No. 879,213. PATENTED FEB. 18, 1908.

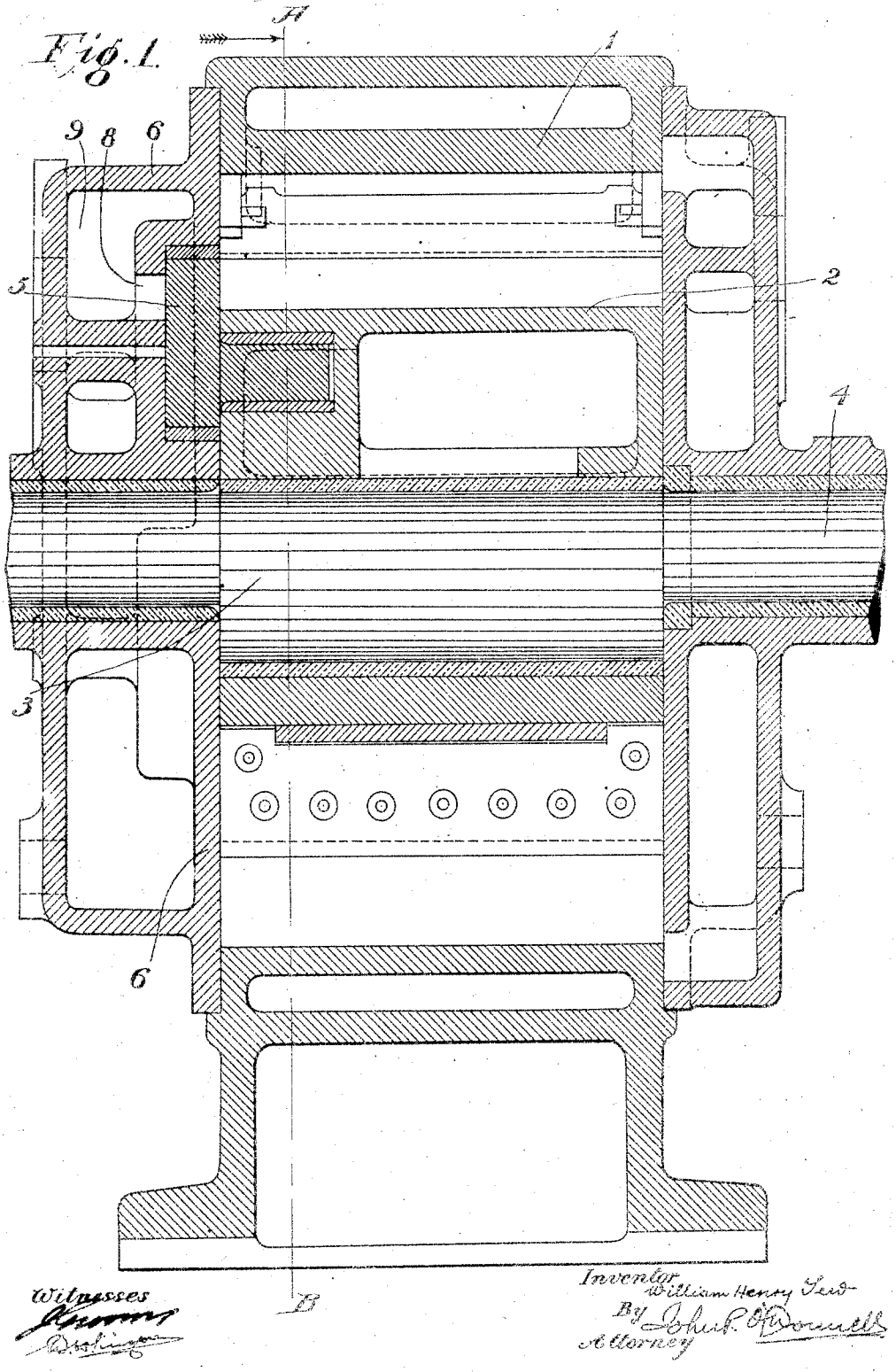
W. H. TEW.

AIR COMPRESSOR OR PUMP.

APPLICATION FILED AUG. 16, 1907.

3 SHEETS—SHEET 1.

Fig. 1.



Witnesses

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By John P. O'Donnell

Attorney

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3 SHEETS—SHEET 2.

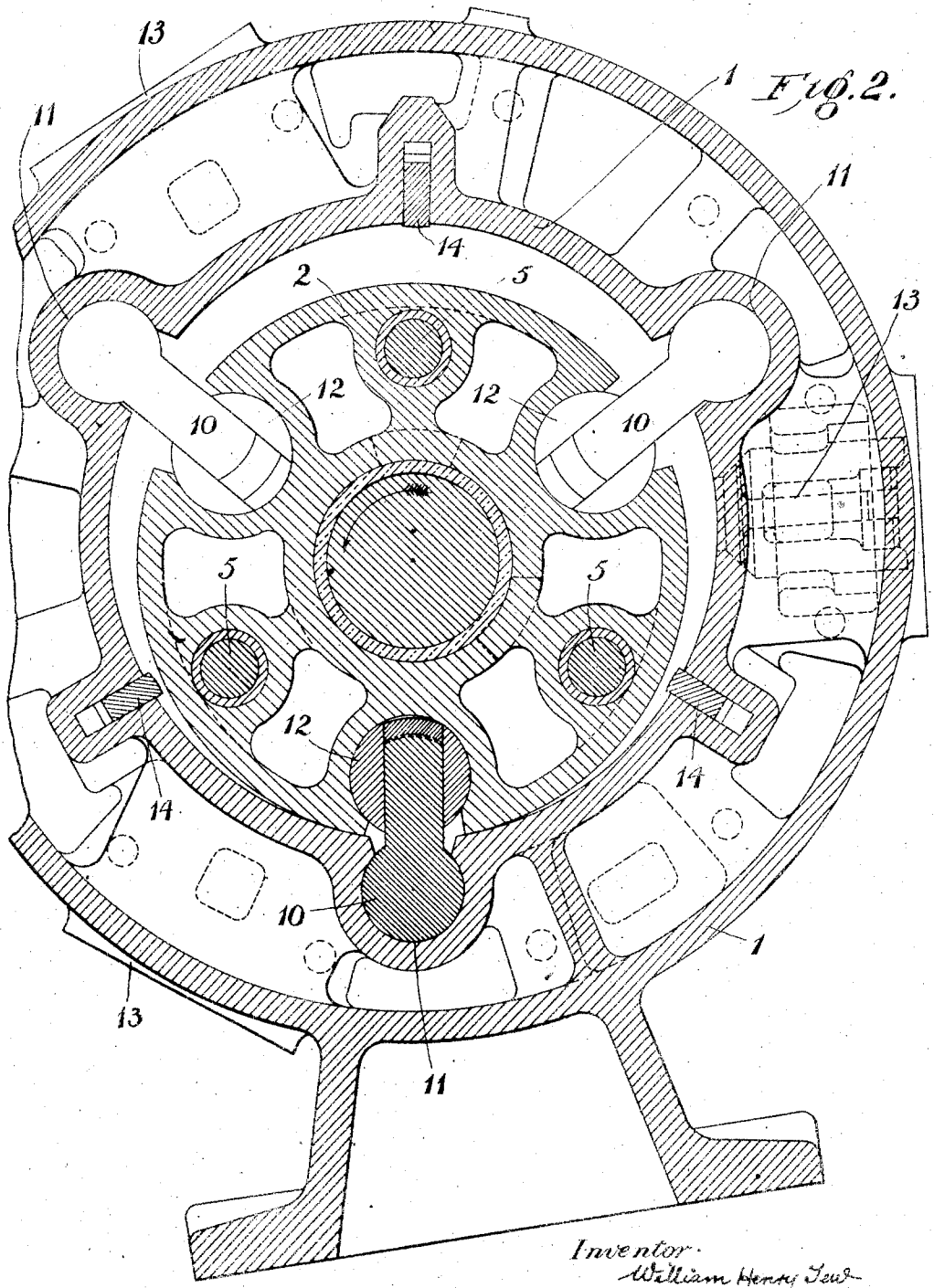

Fig. 2.

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3 SHEETS—SHEET 3.

Fig. 4.

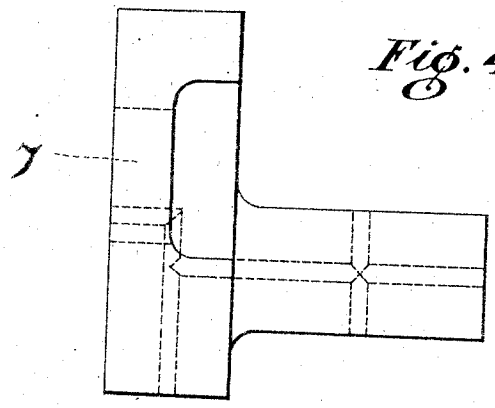
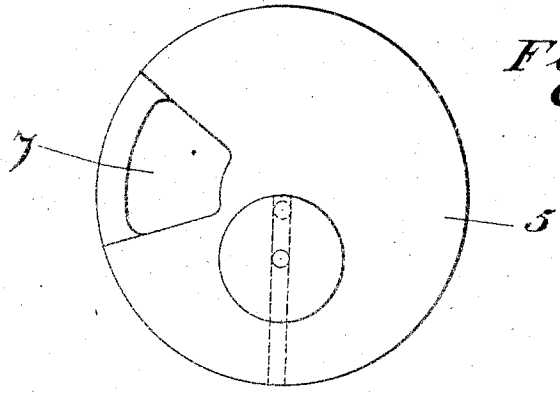


Fig. 3.



Witnesses

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UNITED STATES PATENT OFFICE.

WILLIAM HENRY TEW, OF GLASGOW, SCOTLAND.

AIR COMPRESSOR OR PUMP.

No. 879,213. Specification of Letters Patent. Patented Feb. 18, 1908.

Application filed August 16, 1907. Serial No. 388,342.

To all whom it may concern:

Be it known that I, WILLIAM HENRY TEW, a citizen of the United States of America, residing at Glasgow, in the county of Lanark, Scotland, (whose post-office address is 55 Waterloo street, Glasgow, in the county of Lanark, Scotland,) have invented certain new and useful Improvements in Air Compressors or Pumps; and I do hereby 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.

This invention relates to improvements in air compressors or pumps of the kind in which an inner drum and an outer cylinder or casing are employed and linked together in such a manner that their axes are parallel but arranged eccentrically, the one in relation to the other so that the inner drum and the outer casing form a crescent shaped chamber, the said chamber being divided by radial vanes as hereinafter described.

The present invention has for its object to increase the efficiency of compressors built on the above lines without increasing their cost or weight.

In an air compressor according to this invention the construction is such that immediately after the discharge valve or valves have closed, air from the atmospheric intake is admitted to one of the sections of the crescent shaped chamber at the correct moment by the drum itself in its movement mechanically operating valves as hereinafter described.

It is well known to those skilled in the art that in air compressors of the type to which this invention relates, for mechanical reasons an efficient air tight contact or joint is not made between the outside cylindrical surface of the inside drum and the inside cylindrical surface of the outer casing. With a view to overcoming this difficulty or defect a number of strips (hereinafter called packing strips) are, according to this invention, placed in such positions that when the drum in its movement comes in contact with a packing strip an air tight joint or contact is formed and all air in front (in the direction of movement) of this point or position of contact, *i. e.* of the packing strip, is discharged through the valve or valves provided for that purpose. The said packing strips are normally allowed to extend a slight distance into the crescent shaped chamber, and are held in that position by means of springs, or otherwise, until forced outwards by the movement of the drum.

The invention further consists in the combination and arrangement of parts, and features and details of construction, hereinafter described and more particularly pointed out in the appended claims.

In the accompanying drawings,—in the several figures of which the equivalent parts are indicated by similar reference symbols,—Figure 1 is a sectional view of an apparatus constructed according to this invention; Fig. 2 is a sectional elevation, taken on the line A—B, Fig. 1, looking in the direction of the arrow, and Figs. 3 and 4 show one of the crank or eccentric pins 5, hereinafter described, on an enlarged scale.

Referring to the drawings, 1 represents the stationary outer casing or drum and 2 the inner drum. This inner drum 2 is mounted on or surrounds the eccentric portion 3 of the shaft 4 in such a manner that the rotation of shaft 4 imparts a rolling motion to the inner drum 2 and an ever advancing point or line in the periphery of the inner drum 2 is maintained in contact with the inner cylindrical surface of the outer casing 1 while the diametrically opposite point is that of greatest depth of the crescent shaped chamber.

To maintain the relative position of the inner and outer drums 2 and 1 they are linked together, preferably at three points, by eccentric crank pins 5 as shown, sunk into the cover 6 of the outer casing 1. Each of these eccentric pins has an opening or port 7 so placed and arranged that by the movement imparted to them from the inner drum the openings or ports are, at the correct moment placed in communication or registration with an opening or port 8 in the cover 6 in constant communication with an air passage 9 leading to the atmosphere.

Radial vanes 10 of the known kind are provided as shown, which vanes divide the crescent shaped chamber into three parts. These vanes may be fitted to project from the inner drum, or as is preferred and shown in the drawings may be fitted in the known way in sockets 11 in the stationary casing 1 and project inwards through rockers 12 fitted in the inner drum.

The discharge valves 13 are conveniently

located as shown and being arranged radially in the outer casing insure a thorough water cooling.

14 are packing strips formed of any suitable material, and are mounted in the inner face of the outer casing 1. These strips, as hereinbefore stated, are allowed to project or extend a slight distance into the crescent shaped chamber as shown in the drawings and are held in that position by means of springs or the like. The inner drum 2, in the rolling movement imparted to it by the eccentric shaft, forces these packing strips in an outward direction relative to the center of the apparatus, and the said strips form between the outer face of the inner drum and the inner face of the outer casing an air tight contact or joint when the point of contact is at one of the said strips.

What I claim as my invention and desire to secure by Letters Patent is:—

1. In an air compressor, the combination of a stationary outer casing, an inner drum linked thereto, radial vanes operatively mounted in said outer casing and inner drum, a discharge valve or valves in said outer casing, means for imparting a rolling motion to the said inner drum, and inlet valves connected to said drum and adapted to be operated by the movement thereof.

2. In an air compressor, the combination of a stationary outer casing, an inner drum, radial vanes operatively mounted in said inner drum and outer casing, means for imparting a rolling motion to the said inner drum, a discharge valve or valves in said outer casing, eccentric or crank pins linking said inner drum and outer casing together to maintain them in their correct relative positions, and ports in said pins adapted to be put into registration with inlet ports in the outer casing by the movement of the inner drum to admit atmospheric air to the compressor.

3. In an air compressor, the combination of a stationary outer casing, an inner drum linked thereto, radial vanes operatively mounted in said outer casing and inner drum, inlet and discharge valves, means for imparting a rolling motion to said inner drum, and a packing strip or strips adapted at certain times in the operation of the apparatus to form an air tight joint at the point of contact of the inner drum and outer casing.

4. In an air compressor, the combination of a stationary outer casing, an inner drum linked thereto, radial vanes operatively mounted in said outer casing and inner drum, a discharge valve or valves in said outer casing, means for imparting a rolling motion to the said inner drum, inlet valves connected to said drum and adapted to be operated by the movement thereof, and a packing strip or strips adapted at certain times in the operation of the apparatus to form an air tight joint at the point of contact of the inner drum and outer casing.

5. In an air compressor, the combination of a stationary outer casing, an inner drum, radial vanes operatively mounted in said inner drum and outer casing, means for imparting a rolling motion to the said inner drum, a discharge valve or valves in said outer casing, eccentric or crank pins linking said inner drum and outer casing together to maintain them in their correct relative positions, ports in said pins adapted to be put into registration with inlet ports in the outer casing by the movement of the inner drum to admit atmospheric air to the compressor, and a packing strip or strips adapted at certain times in the operation of the apparatus to form an air tight joint at the point of contact of the inner drum and the outer casing.

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

WILLIAM HENRY TEW.

Witnesses:
ROBERT THOMSON,
THOS. GOMLEY.