W. S. KELLEY.

SANDPAPERING MACHINE.

APPLICATION FILED SEPT. 6, 1910.

1,012,651.

Patented Dec. 26, 1911.

2 SHEETS—SHEET 1.

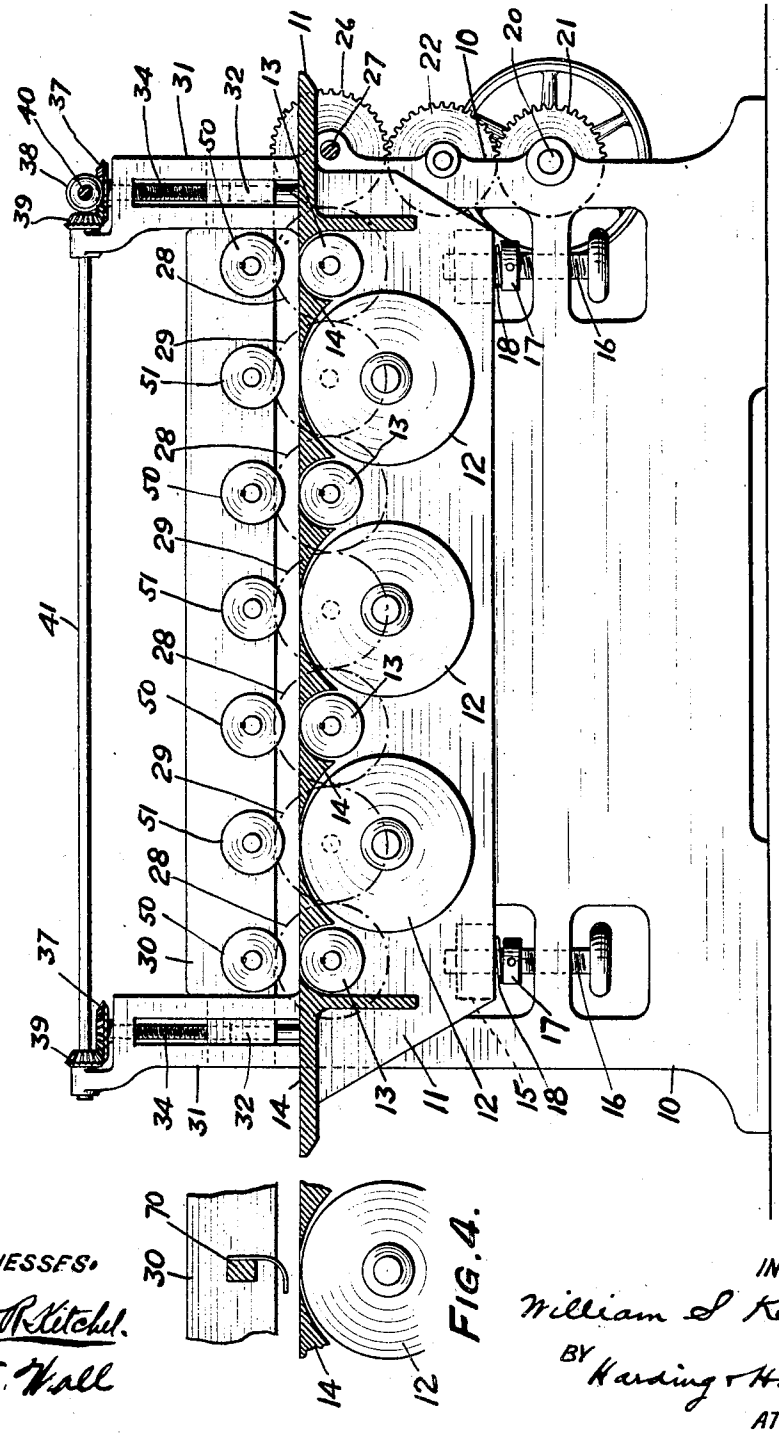

FIG. 1.

FIG. 4.

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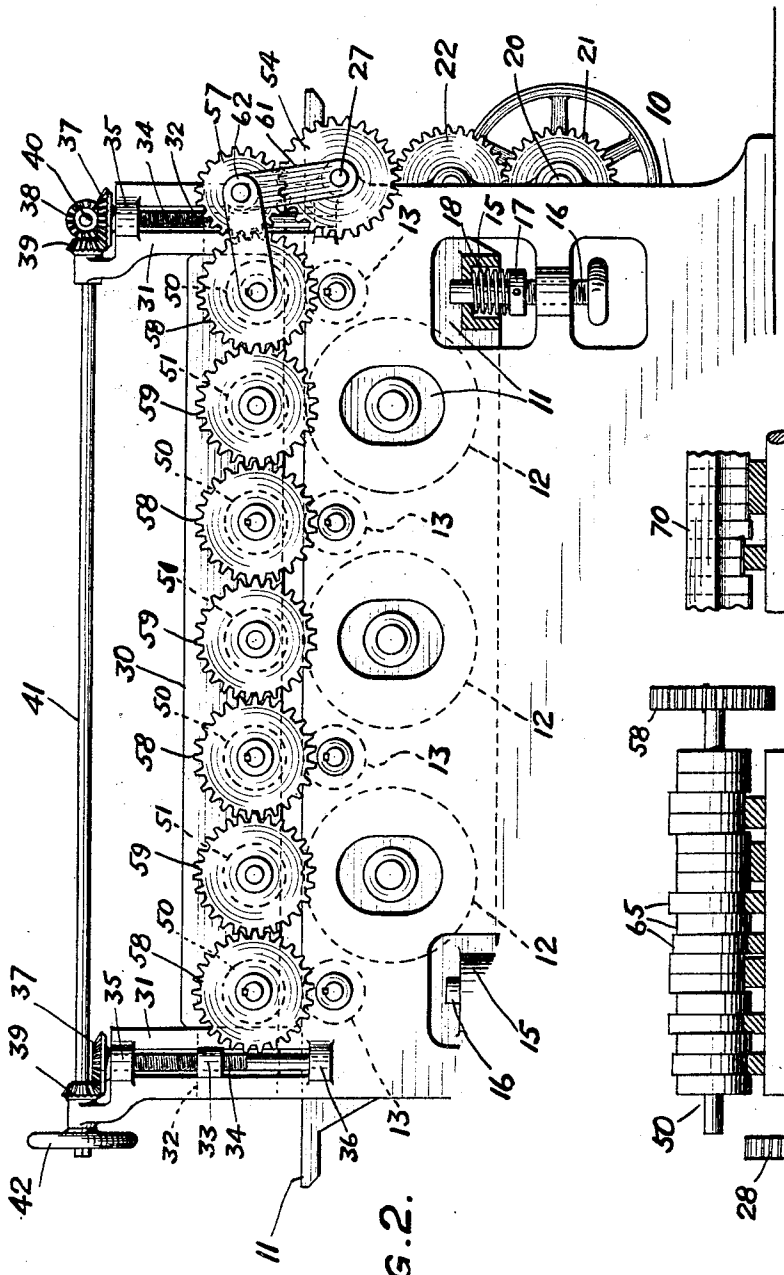

FIG. 2.

FIG. 5.

FIG. 3.

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UNITED STATES PATENT OFFICE.

WILLIAM S. KELLEY, OF MOUNT HOLLY, NEW JERSEY, ASSIGNOR TO H. B. SMITH MACHINE COMPANY, OF SMITHVILLE, NEW JERSEY, A CORPORATION OF NEW JERSEY.

SANDPAPERING-MACHINE.

1,012,651. Specification of Letters Patent. Patented Dec. 26, 1911.

Application filed September 6, 1910. Serial No. 580,615.

To all whom it may concern:

Be it known that I, WILLIAM S. KELLEY, a citizen of the United States, residing at Mount Holly, county of Burlington, and State of New Jersey, have invented a new and useful Improvement in Sandpapering-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of this specification.

The object of my invention is to provide a roller-feed drum sander adapted to act simultaneously upon materials of slightly different thicknesses.

The invention consists of the new arrangement of drums, solid feed rollers, sectional feed rollers and sectional idler rollers, a preferred embodiment of which is shown in the accompanying drawings, in which:

Figure 1 is a longitudinal section, and Fig. 2 a side elevation, of the machine. Fig. 3 is a detail view of one of the sectional rolls. Figs. 4 and 5 are detail views of one of the sectional presser bars.

10 is the main frame or bed of the machine.

11 is a frame carrying the sanding drums 12, the lower feed rollers 13 and platens 14. The frame 11 is mounted on the bed 10 and is vertically adjustable thereon. The adjustable supporting means comprises four devices, located near the respective corners of the machine. Each device consists of an inverted box 15 secured to frame 11, an upright threaded shaft 16 having bearings in the box and in the bed, a collar 17 secured to shaft 16, a coil spring 18 surrounding shaft 16 and confined between the collar 17 and box 15, and a hand-wheel 19 on the lower end of the shaft. By turning either shaft 16 in one direction, the corresponding collar 17 will be raised, thereby, through the corresponding spring 18, raising the corresponding corner of the frame 11. By turning the shaft in the other direction, the collar 17 will be lowered, thereby permitting the corresponding corner of frame 11 to drop to the extent permitted by the spring 18. Thus, all four corners of the frame 11 may be independently raised or lowered.

The lower feed rollers 13 are arranged alternately to the drums 12 and are driven by the following mechanism. 20 is the main driving shaft rotating in bearings in the main frame. This shaft carries a gear 21, which, through an intermediate gear 22, drives a gear 26 on a shaft 27 rotating in bearings on the main frame. The gear 26 engages a gear 28 on the shaft of the adjacent lower feed roller 13. Each of the other lower feed roller shafts carries a similar gear 28, which is driven from a transmission gear 29, rotating in bearings in the frame 11, and in turn driven by the preceding gear 28 of the series. Any convenient known means may be provided for driving the drums, and such means are not herein shown as they have no relation to or bearing upon the invention herein disclosed. Projecting upward from the bed 10 are standards 31, one at each corner of the bed. The frame 30, which carries the upper feed rollers and idler rollers, is provided, at the four corners thereof, with projections 32 extending longitudinally and outwardly and fitting slidably within vertical guides in the four standards 31 respectively. Projecting laterally from each projection 32 is a nut 33, the corresponding standard being cut away in a vertical direction to permit the nut to travel vertically and to accommodate the corresponding vertical screw shaft 34, which engages the nut 33 and turns in bearings 35 and 36 at the upper and lower ends respectively of the corresponding standard 31. On the upper end of each screw shaft 34 is a bevel gear 37. Each bevel gear 37 meshed with a bevel gear 39. Two of the bevel gears 37 at one end of the machine mesh with bevel gears 38. The two pairs of bevel gears 39 at opposite sides of the machine are on longitudinal shafts 41 respectively. The two bevel gears 38 are on a transverse shaft. On one of the shafts 41 is a hand-wheel 42. It will be understood that by turning the hand-wheel 42, the corresponding shaft 41 will transmit equal movements of rotation to the four upright screw shafts 34, which, having no vertical movement, will lift the four nuts 33 and the frame 30 carried thereby. The frame 30 may thus be raised or lowered in a right line, thereby enabling the machine to be adjusted to vary the maximum and minimum thicknesses of work to be operated upon by the drums. Turning in bearings on the frame 30 are seven rollers disposed respectively above and opposite to the four lower feed rollers 13 and three sanding drums 12. The four rollers 50 above the lower feed rollers 13 are driven rollers and

coöperate with the feed rollers 13 to feed the material along the work bed. The three rollers 51 above the sanding drums 12 are idler rollers. For the rollers 51 may be substituted presser bars, one of which, indicated by the reference numeral 70, is shown in Figs. 4 and 5.

The feed rollers 50 are driven from the main driving shaft by the following means: The shaft 27, heretofore, described as being driven from the driving shaft, carries near the end a gear 54, which, through the medium of an intermediate gear 57, drives a gear 58 fixed on the shaft of the adjacent upper feed roller 50. Each upper feed roller shaft has secured thereto a similar gear 58, and each two adjacent gears 58 are operatively connected by an intermediate gear 59 loose on the shaft of the corresponding intermediate idler roller 51. By driving the series of gears 58, 59, all the upper feed rollers are positively rotated, while the idler rollers are not rotated except by means of the work itself pressed against the idler rollers by the sanding drums. The shaft of the gear 57 is hung upon a pair of links 61 pivoted on the shaft 27 and also upon a pair of links 62 pivoted on the shaft of the adjacent feed roller 60. Thereby provision is made for maintaining the driving connections to the upper feed rollers notwithstanding the described vertical adjustment of the frame 30. Each of the rollers 50 and 51 comprises a series of independent annular sections 65 disposed side by side along the shaft of the roller and adapted to be normally held under spring pressure in concentric position relatively to the shaft while capable of yielding so as to assume an eccentric position in response to the upward pressure of work passing under them. See Fig. 3. The specific construction of one of these sectional rollers need not be described, as the same forms no part of my invention. A roller of this character is disclosed, for example, in the Whitney Patent No. 459325 of September 8, 1891. If presser bars are employed, they too would be made sectional, as shown in Figs. 4 and 5. In the application of sectional rollers of this character, in the manner described, to a roller-feed drum sander, means are provided whereby the sanding drums can act simultaneously upon work of different thicknesses that pass, either side by side or successively, through the machine. The possible range of variation of thickness will depend upon the degree to which the sections 65 are rendered capable of yielding radially. In operation, the frame 30 is first adjusted so as to provide for the material of minimum thickness, and then work of varying thickness may be fed to the machine successively or simultaneously.

Certain features providing for adjustments of the different parts of the machine are disclosed herein which, in and of themselves, form no part of my invention, but are set forth and claimed in another application Serial No. 580640½ filed by me of even date herewith.

It will be understood that the rollers 50 may be idler rollers, or alternatively, the rollers 13 may be idler rollers; but the operation of the machine will be more satisfactory and certain if both these sets of rollers are positively driven.

Having now fully described my invention, what I claim and desire to protect by Letters Patent is:—

1. In a sand papering machine, the combination with a lower frame and an upper frame, of a series of sanding drums and a series of solid rollers carried by one frame, said drums and rollers being arranged alternately, and yielding devices carried by the other frame and arranged opposite said drums and rollers and adapted, under pressure of said drums and rollers, to yield along different longitudinal lines to permit the drums to successively operate upon work of different thicknesses without reducing the work to a uniform thickness.

2. In a sand papering machine, the combination, with a lower frame and an upper frame, of a sanding drum carried by one frame, a yielding device carried by the other frame and arranged opposite the sanding drum and adapted to yield along different longitudinal lines to permit the drum to operate upon work of different thickness, feeding means arranged in advance of the sanding drum and including a similar yielding device, and delivery means arranged beyond the sanding drum and including a similar yielding device, whereby work of different thicknesses may be simultaneously fed, polished and delivered without reducing the same to a uniform thickness.

In testimony of which invention, I have hereunto set my hand, at Mount Holly, New Jersey, on this first day of September, 1910.

WILLIAM S. KELLEY.

Witnesses:

ELTON ALLEN SMITH, Jr.,

GEO. A. LIPPINCOTT.