(No Model.)

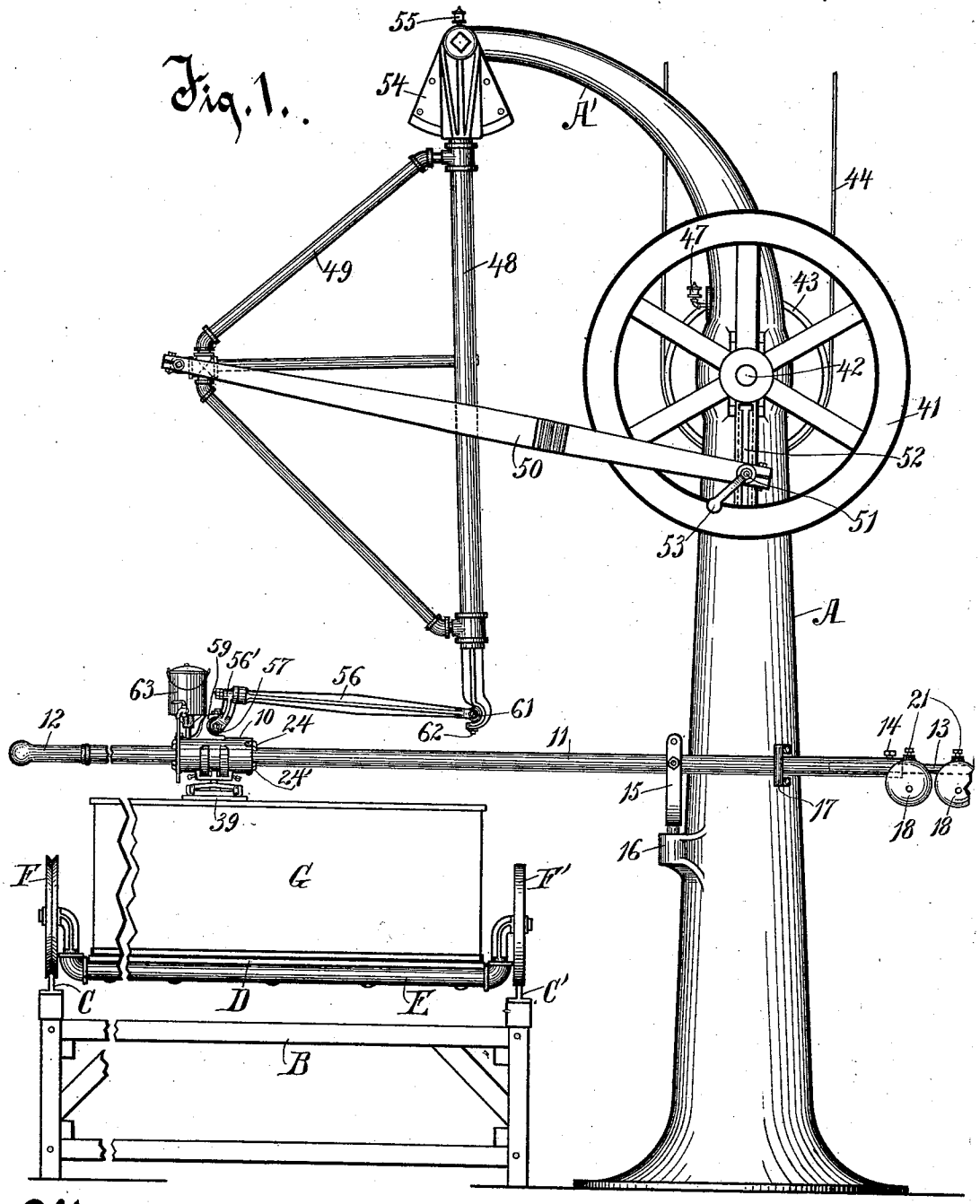
2 Sheets—Sheet 1.

S. F. MOORE.

RUBBING OR POLISHING MACHINE.

No. 507,280. Patented Oct. 24, 1893.

Fig. 1.



Witnesses.

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(No Model.)

2 Sheets—Sheet 2.

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Fig. 2.

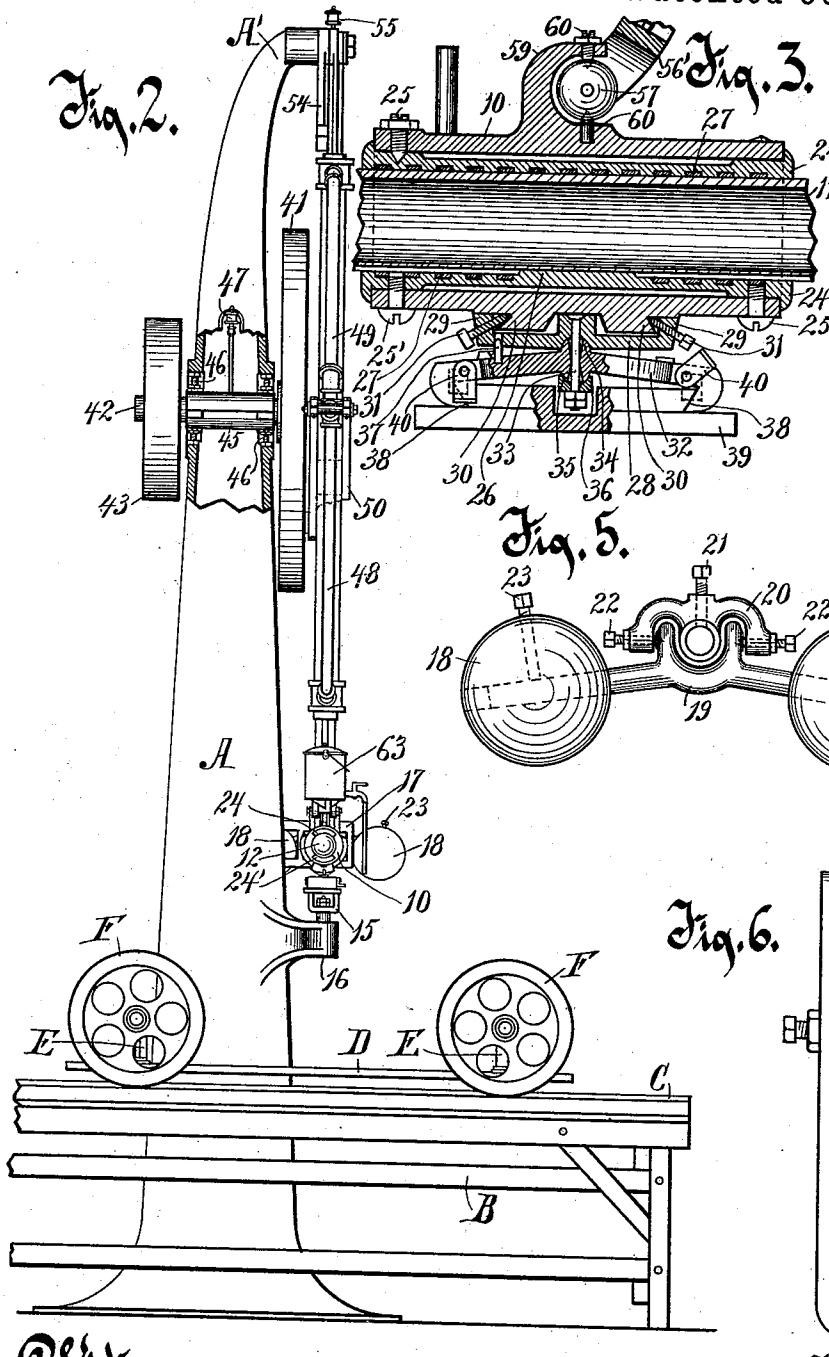


Fig. 3.

Fig. 4.

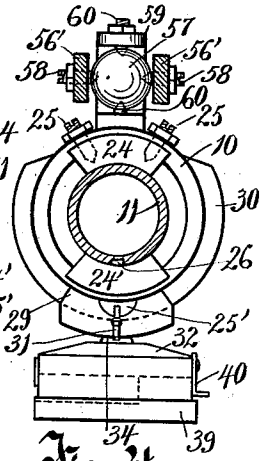
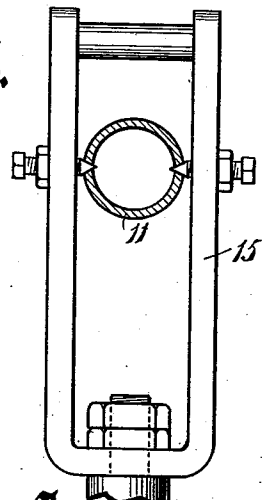


Fig. 5.

Fig. 6.



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UNITED STATES PATENT OFFICE.

STEPHEN F. MOORE, OF MINNEAPOLIS, MINNESOTA, ASSIGNOR TO THE MOORE CARVING MACHINE COMPANY, OF SAME PLACE.

RUBBING OR POLISHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 507,280, dated October 24, 1893.

Application filed March 6, 1893. Serial No. 464,645. (No model.)

To all whom it may concern:

Be it known that I, STEPHEN F. MOORE, of Minneapolis, in the county of Hennepin and State of Minnesota, have invented a new and useful Improvement in Rubbing or Polishing Machines, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

The object of this invention, is to provide a machine for sand papering, rubbing or polishing the surface of articles manufactured of wood or other material capable of taking a polish, which machine is strong and enduring in all its parts, is simple in its construction, is capable of fine adjustment, is easy of manipulation, and is adapted to polish flat, beveled or rounded surfaces, both on the top and the sides of the article being polished.

The invention consists in the machine and its parts or their equivalents, substantially as hereinafter described and claimed.

In the drawings, Figure 1, is a side elevation of the complete machine, parts being broken away for convenience of illustration. Fig. 2, is a front elevation of the machine taken at a right angle to Fig. 1, parts being broken away and omitted for convenience of illustration, and other parts being broken away to exhibit interior construction. Fig. 3, is a view mostly in central, longitudinal section, of the buffer or polisher carriage and a fragment of the bar or guide on which it travels, with a fragment of the mechanism by which the carriage is operated, and with the buffer or polisher attached thereto. Fig. 4, is an end view of the mechanism complete, that is shown mostly in section in Fig. 3. Fig. 5, is a detail of a weight or counterpoise and its supporting and adjusting devices. Fig 6, is a detail of the guide-supporting yoke or arms.

In the drawings, A is a standard terminating at its upper extremity in an overhanging laterally deflected arm A′, on which standard most of the operative mechanism is supported. This standard serves the purpose of and is a permanent frame or support for much of the operative mechanism, and the form and construction of this standard or frame is not necessarily essential to the invention, though the form and construction shown are deemed advisable.

B is a suitable frame provided with rails C C′, forming a track on which a table or car travels. The rails C and C′ are formed of T-iron, the rails C being rounded or reversely V-shaped on its upper surface and the rail C′ being flat. The traversing table or car D is provided with cranked or depending axles E on which the car wheels F F′ are mounted. The wheels F at one side of the car, are grooved and travel on and are guided by the rail C. The wheels F′ have flat peripheries and travel on the flat-topped rail C′ being thereby adapted to yield slightly if need be, to any guided movement of the car produced by the travel of the grooved wheels F on the guiding rail C. The axles E are cranked so as to bring the table or bed of the car down nearly to the horizontal plane of the surface of the rails, whereby the transverse strain of the buffer or polisher on the article being polished while supported on the car, is exerted more directly against the fixed support, and is thereby best resisted. A dressing case or bureau is indicated at G being an article among the many which this machine is adapted to polish. The rails C C′ are laid, and the car D is adapted to travel laterally, or substantially at a right angle to the reciprocating movement of the buffer or polisher carriage hereinafter described.

A buffer or polisher carriage 10 is mounted and reciprocates on the guide bar 11. The guide bar 11 consists preferably of a hollow cylindrical steel tube, provided with a fixed wood termination 12 forming a handle to be grasped by the operator and an inserted telescoping rod 13 forming its other extremity and secured adjustably in place by the set screw 14. This guide bar 11 is pivoted medially, so as to be capable of being tilted or oscillated vertically limitedly in an upturned yoke 15 swiveled on a ledge or projection 16 integral with the standard A. The vertical oscillating movement of the guide bar is limited by the stop 17 around the guide bar, the stop being fixed on the standard A. The carriage 10 and the excess in weight of the guide bar in front of the yoke 15, are counterbal-

anced by weights 18 located adjustably on the rear end of the guide bar and conveniently on the extension rod 13. For securing a nice adjustment of these weights 18 they are preferably formed in pairs secured to the extremities of a cross head 19, which cross head is suspended pivotally from a yoke 20 mounted adjustably on the rod 13, and held thereto by the set screw 21. The cross head 19 is suspended on the yoke 20 by means of the pivoting screws 22 turning through the yoke into conical recesses therefor in the cross head. The weights 18 are severally secured to the cross heads in pairs by the set screws 23.

The carriage 10 is constructed preferably as a cylindrical sleeve about the guide bar 11, the sleeve being provided with interior longitudinal brasses 24 24′ at the top and bottom respectively, secured in place adjustably by set screws 25 25′. A feather 26 (Figs. 3 and 4) enters a longitudinal groove therefor in the under side of the guide bar 11 and prevents rotary movement of the carriage on the guide bar. The brasses are provided with pockets containing graphite 27 for lubrication. This carriage 10 which reciprocates on the bar 11 carries the buffer or polisher thereon. For this purpose an adjustable block 28 having its extremities turned inwardly radially, is fitted to bear at the inner surfaces of these inwardly turned ends against the surface of the sleeve of the carriage 10 and to be adjustable circumferentially on the sleeve. The radially inwardly turned ends of this block 28 are extended or turned inwardly horizontally forming flanges 29 which pass under the longitudinally projecting or overhanging edges of segmental or partially circumferential ribs 30 on the sleeve of the carriage. The block 28 is locked in position on the sleeve of the carriage by the set screws 31. By this construction the polishing block may be secured to the carriage in such position as to polish the top surface of an article on the car D, or at such other angle radially on the carriage as to adapt it to polish the side of the article or a beveled or curved part thereof.

A tiltable head-block 32 is attached to the adjustable block 28 centrally by a bolt 33. This head-block 32 is provided centrally with a rounded projection or boss 34 which enters the correspondingly concave recess therefor in the block 28 forming a curved or ball bearing, and an opposite and corresponding boss 35 on the under surface of the block 32 fits in a corresponding concave recess in a washer 36 about the bolt 33 inside of the nut turning thereon, which latter boss and concave washer also form a curved or ball bearing for the movement of the block 32. The bolt 33 is supported in the block 28 and passes transversely through the block 32 in the axis of the bosses 34 and 35. The aperture in the block 32 through which this bolt passes is enlarged from the medial plane of the block outwardly in both directions toward its surfaces, thereby providing for the limited tilting of the block on the bolt. The block 32 diverges (from the block 28) from the bosses outwardly. This permits the tilting of the block 32 as also provided for by the clearance of the bolt 33 in the block 32. This provision for the tilting of the block 32 permits of the adjustment of the polisher to uneven or billowy surfaces on the article being polished. A pin 37 fixed in the block 32 which enters loosely an aperture therefor in the block 28 prevents the rotation of the block 32. The longitudinal extremities of the block 32 are turned downwardly and inwardly forming transverse ways or bearings 38 adapted to receive projecting parts of the sand-paper, or polisher block 39. The block 39 being removably inserted in the block 32 is secured temporarily therein by the buttons or latches 40 pivoted to the block 32, which fall by gravity in front of the edge of that portion of the block 39 that is received on and supported by the ways 38. This block 39 may be of material adapted to serve as a buffer or polisher but it is intended that its under surface shall be covered with sand paper, leather or other suitable material for abrading, polishing or buffing as desired.

For reciprocating the buffer or polisher a fly wheel 41 is fixed on the shaft 42 having a band wheel 43 on which a belt 44 runs from the power supply. The shaft 42 has its bearings in a box 45, the parts of which box are secured and made adjustable in the standard A transversely thereof in an aperture therefor by the bearing screws 46. An oil cup 47 provided with a suitable tube therefor, supplies oil to the box 45 for the lubrication of the shaft 42. A vibrating arm 48 pivoted to and depending from the overhanging arm A′ of the standard A, is provided medially with a truss 49, and is connected operatively to the fly wheel 41 by a furcate or slotted pitman 40 which straddles and furnishes a bearing for the vibrating arm and is pivoted at its front extremity to the truss 49 medially, and at its rear extremity is connected adjustably to a radial spoke of the fly wheel 41 by a holding bolt 51 serving as a wrist pin on the fly wheel. The head of the bolt 51 enters and is adjustable radially of the wheel in a channel 52 therefor in the spoke of the wheel, the bolt being provided with a nut on its outer end having a wrench handle 53 whereby the parts are clamped together. Washers on the bolt 51 are interposed between the pitman and spoke of the wheel and the nut 53 respectively, to provide for the movement of the pitman on the wrist. A segmental plate 54 rigid on the arm A′ receives the bearing of a flattened portion of the vibrating arm 48 and steadies its motion. An oil cup 55 supplies oil to the connection between the arm A′ and the vibrating arm 48 for the lubrication thereof. A rod consisting of two members 56, 56′ connects the free extremity of the vibrating arm 48 to the carriage 10. The

member 56′ is furcate and is medially swiveled on the member 56 at an angle thereto. The member 56′ is pivoted in a ball 57 (Figs. 3 and 4) by means of the laterally disposed set screws 58, and the ball 57 is pivoted in a boss or lug 59 integral with the sleeve 10, by means of vertically arranged centers 60, whereby a universal joint is formed. The rear extremity of the member 56 is similarly connected to the free extremity of the vibrating arm 48 by a universal joint, the furcate ends of the member 56 being pivoted to an interposed ball by horizontally arranged screw threaded centering pins 61, and the ball being pivoted in the arm 48 by vertically arranged centering pins 62.

A small tank 63 provided with a faucet and a trip tube is adapted to supply water to the surface being polished or rubbed down, when desired.

From the foregoing description it will be understood, that a polisher being reciprocated by the mechanism described therefor, will reciprocally traverse the surface of an article supported on the table or car, and that the car being moved to right or left will bring every portion of the surface of the article beneath the polisher, so that its entire upper surface or sides may be polished completely by the machine; and that the operative parts of the mechanism are so supported and balanced that but little effort is required on the part of the operator to control and properly manipulate the polisher for these purposes.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a machine of the character described, the combination, of a standard, or frame a guide bar pivoted on the standard and capable of being swung vertically, a driving shaft mounted in the standard, a vibrating arm pivoted on the standard, a pitman connecting the vibrating arm to a crank on the driving shaft, a reciprocating polisher carriage on the guide bar and a rod connecting the carriage to the free extremity of the vibrating arm, substantially as described.

2. In a machine of the character described the combination of a standard, or frame a driving shaft mounted in the standard, a fly wheel fixed on the shaft, a vibrating arm pivoted on and suspended from the standard, and a pitman connecting the vibrating arm medially to a wrist pin on the fly wheel, and a reciprocating polisher carriage connected directly to the extremity of the vibrating arm substantially as described.

3. In a machine of the character described, the combination of a standard having an overhanging and laterally deflected arm, a shaft mounted in and transversely of the standard, a fly wheel on the shaft at one side of the standard, a vibrating arm pivoted on the deflected extremity of the standard and pendent therefrom in the vertical plane of the fly wheel, and a pitman connecting the vibrating arm medially to the wrist pin of the fly wheel, substantially as described.

4. In a machine of the character described, the combination of a standard having an overhanging and laterally deflected arm, a shaft mounted in and transversely of the standard, a fly wheel on the shaft at one side of the standard, a vibrating arm pivoted on the deflected extremity of the standard and pendent therefrom, a vertically disposed bearing plate 54 rigid to the standard and adapted to bear against and guide the vibrating arm, and a pitman connecting the vibrating arm to the wrist pin of the fly wheel,—substantially as described.

5. In a machine of the character described, the combination of a standard, a fly wheel journaled on the standard, a vibrating arm pivoted on and pendent from the standard, a medial truss on the vibrating arm projecting laterally therefrom on the side opposite to the fly wheel, and a pitman connecting a wrist pin on the fly wheel to a distant part of the truss, substantially as described.

6. In a polishing machine the combination of a vibrating arm, a polisher carriage and a rod connecting the carriage to the arm consisting of two members swiveled together, as described.

7. In a polishing machine the combination of a vibrating arm, a polisher carriage and a rod connecting the carriage to the arm consisting of two members swiveled together, one of which members is arranged at an angle to the other member, substantially as described.

8. In a polishing machine, the combination of a vibrating arm, a polisher carriage, a connecting rod consisting of two members swiveled together, and balls or gimbals interposed between the ends of the rod and the vibrating arm and the polisher carriage respectively, forming universal joints between them, substantially as described.

9. In a polishing machine, the combination of a cylindrical guide bar having a longitudinal groove therein, and a polisher carriage reciprocable thereon, the carriage consisting chiefly of a sleeve and bearing brasses adjustable therein, one of the brasses being provided with a feather which enters the groove in the guide bar and prevents rotation of the carriage thereon, substantially as described.

10. In a polishing machine the combination of a substantially cylindrical polisher carriage reciprocable on a guide bar, an adjustable block to which a polisher block is attached, and means substantially as described for adjusting the adjustable block circumferentially on the carriage.

11. In a polishing machine, the combination of a reciprocable polisher carriage, a polisher block secured detachably to a head-block, said head-block secured tiltably to an adjustable

block, which last block is secured adjustably to the carriage, substantially as described.

12. In a polishing machine, the combination of a reciprocable polisher carriage, a polisher head-block mounted and laterally tiltable on the carriage, and a polisher-block secured detachably to the head-block substantially as described.

13. In a polishing machine the combination of a reciprocable polisher carriage, an adjustable block on the carriage, a polisher head-block provided with curved bearings and a bolt holding the polisher head-block to the adjustable block tiltably, substantially as described.

14. In a polishing machine, the combination of a standard, a yoke swiveled on the standard, a guide bar pivoted medially in the yoke, a polisher carriage reciprocable on an arm of the guide bar and an adjustable counterpoise on the other arm of the bar, substantially as described.

15. In a polishing machine, the combination of a standard, a yoke swiveled on the standard, a guide bar pivoted medially on the standard, a polisher carriage reciprocable on one arm of the guide bar, a yoke adjustable on the other arm of the guide bar, and weights pivoted and pendent on the yoke in pairs opposite each other laterally, substantially as described.

16. In a polishing machine the combination of a standard, a guide bar pivoted medially on the standard, and a polisher carriage reciprocable on one arm of the guide bar, a counterpoise on the other arm of the bar, and a stop fixed on the standard adapted to engage and limit the oscillation of the bar, substantially as described.

17. In a polishing machine, the combination with a polisher carriage reciprocable horizontally, of a car adapted to support an article being polished, which car includes wheels traveling on a track at a right angle to the motion of the reciprocable polisher carriage, and cranked axles whereby the floor of the car is let down between the wheels so as to bring the transverse rubbing strain of the polisher on the article being polished down more nearly to the plane of the car track, substantially as described.

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

STEPHEN F. MOORE.

Witnesses:
CHAS. L. TYLER,
RICHARD T. ALBUY.