Dec. 16, 1958 A. SCHEWEL 2,864,406

EXHAUST DEFLECTOR

Filed Sept. 1, 1954

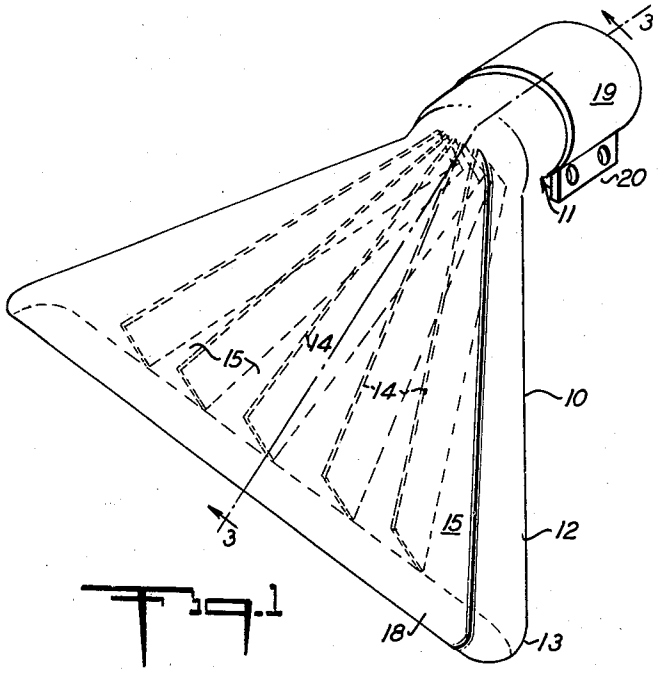

FIG. 1

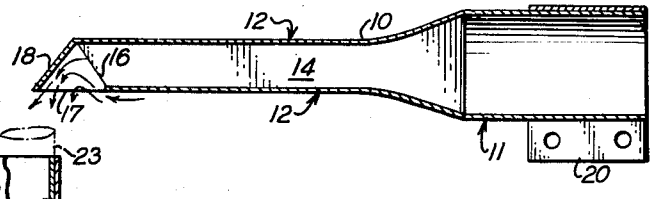

FIG. 3

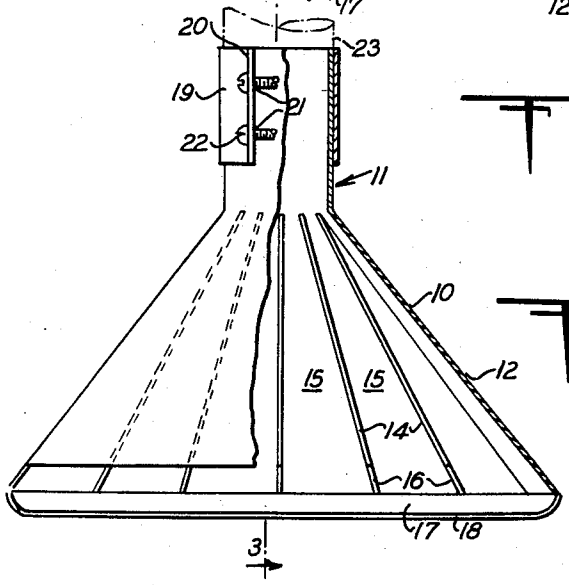

FIG. 2

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EXHAUST DEFLECTOR

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1 Claim. (Cl. 138—46.5)

This invention relates to pipe terminal construction for distributing and mixing noxious gas with air such as exhaust gas emanating from a muffler, or other noxious gas conduit, particularly an automobile, truck or bus exhaust gas conduit. With the present device the noxious gas passing through the pipe has its normal velocity greatly reduced by expansion and the gas stream is broken into a plurality of several separate streams of gas each fanning outwardly of the gas duct and each directed downward for disposal into the air for optimum immediate admixture therewith. Thus the present device divides relatively high velocity exhaust gases into a plurality of streams each continuously broadened into an overall widened flaring outlet in which each stream is independent of the next, each being progressively expanded by widening for continuous slowing of the portion of gas passing therein, and each being baffled at its outlet for direction downwardly toward the ground from the generally horizontal position in which exhaust gas outlets are normally supported in present day automobile, truck and bus construction.

It is known in the art to flare the end of an exhaust gas conduit in an effort to distribute the gas laterally, but such constructions have not been effective to distribute the gas laterally despie the flared shape of the outlet because gas generally emanating from a round conduit at high velocity tends to maintain its highly concentrated jet nature for substantial distances behind the vehicle, since the mere flaring of the end of the conduit does not in itself force reshaping of the stream of gas emanating from the rounded portion of the conduit at high velocities under usual substantial pressures.

According to the present construction, the flared end of the exhaust outlet has mounted therein a plurality of vanes or partitioning walls subdividing the flared portion into a plurality of smaller conduits. The vanes are mounted to extend from the narrower relatively round exhaust pipe end substantially to the outlet end of the flared portion. Thus the gas from the exhaust is passed into the several conduit alleys formed by such partitioning and diverted laterally while expanding, each alley thus forming an individual lateral directing conduit and the bulk of the exhaust gas is positively broken or divided into a plurality of expanded and laterally divergent streams.

Moreover, according to this invention, the outer end of the flared terminal has a transverse baffle or lip downturned at an acute angle tending to baffle each divergent stream of gas emanating from each conduit alley generally downward, as a baffle. Thus it will appear that by the present construction the exhaust gas is evenly admixed with air for extremely rapid dilution thereof, the concentrated stream thereof emanating from the exhaust pipe is broken into divergent individually expanded streams each of which is intimately mixed with air and the entire mass of gases distributed near the ground for optimum disposal of the noxious gas into the air. Even when the vehicle is standing still the exhaust gas is directed downwardly in a plurality of broken streams to obtain a superior dispersal thereof into the stagnant air by more rapid admixture with great volumes of air near the ground.

The invention will be more clearly understood by reference to a specific embodiment illustrated in the drawings wherein

Fig. 1 shows a top view in perspective;

Fig. 2 is a plan view of the underside of a pipe end; and

Fig. 3 is a longitudinal section through the pipe end taken on the line 3—3 of Fig. 1.

The pipe end construction shown in the drawings comprises a body **10** having a rounded inlet neck portion **11** which is of substantially the same diameter and shape as the pipe end to which it is fitted, although a slight variation in diameter thereof with respect to such pipe end is permissable if, in the mounting thereon, both pipe ends are to be telescoped one within the other for more secure mounting. The neck portion **11** leads into a housing shell **12** which flares widely in the lateral direction towards the opposite end **13** to extend laterally between 3 and 10 times the width of the rounded neck portion **11** while constricting the height of the flared outlet to between ¼ and about ¾ of the original diameter height thereof, the contour of the shell being smoothly faired or streamlined from the rounded neck portion to the flared outlet.

Mounted within the housing shell **12** are a plurality of vertically mounted partitions or vanes **14** which extend between the upper and lower walls of the flared housing from the rounded neck portion **11** to the flared outlet end **13**. These vanes **14** are distirbuted fan-like from the narrower neck portion to the wide flaring mouth in relatively gas tight partitioning construction to define a plurality of small intermediate conduits **15** each having an inlet at the rounded neck portion **11** and an outlet at the outlet portion **13**. Thus each conduit **15** is small at the inlet end and large at the outlet end so that gas may expand when passing therethrough to the expanding dimensions of each conduit, and each are so positioned, fan-like with respect to the inlet neck **11**, to direct the gas passing therethrough divergently as each of these conduits diverge laterally by the construction shown.

It will be noted that each of the conduits **15** are preferably so dimensioned and positioned at their inlets whereby all of the gas passed thereto from exhaust pipe **11** under relatively even pressure will be evenly distributed in quantity, velocity and pressure through all of the conduits **15**. One desirable means for most economically mounting vanes near the inlet to secure most even subdivision of total exhaust gas among the several conduits is to mount the inner ends of the vanes on a curve with respect to the exhaust pipe neck **11** so the central vane ends are farther removed from the neck than the end vanes so that normal gas expansion will tend to fill all conduits evenly with gas.

At the outlet terminal the ends of each partitioning element may be inclined as at **16** thereby to prevent admixture of gases in each conduit **15** prior to reaching a downturned trough-like chamber **17** formed by a downturned baffle or lip **18** mounted over the outer end of the outlet **13**. With this construction it will be seen that the downturned lip **18** acts as a baffle to direct the gas, now laterally disposed as emanating from each conduit **15**, downwardly toward the ground when the gas outlet is supported horizontally as in ordinary vehicle exhaust gas pipe mounting.

The pipe end hereof may be a separately manufactured item for fitting about or connecting to the ordinary end of a round exhaust pipe. With such mounting the inlet neck portion **11** is mounted contiguous alignedly with the ordinary exhaust pipe; or, by slight modification of the

diameter thereof may be slipped over or into the end of the exhaust pipe telescopically and fixed in that position with the flared contour held horizontal and the outlet trough directed downwardly toward the ground. Any suitable clamping means to retain the pipe end in this position may be provided and, as shown herein, such clamping means may be a circular split sleeve 19 having parallel radially raised flanges 20 bored at 21 to receive bolts 22 for tightening the sleeve in clamping position both about the neck 11 and the exhaust pipe end for securing the same together as a continuous exhaust gas conduit. However, the flared pipe end construction herein shown may be formed integral with the exhaust pipe 23 as shown in dotted line position of Fig. 2.

As thus described, an improved pipe end is formed particularly useful for distributing and quickly diluting in air with optimum admixture noxious gases such as exhaust gases from an exhaust gas outlet, to relatively evenly divide the total volume of gas passed through an exhaust pipe into a plurality of divergent channels which comprise ducts whereby the supply of gas is positively divided laterally into a wide flaring fan-like body. That gas after lateral diversion is impinged against a downturned baffle which not only directs the gas downwardly but enhances the admixture with air.

I claim:

In combination with a vehicle mounted exhaust pipe having an outlet circular in cross-section, an exhaust pipe distributor formed of a single sheet of metal into a housing having a circular inlet end corresponding approximately in diameter to said exhaust pipe outlet, said housing flaring horizontally to a flat top and bottom connected

by approximately vertical sides to a wide and narrow outlet end of several-fold the width and narrower in height than said inlet end, the flat single sheet metal top of said outlet end continuing into a flat planar end baffle wall by being down-turned at an oblique angle substantially less than vertical to terminate in a plane corresponding approximately to the plane of the flat outlet bottom, thereby intercepting, as an angular baffle wall, and diverting angularly downward all of the exhaust gas passing through said housing and impinging against said baffle, said flat bottom of said housing terminating before the downturn of the top of said housing thereby forming an inverted V-shaped outlet trough opening downwardly of said housing and extending entirely across the said laterally flared outlet end, said housing having a plurality of vertically mounted vanes, extending from the said circular inlet end to the flared outlet end, partitioning the flared housing radially into several conduits of approximately equal volume, and means for coupling the said inlet end of the exhaust pipe distributor to the outlet of the exhaust pipe.

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