E. V. MORREAU.

SANDPAPERING MACHINE.

APPLICATION FILED AUG. 26, 1914.

1,253,080.

Patented Jan. 8, 1918.

2 SHEETS—SHEET 1.

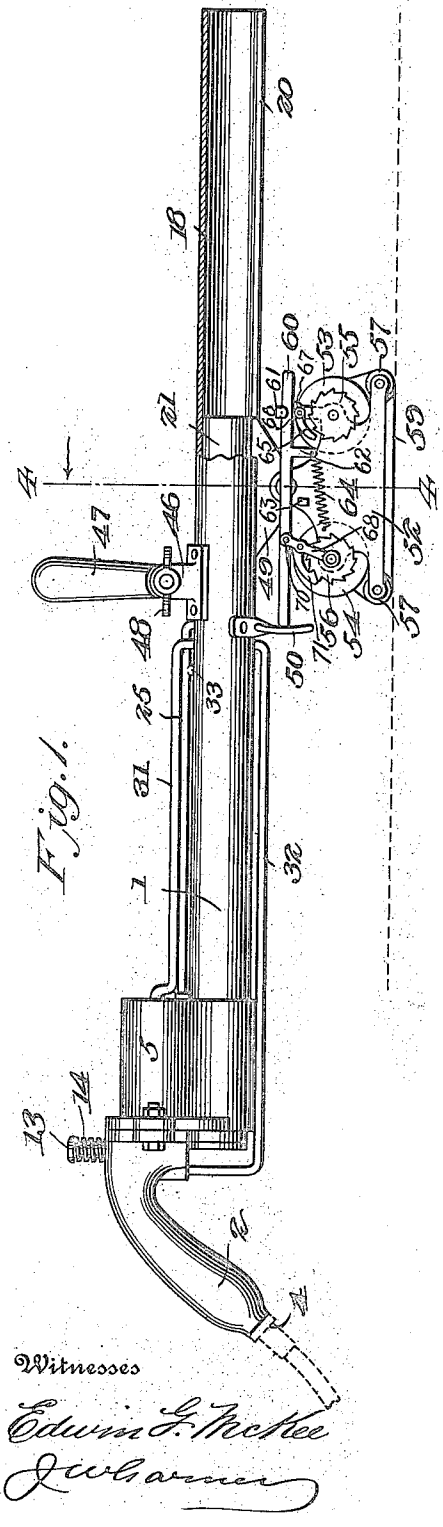


Fig. 1.

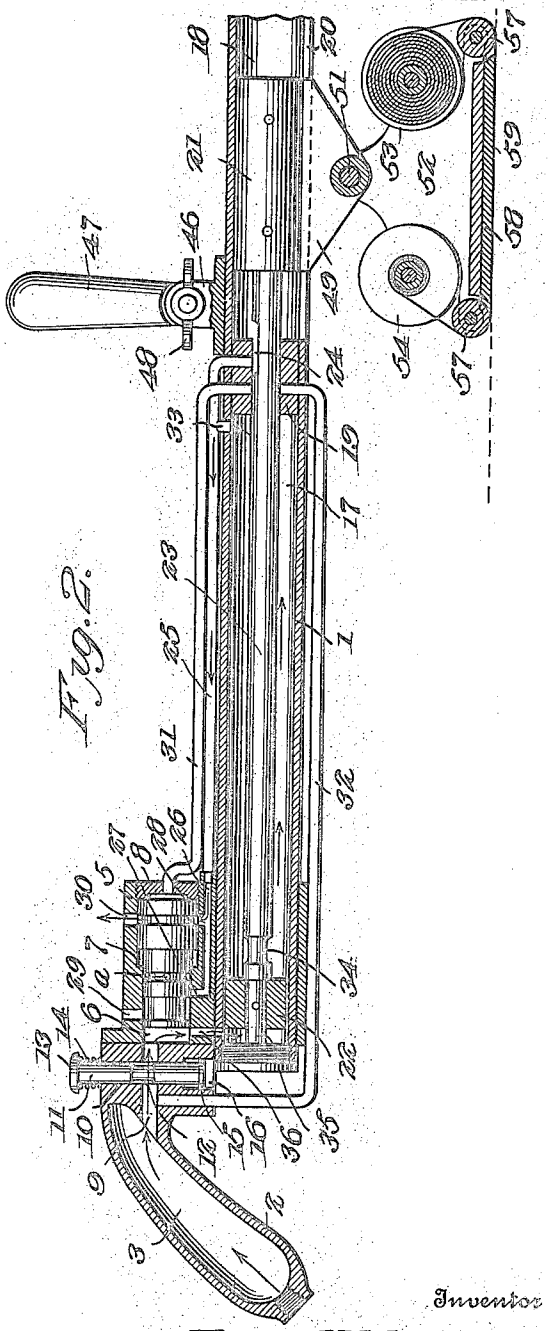


Fig. 2.

Witnesses

Edwin L. McKee

J. W. Garner

Inventor

Emile V. Morreau

By Victor J. Evans

Attorney

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2 SHEETS—SHEET 2.

Fig. 3.

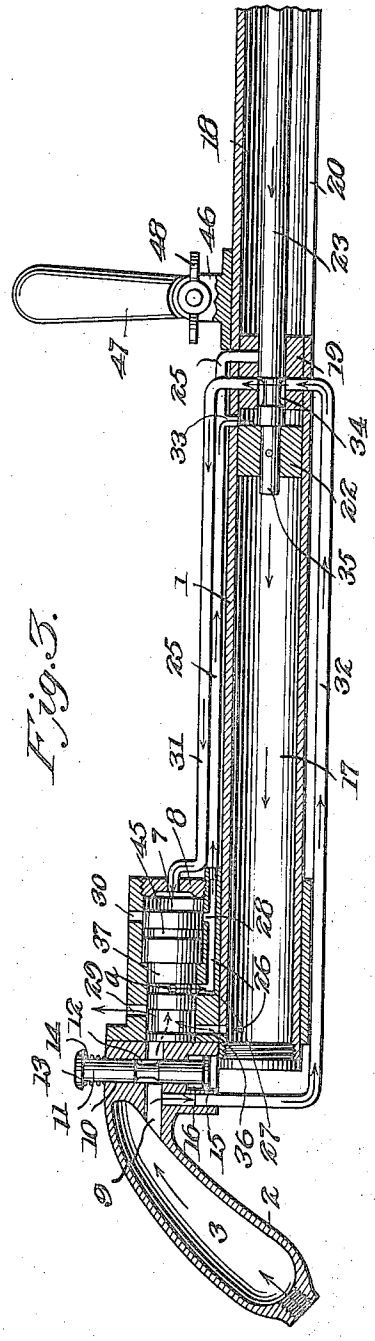


Fig. 5.

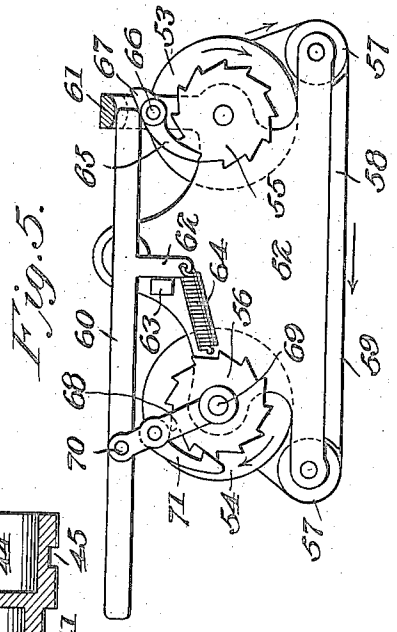


Fig. 6.

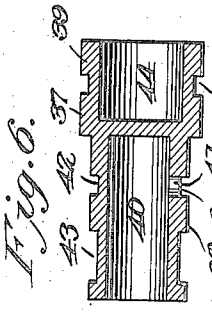
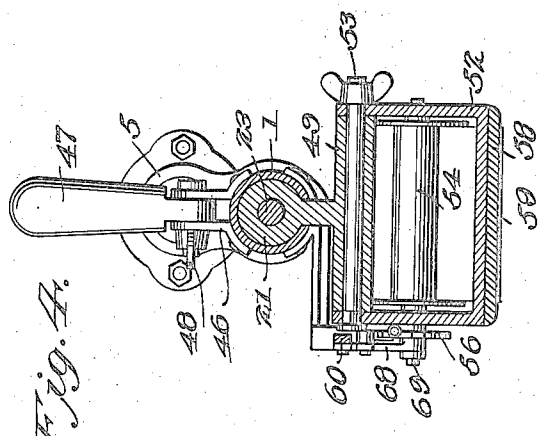


Fig. 4.



Witnesses

Edwin G. McKee

J. W. Garner

Inventor

Emile V. Morreau

By Victor J. Evans

Attorney

UNITED STATES PATENT OFFICE.

EMILE VICTOR MORREAU, OF MARSHALL, TEXAS.

SANDPAPERING-MACHINE.

1,253,080. Specification of Letters Patent. Patented Jan. 8, 1918.

Application filed August 26, 1914. Serial No. 858,657.

To all whom it may concern:

Be it known that I, EMILE V. MORREAU, a citizen of the United States, residing at Marshall, in the county of Harrison and State of Texas, have invented new and useful Improvements in Sandpapering-Machines, of which the following is a specification.

This invention is an improved compressed air operated sand papering or rubbing machine adapted for use for finishing or rubbing surfaces with sand paper, emery cloth or other like abrasive material, the object of the invention being to provide an improved machine of this kind which is automatic in operation and which can be readily controlled.

The invention consists in the construction, combination and arrangement of devices hereinafter described and claimed.

In the accompanying drawings:—

Figure 1 is a side elevation, partly in section, of a compressed air operated sand papering machine constructed in accordance with my invention.

Fig. 2 is a longitudinal sectional view of the same on a larger scale.

Fig. 3 is a similar view of the same showing the piston at full stroke.

Fig. 4 is a transverse sectional view of the same on the plane indicated by the line 4—4 of Fig. 1.

Fig. 5 is a side elevation of the carriage.

Fig. 6 is a detail sectional view of the reversing valve.

In accordance with my invention I provide a cylinder 1 of suitable length and diameter, which is provided at one end with a handle 2. The handle is formed with a duct 3 and has an opening at its outer end for the attachment of an air hose 4 for supplying compressed air into the machine. A valve chest 5 is on one side of the cylinder, at the end to which the handle is attached, said valve chest having a cylindrical chamber 6 and also having a larger cylindrical chamber 7. A cap 8 is screwed in the outer end of the chamber 7. A duct 9 connects the duct 3 with the chamber 6 and is intersected by a bore 10 in which a cylindrical controlling valve 11 operates, said valve having an annular groove 12 for movement into and out of registry with the duct 9.

At the upper end of said valve is a button 13. A spring 14 normally moves the valve to closed position, the extent of movement of the valve being fixed by a flange 15 in the lower end of the valve and which operates in a chamber 16.

The cylinder comprises an inner chamber 17 and an outer chamber 18 which are divided by a fixed plug 19. The chamber 18 has a longitudinal slot 20 in its lower side. A plunger 21 operates in the chamber 18. A piston 22 operates in the chamber 17 and is connected to the plunger by a rod 23 which passes through a bore in the center of the fixed plug 19 and has an exhaust notch 24 in one side which when the piston is at in stroke registers with the chamber 18 and also with a tube 25 which is connected to a duct 26 in the lower side of the valve chest 5. Said duct communicates with the chamber 6 through the port 27 and also communicates with the chamber 27 through a port 28. In the upper side of the chamber 6 is an exhaust notch 29 and in the upper side of the chamber 7 is an exhaust port 30.

A pipe 31 leads from the outer end of the valve chest to a point at one side of the bore in the plug 19. A pipe 32 leads from the other side of said bore to the duct 9 at a point between the controlling valve 11 and the duct 3. The pipe 25 communicates with the cylinder 17, at a point near the plug 19, as at 33. The piston rod 23 has an annular groove 34 near the piston 22 and which establishes communication between the pipes 31—32 when the piston is at out stroke as shown in Fig. 3. The inner end of the piston rod projects slightly from the inner side of the piston as at 35. A port 36 establishes communication between the inner end of the valve chamber 6 and the inner end of the cylinder chamber 17.

A reversing valve 37 is arranged in the valve chest 5 and has a small cylindrical portion 38 which operates in the chamber 6 and a larger cylindrical portion 39 which operates in the chamber 7. The portion 38 has a chamber 40 open at the inner end and provided with a port 41 which communicates

with an annular groove 42. Said portion 38 also has a broader annular groove 43. When the piston is at in stroke the port 36 is open and port 27 is closed. The valve end 39 has a chamber 44, open at its outer end and also has an annular groove 45. When the piston is at in stroke this groove 45 opens the ports 30—28. When the piston is at out stroke the valve closes the port 36 and the ports 28—30 and opens the valve 27 and establishes communication between the cylinder chamber 17 through port 36, groove 43 and port 29. Hence when the controlling valve is depressed to cause its groove 12 to register with the duct 9 the piston is caused by the compressed air to reciprocate in the cylinder chamber 17 and to impart corresponding movement to the plunger 21 in the chamber 18.

A boss 46 is secured on the upper side of the cylinder at an intermediate point and a handle 47 is pivotally connected to the boss by means of a thumb screw 48. This thumb screw enables the handle to be arranged at any desired angle with respect to the cylinder and to be adjusted in such position.

The plunger or traveler 21 has an arm 49 which projects through the slot 20. On the under side of the cylinder at a point near the boss is a curved depending stop 50 which is concentric with an opening 51 in the arm 49.

A carriage 52 is pivotally connected to the plunger or traveler arm 49 by a clamping bolt 57 which passes through the opening 51, and also through openings in the side walls of said carriage. This clamping bolt enables the carriage to be adjusted and arranged either parallel with the cylinder or at any desired angle.

The carriage is provided near its ends with drums 53—54 which are respectively provided with ratchet wheels 55—56. At the ends of the bottom of the carriage are direction rollers 57 and on the bottom of the carriage is a cushion 58 of rubber or other suitable material. A rubbing or finishing element such as a longitudinal strip of emery cloth 59 passes on the outer face of the cushion 58 and has its ends attached to the drums so that while it is being wound up by one drum it is being unwound from the other end, hence the emery cloth may by step by step movement be moved longitudinally to present a new surface to the work when the machine is in use.

A rod 60 is mounted for reciprocating movement in a guide 61 on one side of the carriage. This rod has an arm 62 and the carriage has a stop stud 63 for engaging said arm and limiting the movement of the rod in one direction. A spring 64 which is attached to said arm and to the carriage, moves the said rod in such direction. A pawl 65 is pivotally mounted on the carriage as at 66 for engagement with the ratchet wheel 55 and has a trip arm 67 arranged for operation by the rod 60. A rock arm 68 is pivotally mounted on the shaft of the drum 54 as at 69 and is pivotally connected to the rod 60 as at 70. A pawl 71 is pivotally connected to said rock arm and arranged for engaging the ratchet wheel 56.

When the machine is in operation with the emery cloth bearing on the work and the carriage and traveler are reciprocated by the action of the piston, the emery cloth is moved back and forth on the work and thoroughly rubs and polishes the same as required. At each out stroke of the traveler the rod 60 is drawn rearwardly by the spring 64, causing the pawl 71 to slip on the ratchet wheel 56 and said rod clears the trip arm 67 of the pawl 65 so that said pawl stays in engagement with the ratchet wheel 55 and the drums are prevented from turning and the rubbing or finishing element 59 is prevented from slipping. At each in stroke of the piston the pawl 71 prevents the drum 54 from turning and hence holds the rubbing or finishing element to the work, until the inner end of the rod 60 engages the stop 50, which occurs just at the termination of such in stroke. The rod 60 is then moved outwardly by the stop 50, causing the trip arm 67 to release the pawl 65 from the ratchet wheel 55 and causing the pawl 71 to partly turn the ratchet wheel 56 and drum 54 thereby slightly unrolling the rubbing element 59 from the drum 53 and taking up a corresponding portion of said rubbing element on the drum 54 so that constantly renewed surfaces of the rubbing element are presented for the work.

Having thus described my invention, I claim:

In a machine of the class described, a cylinder of uniform diameter, a fixed block arranged within the cylinder at a point intermediate its ends, a valve chest supported upon one end of the cylinder and having inlet ports communicating therewith, and exhaust ports, a piston rod arranged to reciprocate in said cylinder and through said block, a piston on one end of the rod, a plunger on the opposite end thereof, a rubbing element associated with the plunger, a tube communicating with said valve chest and with the bore of said block, said piston rod having an exhaust notch in one side adapted to communicate with the cylinder at one side of the block and with the adjacent extremity of said tube at the in stroke of the piston, pipes arranged at the opposite sides of the cylinders and having their corresponding extremities communicating with said bore of the block, and also communicating with the valve chest, a reversing valve

in said chest for controlling the said inlet and exhaust ports between the latter and said cylinder, means for admitting fluid under pressure into said chest to operate said valve in one direction, said pipes establishing communication between the cylinders and said chest on predetermined positions of the rod whereby the exhaust from the cylinder operates said valve in a reverse direction.

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

EMILE VICTOR MORREAU.

Witnesses:

R. K. TURNER,

N. P. TURNER.