T. A. SMITH.

SCRUBBING AND POLISHING MACHINE.

APPLICATION FILED MAY 1, 1917.

1,296,868.

Patented Mar. 11, 1919.

2 SHEETS—SHEET 1.

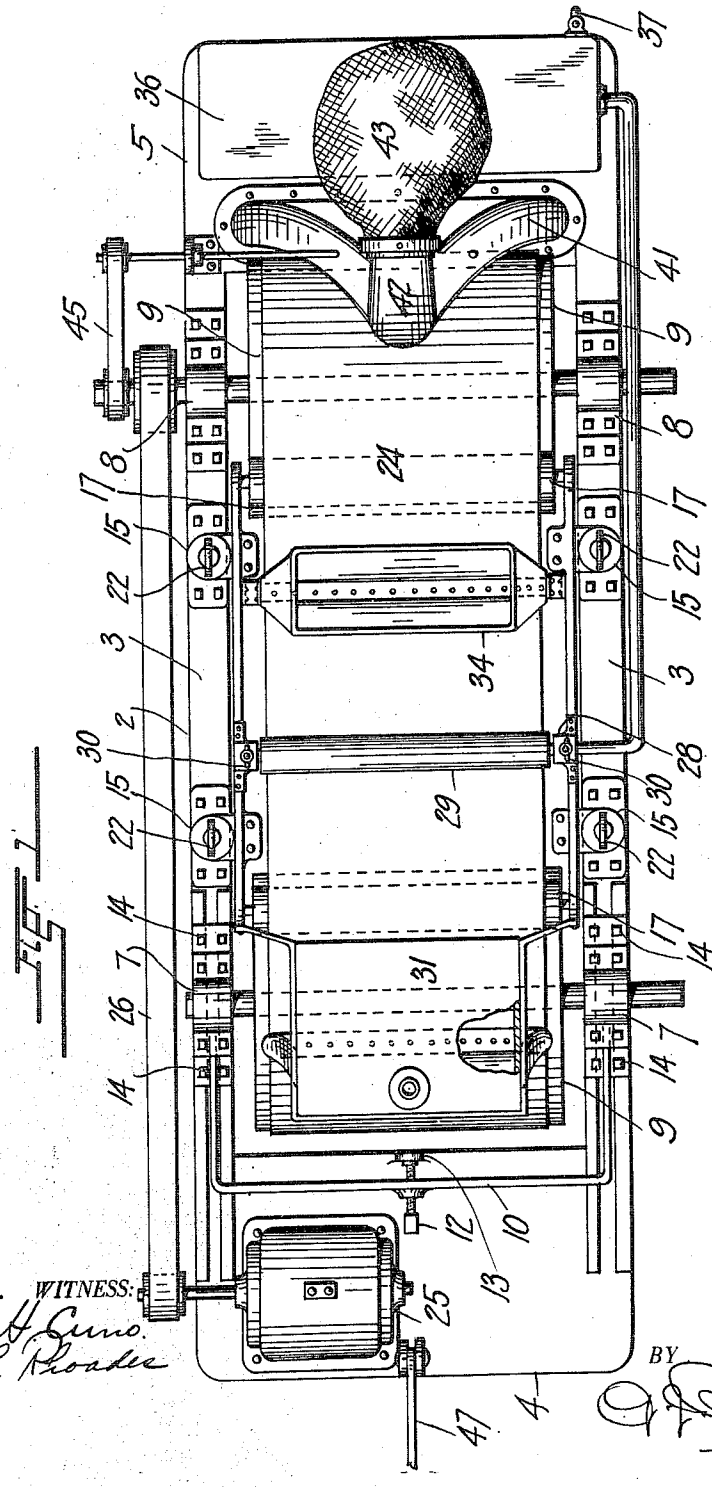

FIG. 1.

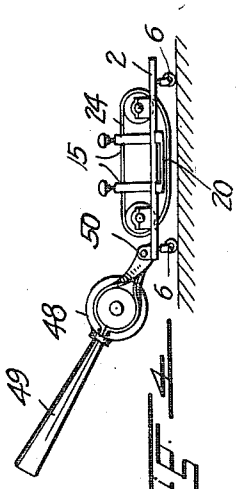

FIG. 4.

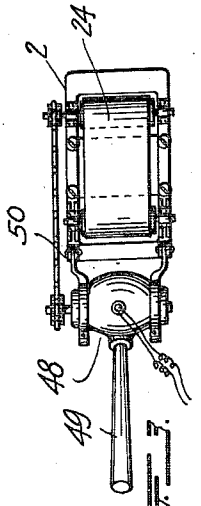

FIG. 3.

WITNESS:

F. H. Gunn.

L. Rhoades

INVENTOR.

T. A. SMITH.

BY

ATTORNEY.

T. A. SMITH.

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2 SHEETS—SHEET 2.

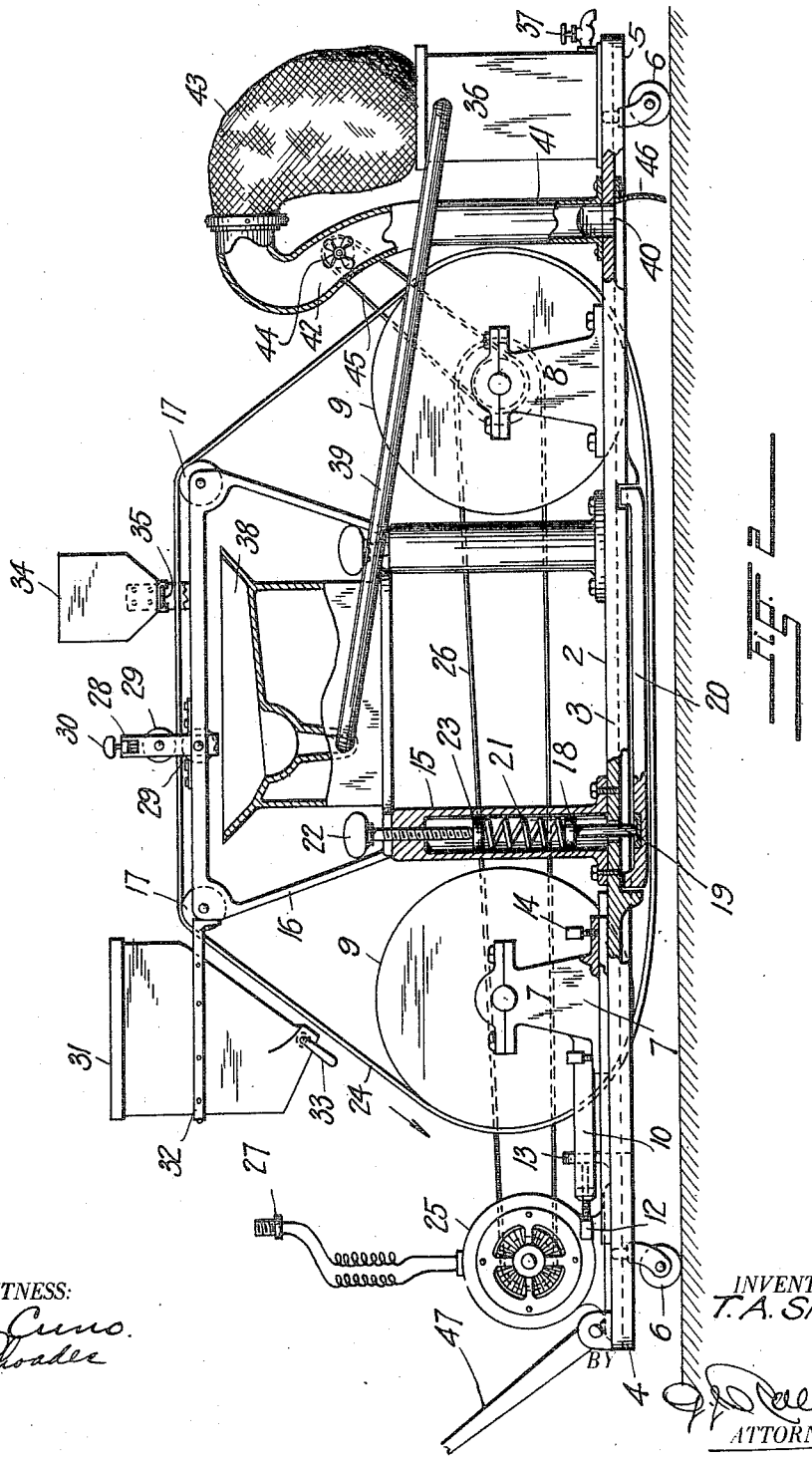

Fig. 2

WITNESS:
F. H. Cuno.
L. Rhoades

INVENTOR.
T. A. SMITH.
BY
ATTORNEY.

UNITED STATES PATENT OFFICE.

THOMAS A. SMITH, OF DENVER, COLORADO.

SCRUBBING AND POLISHING MACHINE.

1,296,868. Specification of Letters Patent. Patented Mar. 11, 1919.

Application filed May 1, 1917. Serial No. 165,647.

To all whom it may concern:

Be it known that I, THOMAS A. SMITH, a citizen of the United States, residing at Denver, in the county of Denver and State of Colorado, have invented certain new and useful Improvements in Scrubbing and Polishing Machines, of which the following is a specification.

This invention relates to a scrubbing and polishing machine and its primary object is to provide a machine of this type which is self-contained by carrying its own motor in driving connection with its coöperative elements.

Another object of the invention is to provide in combination with a wheeled carrier, and an endless belt which is mounted thereon to frictionally engage the surface over which the carrier is propelled, a reservoir to automatically supply a liquid or an abrasive agent to the belt before it engages the surface, a flushing tank to moisten the belt after it has disengaged the surface, and a wringer to subsequently press the moisture out of the belt.

Still another object of the invention resides in providing a suction fan in operative connection with the motor and in association with a suitable receiver to remove dust, dirt and abrasive matter from a surface which is being smoothed or polished by the operation of the machine, and still a further object of the invention is to provide in a machine of the type mentioned, adjustable devices to secure the frictional engagement of the endless element with a surface along which the machine is propelled.

The above and other objects, all of which will fully appear in the course of the following description, I attain by the combination and arrangement of parts shown in the accompanying drawings in which like reference characters indicate coresponding parts throughout all the views, and in which

Figure 1 represents a plan view of my improved scrubbing and polishing machine,

Fig. 2, a sectional side elevation of the same,

Fig. 3, a plan view of the machine adapted for use in cleaning and smoothing walls and overhead surfaces, drawn to a reduced scale, and

Fig. 4 a side elevation of the machine shown in Fig. 3.

Referring first to Figs. 1 and 2 of the drawings, the reference character 2 designates a wheeled carrier composed of a pair of parallel sills 3 connected at their ends by platforms 4 and 5 and supported upon four caster wheels 6.

Mounted upon the sills are two pairs of journal bearings 7 and 8 which support two drums 9 for rotation about parallel axes.

The journal bearings 7 comprised in one of the pairs are adapted to slide through parallel guide ways which extend longitudinally with relation to the sills and they are connected by means of a yoke 10 which carries a set-bolt 12 in engagement with a stationary abutment 13 on the platform 4.

The journal bearings 7 are also provided with set-screws 14 which by engagement with the upper surface of the sills secure them in their adjusted positions.

Erected upon the sills between the two pairs of the journal bearings are four hollow cylindrical columns 15 which carry a superstructure 16 for the support of idle rollers 17 and other parts of the machine hereinafter to be described.

Pistons 18 movably fitted in the hollow columns are secured at the upper ends of stems 19 which pass through openings in the sills to engage a shoe 20 disposed beneath the carrier.

Springs 21 placed above the pistons, exert a downward pressure on the shoe, and set screws 22 which project through threaded apertures in the upper ends of the columns engage abutment-plates 23 above the springs to regulate the tension of the same.

An endless belt 24 of flexible material passes over the drums 9 and the rollers 17 and underneath the shoe 20 which presses it into frictional engagement with a surface over which the machine is propelled.

An electric motor 25 mounted on the forward platform 4 of the carrier is connected with one of the drums by means of a driving belt 26 and has a plug 27 for its connection in an electric circuit such as that provided by a lighting system of residences and other buildings.

Mounted upon the superstructure between the rollers 17 is a wringer 28 composed of a suitable frame which carries two rollers 29 between which the belt passes and set screws 30 for forcing these rollers into contact with the same.

A reservoir 31 is suspended from arms 32 on the superstructure above a portion of the

belt at the forward end of the machine and it has a row of apertures controlled by a suitable valve 33, to spray a liquid or an abrasive agent onto the surface of the belt before it engages the surface over which the machine is propelled.

A flush-tank 34 is supported on the superstructure forward of the wringer 28 with relation to the direction of motion of the belt, and this tank is likewise provided with a series of discharge openings the flow through which is controlled by a sliding valve 35.

Mounted upon the rear platform 5 of the carrier is a container 36 provided with a drain-cock 37, and a sink 38 supported upon the columns underneath the portion of the belt which passes between the rollers of the wringer and underneath the flushing tank, is connected with the container by means of a conduit 39.

The rear platform of the carrier has rearward of the adjacent drum, a slot 40 which by means of a gradually narrowing flue 41 is connected with a fan chamber 42 which has a discharge opening in connection with a bag 43 supported upon the container 36.

The suction fan 44 rotatably mounted in the chamber is by means of a driving belt 45 operatively connected with the adjacent drum over which the belt passes, and a deflector 46 is suspended from the platform rearward of the slot 40 to direct thereinto dirt and dust drawn by the action of the fan from the surface over which the machine is propelled.

When the machine is used to scrub a floor, the endless belt is composed of webbing, mopping cloth or other similar material.

Water is constantly supplied in small quantities through the rows of apertures in the reservoir 31 and the tank 34 and while the machine is drawn along the floor by means of a handle 47 at its forward end, the belt is caused to travel rapidly around the drums and the rollers by the driving action of the motor which by means of the plug 27 is connected in a conveniently located electric circuit.

The portion of the belt extending between the sills is held in frictional contact with the floor by the spring-pressed shoe 20, it being understood that the pressure exerted thereby is regulated by adjustment of the set screws 22.

During movement of the machine across the floor, a rubbing action of the endless mop will rapidly and thoroughly clean the same, the dirt being carried upwardly by the belt and removed therefrom by the action of the wringer.

Before the belt passes between the rollers of the wringer, its surface is flushed by the discharge from the tank 34 and the water which subsequently is pressed out of the belt by the wringer, carries the dirt with it and thus thoroughly cleans the cloth before it is again supplied with clean water from the reservoir.

The dirt-carrying liquid squeezed out of the belt by the wringer, falls in the sink and is through the conduit 39 conveyed to the reservoir at the rear end of the machine which is drained at intervals by opening the cock 37.

When the machine is used for polishing or smoothing a surface, a belt made of emery cloth or other suitable abrasive material is substituted for the cloth belt used in the scrubbing action, the valve tank 34 is closed, the rollers of the wringer are relieved from pressure and the reservoir 31 may either be discarded or used to supply an oil, wax or other polishing material to the surface of the belt.

The operation of the machine is otherwise the same as hereinbefore described, and the dirt, dust and abrasive matter is by the action of the fan 44 drawn upwardly from the rearward portion of the belt and the surface over which the machine is moved, and discharged into the bag 43.

It will thus be seen that the machine is well adapted to clean, polish and smooth different surfaces with a minimum of effort on the part of the operator, the pressure exerted upon said surfaces being readily regulated by means of the set-screws 22, while the tension of the belt is varied by means of the sliding boxes 7.

To adapt the machine for use in cleaning vertical and overhead surfaces, its dimensions are reduced and its construction simplified by the omission of the superstructure of the first described form, as shown in Figs. 3 and 4 of the drawings.

The motor which operates the belt is in this modified form of my invention inclosed in a chamber 48 which forms part of the handle 49 which is pivotally connected with the carrier as at 50, and the reservoir, tank and receiver of the larger machine are preferably eliminated.

Having thus described by improved scrubbing and polishing machine in the best form at present known to me, I desire it understood that other variations in the arrangement and construction of its parts, may be resorted to within the spirit of my invention as defined in the following claims:

1. In a machine of the character described, a manually propelled wheeled carrier, a pair of rotary drums thereon, hollow columns erected on the carrier, a superstructure supported on said columns, idle rollers on said superstructure, an endless belt passing over the rollers and stretched between the drums to frictionally engage a surface over which the carrier is propelled, a shoe engaging the inner side of the belt between the drums to press the belt, against said surface, spring-pressed pistons in the columns, to exert a

downward pressure on the shoe, and a motor in driving-connection with one of said drums.

2. In combination, a wheeled carrier, a pair of rotary drums thereon, a superstructure on the carrier, rollers on the superstructure, an endless belt passing around the drums and the rollers with its lower portion stretched between the drums to engage a surface over which the carrier is propelled, means on the superstructure supplying a wash-water to the stretch of the belt between the rollers for the removal of adherent dirt after it has disengaged the surface, a wringer on the superstructure pressing the dirt-carrying wash-water out of the said stretch of the belt, a receptacle disposed beneath said stretch to receive the wash-water after it has passed through the fabric of the belt, and a water-supply disposed on the carrier to wet the belt after it has passed through the wringer and before it reëngages the surface.

3. In combination with a wheeled carrier, an endless belt having a lower portion traveling below the carrier to engage a surface over which the carrier is propelled, and an upper portion moving above the carrier, a motor for operating the belt, means for supplying a wash-water to said upper portion of the belt, a wringer rearward of the washing means, to press the dirt-carrying wash-water out of the belt, and means rearward of the wringer to supply a liquid to the upper portion of the belt before it engages the surface.

4. In combination with a wheeled carrier, an endless belt having a lower portion traveling below the carrier to engage a surface over which the carrier is propelled, and an upper portion moving above the carrier, a motor for operating the belt, means for supplying a wash-water to said upper portion of the belt, a wringer rearward of the washing means, to press the dirt-carrying wash-water out of the belt, a receptacle between the two portions of the belt to receive the wash-water passing through the fabric of the belt, and means rearward of the wringer to supply a liquid to the upper portion of the belt before it engages the surfaces.

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

THOMAS A. SMITH.

Witnesses:
G. J. ROLLANDET,
L. RHOADES.