(No Model.) 5 Sheets—Sheet 1.

H. SPOOR.

SANDPAPERING MACHINE.

No. 456,861. Patented July 28, 1891.

Fig. 1.

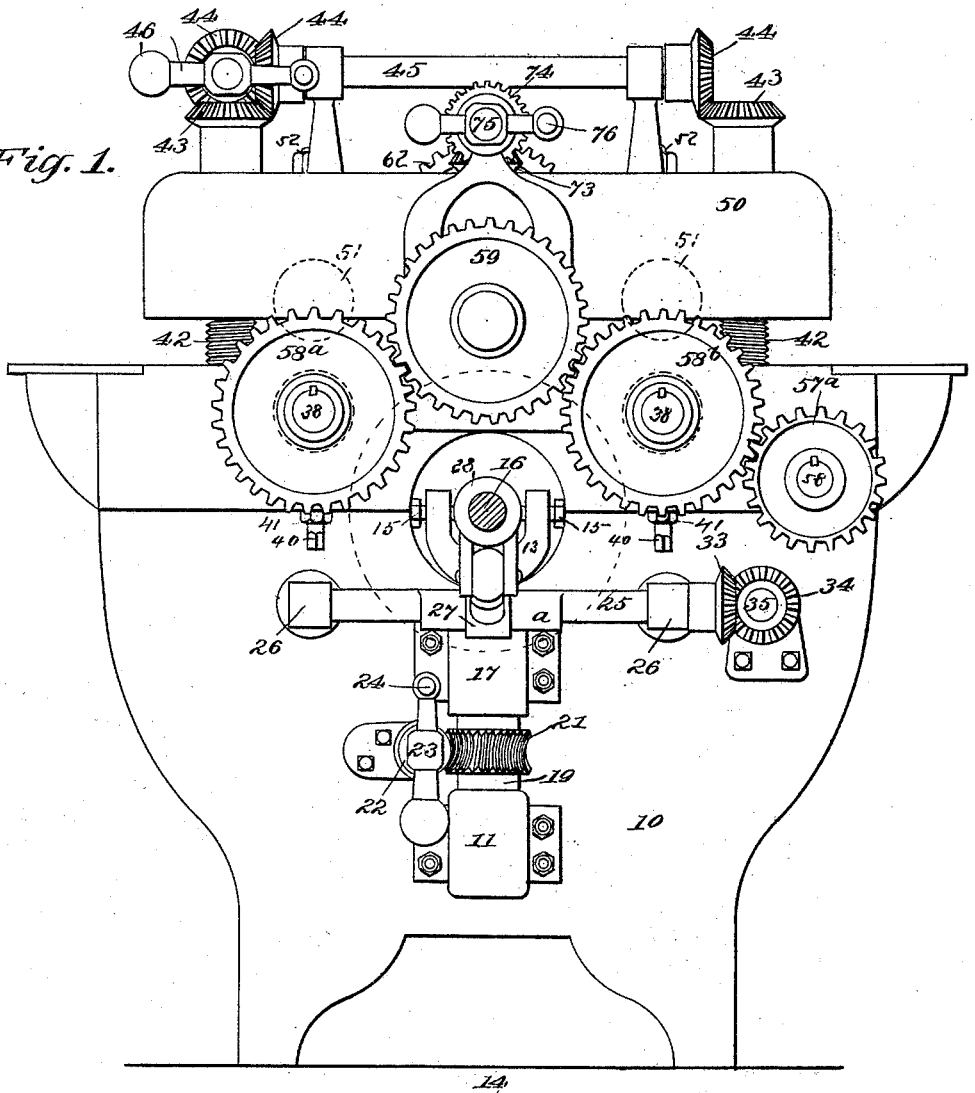
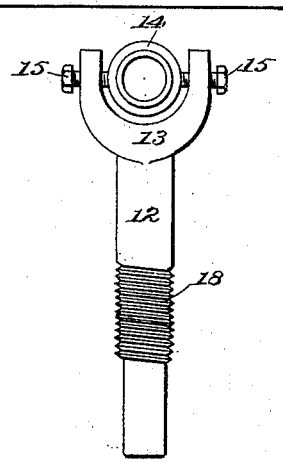


Fig. 5.



WITNESSES:

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H. SPOOR.

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Fig. 2.

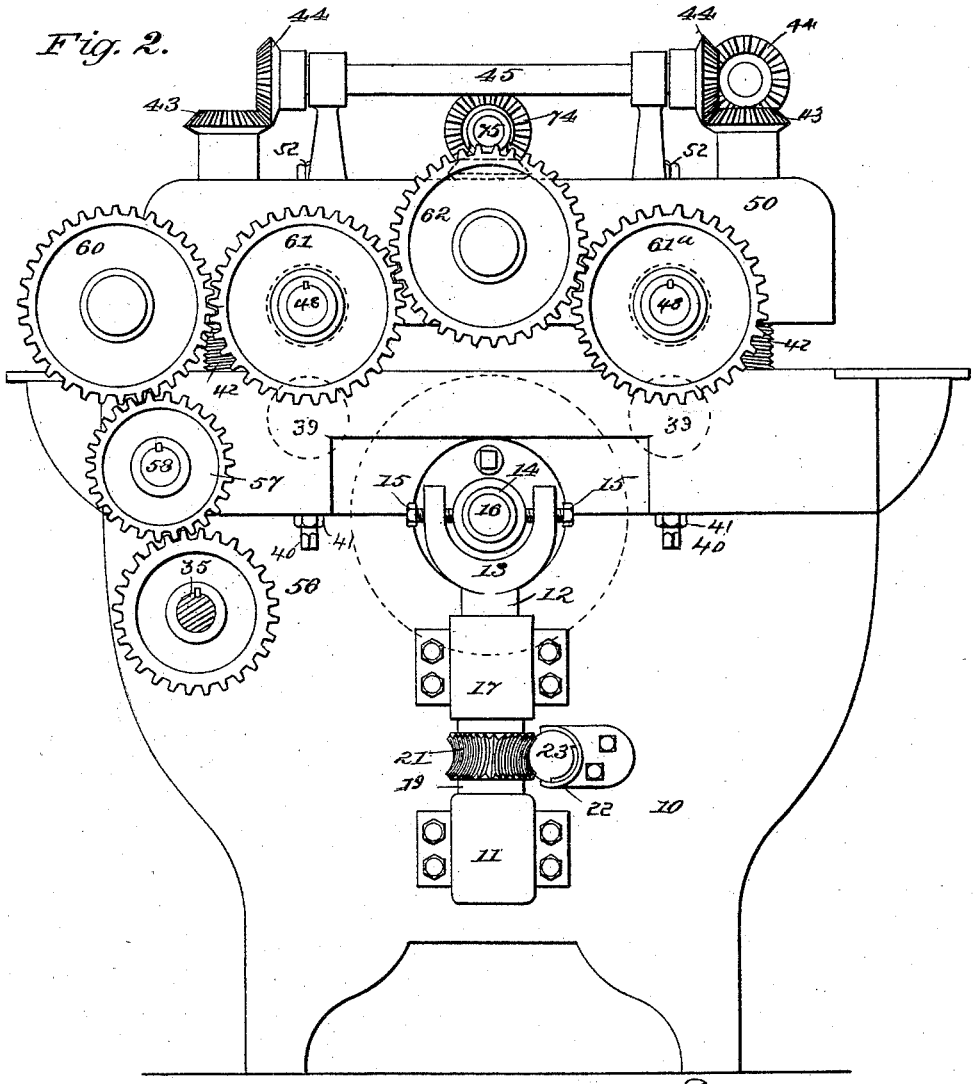
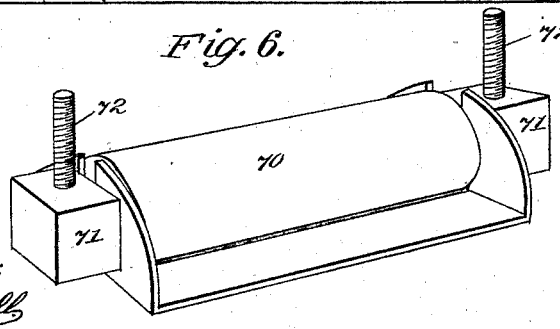


Fig. 6.



WITNESSES:

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(No Model.) 5 Sheets—Sheet 3.

H. SPOOR.

SANDPAPERING MACHINE.

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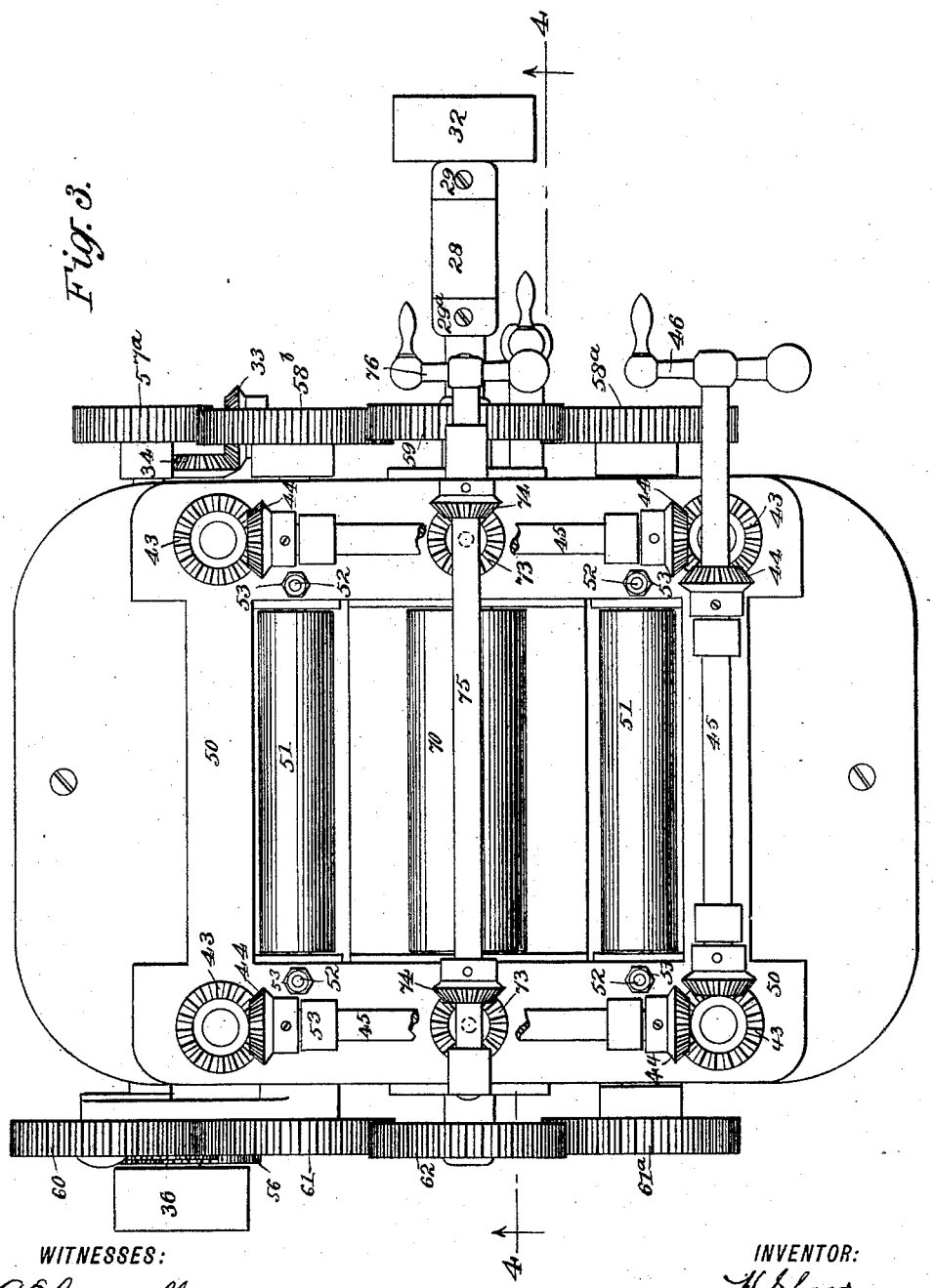
Fig. 3.



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(No Model.)

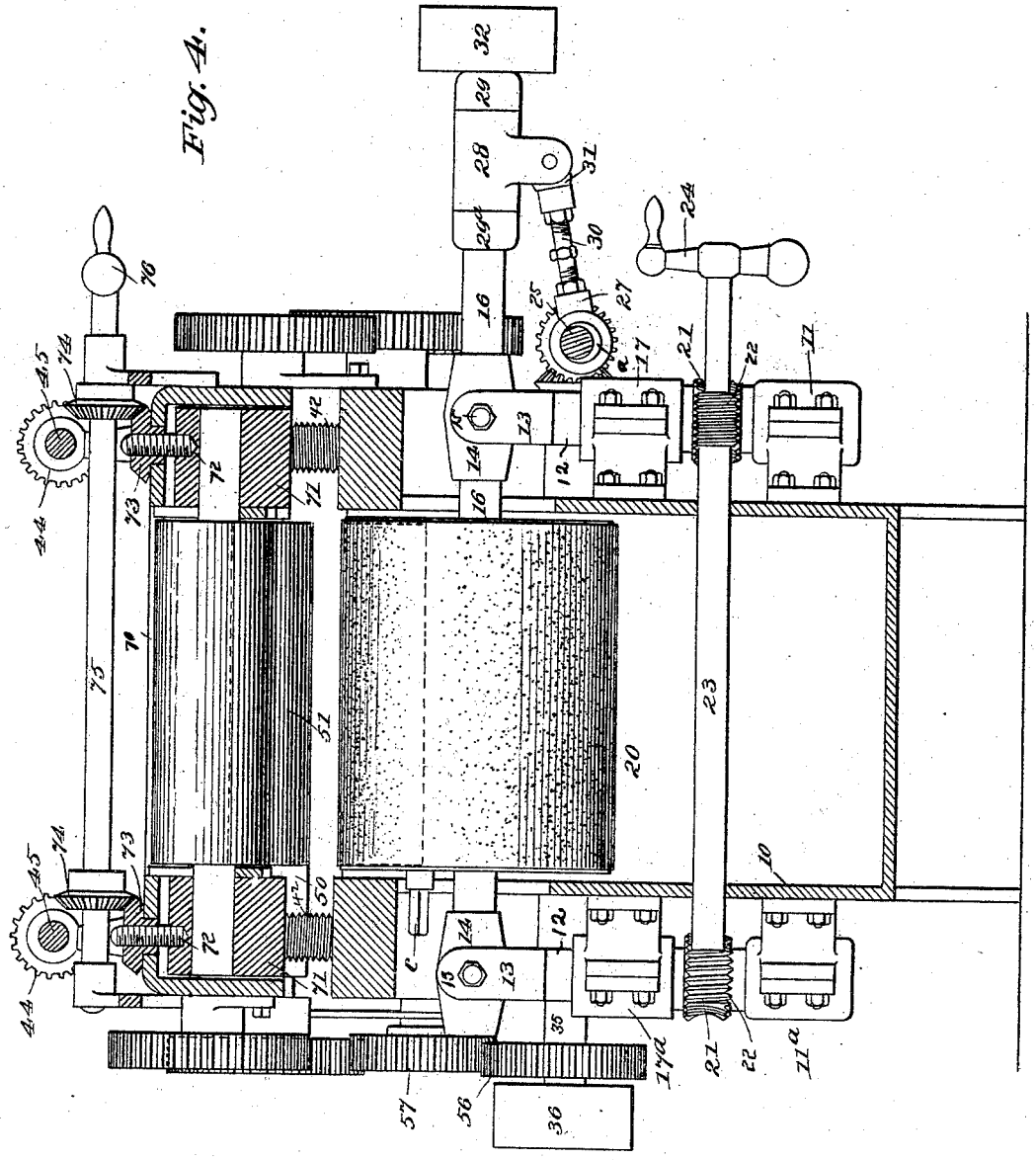
5 Sheets—Sheet 4.

H. SPOOR.

SANDPAPERING MACHINE.

No. 456,861. Patented July 28, 1891.

Fig. 4.



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H. SPOOR.

SANDPAPERING MACHINE.

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Fig. 7.

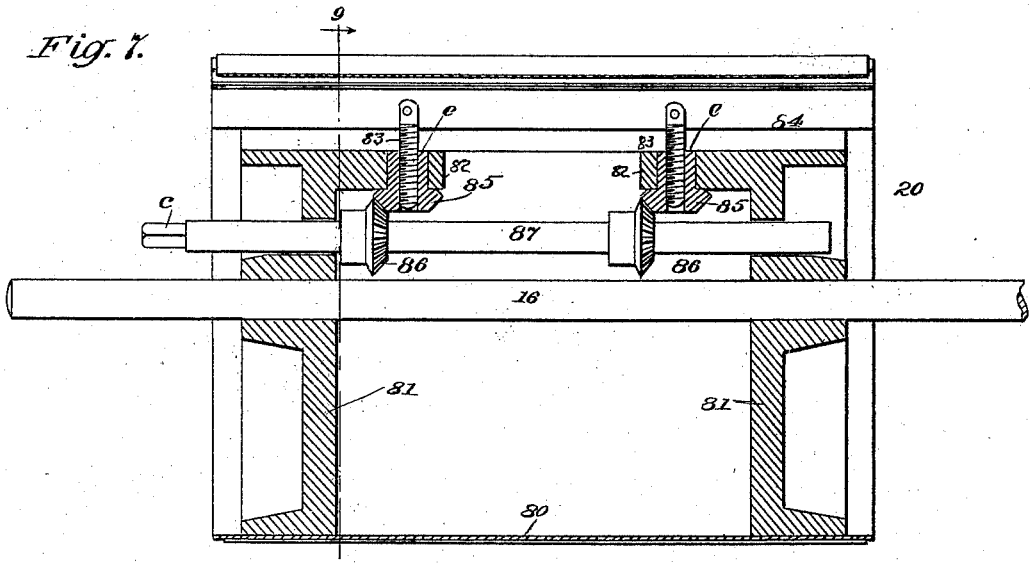


Fig. 8.

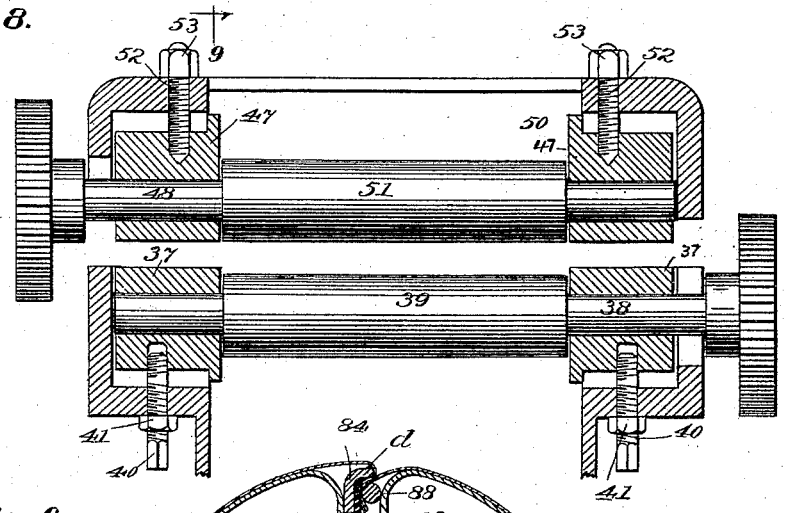
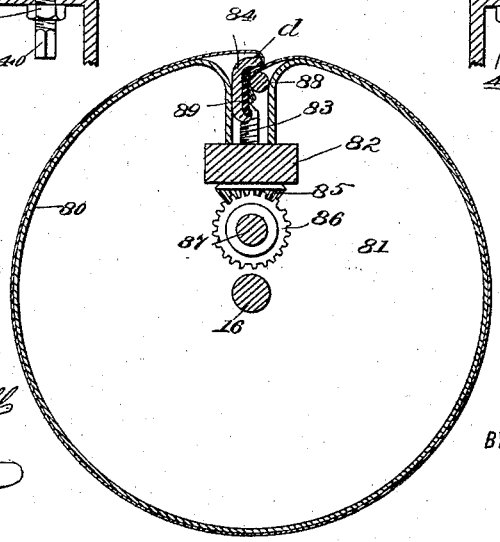


Fig. 9.



WITNESSES:

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UNITED STATES PATENT OFFICE.

HERBERT SPOOR, OF BERLIN, WISCONSIN.

SANDPAPERING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 456,861, dated July 28, 1891.

Application filed August 30, 1889. Serial No. 322,467. (No model.)

To all whom it may concern:

Be it known that I, HERBERT SPOOR, of Berlin, in the county of Green Lake and State of Wisconsin, have invented a new and Improved Sandpapering-Machine, of which the following is a full, clear, and exact description.

This invention relates to sandpapering-machines of the class wherein the sand-paper is secured about the peripheral face of a horizontal cylinder, the material to be operated upon being fed over said cylinder by means of feeding-rollers, the main objects of the invention being to provide for the uniform adjustment of the cylinder and of the feeding-rollers and to impart a reciprocating motion to the cylinder as it is rotated.

To the ends above named the invention consists of certain novel constructions, arrangements, and combinations of elements, to be hereinafter fully described, and specifically pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures and letters of reference indicate corresponding parts in all the views.

Figure 1 is a side view of my improved sandpapering-machine, the cylinder-driving shaft being shown in section. Fig. 2 is a view of the opposite side of the machine. Fig. 3 is a plan view of the machine, some of the shafts being broken away. Fig. 4 is a cross-sectional elevation on line 4 4 of Fig. 3. Fig. 5 is a detail view illustrating the construction of one of the yokes which support the cylinder-shaft bearings. Fig. 6 is a detail perspective view of the upper feeding-roll. Fig. 7 is a central longitudinal sectional view of the sandpapering-cylinder. Fig. 8 is a sectional detail view illustrating the feed-roll-adjusting devices, and Fig. 9 is a cross-sectional view of the sand-paper-carrying cylinder.

In the drawings, 10 represents the main frame of the machine, to the sides of which frame there are bolted steps 11, in which the lower ends of the shanks 12 of yokes 13 bear. These yokes 13 each carry a tubular bearing 14, the bearings being held to place by set-screws 15, and through the bearings 14 there is passed the shaft 16 of a sand-paper drum 20. The yoke-shanks are guided by brackets 17, and between the brackets the shanks are threaded, as shown at 18. Upon the threaded sections 18 I mount nuts 19, that are formed with worm-gears 21, the said worm-gears being engaged by worms 22, that are carried by a transverse shaft 23, such shaft being provided with a crank arm or handle 24, the arrangement being such that by turning the shaft 23 the drum 20 may be raised or lowered.

In order that a reciprocating motion may be imparted to the drum, I mount a horizontal shaft 25 in bearings 26, that extend outward from the sides of the frame 10, the central portion *a* of this shaft 25 being eccentric. Upon the eccentric section I mount an eccentric-strap 27 and the end of the strap I pivotally connect to a sleeve 28, that is held between collars 29 and 29ª, that are rigidly connected to the shaft 16, the eccentric-stem 30 being formed with a right and left hand thread, as shown in Fig. 4, to engage correspondingly-threaded sockets carried by the eccentric-strap 27 and by the coupling-piece 31, by means of which the stem is connected to the sleeve 28. This arrangement provides for the lengthening or shortening of the eccentric-stem, so as to vary the position of the drum 20, as will be understood. The shaft 16 carries a pulley 32, over which a driving-belt is passed, in order that a rotary motion may be imparted to the shaft, the eccentric-shaft 25 being provided with a bevel-gear 33, that is engaged by a corresponding gear 34, carried by a transverse shaft 35, which said shaft also carries a driving-pulley 36, that is engaged by a driving-belt. The upper portion of the frame 10 is recessed to receive bearing-boxes 37, in which there are mounted the shafts 38 of feeding-rollers 39, the boxes 37 being engaged by adjusting-screws 40, formed with right and left hand threaded sections, such screws engaging the frame, and also threaded apertures that are formed in the boxes and being held to place by lock-nuts 41, the arrangement being such that the boxes and with them the rollers may be adjusted to the required position and there locked to place.

Above the frame 10 the upper feeding-rollers (which will be presently described) are carried by an auxiliary frame 50, which is adjustably mounted above the main frame 10, such auxiliary frame being supported by

adjusting-screws 42, each of which screws carries a bevel-gear 43, which said bevel-gears are engaged by corresponding gears 44, that are carried by horizontal shafts 45, mounted in bearings above the frame 50, and one of these shafts is provided with a crank arm or handle 46, the arrangement being such that by turning the crank-arm a rotary motion will be imparted to each of the adjusting-screws 42 and the frame 50 will be raised or lowered in accordance with the direction of rotation. The frame 50 is recessed to receive boxes 47, and these boxes serve as bearings for shafts 48, which carry the upper feeding-rolls 51, the boxes being adjusted by means of adjusting-screws 52, that are provided with lock-nuts 53, as in the case of the screws 40.

In order that the feeding-rollers may be turned to feed the material forward, I provide the shaft 35 with a gear 56, which gear engages a gear 57 carried by a shaft 58, a second gear 57^a being arranged at the opposite end of the shaft. The gear 57^a engages a gear 58^b, that is carried by the shaft of the adjacent feeding-roller 39, and the gear 58^b in turn engages an idler 59, which idler engages a gear 58^a, that is carried by the shaft of the remote lower feeding-roller 39. In this way motion is imparted to the two lower feeding-rollers, the upper feeding-rollers being driven by the train of gearing shown in Fig. 2, wherein the gear 57 is represented as engaging an idler 60, which engages a gear 61, carried by the shaft of the adjacent upper feeding-roller 51, the gear 61 in turn engaging an idler 62 and the idler 62 engaging a gear 61^a, that is carried by the other upper feeding-roller.

Just above the cylinder 20 I mount a pressure-roller 70, the shaft of said roller being journaled in boxes 71, that are provided with upwardly-extending threaded stems 72, such stems projecting through apertures that are formed in the upper walls of the frame 50, there to be engaged by toothed nuts 73, which said nuts are in turn engaged by pinions 74, carried by a tranverse shaft 75, which is provided with a crank-arm 76, the arrangement being such that the boxes and with them the pressure-roller may be raised or lowered. The sand-paper cylinder 20 embodies a metallic sheet 80, that is bent to cylindrical form and supported by heads 81, rigidly connected to the shaft 16, this sheet forming the peripheral face of the drum. The edges of the sheet 80 are bent inward and secured to lugs 82, carried by the heads 81. These lugs 82 serve as bearings for internally-threaded sleeves that are engaged by stems 83, said stems being connected to a clamping-strip 84. The internally-threaded sleeves (which are shown at *e* in Fig. 7) are each provided with bevel-pinions 85, that are engaged by corresponding pinions 86, carried by a shaft 87, said shaft being journaled in bearings formed in the heads 81 and being squared or irregularly formed at one end, as shown at *c*, to fit the socket of a key.

In applying the sand-paper such paper is passed about the peripheral face of the drum and the edges are brought within the overhanging flange *d* of the clamping-strip 84, after which a rod or strip 88 is passed in, so as to press the sand-paper against a cushion 89, that is carried by the strip 84. The parts having been adjusted as above described and as represented in the drawings, a movement of the shaft 87 in a direction proper to draw the clamping-strip inward will act to bind the sand-paper firmly to the drum.

From the construction above described it will be seen that any required adjustment of the several parts of the sandpapering-machine may be obtained, and that in operation the material will be fed regularly forward, the cylinder 20 will be revolved, and, as it is so revolved will also be reciprocated.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a sandpapering-machine, the combination, with the sand-paper-carrying drum, of bearings in which the drum-shaft rides, yokes by which the bearings are supported, the stems of said yokes being formed with threaded sections, sleeves which engage said threaded sections, gears carried by the sleeves, and a shaft formed with worms which engage said gears, substantially as described.

2. In a sand-paper-carrying drum, the combination, with a clamping-strip, of a rod and a means for adjusting the strip, substantially as described.

3. In a sand-paper-carrying drum, the combination, with the drum-body, of a clamping-strip, threaded stems carried thereby, threaded sleeves which said stems engage, pinions carried by the sleeves, a transverse shaft, and pinions carried thereby, the shaft-pinions being arranged to engage the stem-pinions, substantially as described.

HERBERT SPOOR.

Witnesses:
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F. B. TULLCOTT.