

(No Model.)

2 Sheets—Sheet 1.

H. C. SERGEANT.
AIR COMPRESSOR.

No. 579,775.

Patented Mar. 30, 1897.

Fig. 2.

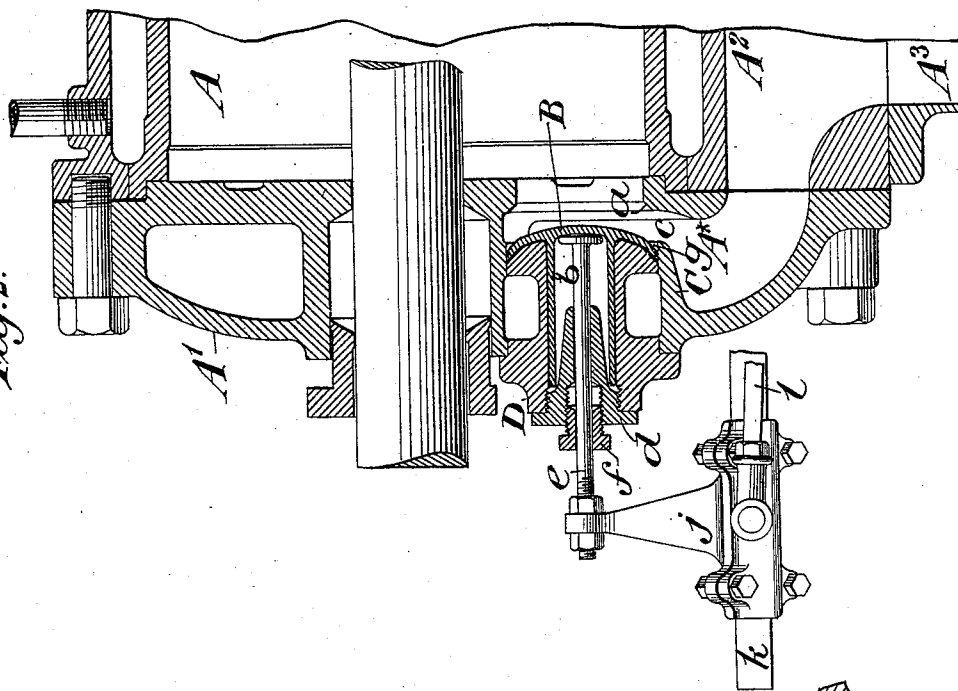
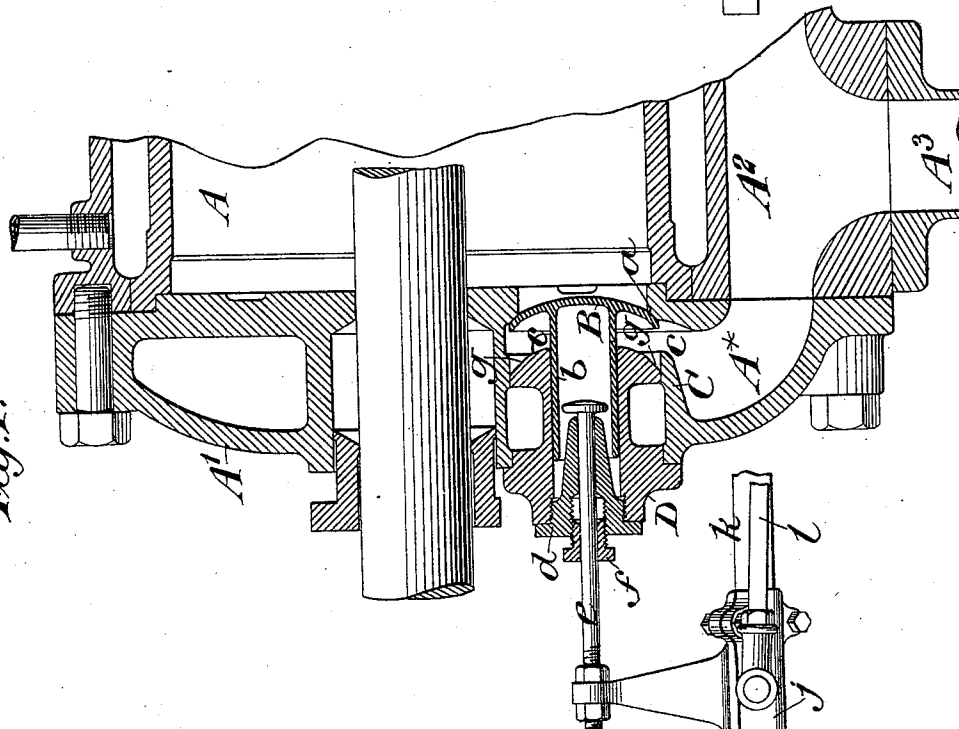


Fig. 1.



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George Barry Jr.
Edward

Inventor:
Henry C. Sergeant.
by attorneys
Brown & Howard

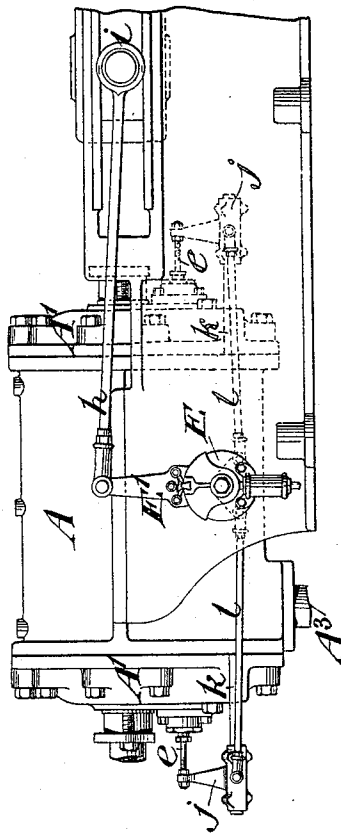
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George Barry Jr.

W B Leonard

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UNITED STATES PATENT OFFICE.

HENRY C. SERGEANT, OF WESTFIELD, NEW JERSEY, ASSIGNOR TO THE
INGERSOLL-SERGEANT DRILL COMPANY, OF NEW YORK, N. Y.

AIR-COMPRESSOR.

SPECIFICATION forming part of Letters Patent No. 579,775, dated March 30, 1897.

Application filed April 7, 1896. Serial No. 586,622. (No model.)

To all whom it may concern:

Be it known that I, HENRY C. SERGEANT, of Westfield, in the county of Union and State of New Jersey, have invented a new and useful Improvement in Air-Compressors, of which the following is a specification.

This improvement in air-compressors relates to their discharge-valves, and more especially to such valves which have their closing movements effected in a positive manner by devices connected with the piston-rod or driving mechanism of the compressor, but which when open are allowed to remain open until the said devices act upon them to close them.

The nature of the improvement will be described with reference to the accompanying drawings, and its novelty will be pointed out in claims.

Figures 1 and 2 represent central vertical sectional views of one of the cylinder-heads and part of the cylinder of an air-compressor, illustrating my improvement in the discharge-valves, Fig. 1 showing the discharge-valve closed and Fig. 2 showing it open. Fig. 3 represents a side view of the compressor-cylinder and of positively-operated and positively-operating mechanism for closing the discharge-valves.

Similar letters of reference designate corresponding parts in all the figures.

A designates the cylinder, having in its heads A', as shown in Figs. 1 and 2, discharge-chests A*, which are always in free communication through a discharge-passage A², running lengthwise of the cylinder with the discharge-pipe A³, through which the compressed air is discharged to a receiver or other place. (Not shown.) The discharge-valves B, only one of which is shown, through which the compressed air is delivered into discharge-chests within the cylinder-heads, are of the puppet type and close into conical seats a in the inner walls of the respective cylinder-heads.

The discharge-valves B have central stems b, represented as hollow and cylindrical, the stem of each valve being fitted and guided in a valve-box C D in its respective cylinder-head. This valve-box consists of a small cylinder C and a cap D, the said cylinder C be-

ing formed or provided between the inner and outer walls of the cylinder-head A' and the cap D being fitted to and secured within the said cylinder C, the said cylinder, which is opposite to and concentric with the valve-seat, opening through the outer wall of the cylinder-head for the insertion of the cap D, and there being an opening c all around the inner end of said cylinder C to the discharge-chest A*. The cap D is bored centrally to receive and form a guide for the stem b of the valve. The outer end of the bore of said cap is closed by a plug d, which is bored centrally to receive and form a guide for the rod of a valve-tappet e, which projects into the hollow stem of the valve. The plug d, or, as it may be called, the "valve-tappet guide," is fitted in its outer end with a stuffing-box f for the rod of the tappet e. The valve-tappet guide thus projecting within the hollow stem of the valve permits a long guide for the tappet-rod without much projection of the guide beyond the cylinder-head.

The inner open end of the valve-box cylinder C and the inner end of the cap D are respectively so formed, as may be best understood by reference to Fig. 1, as to leave within the said cylinder between it and the valve-stem an annular space g, which constitutes a dash-pot into which the head of the valve, which projects all around the stem and is made to fit the said cylinder C, may enter, as shown in Fig. 2, when the valve completes its opening movement and may so be prevented from slamming open. The valve opens wide automatically when the pressure in the cylinder in front of it becomes greater than that behind it, and when wide open and received within the dash-pot g, as shown in Fig. 2, the portion of its head which projects around the stem is so sheathed or protected by the latter as to be unaffected by any such current of air from the discharge-passage A², through the chest A* into the cylinder, as might otherwise occur and have a tendency to close it when the valve is intended to remain open, as when the operation of the compressor is required to cease in consequence of an excess of pressure beyond the maximum desired in the receiver.

The discharge-valves may be closed posi-

tively by any known or suitable mechanism, as, for example, by the connection of the tappets with a rocker-arm E', (see Fig. 3,) which derives motion through a rod *h* from the cross-head *i* of the engine, which drives the piston of the compressor, the tappet-rods being attached to slides *j*, which work on fixed guides *k* on the heads of the compressor-cylinder, and the said slides being connected by rods *l* with a swing-plate on the shaft E, on which said rocker-arm is mounted. This particular valve-closing mechanism constitutes no part of the present invention, but forms part of the subject-matter of my application for United States patent, Serial No. 586,623, filed April 7, 1896, and therefore needs no further description here.

What I claim as my invention is—

1. The combination with an air-compressor discharge-valve having a stem of smaller diameter than its head, of an annular dash-pot in which the portion of the head projecting around the stem of the valve is sheathed when the valve is open, substantially as and for the purpose herein described.

2. The combination with an air-compressor cylinder having a hollow head constituting an air-discharge chest, of a dash-pot within the said head opening into the said discharge-

chest and a discharge-valve which when open has its head sheathed within said dash-pot, substantially as herein described.

3. The combination in an air-compressor of a valve-box, a valve having a hollow stem, a guide in said box for said stem, a valve-operating tappet entering the said stem, and a guide for said tappet provided in the valve-box and projecting into the hollow valve-stem, substantially as herein described.

4. In an air-compressor, the combination with a discharge-valve having a hollow stem and a head projecting around said stem, of a valve-box composed in part of a cylinder and in part of a cap which is fitted to said cylinder and which contains a guide for said stem the said box and stem having formed between them an annular dash-pot for the projecting head of the valve, a valve-tappet entering said hollow stem, a guide for said tappet provided in said cap and projecting within said hollow stem, and a stuffing-box for said tappet provided in said guide, substantially as herein described.

HENRY C. SERGEANT.

Witnesses:

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