Dec. 16, 1924. 1,519,425

T. R. WALKER ET AL

PIANO KEY SANDING AND POLISHING MACHINE

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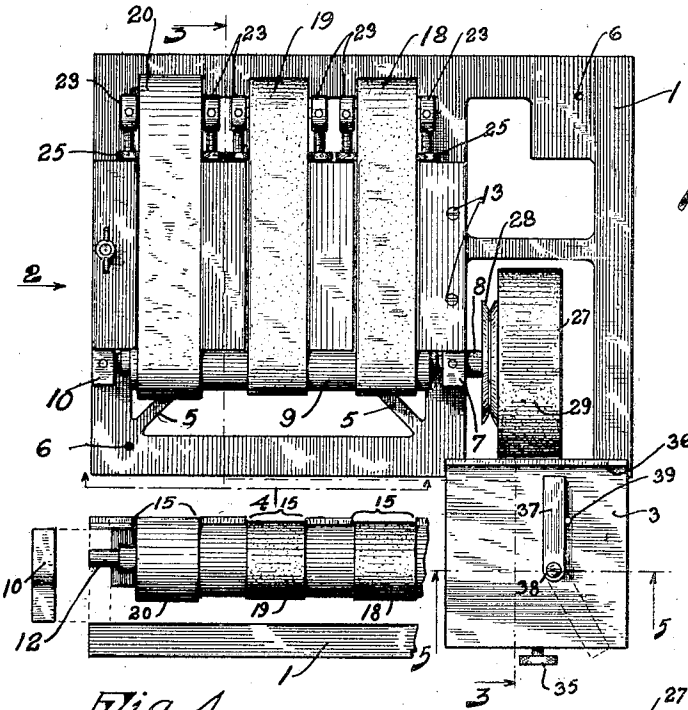


Fig. 1.

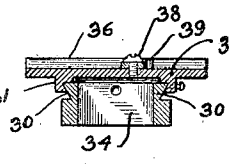


Fig. 5

Fig. 4.

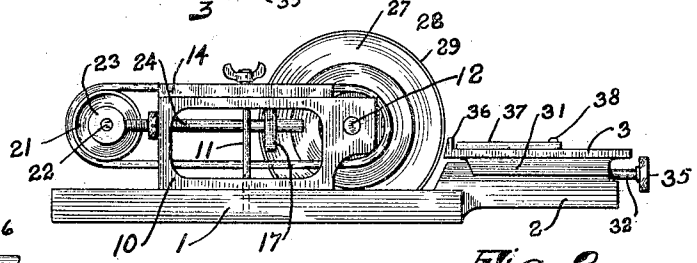


Fig. 2.

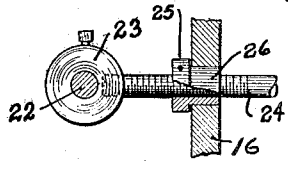


Fig 6.

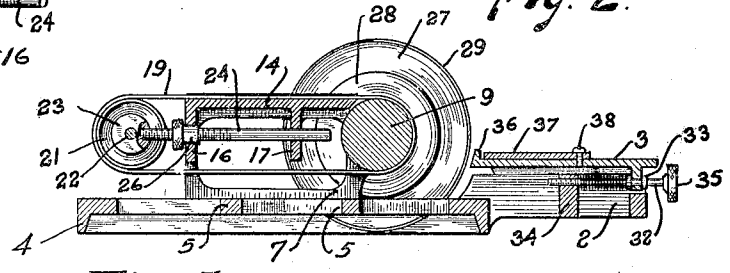


Fig. 3.

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UNITED STATES PATENT OFFICE.

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PIANO-KEY SANDING AND POLISHING MACHINE.

Application filed January 9, 1923. Serial No. 611,550.

To all whom it may concern:

Be it known that we, THOMAS R. WALKER and HARRY B. MANBY, citizens of the United States, residing at the city and county of Denver and State of Colorado, have invented certain new and useful Improvements in Piano-Key Sanding and Polishing Machines; and we do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form a part of this specification.

This invention relates to sanding and polishing machines and has special reference to a machine for finishing piano and organ keys.

In manufacturing and repairing keys for pianos and organs, it is necessary to cover the end and one side with ivory, which consists of thin sheets that are secured in place by glue or other suitable cement. After the ivory is secured in place, it is necessary to finish the surfaces and to polish the same.

Our invention relates to a sanding machine that is especially designed for the purpose of grinding, sanding and polishing keys, and consists, generally speaking, of a rotatable grinder, which is employed in removing the projecting edges of the ivory, two sanding belts of different coarseness, and a polishing belt, together with means for tightening the belts and for readily removing and replacing the same.

In order to more clearly describe our invention, we shall have reference to the accompanying drawing, in which—

Fig. 1 is a plan view of our improved sanding and polishing machine;

Fig. 2 is an end elevation looking in the direction of the arrow 2 in Fig. 1;

Fig. 3 is a section taken on line 3—3, Fig. 1;

Fig. 4 is a view taken along line 4—4, Fig. 1, and shows how one bearing block may be removed so as to permit the removal and replacement of the belts;

Fig. 5 is a section taken on line 5—5, Fig. 1; and

Fig. 6 is a section similar to section 3, but showing a portion of the machine for the purpose of better illustrating the adjusting means.

The same reference characters will be used to designate the same parts throughout the several views.

Numeral 1 represents the base of the machine and is substantially rectangular and provided at one corner with a projecting portion 2, which serves as a guide for a sliding table 3, the function of which will hereinafter appear. The base 1 is formed with downwardly extending flanges 4, which serve to give it greater rigidity and has diagonal bracing members 5. Holes 6 are provided for the purpose of securing the base to a bench. A bearing block 7 is secured to the base by any suitable means and provided near the front end thereof with a bearing for the end 8 of the shaft 9. Near the other end of the base we provide a bearing block 10, which is removably held in place by bolt 11. An opening is provided near one end of block 10, and this serves as a bearing for the reduced end 12 of shaft 9. Secured to the top of bearing block 7 by means of screws 13 is a supporting and guiding plate 14, which is provided on its upper surface with three parallel spaced grooves 15, and on its lower surface with two spaced longitudinal ribs 16 and 17. One end of the guiding plate 14 is secured to the top of the bearing block 10 by means of the bolt 11. By removing the bolt 11, the block 10 can be removed, as shown in Fig. 4. This permits the belts 18, 19 and 20 to be removed and replaced.

The belts 18 and 19 are sanding belts of different degrees of coarseness. Belt 18 is coarser than belt 19 and serves as the main cutting belt, while the finer belt 19 is employed for smoothing, while belt 20 is a felt polishing belt. Idlers 21 are mounted on shaft 22, which rotate in bearings 23 supported on the outer ends of rods 24, which are slidably connected with the rib 17 and have nuts 25, which have a portion 26 of reduced diameter that co-operates with a proper sized opening in the rib 16. It is evident that by rotating the nut 25, the rod 24 can be reciprocated for the purpose of tightening and loosening the belts. There is one idler for each belt and two rods 24, nuts 25 and bearings 23, so that each belt may be independently adjusted. On the end 8 of shaft 9 we secure a circular grinding member 27 and a belt wheel 28. The outer surface of the grinding member 27 is covered with sandpaper 29. A suitable motor is belted to wheel 28 and serves to rotate the grinder 27 and the belts 18, 19 and 20. The sides of

the grooves 15 serve as guides for the belts and the bottom of the grooves as supports therefor. The upper surface of the projecting portion 2 has outwardly inclined guiding surfaces 30, which co-operate with corresponding surfaces on the flanges 31 on the bottom of the table 3 (Fig. 5). Table 3 can be slid towards and away from the grinding surface of the wheel 27 by means of a screw 32, which is rotatably but non-slidably mounted in the downwardly extending rib 33 of table 3, and which has a threaded connection with the transverse rib 34 of part 2. By rotating the bolt 32 by means of the knob 35, the table 3 may be moved to the position desired. The inner edge of table 3 is provided with an upstanding flange 36, which serves as a stop for the key or other material that is operated upon. On the upper surface of table 3, we provide a guide 37, which is pivotally attached to the table by means of a bolt 38. A pin 39 serves as a stop for the guide 37 and holds the same at right angles to the flange 36.

When the ivory has been glued to the end and side of the key, the latter is laid upon the table 3, and with one side guided by the member 37, it is pushed against the rotating wheel 27. The guide is then swung out of the way and the sides of the key are ground away as required. When the ivory has been trimmed, the key is transferred to the belt 18, where it is sanded. It is then transferred to belt 19, where it is subjected to a smoothing action, after which it is transferred to and held against the surface of the polishing belt 20.

Attention is called to the function of the sides of grooves 15 in guiding the belts and in preventing sand and grit from one belt from reaching the surface of the other. The means employed by us for tightening the belts is also believed to be novel in this combination.

From the above, it will appear that we have devised a machine that is particularly well adapted for use in connection with piano and organ manufacture and repair; that is of a simple and substantial construction; that can be readily assembled and is adapted to be fastened to a work bench.

Having now described our invention, what we claim as new is:

1. A sanding and polishing machine comprising, in combination, a base, a pair of spaced bearing blocks secured thereto, a shaft rotatably mounted in each of said blocks near one end thereof, a plate supported by said blocks, said plate having a plurality of parallel guide grooves in its upper surface, said plate having also a downwardly projecting flange along one edge and another similar flange parallel with the first mentioned flange and spaced therefrom, said flanges each having a pair of holes corresponding to each guide groove, a rod slidably mounted in corresponding holes in each flange, a bearing secured to corresponding ends of each rod, an idler pulley rotatably mounted between adjacent bearings, a belt extending about each idler pulley and about the shaft, each belt having one side positioned in a guide groove, and a nut on each bolt, said nut engaging one side of one of said flanges for the purpose of holding the bolt from sliding in said holes.

2. A sanding and polishing machine comprising, in combination, a base, a pair of spaced bearing blocks secured thereto, a shaft rotatably mounted in each of said blocks near one end thereof, a plate supported by said blocks, said plate having a plurality of parallel guide grooves in its upper surface, said plate having also a downwardly projecting flange along one edge and another similar flange parallel with the first mentioned flange and spaced therefrom, said flanges each having a pair of holes corresponding to each guide groove, a rod slidably mounted in corresponding holes in each flange, a bearing secured to corresponding ends of each rod, an idler pulley rotatably mounted between adjacent bearings, a belt extending about each idler pulley and about the shaft, each belt having one side positioned in a guide groove, a nut on each bolt, said nut engaging one side of one of said flanges for the purpose of holding the bolt from sliding in said holes, a projecting portion on said base, a table slidable on said projecting portion, means comprising a screw for adjusting said table on said projecting portion, and a grinding wheel mounted on the shaft and rotatable in a plane perpendicular to the table.

3. A sanding and polishing machine comprising, in combination, a base, a pair of spaced bearing blocks secured thereto, a shaft rotatably mounted in each of said blocks near one end thereof, a plate supported by said blocks, said plate having a plurality of parallel guide grooves in its upper surface, said plate having also a downwardly projecting flange along one edge and another similar flange parallel with the first mentioned flange and spaced therefrom, said flanges each having a pair of holes corresponding to each guide groove, a rod slidably mounted in corresponding holes in each flange, a bearing secured to corresponding ends of each rod, an idler pulley rotatably mounted between adjacent bearings, a belt extending about each idler pulley and about the shaft, each belt having one side positioned in a guide groove, a nut on each bolt, said nut engaging one side of one of said flanges for the purpose of holding the bolt from sliding in said holes, a projecting portion on said base, a table slidable on said projecting portion, means comprising a

screw for adjusting said table on said projecting portion, a flange along one edge of said table, and a grinding wheel mounted on the shaft, said wheel being rotatable in a plane perpendicular to the plane of the table.

4. A grinding and polishing machine comprising, in combination, a pair of blocks, each having a bearing in one end, a shaft rotatable in said bearings, a plate supported from said blocks and having a plurality of parallel guide grooves in one surface, an idler pulley corresponding to each guide groove, and a belt passing around each of said pulleys and said shaft and having one side thereof cooperatively related to the guide groove.

5. A grinding and polishing machine comprising, in combination, a pair of blocks, each having a bearing in one end, a shaft rotatable in said bearings, a plate supported from said blocks and having a plurality of parallel guide grooves in one surface, an idler pulley corresponding to each guide groove, a belt passing around each of said pulleys and said shaft and having one side thereof cooperatively related to the guide groove, and means for adjusting the tension of said belts.

6. A grinding and polishing machine comprising, in combination, a pair of blocks, each having a bearing in one end, a shaft rotatable in said bearings, a plate supported from said blocks and having a plurality of parallel guide grooves in one surface, an idler pulley corresponding to each guide groove, a belt passing around each of said pulleys and said shaft and having one side thereof cooperatively related to the guide groove, and means for adjusting the tension of said belts, one of said blocks being readily removable so as to facilitate the applying and the removal of the belts.

7. A sanding and polishing machine having a plurality of substantially parallel belts, a common drive shaft for the same, means for independently adjusting said belts, and means comprising a grooved member for guiding said belt.

8. A sanding and polishing machine having a plurality of endless belts arranged in parallel relation, and means for guiding said belts for supporting the same and for preventing grit and sand from passing from one belt to the other, said means comprising a grooved plate.

9. A sanding and polishing machine comprising a base, a pair of spaced bearing blocks secured thereto, a shaft pivotally mounted in said blocks, a supporting member secured to said bearings, a plurality of idlers adjustably secured to the supporting member, means for adjusting the idlers, belts from the shaft to the idlers, and means for guiding the belts, one of said bearing blocks being removable to permit the belts to be removed and replaced.

In testimony whereof we affix our signatures.

THOMAS R. WALKER.
HARRY B. MANBY.