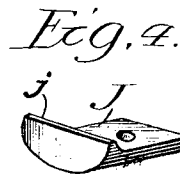
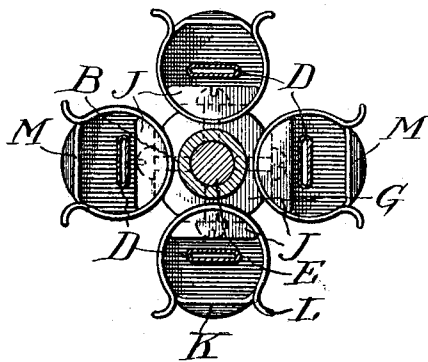
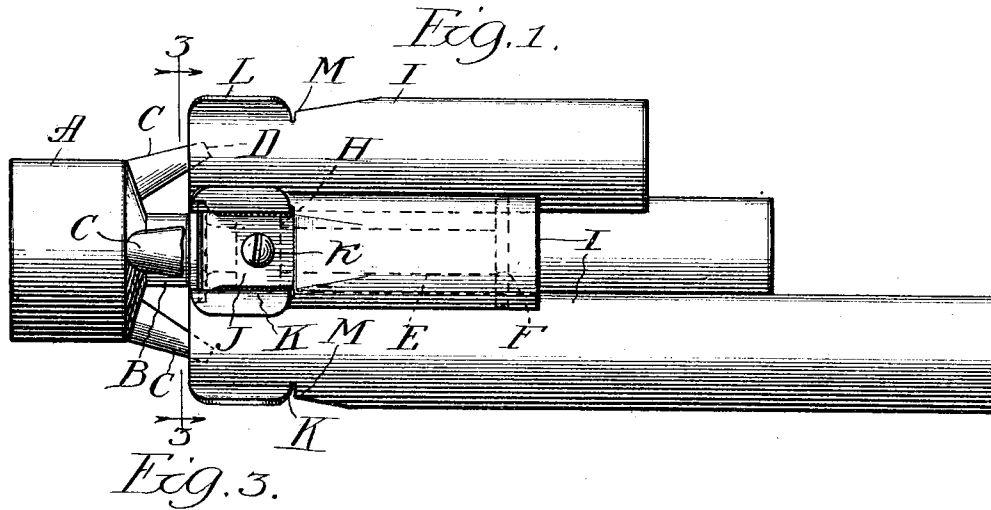


W. E. STEPHENS.
 AUTOMOBILE HORN.
 APPLICATION FILED JULY 14, 1911.

1,036,023.

Patented Aug. 20, 1912.



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UNITED STATES PATENT OFFICE.

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AUTOMOBILE-HORN.

1,036,023.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, WILLIAM EDWARD STEPHENS, a citizen of the United States, residing at Chicago, in the county of Cook
5 and State of Illinois, have invented new and useful Improvements in Automobile-Horns, of which the following is a full, clear, and exact description.

My invention relates to warning horns or
10 signals, and is particularly designed for use in connection with automobiles, motorcycles, and the like, and is adapted to be connected to the exhaust of the engine thereof and is operated by the pressure of the expelled
15 gases therefrom.

It is the object of my invention to construct a signal horn of this character that can be easily applied, that will not be affected by the hot blast to which it is subject,
20 that is simple and durable in construction, and easily assembled, and that produces a pleasing resonant musical chord and never shrieks or hisses. These objects I accomplish by the means and in the manner here-
25 inafter fully described and as more particularly pointed out in the claims, reference being had to the accompanying drawings forming a part hereof, in which—

Figure 1 is a longitudinal side elevation
30 of my improved horn or signal. Fig. 2 is a central longitudinal section through a portion of the coupling-head and showing the core in elevation. Fig. 3 is a transverse vertical section taken on line 3—3 Fig. 1.
35 Fig. 4 is a detail perspective view of one of the washers used in assembling the parts of the horn.

Referring to the drawings, A is a suitable cast metal coupler or head that is preferably
40 cylindrical or cup-shaped and is threaded interiorly. The coupler is adapted to be screwed onto or otherwise secured to the end of the muffler or other exhaust port of the engine of an automobile (not shown). The
45 closed end of this coupler has a central or axial stub B extending beyond the same. A plurality of nozzles C, C, are tapped into the shoulder between said stub and the outer circumference of the coupler and project ob-
50 liquely outward beyond the same a suitable distance, and have their outer or discharge ends D preferably flattened and extended into the adjacent open end of the respective resonant tubes. Stub B is preferably bored
55 out from its outer end to the interior of the

coupling and has the adjacent screw-threaded end of a stem or spindle E tapped into the same, preferably in axial alinement with the coupling. This stem is preferably about half the length of the longest resonant tube and at its outer end is provided with a rectangular shaped head F, the sides of which are preferably concaved. A similar head G is formed on this stem at a point immediately beyond the outer end of the stub B, and adjacent to this last mentioned head (G), said stem is provided with a circumferential flange H, substantially as shown.

The resonant tubes I, I are made of metallic tubing, preferably of the same diameter but of various lengths in order to produce notes of various pitches. These tubes are placed in the seats formed by the concaved edge portions of heads F and G, and are secured in position by tapping suitable
screws *k* through the same and into the boss H on the central stem. Suitable washers J are interposed between the heads of screws *k* and the interior of the tubes and the sides thereof engaging the tubes are convexed so
as to contact with the same throughout their lengths, while suitable ridges *j* are formed on their upper outer ends that prevent the displacement of the nozzles in case of acci-
dent. The nozzles C projecting into these
tubes are preferably longer or shorter according to the length of the respective tube engaged thereby. Near the discharge end of these nozzles, the side-walls of the resonant tubes opposite the stem are preferably
cut away to form openings K, and this is done by cutting a T-shaped slit in the end edge of said tube and bending the wings
L, L, formed thereby, outward, as shown. The transverse edge of the cylindrical por-
tion of each tube, between its wings, is preferably flattened so as to make it straight, and the currents of exhaust gases from the muffler impinge against this edge M as they
pass out of the nozzles, and sound a note of
a different pitch in each tube.

By the arrangement above described, while the tubes are closed on their outer ends, their inner ends are open and free and it has been found that, no matter how high
may be the pressure of the exhaust, the tone of each will be uniform and pleasant to hear; and the chord resulting from the combined resonant tubes, while pleasant to the
ear, will be sufficiently violent to alarm and

warn pedestrians and others of the approach of the vehicle carrying the same.

While I have described and shown a particular arrangement and number of parts it
5 of course is obvious that the same may be varied according to the needs of particular cases, and all such modifications are to be understood as contemplated within the scope of my claims.

10 What I claim as new is:

1. A horn comprising a series of longitudinally disposed resonant tubes, a longitudinally disposed central stem around which the tubes are grouped which is provided with open concave seats for the same,
15 a tubular coupling to one end of which said stem is secured, and a series of air nozzles or tips secured to and leading from said coupling, which discharge into the open ends of said tubes.

2. A horn comprising a series of longitudinally disposed resonant tubes of various lengths whose open ends are in the same transverse plane, a longitudinally disposed
25 central stem around which said tubes are grouped, a boss mounted on said stem, screws tapped through the inner portion of the shell of each tube into said boss, longitudinally elongated washers interposed between the heads of said screws and said
30 shells each having a transverse ridge across its outer edge, a tubular coupling into the closed end of which one end of said stem is secured, and a series of air nozzles or tips
35 which discharge into the open ends of said tubes.

3 A horn comprising a series of longitudinally disposed resonant tubes of various lengths whose open ends are in the same transverse plane, a longitudinally disposed central stem around which said tubes are grouped, flanges carried by said stem having concave depressions in their edges in which said tubes are seated, a boss mounted on said stem between said flanges, screws tapped
45 through the inner portions of the shell of each tube into said boss, elongated washers interposed between the heads of said screws and said shells that have transverse ridges across their outer edges, a tubular coupling
50 into the closed end of which one end of said stem is secured, and a series of air nozzles or tips which discharge into the open ends of said tubes.

4. A horn comprising a coupling member
55 having a single intake opening or bore and several obliquely extending discharge openings at its opposite end, and a cluster of resonant tubes of different lengths rigidly supported by said coupling and arranged
60 substantially concentric to the axis thereof, and having the side-walls of their open ends adjacent to said coupling, into which said openings discharge, cut-away and having their opposite ends closed.

55 In witness whereof I have hereunto set my hand this 11th day of July, 1911.

WILLIAM EDWARD STEPHENS.

Witnesses:

E. K. LUNDY,
M. F. JILLSON.