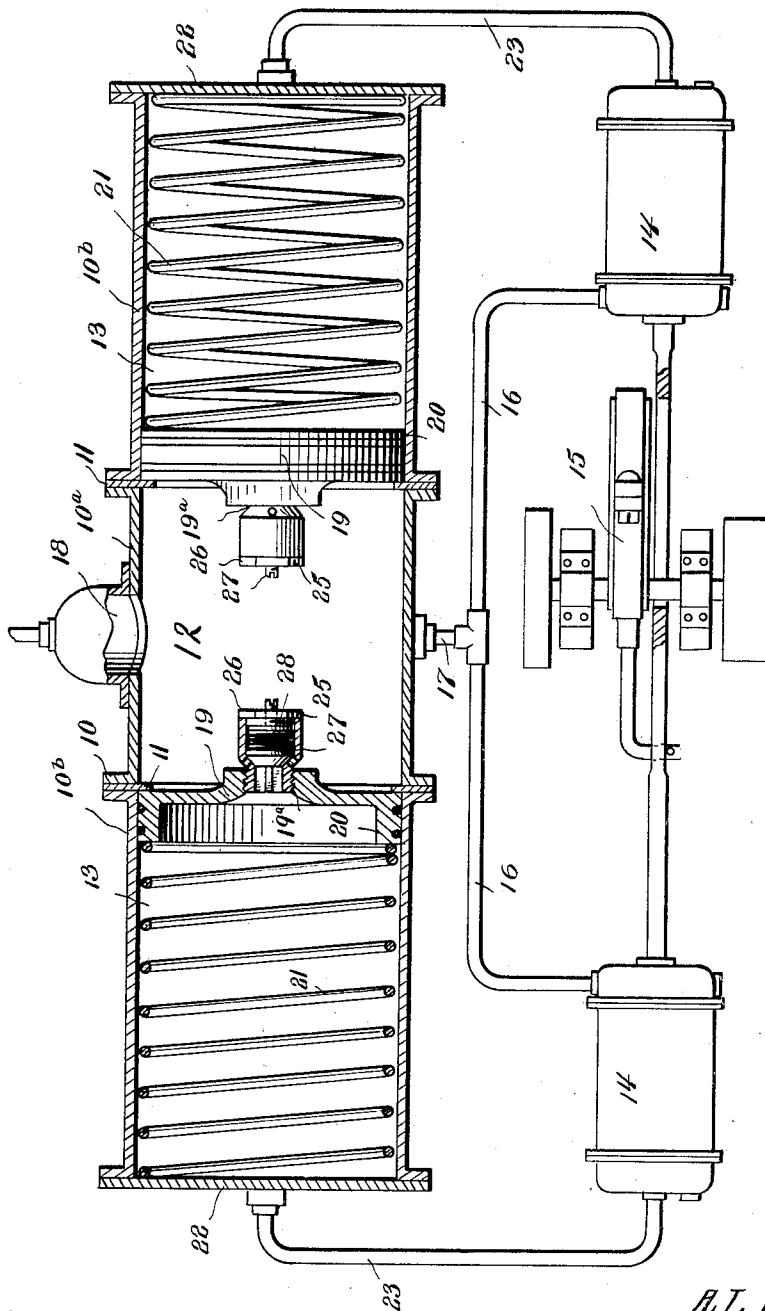


A. L. ELLIS.
AIR COMPRESSING MACHINE.
APPLICATION FILED MAR. 21, 1913.

1,109,519.

Patented Sept. 1, 1914.



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ALTOMON L. ELLIS, OF EDEN, MISSISSIPPI.

AIR-COMPRESSING MACHINE.

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Specification of Letters Patent.

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Application filed March 21, 1913. Serial No. 756,062.

To all whom it may concern:

Be it known that I, ALTOMON L. ELLIS, a citizen of the United States, residing at Eden, in the county of Yazoo and State of Mississippi, have invented new and useful Improvements in Air-Compressing Machines, of which the following is a specification.

An object of the invention is to provide a machine for compressing air.

The invention embodies, among other features, a casing subdivided to form a plurality of compartments, the medial one of which constitutes a main air chamber and which is provided with an outlet, a plurality of pumps being provided, the said pumps being of the double-acting type and having connection with the medial chamber and the end compartments to force air into the medial chamber and into the end compartments, the air forced into the end compartments being adapted to actuate compressing heads movable in the compartments to compress the air in the main air chamber, the compression of the air in the main chamber being regulated synchronously with the action of the pumps to force the said current of air through the exhaust or outlet in the main chamber.

In the further disclosure of the invention reference is to be had to the accompanying drawings, constituting a part of this specification, and in which the figure is a horizontal longitudinal sectional view of the device, the pumps and operating mechanism therefor being shown in plan.

Referring to the figure it will be seen that use is made of a cylindrical casing 10 including a series of connected sections 10^a and 10^b, with the section 10^a interposed between the sections 10^b, suitable ring-like plates 11 being interposed between the ends of the middle section 10^a and the end sections 10^b. It will, therefore, be apparent that the section 10^a constitutes a main air chamber 12, whereas the end sections 10^b constitute end air compartments 13.

A plurality of double acting pumps 14 are provided and actuated by a suitable driving member 15 interposed between the pumps as shown, and having connection with the said pumps are a plurality of pipes 16 terminating in a pipe 17 having connection with the main air chamber 12, an outlet 18 being provided for the chamber 12, as shown, to per-

mit the air contained therein to flow outwardly from the chamber.

Compressing heads 19 are mounted to slide in the compartments 13 formed by the sections 10^b, and abutting against integral circular flanges 20 of the compressing heads 19 are expansible helical springs 21 arranged within the compartments 13, with the other ends of the springs abutting against the inner faces of end plates 22 secured to the outer open ends of the sections 10^b to close the same, it being readily apparent that the ring-like plates 11 limit the forward movement of the compressing heads 19 and which are normally held in forward position by the springs 21. Pipes 23 have connection with the compartments 13 and the pumps 14 for the purpose of admitting air to the compartments, behind the compressing heads 19, it being readily apparent by referring to the view that on the forward strokes of the pistons of the pumps 14, air will be forced through the pipes 23 into the end compartments 13, whereas on the return stroke of the pumps air will be forced through the pipes 16 and the pipe 17 into the main air chamber 12. The compressing heads 19 are provided with openings 19^a in which are mounted valves 25, consisting of circular casings 26 in which are mounted slide valve members 27 normally engaged by springs 28 which tend to hold the valves 27 in closed position in the casing 26.

Now in order that the air passing through the outlet 18 from the chamber 12 will be of substantially an even pressure at all times so that a constant supply of air will pass from the chamber, it will be apparent that in order to retain an even pressure of air in the chamber 12, the compressing heads 19 will be moved by the air received in the chamber and against the actions of the springs 21 when the pressure of the air received in the chamber and forced therein by the pumps 14 is greater than the expansible action of the springs and it will be further apparent that when air is forced into the end compartments 13 through the pipes 23 connected with the pumps 14, the air received in the end compartments will pass into the chamber 12 when the said air has a greater pressure than the expansible action of the springs 28 normally holding the valves 27 in closed position. Therefore, each time that the pistons of the pumps 14

are moved forwardly by the engine 15 a supply of air will be forced into each of the compartments 13 and upon the return stroke of the pistons of the pumps air will be forced into the main air chamber 12. Now by providing the movable compressing heads and the valves 25 carried thereby the pressure of the air in the chamber 12 will at all times remain constant and therefore the air flowing outwardly through the outlet 18 will at all times be maintained at an even pressure.

Having thus described my invention, I claim:

1. In a device of the class described, the combination with double-acting pumps, of a casing, plates secured in the casing to form an air chamber and end compartments therein, compressing heads mounted to slide in the compartments and adapted to engage the said plates to limit the sliding movement of the heads in the compartments, springs in the compartments and engaging the compressing heads to normally retain the same in engagement with the said plates, pipes connecting the said pumps with the said compartments, a pipe connecting the said pumps with the said air chamber, an outlet pipe for the air chamber, and spring-engaged valves mounted on the said compressing heads to normally close openings therein.
2. In a device of the class described, the combination with double-acting pumps, of a casing, plates secured in the casing to form an air chamber and end compartments therein, compressing heads mounted to slide in the compartments and adapted to engage the said plates to limit the sliding movement of the heads on the compartments, springs in the compartments and engaging the compressing heads to normally retain the same in engagement with the said plates, pipes connecting the said pumps with the said compartments, a pipe connecting the said pump with the said air chamber, an outlet pipe for the air chamber, spring-engaged

valves mounted on the said compressing heads to normally close openings therein, and apertured housings on the said heads and adapted to inclose the said valves therein.

3. In a device of the class described, the combination with a casing subdivided to form an air chamber and end compartments, of pumps having connection with the said air chamber and end compartments for forcing air therein, of compressing heads slidable in the end compartments, plates secured to the casing to limit the sliding movement of the said heads and the said compartments, springs in the said compartments and engaging the ends to normally retain the same in engagement with the said plates, valves adapted to normally close openings in the said heads, and springs engaging the valves to normally retain the same in closed position.

4. In a device of the class described, the combination with a casing subdivided to form an air chamber and end compartments, of pumps having connection with the said air chamber and end compartments for forcing air therein, of compressing heads slidable in the end compartments, plates secured to the casing to limit the sliding movement of the said heads and the said compartments, springs in the said compartments and engaging the heads to normally retain the same in engagement with the said plates, valves adapted to normally close openings in the said heads, springs engaging the valves to normally retain the same in closed position, and apertured housings on the said heads and adapted to inclose the said valves.

In testimony whereof I affix my signature in presence of two witnesses.

ALTOMON L. ELLIS.

Witnesses:

W. D. LAWSON,
GEO. F. STRICKLIN.