W. J. SUMNER.

WOOD POLISHING MACHINE.

APPLICATION FILED NOV. 17, 1914.

1,150,155.

Patented Aug. 17, 1915.

3 SHEETS—SHEET 1.

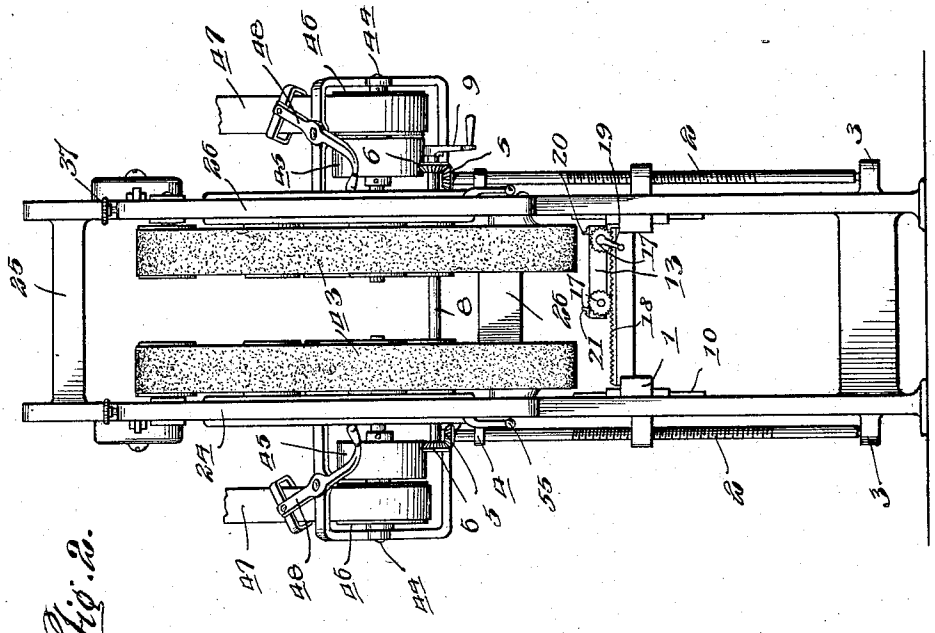


Fig. 2.

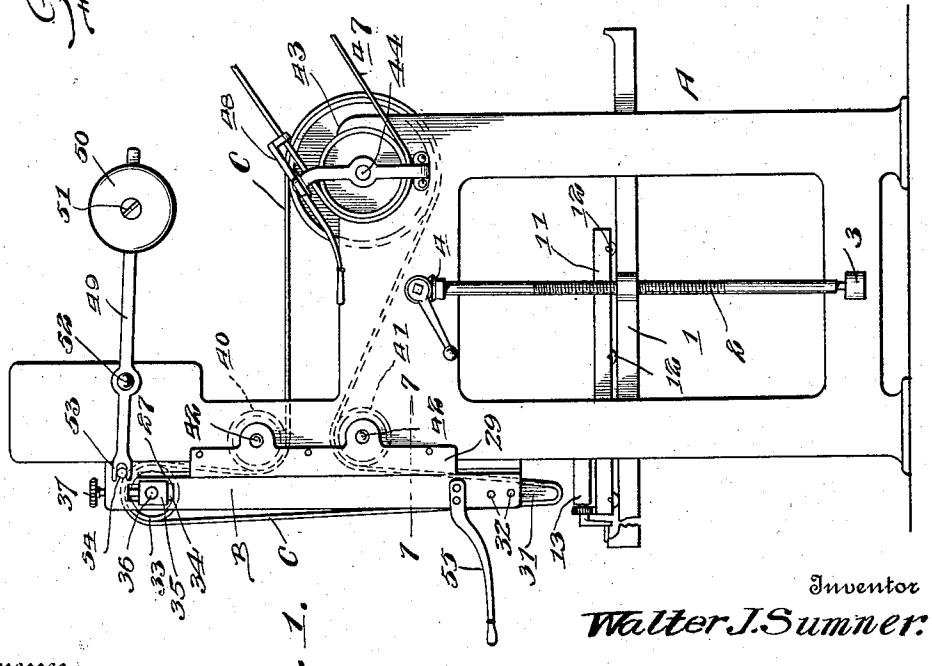


Fig. 1.

Witnesses

Frederick L. Fox.

R. M. Smith.

Inventor

Walter J. Sumner.

By Victor J. Evans.

Attorney

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C

W. J. SUMNER.

WOOD POLISHING MACHINE.

APPLICATION FILED NOV. 17, 1914.

1,150,155.

Patented Aug. 17, 1915.

3 SHEETS—SHEET 2.

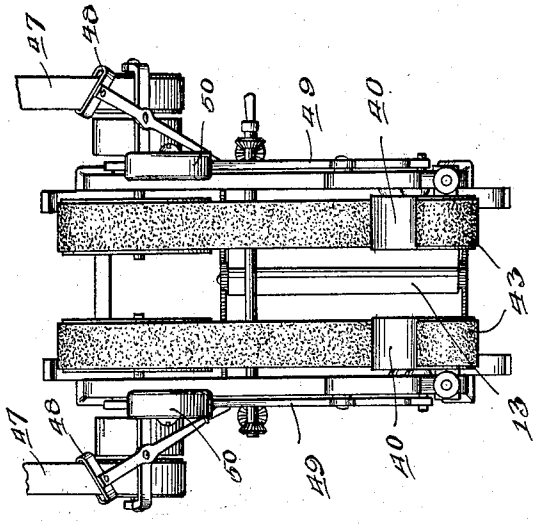


Fig. 4.

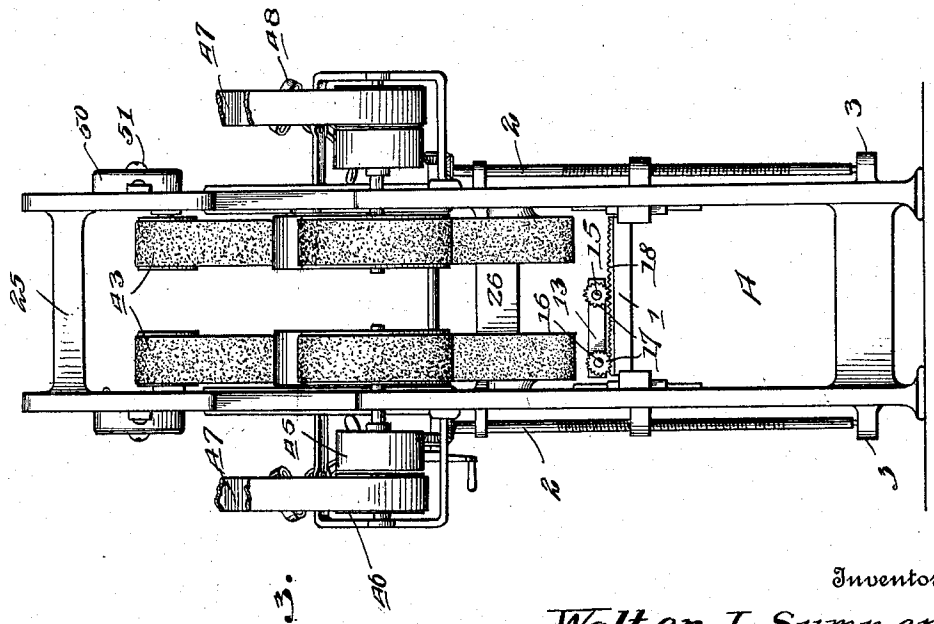


Fig. 3.

Witnesses

Frederick L. Fox.

P. M. Smith.

Inventor

Walter J. Sumner.

By Victor J. Evans

Attorney

W. J. SUMNER.

WOOD POLISHING MACHINE.

APPLICATION FILED NOV. 17, 1914.

1,150,155.

Patented Aug. 17, 1915.

3 SHEETS—SHEET 3.

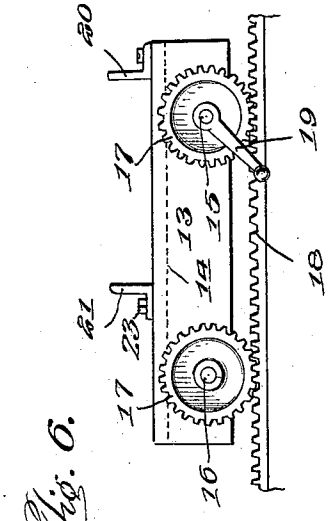


Fig. 6.

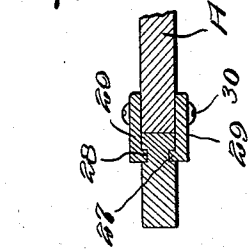


Fig. 7.

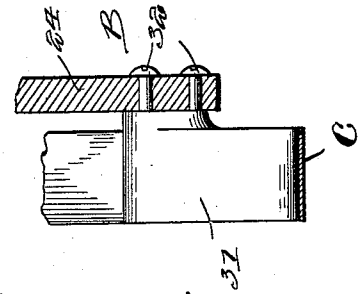


Fig. 9.

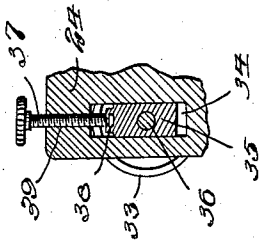


Fig. 8.

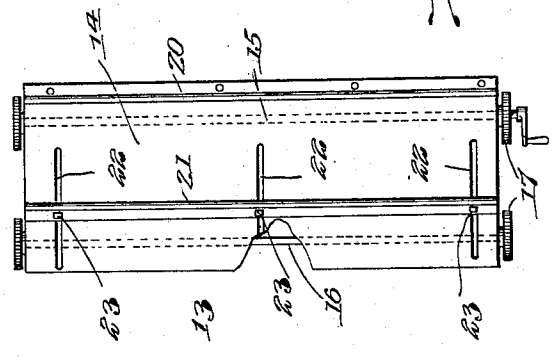


Fig. 5.

Witnesses

Frederick L. Ley.

P. M. Smith.

Inventor

Walter J. Sumner.

By Victor J. Evans.

Attorney

UNITED STATES PATENT OFFICE.

WALTER J. SUMNER, OF MINNEAPOLIS, MINNESOTA.

WOOD-POLISHING MACHINE.

1,150,155. Specification of Letters Patent. Patented Aug. 17, 1915.

Application filed November 17, 1914. Serial No. 872,632.

To all whom it may concern:

Be it known that I, WALTER J. SUMNER, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented new and useful Improvements in Wood-Polishing Machines, of which the following is a specification.

This invention relates to wood polishing machines, the object of the invention being to produce a machine of the character referred to which is particularly designed for polishing or finishing work or stock having an irregular or undulatory surface, the machine of this invention embodying a plurality of endless polishing belts which run over shaper blocks any number of which may be interchangeably used in the machine thus adapting a plurality of shaper blocks to be employed for different kinds of work depending on the surface to be polished.

A further object of the invention is to provide in a machine of the class referred to a work holder which is universally mounted so that it may be moved laterally or in a fore and aft direction and brought to any point whatever with respect to the polishing belts, means being provided for vertically adjusting the work holder and also for feeding said holder and the work carried thereby in relation to the polishing belts.

With the above and other objects in view, the invention consists in the novel construction, combination and arrangement of parts, as herein described, illustrated and claimed.

In the accompanying drawings:—Figure 1 is a side elevation of a polishing machine embodying the present invention. Fig. 2 is a front elevation of the same. Fig. 3 is a rear elevation thereof. Fig. 4 is a top plan view thereof. Fig. 5 is an enlarged plan view of the work holder. Fig. 6 is a front elevation of the work holder and a portion of the supporting carriage therefor, taken on a still larger scale. Fig. 7 is a detail horizontal section on the line 7—7 of Fig. 1. Fig. 8 is a fragmentary vertical section showing one of the belt tighteners. Fig. 9 is a fragmentary sectional view showing one of the shaper blocks and portions of one of the polishing belts and head frame.

Referring to the drawings A generally designates the machine frame which may be of any desired size and shape to support the operative parts hereinafter particularly described. At a suitable elevation, oppositely arranged parallel track rails 1 are arranged just within the side members of the frame A and rendered vertically adjustable by means of a pair of threaded adjusting shafts 2 the lower ends of which are stepped in bearings 3 on the frame A and the upper ends of which are also journaled in bearings 4 and provided at their upper extremities with miter gears 5 which mesh with other miter gears 6 on a horizontal shaft 7 provided at one end with an operating crank handle 9 enabling both of the adjusting screws or shafts 2 to be simultaneously and equally turned for the purpose of raising and lowering the track rails 1. These track rails are steadied by means of guides 10 on the frame A as shown in Fig. 2.

Mounted upon the track rails 1 is a carriage 11 the same being provided with wheels or rollers 12 adapted to travel along the track rails 1, said track rails extending in a fore and aft direction or from the front to the rear of the machine. Mounted upon the carriage 11 is a work holder 13 which is illustrated in detail in Figs. 5 and 6, said work holder comprising a suitable marginal frame to which the reference numeral 13 is applied, and a table 14 supported by said frame. Adjacent to the opposite sides of the frame of the work holder, the latter is provided with shafts 15 and 16 parallel to each other, each of which is provided adjacent to its opposite extremities with spur gears 17 which engage the teeth of parallel racks 18 on the upper surface of the carriage 11, the racks 18 extending in a direction perpendicular or at right angles to the movement of the carriage 11 on the track rails 1. The shaft 15 is provided at one extremity with a crank handle 19 enabling one of said shafts to be revolved for the purpose of feeding the work holder 13 transversely of the machine and across the carriage 11.

On its upper side the work holder is provided with clamps 20 and 21 one of which is made adjustable as shown in Fig. 5 by providing the table 14 with slots 22 extending transversely thereof and receiving clamping bolts 23. By loosening these bolts, the clamp 21 may be moved toward and away from the clamp 20 so as to accommodate work of different sizes and enable the same to be securely fastened to the work

holder. The work holder may be readily lifted off the carriage 11 and larger work may be placed directly on the carriage 11.

B generally designates a polishing head frame comprising the vertical side members 24, and top and bottom cross bars 25 and 26, respectively. This head frame is movable vertically and guided in such movement by providing the head frame with vertical grooves 27 as best illustrated in Figs. 1 and 7, the grooves 27 being adapted to receive vertical ribs 28 on a pair of guides 29 which are shown as fastened to the frame A by means of screws or their equivalent.

To the lower end and inner face of each of the side bars 24 of the head frame B is secured a shaper block 31 having a rounded lower end as shown in Fig. 1. This block, as shown in Fig. 9, is detachably secured to the adjacent side bar 24 of the head frame B by means of fasteners 32 so that interchangeable shaper blocks of different sizes and shapes may be employed according to the nature of the surface being operated upon. At the upper end of the head frame B are pulleys 33 which as shown in Figs. 1 and 8 are adjustable for the purpose of tightening the respective endless polishing belt C. To that end the adjacent side bar 24 is provided with a vertical slot 34 in which is a slidable bearing 35 for the shaft 36 of the said pulley 33. An adjusting screw 37 has a swiveled connection at 38 with the slidable bearing 35 and a threaded connection at 39 with the frame bar 24. Therefore, by turning the screw 37, the pulley 33 may be adjusted for the purpose of taking up slack in the endless polishing belt C.

Each of the endless polishing belts C, two of such belts being shown, after passing around the pulley 33 and the shaper block 31, passes over pulleys 40 and 41 journaled on stud shafts 42 supported by the machine frame A. Each belt then passes around one of a pair of driving pulleys 43 on driving shafts 44 arranged at opposite sides of the machine and each equipped with a driving pulley 45 and an idler pulley 46 either of which is adapted to receive an independent driving belt 47. In connection with each belt 47 I employ a belt shifter 48 so that either one of the endless polishing belts may be thrown into or out of operation. They may be driven individually or collectively according to the nature of the work performed. The head frame B is counterbalanced by the arms or levers 49 provided with weights 50 adjustable thereon by means of set screws 51, said arms or levers being fulcrumed at 52 on the machine frame and provided with forked extremities 53 which are associated with pins 54 projecting from the upper portion of the head frame B.

55 designates a pair of handles for raising and lowering the head frame B to bring the polishing belts against the work with any desired pressure, said handles also enabling the operator to lift the polishing belts quickly off the work before and after the polishing operation.

As shown in Fig. 2 the machine hereinabove described may be made quite narrow and compact, the work holder 13 being movable beneath the polishing belts and from one to the other as may be required. In one and the same machine, a plurality of shaper blocks 31 may be used simultaneously thereby enabling a portion of the work to be performed by one belt and another portion by another belt. By reason of the construction set forth shaper blocks of different sizes and shapes may be used according to the irregular or undulatory character of the surface being polished. In case of extra large work, the work holder 13 may be lifted off the carriage 11 and the work or stock may be placed directly on said carriage. The supporting track rails 1 may be adjusted up and down to accommodate work of any size or thickness.

What I claim is:—

1. In a polishing machine, the combination of a machine frame, a horizontally movable work holder, vertically adjustable supporting and guiding means for said work holder, a vertically movable polishing head frame located wholly above said table, a handle rigidly fastened to said head frame for manually sliding the latter up and down, guides on the machine frame for said head frame, a plurality of endless polishing belts, pulleys on said head frame around which said belts pass, driving pulleys for said belts on the machine frame, and counterbalancing means for said head frame.

2. In a polishing machine, the combination of a machine frame, a horizontally movable work holder, vertically adjustable supporting and guiding means for said work holder, a vertically movable polishing head frame, guides on the machine frame for said head frame located wholly above said table, a handle rigidly fastened to said head frame for manually sliding the latter up and down, a plurality of endless polishing belts, pulleys on said head frame around which said belts pass, driving pulleys for said belts on the machine frame means for throwing one or more of said belts into and out of operation, and counterbalancing means for said head frame.

3. In a polishing machine, the combination of a machine frame, a horizontally movable work holder, vertically adjustable supporting and guiding means for said work holder, a vertically movable polishing head frame, guides on the machine frame for said head frame located wholly above said table, a handle rigidly fastened to said head frame for manually sliding the latter up and down,

a plurality of endless polishing belts, pulleys on said head frame around which said belts pass, driving pulleys for said belts on the machine frame, tightening means for said belts on the head frame, and counterbalancing means for said head frame.

4. In a polishing machine, the combination of a machine frame, a horizontally movable work holder, vertically adjustable supporting and guiding means for said work holder, a vertically movable polishing head frame, located wholly above said table, a handle rigidly fastened to said head frame for manually sliding the latter up and down, guides on the machine frame for said head frame, a plurality of endless polishing belts, pulleys and shaper blocks on said head frame around which said belts pass, driving pulleys for said belts on the machine frame, and counterbalancing means for said head frame.

5. In a polishing machine, the combination of a machine frame, a horizontally movable carriage, a horizontally movable work holder shiftable at a right angle to the movement of the carriage, vertically adjustable supporting and guiding means for said work holder, rack and pinion mechanism for shifting said work holder, a vertically movable polishing head frame located wholly above said table, a handle rigidly fastened to said head frame for manually sliding the latter up and down, guides on the machine frame for said head frame, a plurality of endless polishing belts, pulleys on said head frame around which said belts pass, and driving pulleys for said belts on the machine frame.

6. In a polishing machine, the combination of a machine frame, a horizontally movable carriage, a horizontally movable work holder supported by said carriage and shiftable in a plane perpendicular to the carriage, vertically adjustable supporting and guiding means for said carriage and work holder, a vertically movable polishing head frame located wholly above said table, a handle rigidly fastened to said head frame for manually sliding the latter up and down, guides on the machine frame for said head frame, a plurality of endless polishing belts, pulleys on said head frame around which said belts pass, driving pulleys for said belts on the machine frame, and counterbalancing means for said head frame.

In testimony whereof I affix my signature in presence of two witnesses.

WALTER J. SUMNER.

Witnesses:

FRED E. BADNEY,

G. E. SANDEEN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents. Washington, D. C."