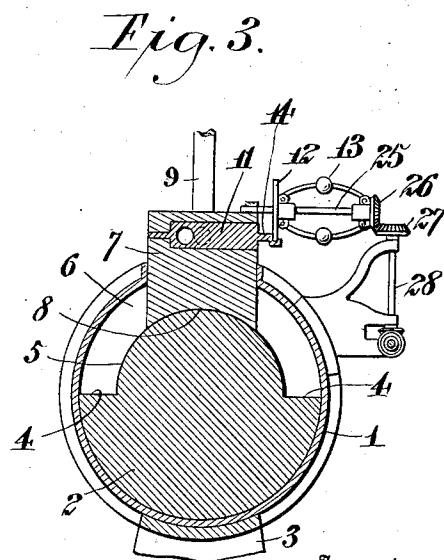
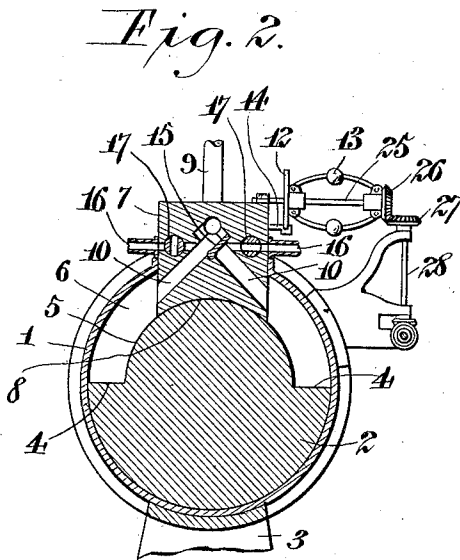
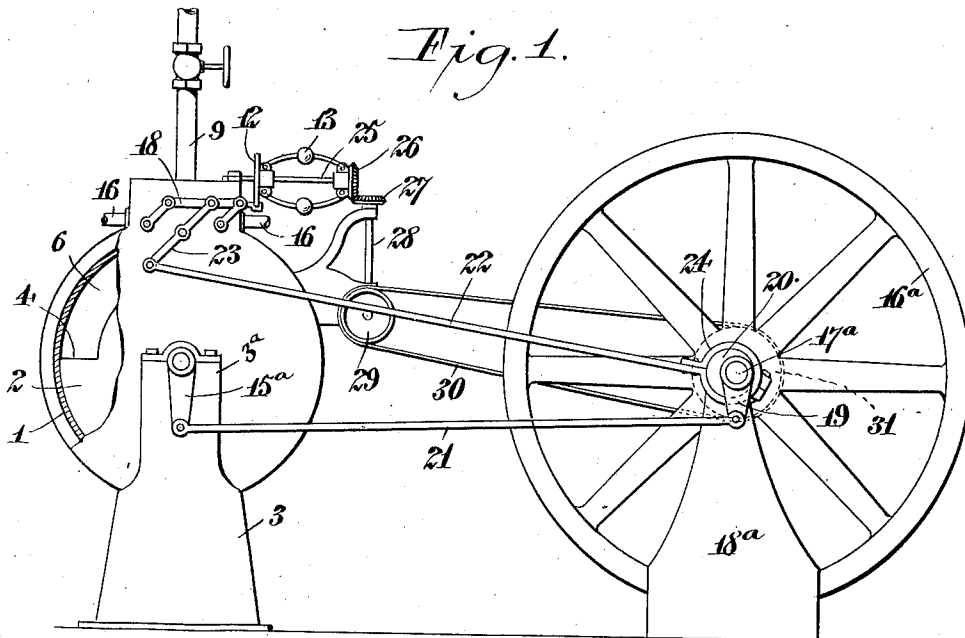
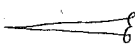


J. M. BROWN.
ENGINE.
APPLICATION FILED JUNE 4, 1912.

1,042,883.

Patented Oct. 29, 1912.



Witnesses: 
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UNITED STATES PATENT OFFICE.

JUNEY M. BROWN, OF GREENSBORO, NORTH CAROLINA.

ENGINE.

1,042,883.

Specification of Letters Patent.

Patented Oct. 29, 1912.

Application filed June 4, 1912. Serial No. 701,581.

To all whom it may concern:

Be it known that I, JUNEY M. BROWN, a citizen of the United States, residing at Greensboro, in the county of Guilford and State of North Carolina, have invented new and useful Improvements in Engines, of which the following is a specification.

This invention is an improved steam engine embodying an oscillating piston and consists in the construction, combination and arrangement of devices hereinafter described and claimed.

In the accompanying drawings:—Figure 1 is partly a side elevation and partly a sectional view of an engine constructed in accordance with my invention. Fig. 2 is a detail sectional view of the same on a plane parallel with and intersecting the branch ports. Fig. 3 is a similar view on a plane with and intersecting the throttle valve.

In accordance with my invention, I provide a circular casing 1 in which a correspondingly shaped piston 2 is mounted for oscillation, the bearings of the piston being indicated at 3^a on standards 3, and the piston being provided at diametrically opposite points with shoulders 4, the piston having a portion 5 of reduced diameter on its upper side between the shoulders, whereby a steam space 6 is formed between one side of the casing, the reduced portion and the shoulders of the piston.

A fixed abutment 7 is arranged in the upper side of the casing, the outer portion of the said abutment projecting upwardly and from the casing and the lower side of the abutment bearing against and being concaved at its lower side as at 8 to fit snugly against the reduced portion 5 of the piston. This fixed abutment is provided with a steam inlet 9 from which extend branch ports 10 which are oppositely arranged. In the inlet port is a throttle valve 11 which is connected to the movable member 12 of a centrifugal governor 13 by means of a rod 14.

An inlet valve 15 is arranged in the fork between the ports 10 and is mounted for oscillation across the lower end of the port 9 so that the said valve serves to alternately close and open each port 10 to admit steam alternately to opposite sides of the steam space and, hence, cause oscillating motion to be imparted to the piston 2. Exhaust pipes 16 lead from the steam space at points at opposite sides of the abutment and are pro-

vided with valves 17. These valves are mounted for oscillation and are connected to the valve 15, by connections 18 for simultaneous movement with said valve 15 so that when the latter open either of the ports 10 closes the other port which also causes one of the exhaust valves to close and the other to open communication between the closed port 10 and the corresponding exhaust pipe 16. Hence, when steam is admitted to either side of the steam space for action against one of the shoulders of the oscillating piston, it is exhausted from the other side of the steam space.

The axle of the oscillatory piston is provided with a crank 15^a which is arranged at one side of the casing. A fly wheel 16^a is carried by a shaft 17^a which has its bearings in a suitable support 18^a. The shaft has a crank 19 and is also provided with an eccentric 20. The crank 19 is connected to the crank 15 by a rod 21. An eccentric rod 22 is connected at one end to a crank arm 23 carried by the oscillatory steam inlet valve 15 and the said eccentric is provided with an eccentric strap 24 which engages and operates on the eccentric 20. The oscillatory movement of the crank 15 through the instrumentality of the connecting rod 21 and the crank 19 causes the shaft 17 to revolve with its fly wheel 16 and eccentric 20 and the latter through the instrumentality of the connections hereinbefore stated, operates the steam inlet valve 15. In practice, the shaft 17 will also be provided with a suitable pulley or other device for conveying power. The shaft 25 of the speed governor is provided with a bevel gear 26 which is engaged by a similar but smaller gear 27 which is carried by a shaft 28. This shaft also has a pulley 29 which is engaged by an endless belt 30, the said endless belt being operated by a pulley 31, with which the shaft 17 is provided. Hence, the speed governor is driven from the power shaft of the engine and it will be understood that the speed governor is automatic in its operation and controls the operation of the engine.

While I have herein shown and described a preferred form of my invention, I would have it understood that changes may be made in the form, proportion and construction of the several parts without departing from the spirit of my invention and within the scope of the appended claims.

I claim:—

1. In an engine of the class described comprising a circular casing having an abutment in one side, the said abutment being
 5 provided with a steam inlet port and with branch ports leading to opposite ends of the abutment, an oscillating valve arranged in the angle between the said ports, exhaust
 10 pipes respectively communicating with the branch ports and provided with valves, connections between the exhaust valves and the first-mentioned valve to cause said exhaust
 15 valves to be operated by and with the first-mentioned valve, means to operate the first-mentioned valve, and an oscillating piston mounted concentrically in the casing and
 20 having shoulders respectively on opposite ends of the abutment, the said oscillating piston having a portion of reduced diameter between the said shoulders and against the
 25 periphery of which the said abutment bears and whereby a steam space is formed between the reduced portion of the piston and the corresponding portion of the casing and at opposite ends of the abutment.

2. In an engine of the class described comprising a circular casing having an abutment in one side, the said abutment being provided with a steam inlet port and with

branch ports leading to opposite ends of the
 abutment, an oscillating valve arranged in
 the angle between the said ports, exhaust
 pipes respectively communicating with the
 branch ports and provided with valves, con-
 35 nections between the exhaust valves and the first-mentioned valve to cause said exhaust
 valves to be operated by and with the first-mentioned valve, means to operate the first-
 mentioned valve, and an oscillating piston
 40 mounted concentrically in the casing and having shoulders respectively on opposite
 ends of the abutment, the said oscillating piston having a portion of reduced diameter
 between the said shoulders and against the
 45 periphery of which the said abutment bears and whereby a steam space is formed between the reduced portion of the piston and the corresponding portion of the casing and
 at opposite ends of the abutment, the said
 50 engine being further provided with a throttle valve, and a governor mechanism connected to the throttle valve.

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

JUNEY M. BROWN.

Witnesses:

J. W. PRICE,

J. M. MILLER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."