July 7, 1931. E. SCHINDLER 1,813,546

AIR HAMMER

Filed Feb. 6, 1928

Fig. 1

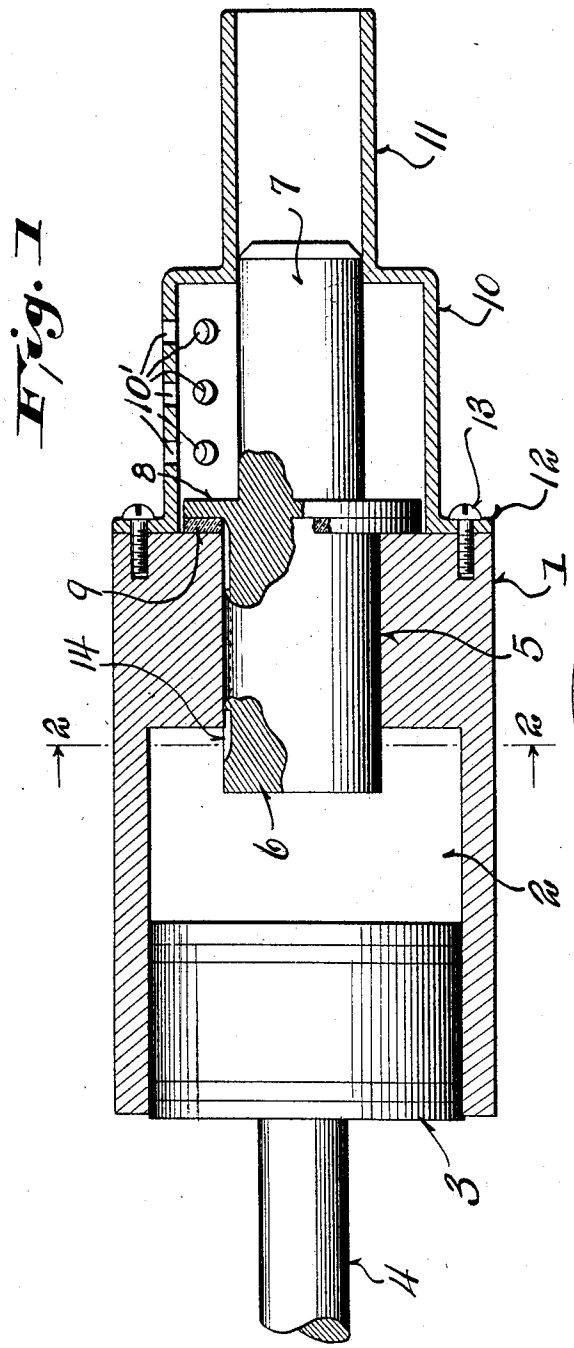
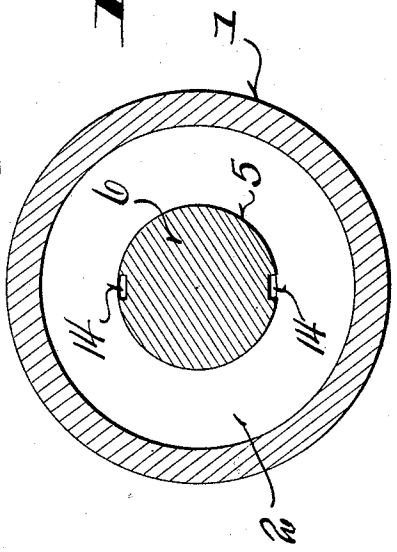


Fig. 2



Inventor:
Emanuel Schindler
By
Attorneys:

Patented July 7, 1931 1,813,546

UNITED STATES PATENT OFFICE

EMANUEL SCHINDLER, OF CHICAGO, ILLINOIS

AIR HAMMER

Application filed February 6, 1928. Serial No. 252,390.

This invention relates to air hammers.

Objects of this invention are to provide a novel form of air hammer in which a yielding stroke is produced, in which the head which strikes the work or the tool, is yieldingly driven by air pressure without the use of valves or other means of this type, and in which means are provided for maintaining the proper amount of air in the cylinder to make up for losses occurring during operation of the hammer.

Further objects are to provide an air hammer in which reciprocatory driving means are employed which may be driven from any suitable source of power, as for instance an electric or other motor, and which transforms this mechanical drive into a pneumatic drive and yieldingly drives the hammer itself, so that although a blow of any desired intensity may be struck, nevertheless this blow is yielding, so that if the hammer is stopped before it completes its stroke, no damage is done to the mechanism which drives the reciprocatory member.

Further objects are to provide a device which is extremely simple, which may be made by ordinary machine shop methods, and which is inexpensive to construct.

An embodiment of the invention is shown in the accompanying drawings in which:

Figure 1 is a longitudinal sectional view through the device;

Figure 2 is a transverse view on the line 2—2 of Figure 1.

Referring to the drawings, it will be seen that the device comprises a body portion 1 which has a main cylinder 2. This main cylinder receives the reciprocatory member or piston 3 provided with a piston rod 4 which may be driven in any suitable manner, as for instance, by means of an electric or other motor.

The body portion 1 has a smaller bored out aperture 5 opening into the main cylinder 2. This aperature constitutes an auxiliary cylinder of materially smaller diameter than the main cylinder 2, and receives the sliding piston portion 6 of the hammer. This piston portion is made integral with the hammer proper, indicated by the reference character 7, and preferably an integral flange 8 is formed thereon at the point of union between the auxiliary piston 6 and the hammer 7, although in reality the hammer and auxiliary piston constitute one member. Obviously, they may be made of separate members if so desired.

A yielding washer 9 is carried by the body portion 1 and forms a cushion against which the flange 8 strikes in the rearward stroke of the hammer. Preferably, a casing 10 surrounds the hammer and is provided with a restricted portion or guiding sleeve 11 for the outer end of the hammer. This sleeve may receive the tool upon which the hammer operates, or else the hammer may project beyond the sleeve in its extreme position and act directly upon the work. The casing 10 is formed with a plurality of vent openings 10′ and may be held in place in any suitable manner, as, for instance, by means of the apertured flange 12 through which the attaching screws 13 pass. It is to be noted particularly that the auxiliary piston is provided with one or more passageways 14 milled therein to provide an air passage through which the air in the cylinder 2 may be replenished, as it leaks out during the operation of the device.

It is to be noted particularly that the channels or passageways 14 stop short of the inner or rear end of the auxiliary piston, so that as the main piston moves forwardly and the auxiliary piston makes a stroke forwardly, the passageways will be sealed off, as the end of the auxiliary piston passes into the auxiliary cylinder portion or aperture 5.

Further it is to be noted that the auxiliary piston has a relatively wide or elongated bearing surface in the body portion. No packing rings need be employed in this auxiliary piston, although the main piston is preferably provided with these packing rings.

It will be seen that a novel form of air hammer has been provided in which the driving reciprocatory member may be driven from any suitable source of power, and in which a yielding blow is struck by

the hammer itself so that its length of stroke may vary according to the demands of the work without producing any excessive stresses or strains upon the main driving reciprocatory member. In other words, the main reciprocatory member may make a fixed length of stroke at all times, whereas the hammer itself may make any length of stroke, as the work requires.

It will be seen further that the device is extremely simple, is cheap to manufacture, and consists of a very small number of strong and reliable parts.

Although the invention has been described in considerable detail, such description is intended as illustrative rather than limiting as the invention may be variously embodied and as the scope of such invention is to be determined as claimed.

I claim:

An air hammer comprising a body portion having a main cylinder and an auxiliary cylinder opening thereinto, said main cylinder being relatively larger than the auxiliary cylinder, a main piston mounted within said main cylinder and adapted to be reciprocated to alternately compress and rarify the air in said main cylinder, an auxiliary piston consisting of an elongated cylindrical member mounted within said auxiliary cylinder, a hammer rigid with said auxiliary piston, a collar rigid with said hammer and auxiliary piston, yielding means carried by said body portion and against which said collar is adapted to strike at the extreme rearward limit of motion of the auxiliary piston, said auxiliary piston having passageways cut in its periphery and terminating short of its rear end, and guiding means for said hammer carried by said body portion.

In testimony that I claim the foregoing I have hereunto set my hand at Chicago, in the county of Cook and State of Illinois.

EMANUEL SCHINDLER.