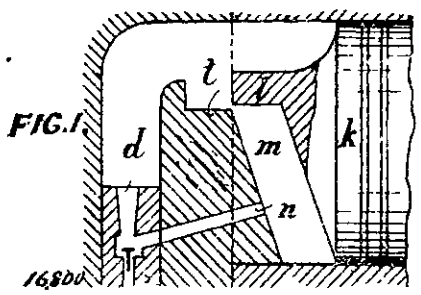
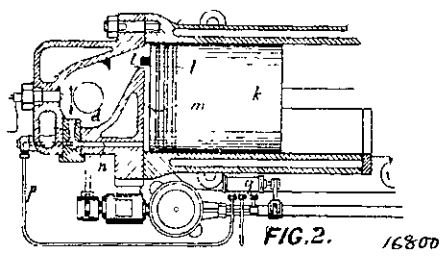
Inventions.

Abridgments of Interesting Patent Specifications.

ATOMISER.—Haselwander.—No. 16,800, dated August 18th, 1905.—In two-stroke-cycle engines it is usual to use a baffle (*l*) on the piston (*k*), Fig. 1. In this invention this baffle can be utilised to co-operate with a part (*t*) at the compression end

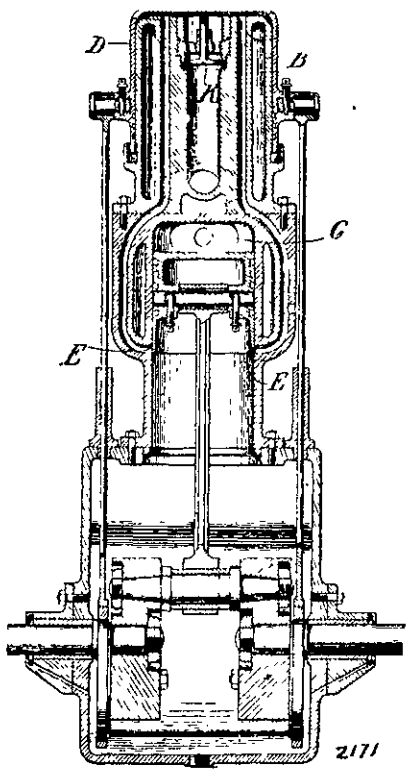


of the cylinder, so that, as the piston arrives at the end of its stroke, it super-compresses a charge in the chamber (*m*). This super-compressed charge escapes by the passage (*n*), where it meets the fuel, which it atomises as it is discharged from the outlet (*d*). The same invention can be applied



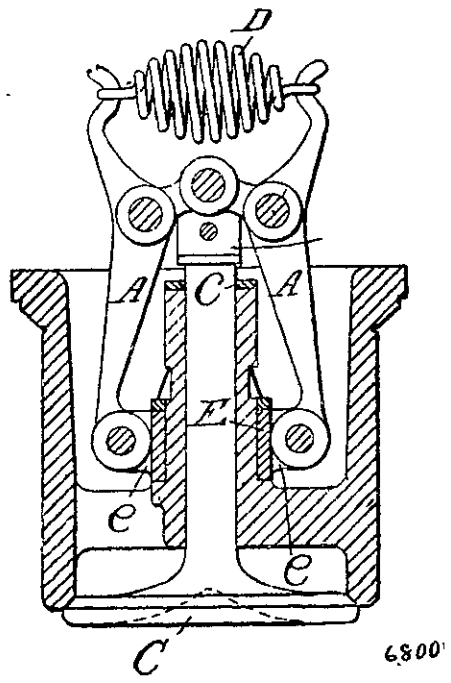
to four-stroke-cycle engines, as shown in Fig. 2, where a web (*l*) is secured to the piston and co-operates with a fixed part at the combustion end of the cylinder to form a separate chamber (*m*), in which super-compression takes place at the end of the stroke. In this figure fuel is shown as admitted by the conduit (*p*).

TWO-CYCLE ENGINE.—Jung.—No. 2,171, dated February 3rd, 1905.—This engine is provided with an auxiliary cylinder (*d*), which slides upon an extension (*b*) from the main cylinder, and is operated by eccentrics upon the crank shaft. As the piston (*f*) in the main cylinder commences



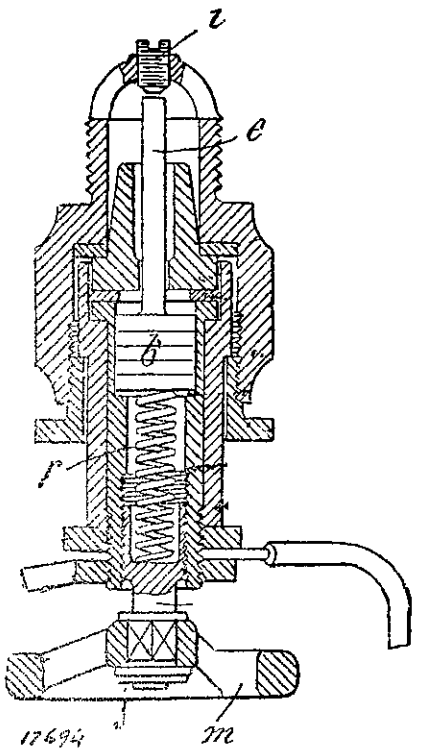
its working stroke, the cylinder (*d*) is raised so that a vacuum is formed therein. When the piston (*f*) passes the ports (*e*) in its cylinder, the exhaust gases escape through these to the cylinder (*d*), and at the same time a fresh charge is admitted by the inlet (*g*). The new charge is then compressed, and exhaust from the cylinder (*g*) takes place through the valve (*k*), which is gravity-controlled to open when the pressure rises beyond a given limit.

INDUCTION VALVE.—The Wolseley Tool and Motor Car Co., Ltd.—No. 6,800, dated August 31st, 1905.—The valve (*c*) is held upon its seating by toggles (*a*) pivoted to a fixed collar (*e*). The toggles are pivoted to the top of the valve stem



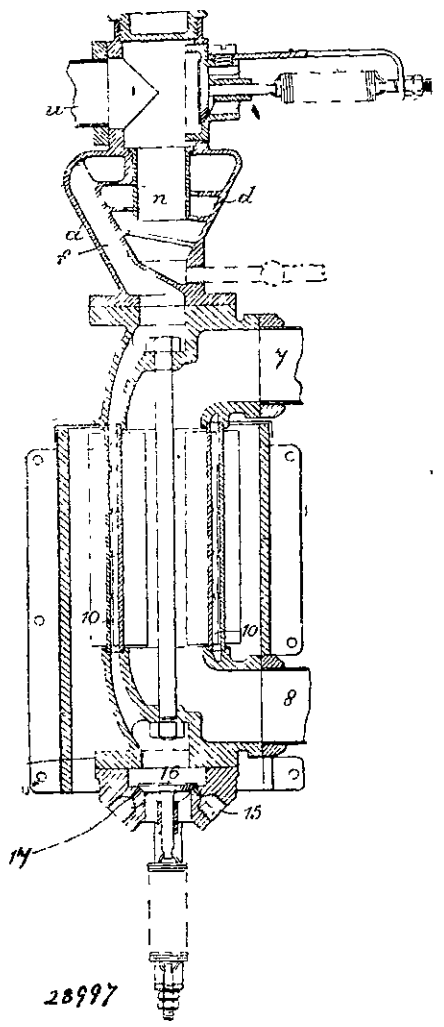
and controlled by a spring (*d*). The advantage of this valve is that it requires a greater degree of suction to first open it than it does to maintain it open, whereas the reverse is the case with ordinary suction valves, so that these latter are often uncertain in action owing to their "fluttering."

IGNITION DEVICE.—Olive.—No. 17,694, dated September 1st, 1905.—The spring (*r*) operating upon the piston (*b*) maintains one of the ignition points (*e*) in contact with the corresponding point (*i*). The tension of the spring (*r*) is so adjusted



that when the required degree of compression is obtained within the cylinder the piston (*b*) is forced back thereby, and thus the circuit (*e i*) is broken so that a spark occurs. By regulating the pressure exerted by the spring (*r*), adjustable by the hand wheel (*m*), the moment of ignition can be controlled.

VAPORISER AND SEPARATOR.—Thornycroft, Ltd.—No. 28,977, dated December 30th, 1904.—The annular chamber (10) is heated by the exhaust gases passing through the conduit (7 and 8). Air is admitted by the valve (16) to the chamber (10), and carries with it fuel from the nozzles (15 and 17). In the chamber it is heated, and then passes through a passage (*f*) to a spiral passage (*d*) in a truncated



cone-shaped member (*a*). In the spiral passage (*d*) the heavier parts of the fuel are discharged by centrifugal action, whilst the lighter and properly carburetted portion passes on by the outlet (*n*) and conduit (*u*) to the cylinder of the engine. Additional air may be admitted by the valve (*s*).

The Submarine Boat.

SOME few years have now elapsed since the then startling announcement was made—viz., that a certain ingenious individual—a Frenchman if we mistake not—had succeeded in devising a boat capable of sailing under water, and which was specially adapted for use in naval warfare. The original craft was subjected to severe practical test. The results obtained were of a singularly astounding nature; the theory of propelling a boat completely submerged for some considerable distance was found to be quite feasible, and soon all the world were talking about the wonderful achievements of this remarkable invention. The novelty surrounding the invention gradually wore off, and at length the submarine boat came to be recognised by the naval experts of the different countries interested in matters of this kind as an invention of first-rate importance, and one likely to prove of invaluable service in times of naval warfare. Their utility—or apparent utility—for such purposes became so transparent in the eyes of capable judges, that several of the European powers took steps to have boats built as an adjunct to their respective navies. Yet, despite the great activity which has been displayed in this direction, the truth is that the much-boomed submarine is still in its experimental stage; and it seems doubtful, after all, whether this type of craft is destined to accomplish the specific object which it gave ample promise of doing when it first came under the notice of the general public. The three serious disasters which befel submarines within quite recent date, two British and one French, prove that our maritime authorities have still much to learn ere they can count upon making free use of these vessels in a time of actual warfare on sea. The submarine, as we have it, with all its advantages—and it does possess some wonderful qualities—has been proved to be liable to serious dangers when subjected to a thorough practical test; dangers which its pioneers may not have anticipated, and, until an improved type has been given to the world—a type, we mean, which can be shown to be comparatively free from such dangers over a wide area and in all kinds of weather—its value as a serviceable naval fighting machine cannot well be satisfactorily appraised.