The present invention relates to a protective cover attachment for upright exhaust pipes of internal combustion engines, such as the engines of tractors and the like, for the purpose of preventing foreign matter from entering the exhaust pipe and the engine cylinders.

An important object is to provide a simple, efficient, and economical type of clamp or cap attachment for an engine exhaust pipe. This attachment includes an elongated tubular member having a lower portion arranged to be detachably connected to an upright exhaust pipe, also an upper portion through which the exhaust gases discharge to the atmosphere, and an intermediate laterally offset portion or elbow which communicates the upper portion with the lower portion. The intermediate offset portion constitutes a trap and is provided with an enlarged opening through which foreign matter, such as rain, water, snow, and dust, entering the tubular member through the upper portion thereof is prevented from passing into the lower portion of the tubular member and the engine cylinders.

A further object consists in providing the upper portion of the tubular member with a discharge opening, and forming the intermediate offset portion of the tubular member with a drain opening which may be positioned on the side of the tubular member opposite to that of the discharge opening in the upper portion of the tubular member.

Other objects and advantages of the invention will become apparent from the following description, when taken in conjunction with the accompanying claims and drawings.

Referring to the drawings, in which is shown a preferred embodiment of the invention:

Figure 1 is a side elevational view of a tractor with parts in section showing the cover attachment connected to the exhaust pipe of the tractor engine;

Figure 2 is an enlarged side view taken substantially along the line 2—2 of Figure 1, showing the cover attachment removed from the exhaust pipe;

Figure 3 is an end view of Figure 2; and

Figure 4 is a sectional view, taken substantially along the line 4—4 of Figure 3.

Referring to the drawings, 10 indicates a tractor of any conventional type to the front of which is mounted the hood 11 that encloses the engine 12. An exhaust pipe 13 is suitably connected to the manifold 14 of the engine and extends upwardly through an opening 15 in the hood 11, so as to provide an exposed end portion to which is suitably connected a tubular cover or rain cap attachment generally indicated by the numerals 16 (Figs. 1 and 2). The tubular cover attachment 16 is formed with a lower straight portion 17 which may be provided with one or more vertical slits 18 so as to yieldably fit over the exposed upper end portion of the upright exhaust pipe 13 and be firmly secured thereto by a flexible strap or band 19 (Fig. 2). The lower portion 17 of the tubular member communicates with the laterally offset portion or elbow 20, which, in turn, communicates with an upper portion 21 that has an inclined discharge opening 22 in one side thereof. Preferably, the upper portion 21 is slightly curved as at 23, so as to form a reverse curve with the intermediate offset or bent portion 20 and thus provide a trap for foreign matter entering the tubular member 16 through the gas discharge opening 22.

In order to prevent foreign matter, such as rain, water, snow, dust, and the like, from entering the exhaust pipe 16, the intermediate offset portion 20, at the junctures of the lower portion 17 and the upper portion 21 therewith, and on the side opposite to the discharge opening 22, is provided with an enlarged drain or trap opening 24 for catching and withdrawing any of the foreign matter that enters through the opening 22. A depending drain pipe 25 is welded or otherwise suitably connected to the wall of the opening 24, as at 26, and is of such a length as to be spaced from the top of the hood 11, when the parts are assembled. Additionally, the enlarged opening 24 which communicates with the drain pipe 25 is positioned outside of the hood 11 so as to prevent fouling into the tubular member 16 and thus mix with the exhaust gases or fumes as they are discharged from the exhaust pipe 15 and pass freely upwardly through the tubular member 16 so as to discharge through the opening 22. Thus, means are provided for diluting the exhaust gases to a substantial degree so as to aid in the dissipation of the gas or fumes as they are discharged from the exhaust pipe 15 and pass freely upwardly through the tubular member 16 so as to discharge through the opening 22. The closure or rain cap attachment is particularly efficient for use with diesel engines or the like and may be readily connected to the upright exhaust pipe 13 of the engine by the clamp 19. Preferably at the point 26 where the pipe 25 is connected to the tubular member 16, there is provided a slight overlap or inwardly extending projection 27 (Fig. 4) which serves to catch moisture entering the pipe through the opening 22. The wall of the opening 22 is inclined downwardly, so as to provide greater protection from the weather than would be obtained if the exposed end of this wall were vertical or straight up and down. The length of the tubular cover attachment 16, including the end portions 17 and 21, may be varied so as to adapt the attachment to any particular type of machine, at a minimum expenditure of time, effort, and cost.

In operation, it will be noted that the tubular member 16 is connected to the upright exhaust pipe 13 so as to position the discharge opening 22 in any suitable direction to allow the free withdrawal of the exhaust gases through the outlet 22. Moreover, the intermediate offset or bent portion 20 coacts with the upper portion 21 of the tubular member so as to provide a trap for foreign matter, such as rain, snow, water, or the like, that enters the attachment through the opening 22 to be deflected towards the drain opening 24 and be withdrawn therefrom through the pipe 25 without danger of this foreign matter being discharged into the lower portion 17 and the engine cylinders. The intermediate offset portion 20 or elbow 20, which is provided with the trap, is shaped to insure the stream of exhaust gases or fumes as they issue from the exhaust pipe 13 to pass freely upwardly and without interference, through the tubular member 16 and around the curved intermediate portion 23 to the discharge outlet 22 when the engine is in operation. When the engine is not in operation, any foreign matter that may enter the tubular member through the opening 22 will be trapped and caught by the intermediate offset portion 20 and be discharged therefrom through the drain pipe 25, so as to prevent any of this foreign matter from entering the cylinders and causing damage by corroding or rusting parts thereof.

It will be understood that the form of the invention...
shown is merely illustrative and that such changes may be made as come within the scope of the following claims.

I claim:

A one piece cover attachment for upright engine exhausts including an elongated sinuous tubular member having a lower inlet end portion, an upper end portion curved toward the horizontal so as to provide a lateral port in one side thereof, an intermediate curved laterally offset portion communicating the lower end portion with the upper end portion, said intermediate offset portion having a drain opening in the side thereof opposite said lateral port and adjacent the juncture of the lower inlet portion therewith, for withdrawing by gravity foreign matter entering the tubular member through said port and for preventing the foreign matter from discharging into the lower end portion of the tubular member, and a depending drain pipe connected to the wall of said drain opening and positioned outside of and overlapping the inlet portion of said tubular member.

References Cited in the file of this patent

UNITED STATES PATENTS

41,427 Elbreg ------------ Feb., 2, 1864
2,296,550 Johnson -------------- Sept. 2, 1942
2,446,631 Burks -------------- Aug. 10, 1948
2,465,307 DiRenno -------------- Apr. 5, 1949
2,468,961 Curphy -------------- May 3, 1949
2,482,577 Dahlstrom -------------- Sept. 20, 1949
2,630,748 Brockelsby -------------- Mar. 10, 1953

FOREIGN PATENTS

18,136 Great Britain -------------- Aug. 10, 1911