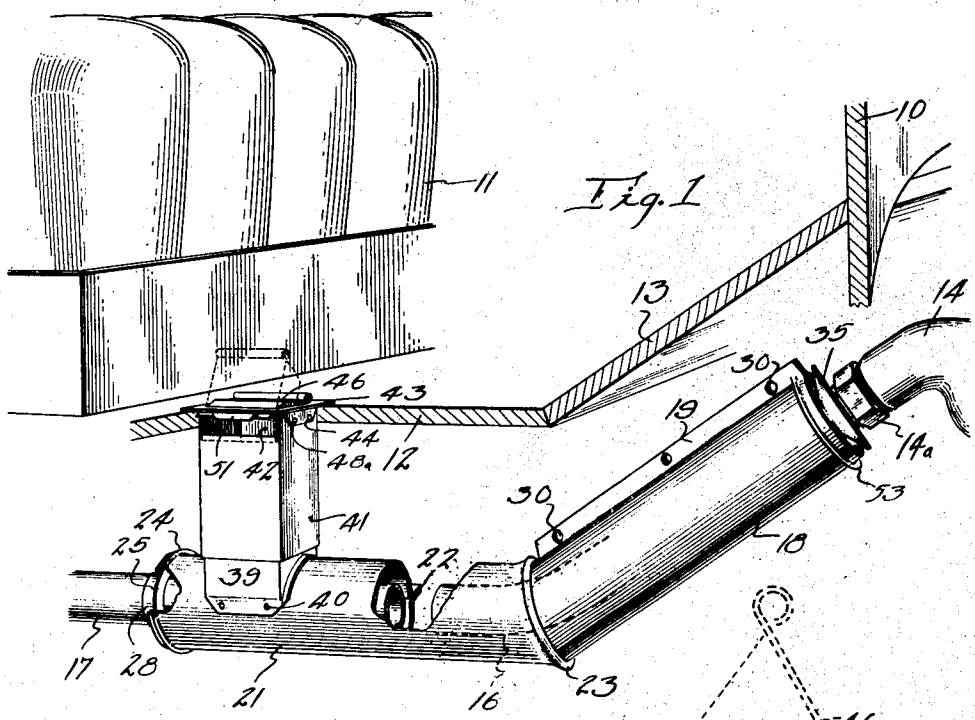
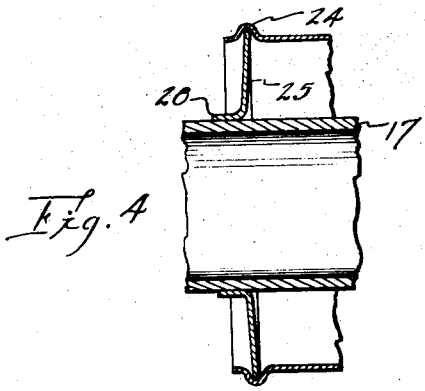
Sept. 21, 1926. 1,600,219

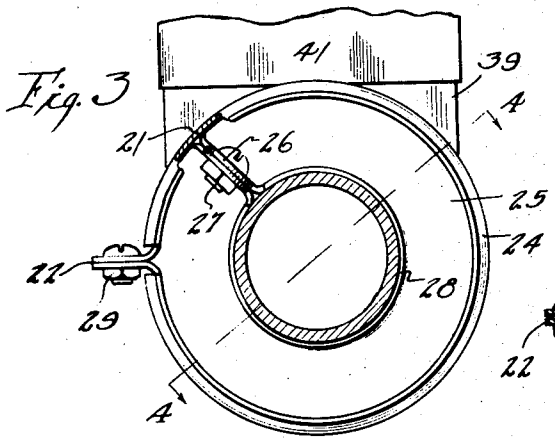
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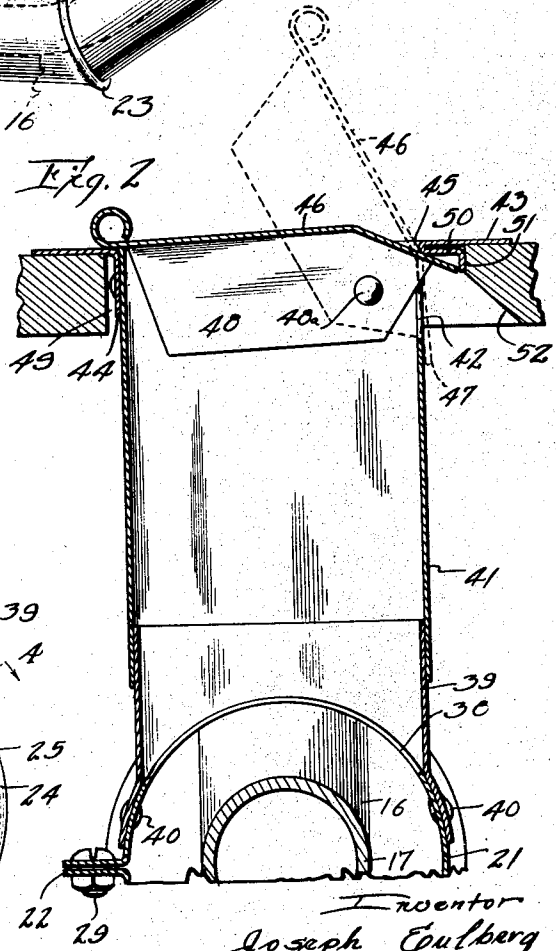
EXHAUST HEATER FOR VEHICLES

Filed May 23, 1925 2 Sheets-Sheet 1









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Joseph Eulberg
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Sept. 21, 1926. 1,600,219

J. EULBERG

EXHAUST HEATER FOR VEHICLES

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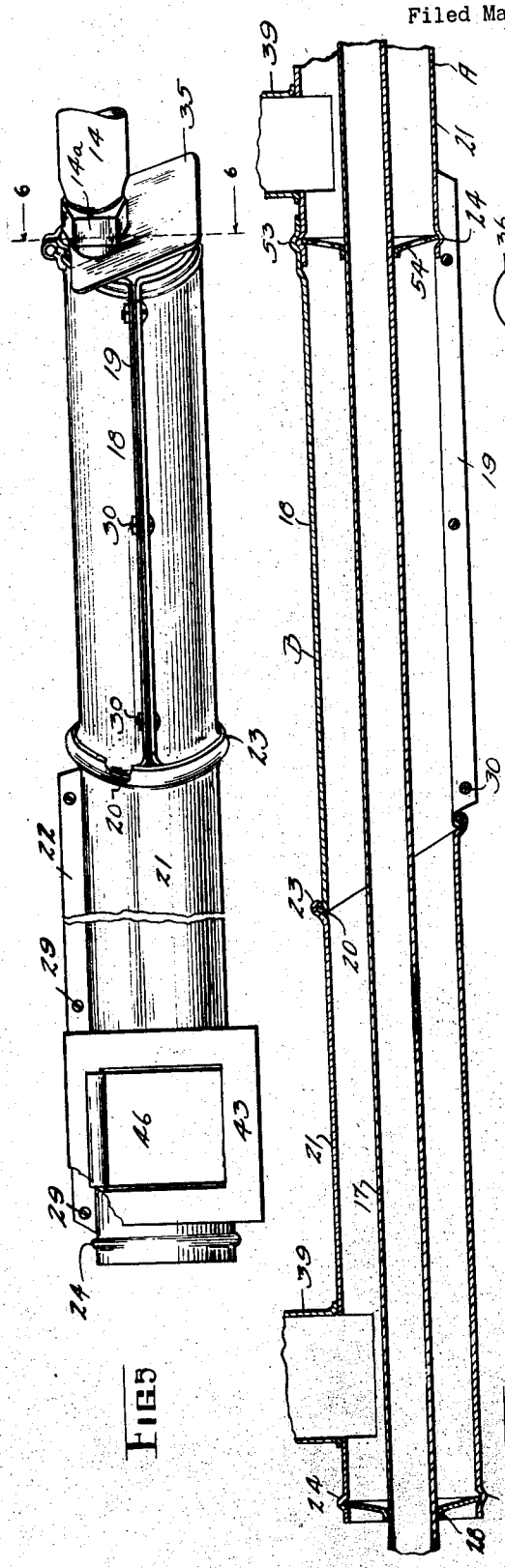


FIG 5

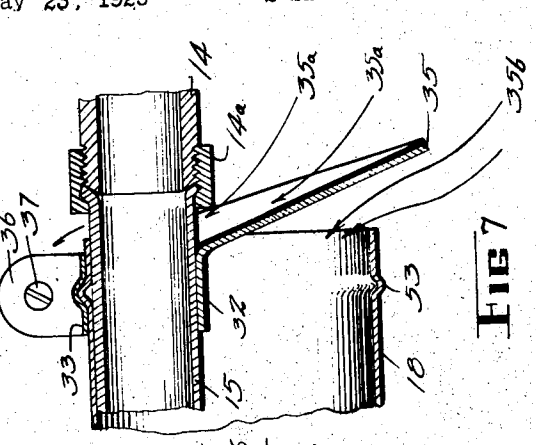


FIG 7

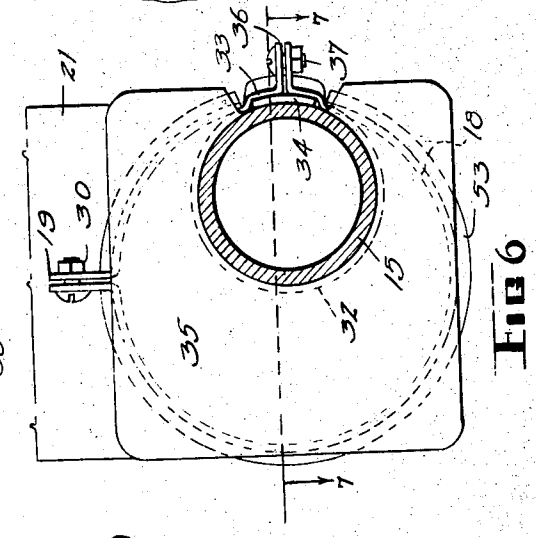


FIG 6

FIG 9

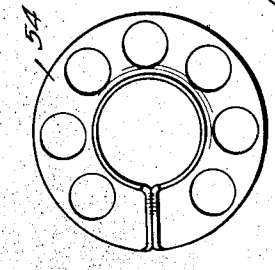


FIG 10

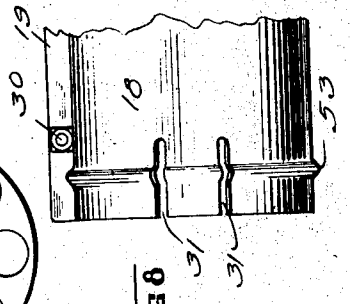


FIG 8

Inventor

Joseph Eulberg

By Bair Freeman & Latta

Patented Sept. 21, 1926. 1,600,219

UNITED STATES PATENT OFFICE.

JOSEPH EULBERG, OF ALTON, IOWA.

EXHAUST HEATER FOR VEHICLES.

Application filed May 23, 1925. Serial No. 32,262.

My invention relates to a vehicle heater of the type in which the exhaust pipe of the vehicle is enclosed for a portion of its length in a sleeve, through which a current of air is allowed to pass and to be warmed by contact with the exhaust pipe, the current of air being then discharged into the vehicle through a suitably located register.

An object of my invention is to provide a heater of this type of simple, durable and inexpensive construction, and which is especially adapted to fit over the elbow of an exhaust pipe wherein a portion of the pipe is inclined relative to the body thereof. The advantage of such an arrangement lies in utilizing the entire length of the exhaust pipe from its forward end to a point from which it is convenient to extend a register through the floor boards of a car forwardly of the front seat of the vehicle.

More specifically, it is my object to provide such a heater employing two sleeves which may be placed around the inclined and body portions of the exhaust pipe, respectively, without removing the exhaust pipe from the exhaust manifold or removing the manifold, and which are provided with biased ends adapted to be secured together to form a continuous elbow-shaped tube.

A still further object is to provide such a pair of sleeves in which the union of the biased ends will permit rotation of the sleeves relative to each other to positions of alignment whereby the same sleeves may be both secured around the straight portion of an exhaust pipe to provide a heater for the rear seat of a two-seated vehicle.

A further object is to provide a structure allowing the joining of two individual heaters together to form one continuous double heater for a two-seated car.

Another object is to provide means for deflecting escaped combustion gases away from the mouth of the heater behind the manifold packing nut.

A still further object is to provide a register having a novel shutter adapted, when closed, to uncover an aperture, allowing escape of the heated air under the floor boards of the car, and when open to close said aperture, whereby the entire current of air will be thrown into the car.

Another object is to provide a register which may be quickly shifted to any one of several positions, the shutter being inclined when in open positions to throw the current of heated air in a direction corresponding to the position of the register.

With these and other objects in view, my invention consists in the construction, arrangement and combination of the various parts of my device, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims, and illustrated in the accompanying drawings, in which:—

Fig. 1 is a perspective view of a heater attached to an exhaust pipe of a car, the floor boards of which are shown in section.

Fig. 2 is a transverse sectional view through the register.

Fig. 3 is an end view of the rear sleeve, the exhaust pipe being shown in section.

Fig. 4 is a detail sectional view taken on the line 4—4 of Fig. 3.

Fig. 5 is a plan view of the heater.

Fig. 6 is a detail sectional view taken on the line 6—6 of Fig. 5.

Fig. 7 is a detail sectional view taken on the line 7—7 of Fig. 6.

Fig. 8 is a detail view of the upper end of the forward sleeve, illustrating the means for attaching the gas deflector.

Fig. 9 is a longitudinal sectional view through a heater in which the sleeves are aligned and attached in tandem relation to the rear end of another heater.

Fig. 10 illustrates a modified form of a collar used to attach the rear sleeve to the exhaust pipe, and used in connection with the tandem construction shown in Fig. 9.

I have used the reference character 10 to indicate the dash of a vehicle having the front seat, 11, the horizontal floor board, 12, and the forward inclined floor board, 13. The exhaust manifold, 14, is connected at its rear end to the inclined portion, 15 (see Fig. 7), of the exhaust pipe, which is curved as indicated in dotted lines in Fig. 1 to form the elbow, 16, and thence extended rearwardly in the straight horizontal portion, 17.

The forward sleeve, 18, is formed of a sheet of metal bent into cylindrical form and having its sides extended outwardly to form flanges, 19.

The flanges, 19, are cut short of the rear

end of the sleeve, 18, and that end of the sleeve is cut on a bias and formed with an outwardly projecting annular flange, 20. (See Figs. 5 and 9.)

The rear sleeve, 21, is formed of a similar sheet of metal, having the flanges, 22, similar to the flanges, 19, and having its forward end cut on a bias equal to that of the sleeve, 18. The biased end is provided with an annular channel, 23, adapted to receive the flange, 20, in order to connect the two sleeves together.

The ends of the sleeves, 18 and 21, are widened somewhat along those diameters which are perpendicular to the axes of the sleeves, in order that the biased ends may have true circular, rather than elliptical, outlines. Thus rotation of the sleeves relative to each other will be permitted when adjusting them in position upon an exhaust pipe.

It will now be seen that in order to install one of the heaters it is only necessary to spread the flanges apart a distance sufficient to receive the exhaust pipe, the sleeve, 18, being inserted first, and the sleeve, 21, then being spread to simultaneously receive the portion, 17, of the exhaust pipe and also enclose the flange, 20.

In order to support the rear sleeve in proper spaced relation to the exhaust pipe, I provide an annular outwardly-beaded channel, 24, in the end thereof adapted to receive the periphery of a ring, 25. The ring, 25, is split to allow encircling of the exhaust pipe, and the ends thereof are turned up to form ears, 26, which may be secured together by means of a bolt, or the like, 27.

The ring, 25, is formed of a single sheet of metal, die cut into ring shape, and drawn with a collar, 28, to encompass the exhaust pipe, the ring portion, 25, being necessarily pressed into conical shape in order to allow the forming of the ears, 26.

With the ring, 25, in place the sleeve, 21, may be secured about the ring by inserting the bolts, 29, in properly positioned openings in the flange, 22, and drawing the same together. The flanges, 19, of the sleeve, 18, are secured together by means of bolts, 30.

It is desirable to secure the mouth of the sleeve, 18, in concentric relation to the exhaust pipe and extend it away from the engine in order to avoid, as much as possible, the current of air moving closely adjacent the engine sides, which tends to become laden with odors from the engine. I provide a device which serves to both accomplish this function, and further to deflect any gases which may escape from behind the packing nut, 14a.

The side of the sleeve, 18, adjacent the engine is provided with slots, 31. The deflector has a collar, 32, adapted to extend around the exhaust pipe, as shown in Fig. 6 in dotted lines, and which terminates in two outwardly drawn portions, 33, adapted to extend through the slots, 31, and outside of the lip, 34, formed between the slots, 31.

The deflector plate proper, 35, is substantially rectangular in shape, as shown in Fig. 6, and of an area sufficient to approximately cover the end of the sleeve, 18. The collar, 32, is formed in one side of the deflector so that the deflector extends almost entirely on one side of the exhaust pipe. The deflector, 35, is inclined forwardly so that when attached to the pipe and to the sleeve, as shown in Fig. 7, it will guide the currents of air flowing past the exhaust pipe in the direction indicated by the arrow, 35a. These deflected currents of air will carry any gases which may escape behind the manifold packing nut, 14a, beyond and to the side of the mouth of the sleeve, 18, as indicated by the arrows.

The deflection of the air currents on the outer side of the deflector will cause the adjacent air currents to be also deflected and thereby to enter the sleeve, 18. I find that the velocity of air currents flowing past the sleeve is not sufficient to overcome this deflecting action upon those currents which pass beyond the deflector.

The portions, 33, terminate in outwardly-projecting ears, 36, adapted to receive a stove bolt, 37, by means of which the collar, 32, may be drawn tightly around the exhaust pipe.

In the side of the rear sleeve is cut an opening, 38, which is square in plan. (See Fig. 2.) A register pipe, 39, square in cross section is riveted, or otherwise secured, as at 40, to the sleeve surrounding the opening, 38, and extends upwardly, as shown.

The register, 41, is formed of a sheet of material bent into the shape of a square cage, adapted to set over the pipe, 39, in any one of four positions.

The upper end of one of the sides of the register, 41, is cut away to provide an aperture, 42, and a collar, 43, is secured to the remaining three sides of the register by means of the downwardly bent flanges, 44, in order to define the register opening, 45. (See Fig. 2.)

The register shutter, 46, is stamped out of a sheet of metal, one end thereof being inclined relative to the remainder, as at 47. The sides are bent perpendicularly to form flanges, 48, through which rivets, 48a, are extended in order to pivot the shutter plate to the register.

The rivets, 48a, also serve to help secure the flanges, 44, to the register.

The inclined portion, 47, when the shutter is closed, extends under one side of the collar, 43.

The floor board, 12, is provided with a

rectangular opening, 49, to receive the register, the opening being widened on the side which receives the aperture, 42, and the collar, 43, being provided with a flange bent under, as at 50, and thence downwardly, as at 51, in order to space the side wall of the register away from the opening on that side. The opening, 49, may be further cut away on an angle, as at 52, to provide ample passageway for the escape of air when the register is closed.

The inclined portion, 47, of the shutter engages the flange, 50, when the shutter is in closed position, as shown in Fig. 2, and the end of the portion, 47, is cut so as to just be received within the perpendicular flange, 51. Thus it will be seen the flange, 51, serves not only to position the register within the opening, but to protect the edge of the shutter as well.

The inclined portion, 47, moves downwardly when the shutter is raised to the dotted line position shown and completely closes the aperture, 42, at the same time being engaged against the outer face of the wall, 41, which serves to limit the upward movement of the shutter, 46, to the inclined position shown in dotted lines.

In Fig. 1 the register is shown attached to the pipe, 39, in such a position that the heated air will be directed toward the driver's seat. By removing the register and turning it through an angle of ninety degrees the heat may be thrown directly to the rear. For this purpose the opening, 49, should be cut as wide longitudinally of the channel as laterally. These two positions are probably the only two positions desirable, but it will be seen that if the occupants of the car wish to escape the direct current of heated air the register may be turned to either one of the other possible positions which it may assume relative to the pipe, 39.

I have found that my heater, which has a cross section more than six times as great as that of the ordinary exhaust pipe, and which is of greater length than the ordinary heater, due to the elbow bend enclosing the inclined portion of the exhaust pipe, throws a much greater quantity of heated air than the average heater now on the market.

By throwing the heat toward the adjacent door of the vehicle, a sufficient quantity of heated air may be supplied to the car and yet the legs of the occupants are not subjected to the direct current of air from the heater, which sometimes becomes uncomfortable.

In Fig. 9 I have shown the method of attaching two heaters in tandem. The rear portion of the forward heater, which is attached in the same manner as shown in Fig. 1, is shown at A in Fig. 9. The rear heater is indicated at B, and the two sleeves, 18 and 20, have been turned so as to bring them in alignment. The forward end of the sleeves, 18, is provided with a peripheral channel, 53, shaped to receive the channel, 24, in the sleeve, 21, and apertured collar 54, is substituted for the collar, 25, to support the end of the forward heater. The end of the rear heater is then closed by the collar, 25. The heaters are of such length that the register of the rear heater will be in proper position to extend through the floor boards behind the front seat and ahead of the rear seat. This construction is not illustrated in the drawings since the lengths of cars vary, and it is thought to be evident that the heaters can be readily adapted to serve this purpose.

Some changes may be made in the construction and arrangement of the parts of my invention without departing from the real spirit and purpose of my invention, and it is my intention to cover by my claims any modified forms of structure or use of mechanical equivalents which may be reasonably included within their scope.

I claim as my invention:—

1. In an exhaust heater, a pair of sleeves joined end to end by means of a biased union allowing rotation of the sleeves relative to each other from a position in alignment to positions angularly disposed to each other, the sleeves being of sufficient diameter to receive the curved bend of an elbowed exhaust pipe, when in the latter mentioned positions, and adapted to receive the straight portion of an exhaust pipe when in aligned position, and means for securing the free ends of the sleeves to an exhaust pipe.

2. In an exhaust heater, a forward sleeve comprising a longitudinally split, cylindrical sheet of material of sufficient resilience to allow the reception of an exhaust pipe through the split, the rear end of the sleeve being cut on a bias, a rear sleeve comprising a longitudinally split, cylindrical sheet of material of sufficient resilience to allow the reception of an exhaust pipe through the split, the forward end of the rear sleeve being cut on a bias, the biased end of one sleeve being provided with an annular, outwardly extending flange, the end of the other sleeve being provided with an annular channel to receive said flange, and means for securing the sleeves together around an exhaust pipe having a portion inclined relative to the body of the pipe, the forward sleeve receiving the inclined portion of the pipe, the rear sleeve receiving a portion of the body of the pipe, and the annular channel receiving the annular flange in such relation as to dispose the sleeves in position inclined relative to each other.

3. In combination with an exhaust pipe having a manifold packing nut, a heater in-

cluding a sleeve encircling the pipe and having a mouth adjacent said nut, and a deflector secured to the pipe, adapted to deflect gases escaping around the nut, beyond the mouth of said sleeve.

4. In an exhaust heater, a sleeve adapted to encircle an exhaust pipe, and a combined gas-deflecting plate and clamp adapted to secure the forward end of the sleeve to the pipe.

5. In combination with an exhaust pipe having a manifold packing nut at its forward end, a heater including a sleeve encircling the pipe and terminating adjacent said nut, and means disposed between said nut and the mouth of the sleeve to prevent gas escaping around the nut from entering the sleeve.

6. In combination with an exhaust pipe having a manifold packing nut at its forward end, a heater including a sleeve encircling the pipe and terminating adjacent said nut, and a deflector disposed between the mouth of said sleeve and said nut and inclined forwardly and away from the exhaust pipe, said deflector being adapted to prevent gases escaping around the nut from entering the sleeve.

Signed at Sioux City, in the county of Woodbury and State of Iowa, this 1st day of May, 1925.

JOSEPH EULBERG.