

P. AJASSON DE GRANDSAGNE.
SILENCER FOR EXPLOSIVE ENGINES.
APPLICATION FILED DEC. 16, 1908.

947,431.

Patented Jan. 25, 1910.

Fig. 1

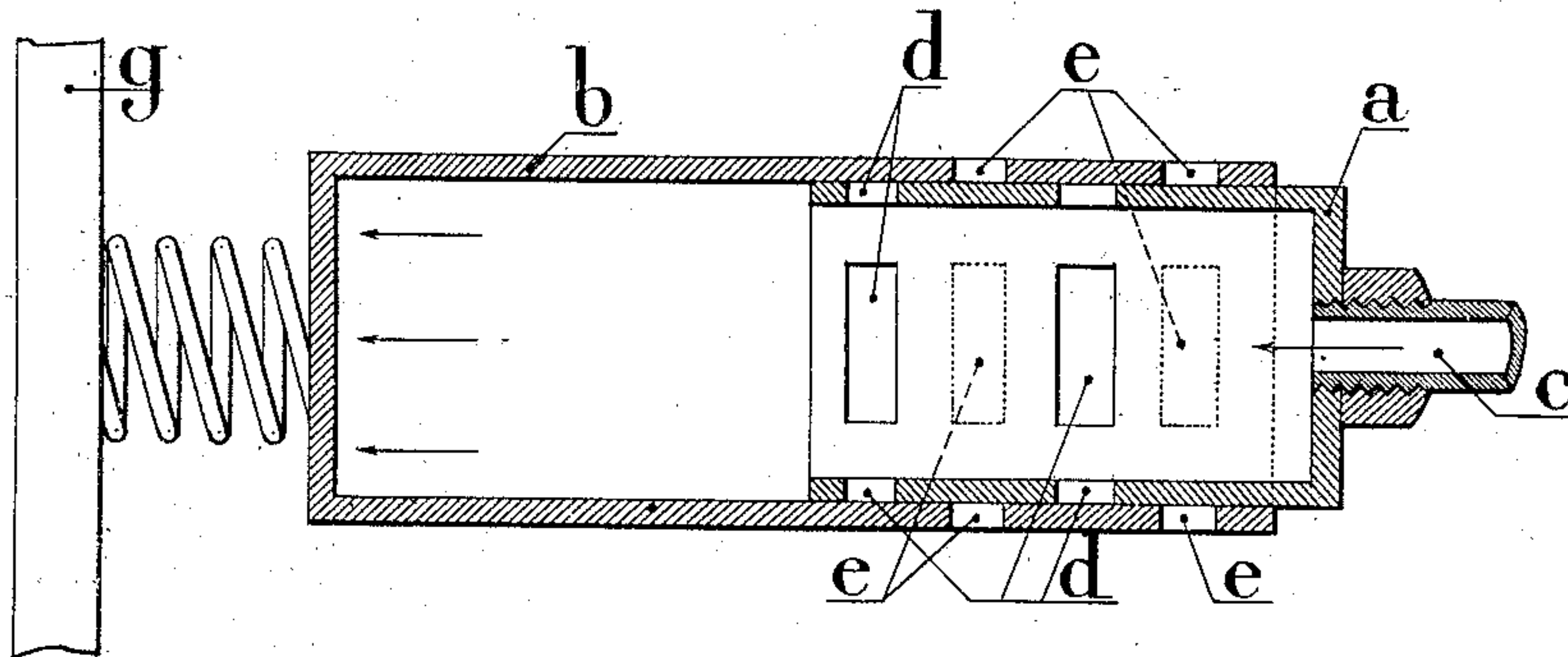
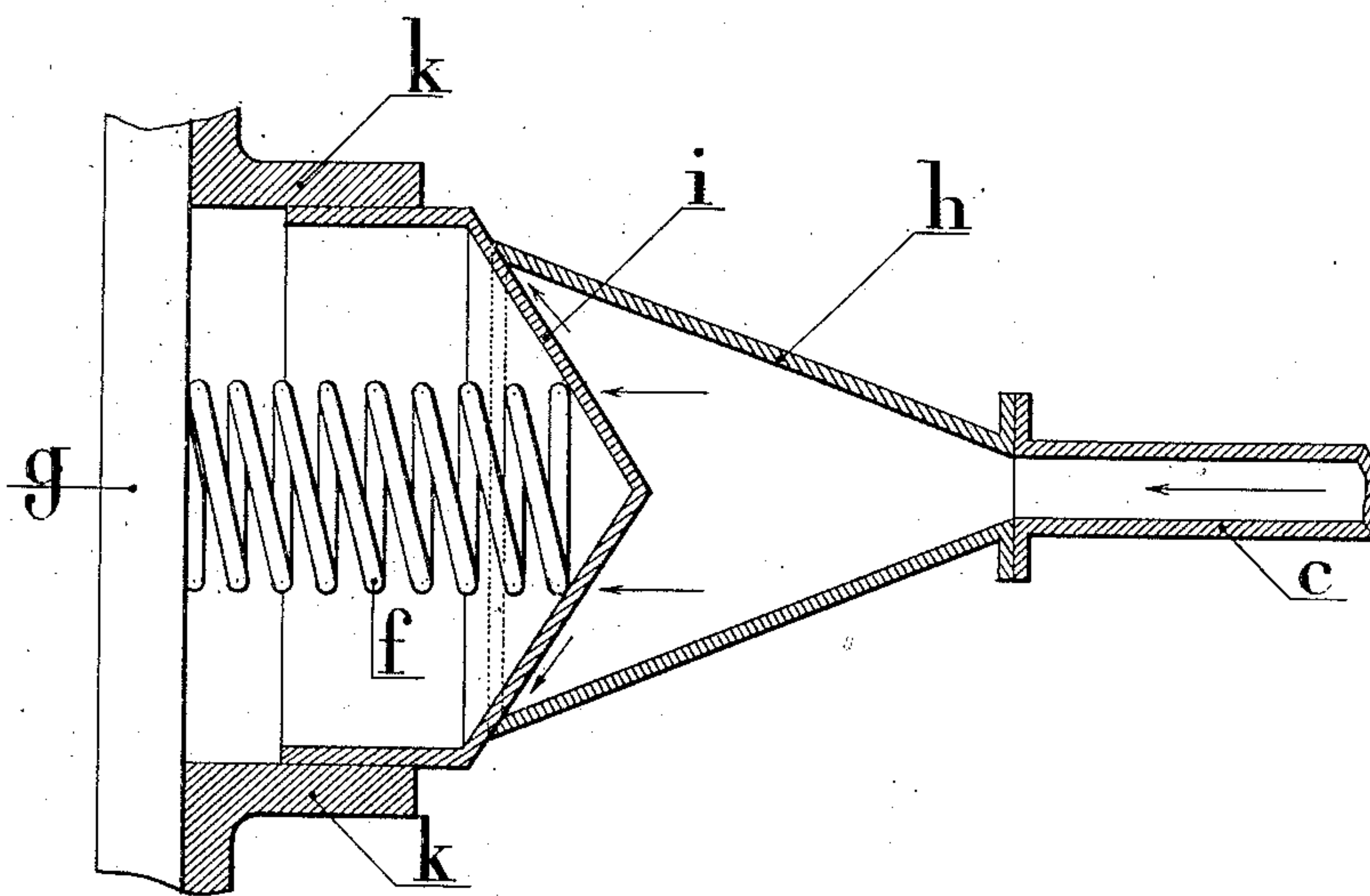


Fig. 2



Witnesses:

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UNITED STATES PATENT OFFICE.

PIERRE AJASSON DE GRANDSAGNE, OF PARIS, FRANCE.

SILENCER FOR EXPLOSIVE-ENGINES.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, PIERRE AJASSON DE GRANDSAGNE, a citizen of the French Republic, and resident of Paris, France, have invented certain new and useful Improvements in Silencers for Explosion-Engines, of which the following is a specification.

The present invention relates to a silencer for explosion engines which is characterized by the arrangement that a valve of large capacity is mounted upon the exhaust which facilitates the exhaust of the exploded gas but prevents as much as possible the return of said gas into the apparatus.

In the accompanying drawings two modes of construction of the silencer are shown in vertical section in Figures 1 and 2.

According to Fig. 1 the valve which characterizes the invention is constituted by a cylindrical slide composed of two cylinders *a* and *b* adapted to slide the one upon the other. Cylinder *a* is fixed and, for example, rigidly connected with the frame of a motor-car; it is open at one end and closed at the other end and communicates with the exhaust of the engine by means of a pipe *c*. This cylinder *a* is perforated by a great number of openings *d*. Cylinder *b* is also open at one end and adapted to slide upon or in cylinder *a* which serves to guide cylinder *b*. Cylinder *b* is perforated by openings *e* which correspond exactly with the openings *d* with which they can coincide. Between the end-plate of cylinder *b* and a suitable fixed bracket *g* a spiral spring *f* is located which exerts a continuous pressure upon the movable cylinder *b* in the direction opposite to the direction of the exhaust gases. Said two cylinders together form a closed relief chamber of variable volume. Normally spring *f* maintains the movable cylinder *b* in the position shown in the drawing, that is to say in such position that the openings *e* and *d* are not superposed. As soon however as the engine is started each exhaust of the engine will push back the movable cylinder *b* in compressing said spring *f* until the openings *e* communicate more or less with the openings *d* so that the exhaust gases can escape. During the three other strokes of

the engine the parts of the silencer will return to their original positions. This muffling apparatus allows to divide the pressure of the gases into two parts, said pressure being assimilated to the pressure existing in the relief chamber *a b* before the openings *d, e* communicate. This construction can be modified as shown in Fig. 2, according to which the valve is composed of two cones, of which one, *h*, is fixed and connected with the exhaust *c*, the other, *i*, being movable and adapted to slide upon the guide-piece *k*. Said movable cone *i* is under the influence of spring *f*. The pressure of the exhaust gases acting upon cone *i* will push the same back so that an annular opening is formed between cones *i* and *h* through which said gases can escape.

The noise which is to be muffled by the described apparatus being provoked by the sudden inflow of the outer air into the apparatus caused by the vacuum left by the escape of the gases of the exhaust and their partial condensation, it is obvious that this noise will be muffled because the valve automatically prevents the inflow of the air into the apparatus.

I claim:—

1. A silencer for explosion engines comprising in combination with the exhaust of the engine, a fixed perforated cylinder mounted upon said exhaust and communicating with the same, a second perforated cylinder movably mounted upon said fixed cylinder so that its perforations do not communicate with the perforations of the fixed cylinder when the movable cylinder is in its normal position, a bracket fixed to the frame of the engine, a spiral spring bearing with one end against said bracket and with the other end against the end of the movable cylinder to maintain the same in normal position upon the fixed cylinder, substantially as described and shown and for the purpose set forth.

2. A silencer for explosion engines comprising in combination a fixed cone connected with the exhaust of the engine, a movable cone inserted in the open front end of the fixed cone, a guide bracket fixed to

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the frame of the engine and guiding the outer end of the movable cone and a spiral spring located in said guide bracket and bearing against the movable cone for pressing the same against the fixed cone, substantially as described and shown and for the purpose set forth.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

PIERRE AJASSON DE GRANDSAGNE.

Witnesses:

ALFRED FREY,
H. C. COKE.