No. 670,153. Patented Mar. 19, 1901.

C. GARVER.

STEAM COMPRESSOR.

(Application filed Mar. 29, 1900.)

(No Model.)

Fig. 1.

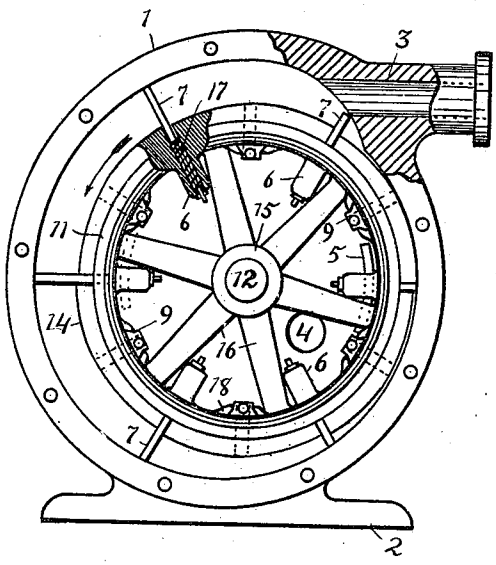
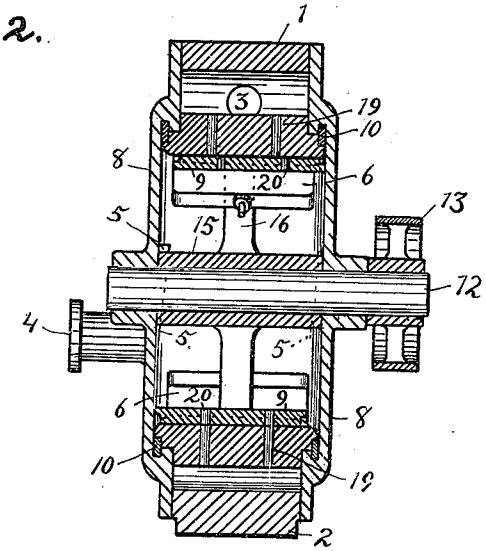


Fig. 2.



WITNESSES:

J. W. Wilson

Anna K. Rochss

Charles Garver INVENTOR

BY A. G. Burns

ATTORNEY.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

CHARLES GARVER, OF FORT WAYNE, INDIANA.

STEAM-COMPRESSOR.

SPECIFICATION forming part of Letters Patent No. 670,153, dated March 19, 1901.

Application filed March 29, 1900. Serial No. 10,585. (No model.)

To all whom it may concern:

Be it known that I, CHARLES GARVER, a citizen of the United States, residing at Fort Wayne, in the county of Allen and State of Indiana, have invented certain new and useful Improvements in Steam-Compressors; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in devices for utilizing exhaust-steam; and the object of my improvement is to afford means for compressing exhaust-steam and returning the same into the generator.

The device consists of the construction illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation, partly in section and with one of the side plates removed; and Fig. 2 is a vertical central section on a line at right angles to Fig. 1.

Similar numerals of reference indicate corresponding parts in both views.

1 is the casing, which is circular in form and is mounted upon or cast integral with the base 2. The sides of said casing are faced so as to snugly fit with the side plates 8 8, which are secured thereto by means of bolts or otherwise. The inlet-port 3 enters said casing near the top, beneath which the inner surface of said casing conforms for a short distance with the contour of the wheel 14.

The driving-shaft 12 is mounted in suitable bearings in the side plates 8 8 and with one end extending to form a mount for the driving-gear 13. The wheel 14 is rigidly fixed upon the shaft 12 and ranges between the side plates 8, with one part of its outer surface snugly fitting against that portion of the casing 1 which conforms with the contour of said wheel mentioned hereinbefore. Annular recesses 11 11 are made in the sides of said wheel, which serve as seats for the packing-rings 10 10. The side plates 8 8 overhang said rings and fit snugly against the lateral sides of said wheel.

Blades 7 7, &c., are arranged at regular intervals within suitable pockets 6 6, which are cast integral with said wheel. The said blades extend radially outward from their respective pockets and are adapted to reciprocate therein. The springs 17, arranged in said pockets, are adapted to hold said blades outward against the inner surface of the casing 1.

The thickness of the rim of the wheel 14 gradually decreases from the ports 19, respectively, toward the forward blades 7 to allow spaces between said rim and the casing 1 for such condensation as may collect therein.

Upon the inner side of the rim of the wheel 14 are arranged at regular intervals a number of laterally-movable valves 9 9, having openings 20 20, which register with corresponding ports 19 19, extending through the rim of the wheel. The said valves are adapted to close said ports when actuated as hereinafter described. Lugs 18 are cast integral with the rim of said wheel and overhang the bevel sides of said valves and form ways in which the same is adapted to slide.

Cams 5 5 are respectively secured to the inner sides of the side plates 8 8 at points upon opposite sides of the shaft 12. The said cams project from said side plates and engage the ends of said valves. As the wheel 14 moves in the direction indicated by the arrow the valves are successively engaged by the cam 5 and are thereby shifted laterally, thus closing the ports 19. The action just described takes place when the respective valves reach the point where the rim of the wheel 14 rests against the casing 1. The valves are successively reopened as they come into contact with the cam on the opposite side plate 8, which cam is located at a point diametrically opposite the formerly-mentioned cam. Thus (referring to Fig. 1) the valves are closed when they reach the right-hand extreme and are opened when they reach the left-hand extreme by coming into contact with the cams alternately.

The blades 7 7 slide against the casing 1 and range in their respective pockets according to the relative space between the wheel 14 and said casing.

The discharge-port 4 passes through the side plate 8 at a point ranging within the rim of the wheel 14.

In use the machine is mounted upon a suitable foundation, and the gear 13 is connected with an engine, so as to revolve approximately at a ratio of one to three. The exhaust of said engine is led into the inlet-port 3, and the discharge-port 4 is connected with the generator which supplies said engine with steam. As the engine revolves, the wheel 14 is driven, and the exhaust-steam from the engine passes through the port 3 into the spaces between the blades 7 7. The valves 9 admit the steam between the blades to pass through the ports 20 and into the inner part of the wheel 14 as the space between the casing 1 and said wheel decreases. At this juncture the valves 9 are closed by means of the cam 5, which prevents the steam from retracting. The steam thus forced into the central portion of the wheel passes in a compressed form through the discharge-port 4 and into the generator with which it is connected.

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

In a device for utilizing exhaust-steam, a revoluble wheel having a number of pockets within its rim; radial blades adapted to reciprocate in said pockets; ports communicating through the rim of said wheel between said pockets; valves for closing said ports; a casing, inclosing said wheel, eccentrically arranged with one part of its inner surface against the face of said wheel; and the side plates, secured to said casing and having extending cams arranged respectively to alternately close and open said valves, substantially as shown and described.

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

CHARLES GARVER.

Witnesses:
WILMER LEONARD,
ELMER LEONARD.