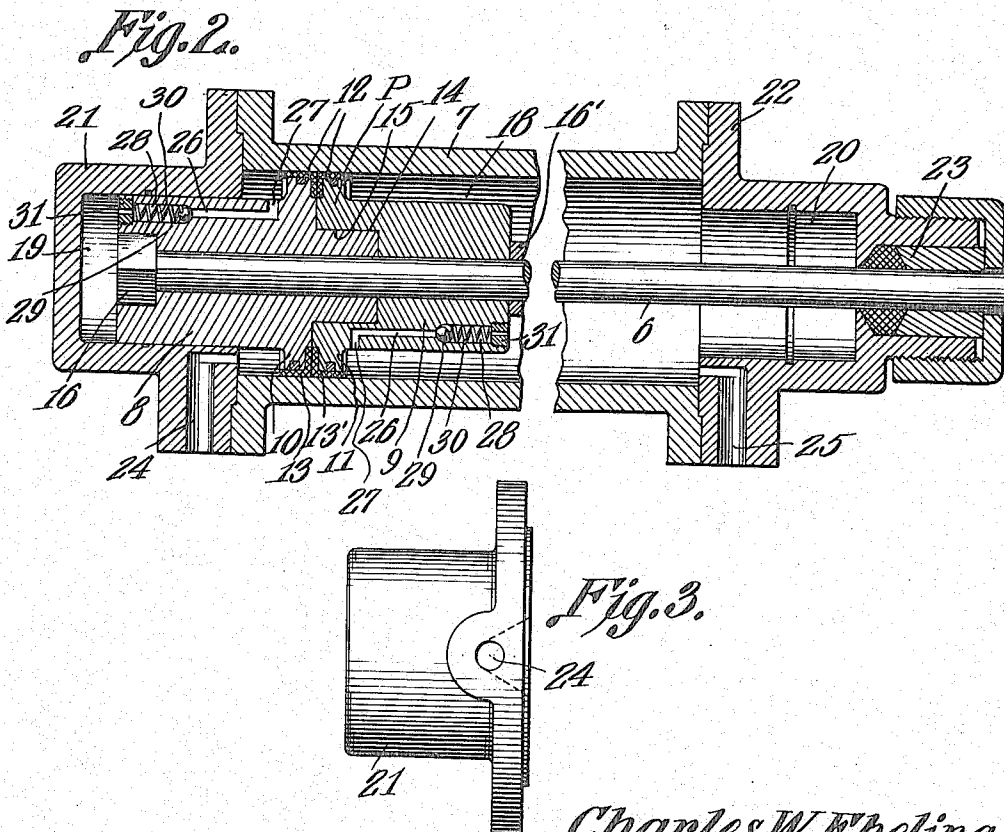
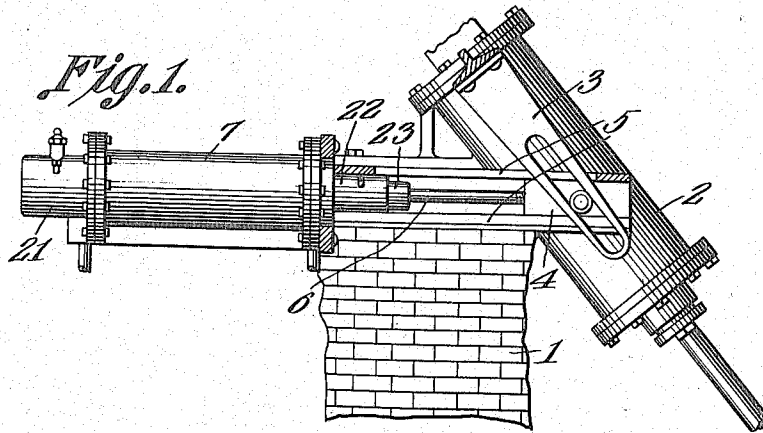


C. W. EBELING.
 RECIPROCATING MOTOR.
 APPLICATION FILED AUG. 7, 1913.

1,129,964.

Patented Mar. 2, 1915.



Witnesses

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UNITED STATES PATENT OFFICE.

CHARLES W. EBELING, OF WHEELING, WEST VIRGINIA, ASSIGNOR OF ONE-HALF TO
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RECIPROCATING MOTOR.

1,129,964.

Specification of Letters Patent.

Patented Mar. 2, 1915.

Original application filed June 27, 1911, Serial No. 996,226. Divided and this application filed August 7, 1913. Serial No. 783,643.

To all whom it may concern:

Be it known that I, CHARLES W. EBELING, a citizen of the United States, residing at Wheeling, in the county of Ohio and State of West Virginia, have invented a new and useful Reciprocating Motor, of which the following is a specification.

The present invention relates to improvements in reciprocating motors and more especially adapted for application to the enameling table set forth in the Patent No. 996,226 dated June 27, 1911, one object of the invention, being the provision of a novel form of motor for tilting the ware carrying support, by means of which any sudden jars at either end of the stroke of the piston of the motor is properly cushioned so that the mechanism for rotating, tilting and elevating the ware support is relieved of any damaging effect, during the operation of the table.

A further object of the present invention, is the provision of a motor mechanism for tilting a ware support of an enameling table, in which the ends of the motor are provided with cushioning chambers, the piston being provided with oppositely disposed reduced pistons for entering such chambers to coact with the fluid within the respective chambers to compress the same and thus produce a fluid cushion effect at the full stroke of the piston, thus relieving any jar whatsoever upon the piston and reducing the wear of the same at the ends of the cylinder.

A still further object of the invention, is the provision of a valved by-pass at each reduced end of the piston, by means of which at the initial stroke, the pressure fluid imparting the stroke will be admitted into the chamber at the rear of the base of the reduced end and thus assist in propelling the same in the desired direction, the valve being so mounted as to close the by-pass as the forward reduced end enters its chamber so that the pressure fluid will be properly compressed therein to cushion the stroke.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of

the invention herein disclosed can be made within the scope of what is claimed without departing from the spirit of the invention.

In the drawings—Figure 1 is a fragmentary side elevation showing the motor for elevating the ware support and the present motor for tilting the same. Fig. 2 is a longitudinal sectional view through the motor for tilting the ware support, the said motor being broken away in the center to foreshorten the same. Fig. 3 is a bottom plan view of the outer cap of the motor removed.

Referring to the drawings, the numeral 1 designates the base or pedestal of the enameling table, (not shown), which carries the motor 2 for properly elevating the ware support (not shown), there being connected to the motor 2, an actuating lever 3, which is operably connected to the cross head 4 which travels between the members of the guide 5, which is properly supported upon the pedestal 1 and is connected to and supports the motor 7 for imparting the desired tilting motion to the actuating lever, as particularly set forth in the before mentioned patent.

The tilting motor 7, as particularly shown in Fig. 2, is provided with the piston rod 6, which is operably connected to the cross head 4 and carries within the motor casing 7 the piston P, which is composed of the two members 8 and 9. These members are double diametered members, being provided with the enlarged diametered portions 10 and 11 which are disposed adjacent each other and provide the circumferential recess 12 for the reception of the flexible gaskets 13—13'. The adjacent faces of the members 8 and 9 are provided respectively with the sockets 14 and the cylindrical projection 15, for coaction, as shown in Fig. 2, so that the two members 8 and 9 may be forced in interlocked engagement and be held in such engagement by means of the respective locking nuts 16 and 16' which are disposed upon the piston rod 6 and clamp the members 8 and 9 together.

The cylindrical projections of the pistons 8 and 9 of the main piston P are disposed for movement into and out of the respective cushioning chambers 19 and 20 formed in and carried by the caps 21 and 22 respectively of the motor. The cap 22 is provided

with the stuffing box 23 through which the piston rod 6 reciprocates. The introduction and exhaust ports for the motor 7 are disposed as at 24 and 25 in the respective caps 21 and 22 and alternate as is the usual custom in admitting the pressure fluid and exhausting the same.

In order to provide a means for properly admitting the pressure fluid to the respective chambers 19 and 20 to assist in propelling the piston P, a channel 26 is provided in each reduced portion 8 or 9, and is provided with the inlet 27 adjacent the rims 10-11 of the piston P. The opposite end of the channel, as at 28, is enlarged and has disposed therein the ball valve 29, which is normally seated by means of the spring 30, said spring being held in place by means of the ported ring 31, which is opened through the outer end of the reduced end of the piston into the respective chambers 19 and 20. By this means, it will be seen that under normal conditions, a certain amount of the pressure fluid at either side of the respective rims 10 and 11, as for instance when the piston P is moving toward the stuffing box end in Fig. 2, will enter the port 24 to the left of the ring 10 and will also enter the port 27 and will unseat the ball valve 29. Thus the pressure fluid will enter the chamber 19 to be directed against the end of the plug 8 and thus assist in moving the piston P to the right. The reduced end 9 is then directed into the chamber 19 and as the ball valve carried thereby prevents the escape of the pressure fluid trapped therein through the by-pass or channel 26, the desired cushion action is had at the end of the stroke. The ports 24 and 25 are so

provided, that when one is the inlet, the other is the exhaust port. This construction prevents any jarring or knocking that would tend to detrimentally effect the ware support of the enameling table, thus providing a cushioning means at the end of each stroke of the piston P that utilizes the operating fluid of the motor.

What is claimed is:

A reciprocating motor, including a cylinder having two reduced chambers, one at each end thereof, there being two ports, one in communication with each end of the main chamber of the cylinder at a point adjacent the junction between the main chamber and its reduced chamber; a piston having a centrally disposed main chamber engaging portion and two oppositely disposed cylindrical ends, said ends being disposed for snugly fitting into the respective reduced chambers as the piston is reciprocated, each cylindrical end being provided with a by-pass leading from its end face to a point adjacent to the main cylinder engaging portion, and a spring closed valve in each by-pass for trapping the pressure fluid within the reduced chamber as the cylindrical end of the piston enters the chamber, the valve opening at the beginning of the stroke to admit the pressure fluid into the chamber at the rear of the cylindrical end of the piston to assist in propelling the piston.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

CHAS. W. EBELING.

Witnesses:

MAY MULLANE,
FRED J. WHELAN.