

No. 626,053.

Patented May 30, 1899.

J. A. CHARTER & F. G. HOBART.

COMPRESSOR.

(Application filed Oct. 13, 1898.)

(No Model.)

2 Sheets—Sheet 1.

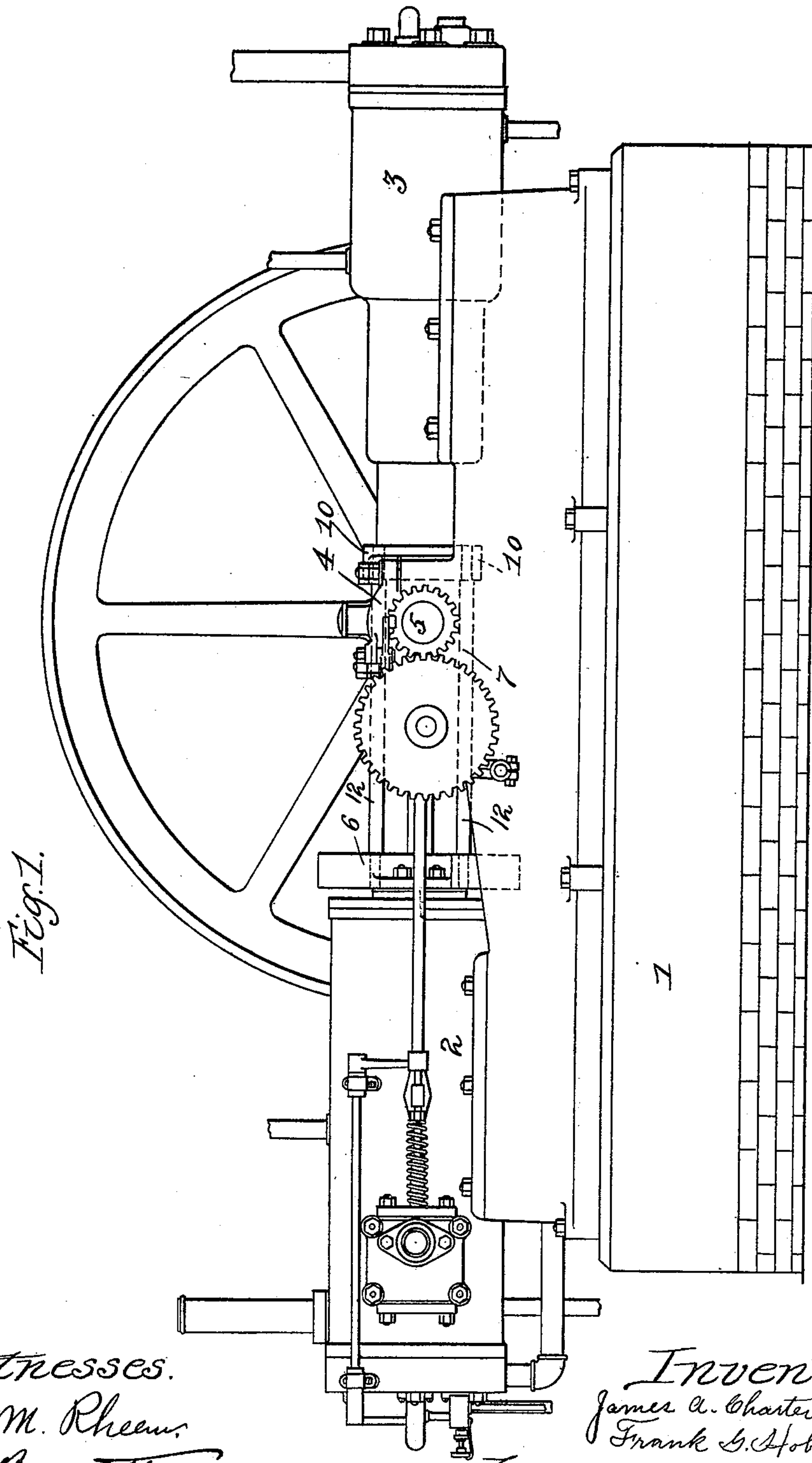


Fig. 1.

Witnesses.
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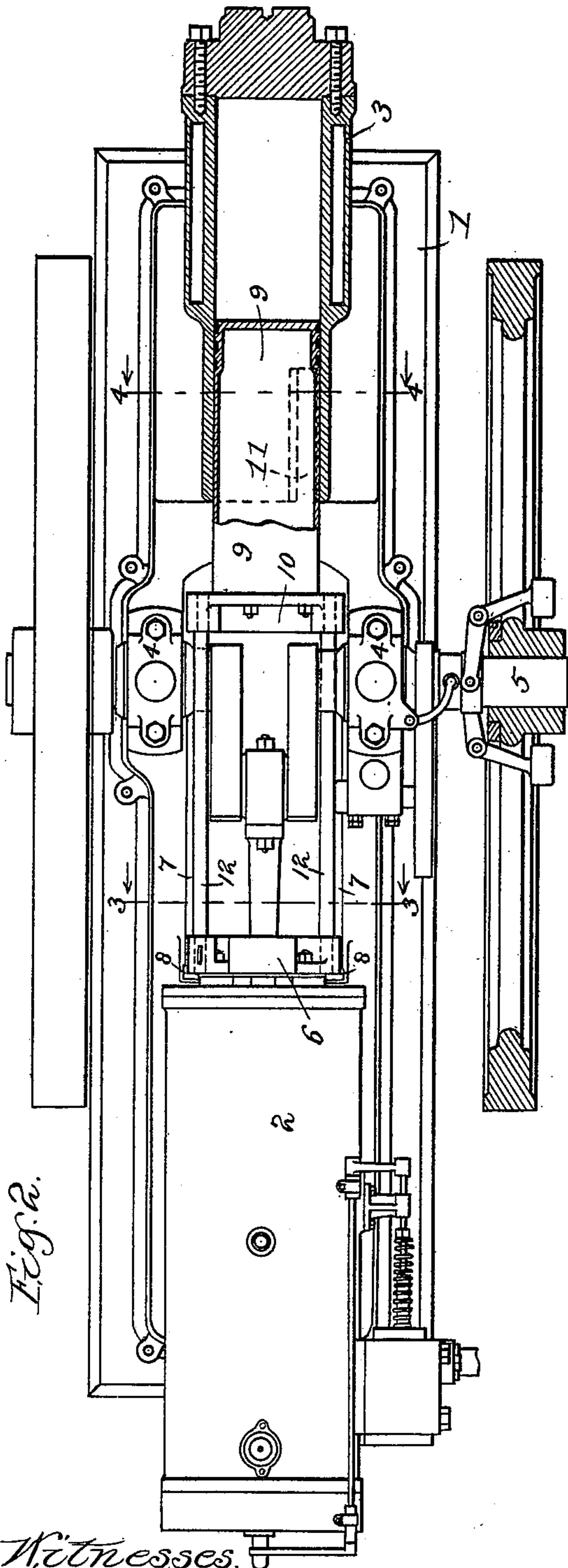


Fig. 2.

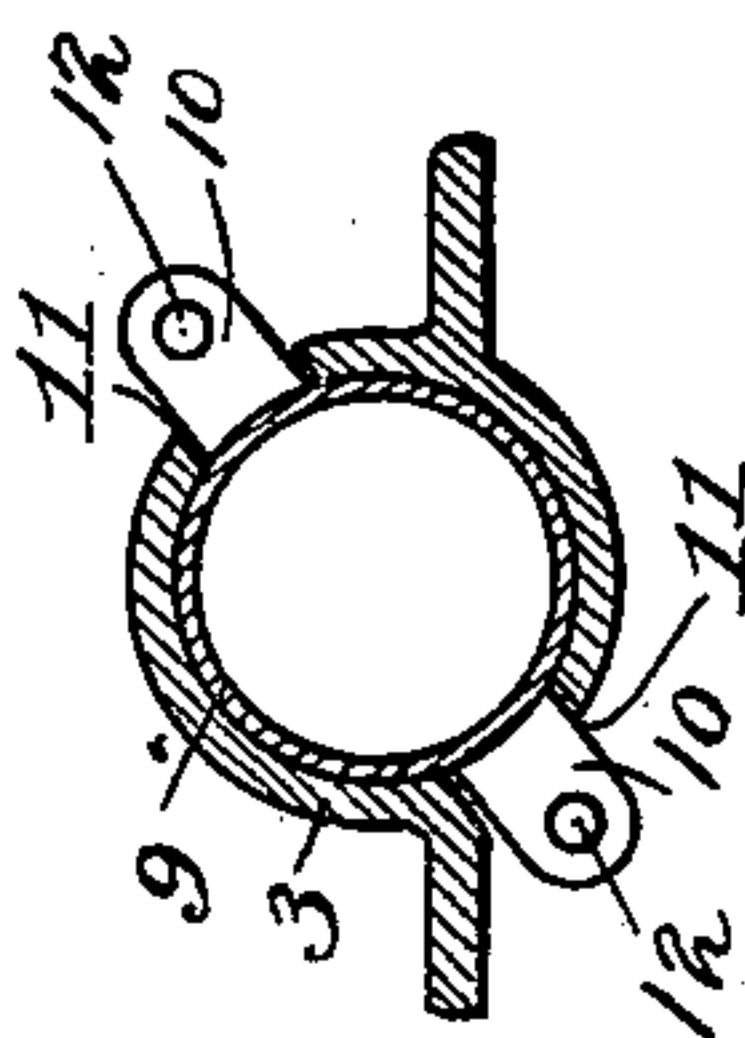


Fig. 4.

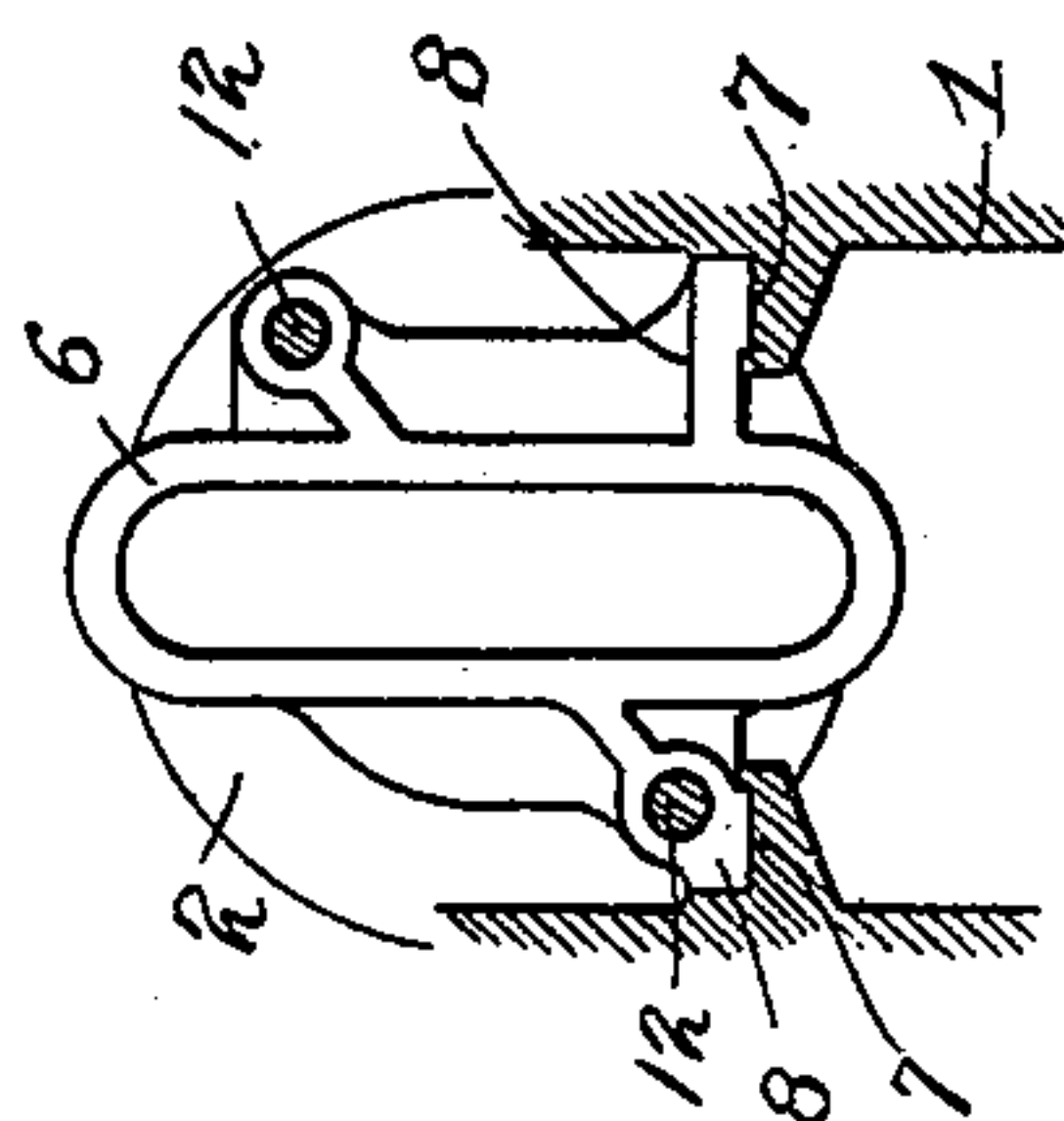


Fig. 3.

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UNITED STATES PATENT OFFICE.

JAMES A. CHARTER, OF CHICAGO, ILLINOIS, AND FRANK G. HOBART,
OF BELOIT, WISCONSIN, ASSIGNORS TO THE FAIRBANKS, MORSE &
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COMPRESSOR.

SPECIFICATION forming part of Letters Patent No. 626,053, dated May 30, 1899.

Application filed October 13, 1898. Serial No. 693,436. (No model.)

To all whom it may concern:

Be it known that we, JAMES A. CHARTER, of Chicago, Cook county, Illinois, and FRANK G. HOBART, of Beloit, Rock county, Wisconsin, citizens of the United States, have invented certain new and useful Improvements in Compressors, of which the following is a specification.

Our invention relates to that form of compressor which comprises, essentially, a power and compression cylinder mounted upon opposite ends of a common frame or bed and having a crank-shaft between such cylinders.

One of the objects of our invention is the provision of a compressor of the type specified which will be simple and economical in construction, positive and reliable in its operation, and more compactly arranged than most of the compressors of like kind now in common use.

In order to accomplish the above as well as other objects, which will hereinafter appear, we provide a bed or frame having a power-cylinder mounted upon one end and a compression-cylinder mounted upon the other end thereof and a crank-shaft carried by bearing-blocks arranged intermediate said cylinders. Within the power-cylinder is arranged a trunk-piston of considerable length, one end of which projects out of such cylinder in the direction of the compression-cylinder and is supported by guideways, as and for the purpose which will hereinafter be more particularly described. Between the power and compression cylinders we provide a yoke-and-rod connection having opposite rods arranged on opposite sides of the crank-shaft, so that the strain or force transmitted from one cylinder to the other will be carried along a straight line and not produce any side stresses, such as would result in uneven wear of the cylinders and pistons.

In order to secure as compact an arrangement of the parts as possible, we place the two cylinders but a short distance apart, and in the inwardly-projecting end of the compression-cylinder we provide an arrangement of slots which form clearance-ways for the yoke and permit the full length of stroke re-

quired, while at the same time affording an efficient guide for the compressing-piston.

Our invention will now be better understood by reference to the accompanying drawings, in which we have illustrated it in preferred form, and in which—

Figure 1 is a side elevation showing our improved compressor. Fig. 2 is a plan view of the same, partly in section. Fig. 3 is a section showing the arrangement of the guideways which support the projecting end of the power-piston, and Fig. 4 is a section showing the arrangement of the yoke and the slots in the compression-cylinder which form clearance-ways for the yoke.

In the practice of our invention we provide, first, a bed or frame 1, upon one end of which is mounted a power-cylinder (in this case a gas-engine cylinder) 2 and upon the other end of which is mounted a compression-cylinder 3. Between the two cylinders are bearing-blocks or journals 4, which carry the crank-shaft 5. In order to support the projecting end of the power-piston 6 and take the weight off the cylinder, so as to prevent uneven wear of the latter, we provide a pair of guideways 7, arranged as shown in Fig. 3 and indicated in dotted lines in Fig. 1, these guideways carrying a combined cross-head and yoke-casting 8, attached to the piston. Within the compression-cylinder is a piston 9, to the projecting end of which is secured another yoke-casting 10, and within the inwardly-projecting extension of the compression-cylinder are formed a pair of slots 11, arranged so as to make a clearance-way for the yoke and permit the latter to move past the end of the cylinder, these provisions all permitting a full length of stroke with a comparatively short length of the machine as a whole.

As will be clearly seen from an examination of Figs. 3 and 4, the rod or yoke connections 12 are arranged in a plane at an angle about half-way between the vertical and horizontal, so as to pass one above and the other below the crank-shaft, and yet transmit the strains and power from one piston to the other in a direct line without any side strain or bending moment, such as would result in an uneven

wear of the cylinders and pistons as well as a certain loss in the percentage of power.

Our invention may be used on compressors actuated by hydrocarbon or explosive engine cylinders, and it is in connection with such a power-cylinder that we have illustrated and described it herein; but we do not desire to limit our claims to this particular class of power apparatus, and it is obvious that the advantages of our improvement are applicable also to compressors operated by other motive fluids.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. An improvement in compressors comprising the combination with a bed or frame, a power-cylinder and a compression-cylinder mounted thereon, a power-piston and a compression-piston operating in said cylinders, and a yoke connection between said pistons, a crank-shaft mounted between said cylinders, said yoke connection comprising rods

arranged on opposite sides of said shaft and also on opposite sides of said crank; of slots in the inwardly-projecting end of said compression-cylinder, said slots forming clearance or guide ways for said yoke and being arranged in position on a diagonal plane corresponding to the plane of the rods of the yoke, substantially as described.

2. An improvement in compressors comprising the combination with a bed or frame, a power-cylinder and a compression-cylinder mounted thereon, a power-piston and a compression-piston operating in said cylinders, and a yoke connection between said pistons, of slots in the inwardly-projecting end of said compression-cylinder, said slots forming clearance or guide ways for said yoke.

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