with the larger at diametrical points, and all revolve in the same horizontal direction and at the same speed. The sliver of wool to be combed is without any twist delivered from the creels (not illustrated) through the series of feed-boxes surrounding and a part of the machine-bed, whence they are drawn into the circles for combing at their points of juxtaposition. As the revolving circles diverge from each other a portion of the wool adheres to each, afterward drawing the sliver out of each circle through the pins and again uniting the wool to make the "combed top." It is at this point—the momentary junction of the revolving pins or combs—that the wool must be dabbed into them, which is now accomplished by "dabbing-brushes" having a vertical motion. This method has always been difficult, for the brushes must move with exceeding rapidity or the sliver is not dabbed down precisely at the junction of the circles and in consequence of this very quick motion the brushes do not rise high enough, and the wool is ruffled and rubbed sidewise as it passes under the brushes and is not sufficiently dabbed down. The bristles composing said brushes also become wasted and reflexed at their contact ends, and thus draw portions of the fibers out of the combs which will produce "noil-knots." These are dragged over the pins, inevitably making bad work and often breaking the combs, thereby disar-

ranging the dabbing mechanism. The ordinary dabbing-brushes are therefore not always reliable in their efficiency and always a source of great expense and much annoyance.

To obviate such disadvantages is the purpose of my invention, which I accomplish through the apparatus herewith illustrated, comprising, briefly, a series of vertical tubes adapted as conduits directing fluid currents in direct and divergent streams upon the wool sliver, acting in conjunction with horizontal rotating drums provided with surface material to press the wool farther into the combs, together with vertical and lateral adjusted presser-feet confining the wool below the points of the combs.

Referring to the drawings, Figure 1 is a perspective view of a sufficient portion of a wool-combing machine to exhibit my improvement thereto attached. Fig. 2 indicates an elevation of the front in connection with a portion of the comb. Fig. 3 designates a plan, in part section, of the same positioned above a fragmentary part of the large and one of the small circles of combs. Fig. 4 is a front elevation of the principal member of the tube group with its foot in section. Fig. 5 represents a side elevation of the same on line of section 5 5 of Fig. 4, sufficiently sectioned to disclose its construction. Fig. 6 illustrates in perspective the secondary member with its orifice in section displaying its internal arrangement. Fig. 7 is a longitudinal central section of the intermediate members, the several members being detached views. Fig. 8 indicates the devices employed to vertically adjust the brushes in their relation to the combs detached from their supporting-pillars. Fig. 9 denotes a transverse section of the same on line of section 9 9 of Fig. 8. Fig. 10 represents the endless belts which may be adapted in lieu of the rotative brushes.

Corresponding numerals designate similar features throughout the several drawings, referring to which—

1 indicates the bed of the machine, and 2 the pillars arising therefrom. The apparatus as a whole is designated 3, each being secured to said pillars firmly by brackets 4, Fig. 2, or in other suitable ways. 5 represents threaded suspension-bolts passing vertically through said brackets and held in adjustment therein by the nuts 6. Said bolts are each secured to the brackets 7, movably at-

tached to said pillars 2 by bolts 8 or in such other manner as to permit, through the agency of the bracket-slots 9, the vertical adjustment to or from the combs of said bracket with its accompanying accessories. The brackets 10 are each attached to the brackets 7 in a like manner, so that they have a horizontal adjustment in relation to the combs additional to their vertical adjustment by the brackets 7, previously described. The brackets 10 support the main conduits and their coacting members, hereinafter described. 11, Fig. 3, represents right-angle slide-plates capable of vertical adjustment in relation to the combs, being attached to said brackets 10 and adjusted vertically by nuts and bolts through slots in the manner already described. The lower or horizontal portion of said plates 11 are furnished with slots 12, which receive the screw-threaded stems 13, suspending the presser-feet 14, and adjusted vertically therein by the check-nuts 15. Said presser-feet are formed substantially as illustrated and provided with sockets 16 on their upper surface, which receive the stems 13 and are therein secured by the locking-nuts 17. Through these means an axial adjustment of said presser-feet in addition to their vertical movement is obtained. These retaining presser-feet are located between the circles at their tangential junction, (shown in Fig. 3,) and their purpose is to prevent the sliver from rising above the pins after the wool has passed beyond said junction of the combs into which it has been pressed as it comes from the "feed-boxes."

The horizontally-rotating brushes 18 are peripherally provided with points for stroking transversely the fibers of the wool as the sliver passes to the combs. For this purpose bristles or preferably wires as exemplified in "card-cloth" are employed. The arbors 19, on which said brushes 18 revolve, are secured to movable plates 20, Fig. 8, having racks 21, engaging with the segment-gears 22, secured to the plates 23, attached to the pillars 2, and provided with guideways 24, the latter plates embracing the edges of plates 20 in a manner that their vertical adjustment, together with their brushes, toward or away from the combs is accomplished by the coaction of said segment-gears and racks through the manually-actuated gear-handles 25. The rotation of the brushes is accomplished by contact of their points with the combs aided by the interposed wool sliver, and their speed obviously is that of the circles, their adjustment bringing the points of the brushes at a predetermined distance below the combs to secure the results desired. An alternate method of obtaining like results is secured by endless short belts or aprons of card-cloth carried over antifriction-rolls supported on arbors in the position shown in Fig. 10 at 26. Said aprons and rolls are ro-

tated by their points through the latters' contact with the combs, as previously explained.

The main conduits—important factors in carrying my invention into effect—are shown at 27, horizontally, vertically, and radially adjusted in the brackets 10 and which receive an elastic medium—in the present instance air—through the bifurcated tube 28 or in any other preferable manner from a blower, reservoir, or other source of supply unnecessary to illustrate. The lower ends or terminals of these conduits 29 are flattened somewhat transversely in their relation to the combs, as in Fig. 5, and have their orifices flaring in the same direction as shown in Fig. 4. Said orifices have foraminous barriers or floors 30, with additional semicircular openings 31 of increased size over their associated perforations and located in position above the combs, so that a slightly-increased volume of air impinges on the sliver directly at the point of meeting 32 of the combs, Fig. 3, over that passing through said perforations. This is facilitated by the inclination of the floors, as illustrated in Figs. 2 and 5.

The secondary conduits are constructed substantially as exhibited in Fig. 6, having fan-shaped terminals 33, deep at their rear and terminating widthwise in narrow orifices 34. Sinuous vertical partitions 35 lie just back of these orifices and are perforated for the egress of fluid currents, as at 36, which flow in convergent and divergent streams, as indicated by the arrows, and which restores the stray fibers of wool to the points as the slivers traverse the combs and just previous to their coming under the main pressure.

The intermediate conduits 37 are illustrated in Fig. 7, their orifices 38 being slightly less in depth and without partitions, their conformation otherwise corresponding with the terminals 33, their purpose being to restore the fibrillous wool (if any) which may elude the action of the terminals 29 33 within the air-zone of the main conduits, whence it is driven back and returned to the combs.

Transmission of air from the main conduits 27 is downward through the by-passages 39, which suspend the group of terminals 29 33 by their telescopic construction, the deflection of a part of the main column of air being materially assisted by the reëntering ends 40, as in Fig. 5. Both the main conduits being thus equipped, the vertical and axial adjustment of said members in their relation to each and to the combs is secured and the permanency of all conduit adjustment maintained by set-screws 41 and thumb-screws 42 or in any other well-known manner.

It will be observed from the foregoing that a horizontal adjustment of the main conduits toward or away from the tangential junction 32 of the circles, as well as the vertical adjustment to or from the combs, together with their axial movement for the

slight radial adjustment of the terminals over the combs or the individual independent movement of said terminals in their relation to the circles, is attained through this multiple adjustment of the several members, while the alinement and rigidity of all the parts comprising my improvement is assured.

Having thus ascertained the operation and construction of my improved invention, I do not confine myself to the exact details herein illustrated, as the same may be variously modified without departing from the spirit thereof.

I claim—

1. In a machine for combing wool the herein-described apparatus adapted to force the wool slivers into the combs by pressure exerted through an elastic medium, comprising means to convey said medium from a source of supply to a position above said slivers, circles of combs, and means to secure the slivers in the combs.

2. In a wool-combing machine, the herein-described apparatus comprising a series of circle combs, a series of conduits adapted and arranged to convey an elastic medium and project the same upon a sliver of wool in a manner that the wool is pressed below the points of the said combs at the meeting place of the circles.

3. In a machine for combing wool the circle combs, the conduits provided with by-passes having terminals adapted for lateral and vertical adjustment in their relation to the combs, and means to vertically and horizontally adjust and support said conduits relative to the tangential junction of the circles.

4. In a wool-dabbing apparatus, a series of circle combs, a series of conduits provided with means for deflecting a part of their contents, and having foraminous floors arranged to deliver pressure at a predetermined angle directly to the junction of the circles, a series of by-passes supported by said conduits provided with fan-shaped terminals, and means within said terminals to diffuse the volume of air as it passes to the orifices.

5. A wool-dabbing apparatus composed of a series of members transmitting an elastic medium from a source of supply to the circles of a wool-comb, two or more fan-shaped terminals coacting with said members provided with sinuous partitions, perforations therein to disseminate the volume of pressure into converging and diverging streams to secure an equalized pressure over the wool sliver before it enters the junction of the combs, the circle of combs, and means to maintain the sliver of wool within the said circle.

6. In an apparatus for confining slivers of wool to the combs, two or more main conduits having each flaring orifices covered by foraminous plates, apertures in each plate enlarged to permit egress of an increased volume of pressure over that issuing through the associated perforations, so as to confine the wool at a precise point in the circles, in combination with rotatable means to retain the wool below the points of the combs, the said combs and means for the manual adjustment and maintenance vertically of said rotatable devices and conduits.

7. In combination the circle combs and conduit carrying fluid under pressure, terminals thereto having foraminous barriers and orifices, and provided with means to deflect the fluid-pressure into separate currents, rotatable brushes or aprons for confining the wool below the points after the confinement of the sliver by fluid-pressure, and the presser-feet having means for their axial and vertical adjustment, and adapted to confine the wool to the circles after passing the junction of the combs.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, at Lawrence, Massachusetts, this 27th day of March, 1905.

ISAAC BEST.

Witnesses:

JOHN R. POOR,
PERLEY D. SMITH.