Nov. 26, 1929. C. J. WINDFELDT 1,737,135

SANDING AND POLISHING MACHINE

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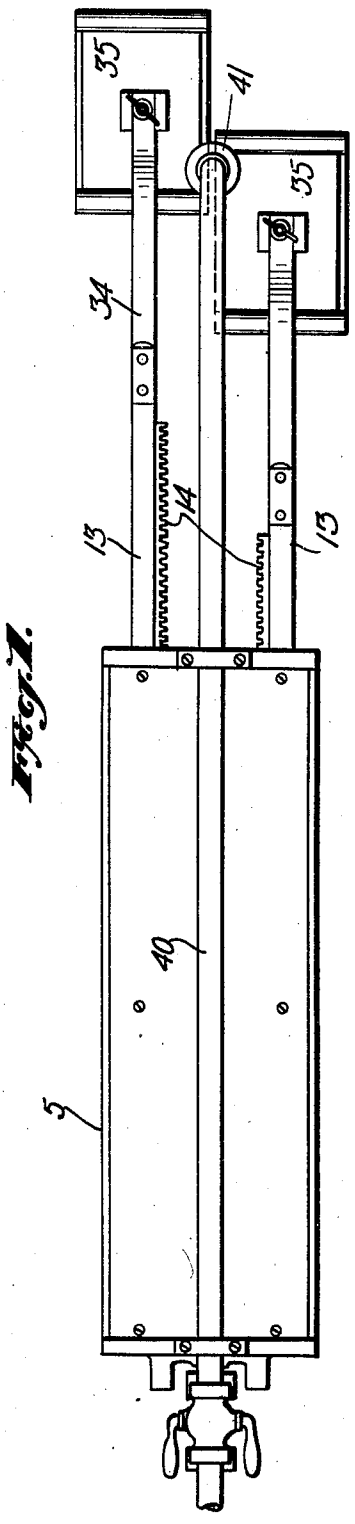


Fig. 1.

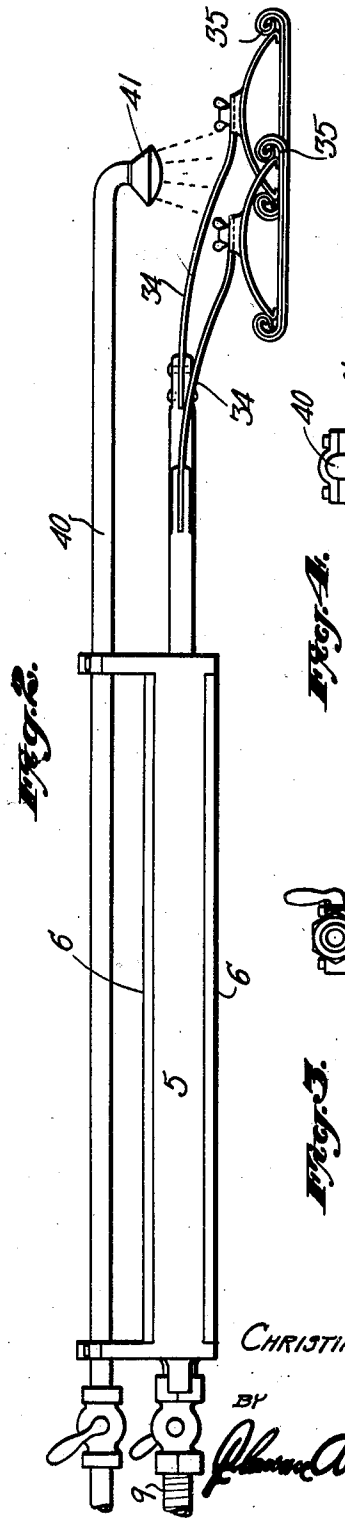


Fig. 2.

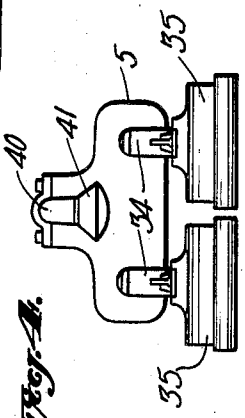


Fig. 4.

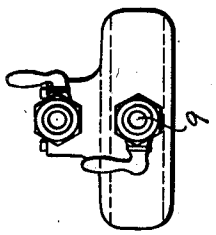


Fig. 3.

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SANDING AND POLISHING MACHINE

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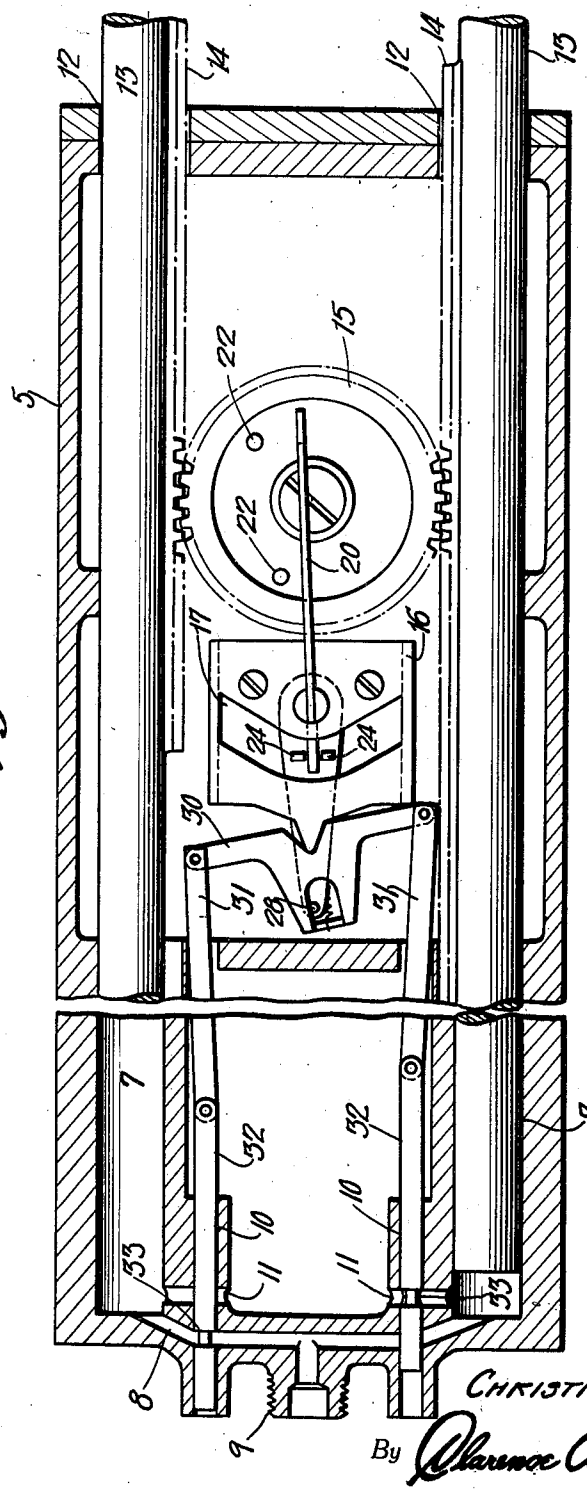


Fig. 5.

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SANDING AND POLISHING MACHINE

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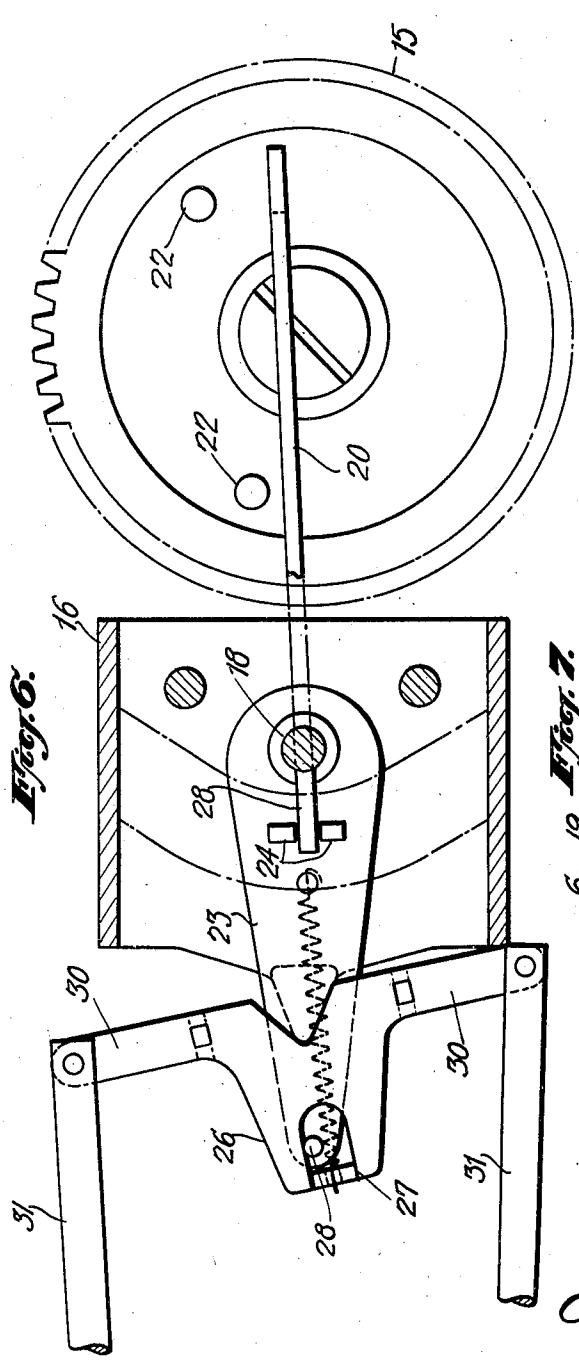


Fig. 6.

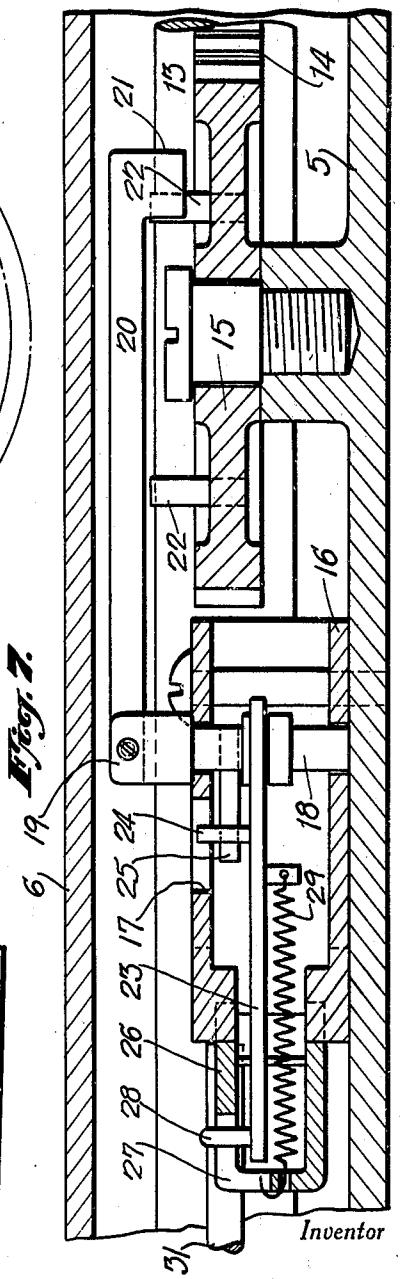


Fig. 7.

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Fig. 8.

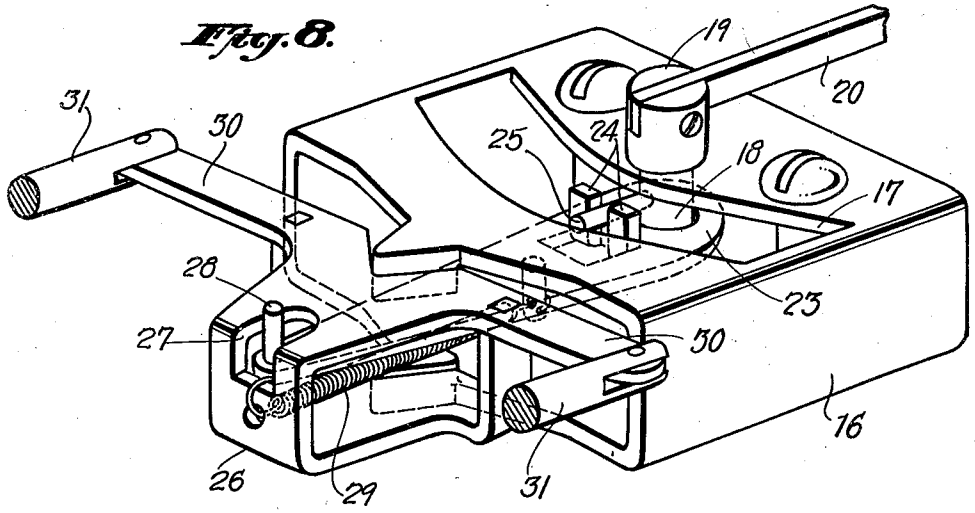
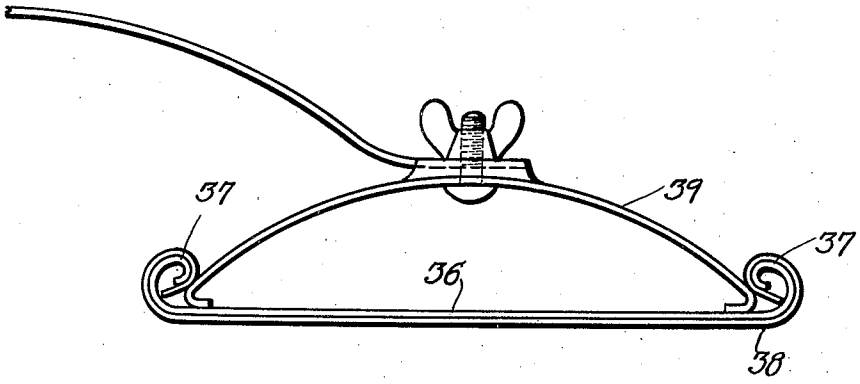


Fig. 9.



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Patented Nov. 26, 1929 1,737,135

UNITED STATES PATENT OFFICE

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SANDING AND POLISHING MACHINE

Application filed March 8, 1929. Serial No. 345,384.

My invention relates to new and useful improvements in sanding and polishing machines, and has for its primary object to provide a simple and efficient device that is primarily adapted for use in the sanding or polishing of automobile bodies, and other surfaces, and that is of such a nature as to enable a free manipulation thereof by a single individual in order to expedite and improve the sanding or polishing of an automobile body, and other objects of flat curved or otherwise irregular surfaces.

An essential object of this invention is to provide a device of this character that is light in weight, so that it may be easily handled by the operator and employed in the sanding or polishing of usually inaccessible surfaces to be sanded or polished.

Generally, the invention consists of a pair of reciprocating sanding or polishing heads operable through the medium of air or steam pressure, these heads being associated with pressure actuated rods, the reciprocatory motion of which automatically control the supply of air or steam into rod cylinders, the valve mechanism controlling the passage of the air or steam pressure to the cylinders being of a simple and efficiently operable nature.

With the foregoing and other objects in view as the nature of the invention will be better understood from the following specification when considered in conjunction with the accompanying drawings, wherein:—

Figure 1 is a top plan view of my improved device.

Figure 2 is a side elevation thereof.

Figure 3 is a rear end elevation.

Figure 4 is a front end elevation.

Figure 5 is an enlarged fragmentary longitudinal section through the machine casing constructed to provide a pair of rod cylinders and equipped with automatic mechanism to regulate the alternate passage of compressed air or steam to the cylinders.

Figure 6 is an enlarged fragmentary section through the valve operating mechanism, per se.

Figure 7 is an enlarged transverse longitudinal section through the end valve controlled mechanism therein.

Figure 8 is an enlarged perspective of the valve control assembly and

Figure 9 is a side elevation of one of the sanding or polishing heads.

Now, having particular reference to the drawings, my novel machine consists of a somewhat elongated narrow and relatively thin casing 5, preferably having removable top and bottom walls 6—6, and within the rear end of which is formed a pair of parallel spaced longitudinal cylinders 7—7 open at their forward ends and communicating at their opposite ends through the medium of an air or steam passage 8 formed in the rear end wall of the casing, as disclosed in Figure 5. This end wall is constructed centrally with an air or steam inlet 9 having communication with the passage, and that is adapted to receive a flexible compressed air or steam pipe equipped with a suitable hand valve as illustrated more clearly in Figure 2. Interiorly of the casing 5, the side walls of these cylinders 7—7 are formed with longitudinal valve rod cylinders 10—10 that extend beyond the adjacent end wall of the casing and communicate with the cross passage 8, as also disclosed in Figure 5. Air ports 11—11 at the closed ends of the cylinders are provided for establishing communication between the cylinders and the atmosphere within the casing.

The forward end wall of the casing 5 is provided with a pair of openings 12—12 in registry with the rod cylinders 7—7, these openings being equipped with any suitable type of bushings. Movable through these openings are piston rods 13—13, the rear ends of which are mounted within the cylinders 7—7, the extreme rear ends thereof providing steam or air pressure impact heads. At opposed points and throughout a predetermined length of these piston rods, the same are constructed or formed with rack bars 14—14 that have mesh with a reversely rotating rack gear 15 rotatably mounted within the casing 5, as illustrated in Figures 5, 6 and 7.

Rigidly arranged within the center of the casing between the gear 15 and the inner ends of the rod cylinders 7—7 is a relatively small

housing 16 open at its opposite ends and provided at one side wall with a curved slot 17. Beneath this slot at the center thereof, said housing is equipped with a loosely mounted transverse pin 18, the end of this pin at the side of the housing with the slot 17 being equipped with a head 19, to which is rigidly secured one end of a forwardly extending horizontal arm 20, the opposite end of which terminates beyond the pivot of the gear 15, and within the periphery of the gear, this end of the arm 20 being formed with an inwardly extending tongue 21 for alternate engagement by a pair of spaced pins 22—22 associated with the adjacent face of the gear, as more clearly disclosed in Figure 7. Loosely arranged at its inner end upon said pin 18 and projecting in a direction opposite to the direction of the arm 20 is a trip lever 23 constructed at a point within the housing slot 17 with spaced fingers 24—24 between which projects a pin 25, rigidly associated with the previously mentioned loosely arranged pin 18.

Loosely pivotally supported upon the upper open end of the housing 16 is a rocker member 26, preferably of inverted U formation, and within which engages the upper end of the said lever 23, this rocker member 26 being formed at one side with a slot 27, within which is disposed a lateral pin 28 carried by the upper end of the lever 23. In order to maintain this rocker member 26 in engagement with the housing 16 and to maintain said rocker member at opposite sides of a central point when moving off center, there is provided a retractile coil spring 29 secured at one end to the lever 23, and at its opposite end to the center of the rocker.

This rocker member 26 is constructed at opposite sides with lateral arms 30—30, the ends of which are loosely pivoted to pitman rods 31—31, the upper ends of these pitmen being loosely pivotally secured to reciprocatory valve rods 32—32 movable within the valve rod cylinders 10—10. Within the outer ends of these valve rods, the same are formed with steam or air passages 33—33 for alternate registration with the passage 8 and the said ports 11—11.

Obviously, when one cylinder 7 is in communication with the steam or air passage 8, that rod will be forced forwardly rotating the gear 15 in one direction for reciprocating the other rod in a reverse direction. During the reverse movement of the last mentioned rod its cylinder is closed to the passage 8, but open to the atmosphere, so that the air or steam can be forced therefrom. The gear pins 22—22 are so positioned as to cause their engagement with the arm 20 when the ends of the rods 13—13 approach the ends of the cylinders 7—7 and as soon as one of these pins 22 strikes the arm 20, it will be swung over to cause a swinging of the lever 23 in the same direction. This swinging of the lever will throw the rocker member 26 to a reverse position to shift the position of the valve rods 32—32, which will control the supply of the compressed air or steam to the cylinder of that piston that has just completed its return stroke. The spring 29 will retain the rocker in the required position until the other pin 22 has encountered the opposite side of the arm 20, which will of course reverse the position of the valve rods.

The forward ends of the piston rods 13—13 are equipped with leaf springs 34—34, preferably slightly bowed downwardly and carrying at their forward ends sanding or polishing material carrying heads 35—35. Each head preferably consists of a flat plate 36 turned upwardly and inwardly at its opposite ends to provide spring beads 37—37. A strip of sanding or polishing material 38 is arranged upon the outer face of the plate 36, the ends thereof being turned inwardly upon the beads 37—37 and thereby retained in association with the beads by a curved spring clamping plate 39, the ends of which are turned inwardly so as not to damage the sanding or polishing material.

If desired, the top side of the casing 5 is equipped with a longitudinally extending water pipe 40 to be attached at its rear end to a flexible water supply pipe equipped with a suitable hand valve as disclosed in Figures 1, 2 and 3. This pipe 40 extends forwardly beyond the casing 5 and terminates at a point between the heads 35—35 and within the limit of the stroke thereof, this end of the pipe being turned and equipped with a suitable spray nozzle 41, all for the purpose of permitting water to be projected onto the surface being sanded.

In view of the foregoing description when considered in conjunction with the accompanying drawings, it will be apparent that I have provided a novel, simple, useful and efficient sanding and polishing machine that is well adapted for all of the purposes heretofore designated, and even though I have herein shown and described the invention, and particularly the valve mechanism thereof, as consisting of certain detailed structural elements, it is nevertheless to be understood that I do not desire to be limited to the specific embodiment of the device as illustrated and described, as various modifications and improvements may be made without affecting the spirit and scope of the appended claims.

Having thus described my invention, what I claim as new, and desire to secure by Letters-Patent, is:

1. In a sanding and polishing machine of the class described, a frame unit, a pair of spaced parallel cylinders associated with the frame and communicating with an air inlet passage and each having an outlet port, means

whereby air may be directed into the passage, a pair of piston rods movable at their inner ends within the cylinders, sanding and polishing heads associated with the outer ends of the rods, means automatically operable by the reciprocation of the rods to cause the alternate passage of the air into the cylinders, said means consisting of a pair of valve rods movable in rod cylinders that communicate with the passages, a reversely rotatable gear associated with the frame, means between the gear and piston rods to rotate the gear in reverse directions, and means between the gear and valve rods to reciprocate said valve rods.

2. In a sanding and polishing machine of the class described, a frame unit, a pair of spaced parallel cylinders associated with the frame and communicating with an air inlet passage and each having an outlet port, means whereby air may be directed into the passage, a pair of piston rods movable at their inner ends within the cylinders, sanding and polishing heads associated with the outer ends of the rods, means automatically operable by the reciprocation of the rods to cause the alternate passage of the air into the cylinders, said means consisting of a pair of valve rods movable in rod cylinders that communicate with the passages, a reversely rotatable gear associated with the frame, means between the gear and piston rods to rotate the gear in reverse directions, means between the gear and valve rods to reciprocate said valve rods, said last means consisting of a rockable member, connections between the sides of the member and the valve rods, and a gear controlled swinging arm for moving the rocking member in reverse directions.

In testimony whereof I affix my signature.

CHRISTIAN J. WINDFELDT.