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FLEXIBLE DEFLECTOR FOR EXHAUST PIPES  
OF AUTOMOBILES AND THE LIKE  
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FIG. 3.

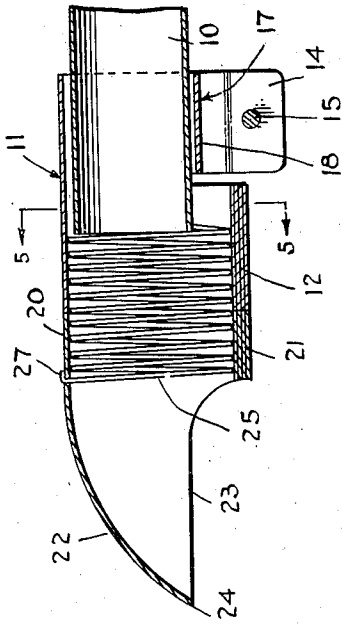


FIG. 1.

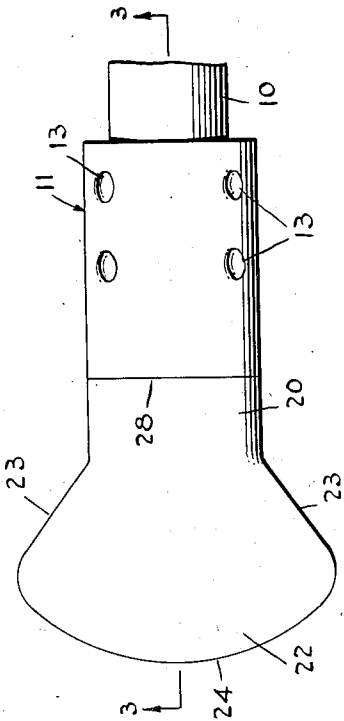


FIG. 5.

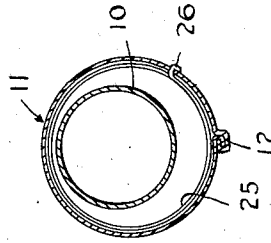


FIG. 4.

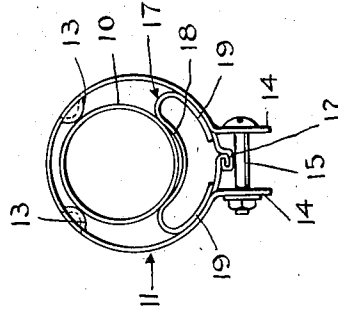
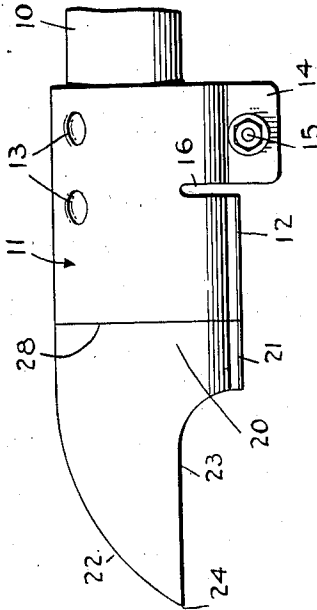


FIG. 2.



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# UNITED STATES PATENT OFFICE

2,466,307

## FLEXIBLE DEFLECTOR FOR EXHAUST PIPES OF AUTOMOBILES AND THE LIKE

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Application December 15, 1947, Serial No. 791,875

5 Claims. (Cl. 138—46.5)

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My invention relates to a flexible deflector for exhaust pipes of automobiles and the like.

The exhaust pipes of most automobiles terminate forwardly of the rear bumper, so that they are not liable to be struck by the bumper of another car, or by some stationary object. This arrangement is adhered to in order to prevent damage to the exhaust pipe and muffler. A disadvantage of this arrangement is the resulting corroding and discoloring of the rear end of the automobile, and particularly the chrome plated bumper, due to the exhaust fumes expelled from the exhaust pipe. Accordingly, many exhaust deflectors are available to deflect smoke and fumes away from the rear end of the car body and bumper. These devices, however, extend rearwardly beyond the bumper and are rigid, so that when they are struck, bending of the exhaust pipe and damage to the muffler often results. It is, therefore, an important object of this invention to provide an exhaust pipe deflector which has a flexible universal connection with the exhaust pipe, and will yield when struck from any direction, without causing damage to the exhaust pipe or muffler.

A further object of the invention is to provide a flexible exhaust pipe deflector designed to fit any standard make of car, and which is practical and inexpensive to manufacture.

A still further object of the invention is to provide a device of the above mentioned class which is simple, comprising few parts, and durable.

Other objects and advantages of the invention will be apparent during the course of the following description.

In the accompanying drawings, forming a part of this application, and in which like numerals are employed to designate like parts throughout the same,

Figure 1 is a plan view of the deflector embodying the invention and showing the same applied to an exhaust pipe,

Figure 2 is a side elevation of the same,

Figure 3 is a central vertical longitudinal section, taken on line 3—3 of Figure 1,

Figure 4 is an end elevation of the device as shown in Figure 2, and

Figure 5 is a transverse vertical section taken on line 5—5 of Figure 3.

In the drawings, where for the purpose of illustration is shown a preferred embodiment of the invention, the numeral 10 designates the rear or outermost portion of an automobile exhaust pipe. Detachably mounted upon the exhaust pipe 10

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near the outer end of the same is a generally cylindrical forward casing section 11, which may be formed of sheet metal with its longitudinal edges secured together by a stove pipe joint 12. The casing section 11 is provided in its upper portion with inwardly formed lugs 13, which are longitudinally and transversely spaced, as shown. At its forward end, the longitudinal edges of the casing section 11 are separated and extend downwardly forming apertured ears 14, which are adjustably connected by a bolt 15. The casing section 11 has circumferentially extending slots 16 adjacent to the apertured ears 14, as shown. A spring 17 is provided, which is generally U-shaped, including a curved top portion 18 and curved arms 19. The arms 19 are disposed forwardly of the slots 16, and are secured to the casing section 11 by suitable means such as spot welding. The spring 17 is arranged diametrically opposite the forward pair of lugs 13 and extends from the forward end of casing section 11 to the slots 16.

The exhaust pipe deflector further comprises a rear cylindrical casing section 20, preferably formed of sheet metal, having its marginal edges secured together by a stove pipe joint 21. The rear casing section 20 is continued rearwardly in the form of an extension 22, which flares rearwardly to project laterally beyond the casing section 20. The extension 22 is spherically curved and has its bottom open, Figures 2 and 3. The extension 22 has rearwardly diverging side edges 23, and a curved transverse end edge 24.

Slidably mounted within the casing sections 11 and 20 is a retractile coil spring 25, having its forward end attached to casing section 11 by any suitable means, such as bending the end of the spring into a hook 26, and passing the hook outwardly through an aperture in the casing section 11. The rear end of spring 25 may be attached to the casing section 20 in a similar manner by passing a hook 27 formed upon the spring 25 through an aperture in the casing section 20. The meeting edges 28 are cut at right angles to the central longitudinal axes of the casing sections 11 and 20. The spring 25 is under tension to hold these meeting edges in engagement and parallel relation, so that the central longitudinal axes of the casing sections 11 and 20 normally coincide and form a straight line. The retractile coil spring 25 also functions as a flexible universal coupling between the casing sections 11 and 20, prevent any perceptible relative movement between the same under normal conditions.

In use, with the casing sections 11 and 20 assembled, as shown, the casing section 11 is applied to the rear end of exhaust pipe 10, which may extend substantially to the spring 25, or project slightly into the same. The pairs of lugs 13 hold the top of the casing section 11 spaced from the exhaust pipe 10, the lower side of which engages within the curved top portion 13 of spring 17. The bolt 15 is now tightened, and the exhaust pipe 10 is clamped between the elements 13 and 17, and the casing section 11 is held in spaced eccentric relation to the exhaust pipe 10, Figure 4. The retractile coil spring 25 being under tension, holds the casing section 20 so that its central longitudinal axis and the central longitudinal axis of casing section 11 are in alignment, and form a straight line. Particular attention is called to the fact that the spring 25 between its ends is slidable within the casing sections 11 and 20, so that it will quickly return the casing section 20 to the normal position when moved therefrom and released. Further, the bore of the coil spring 25 is greater than the bore of exhaust pipe 10, and the attachment will in no way create back pressure in the exhaust pipe.

When the spherically curved extension 22 is struck, its flexible or resilient connection of its casing section 20 with the casing section 11 will permit the same to yield laterally, thus preventing injury to the exhaust pipe 10. When the pressure is removed from the extension 20, the spring 25 will return it to the normal position. The spring 25 and meeting edges 28 afford a universal connection between casing sections 11 and 20, so that the spherically curved extension 22 may yield in all lateral directions, and this movement is aided by the spherical curvature of extension 22.

It is to be understood that the form of the invention herewith shown and described is to be taken as a preferred example of the same, and that various changes in the shape, size and arrangement of parts may be resorted to, without departing from the spirit of the invention, or the scope of the subjoined claims.

Having thus described the invention, I claim:

1. A flexible deflector for exhaust pipes, comprising forward and rear casing sections arranged in end-to-end relation, a retractile coil spring engaging the casing sections and forming a flexible connection between them and serving to hold the rear casing section in a selected position with respect to the forward casing section and to return the same to such position when moved laterally from the selected position and released, and means to secure the forward casing section upon the exhaust pipe.

2. A flexible deflector for exhaust pipes, comprising forward and rear casing sections arranged in end-to-end relation and including transverse opposed meeting edges, a retractile coil spring engaging the casing sections to form a flexible universal connection between them and serving to normally hold the meeting edges in engagement, and means to secure the forward casing sections upon the exhaust pipe.

3. A flexible deflector for exhaust pipes, comprising forward and rear casing sections arranged in end-to-end relation, a retractile coil spring arranged within the casing sections and having its ends attached to the same and forming a flexible connection between the casing sections, the spring being tensioned for holding the rear casing section in a selected position with respect to the forward casing section and to return the same to such position when moved laterally from the selected position and released, and adjustable means to secure the forward casing section upon the exhaust pipe.

4. A flexible deflector for exhaust pipes, comprising forward and rear casing sections having opposed meeting ends, the rear casing section including a spherically curved portion, a retractile coil spring arranged within the casing sections and extending across the meeting ends and having its opposite ends attached to such casing sections, the spring forming a flexible connection between the casing sections and serving to hold the meeting ends together and opposed tilting movement of the rear casing section with relation to the forward casing section.

5. A flexible deflector for exhaust pipes, comprising forward and rear casing sections having meeting ends, the rear casing section having a spherically curved rear end extension, a retractile coil spring arranged within the casing sections and extending across the meeting ends and having its ends secured to such casing sections, the spring forming a flexible universal connection between the casing sections and being tensioned to hold the meeting ends together, and adjustable clamping means mounted upon the forward casing section for engaging the exhaust pipe and serving to connect the flexible deflector thereto.

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#### REFERENCES CITED

The following references are of record in the file of this patent:

#### UNITED STATES PATENTS

Number	Name	Date
792,913	Mulconroy	June 20, 1905
2,232,395	Koch	Feb. 18, 1941