

No. 680,953.

Patented Aug. 20, 1901.

C. W. WEISS.
EXPLOSIVE ENGINE.

(Application filed Apr. 24, 1899.)

(No Model.)

Fig. 1.

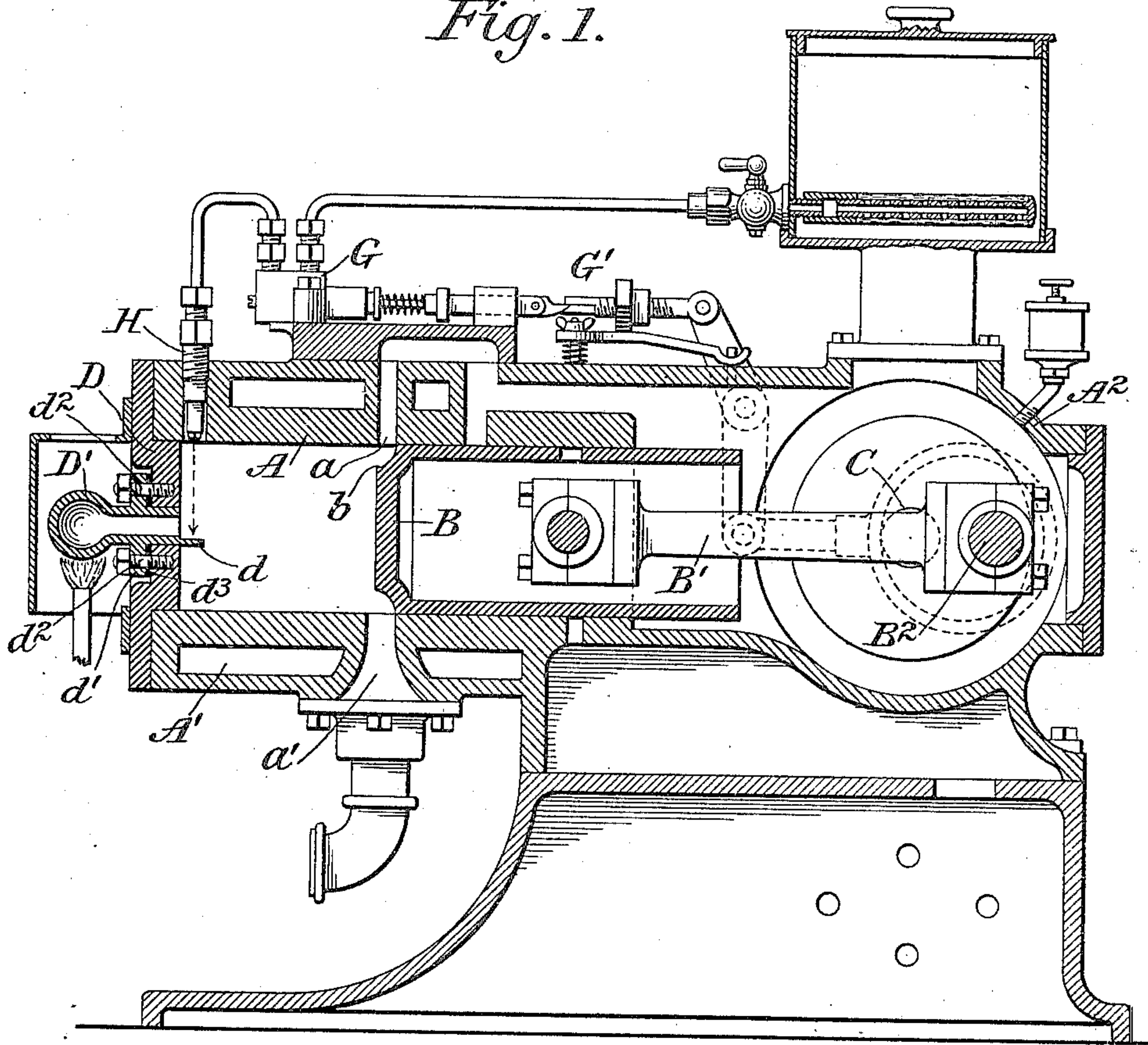


Fig. 2.

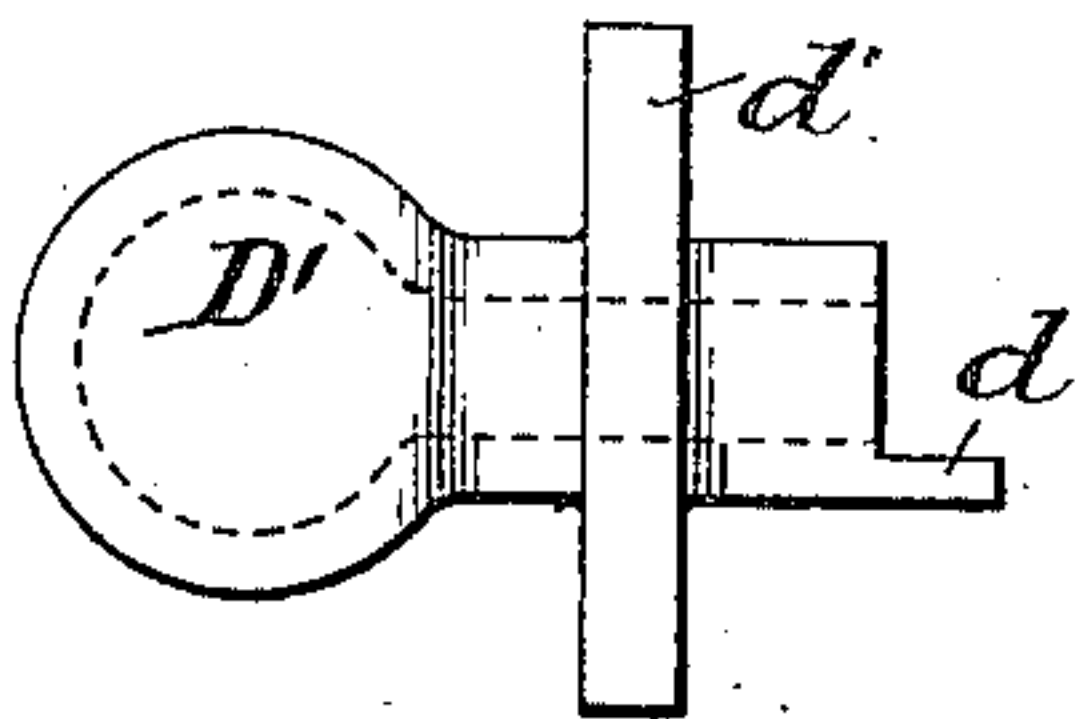
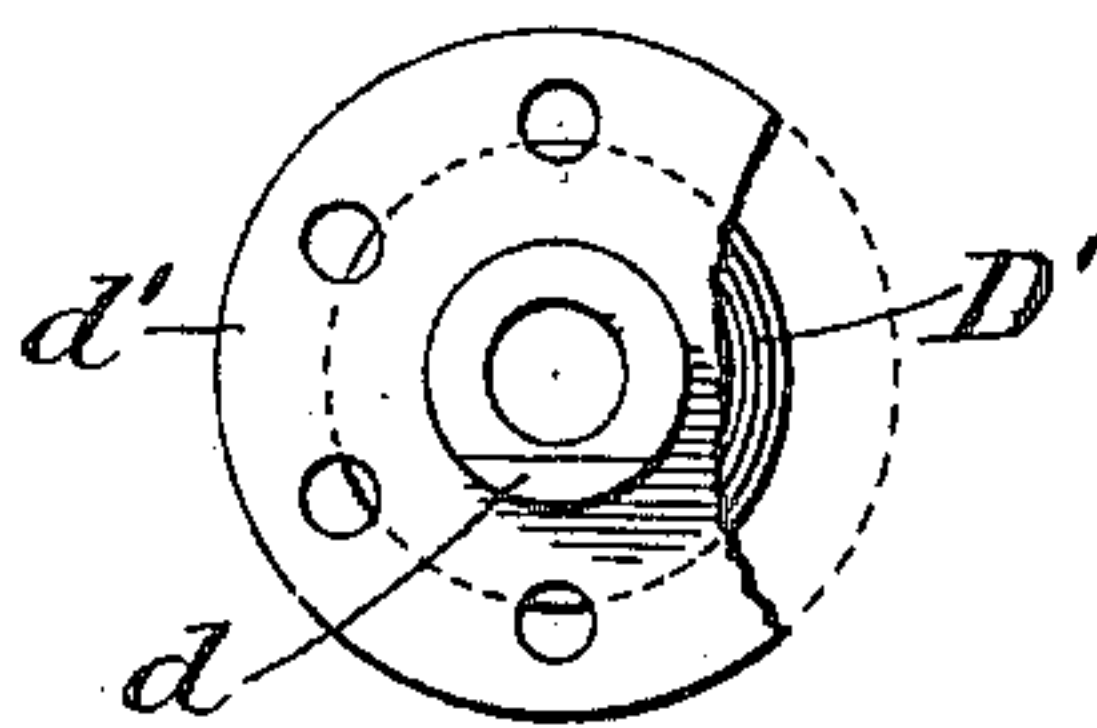


Fig. 3.



Attest:

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EXPLOSIVE-ENGINE.

SPECIFICATION forming part of Letters Patent No. 680,953, dated August 20, 1901.

Application filed April 24, 1899. Serial No. 714,201. (No model.)

To all whom it may concern:

Be it known that I, CARL W. WEISS, a citizen of the United States, residing in the borough of Manhattan, city of New York, State of New York, have invented certain new and useful Improvements in Explosive-Engines, of which the following is a specification, reference being had to the accompanying drawings, forming a part hereof.

This invention relates to explosive-engines of the general character of that shown and described in Letters Patent of the United States No. 592,034 granted October 19, 1897, in which the hydrocarbon is introduced into the explosion-chamber or working chamber and is there vaporized and mixed with air to form the explosive mixture.

The present invention is concerned especially with the vaporization of the hydrocarbon and the formation of the explosive mixture and the ignition of such mixture after its formation; and it consists in the improved construction and arrangement of parts, as hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a vertical longitudinal section of an engine equipped with the present improvement. Fig. 2 is a side elevation, on a larger scale, of the igniter. Fig. 3 is an end elevation of the igniter as seen from the right in Fig. 2, the flange being partly broken off.

The cylinder A may be of ordinary construction, except as may be indicated hereinafter, and may be provided with a water-jacket A', as usual. The casing A² is preferably extended forward to inclose the crank or crank-disks and to receive the bearings of the crank-shaft. The trunk-piston B may be connected by a pitman B' to the crank-pin B², carried by the crank-arms or crank-disks secured to the crank-shaft C. The chamber inclosed by the forward part of the casing A² constitutes a convenient air-compression chamber in which the air is compressed at each forward movement of the piston. The said chamber is connected through a suitable duct with the working cylinder A or explosion-chamber, said duct having a port *a*, which is so arranged as to be closed by the piston during its rearward movement. An exhaust-port *a'* is also provided and is preferably so arranged

as to be covered by the piston except when the latter approaches the limit of its forward movement. A deflector *b* is formed upon or secured to the face of the piston B for the purpose of directing a strong blast of air from the compression-chamber rearwardly into the explosion-chamber and against the head of the cylinder.

The cylinder-head D presents a substantially plane surface and is nearly approached by the piston at the limit of its rearward movement, a space being left between the two, however, in which the explosive charge is compressed. A closed tubular igniter D', formed separately from the head and having, it may be, an enlargement at its outer end, is secured to the cylinder-head, opening through a single central mouth into the interior of the cylinder. The igniter may be formed with an integral flange *d'*, through which bolts *d*² may be passed to secure the igniter to the cylinder-head, a suitable insulation *d*³ being interposed between the flange and the cylinder-head. The inner end of the igniter is provided below its bore or mouth with a lip or ledge *d*, which projects beyond the inner face of the cylinder-head within the cylinder.

The oil is discharged forcibly and in proper quantity directly upon the lip or ledge *d* by any suitable means, such as a pump G, which may be operated by suitable connections (not necessary to be described herein) from the crank-shaft of the engine, the action of the pump being controlled by a suitable governor mechanism, which is sufficiently indicated at G'. The pump communicates with a nipple or nozzle H, which is located in the cylinder-wall near the cylinder-head, so that the oil shall be discharged directly upon or against the lip or ledge *d*, above referred to.

It will be understood that the lip or ledge *d* being integral with the igniter is heated quickly to a vaporizing temperature by the application of heat to the external portion of the igniter, and thereby facilitates the starting of the engine. The cylinder-head, however, is kept cool by the insulation between the same and the igniter. Moreover, the said lip or ledge is so located with respect to the inlet-port *a* that the swirling currents of air immediately disseminate the vapor through-

out the explosion chamber or cylinder, thereby producing an explosive mixture which is of uniform quality throughout said chamber or cylinder. Moreover, the said lip or ledge
5 is so located with respect to the igniter that the ignition of the charge takes place without fail whenever the proper conditions obtain.

I claim as my invention—

10 1. In an explosive-engine, the combination of a cylinder, a separate, tubular igniter secured to the exterior of the cylinder-head closed at its outer end and having an integral lip or ledge at its inner open end project-
15 ing into the cylinder, means for discharging oil against the said lip or ledge, and means for introducing into the cylinder a current of air, whereby the lip or ledge of the igniter is maintained always at a vaporizing temper-
20 ature without raising the temperature of the head, substantially as shown and described.

2. In an explosive-engine, the combination with the cylinder provided with a centrally-

apertured head, of a tubular igniter, passed through said aperture, and provided with a
25 flange bolted to and insulated from, the outer side of said head, the closed outer end of the igniter being enlarged and its inner end terminating in a longitudinally-projecting vaporizing lip or ledge within the cylinder,
30 means for discharging oil against said lip, and means for introducing a current of air into the cylinder, substantially as described.

3. In an explosive-engine, a combined igniter and vaporizer, comprising a tube pro-
35 vided with a closed bulbous or enlarged outer end, an annular attaching-flange between its ends, and a longitudinally-extending vaporizing lip at its inner end, substantially as described.
40

This specification signed and witnessed this 21st day of April, A. D. 1899.

C. W. WEISS.

In presence of—

ANTHONY N. JESBERA,
LOUIS R. MOORE.