

I. N. BENSON.

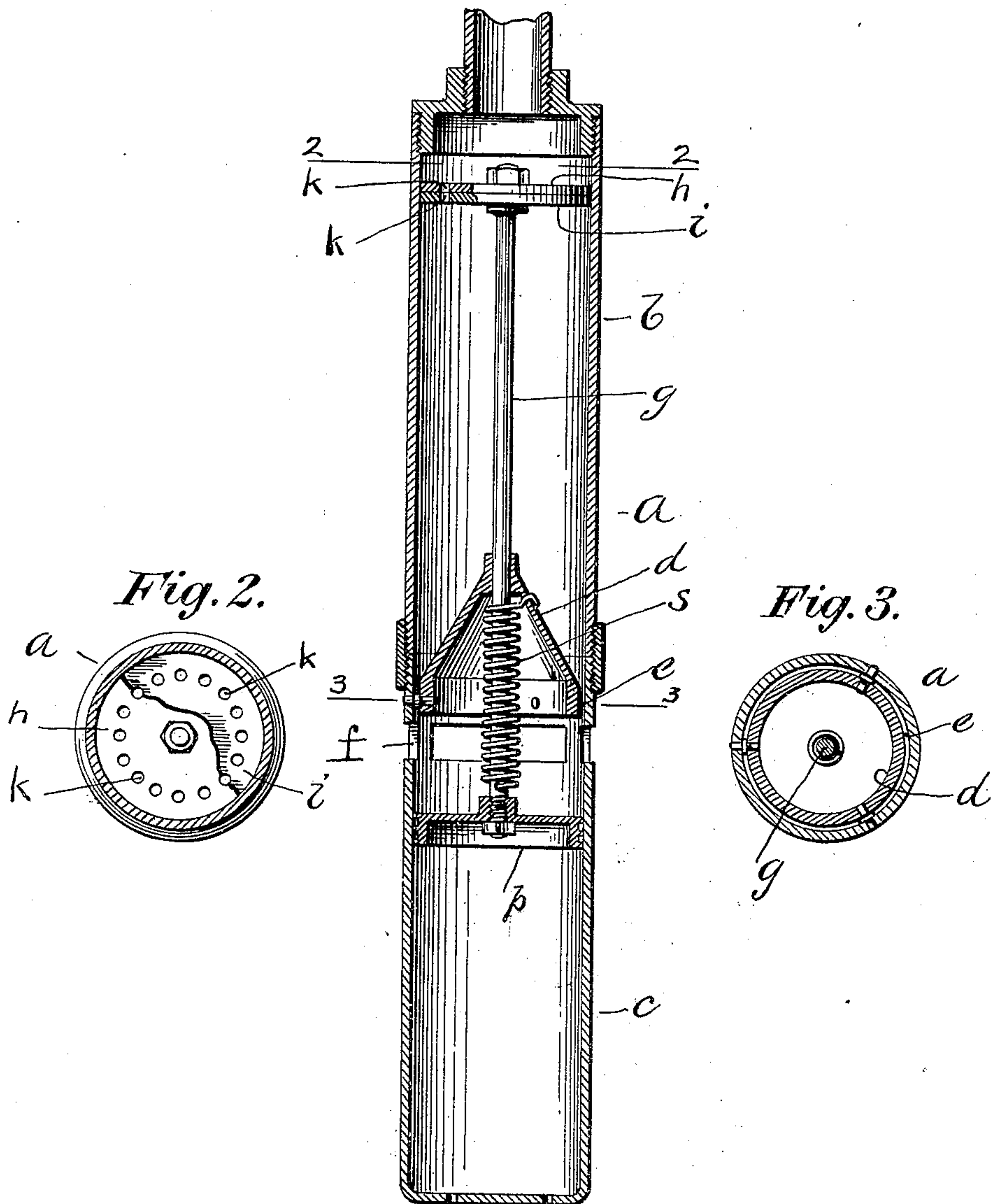
HORN.

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Fig. 1.



WITNESSES:

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AUTOMOBILE STATION COMPANY, OF HARTFORD, CONNECTICUT, A CORPORATION OF
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HORN.

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To all whom it may concern:

Be it known that I, IRVIN N. BENSON, a citizen of the United States, and a resident of Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Horns, of which the following is a specification.

My invention relates to improvements in horns intended more particularly for use on automobiles and designed to be sounded by the exhaust gases from the engine.

It is of course clear that the use of the horn is not limited to its use on automobiles and that it can be sounded in other ways than by the exhaust from the engine. The invention is illustrated and will be described as operated by the engine exhaust.

The object of the invention is to produce a device of the class specified having features of novelty and advantage and particularly to provide means for automatically varying the pitch or tone of the horn.

In the drawings—Figure 1 is a central vertical section. Fig. 2 is a plan view on the line 2—2 of Fig. 1 with one of the plates partly broken away. Fig. 3 is a cross section on the line 3—3 of Fig. 1.

The horn illustrated in the drawings is of tubular form, indicated at *a*, divided into upper and lower compartments *b c* by a deflector *d* whose lower edge is spaced from the walls of the horn to leave an annular passage *e*, the vent openings *f* being cut in the tube walls just below this annular passage.

In the embodiment of the invention illustrated in the drawings I accomplish the desired result of automatically changing the pitch or tone of the horn by varying the size or depth of the sounding chamber in the manner now to be described.

A stem *g* is located within the horn and adapted for movement lengthwise thereof. To the upper end of this stem I secure a pair of shutter-plates *h i* which fit the tube closely but are free to move up and down therein. These shutter-plates have a number of registering openings *k* through them to permit the passage of the horn-sounding medium, either exhaust gases, air or the like, into the upper chamber. One of these plates is revolvable on the stem to permit of varying the size of the openings. To the lower end of the stem I secure a piston *p* which fits closely in the lower or sounding chamber and is free to move up and down therein. A spring *s*

holds the stem normally in its raised position, in which the shutter-plates stand in the upper part of the upper chamber just below the intake and the piston stands a little way below the vent openings to form a shallow sounding chamber.

The device operates as follows, it being understood that some means, as a foot lever or button, is provided to move a valve so as to admit the exhaust gases from the engine into the horn. When this device is opened the gases pass through the tube into the horn and strike the shutter-plates *h, i*. If the engine is running at a low speed these exhaust gases will pass through the openings *k* into the tube *b* but will not strike the shutter-plates with enough force to move the stem down in the tube. The air will pass down the tube *b*, out through the annular opening *e* and out through the vent openings *f*; the slight depth left in the lower tube between the lower edge of the vent openings and the piston *p* gives a high shrill tone to the horn. If it is desired to give a deeper tone to the horn when the engine is running under slow speed one of the shutter-plates can be turned with respect to the other in order to decrease the size of the openings which admit the exhaust into the upper tube so that part of the force of the exhaust will be exerted to move the shutter-plates down in the tube and in consequence move the piston *p* down in the lower tube, increasing the depth of the chamber below the escape opening, called for convenience the sounding chamber.

As the engine is speeded up and the exhaust comes into the horn with greater rapidity and force the shutter-plates are driven down in the tube *b* and the piston *p* is driven down in the tube *c* inasmuch as the shutter-plates and piston are secured to the same stem, thus increasing the depth of the sounding chamber and so increasing the depth of the tone. The spring restores the piston and shutter-plates to their normal positions when the exhaust is cut off from the horn.

I am aware that various changes in the form, construction and arrangement of parts can be made without departing from the spirit of my invention.

I claim:—

1. In a horn of the character described a sounding chamber, a piston located therein,

yielding means for holding said piston in its normal position, and means adapted to be actuated by the horn-sounding medium for moving said piston from its normal position.

5 2. In a horn of the character described a body, a deflector located within said body with its edge spaced from the walls thereof to form an annular passage, vent openings be-
10 low said passage, a stem movable lengthwise within said body, a perforated plate secured to the upper end of said stem, a piston se-
cured to the lower end of said stem and having a sliding fit in said body below the
15 vent openings, and means for holding said stem in normal position.

3. In a horn of the character described a body having an inlet opening at one end, vent openings through the walls of said body at a point between its ends, a member sup-
20 ported within said body with its edge spaced from the walls thereof to form an annular passage just above said vent openings, a plate in the upper part of said body under
said inlet and having openings through it,
25 means for varying the size of said openings, a piston in the lower part of said body, and a stem connecting said plate and piston, substantially as described and for the purposes set forth.

30 4. In a horn of the character described a body having an inlet, a partition within said body forming a plurality of chambers one above the other, a perforated plate normally located near the upper end of the upper
35 chamber below the inlet, a piston normally located near the upper end of the lower chamber below the vent openings, said plate and piston having a sliding fit in their respective chambers, a stem connecting said

plate and piston to move in unison, and a 40 spring for holding said stem and the parts carried thereby in normal position.

5. In a horn of the character described a body having an inlet, a deflector located within said body with its edge spaced from 45 the walls of said body to form an annular passage, vent openings below said passage, a stem movable lengthwise within said body, a pair of perforated plates revolubly mounted on the upper end of said stem, said plates 50 having a sliding fit in said body and positioned just below the inlet when said stem is in its normal position, a piston secured to the lower end of said stem and having a sliding fit in said body below the vent openings, and 55 a spring for holding said stem in normal position.

6. In a horn of the character described a tubular body, vent openings through the walls of said body at a point between its ends, 60 a member supported by said tube above said vent openings with its edge held out of contact with the tube walls to form an annular passage, said member dividing the body into chambers located one above the other, shut- 65 ter-plates normally located near the upper end of said upper chamber and having a sliding fit therein, a piston normally located in the lower chamber below said vent openings and having a sliding fit in the lower 70 chamber, a stem on which said shutter-plates and piston are secured, and means for holding said stem in its normal position.

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Witnesses:

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