D. Myers,

Air Engine.

No. 109,338. Patented Nov. 15. 1870.

Fig 1

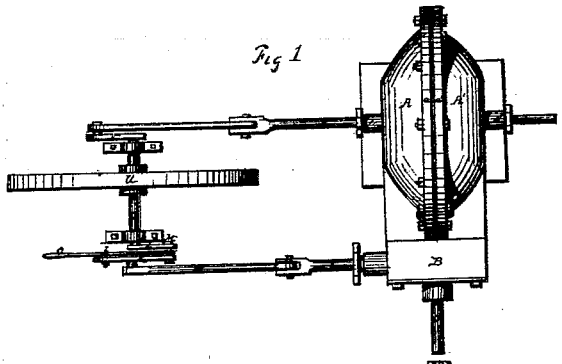

Fig 2.

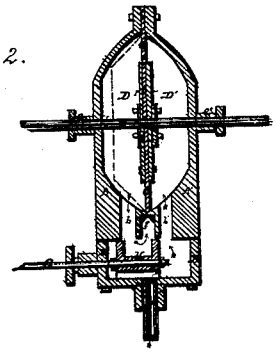

Fig 3.

WITNESSES:

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INVENTOR:

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DAVID MYERS, OF CHICAGO, ILLINOIS.

Letters Patent No. 109,338, dated November 15, 1870.

IMPROVEMENT IN AIR-ENGINES.

The Schedule referred to in these Letters Patent and making part of the same.

I, DAVID MYERS, of Chicago, in the county of Cook and State of Illinois, have invented certain Improvements in Compressed-Air Engines, of which the following is a specification.

In the accompanying drawing—

Figure 1 is a plan or top view of an engine constructed after my invention.

Figure 2 is a central horizontal section of the cylinder and valves.

Figure 3 is a detached view of the reversing apparatus.

General Description.

A A′ are two metallic hemispheres, so termed, although not precisely hemispherical in form.

They are each fitted with a flange, *a a′*, by means of which they may be fastened together by bolts passing through the said flanges.

At one side the metal of said hemispheres is continued, to form channels of communication, *b b′*, with the valve-chest B.

C is a diaphragm or partition of India rubber or other flexible material, secured between the flanges *a a′*, and dividing the cylinder into two equal parts, marked, respectively, D D′.

E is the piston-rod, passing through boxes *e e′*, which are properly packed and rendered air-tight, and through the center of the diaphragm C, to which it is secured by means of the disks or plates F F, which are bolted upon each side of the diaphragm, and which serve to strengthen and stiffen the same around the said piston rod.

G is the valve-rod, which operates an ordinary sliding valve, H.

J is the supply-pipe.

The compressed air enters the valve-chest B, passes around the valve H and into one of the passages *b* or *b′*.

The drawing indicates this course by arrows. Say it passes into the passage *b′*, through which it will reach the compartment D′ of the cylinder, and will exert its force to send home the piston-rod, by pressing against the partition or diaphragm C, which will assume a position indicated by the dotted line.

The dead air in the compartment D will be exhausted or forced out through the passage *b* into the small chamber *f*, from whence there are several free passages into the open air.

As the valve is moved by appropriate machinery, this operation is alternately affirmed and reversed, giving the proper and usual reciprocating motion to the piston-rod E, whence it is communicated to the desired machinery.

Of course it will be understood that the rubber diaphragm above described would not be suitable for use in a steam-cylinder or with hot air, as the heat would melt or soften the rubber.

The reversing apparatus consists of the quadrant K, which is pivoted to the crank L at M.

This said crank L has, rigidly attached thereto, the spring-crank or lever O, which has a pin, *p*, working in a slot, *s*, of the quadrant K.

The crank L is rigidly attached to the main shaft T, which carries the fly-wheel U and the main or driving-crank V.

The connecting-rod, W, which communicates motion to the valve-rod G, and so to the valves, is pivoted to the quadrant K at a point, *z*, eccentric to the main shaft T.

As is customary in ordinary sliding-valve motion, the connecting-arm is pivoted so that it shall be about a quarter revolution of the main shaft in advance of the main crank V.

Now the quadrant K is so adjusted that, when the pin *p* stands as in the drawing, the valve motion shall be a quarter in advance of the main crank; but when the pin *p* stands at *p′* the said valve motion shall be a quarter behind the main crank.

This difference constitutes the "reverse." When the valve motion is a quarter in advance the engine moves forward, and when it is a quarter behind the engine moves backward or reverses.

The spring-crank or lever O has certain pins or catches which fit into corresponding cavities in the quadrant K, to hold the same in place after it has been moved backward or forward.

The advantage urged for this reversing device is its extreme simplicity and cheapness. An ordinary link motion or other reversing apparatus, even the simplest of them, are intricate and complex in their construction, and very costly. This reversing apparatus, taken with the cylinder, constitutes an exceedingly cheap and simple engine.

Having thus described my invention,

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

The combination of the quadrant K and spring-crank or lever O, when so constructed and arranged that the valve motion may be reversed, substantially as shown.

DAVID MYERS.

Witnesses:
L. L. COBURN,
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