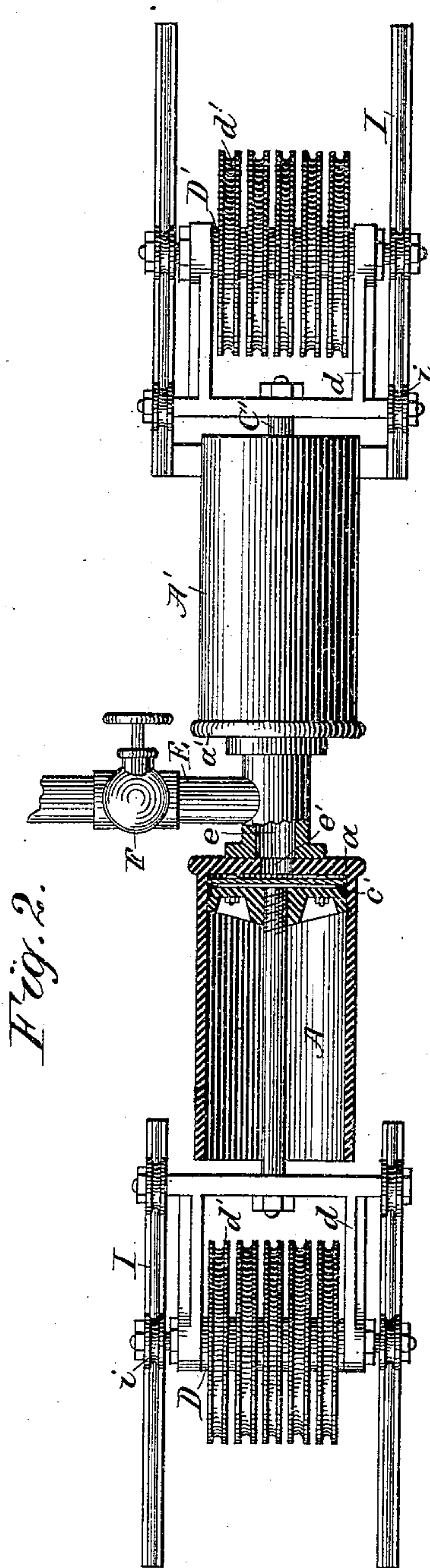
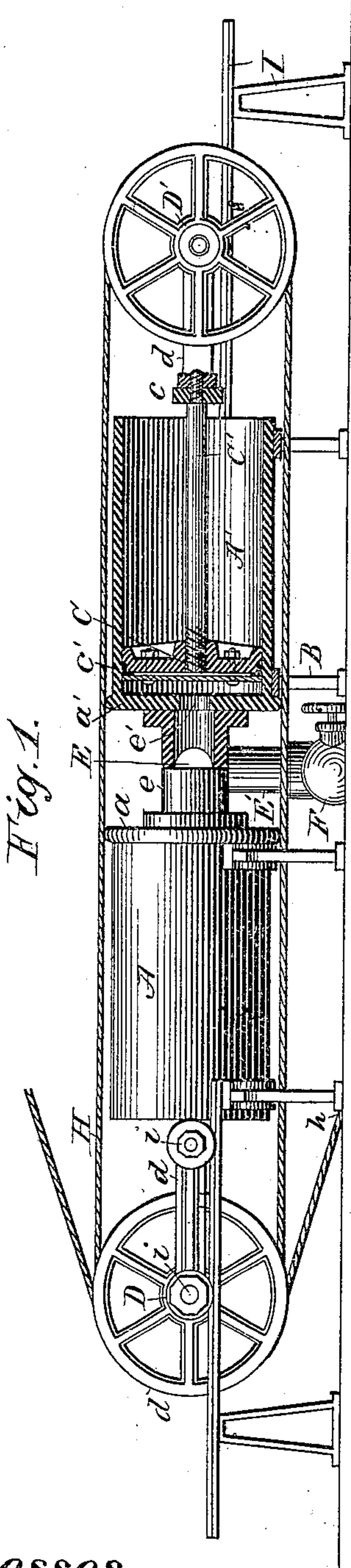


(No Model.)

E. M. BUTZ.
FLUID PRESSURE MOTOR.

No. 267,489.

Patented Nov. 14, 1882.



Witnesses.

C. L. Parker
R. H. Whittlesey

Inventor.

Edward M. Butz
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UNITED STATES PATENT OFFICE.

EDWARD M. BUTZ, OF ALLEGHENY CITY, ASSIGNOR TO THE PENNSYLVANIA
CONSTRUCTION COMPANY, OF PITTSBURG, PENNSYLVANIA.

FLUID-PRESSURE MOTOR.

SPECIFICATION forming part of Letters Patent No. 267,489, dated November 14, 1882.

Application filed February 8, 1882. (No model.)

To all whom it may concern:

Be it known that I, EDWARD M. BUTZ, of Allegheny City, county of Allegheny, State of Pennsylvania, have invented or discovered a
5 new and useful Improvement in Fluid-Pressure Motors; and I do hereby declare the following to be a full, clear, concise, and exact description thereof, reference being had to the
10 accompanying drawings, making a part of this specification, in which—like letters indicating like parts—

Figure 1 is a view in side elevation of my improved fluid-pressure motor, a part of the same being shown in vertical section; and Fig.
15 2 is a top plan view, a part being shown in horizontal section.

My present invention relates to fluid-pressure power apparatus, and more particularly that class employed for hoisting; and it consists, in general terms, in certain combinations of fluid-pressure cylinders and pistons,
20 with sheaves or pulley-blocks and rope, so arranged that fluid-pressure within the cylinders will move the pistons and sheaves simultaneously in opposite directions, as hereinafter more fully described and claimed.

The purpose of my invention is to provide an apparatus capable of doing a comparatively large amount of work by means of two
30 small cylinders and pistons instead of one large one, the two being arranged and combined so as to secure cheapness in construction and special adaptation to the requirements of this class of machinery.

In the drawings, A A' represent two fluid-pressure cylinders adapted for hydraulic, steam, air, gas, or other pressure medium, as
35 may be preferred. These cylinders are mounted by any suitable supports, B, in line, and with heads or receiving ends *a a'* adjacent. A trunk supply and discharge pipe, E, leads by branches *e e'* to each cylinder through ports *e'* in their adjacent ends. A valve, F, may be employed to admit fluid under pressure to both
40 cylinders simultaneously, and a similar valve, F', in the discharge-pipe E', which leads from trunk-pipe E, may be employed to effect simultaneous discharge from both cylinders. By
45 alternate opening and closing of these valves by the usual or any suitable valve-governing

mechanism, fluid under pressure may be supplied to and discharged from both cylinders, as desired. Pistons C are provided, one in each cylinder, which may be of any suitable construction, and packed, as at *c'*, in any suitable way, to prevent escape of fluid past the
55 piston. As shown, these pistons are single-acting and respond to fluid-pressure on one side only. Stems C' are extended outward from these pistons, and are connected, as at *c*,
60 with sheaves D D', consisting of frames *d* and any desired number of loose pulleys *d'*, which are adapted to receive a rope, H, one end of which is fastened to any suitable fixed support—as to the frame at *h*—and thence is passed
65 over the sheaves, from one set to the other, any desired number of times, as represented in Fig. 1, from which it is carried to any object which it may be desired to move—as, for example, an elevator-car.

I have shown the apparatus mounted horizontally, and in such case I prefer to support and guide the sheaves on tracks I through flanged or grooved wheels *i*, placed at the
70 sides of the frames *d*, as illustrated in Fig. 2. If the cylinders are arranged in vertical position, as may be done, any suitable guides may be substituted for these tracks.

In operation, fluid under pressure being admitted to both cylinders, as described, the
80 sheaves D D' will be spread a distance equal to double the stroke of each piston, and as both pistons move simultaneously this amount of spread will be secured in half the time required for one piston to make its stroke; also, the power
85 exerted by the two cylinders is double that of one of the same area, an adequate supply of fluid under pressure being provided to operate both pistons as described. These advantages
90 in power or in speed are very material ones, and in my improved apparatus one or the other, as may be desired, can be secured in a much better and more economical way than
95 heretofore, since the cylinders may be comparatively small, with short piston-stroke, which cost much less than large ones for a long stroke, and in arranging them I provide for increase in speed and motion without complication of pulleys.

Substantially the same principles of con- 100

struction may be embodied in an apparatus having a greater number of cylinders, pistons, and sheaves, operating radially outward from a common center, with guide-pulleys for directing the rope to and from the movable sheaves; but in so far as such application of these principles involves patentable invention in addition to that herein covered, the same will be included in the subject-matter of a separate application for patent.

It will be understood that by "rope H" I mean any suitable flexible rope, cord, chain, cable, or similar article—such, for example, as are in common use for draft and hoisting purposes.

I claim herein as my invention—

1. In a fluid-pressure motor, the combination of two fluid-pressure cylinders, arranged in line with fluid supply and discharge for their adjacent ends, two pistons—one in each cylinder, and adapted to move in opposite directions un-

der fluid-pressure therein—two sets of sheaves, connected one to each piston and movable therewith, and a rope passing over such sheaves from set to set, substantially as set forth.

2. The combination of two fluid-pressure cylinders, A A', arranged in line, pipe E, leading to the adjacent ends of the cylinders, pistons C C—one in each cylinder—piston-stems C' C', sheaves D D', connected to and movable with the piston-stems, and suitable means for guiding the motion of such sheaves, substantially as set forth.

In testimony whereof I have hereunto set my hand.

EDWARD M. BUTZ.

Witnesses:

R. H. WHITTLESEY,

C. L. PARKER.