

No. 677,001.

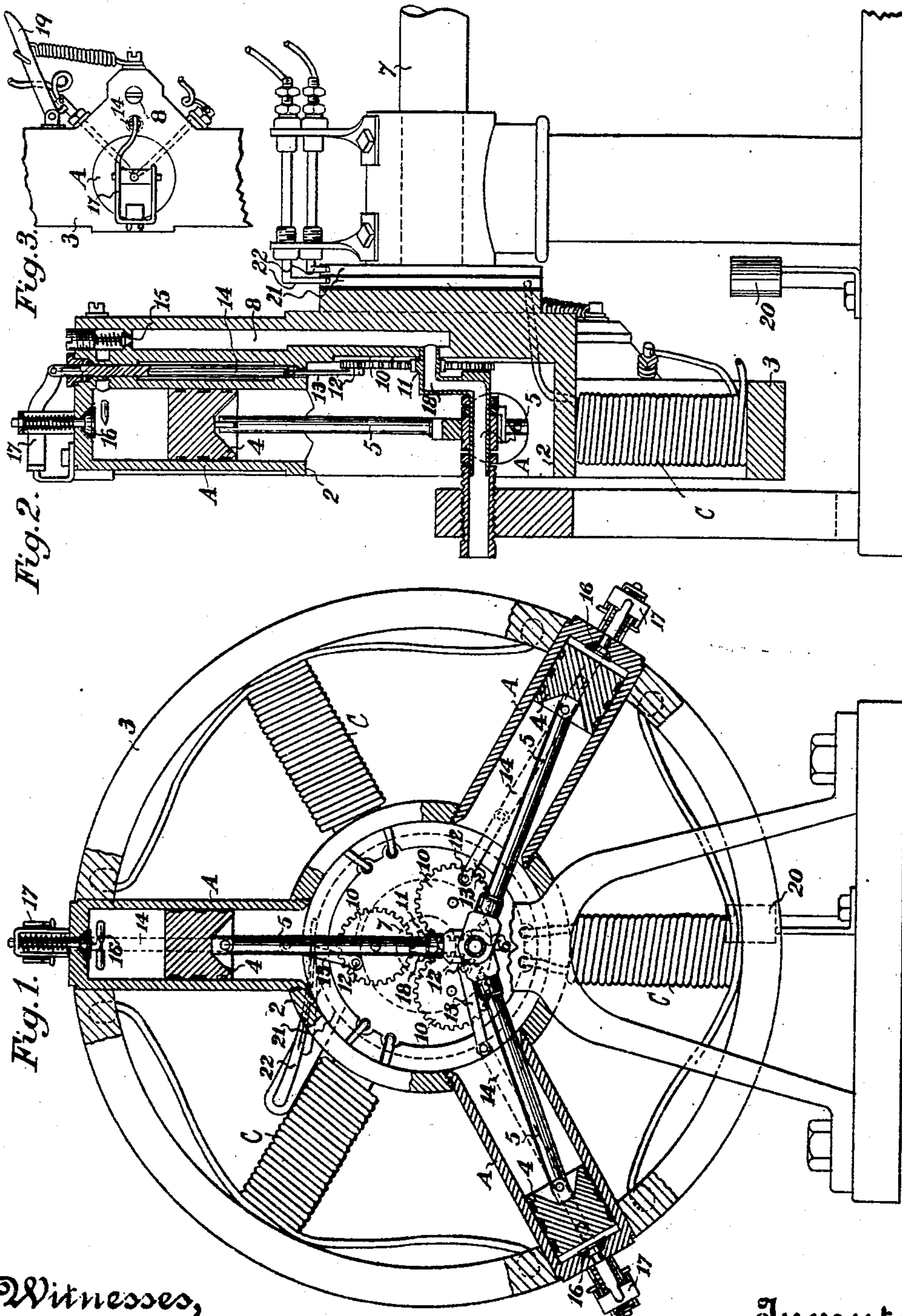
Patented June 25, 1901.

A. T. STIMSON.
ROTARY EXPLOSIVE ENGINE.

(Application filed Apr. 26, 1900.)

(No Model.)

2 Sheets—Sheet 1.



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Fig. 4.

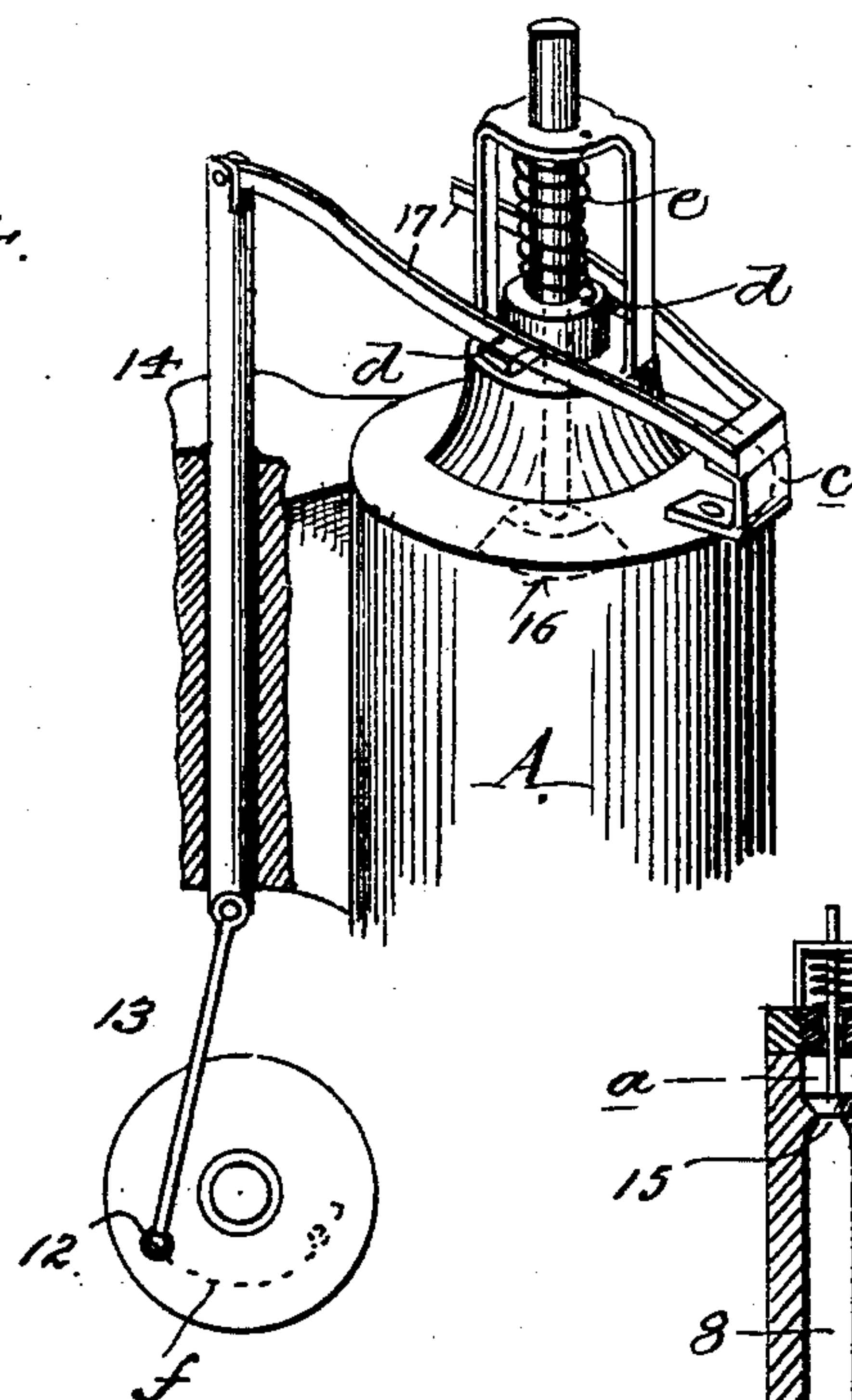


Fig. 5.

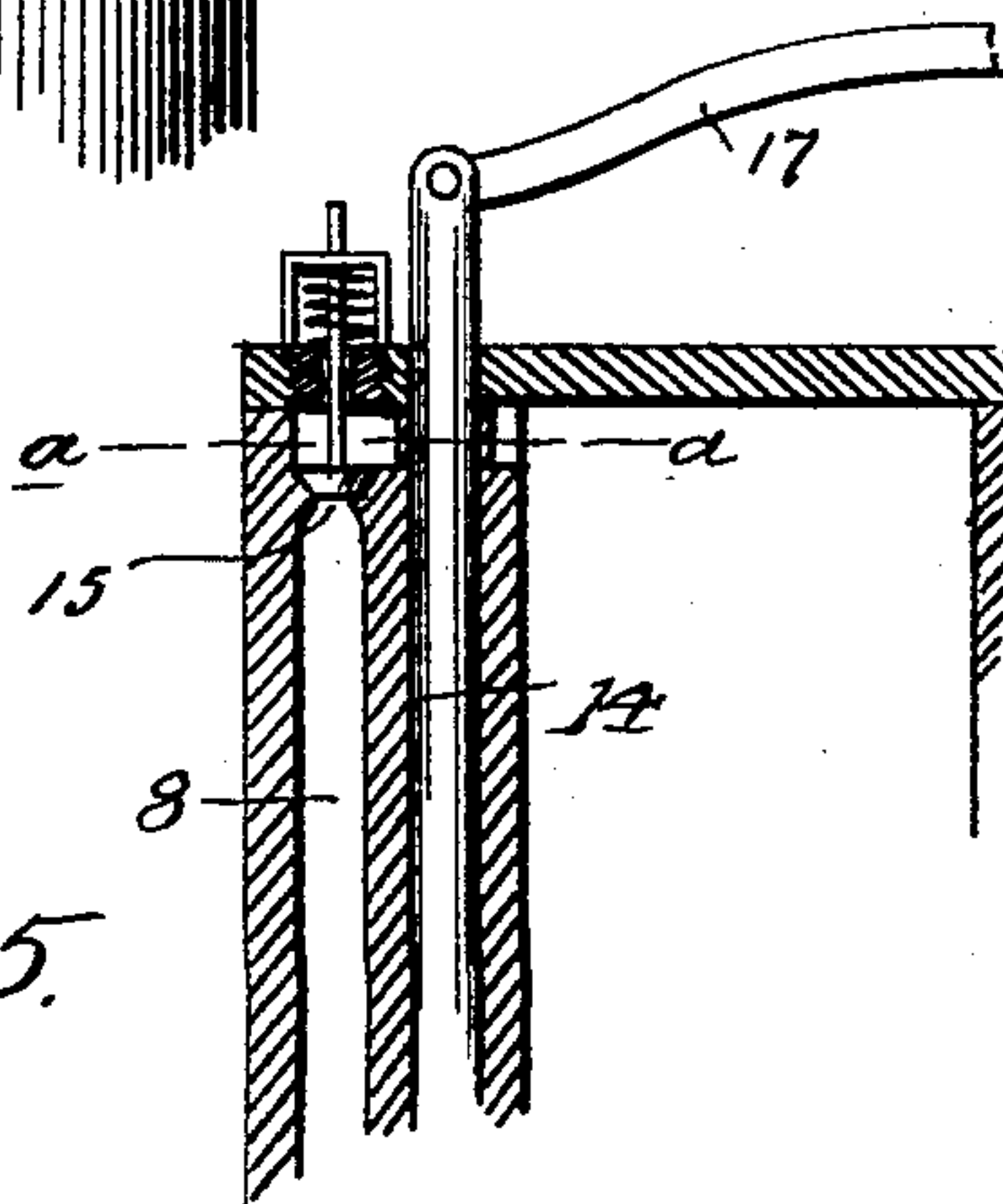
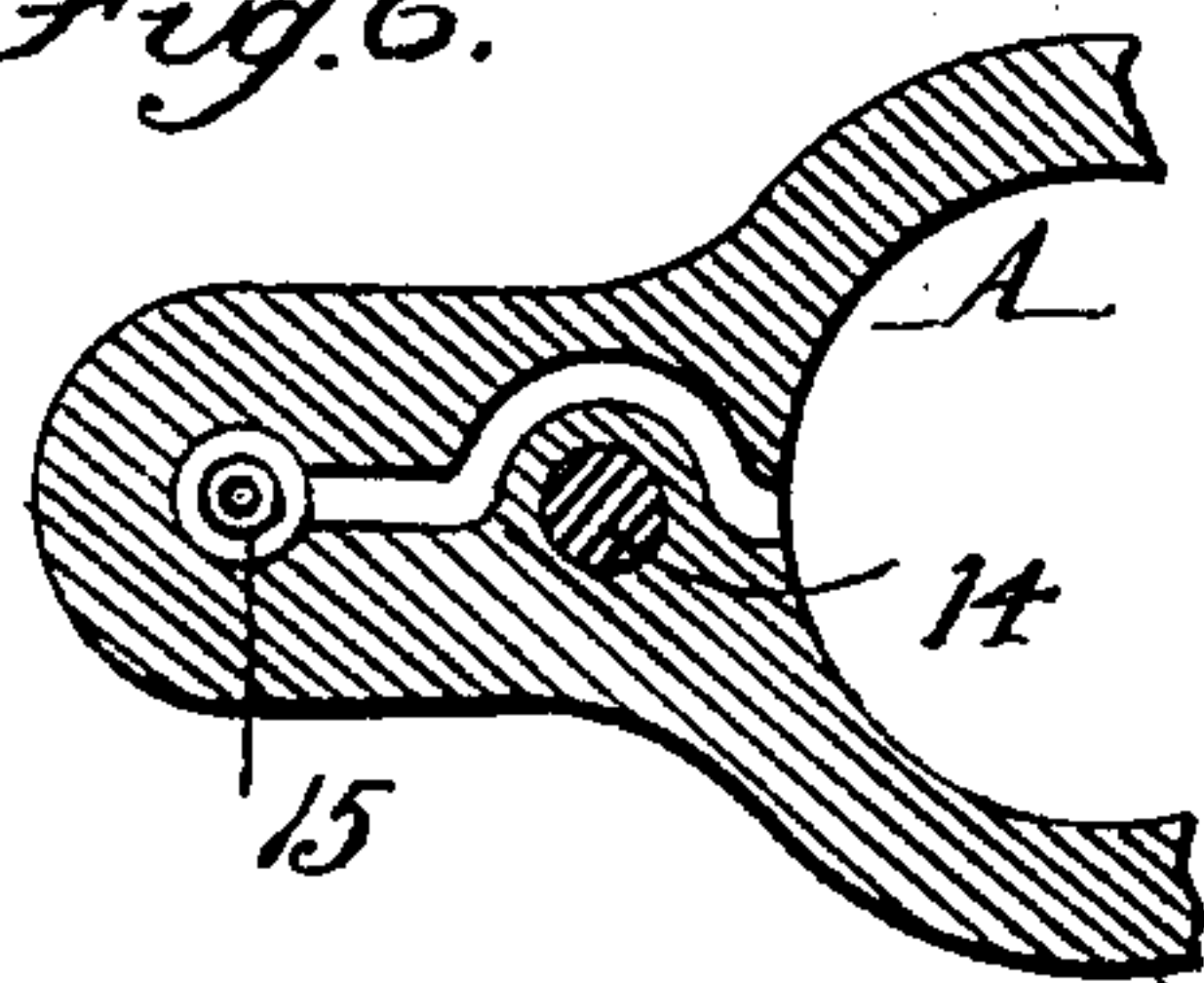


Fig. 6.



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ALFRED T. STIMSON, OF EUREKA, CALIFORNIA.

ROTARY EXPLOSIVE-ENGINE.

SPECIFICATION forming part of Letters Patent No. 677,001, dated June 25, 1901.

Application filed April 26, 1900. Serial No. 14,441. (No model.)

To all whom it may concern:

Be it known that I, ALFRED T. STIMSON, a citizen of the United States, residing at Eureka, county of Humboldt, State of California, have invented an Improvement in Gas-Engines; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to engines which are propelled by a fluid under pressure.

It consists of the parts and the constructions and combinations of parts hereinafter described and claimed.

Referring to the accompanying drawings, Figure 1 is a sectional elevation. Fig. 2 is a longitudinal section. Fig. 3 is a plan of a portion of the rim, showing the lever-arm. Fig. 4 is a detail in perspective of the means for operating the exhaust-valve. Fig. 5 is a sectional detail of the inlet-valve 15, showing portions of the cylinder, the rod 14, and yoke 17. Fig. 6 is a cross-section on the line *a a* of Fig. 5.

This engine may be propelled by steam, compressed air, water, gas, or by an explosive vapor. I have here shown my invention as applied to the latter class of engines. The cylinders *A* are here shown as mounted radially between two concentric rims 2 and 3. Within these cylinders pistons 4 are fitted to reciprocate, and by means of piston-rods 5 they are connected with a stationary pin or center 6, so that while the cylinders revolve about the shaft 7, upon which the rims 2 and 3 are carried, the pistons are caused to reciprocate within the cylinders. Gas or other propelling medium is admitted into the outer ends of the cylinders through pipes or passages 8 by means of valves which are actuated by pinions 10, journaled around a central fixed pinion 11. The pinions 10 revolve with the rims and cylinders, and they have crank or eccentric pins 12, which are connected by rods 13 with the slide-rods 14, which actuate the exhaust-valve 16, as shown in Fig. 4. This valve is operated by the rod 14, the lower end being connected with the pinion 10 by a rod 13. The upper end of this rod 14 is connected with a forked lever or yoke 17, and the latter is fulcrumed by a spring-support *c* to the head of the cylinder. This yoke rests upon the lugs *d*, which ex-

tend outwardly from the enlarged portion or collar of the valve-stem, with which enlarged portion the spring *e*, surrounding the stem, also connects. This spring has a tendency to keep the valve 16 closed. During the travel of the pin 12 through the space represented by the dotted line *f* of Fig. 4 the yoke will press upon the lugs *d* and will consequently open the valve 16 to allow the engine to exhaust; but during the remainder of the travel the yoke will be lifted from the lugs *d* and the springs will act to keep the valve closed until the yoke 17 again contacts with the lugs *d* at the lower part of the travel of the connecting-link 13 and pin 12. The inlet-valve 15, as shown in Fig. 5, is spring-pressed and controls the gas-inlet from the passage 8, which passage enters at right angles and passes around the rod 14, as shown in Fig. 6, to the combustion-chamber or upper part of the cylinder *A*. When the piston 4 is moving in the direction which will produce a vacuum, it opens the valve 15 to draw in a charge, and as soon as the piston moves in the other direction the valve is allowed to close by the action of the spring as well as by the pressure produced. This valve is always closed previous to the explosion of any cylinder. The radial inlet-passages 8 connect at the center with a hollow arm 18, which in turn connects with the hollow eccentric-pin 6, and the propelling medium is conveyed through this pin to the cylinders.

If gas or explosive vapor is employed, when it has been properly compressed within the cylinders and when the cylinders arrive at the proper point in their revolution the charge is exploded, thus giving an impulse to force the cylinder and the wheel or rims in which it is carried to revolve.

An electric spark is produced by means of lever-arms 19, which contact with a stationary pin or lug 20 at a certain point in the revolution to interrupt the circuit and produce the spark.

21 represents commutator or conducting rings carried by the revolving wheel, and 22 represents brushes suitably supported and insulated and resting upon the peripheries of the rings.

Between the hub and rim of the revoluble structure are located coils *C*, with suitable

terminal connections with the rim and commutator or conducting rings 21, the object of the coils being to increase the strength of the spark.

5 Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination of a revoluble structure including concentric rims, a plurality of radi-
10 ally-disposed cylinders having opposite ends fixed to said rims, pistons within the cylinders, a hollow pin eccentric to the center about which the cylinders revolve, rods connecting the pistons with said pin, means for
15 supplying a propelling medium to and exhausting it from the cylinders including gas-passages through the eccentric-pin and in the revoluble structure and inlet-valves controlling the latter passages, radially-disposed
20 rods slidably mounted in the structure between each cylinder and its gas-passage, a pinion fixed to the pin, gearing carried by the revoluble structure and means connecting the slidable rods with the gearing, and ex-
25 haust-valves and means for operating the same including forked yokes on the perimeter of the outer rim, having one end spring-supported and the opposite end connected with the slide-rods, said yokes having their inter-
30 mediate portions operatively engaging the stems of the exhaust-valves.

2. In an engine; a journaled revoluble structure, a plurality of cylinders carried thereby radial to the center of revolution, an
35 independent pin fixed out of line with said center, pistons movable in the cylinders and rods connecting the pistons with said pin, passages through which a propelling medium is admitted to the cylinders, and valves and
40 mechanism by which said valves are actuated to admit and exhaust the propelling medium,

said mechanism including a pinion fixed to the pin and gearing carried by the revoluble structure, radially-disposed longitudinally-reciprocating rods mounted in the said struc- 45
ture and having their outer ends extending beyond the perimeter thereof, means connecting the inner ends of the rods with the gearing, and spring-supported yokes on the per-
50 imeter of the structure and connected with the outer ends of the rods, and having their intermediate portions connected with the stems of the exhaust-valves.

3. An improved gas-engine including a revoluble structure having a plurality of radi- 55
ally-disposed cylinders with pistons movable therein, a hollow pin fixed out of line with the center of revolution of the structure and provided with a pinion, and rods connecting the pistons with said pin, radial passages in
60 the structure, one for each cylinder, and connecting with the hollow pin, inlet-valves, exhaust-valves and means for actuating them including radially-disposed slide-rods be-
65 tween the radial passages and the adjacent cylinders, yokes having their ends connected with said slide-rods and the revoluble structure and having their intermediate portions
70 connected with the stems of the exhaust-valves, gearing located in the center of the structure and engaging said pinion and rods connecting the gearing with the inner ends of the slide-rods, igniting devices and means whereby a contact is made and broken to pro-
75 duce the spark.

In witness whereof I have hereunto set my hand.

ALFRED T. STIMSON.

Witnesses:

S. H. NOURSE,
JESSIE C. BRODIE.