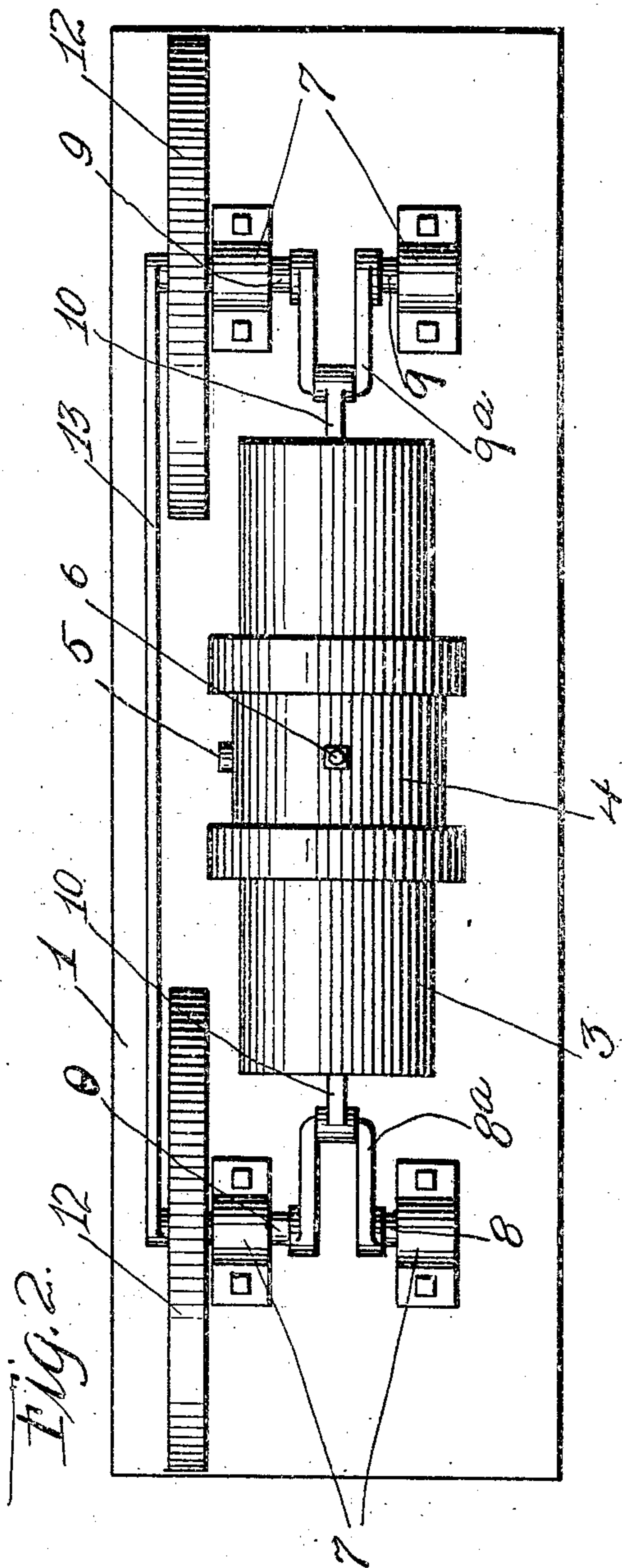
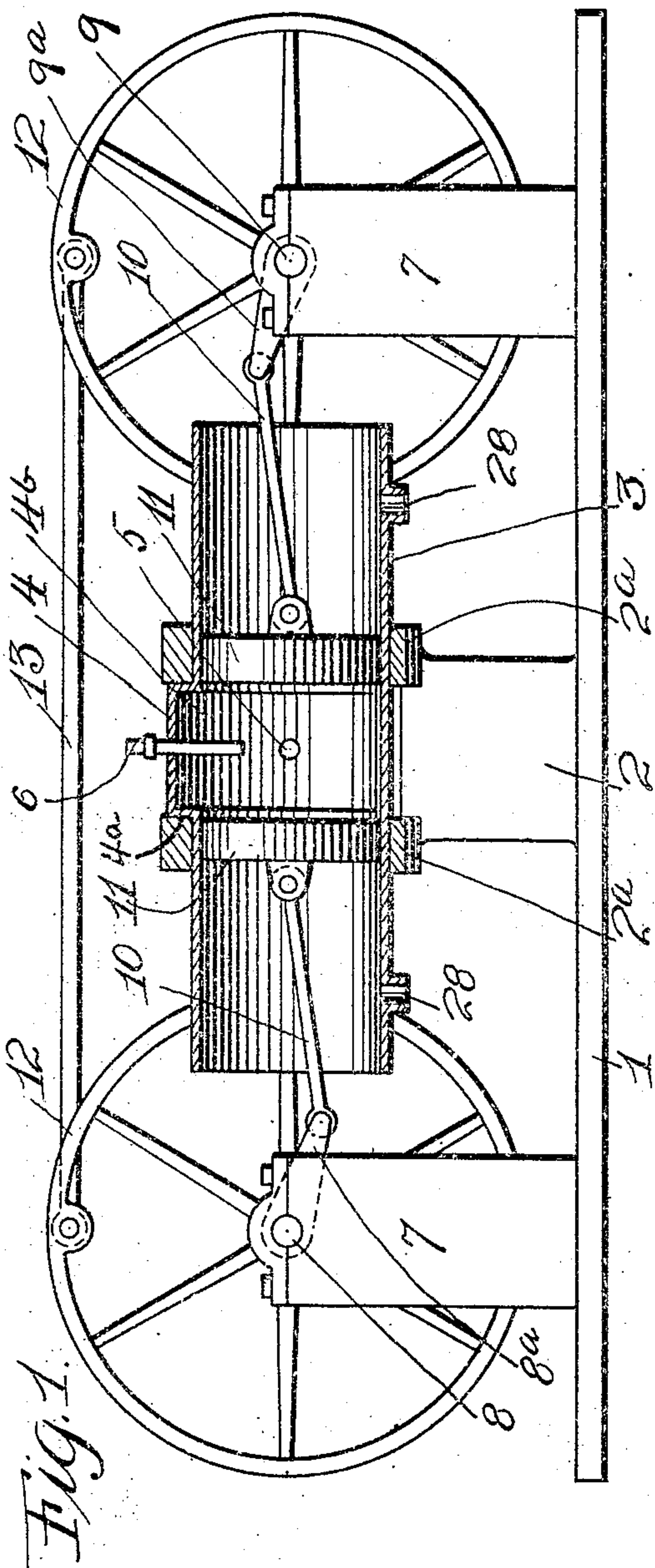


F. MANZ.  
ENGINE.

APPLICATION FILED DEC. 26, 1907.

954,982.

Patented Apr. 12, 1910.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

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## ENGINE.

954,982.

Specification of Letters Patent.

Patented Apr. 12, 1910.

Application filed December 26, 1907. Serial No. 408,085.

*To all whom it may concern:*

Be it known that I, FELIX MANZ, a citizen of the United States of America, residing at North Side, Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Engines, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to engines, and more particularly to that type of engine commonly known as a gas engine, wherein explosions are intermittently employed for driving the piston of a cylinder and the primary object thereof is to provide means in a manner as hereinafter set forth for mounting the cylinder securely in position.

The detail construction entering into my invention will be presently described and then specifically pointed out in the appended claim.

Referring to the drawings forming a part of this specification, Figure 1 is an elevation of the engine, partly in section, and Fig. 2 is a plan of the same.

In the accompanying drawings, 1 designates a suitable foundation upon which is erected an upright 2 provided at its top with a pair of spaced circular supporting members 2<sup>a</sup>. Extending through the members 2<sup>a</sup> is a hollow cylindrical element consisting of a pair of end portions 3 and an intermediate portion 4, the latter being formed integral with the former and is of greater diameter than either of the end portions 3 and furthermore is eccentrically disposed with respect to the end portions 3. The disposing of the intermediate portion 4 eccentrically with respect to the end portions 3 provides a pair of shoulders 4<sup>a</sup> which when the hollow cylindrical element is positioned in the members 2<sup>a</sup> abut against the inner faces of the said members 2<sup>a</sup> whereby the longitudinal shifting of the hollow cylindrical element is prevented. Each of the end portions 3 constitutes a cylinder and the intermediate portion 4 forms an explosion chamber 4<sup>b</sup> which is provided with an inlet 5 whereby an explosive mixture can be supplied to said chamber 4<sup>b</sup>. Extending into the chamber 4<sup>b</sup> is an igniter 6.

Upon the foundation 1 at one side of the upright 2 is arranged a pair of standards 7 and upon the foundation 1 at the other side of the upright 2 is also arranged a pair

of standards 7. Journaled in one pair of standards 7 is a shaft 8 provided with a pair of cranks 8<sup>a</sup> and journaled in the other pair of standards is a shaft 9 provided with a pair of cranks 9<sup>a</sup>. To each pair of cranks is pivotally connected a piston rod 10 which extends into an end portion 3 and is pivotally connected to a piston 11. The pistons 11 are slidably mounted in the end portions 3 which as before stated constitute cylinders and the said cylinders open into the explosion chamber 4<sup>b</sup>. The shaft 8 as well as the shaft 9 upon one end thereof is provided with a balance wheel 12. The wheels 12 are connected together by the rod 13.

Suitable exhaust ports 28 are provided adjacent to the outer ends of the cylinders 3, whereby after the force of an explosion has spent itself, against the pistons 11, the waste gases will escape from the cylinders, allowing the impetus imparted to the shafts 8 and 9 to return the pistons 11 to a position to be again driven outwardly by another explosion.

I reserve the right to make such changes in the size, proportion and minor details of construction as are permissible by the appended claim.

Having now described my invention what I claim as new, is:—

In combination, a hollow cylindrical element embodying a pair of end portions and an intermediate portion, the intermediate portion being of greater diameter than either of the end portions and eccentrically disposed with respect to the end portions whereby said element is provided with a pair of shoulders, a pair of annular members embracing said end portions for supporting said element and abutting against said shoulders to prevent longitudinal movement of said element, supporting means for said annular members, said end portions of said element constituting cylinders, said intermediate portion constituting an explosion chamber and provided with an inlet, pistons operating in said cylinders, and igniting means extending into the explosion chamber.

In testimony whereof I affix my signature in the presence of two witnesses.

FELIX MANZ.

Witnesses:

MAX H. SROLOVITZ,  
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