

No. 695,824.

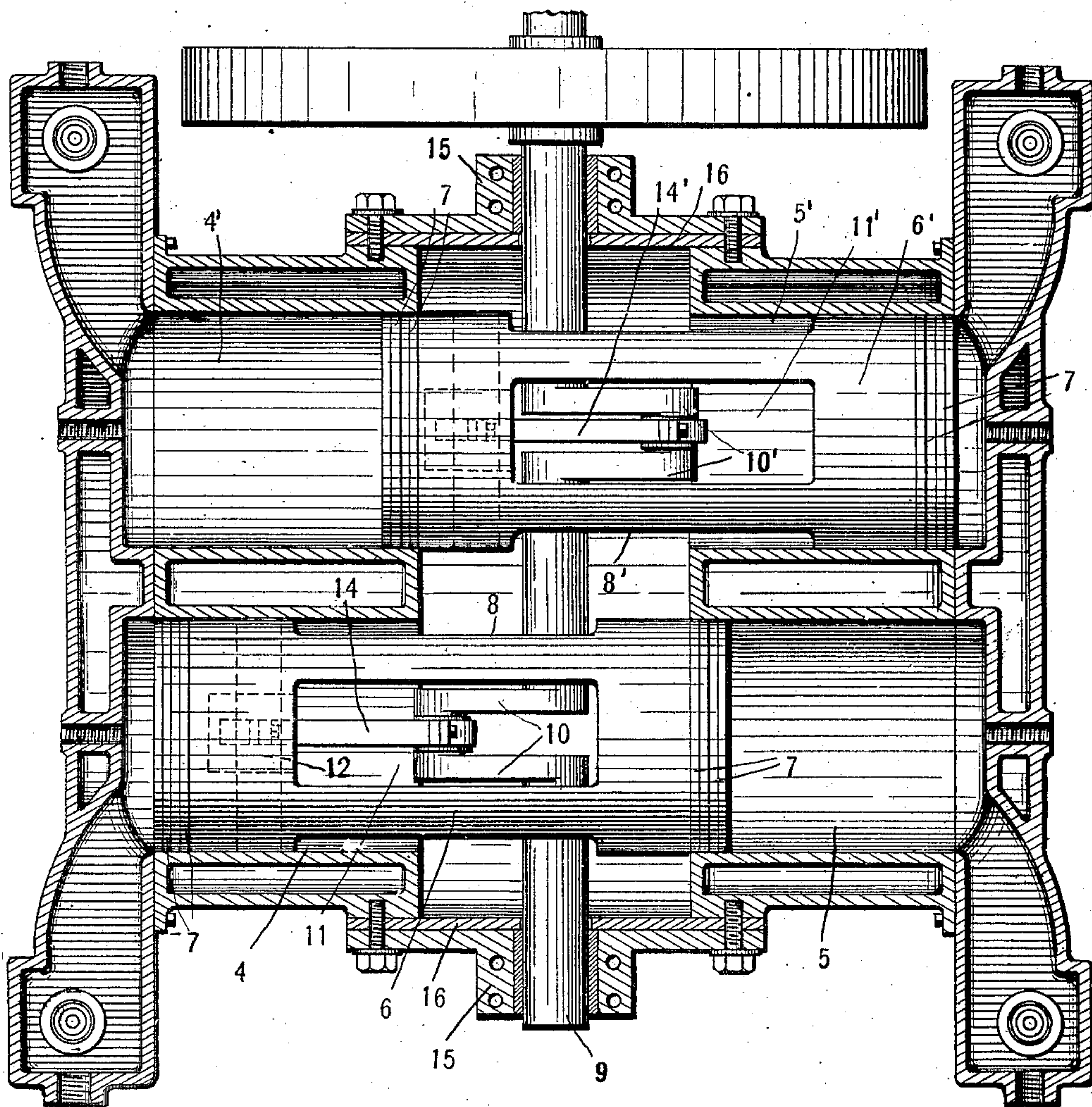
Patented Mar. 18, 1902.

H. N. MOTSINGER.
ENGINE.

(Application filed Mar. 25, 1901.)

(No Model.)

2 Sheets—Sheet 1.



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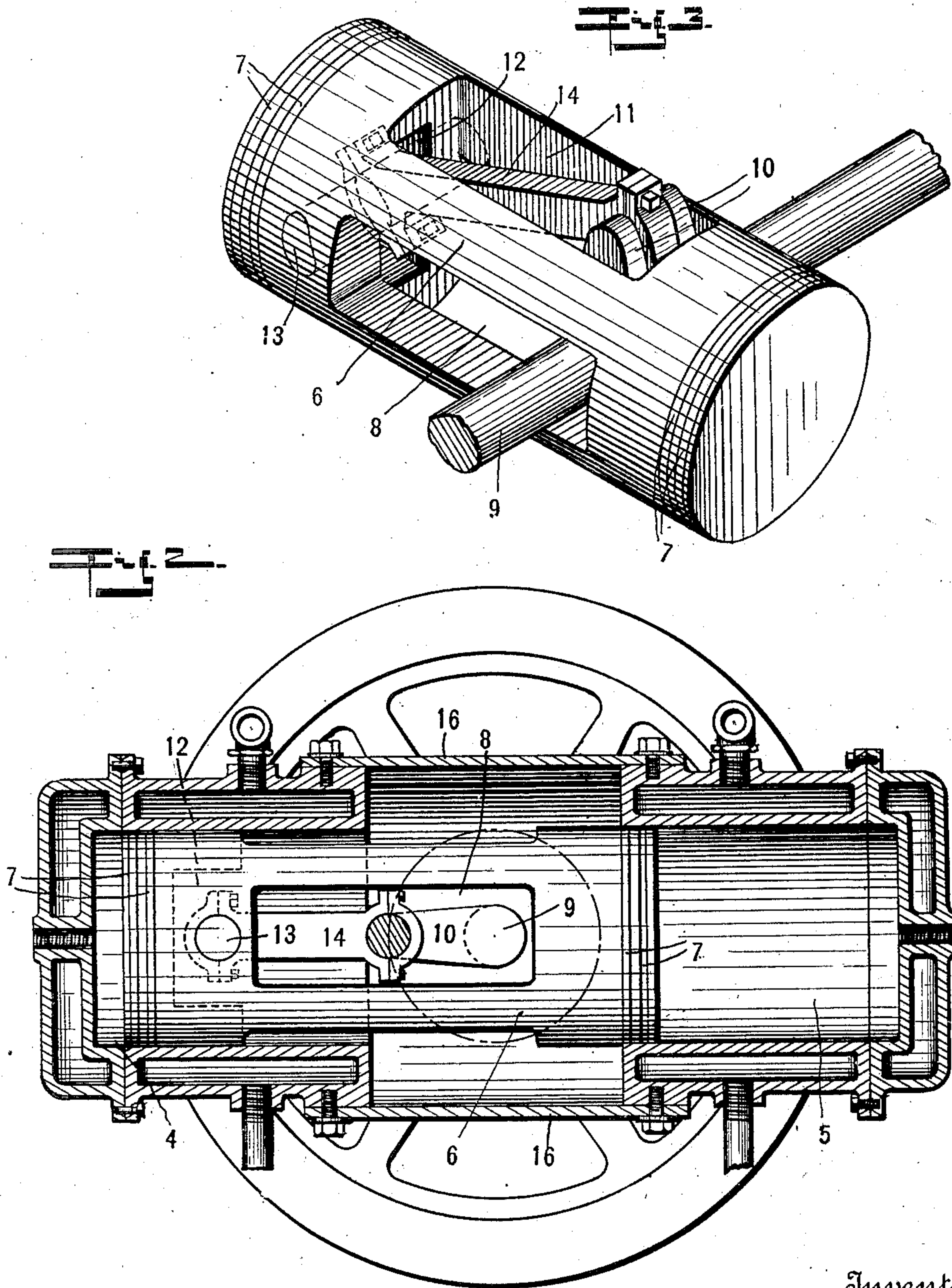
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UNITED STATES PATENT OFFICE.

HOMER N. MOTSINGER, OF PENDLETON, INDIANA.

ENGINE.

SPECIFICATION forming part of Letters Patent No. 695,824, dated March 18, 1902.

Application filed March 25, 1901. Serial No. 52,710. (No model.)

To all whom it may concern:

Be it known that I, HOMER N. MOTSINGER, a citizen of the United States, residing at Pendleton, in the county of Madison and State of Indiana, have invented a new and useful Engine, of which the following is a specification.

My invention relates to an improvement in engine construction.

The object of my invention is to produce a multicylinder engine which shall be exceedingly compact, in which there will be no piston-rod, and in which the length of bearing of the piston will remain uniform throughout the stroke of the piston.

The accompanying drawings illustrate my invention.

Figure 1 is an axial section of a four-cylinder gas-engine embodying my invention. Fig. 2 is a section through one pair of cylinders at right angles to the crank-shaft. Fig. 3 is a perspective detail of one of the pistons and its connection to the crank-shaft.

In the drawings I have shown the several cylinders provided with heads such as would be used for explosive-engines; but it is to be understood that my invention is equally applicable to steam or other engines, and no part of my present invention lies in the means for introducing the working fluid into the cylinders.

In the drawings 4 and 5 indicate a pair of cylinders in alinement with each other. Mounted within cylinders 4 and 5 is a piston 6, one end of which fits within cylinder 4 and the other end of which fits within cylinder 5, both ends being provided with suitable packing-rings 7. Extending through the middle of piston 6 is an axial slot 8, the length of which is somewhat greater than the throw of the piston and the width of which is slightly greater than the diameter of the crank-shaft 9, which passes therethrough. Crank-shaft 9 is provided with a crank 10, and provision is made for the movement of said crank 10 by forming an axial slot 11 through the middle of piston 6, which slot extends through the piston at right angles to the slot 7. One

end of piston 6 is recessed at 12 at one end of the slots 8 and 11, and extending transversely through this recess is a pitman-pin 13, upon which is pivoted one end of a pitman 14, the opposite end of which is pivoted upon the crank 10.

For many reasons, especially to prevent vibrations, it is desirable to duplicate the mechanism described by providing a second pair of cylinders 4' and 5' and a piston 6', provided with the axial openings 8' and 11'. The crank-shaft is then provided with a second crank 10', which is preferably set opposite the crank 10 and to which is connected a pitman 14'.

The cylinders are in length equal to the throw of the crank plus the packing-ring length, so that they may be brought very close together, and the engine may be exceedingly compact. Such a construction is especially useful for automobile-engines, where the space is cramped. By the arrangement of parts, however, each piston is always supported at both ends, so that the length of support is constant and no cross-head guides are necessary.

In the drawings cylinders 4 and 4' are in one casting and cylinders 5 and 5' in a similar casting. These two castings are connected by bearing-brackets 15, which support the crank-shaft, and by plates 16.

I claim as my invention—

In an engine, a pair of parallel cylinders formed in one piece, a second pair of parallel cylinders also formed in one piece, plates connecting said pieces with the pairs of cylinders in alinement, a pair of pistons each provided with a medial diametrical slot and each mounted in a pair of cylinders, a crank-shaft passing through the slots of the pistons, a pair of pitmen connected to said cranks and pistons, and bearings for the crank-shaft, substantially as shown and described.

HOMER N. MOTSINGER.

Witnesses:

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