No. 692,289. Patented Feb. 4, 1902.

F. D. HOLDSWORTH.

VALVE GEAR FOR ENGINES.

(Application filed Apr. 9, 1901.)

(No Model.)

Fig. 1.

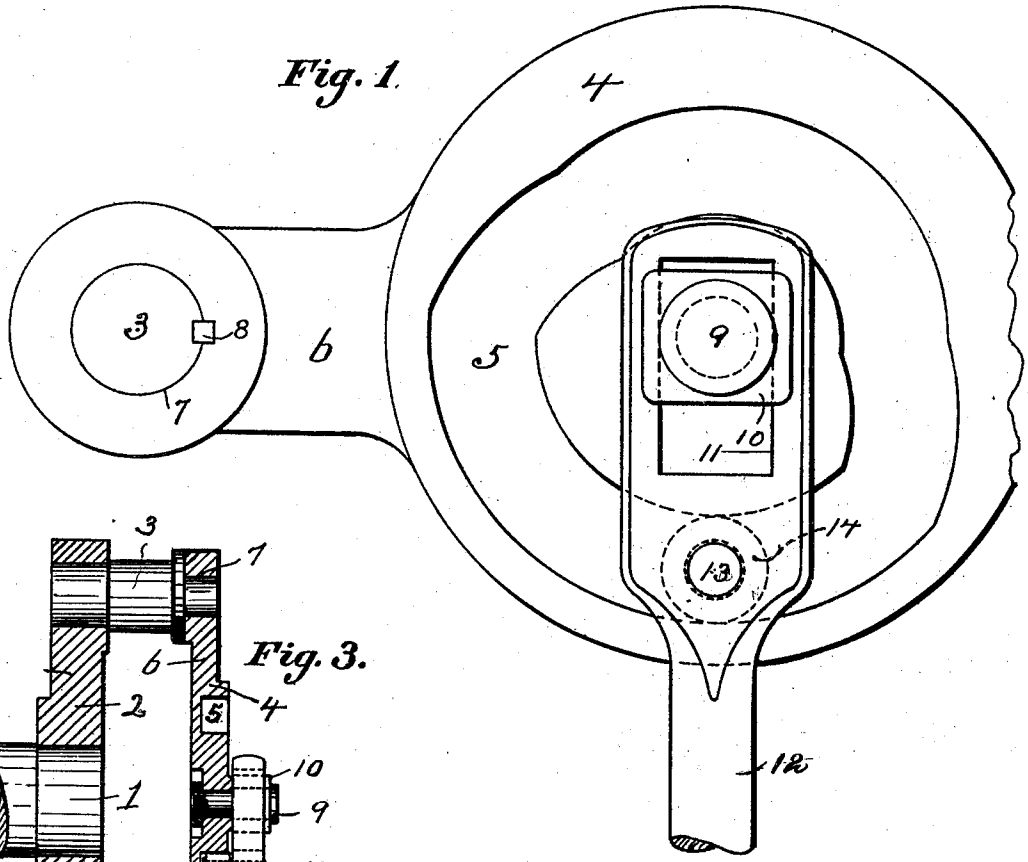
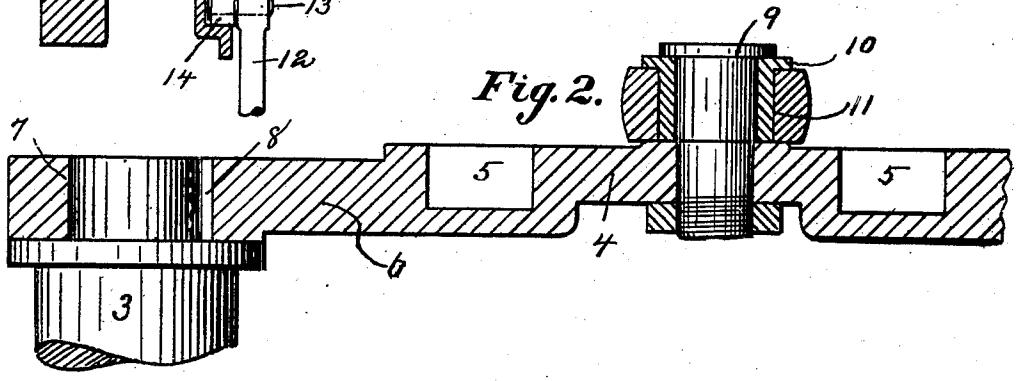


Fig. 3.

Fig. 2.



Witnesses

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UNITED STATES PATENT OFFICE.

FRED DEAN HOLDSWORTH, OF CLAREMONT, NEW HAMPSHIRE, ASSIGNOR TO SULLIVAN MACHINERY CO., OF CLAREMONT, NEW HAMPSHIRE, AND CHICAGO, ILLINOIS, A CORPORATION OF NEW HAMPSHIRE.

VALVE-GEAR FOR ENGINES.

SPECIFICATION forming part of Letters Patent No. 692,289, dated February 4, 1902.

Application filed April 9, 1901. Serial No. 54,982. (No model.)

To all whom it may concern:

Be it known that I, FRED DEAN HOLDSWORTH, a resident of Claremont, in the county of Sullivan and State of New Hampshire, have invented a new and useful Improvement in Valve-Gear for Engines; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to a valve-gear for engines, fluid-compressors, and similar devices, and more particularly to mechanism for operating said valves, which is adapted to be attached to the crank-pin of the engine or compressor.

In the accompanying drawings, Figure 1 is a front view of my improved mechanism. Fig. 2 is a horizontal section through the same, and Fig. 3 is a similar section through the same and the crank.

1 represents the crank-shaft of the engine or compressor, 2 the crank secured to said shaft, and 3 the crank-pin, all of which may be of the ordinary construction.

4 represents a plate which is provided with a suitable cam-groove 5 on the front face thereof and with an arm 6, which extends from one side of the plate, and is provided with a hole 7, which takes over the end of the crank-pin 3 and which is suitably secured thereto, so as not to rotate thereupon, by any suitable means—such, for instance, as the key 8. The distance between the center of the hole 7 and the axis of the cam-groove 5 is equal to the throw of the crank 2, and the key 8 is so located with reference to the plate 4 and pin 3 that the axis of the cam-groove 5 and the axis of the crank-shaft 1 are coincident.

9 is a pin or stud secured to the plate 4 with its axis coincident with the axis of the cam-groove 5. Mounted on this pin, so as to be freely rotatable thereon, is the block 10, said block being located in an oblong slot or opening 11 in the end of the link 12, which is connected in any suitable manner with the valve or valves to be moved. The slot 11 in the link 12 fits the sides of the block 10 in one direction; but it is of sufficient length in the other direction to allow a longitudinal movement of the link equal to the throw of the cam-groove 5. Said link 12 is provided with a stud 13, carrying a small antifriction-roller 14, which projects into the cam-groove 5.

The operation of the mechanism is as follows: As the crank-shaft 1 revolves it carries the plate 4 with it, and as the axis of the pin 9 is coincident with the axis of the shaft 1 the said pin has merely a motion of rotation given to it by the revolving plate 4, so that said pin is in effect an extension or continuation of the crank-shaft 1. The plate 4, however, revolves about this pin 9, and the cam-groove 5 therein bearing upon the roller 14 will give to the link 12 a longitudinal motion corresponding to the contour of said cam-groove, which longitudinal movement is transmitted to the valve or valves to be moved. The pin 9 and block 10 serve as a support and guide, respectively, for the end of the link 12, and as the pin is coincident with the axis of the crank-shaft the link 12 will be reciprocated in a right line and cannot vibrate or oscillate.

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

1. In valve-gear for engines, and the like, the combination with a crank shaft and pin, of a cam secured to the crank-pin with its axis coincident with the axis of the crank-shaft, a valve-operating link actuated by said cam and means on the cam for guiding the link in a right line.

2. In valve-gear for engines, and the like, the combination with a crank shaft and pin, of a cam secured to the crank-pin with its axis coincident with the axis of the crank-shaft, a valve-operating link, a pin coincident with the axis of the cam for guiding the link, and a projection on the link engaging the cam.

3. In valve-gear for engines, and the like, the combination with a crank shaft and pin, of a cam secured to the crank-pin with its axis coincident with the axis of the crank-shaft, a valve-operating link, a pin coincident with the axis of the cam, a block on said pin and engaging a slot in the link, and a projection on the link engaging the cam.

In testimony whereof I, the said FRED DEAN HOLDSWORTH, have hereunto set my hand.

FRED DEAN HOLDSWORTH.

Witnesses:
F. H. FOSTER,
GEO. C. WARNER.