

UNITED STATES PATENT OFFICE.

CHARLES T. CHESTER, OF ENGLEWOOD, NEW JERSEY.

IMPROVEMENT IN APPARATUS FOR REPRODUCING MOTION.

Specification forming part of Letters Patent No. **139,294**, dated May 27, 1873; application filed May 13, 1873.

To all whom it may concern:

Be it known that I, CHARLES T. CHESTER, of Englewood, Bergen county, New Jersey, have invented a new and Improved Method of Reproducing Motion, at any desired distance from the point where motion is produced, through the medium of atmospheric air, of which the following is a specification, reference being had to the accompanying drawings forming part thereof:

Figure 1 is an elevation of a cylinder, with its piston connected with mechanism, to which the piston communicates motion. Fig. 2 is a similar view of the cylinder and its piston, the latter connected by pitman with mechanism, from which it receives motion. Fig. 3 is a side-view elevation of the mechanism connected with the piston in Fig. 1.

My invention relates to reproducing, through the agency of atmospheric air, motion at a place distant from that at which the motion is produced, the force employed to produce the motion being communicated to the piston of an air-pump or cylinder, and thence transmitted to a second, and may be distant, air-pump or cylinder, through an air-pipe or tube connecting the two cylinders, causing a corresponding motion in the piston of the second pump or cylinder.

A B are two cylinders, into each of which is fitted a piston, air-tight. To piston-rod C is connected a pitman, *a*, that is actuated from the crank-pin *d* in the wheel D. The latter may be rotated by the handle E. By these means a reciprocating motion may be given to the piston-rod. These two cylinders are pneumatically connected by the pipe G. It is evident that when the piston-rod is forced upward the air contained in the cylinder, being thereby driven through the pipe G into the cylinder B, will force the piston-rod H downward, and that when the piston-rod C is drawn downward, thus forming a vacuum in the cylinder A, the air then in the cylinder B will rush back through the pipe G to fill it, and the pressure of the external air upon the under side of the piston H will force that piston upward again. Thus, as the piston C is reciprocated a cor-

responding motion will be communicated to the piston H. It is evident that this result may be effected when the cylinders are separated at any desired distance from each other. When motion is thus communicated to the piston H it may be applied to a variety of useful purposes. In the drawing it is represented as applied to producing an intermittent rotary motion of the wheel I by means of the lever J, pivoted at *e* upon a bracket, *k*, the lever being made to actuate the pawl L attached to the arm M that is pivoted at *e*, and engages with teeth in the periphery of the wheel I. The movement of the piston-rod H may be limited either by a set-screw, *f*, stopping the arm M with a similar set-screw, *j*, above the said arm, or by adjustable collars *g* and *h* upon the lower end of the piston-rod H, stopped either way by the bracket *i*. The motion thus communicated to the wheel I may be employed for any desired purpose; among others, that of turning on and off the gas from a gas-burner, K' as shown in the drawing.

A single cylinder, A, may, by being constructed, relatively, sufficiently large, be made to operate any number of cylinders B through branch pipes leading from the main pipe G.

It is evident that the method here described may be very cheaply and conveniently applied to reproducing motion in mechanism at points so distant from that where the motion is produced, that to effect the same result by belts or gearing or other equivalent mechanical instrumentality would be impracticable or very expensive, and involve great intermediate loss of force.

I am of course aware that compressed air has been employed as a motor, and I do not claim, broadly, the producing of motion in mechanism by the expansion of compressed air, nor by the pressure of the atmosphere upon one side of the piston when the counterbalancing pressure of the atmosphere is removed from the opposite side.

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

1. The reproducing of a reciprocating mo-

tion, substantially in the manner, by the means, and for the purpose specified.

2. The combination of the cylinder and piston A C, and the actuating mechanism E D a, with the cylinder and piston B H, as and for the purpose specified.

3. The combination of the mechanism last above claimed with the wheel I, lever J, and pawl L, as and for the purpose specified.

Witness my hand this 16th day of December, 1871.

CHARLES T. CHESTER.

Witnesses:

A. LIVINGSTON MILLS,
GEO. GOTT.