(No Model.) 3 Sheets—Sheet 1.

DE WITT A. DEVENDORF.

BROOM TRIMMING MACHINE.

No. 561,770. Patented June 9, 1896.

Fig. 1.

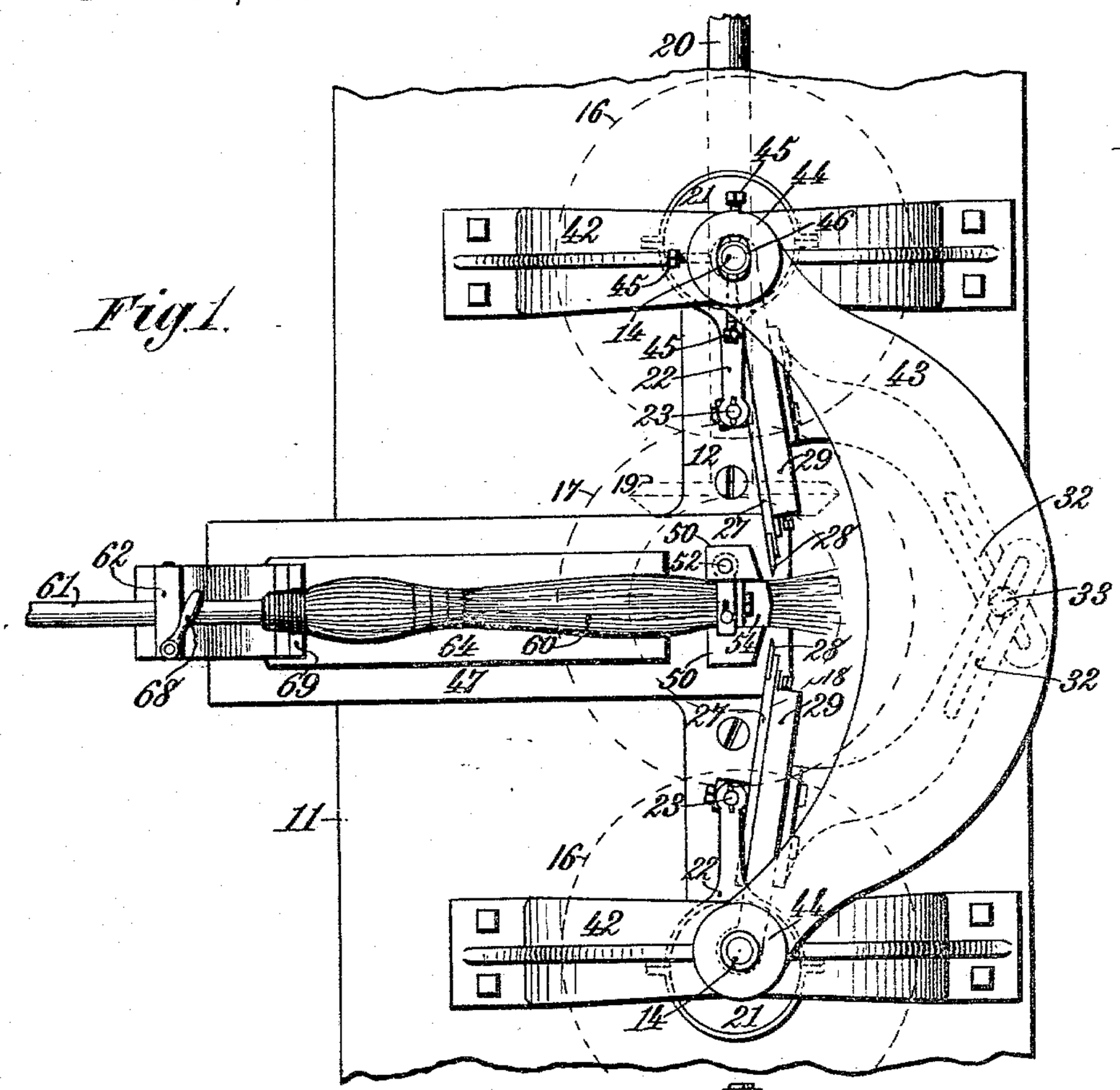
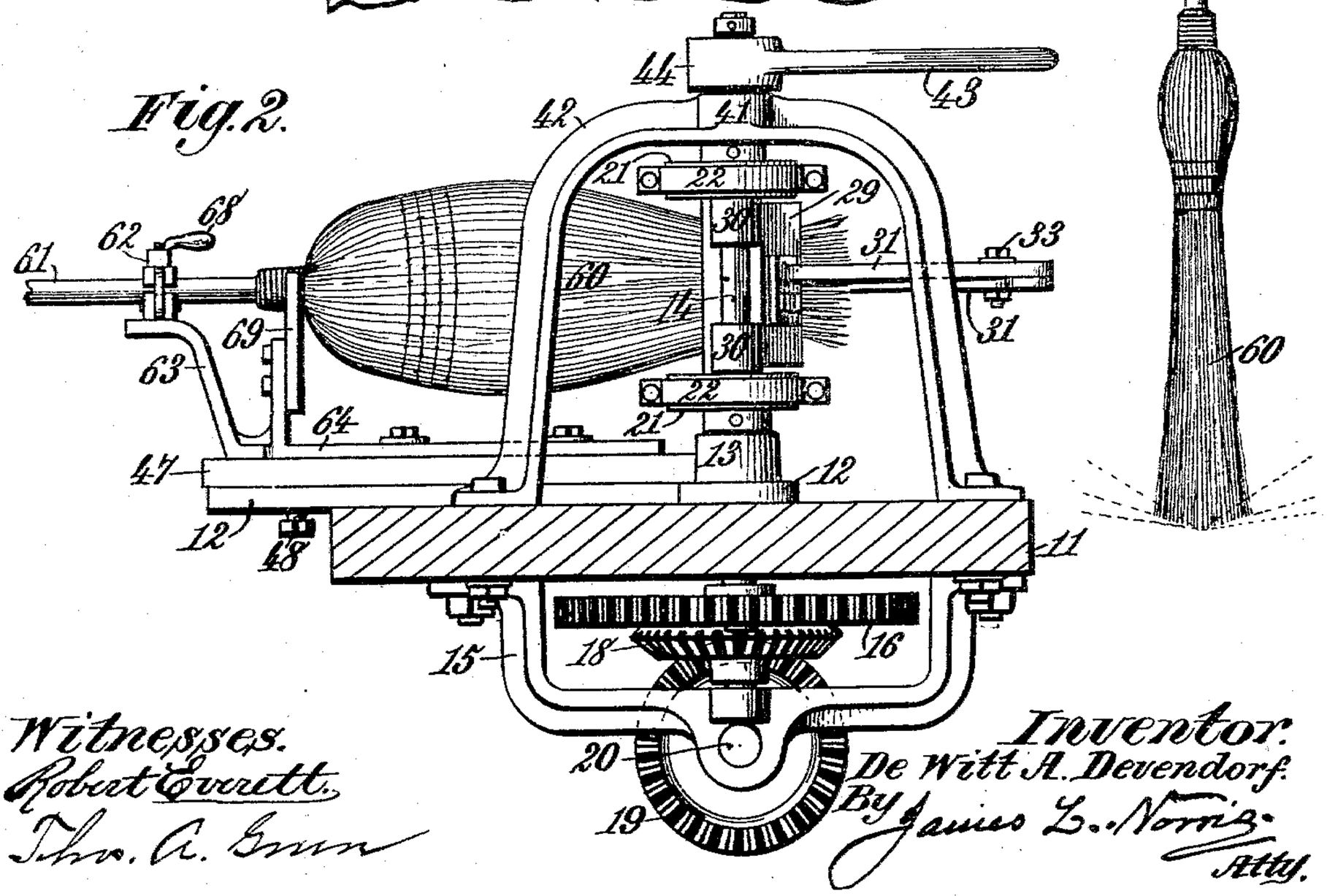


Fig. 10.

Fig. 2.



Witnesses.
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DE WITT A. DEVENDORF.

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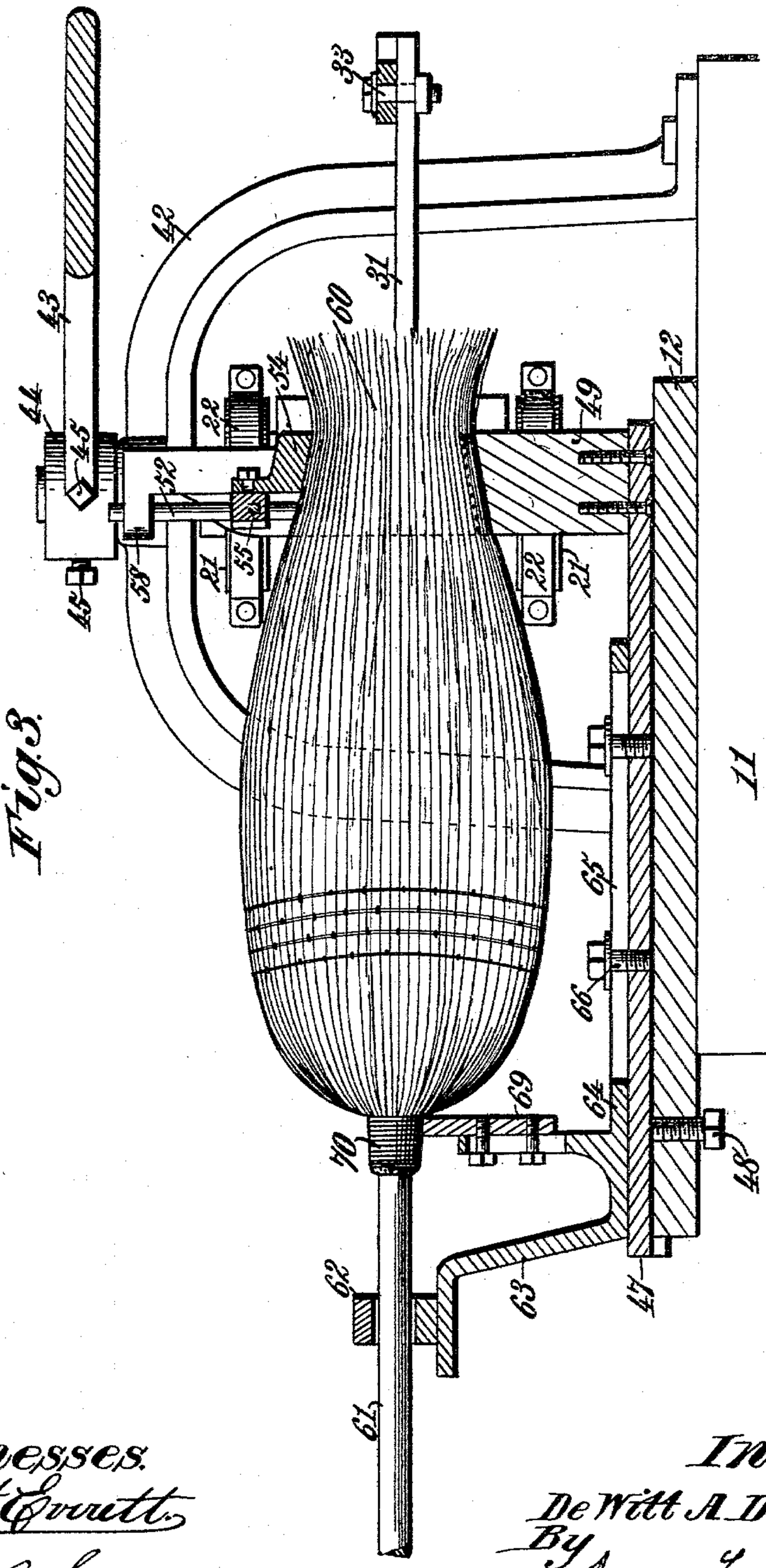

Fig. 3.

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(No Model.) 3 Sheets—Sheet 3.

DE WITT A. DEVENDORF.

BROOM TRIMMING MACHINE.

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Fig. 4.

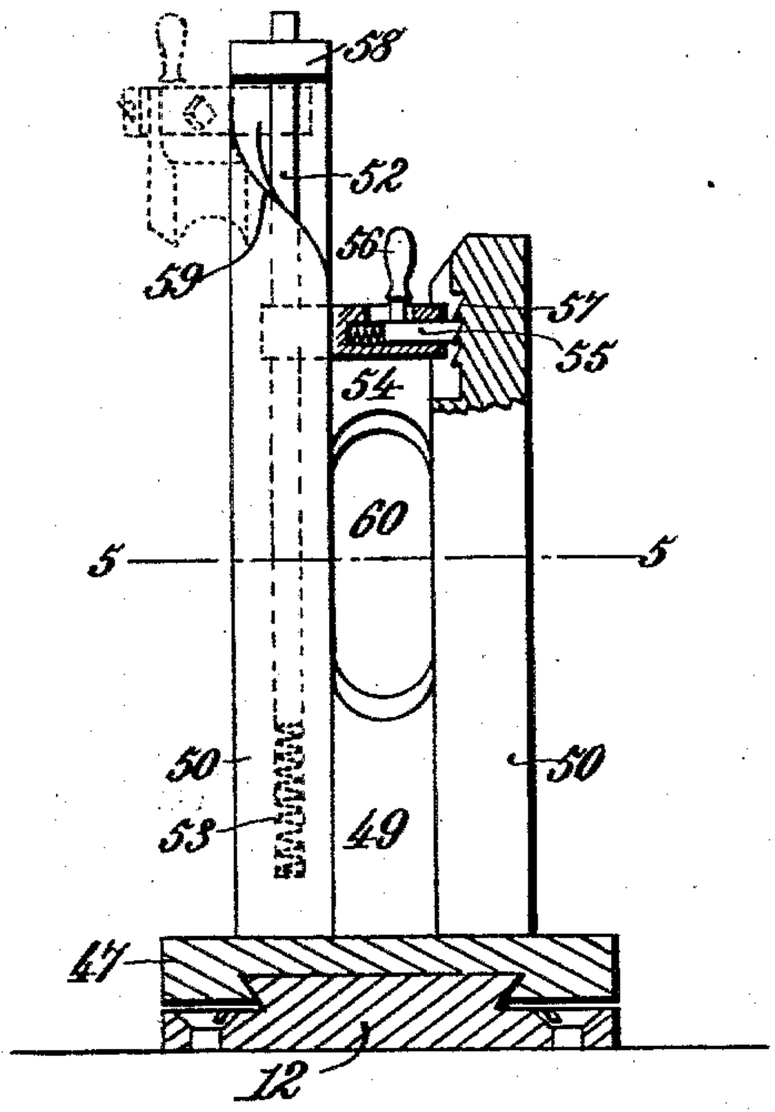


Fig. 5.

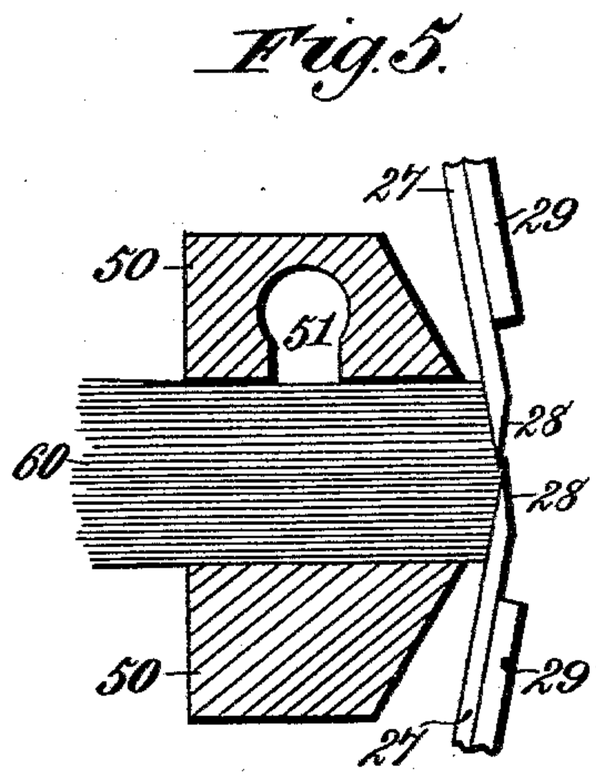


Fig. 6.

Fig. 7.

Fig. 8.

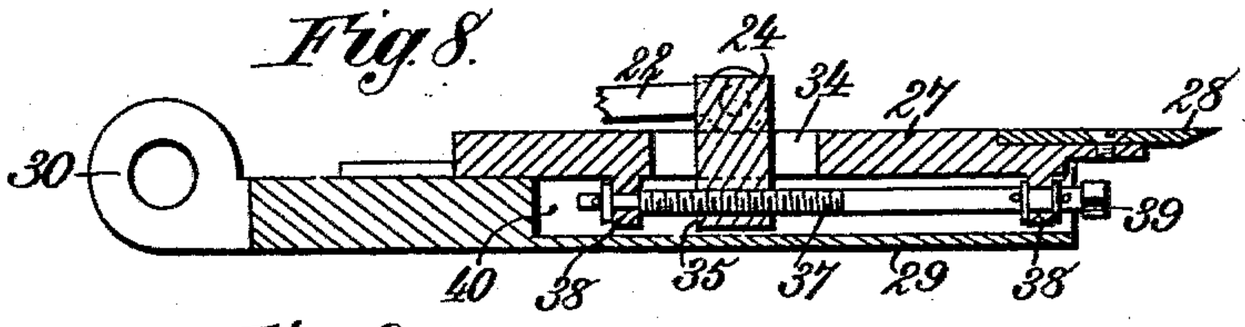
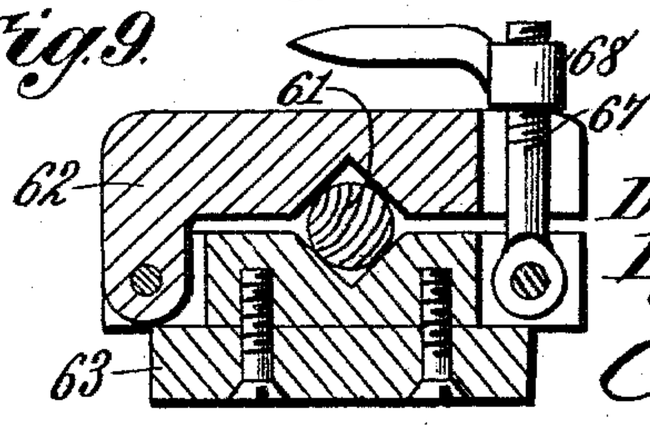


Fig. 9.



Witnesses.
Robt Ewett.
Thos. A. Brown.

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By James L. Norris.
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UNITED STATES PATENT OFFICE.

DE WITT A. DEVENDORF, OF FORT HUNTER, NEW YORK.

BROOM-TRIMMING MACHINE.

SPECIFICATION forming part of Letters Patent No. 561,770, dated June 9, 1896.

Application filed March 25, 1896. Serial No. 584,854. (No model.)

To all whom it may concern:

Be it known that I, DE WITT A. DEVENDORF, a citizen of the United States, residing at Fort Hunter, in the county of Montgomery and State of New York, have invented new and useful Improvements in Machines for Trimming Brooms, of which the following is a specification.

The object of my invention is the production of an improved machine for the trimming or dressing of brooms such as are made from broom-corn or the like; and it is especially my purpose to provide a machine of this character with suitable adjustments for adapting it to brooms of varying sizes and to furnish the machine with knives adjustable to various positions for giving a broom of any thickness such bevel at opposite sides or edges of its acting end as will cause the broom to sweep more cleanly, be capable of effective use in both directions, and adapted to last longer and wear equally on both sides.

My invention consists in a broom-trimming machine having the features of construction and novel combinations of parts hereinafter described and claimed.

In the annexed drawings, illustrating the invention, Figure 1 is a plan of my improved broom-trimming machine. Fig. 2 is a side elevation of the machine. Fig. 3 is a vertical longitudinal section of the same. Fig. 4 is a partly cross-sectional elevation of the broom-clamping mechanism. Fig. 5 is a horizontal section of the same on the line 5 5 of Fig. 4, with a top view of the knives as trimming the broom. Fig. 6 is a vertical transverse section of one of the knife supports and slide. Fig. 7 is an elevation of one of the adjustable knife-carrying slides. Fig. 8 is a horizontal section of a knife, the slide that carries said knife, adjusting mechanism for the knife-slide, and a pivoted support for said slide. Fig. 9 is a transverse vertical section of a clamp for the broom-handle. Fig. 10 shows a trimmed broom in edge elevation.

As shown in the drawings, the table 11 has secured thereon a bed 12, preferably of T shape. One arm of the T-shaped bed 12 may project partly beyond one edge of the table, as shown in Figs. 1 and 2, while the other two arms are located about the table-center. On the end of each innermost bed-arm is a centrally-perforated boss 13, Fig. 2, registering with perforations in the bed and table. Through the bosses 13 are passed vertical shafts 14, that are stepped in brackets or hangers 15 beneath the table. On each of these shafts 14 is secured, below the table, a spur-gear 16, meshing with a central gear 17, that is provided with a bevel-pinion 18 on its under side. This pinion 18 is in mesh with a bevel-pinion 19 on a horizontal shaft 20, that may be driven by hand or power, as preferred. Through the gearing described the vertical shafts 14 are rotated in opposite directions and in unison with each other.

On each of the vertical shafts 14 are secured two eccentrics 21, that are suitably spaced apart. The eccentric-straps 22 connect with pins 23, Figs. 1, 6, and 7, on the upper and lower ends of a vertically-placed cross-head 24, carrying bolts 25 and nuts 26, through which the said cross-head adjustably connects with and operates a slide 27, on one end of which a knife 28 is detachably secured, as shown in Figs. 7 and 8. The knife-carrying slide 27 has a dovetailed or rabbet connection, as shown in Figs. 6, 7, and 8, with an adjustable support 29, having at one end eyes 30, through which each of the two such supports is pivotally mounted on one of the vertical shafts 14, between the two eccentrics 21 thereon.

As will be seen by reference to Fig. 1, the machine is provided with two of the pivotally-mounted supports 29, each furnished with a knife-carrying slide 27 and connections through which the knives 28 are reciprocated to and from each other.

To the front or outward face of each pivotally-mounted support 29 is secured an adjusting-arm 31, that is curved toward and crosses the corresponding arm of the other knife-slide support. In the arms 31 are slots 32 (indicated by dotted lines in Fig. 1) for passage of a clamping screw-bolt 33 to hold the supports of the knives 28 at any desired angle, according to the bevel or dress to be given to the broom, as indicated in Fig. 10.

In the operation of the trimming or clipping knives 28 it is preferable that one should slightly cross the other at completion of the cut, so that the acting ends of the broom straws or fibers will be dressed off accurately

and neatly across the center line of the broom without liability of leaving any of the central straws untrimmed. This will necessitate some longitudinal adjustment of the knives 28 to accord with differing requirements in brooms of varying thickness, and also to compensate for wear of the knives. For this purpose, therefore, each knife-slide 27 is provided near its center with a longitudinal slot 34, Figs. 7 and 8, through which is passed a lug 35 on the cross-head 24. Above and below the slot 34 there are countersunk longitudinally-arranged slots 36 for the bolts 25, so that after loosening the nuts 26 the slide 27 can be adjusted longitudinally to vary the throw of the attached knife 28, as may be required. After loosening the nuts 26 longitudinal adjustment of the slide 27 may be effected by means of a screw-shaft 37, engaged in a threaded perforation through the lug 35 and adapted to turn freely in lugs 38 on the back of the slide 27, with which the screw-shaft 37 is thus connected. The screw-shaft 37 is provided with a squared end 39 for attachment of a wrench to turn the said screw-shaft in making a required longitudinal adjustment of the knife-carrying slide. In each pivotally-mounted knife-support 29 there is a longitudinal groove 40, Figs. 6 and 8, that receives the lugs 35 38 and adjusting-screw 37 of the accompanying knife-slide.

When the knife-slides 27 have been properly adjusted, they are rigidly secured to the cross-heads 24 by tightening the nuts 26 on the bolts 25, and reciprocation of the knives may then be effected without strain on or damage to the adjusting screw-shafts.

Through the cross-heads 24 and eccentric connections with the two geared-together shafts 14 both knives 28 will be operated in perfect unison.

At their upper ends the shafts 14 are provided with bearings 41 in or upon the tops of arches 42, that are bolted to the machine-table. For the purpose of preventing the shafts 14 from spreading they may be connected at their upper ends by a tie-bar 43, that is curved forward, as shown in Fig. 1, to permit ample space for placing the broom in position for trimming. The ends of the tie-bar 43 are provided with collars 44 to surround the upper portions of the shafts 14, and in one of these collars 44 may be mounted set-screws 45, bearing on a sleeve 46, to set up or adjust the shafts 14, if required.

On the main arm of the bed 12 is dovetailed or rabbeted a slide 47, Figs. 2, 3, and 4, that is held to any required longitudinal adjustment by means of a set-bolt 48. The innermost end of this slide 47 supports a lower clamping-block 49 and standards 50 on each side of and close to said block. The top of the lower clamping-block 49 is provided with a somewhat beveled and concaved surface, as will be seen by reference to Figs. 3 and 4, and the inner sides of the standards 50 are parallel and sufficiently close together to enter into the formation of the broom-clamp. In the inner face of one of the standards 50 is a longitudinal groove 51, a portion of which is deepened to provide a socket for a vertically movable and rotatable rod 52, that is normally pressed upward by a spring 53 beneath its lower end. To an upper portion of this rod 52 is secured an upper clamping-block 54, the lower face of which may be beveled and concaved to correspond with the lower clamping-block 49, as shown in Figs. 3 and 4. The rod 52 also carries a horizontally-sliding spring-latch 55, provided with a handle 56, and adapted to engage a series of ratchet-teeth 57, Fig. 4, formed in the recessed upper end portion of one of the clamp-standards. The upper end of the vertically movable and rotatable rod 52 is guided in an offsetting shoulder 58 of the standard, which shoulder serves also as a stop to limit upward movement of the upper clamp-block 54 when unlatched. To facilitate outward and inward swinging movement of the upper clamp-block 54, that standard in which the rod 52 is supported may be dressed off at 59, as shown in Fig. 4. On unlatching the upper clamp-block 54 the spring 53 beneath the rod 52 will expand and lift said rod and clamp-block, and the said upper clamp-block may then be swung outward to permit insertion of a broom into the clamp or its removal therefrom. After a broom has been placed between the standards 50 and onto the lower clamp-block 49 the upper clamp-block will be swung inward and pressed down onto the broom, thereby expanding it laterally against the inner sides of the standards 50 and compacting the broom straws or fibers 60 closely and solidly, so as to brace them firmly against the cutting action of the trimming-knives. The spring-latch 55 will hold down the clamping-block 54 in the position to which it is adjusted.

The broom-handle 61 is held secure in a clamp 62, Figs. 1, 2, and 9, mounted on a bracket 63, that is carried by a slide 64, Fig. 3, which is supported on the slide 47 and provided with a longitudinal slot 65 and adjusting bolts and nuts 66, by which the said clamp-carrying slide 64 can be adjusted to any required position to accord with the length of the broom. The broom-handle clamp 62 may comprise a lower fixed jaw and an upper hinged jaw, as shown in Fig. 9, with a clamping-screw 67 pivoted to one jaw in position to be engaged with a slot or notch in the other jaw and secured by a hand-nut 68 or otherwise.

If desired, there may be carried on the slide 64 a vertically-adjustable bracket 69, Fig. 3, to bear upward against the enlarged portion 70 of the broom-handle at the point where the broom-straws are attached and wired. This bracket 69 serves to brace the broom against any tendency to endwise movement and assists the clamping devices in holding the broom firmly.

Through the adjustments provided by the slides 47 and 64 the machine can be readily arranged to receive a broom of any length, while, together with the slide 12 and clamping devices 49, 50, and 54, supported thereon, suitable adjustments are provided to correspond with adjustments given to the pivotally-mounted knife-supports 29, through slotted arms 31 and set-bolts 33, for increasing or decreasing the bevel imparted to the free ends of the broom-straws by the action of the trimming-knives.

The machine can be operated rapidly and is adapted to give any desired bevel or dress to the sweeping-face of a broom.

What I claim as my invention is—

1. In a machine for trimming brooms, the combination with clamping devices to hold the broom and compress the broom-straws, of a pair of adjustably-mounted trimming-knives adapted to reciprocate across the central line of the broom near the free ends of the broom-straws, and mechanism for operating said knives in unison, substantially as described.

2. In a machine for trimming brooms, the combination with adjustably-mounted clamping devices to hold a broom and compress the broom-straws, of pivotally-mounted knife-slide supports provided with means for adjustment to any angle, longitudinally-adjustable knife-slides mounted on said supports, trimming-knives carried by said slides and adapted to be reciprocated across the center line of the broom to dress off the free ends of the broom-straws, and mechanism for operating the knife-carrying slides in unison, substantially as described.

3. In a machine for trimming brooms, the combination of adjustably-mounted knives adapted to be reciprocated across the center line of a broom to dress off the free ends of the broom-straws at any angle or bevel, clamping mechanism adjustable to correspond with adjustments of said knives and comprising a lower clamping-block, side standards and an upper clamping-block mounted on one of said standards and capable of movement to permit insertion and removal of a broom, a latch for said upper clamping-block and a clamping device for the broom-handle, substantially as described.

4. In a machine for trimming brooms, the combination of clamping devices to hold a broom and compress the broom-straws, pivotally-mounted knife-slide supports having curved and slotted arms crossing each other and held by a bolt adapted to permit adjustment of said supports to any angle, knife-slides mounted on said supports, cross-heads adjustably bolted to the knife-slides and each provided with a lug extended through a slot in the knife-slide, an adjusting screw-shaft connected with said cross-head lug and knife-slide, trimming-knives carried by said slides to dress off the free ends of the broom-straws, and eccentric actuating mechanism connected with the said cross-heads to operate the knife-carrying slides, substantially as described.

5. In a machine for trimming brooms, the combination of adjustably-mounted clamping devices to hold and compress the broom-straws, an adjustably-mounted clamping device for the broom-handle, pivotally-mounted knife-slide supports adjustable to any angle, longitudinally-adjustable knife-slides mounted on said supports, trimming-knives carried by said slides in position to trim or dress off the free ends of the broom-straws, and eccentric actuating mechanism connected with said knife-carrying slides, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

DE WITT A. DEVENDORF.

Witnesses:

FREEMAN S. VAN DERVEER,

J. EDWIN WILLIAMS.