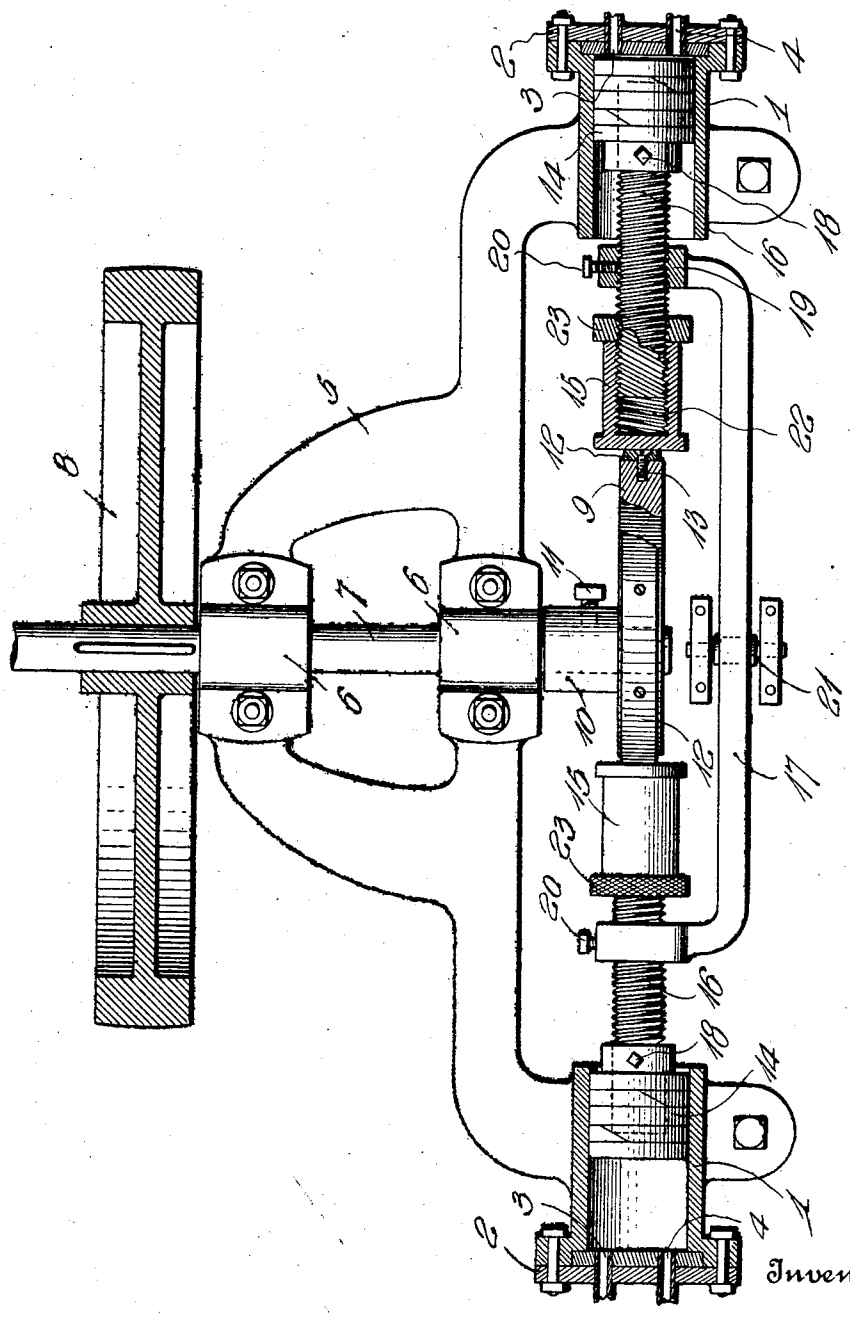
May 20, 1924. 1,494,764

J. McD. WISHART.

ADJUSTABLE STROKE COMPRESSOR

Filed March 22, 1923



Witness

Inventor

James McDonald Wishart

By H. B. Williamson & Co

Attorneys

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JAMES McDONALD WISHART, OF FRESNO, CALIFORNIA.

ADJUSTABLE-STROKE COMPRESSOR.

Application filed March 22, 1923. Serial No. 626,954.

To all whom it may concern:

Be it known that I, JAMES M. WISHART, a citizen of the United States, residing at Fresno, in the county of Fresno and State of California, have invented certain new and useful Improvements in Adjustable-Stroke 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.

My invention relates to improvements in compressors or pumps and the present disclosure thereof is directed to a compressor designed primarily for use in connection with refrigerating systems, although not restricted to such use. The compressor is of the two cylinder, opposed type in which pistons are operated by a common eccentric disposed between the two cylinders, it being the object of the invention to provide a novel form of adjustable connector between the two pistons for transmitting motion thereto from the eccentric, said connector being adjustable to permit eccentrics of different sizes to be used, so that the strokes of the pistons may be varied as occasion may demand.

With the foregoing in view, the invention resides in the novel subject matter hereinafter described and claimed, the description being supplemented by the accompanying drawing, in which a plan view partly in horizontal section is shown of a compressor constructed in accordance with the invention.

In the drawing above briefly described, the numerals 1 designate a pair of opposed axially alined cylinders closed at their outer ends by suitable heads 2 and open at their inner ends, said heads carrying appropriate inlets 3 and outlets 4. The cylinders 1 may be mounted in any desired manner, for instance on a cast metal frame 5 and when this frame is used, it carries a pair of bearings 6 in which a shaft 7 is rotatably mounted, the axis of this shaft being at right angles to the cylinder axis. Any suitable means may be employed for rotating the shaft 7 and I have illustrated a belt wheel 8 for this purpose. An eccentric 9 is removably carried by the shaft 7 between the two cylinders 1 and in the present showing, this eccentric is provided with a hub 10 receiving the shaft, a set screw 11 being threaded through said hub for securing the eccentric upon the shaft. In the preferred form of construction, a steel band 12 surrounds the eccentric 9 and if desired may be detachably secured thereto by means of screws or the like 13. Thus, instead of removing the entire eccentric and installing another, if the stroke of the compressor is to be changed, it is only necessary to remove the band 12 and substitute one having a different thickness.

Suitable pistons 14 are mounted in the cylinders 1 and a rigid adjustable connector is provided between said pistons, said connector having adjustable shoes 15 for contact with opposite points on the eccentric. In the preferred form of construction, the connector between the two pistons, includes a pair of piston rods 16 carrying said pistons and extending toward each other, and a yoke 17 connecting said piston rods. I prefer to thread the rods 16 throughout their lengths, to provide the pistons with threaded sockets receiving the outer ends of said piston rods, and to provide said pistons with set-screws 18 for holding the rods against rotation with respect to said pistons. The ends of the yoke 17 are formed with threaded openings 19 through which the rods 16 pass adjustably and set-screws or the like 20 may be provided to normally hold said yoke and rods against relative turning. To prevent turning of the piston rods 16 and the yoke 17, as a unit, the body portion of said yoke, which is parallel with the piston rods, may engage a suitable guide, such as a roller 21 mounted in any desired manner.

The shoes 15 are preferably of cylindrical form and are provided with sockets 22 into which the piston rods 16 are adjustably threaded, lock nuts or the like 23 being provided to normally hold said shoes in adjusted position.

By employing the construction shown, it will be seen that the distance between the shoes 15 may be varied by loosening the lock nuts 23 and turning said shoes to cause them to travel inwardly or outwardly upon the piston rods 16, thereby permitting an eccentric of a different size to be used, to change the strokes of the pistons 14. Also, by loosening the set-screws 20 and turning the piston rods 16 in the ends of the yoke 17, the distance between said pistons may be changed if desired.

From the above, it will be seen that a compressor or pump has been provided which

may be adjusted to meet a great number of requirements, and as excellent results may be obtained from the details disclosed, they may be followed if desired. However, within the scope of the invention as claimed, numerous minor changes may be made.

I claim:

1. The combination with a pair of opposed cylinders, a driven eccentric between them, and pistons in said cylinders; of a longitudinally extensible and retractable rigid connector between said pistons having means engaging said eccentric to receive motion therefrom, said means being adjustable upon said connector toward and away from said eccentric independently of the longitudinal adjustment of said connector.

2. The combination with a pair of opposed cylinders, a driven eccentric between them, and pistons in said cylinders; of a rigid connector between said pistons having shoes for engagement with opposite points of the eccentric, said shoes being adjustable longitudinally of the common piston axis to permit the substitution of an eccentric of another size.

3. The structure as specified in claim 2, said shoes having screwthreaded mounting means, and means for locking them after adjustment.

4. The combination with a pair of opposed cylinders, a driven eccentric between them, and pistons in said cylinders; of a longitudinally adjustable rigid connector between the two pistons, including shoes for contact with opposite points of the eccentric, said shoes being adjustable longitudinally of the piston axis to permit the substitution of an eccentric of a different size.

5. The combination with a pair of opposed cylinders, a driven eccentric between them, and pistons in said cylinders; of a rigid connector between the two pistons consisting of a main central section and two end sections connected with the pistons and relatively adjustable with respect to said central section, said connector having means engaging the eccentric to receive motion therefrom, said means being adjustable upon said connector toward and away from said eccentric independently of the longitudinal adjustment of said connector.

6. The combination with a pair of opposed cylinders, a driven eccentric between them, and pistons in said cylinders; of a pair of threaded piston rods extending inwardly toward each other from said pistons, and a yoke through the ends of which said piston rods are threaded adjustably, said rods and yoke forming a rigid connector between the two pistons, said connector being provided with means engaging said eccentric to receive motion therefrom, said means being adjustable upon said connector toward and away from said eccentric independently of the longitudinal adjustment of said connector.

7. The combination with a pair of opposed cylinders, a driven eccentric between them, and pistons in said cylinders; of a yoke between the two pistons having openings in its ends alined with the piston axis, piston rods extending inwardly toward each other from the pistons and passing adjustably through said openings of said yoke, said yoke and piston rods forming an adjustable rigid connector between the two pistons, and means carried by said connector and engaging said eccentric to receive motion therefrom, said means being adjustable upon said connector toward and away from said eccentric independently of the longitudinal adjustment of said connector.

8. The combination with a pair of opposed cylinders, a driven eccentric between them, and pistons in said cylinders; of a pair of piston rods extending inwardly toward each other from said pistons, a yoke connecting said piston rods with each other, and shoes longitudinally adjustable upon the inner ends of said piston rods and engaging opposite points of said eccentric, adjustment of said shoes permitting the substitution of an eccentric of a different size.

9. The structure as specified in claim 8, said shoes being threaded upon said piston rods, and means for normally locking said shoes against rotation upon said rods.

10. The combination with a pair of opposed cylinders, a driven eccentric between them, and pistons in said cylinders; of a pair of piston rods extending inwardly toward each other from said pistons, a yoke extending between the two piston rods and having openings in its ends in which said rods are adjustably held, and a pair of eccentric engaging shoes having recesses in which the inner ends of said piston rods are adjustably secured, adjustment of said shoes upon said piston rods permitting the substitution of a different eccentric.

11. The combination with a pair of opposed cylinders, a driven eccentric between them, and pistons in said cylinders; of a pair of threaded piston rods extending inwardly toward each other from said pistons, an elongated yoke extending between the two piston rods and having openings in its ends in which said piston rods are adjustably threaded, means for normally locking said yoke and piston rods against relative turning, a pair of eccentric engaging shoes threaded adjustably on the inner ends of said piston rods, and means for locking said shoes and piston rods against relative turning, adjustment of said shoes on said rods permitting the substitution of a different eccentric.

12. The combination with a pair of opposed cylinders, a driven eccentric between

them, and pistons in said cylinders; of a rigid connector between the two pistons, including a straight portion parallel with but offset laterally from the common piston axis, and a guide relatively stationary with respect to said straight portion of said connector and engaging the same to prevent rotation of said connector and said pistons, said connector having means engaging said eccentric to receive motion therefrom, said means being adjustable upon said connector toward and away from said eccentric independently of the longitudinal adjustment of said connector.

13. The combination with a pair of opposed cylinders, a driven eccentric between them, and pistons in said cylinders; of a rigid connector between the two pistons having adjustable shoes at opposite sides of said eccentric, and a removable band secured around said eccentric and engaging said shoes, adjustment of said shoes along the piston axis and substitution of a band of different thickness serving to change the strokes of the pistons.

In testimony whereof I have hereunto affixed my signature.

JAMES McDONALD WISHART.