

No. 640,396.

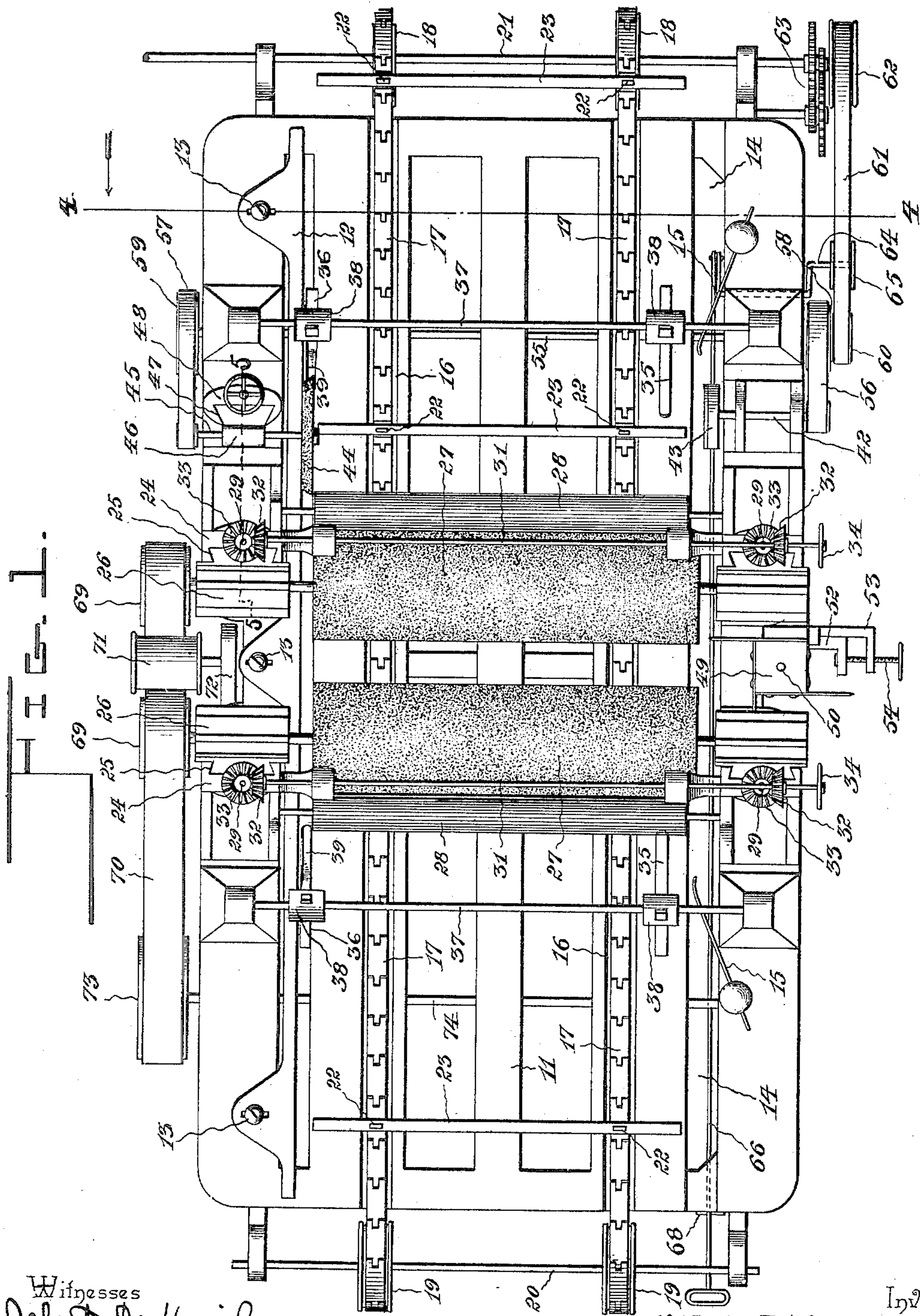
Patented Jan. 2, 1900.

N. J. MATTHIESEN.
SASH POLISHING MACHINE.

(No Model.)

(Application filed Apr. 28, 1899.)

3 Sheets—Sheet 1.



Witnesses
John T. Deffenwiel
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Inventor
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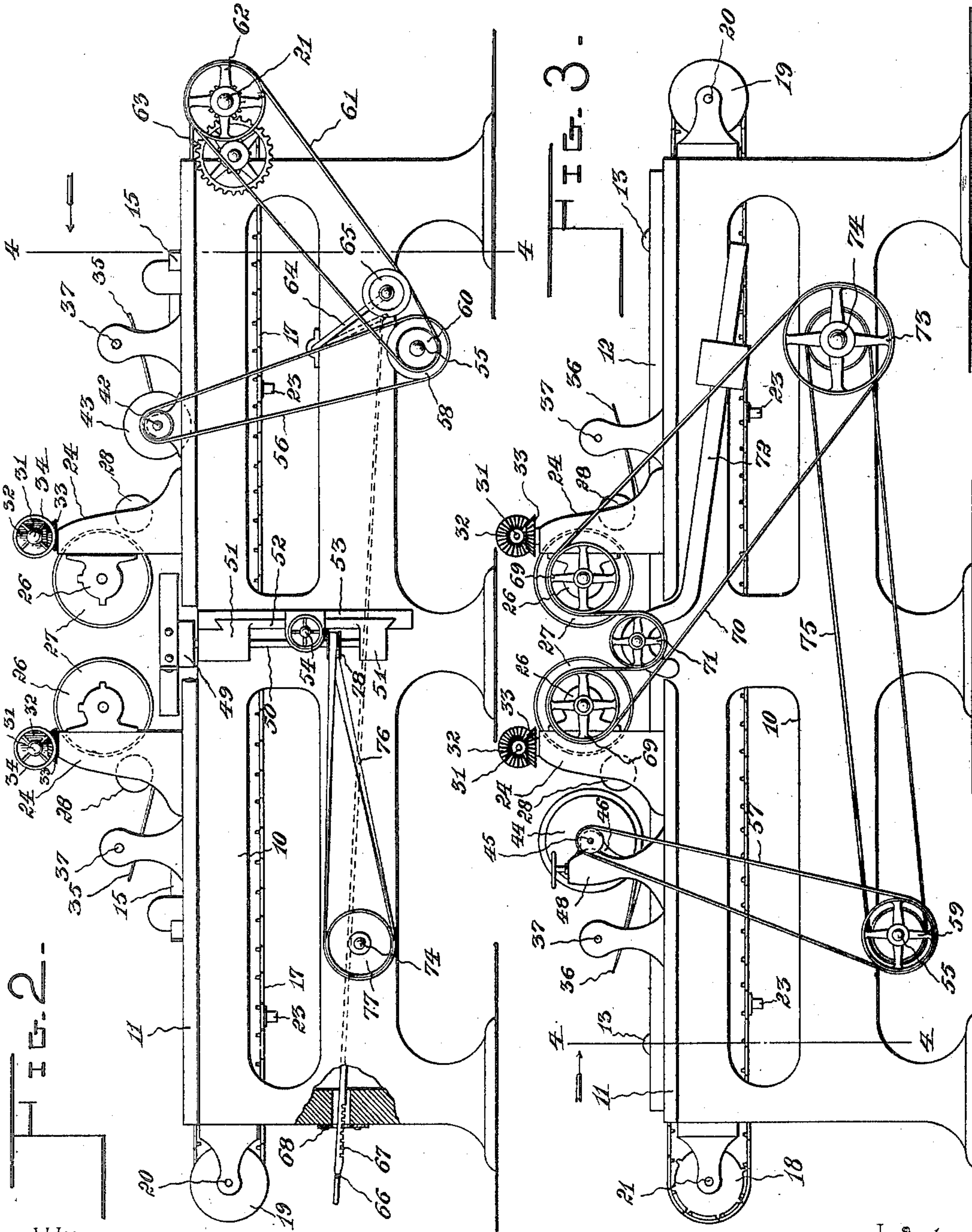
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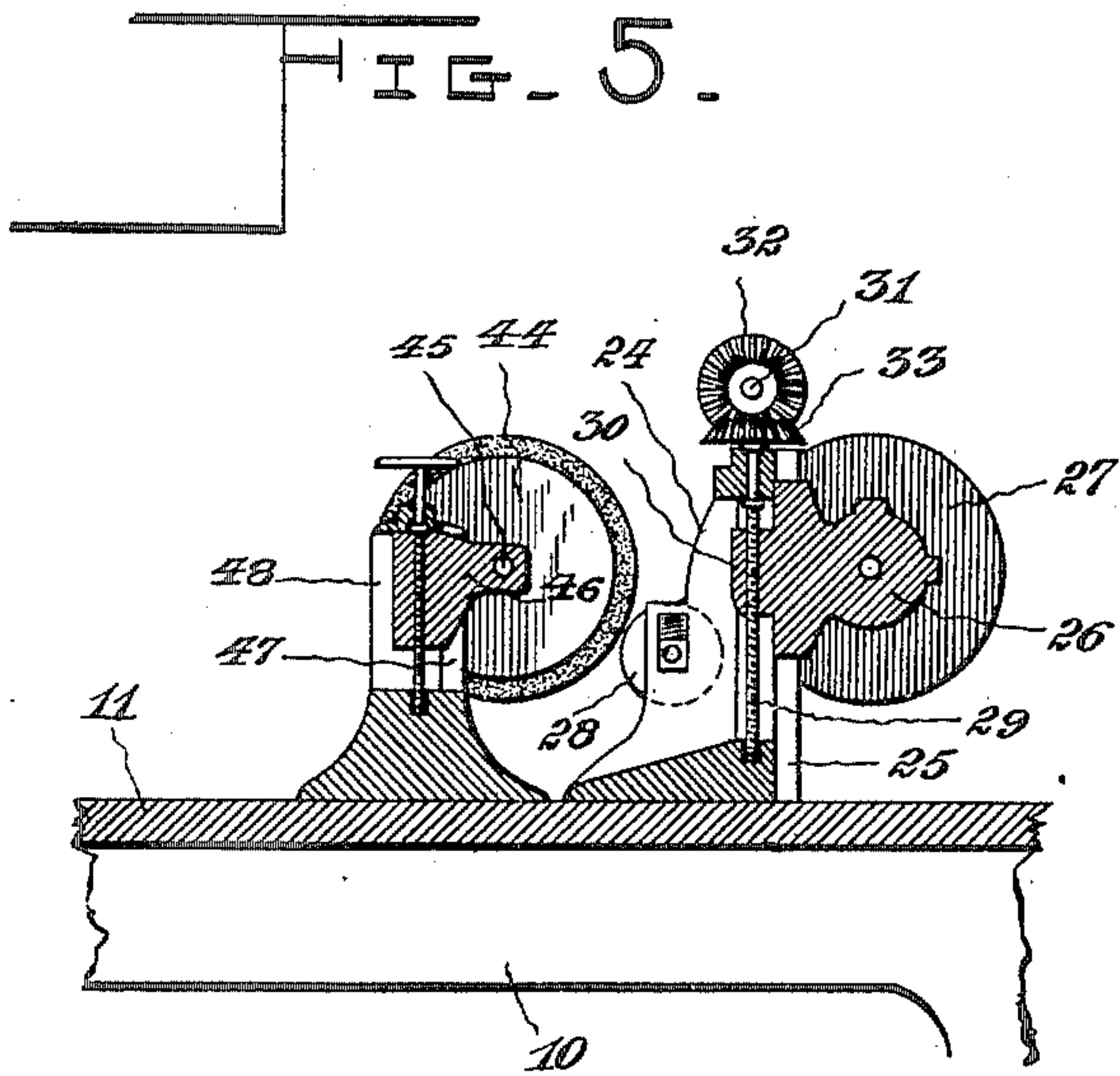
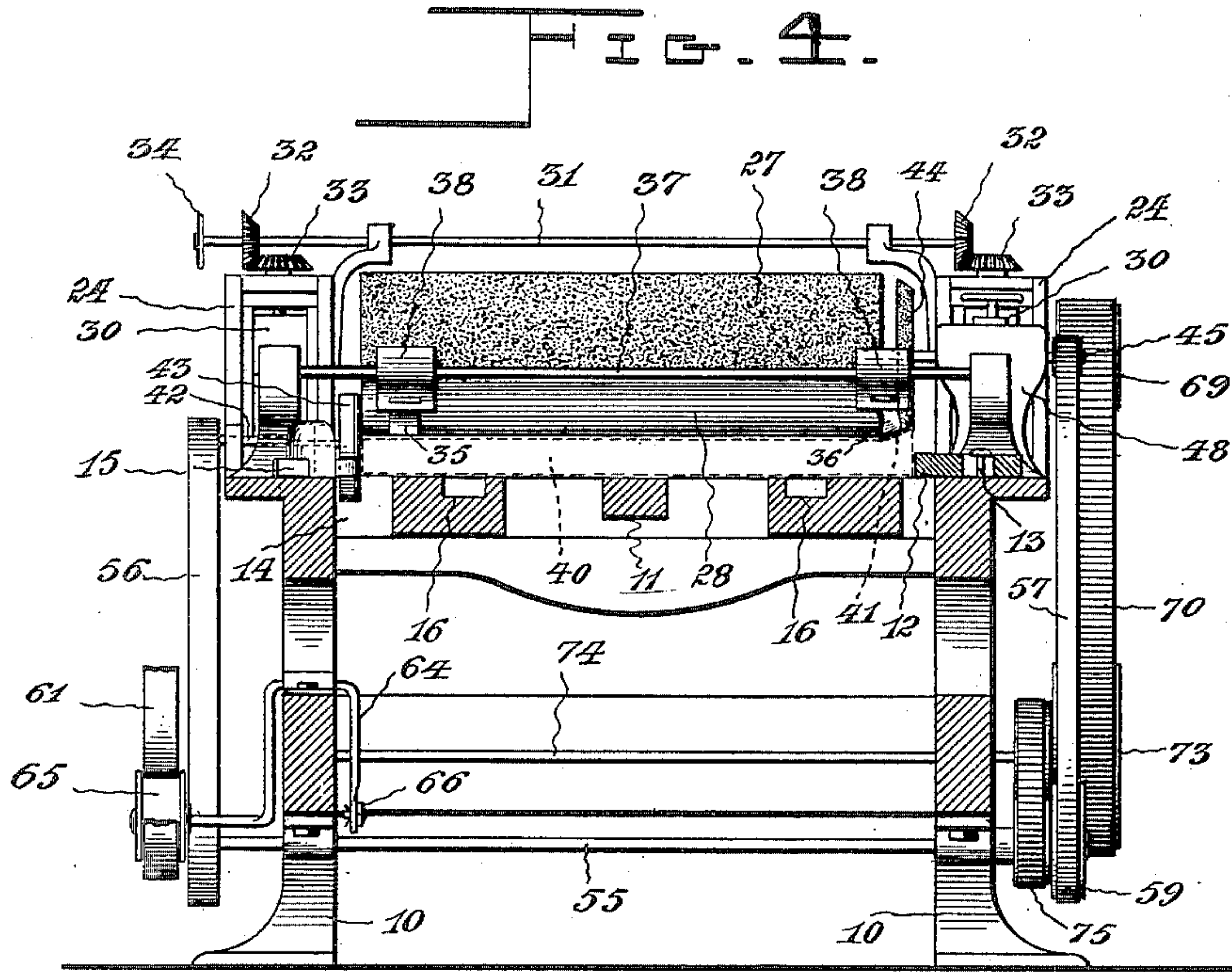
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3 Sheets—Sheet 3



Witnesses

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Nickels J. Matthiesen, Inventor
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UNITED STATES PATENT OFFICE.

NICKELS J. MATTHIESEN, OF CLINTON, IOWA.

SASH-POLISHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 640,396, dated January 2, 1900.

Application filed April 28, 1899. Serial No. 714,812. (No model.)

To all whom it may concern:

Be it known that I, NICKELS J. MATTHIESEN, a citizen of the United States, residing at Clinton, in the county of Clinton and State of Iowa, have invented a new and useful Sash-Polishing Machine, of which the following is a specification.

My invention relates to wood-polishing machines, and particularly to a sash-polishing device designed especially for operating upon check-rail sashes or those wherein the meeting-rails are constructed with offset bevel-faced checks or stops or equivalent projections; and the object in view is to provide a simple, compact, and efficient construction and arrangement of parts whereby the side surfaces of a sash, particularly of the check-rail type, may be successively smoothed or polished, the smoothing of the edges of the sash and of the beveled surface of the check being simultaneously accomplished.

A further object of the invention is to provide improved means for supporting and feeding the object which is to be smoothed or polished, a firm bed being employed for maintaining the object in operative and uniform contact with the smoothing or polishing rolls, and, furthermore, to provide simple and efficient means whereby the parts may be adjusted to secure the desired relation of the same with the coöperating elements.

Further objects and advantages of this invention will appear in the following description, and the novel features thereof will be particularly pointed out in the appended claims.

In the drawings, Figure 1 is a plan view of a polishing-machine constructed in accordance with my invention. Figs. 2 and 3 are views, respectively, of opposite sides of the machine. Fig. 4 is a transverse vertical section on the plane indicated by the line 4 4 of Figs. 1, 2, and 3, showing in dotted lines a sash arranged in operative position thereon, with its check uppermost to receive the polishing action of the bevel-faced side head. Fig. 5 is a detail vertical section on the line 5 5 of Fig. 1.

Similar reference characters indicate corresponding parts in all the figures of the drawings.

Supported by a suitable bed-frame 10 is a horizontal bed 11, at one side of which is ar-

ranged an adjustable gage-bar or guide 12, which is transversely slotted for engagement by set-screws 13, while at the opposite side of the bed is formed a longitudinal depression or check-rail groove 14, adjacent to which are disposed side pressure-springs 15 to bear against the adjacent edge of the sash and hold the opposite edge thereof in contact throughout its length with the gage-bar during the movement of the sash through the machine. The bed is further provided with longitudinal chain-grooves 16, through which extend carrier or feed chains 17, traversing sprocket or chain wheels 18 at one end of the bed and idle rolls 19 at the opposite end of the bed, said idle rolls in the construction illustrated being peripherally grooved and being supported by a transverse spindle. The sprocket or chain wheels are carried by a transverse drive-shaft 21, mounted in bearings at the end of the bed-frame, and to which motion for operating the machine may be communicated by any suitable means. The carrier-chains are provided at intervals with lugs 22, to which are attached transverse carrier or feed bars 23, in front of which the sashes are adapted to be arranged preparatory to being fed longitudinally through the machine.

Rising from the bed-frame, at opposite sides of the bed-plate, are standards 24, constructed to form guides 25 of the dovetail or other type, and mounted upon these guides are bearing-boxes 26 for the spindles of the polishing or smoothing rolls 27, said rolls in the construction illustrated being of the sand-paper type and being arranged transversely of the bed, with their spindles parallel therewith, whereby the rolls bear downwardly upon a sash traversing the surface of the bed to insure the uniform action of the rolls upon the upper or exposed surface of a sash or other object which is being polished. Parallel with and at opposite sides of the polishing-rolls are bearing-rolls 28, which in practice are yieldingly actuated to force them toward the plane of the bed. In the construction illustrated springs are employed to yieldingly hold the bearing-rolls in operative relation with the upper surface of a sash or other object; but it will be understood that weighted levers or any other equivalent mechanical devices may

be employed for this purpose. The adjustment of the polishing or smoothing rolls toward and from the plane of the bed is accomplished by means of feed-screws 29, mounted
 5 in the standards and engaged with feed-nuts 30 on the bearing-boxes of said rolls, together with feed-shafts 31, arranged transversely of the machine and mounted in suitable bearings at the upper ends of the standards, said
 10 feed-shafts and feed-screws being provided with intermeshing bevel-gears 32 and 33. This construction provides for raising and lowering the bearing-boxes of each polishing-roll simultaneously and to the same extent
 15 to maintain the surfaces of said rolls parallel with the bed. The feed-shafts, as illustrated, are provided with hand-wheels 34. Also supported above the bed, at opposite sides of the vertical planes of the polishing
 20 or smoothing rolls, are bearing-springs 35 and 36, carried by transverse supporting-rods 37, to which the springs are connected by means of collars 38 or the equivalents thereof, it being understood that any desired number
 25 of these bearing-springs may be employed and that they may be arranged in the desired positions to insure the proper advance of the sash or other object in its movement upon the bed. In the construction illustrated the bearing-springs 36 are provided with obliquely-disposed bearing-terminals 39 for contact with the beveled surface of the check-rail 40 of a check-rail sash 41, such as that illustrated in Fig. 4.
 35 Carried by the spindle 42, mounted in suitable bearings, preferably in rear of the polishing-rolls, is a polishing head or disk 43, arranged adjacent to the check-rail groove of the bed-plate and provided with an abrading inner face for contact with the edge surface of a sash, and located preferably at a transversely-opposite point upon the frame is a bevel-faced polishing-disk or side head 44, which operates adjacent to the gage-bar, the beveled abrading-face of the disk 44 being designed to polish the beveled surface of the check-rail of the sash when said beveled face of the check-rail is uppermost, as indicated in Fig. 4. The disk 44 is carried by a
 50 spindle 45, mounted in a vertically-adjustable bearing-box 46, said bearing-box in turn being fitted in a guide 47 in the standard 48, which rises from the bed-frame at one side of the bed-plate. The polishing and bearing rolls terminate short of the side edges of the bed-plate or short of the inner sides of the standards by which their bearing-boxes are carried, and the said polishing-disks or side heads 43 and 44 are mounted in vertical longitudinal planes beyond the extremities of said polishing and bearing rolls. Thus when a check-rail sash is arranged in the machine with the beveled or offset face of its check-rail uppermost, as indicated in Fig. 4, the
 65 said check-rail is arranged in contact with the gage-bar; but the offset of the adjacent extremities of the polishing and bearing rolls

from the plane of the gage-bar is sufficient to allow the check-rail to pass between the same and the gage-bar without receiving the pressure or contact of said rolls. As the sash advances the beveled face of its check-rail, which is located in the plane of the side head 44, receives the abrading contact of the latter. On the other hand, when the sash is reversed to allow the polishing-rolls to operate in contact with its other side face the check-rail, which is then at the lower side of the sash, is arranged at the opposite side of the bed-plate from said gage-bar and passes through the check-rail groove of the bed-plate. It will be understood that the side head 43 is designed to successively polish the upper and lower edges of the sash. Also in connection with the mechanism above described I may employ an edge-trimming device consisting of a knife-head 49, carried by a knife-spindle 50, mounted in bearings 51, carried by a slide 52 for adjustment horizontally and transversely toward and from the path of the sash as it is advanced by the feeding devices. Said slide is mounted in a guide-bracket 53 and is adapted to be moved and secured at the desired adjustment by means of an adjusting-screw 54.

The spindles of the side heads 43 and 44 are connected for simultaneous operation with a counter-shaft 55, which is preferably mounted in suitable bearings in the bed-frame below the plane of the bed-plate, and although in the construction illustrated belts 56 and 57 are employed for communicating motion from the counter-shaft to said side heads it will be understood that other equivalent gearing or means of communicating motion may be employed in lieu thereof. Said belts traverse pulleys 58 and 59 on the counter-shaft, and at one end of the counter-shaft is arranged a pulley 60, connected by a belt 61 with a pulley 62 on the drive-shaft. This pulley may be loosely mounted upon the drive-shaft and may receive motion therefrom through a train of speed-multiplying gears 63, and preferably in operative relation with the belt 61 is a belt-tightener consisting of a crank 64, carrying a pulley 65 and having in connection therewith an operating-rod 66, which extends to the front end of the bed-frame and is constructed to be locked at any desired adjustment to maintain the required tension upon the belt. In the construction illustrated said operating-rod is provided with a rack 67 for engagement with a fixed detent 68.

The spindles of the polishing-rolls are provided with belt-pulleys 69, traversed by a belt 70, which also extends over a belt-tightening pulley 71, carried by a weighted lever 72 or the mechanical equivalent thereof, said belt also extending around a pulley 73 on a second counter-shaft 74. The counter-shafts 55 and 74 are connected for simultaneous rotation by suitable gearing, such as a belt 75, traversing pulleys secured, respectively, to

the shafts. The knife-head is actuated from the second counter-shaft 74 by means of a belt 76, traversing a pulley 77 on the counter-shaft, and a second pulley 78 on the spindle of the knife-head.

Although in practice I employ belting and pulleys, as above described, for communicating motion from the drive-shaft to the several rotary elements of the mechanism, I do not desire to be limited to such a construction of connections, as either chains or other forms of gear may be substituted, and other changes in the form, proportion, size, and minor details of construction within the scope of the appended claims may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

From the above description it will be seen that I have provided a solid bed adapted to be traversed by a sash or other object to be dressed or polished, while the polishing-rolls bear vertically downward upon the upper surface of the object and may be adjusted to exert the desired pressure. The rolls are of a length equal to the width of the sash or object, whereby they operate continuously from one side thereof to the other and in connection with the guiding and holding devices for the sash insure a uniform and efficient polishing thereof. Furthermore, the construction of the feeding devices is such as to cause the steady and efficient advance of the sash from one end of the bed-plate to the other without depending upon friction to advance the same. Furthermore, it will be understood that while the machine embodying my invention is designed especially for polishing check-rail sashes it may be used with equal efficiency in connection with plain sashes; but in connection with check-rail sashes the operation of dressing the surfaces of the sash is accomplished with the same facility and uniformity as though the surfaces were plain, and at the same time the beveled surface of the check-rail and the edges of the sash are smoothed, and also, if desired, said edges may be trimmed successively by the cutting mechanism hereinbefore described.

Having described my invention, what I claim is—

1. In a sash-polishing machine, the combination of a bed-plate provided with a longitudinal check-rail groove or depression, and feeding and polishing devices arranged in operative relation with the bed-plate, substantially as specified.

2. In a sash-polishing machine, the combination of a bed-plate provided with a longitudinal check-rail groove and a parallel sash-guide, a polishing roll or rolls arranged in operative relation with the bed-plate, and terminating at one end at an interval from the plane of said guide, feeding devices for advancing a sash parallel with said guide, and operating mechanism for actuating the feed-

ing devices and polishing roll or rolls, substantially as specified.

3. In a sash-polishing machine, the combination of a bed-plate provided with a longitudinal check-rail groove and a parallel sash-guide, a polishing roll or rolls mounted in operative relation with the bed-plate and terminating at one end short of the vertical plane of said sash-guide, sash-feeding mechanism, a side-polishing head or disk arranged in the longitudinal plane of the interval between said polishing roll or rolls and the sash-guide, and means for operating the polishing devices, substantially as specified.

4. In a sash-polishing machine, the combination of a bed-plate provided with a longitudinal check-rail groove and a parallel sash-guide, a polishing roll or rolls mounted in operative relation with the bed-plate and terminating at one end short of the vertical plane of said sash-guide, sash-feeding mechanism, a bevel-faced side-polishing head or disk arranged in the longitudinal plane of the interval between said polishing roll or rolls and the sash-guide, and means for operating the polishing devices, substantially as specified.

5. In a sash-polishing machine, the combination of a bed-plate provided adjacent to one side with a longitudinal check-rail groove and at the opposite side with a sash-guide, polishing-rolls arranged in operative relation with the bed-plate and terminating at one end short of the longitudinal vertical plane of the sash-guide, side heads or polishing-disks mounted in longitudinal planes adjacent to the extremities of the polishing-rolls, that polishing disk or head which is adjacent to the sash-guide being arranged in the longitudinal plane between said guide and the adjacent extremities of the polishing-rolls, and having a beveled abrading surface, and means for operating said polishing devices, substantially as specified.

6. In a sash-polishing machine, the combination of a bed-plate provided adjacent to one side with a longitudinal check-rail groove and at the opposite side with a sash-guide, polishing-rolls arranged in operative relation with the bed-plate and terminating at one end short of the longitudinal vertical plane of the sash-guide, side heads or polishing-disks mounted in longitudinal planes adjacent to the extremities of the polishing-rolls, that polishing disk or head which is adjacent to the sash-guide being arranged in the longitudinal plane between said guide and the adjacent extremities of the polishing-rolls; and having a beveled peripheral abrading surface, and that polishing head or disk which is arranged adjacent to said check-rail groove having a side-polishing face for contact with the edge surface of a sash, and means for operating said polishing devices, substantially as specified.

7. In a sash-polishing machine, the combination of a bed-plate provided with a sash-

guide and a parallel check-rail groove, side heads or polishing-disks arranged in vertical longitudinal planes respectively adjacent to said guide and groove, transverse polishing-rolls arranged in operative relation with the bed-plate and terminating short of the longitudinal vertical planes of said side heads or polishing-disks, sash-feeding mechanism, and operating connections, substantially as specified.

8. In a sash-polishing machine, the combination of a bed-plate provided with a sash-guide and a parallel check-rail groove, side heads or polishing-disks arranged in vertical longitudinal planes respectively adjacent to said guide and groove, transverse polishing-rolls arranged in operative relation with the bed-plate and terminating short of the longitudinal vertical planes of said side heads or polishing-disks, sash-feeding mechanism, yieldingly-actuated bearing-rolls arranged adjacent to the polishing-rolls, and guide-springs arranged adjacent to said check-rail groove for contact with the adjacent edge of a sash to force the same toward the sash-guide, and operating connections, substantially as specified.

9. In a sash-polishing machine, the combination of a bed-plate provided with a sash-guide and a parallel check-rail groove, side

heads or polishing-disks arranged in vertical longitudinal planes respectively adjacent to said guide and groove, transverse polishing-rolls arranged in operative relation with the bed-plate and terminating short of the longitudinal vertical planes of said side heads or polishing-disks, sash-feeding mechanism, downwardly-operating pressure-springs for contact with the upper surface of a sash, those pressure-springs which are adjacent to the plane of the sash-guide having obliquely-disposed bearing-faces, and operating connections, substantially as specified.

10. In a sash-polishing machine, the combination of a bed-plate, pressure devices for maintaining a sash in contact with the bed-plate, polishing devices, feed mechanism comprising carrier-chains operating in longitudinal grooves in the bed-plate, and provided with transversely-opposite lugs connected by transverse carrier-bars, and means for operating said feed mechanism and polishing devices, substantially as specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

NICKELS J. MATTHIEN.

Witnesses:

C. F. CURTIS,

G. W. ALLEN.