

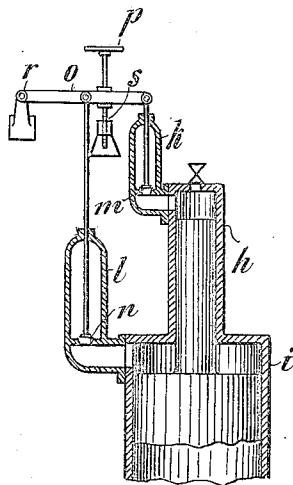
Feb. 27, 1923.

1,446,541

H. H. BLACHE

AUXILIARY DIESEL ENGINE COMPRESSOR

Filed Aug. 20, 1920



Inventor:
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Patented Feb. 27, 1923.

1,446,541

UNITED STATES PATENT OFFICE.

HANS HENRIK BLACHE, OF HELLERUP NEAR COPENHAGEN, DENMARK.

AUXILIARY DIESEL-ENGINE COMPRESSOR.

Application filed August 20, 1920. Serial No. 404,858.

To all whom it may concern:

Be it known that HANS HENRIK BLACHE, director, a subject of the King of Denmark, residing at Nr 32 Sofievej, Hellerup near
5 Copenhagen, Denmark, has invented certain new and useful Improvements in Auxiliary Diesel-Engine Compressors, of which the following is a specification.

The present invention relates to auxiliary
10 Diesel engine compressors, and particularly to compressors of the type indicated which are designed for installation on ships and which are utilized partly to supply air to the cylinder or cylinders of the auxiliary
15 engine to atomize the fuel therein, and partly to supply air to the main engine.

According to the invention, each step or cylinder of the compressor is provided with a regulating expansion chamber controlled
20 by a valve individual thereto; such chambers serving to increase the clearance spaces or chambers already provided in the respective cylinders when the valves are open, but being cut off from the cylinders when the
25 valves are closed. The invention essentially resides, however, in the operating devices for the cut-off valves; and it contemplates the provision of an improved connecting means whereby all of the valves may be opened and
30 closed simultaneously. In this way, it is insured that the work done by the compressor on the different stages will always be nearly the same, whether the compressor be
35 running at full power or cut down to a small fraction of its full power; and at the same time any possibility of the regulating operation affecting only the low-pressure cylinder of the compressor is avoided, which
40 is a matter of considerable importance since it might result in the compression in the high-pressure cylinder reaching so high a point that the rise in temperature might cause serious damage.

In the accompanying drawing, there is
45 illustrated one form which the invention may take in practice, the single figure representing a vertical sectional view of such form.

Referring more particularly to the drawing, *h* indicates the high-pressure (H. P.) cylinder of the compressor, and *i* the low-pressure (L. P.) cylinder. The H. P. cylinder *h* has connected to it the expansion chamber *k*, and the L. P. cylinder is similarly connected with the expansion chamber
55 *l*; the passages leading from the clearance

chambers or spaces provided at the tops of the respective cylinders to said expansion chambers being controlled by the valves *m* and *n*. These valves may be utilized to cut
60 out communication between the clearance chambers and the expansion chambers, as will be understood; but when open, they enable the said clearance chambers to be increased by the expansion chambers,
65 which latter may be made so large that the compression action is reduced to the small fraction of its full power which is required when the compressor is being operated to compress only enough air for in-
70 jecting the fuel into the cylinders of the auxiliary engine and does not supply any air to the main engine.

In order to prevent the regulating operation from affecting only the volume of the
75 L. P. cylinder *i*, the two valves *n* and *m* are connected together for simultaneous actuation, as previously stated, so that a single regulating action will positively open or close both valves. In the construction illus-
80 trated in the drawing, the stems of both valves are pivotally connected at their upper ends to a single lever arm *o*, which is fulcrumed at one end at *r* and which has connected with it a suitable threaded rod *s*
85 carrying a hand-wheel *p* by means of which it may be rotated. When said wheel is turned in the proper direction and to the required extent, lever *o* will be raised or
90 lowered, as the case may be, and in turn, will effect the desired adjustment of both valves with relation to their respective seats.

I claim as my invention:—

1. A Diesel engine compressor, comprising high- and low-pressure compression cyl-
95 inders, each having a clearance chamber; a piston in each cylinder; an expansion chamber connected with the clearance chamber of each cylinder; a valve individual to each expansion chamber to control its communi-
100 cation with the clearance chamber of the respective cylinder; and means for directly and positively opening or closing both valves simultaneously.

2. A Diesel engine compressor, compris-
105 ing high- and low-pressure compression cylinders, each having a clearance chamber; a piston in each cylinder; an expansion chamber connected with the clearance chamber of each cylinder; a valve individual to each expansion chamber to control its communi-
110 cation with the clearance chamber of the re-

spective cylinder; and a single operating connection common to both valves for directly and positively opening or closing them simultaneously.

- 5 3. A Diesel engine compressor, comprising high- and low-pressure cylinders; each having a clearance chamber; an expansion chamber connected with the clearance chamber on each cylinder; a valve individual to

each expansion chamber to control its communication with the respective cylinder; a rocking device to which the stems of both valves are pivoted to be operated in unison thereby; and an actuating member connected to adjust said rocking device. 10 15

In testimony whereof he affixes his signature.

HANS HENRIK BLACHE.