C. L. HENRICH.

Apparatus for Transmitting Power and Motion.

No. 206,018. Patented July 16, 1878.

Fig 1.

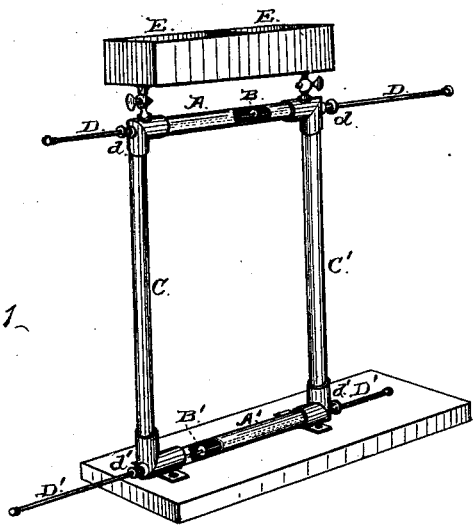
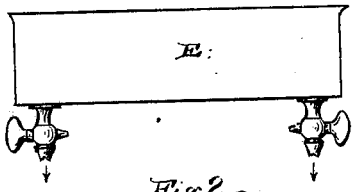
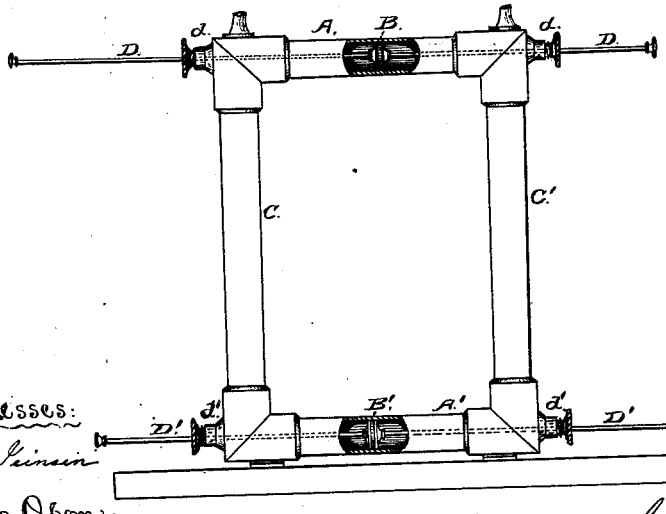


Fig 2.





Witnesses:

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UNITED STATES PATENT OFFICE.

CARL L. HENRICH, OF SAN FRANCISCO, CALIFORNIA.

IMPROVEMENT IN APPARATUS FOR TRANSMITTING POWER AND MOTION.

Specification forming part of Letters Patent No. **206,018**, dated July 16, 1878; application filed February 12, 1878.

To all whom it may concern:

Be it known that I, CARL L. HENRICH, of the city and county of San Francisco, in the State of California, have invented a new and useful Improvement in Apparatus for Transmitting Power and Motion, which invention is fully set forth and described in the following specification and accompanying drawing.

In the accompanying drawing, Figure 1 is a perspective view of my invention; and Fig. 2 is a front elevation, partly in section.

The object of my invention is to provide a means for transmitting power or motion from an engine or motor to any desired distance without the use of belts, rods, walking-beams, or other like mechanism, and also for changing the velocity of the motion so transmitted without the aid of gearing.

To this end my invention consists in the employment of a continuous circuit or body of water inclosed within connecting-sections of water-tight pipes, and having pistons located within straight sections of the circuit-pipe at the upper and lower portions, respectively, of the circuit, whereby on motion being given to either the upper or the lower piston the same will be transmitted by means of the confined body of water to the other piston, and a like motion of the second piston will take place, the speed of the two pistons being governed by the relative size of the two straight sections of pipe with each other, all which will be fully set forth hereinafter.

Referring to the drawing for a better understanding of the nature of my invention, Fig. 1 shows an elevation of my apparatus, which is composed of two straight sections of water-tight pipe, A A′, having pistons B B′ situated and moving therein, and two connecting-sections, C C′, which complete the circuit and form a continuous solid body or column of water, separated into two halves or portions by the pistons B B′ in the straight sections.

The pistons B B′ are secured to a rod or rods, D D D′ D′, which work through suitable stuffing-boxes *d d d′ d′* at the ends of the straight sections of pipe. The section A is connected with water-reservoirs E E, for supplying water to the pipes, and keeping them properly filled with a solid body of water. These reservoirs may be situated at any proper distance from the pipes, and connected therewith by means of pipes or conducting-tubes, having stop-cocks for controlling the supply of water and admitting it in the required quantities to the pipes as needed to supply the place of that lost by evaporation or leakage.

As thus constructed, the apparatus is filled with water from the reservoirs E, and when the pipes and connections are entirely filled with a solid body of water the stop-cocks are closed, and, on power being applied to the rod B of one piston to move it within the straight pipe at the upper part of the circuit, the other piston at the opposite end of the circuit will be moved within its pipe with the same velocity. The column of water is divided by the pistons into two equal portions, counterbalancing each other, and the power applied to move the working-piston has nothing to overcome but the friction of the water within the pipes.

By changing the relative sizes of the two cylinders or straight portions A A′ of the pipes, the relative velocities of the driving and the working pistons can be varied as desired, for the ratio of the velocity of the pistons is as the reverse of the ratio of the squares of the diameters. Therefore by increasing the diameter of the pipe of the working-piston B′ the quick motion of the motor-engine imparted to the driving-piston will be transmitted with a reduced velocity to the piston B′ connected with the machine to be worked. The motion may be thus transmitted and changed in velocity without the use of any gearing.

The advantage of my invention is its adaptability to transmit power and motion to any required distance from the motor-engines without the use of rods, belts, shafting, walking-beams, and like mechanism, and to regulate the speed without the use of gearing.

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

1. In combination with the circuit of water-pipes A A′ C C′, the pistons B B′, reciprocating alternately in the pipes A A′, and the piston-rods D D′, one of which is adapted for connection with the power and the other with

the machinery to be driven, substantially as described and shown.

2. In combination with the circuit of pipes A A′ C C′, to hold a solid body or column of water, and the pistons B B′, with their rods D D′, dividing the circuit into two halves or portions, the reservoirs E E′, with their connecting-pipes and stop-cocks, constructed and arranged to operate substantially as and for the purpose set forth.

In testimony that I claim the foregoing I have hereunto set my hand and seal this 24th day of December, 1877.

CARL L. HENRICH. [L. S.]

Witnesses:
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