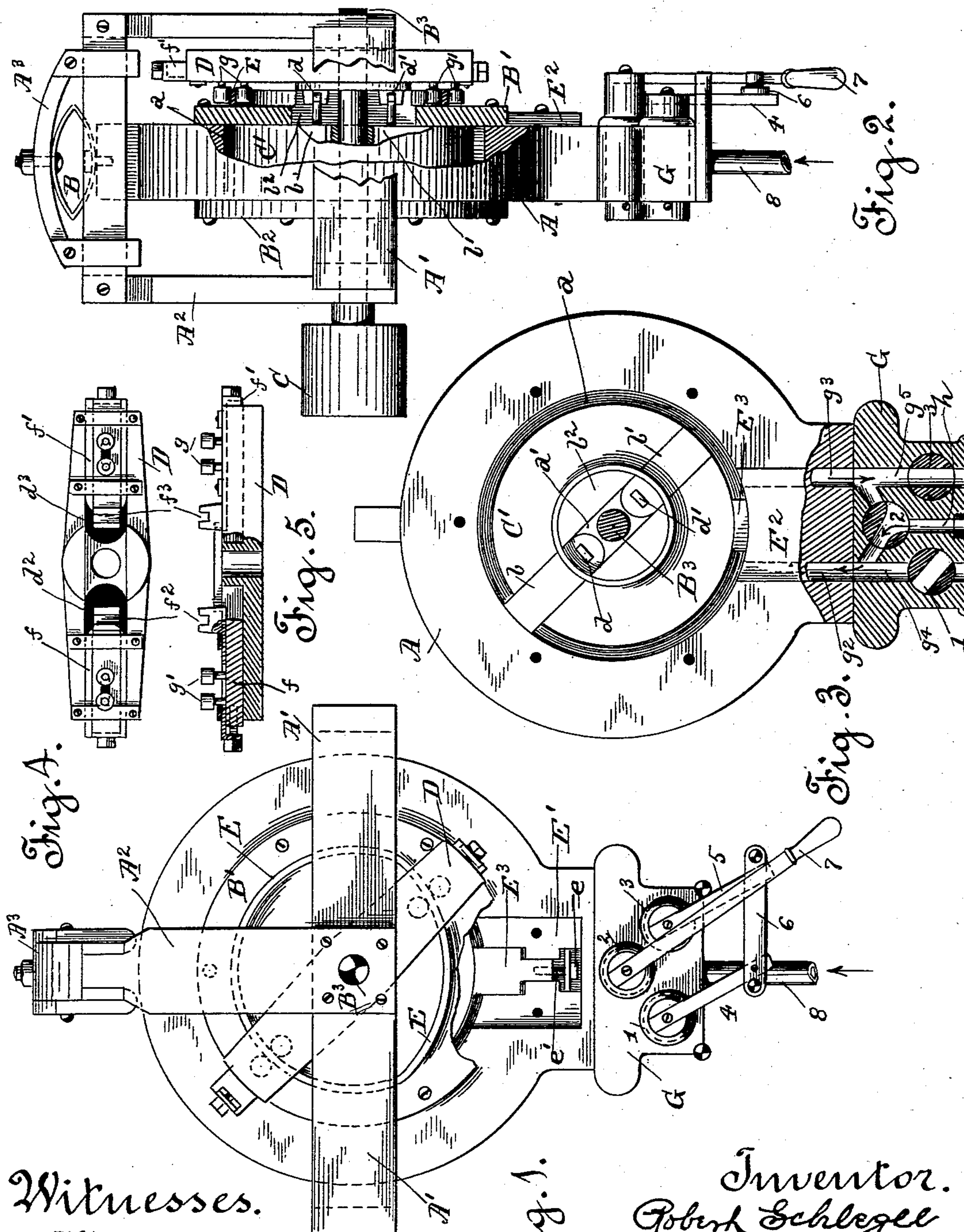


(No Model.)

R. SCHLEGEL.
ROTARY ENGINE.

No. 572,127.

Patented Dec. 1, 1896.



Witnesses.

The Winterverde.
Elmer Wickes.

Fig. 1.

Inventor.
Robert Schlegel
by Nathan
Jr atty

UNITED STATES PATENT OFFICE.

ROBERT SCHLEGEL, OF SAN FRANCISCO, CALIFORNIA.

ROTARY ENGINE.

SPECIFICATION forming part of Letters Patent No. 572,127, dated December 1, 1896.

Application filed June 29, 1896. Serial No. 597,335. (No model.)

To all whom it may concern:

Be it known that I, ROBERT SCHLEGEL, a citizen of Switzerland, residing at San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Rotary Engines; and I do hereby declare that the following is a full, clear, and exact description thereof.

This invention relates to a certain new and useful rotary engine designed to be operated by steam or water power; and it consists in the arrangement of parts and details of construction, as will be hereinafter fully set forth in the drawings and described and pointed out in the specification.

In order to fully understand the invention, reference must be had to the accompanying sheet of drawings, forming a part of this application, wherein—

Figure 1 is a front view and end elevation of the device, the outer casing being partly broken away. Fig. 2 is an end view in elevation of the mechanism illustrated by Fig. 1, the casing being shown partly broken away. Fig. 3 is a front view in elevation, showing the device removed from its frame and with one of the covers of the casing removed, the lower portion of the casing and the valve-block being in section. Fig. 4 is a detail bottom plan view of the arm with its sliding blocks for throwing the pistons of the rotary drum in and out; and Fig. 5 is a side view in elevation, partly broken away, of said arm.

The letter A is used to indicate the outer casing of the device, which is located within the frame A'. This frame is connected at each side by the yoke-plate A², which yoke-plate straddles the outer casing, and to the top of which plate is secured the bridge-plate A³. The bridge-plate A³ is designed to be secured to a beam or other support in order that the engine may be held a distance above the floor or ground. To the bridge-plate is secured the bow-spring B, which spring is also attached to the outer casing. The main weight of the outer casing A is thus thrown upon the bridge and yoke plates A³ A². It will thus be understood that the outer casing A is a fixed or non-rotating one.

Within the outer casing is located the drum C', which drum is keyed or otherwise secured upon the shaft B³. This drum is of such a

diameter as to leave a passage-way *a* between its outer face and the inner face of the outer casing, Fig. 3. In one of the side faces of the rotatable drum C' are cut the transverse grooves *a'*, within which grooves are fitted the slide-pistons *b b'*. These pistons slide toward and from the axis of the rotatable drum as the said drum is rotated within the outer casing A. The sliding pistons, when moved their full outward distance, bear against the inner face of the outer casing, and the pistons are so arranged that as one moves or slides outward or away from the axis of the rotatable drum the other is moved inward.

The hub *b*² of the drum C' extends through the covers B' B² of the outer casing, Fig. 2, and through said hub projects the shaft B³, which works in bearings of the frame A'. One end of this shaft projects beyond the frame A' and has secured thereon the belt-wheel C, by means of which wheel a belt (not shown) is driven, so as to transmit power of the engine.

To the inner end of each slide-piston is secured an outwardly-projecting stud or pin *d d'*, which pin extends through the hub *b*² of the rotatable drum C' beyond the cover B'. Between this cover B' and the frame A' of the engine is fitted loosely upon the shaft B³ the arm D. This arm has cut in its inner face the transverse grooves *d*² *d*³, within which work the slide-blocks *f f'*. In the inner enlarged end of the slide-block *f* is cut the cross-groove *f*² and in the inner enlarged end of the slide-block *f'* the cross-groove *f*³. Within these cross-grooves *f*² *f*³ fit the studs or pins *d d'*, respectively, outwardly projecting from the slide-pistons *b b'*. Being thus connected it is obvious that as the slide-blocks *f f'* move in and out the slide-pistons will be carried therewith. From the upper or outer end of each slide-block *f f'* project two pins or studs, which carry the rolls *g g'*. These rolls embrace the eccentric cam-ring E, secured to and projecting from the outer face of the cover B', and, riding upon the eccentric cam-ring during the rotation of the arm D, serve to force the slide-plates *f f'* in and out, which plates, being connected to the slide-pistons, cause the said pistons to move toward and from the axis of the rotatable drum.

In the lower portion of the casing is formed a pocket E' , which is closed by a cover E^2 . In this pocket is fitted a block E^3 , which extends through an opening into the interior of the outer casing. This block bears against the face of the rotatable drum C' , Figs. 1 and 3, and is raised or lowered by means of the adjusting-nut e , working upon the screw-stem e' . By means of this adjustment wear upon the block E^3 may be taken up.

Through the lower portion of the outer casing are formed the ports g^2 g^3 , by means of which the steam or water flows into and out of the outer casing. These ports register with the ports g^4 g^5 , cut through the valve-block G , secured to the lower end of the casing, Fig. 3. Through the valve-block between the ports g^4 g^5 is cut the inlet-port h , which port is branched at its inner end, so as to connect with each of the ports g^4 g^5 , Fig. 3. In the valve-block are fitted the valves 1 2 3, which control, respectively, the ports g^4 , g^5 , and h . Each valve has a passage-way cut therein, which, when the valves are turned, communicates with the respective valve-ports. To the valves 1 and 2 I attach the arms 4 and 5, which are connected at their outer ends by the link 6, and to the valve 3 is secured the lever 7. This lever, as thrown to the right or to the left, engages with the arms 4 or 5 and moves said arms so as to rotate the valve 1 or 2, in order to open or close the ports g^4 or g^5 .

Steam or water enters the inlet-port h by means of the inlet-pipe 8.

The respective parts standing in the position illustrated by Figs. 1 and 3, the operation will be as follows: Steam or water entering the inlet-port 3 will flow into the casing through the port g^2 . The steam or water flowing into the passage-way a impinges against the projecting end of the piston b and forces or rotates the drum around within the casing, the water or steam being carried around toward the port g^3 by the pressure of the inflowing water or steam. As the piston b is carried toward the port g^3 by the rotary

movement of the drum the said piston will be gradually forced inward by reason of the rolls of the slide-block f riding upon the eccentric portion of the cam-ring secured to and projecting outwardly from the cover B' of the casing. The inward movement of the slide-piston frees the water or steam retained back of the same and permits it to escape into the port g^3 . As the piston is carried past the block E^3 it commences to move outward, so as to close the passage-way a and be in position to be acted upon by the inflowing steam or water. As one piston is moved inward the opposite piston is forced outward. The movement of the pistons is controlled by the movement of the slide-blocks f f' . In order to reverse the movement or rotation of the drum C' , it is only necessary to give an opposite throw to the lever 7, so as to throw the arms 4 and 5 into such position as to turn the valves 1 and 2 to close the port g^5 and open the port g^4 , the valve 3 being turned by the movement of the lever, so as to close the connection of the port 3 with port g^4 and open the connection with port g^5 . The rotation of the drum will be opposite to that just described.

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

In a rotary engine, the combination with the outer casing, the rotatable drum secured therein so as to leave a passage-way between the drum and the casing, the slide-pistons working in grooves in the drum, the arm carried by the drum, the slide-blocks working in said arm, connection between the slide-blocks and the slide-pistons whereby the pistons are moved in or out by the movement of the slide-blocks, the eccentric cam-ring and connection between the cam-ring and the slide-blocks.

In testimony whereof I affix my signature, in presence of two witnesses, this 20th day of June, 1896.

ROBERT SCHLEGEL.

Witnesses:

N. A. ACKER,

F. E. MONTEVERDE.