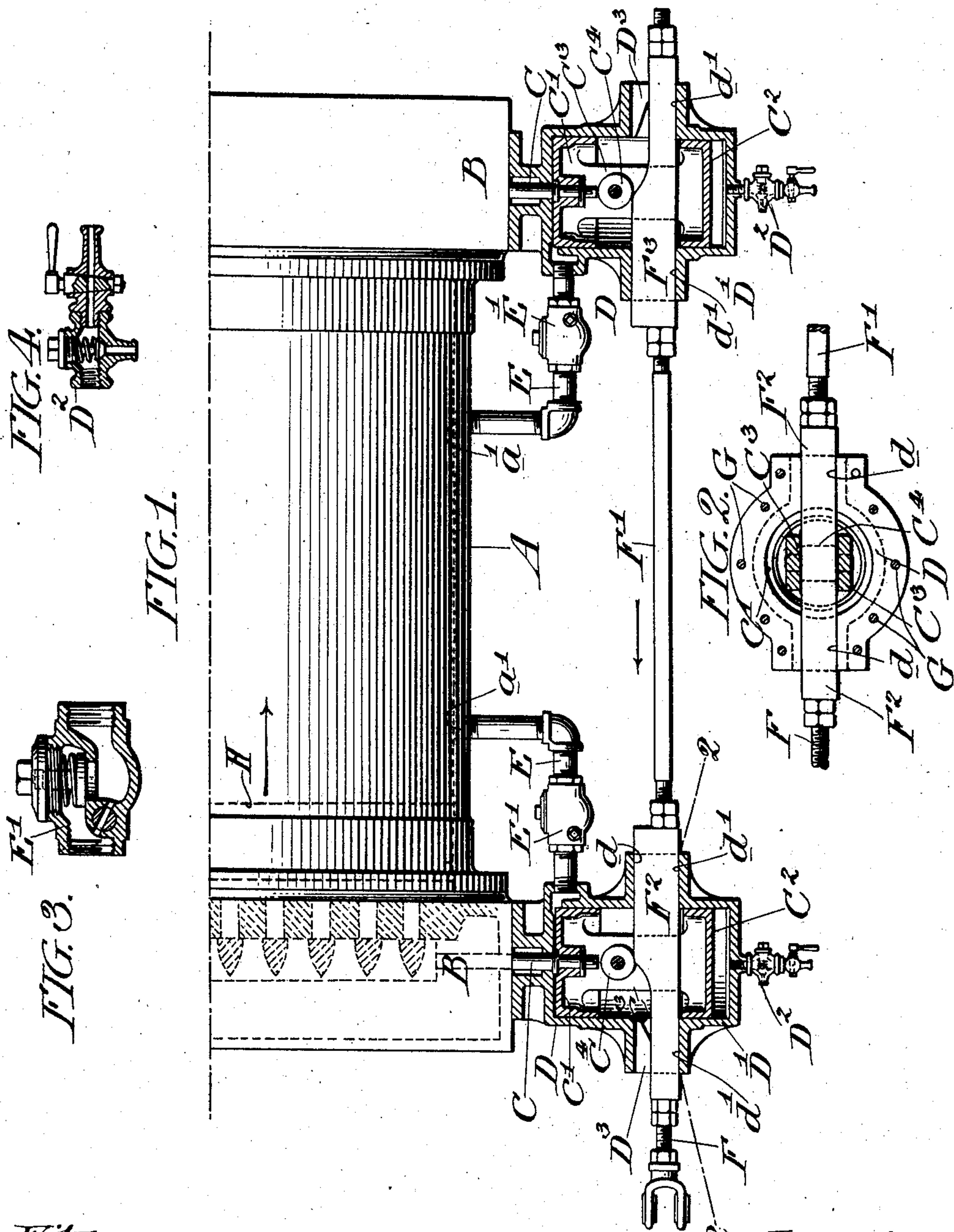


No. 780,911.

PATENTED JAN. 24, 1905.

G. B. PETSCHÉ.
BLOWING ENGINE OR COMPRESSOR.
APPLICATION FILED JUNE 5, 1903.



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BLOWING-ENGINE OR COMPRESSOR.

SPECIFICATION forming part of Letters Patent No. 780,911, dated January 24, 1905.

Application filed June 5, 1903, Serial No. 160,140.

To all whom it may concern:

Be it known that I, GUSTAV BERNHARD PETSCHÉ, a subject of the Emperor of Germany, residing in the city and county of Philadelphia, in the State of Pennsylvania, have invented a certain new and useful Improvement in Blowing-Engines or Compressors, of which the following is a true and exact description, reference being had to the accompanying drawings, which form a part thereof.

My invention relates to blowing-engines or compressors, and particularly to the mechanism for actuating the delivery-valves of such engines, my object being to provide a new, effective, and convenient device for this purpose, the nature of which will be best understood as described in connection with the drawings in which it is illustrated, and in which—

Figure 1 is a view showing a portion of the compressing-cylinder and receivers of the blowing-engine with the delivery-valve-actuating mechanism shown in section. Fig. 2 is a sectional view on the line 2 2 of Fig. 1; Fig. 3, a sectional view of the valve-box E' , and Fig. 4 a sectional view of the restricted escape-passage E^2 .

A indicates the compressing-cylinder; B B, the receivers at the ends of this cylinder; C C, the stems of the delivery-valves, one of which is shown in section at the left-hand side of Fig. 1. These stems connect directly with pistons indicated at C' and moving in the inner ends of the cylinders D, and these pistons in turn are connected by the arms C^3 C^3 with pistons C^2 , moving in the outer ends of the cylinders D D', and the arms C^3 , as shown in Figs. 1 and 2, afford bearings for cam-rolls, (indicated at C^4 .)

D and D' indicate separable sections making up the valve-actuating cylinder, these sections being bolted together, as by bolts G, (shown in Fig. 2,) and being formed with transversely-extending guideways, (indicated at d and d' .)

D^3 indicates a cock secured in the outer end of the valve-actuating cylinder and arranged, as shown in Fig. 4, to admit air freely to the cylinder and permit its exhaust therefrom through a restricted passage.

D^3 indicates a filling-piece used in connection with the portion of the guideway indicated at d .

E E indicate conduits leading from points in the cylinder A to the inner ends of cylinders D, each of these conduits, as shown, embodying the valve-box E' , (shown in section in Fig. 3,) and which permits the air to pass freely from the cylinder A to the actuating-cylinder D, but affords only a restricted passage for the backward passage of the air.

F is a rod which is given a reciprocating motion by some part of the engine (not shown) and so as to move in fixed relation to the compressing-piston in the cylinder A. To the rod F is fastened a regulating-slide F^2 , moving through the guideways d d' of one of the cylinders and connected by a rod F' with a similar but reversed cam-slide F^3 , moving in the guideways of the second valve-actuating cylinder.

G G, &c., indicate bolts which hold the cylinder-sections D and D' together.

The operation of the device is easily followed, it being understood that in the position shown both delivery-valves are closed, the compressing-piston just at the point of beginning its movement toward the right, and the rod F and connected parts moving toward the left, the delivery-valve at the left-hand side of the cylinder having just closed by the action of the cam F^2 operating, through the cam-roller C^4 , on the piston C' and valve-rod C. It will be seen that as the compressing-piston moves toward the right the connected cam-slide F^3 moves toward the left, leaving contact with the cam-roll C^4 , so that the air compressed in the right-hand cylinder A will pass through conduit E into the right-hand cylinder D, so that when the pressure at the right-hand side of the cylinder A and in the right-hand receiver B is substantially in equilibrium the air-pressure in the cylinder D, acting on the piston C' , will press it outward, the connected piston C^2 by compressing the air in the end D' of the actuating-cylinder cushioning the outward movement of the parts, but permitting the full opening

movement of the valve, owing to the gradual escape of air through the restricted passage indicated at D^2 , and it will be understood that as the compressing-piston H completes its stroke the cam-slide F^3 , moving in the opposite direction from that indicated by the arrow, will have assumed the position indicated at the right-hand side of Fig. 1, closing the right-hand delivery-valve, while the cam F^2 will be just at the point where its movement toward the right will leave the actuated piston of the left-hand delivery-valve free to open on the reverse movement of the compressing-piston.

In my application for Letters Patent filed April 20, 1903, Serial No. 153,450, I have shown and described a valve-actuating cylinder of the general character shown and claimed in this application; but in said other application the said device is only claimed in connection with features of construction alternative to and different from the specific devices shown and described in the present application.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. As a device for actuating the delivery-valve of a blowing-engine or compressor, the cylinder D, D' , having guideways for a slide extending transversely through its walls, in combination with a conduit E, connecting the inner end of the cylinder with the compressing-cylinder, a regulated escape-passage for air connecting with the rear end of the cylinder, pistons working in the inner and outer

ends of the cylinder, said pistons being connected together and with the stem of the delivery-valve, a reciprocating slide working through the guideways on the cylinder and between the pistons, and means actuated by said slide for moving the pistons toward the inner end of the cylinder when the slide moves in one direction and leaving them free to move toward the outer end of the cylinder when the slide moves in the other direction.

2. As a device for actuating the delivery-valve of a blowing-engine or compressor, the cylinder D, D' , having guideways for a slide extending transversely through its walls, in combination with a conduit E, connecting the inner end of the cylinder with the compressing-cylinder, a regulated escape-passage for air connecting with the rear end of the cylinder, pistons working in the inner and outer ends of the cylinder, said pistons being connected together and with the stem of the delivery-valve, a cam-contacting part situated between and secured to move with the pistons, a reciprocating slide working through the guideways on the cylinder and between the pistons, and a cam on said slide arranged to contact with the cam-contacting part and through it move the pistons inward when the slide moves in one direction and to leave the piston free to move outward when the slide moves in the other direction.

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