

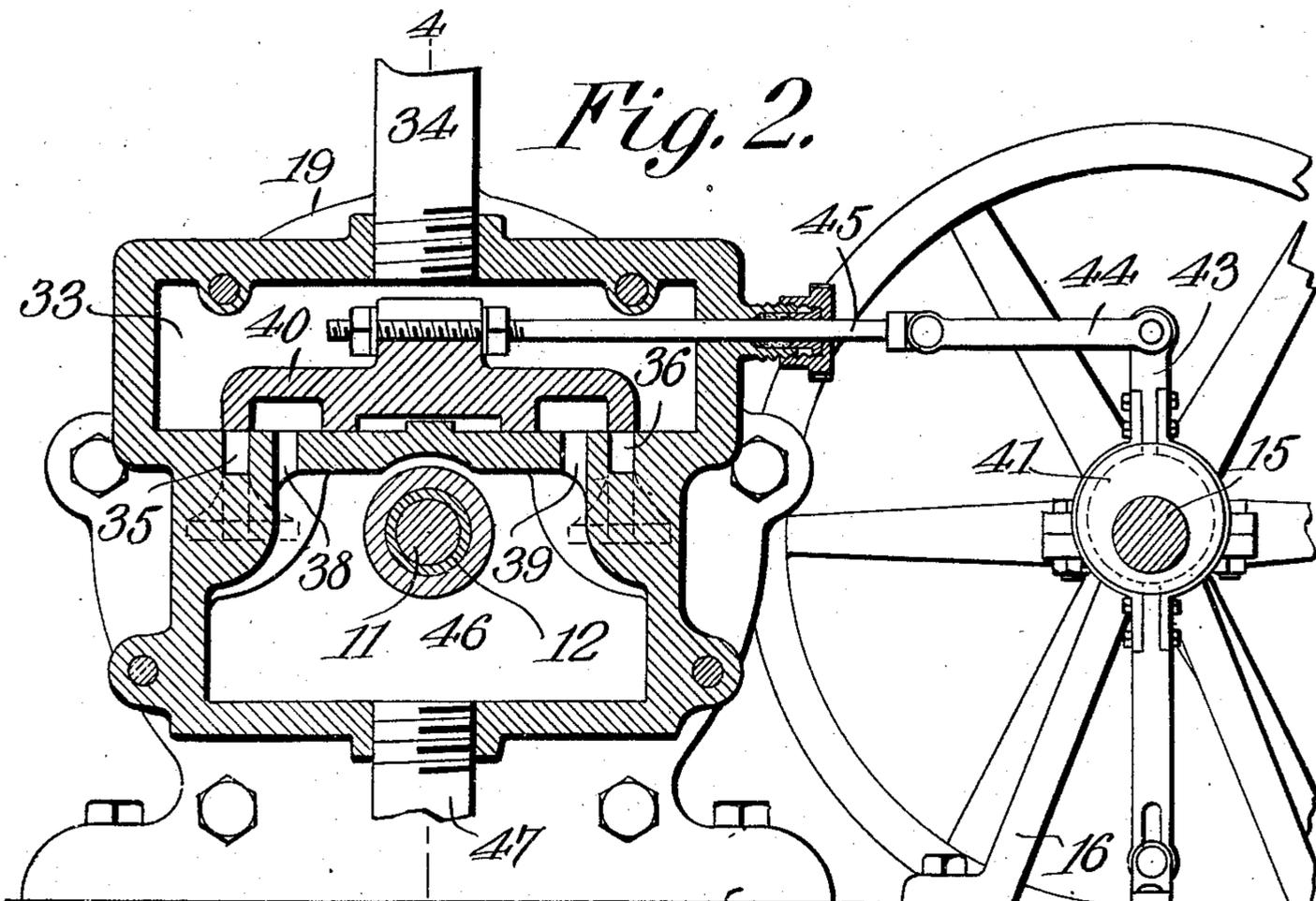
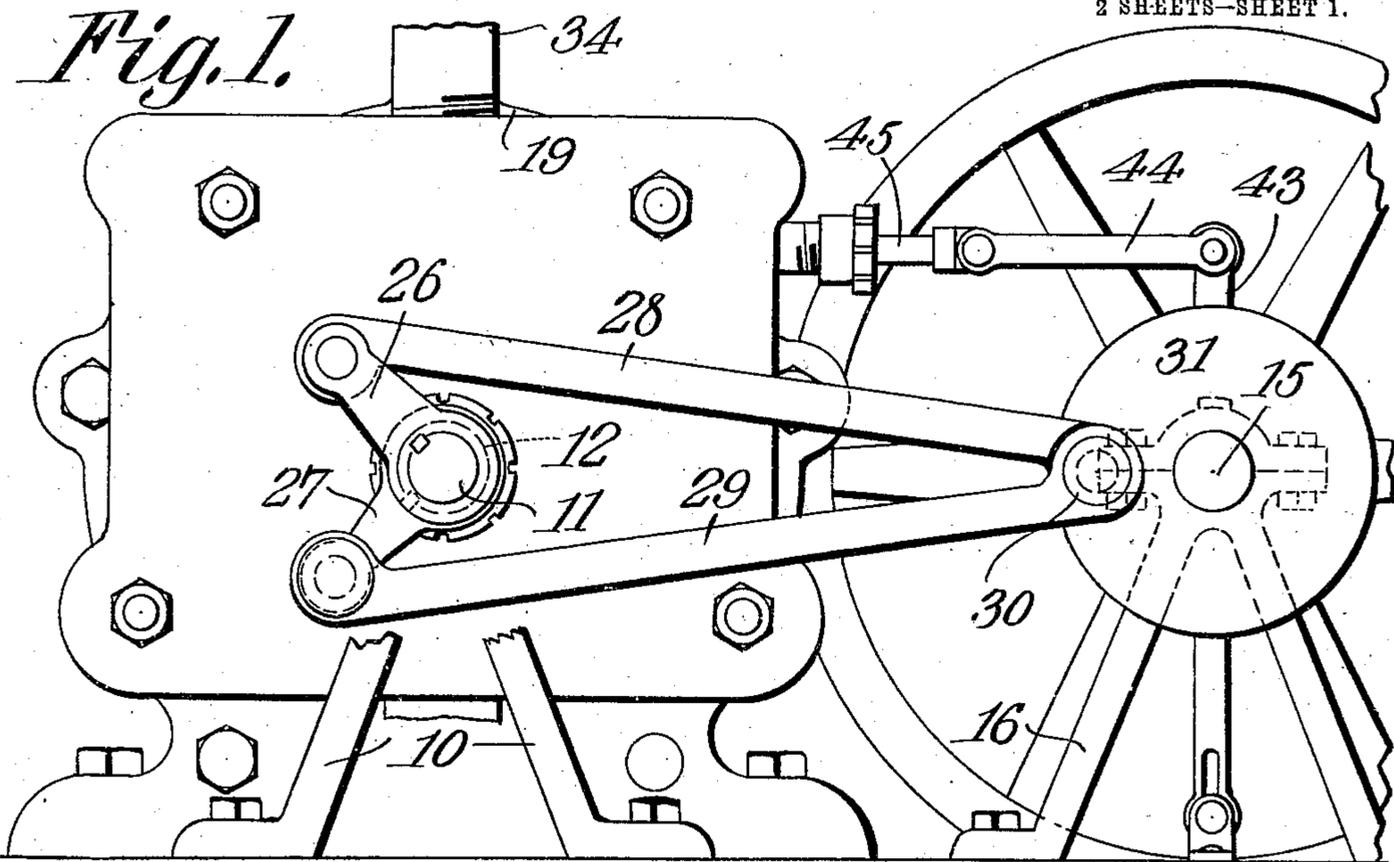
No. 842,446.

PATENTED JAN. 29, 1907.

I. D. CHRITTON.
ENGINE.

APPLICATION FILED SEPT. 14, 1906.

2 SHEETS—SHEET 1.



WITNESSES:

E. H. Stewart
Geo. E. Parker

Isaiah D. Chritton, INVENTOR.

By *C. A. Snow & Co.*
ATTORNEYS

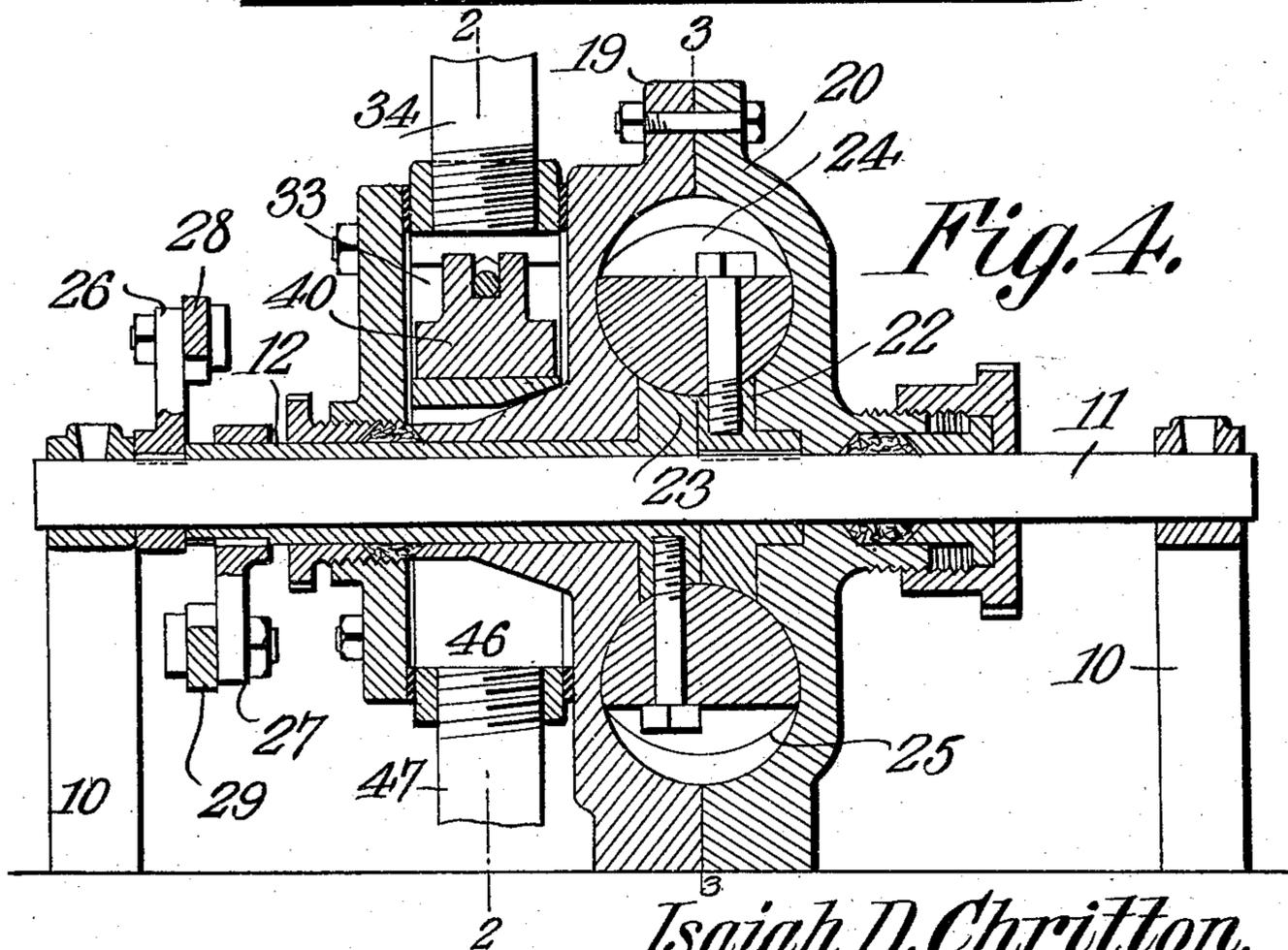
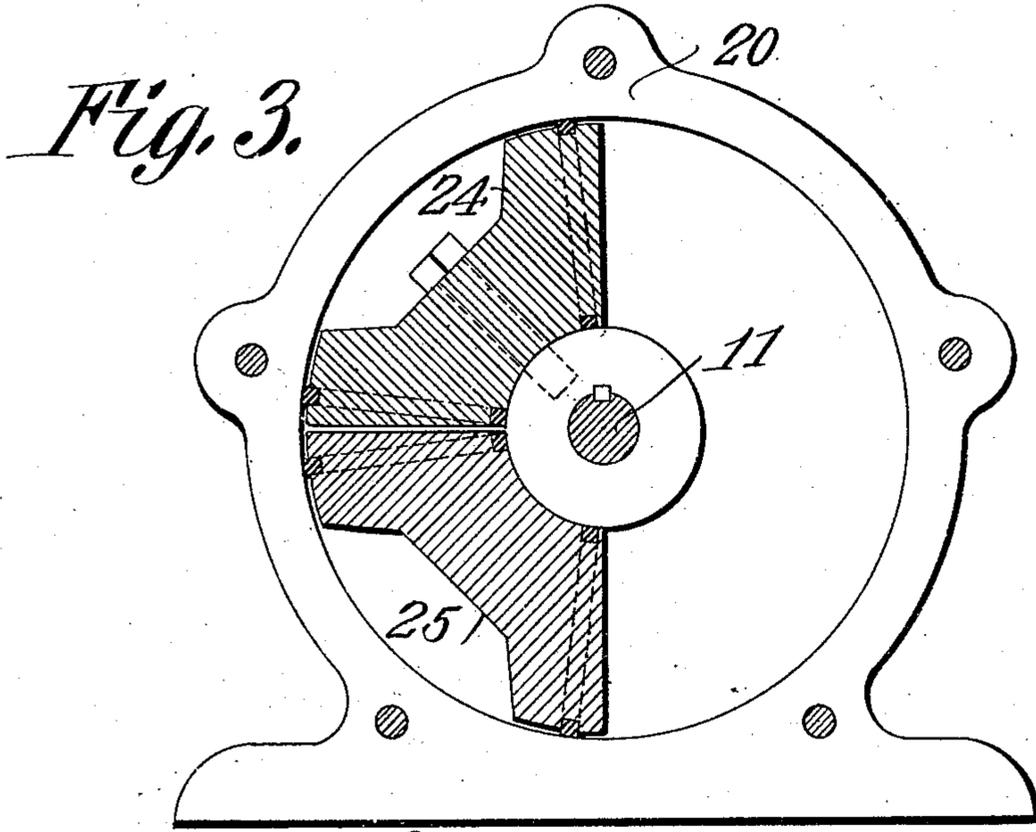
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UNITED STATES PATENT OFFICE.

ISAIAH D. CHRITTON, OF GRAVES, KANSAS.

ENGINE.

No. 842,446.

Specification of Letters Patent.

Patented Jan. 29, 1907.

Application filed September 14, 1906. Serial No. 334,627.

To all whom it may concern:

Be it known that I, ISAIAH D. CHRITTON, a citizen of the United States, residing at Graves, in the county of Cloud and State of Kansas, have invented a new and useful Engine, of which the following is a specification.

This invention relates to engines of that general type in which oscillatory pistons are employed, and has for one of its objects to provide an engine of simple construction in which a pair of oscillatory pistons are arranged within a suitable cylinder, provision being made for introducing steam or other fluid under pressure between the two pistons, and thus operating simultaneously on both.

A further object of the invention is to provide an engine of this type in which the oscillatory pistons are mounted on concentric shafts, the shafts carrying rocker-arms which are connected to a wrist-pin carried by a crank-disk on the main or power-transmitting shaft.

A still further object of the invention is to provide an engine of this style in which the connections between the main or power-transmitting shaft and the oscillatory pistons are such as to insure the utmost regularity of movement of the pistons and prevent any danger of either coming in contact with each other.

With these and other objects in view, as will more fully hereinafter appear, the invention consists in the novel construction and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims; it being understood that various changes in the form, proportions, size, and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of the invention.

Figure 1 is a side elevation of an engine constructed in accordance with the invention. Fig. 2 is a transverse sectional view of the same on the line 2 2 of Fig. 4. Fig. 3 is a similar view on the line 3 3 of Fig. 4. Fig. 4 is a sectional view of the engine on the line 4 4 of Fig. 2.

Similar numerals of reference indicate corresponding parts in each of the several figures of the drawings.

The base or foundation on which the engine is mounted is provided with standards 10, having bearings for the reception of a

shaft 11, which extends through the cylinder and the steam-chest, and mounted on this shaft is a second shaft 12, these two shafts serving for the purpose of transmitting movement from the piston members to the main or power-transmitting shaft 15, which latter is mounted in bearings carried by standards 16.

The cylinder, which is annular in form, is formed of two sections 19 and 20, having suitable bolting-flanges and bolts by which they are firmly held together.

The central portion of the cylinder is cut away down to the shaft 11 for the reception of two disks 22 and 23, the disk 22 being keyed or otherwise secured to the shaft 11, while the disk 23 is carried by or forms an integral part of the hollow shaft 12. To these disks are secured piston members 24 and 25, respectively, the piston members being each provided with pressure-surfaces arranged at an angle of about ninety degrees from each other and having suitable packing-rings that fit within the annular cylinder. Each piston is arranged to oscillate through an arc of ninety degrees, and the pistons move in opposite directions, respectively, steam being introduced between the opposed faces at one side and being exhausted from the space between the opposed faces at the opposite side.

To the ends of shafts 11 and 12 are secured rocker-arms 26 and 27, respectively, and these rocker-arms are arranged at an angle of ninety degrees from each other and are connected by rods 28 and 29 to a wrist-pin 30, that is carried by a crank-disk 31 on one end of the power-transmitting shaft 15. As the piston members and the rocker-arms are oscillated through arcs of ninety degrees the wrist-pin will be revolved and motion will be transmitted to the shaft 15. At one side of the cylinder is a steam-chest 33, to which steam or other fluid under pressure is admitted through a pipe 34. One face of the chest is cut away to form a valve-seat in which are two ports 35 36, leading to the main cylinder at points diametrically opposite each other, as indicated by dotted lines in Fig. 2. In the valve-seat are cut exhaust-ports 38 and 39, and all of the ports are under the control of a double D slide-valve 40, which latter is operated from an eccentric 41 on shaft 15 through the medium of a lever 43, a connecting-rod 44, and valve-stem 45. The exhaust-ports 38 and 39 lead downwardly to an exhaust-

chamber 46, from which leads an exhaust-pipe 47 through a condenser or a proper point of discharge. It will be seen that one side of the cylinder has a projecting hub that encircles and protects the shafts at the point where they pass through the exhaust-chamber.

In operation the valve 40 is moved to and fro for the purpose of alternately opening the ports 45 and 46, and thus establishing communication between the source of pressure-supply and the cylinder, the steam or other fluid entering between the opposing faces of the piston members, moving the same first in one direction and then in the opposite direction, and this movement is transmitted through the shafts and the rocker-arms 26 and 27 to the wrist-pin 30.

It will be seen that by the employment of a pair of oppositely-movable pistons the power will be increased over the ordinary engine and that, as there is no dead-center to overcome, the power exerted on the wrist-pin will be continuous, varying, of course, with the angular position of the pin, and, further, that the elimination of the cross-heads, slides, and

the like friction is materially reduced and the power therefrom directed to the main shafts.

What is claimed is—

The combination in an engine, of an annular cylinder, a pair of pistons arranged in the cylinder and each provided with a pair of pressure-faces arranged approximately at ninety degrees from each other, piston-hub members to which said pistons are secured, a pair of concentric shafts carrying the hub members, rocker-arms on said shafts, a crank-shaft, pitman connections between the rocker-arms and the crank-shaft, a steam-chest, an exhaust-chamber arranged at one side of the cylinder, said cylinder having a projecting hub member extending around the shafts to protect the same from the exhaust-steam, a slide-valve arranged in the steam-chest, and means for actuating the slide-valve.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

ISALAH D. CHRITTON.

Witnesses:

A. D. REID,
H. W. BARBER.