United States Patent

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[54] **WEATHER CAP CONSTRUCTION**
6 Claims, 1 Drawing Fig.

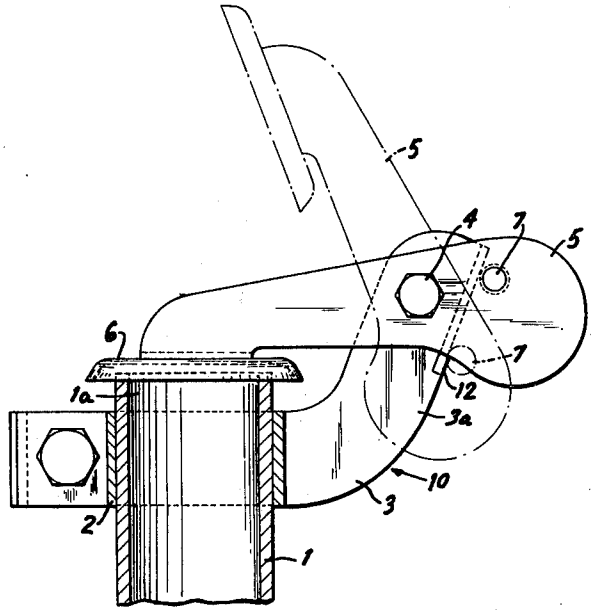
[52] **U.S. Cl.** **98/59,** 220/32
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[50] **Field of Search** 220/32, 36, 44; 98/59

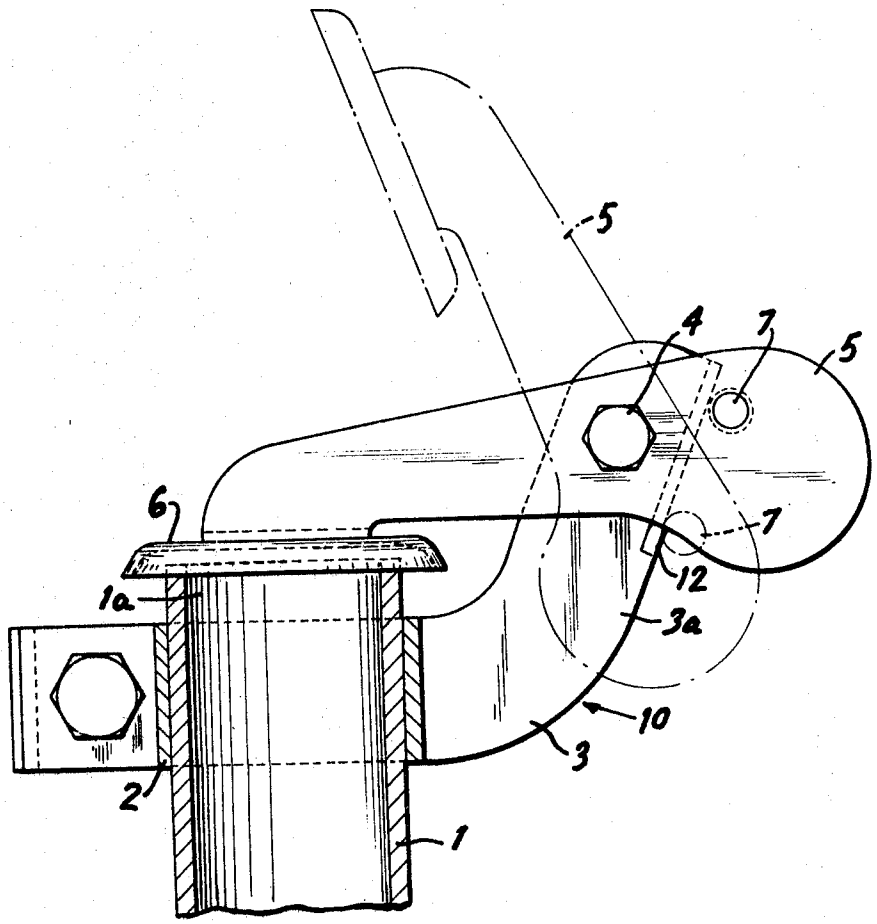
[56] **References Cited**
UNITED STATES PATENTS

2,694,358 11/1954 Taylor 98/59
2,749,832 6/1956 Harmon 98/59

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ABSTRACT: A weather cap preferably for closing vertically disposed pipes such as the exhaust pipe in a motor vehicle including a mounting collar having a crank arm portion providing a fulcrum which extends beyond the end of the pipe over which the collar is placed. An arm carrying a covering element is pivoted on the cranked arm for movement between a closed position at which the covering element covers the pipe in the closed state without bearing directly on the pipe and an opened position at which the covering is removed from but is aligned with the open end of the pipe. The cranked arm advantageously includes an oblique surface or flange which is adapted to contact a stop carried on the covering arm at the opened and closed end positions of the arm.





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WEATHER CAP CONSTRUCTION

SUMMARY OF THE INVENTION

This invention relates in general to the construction of mounted cap elements and in particular to a new and useful weather cap particularly for vertically disposed exhaust pipes which includes a hollow portion for surrounding the pipe which carries a crank arm providing a pivot for a cap covering arm and with stop means for orienting the cap covering on the arm in a position over the exhaust pipe but without bearing directly on the exhaust pipe.

The present invention is an improvement over the prior art particularly in respect to the provision of a pivotally closeable weather cap for covering substantially vertical pipes against the penetration of rain. The device is particularly applicable for use with vertical exhaust pipes of motor vehicles. Such a construction is found, for example, in tractors, agricultural machines, construction machines, and compressed air units. Where the engine is mounted on a vehicle there is the requirement that the covering of the exhaust pipe must be insured regardless of the orientation of the vehicle and especially when it moves over an inclined surface, for example, on steep terrain. Weather caps for closing vertical pipe lines are known, but the known arrangements have the disadvantage that they are either mounted in a fixed position above the end of the pipe and thus prevent the free escape of the exhaust gases or they bear on the mouth of the pipe in the closed state and will be lifted by the gas column formed and permitted to move downwardly to close the pipe subsequently. With such an arrangement, the annoying rattling noise is unavoidable. Most of the known arrangements have the disadvantage that they do not work properly in an inclined position since the covering flaps fall backwardly into a position at which they can no longer close the pipe.

In accordance with the present invention, there is provided a weather cap which may operate without completely shutting a vertical pipe but will provide a suitable covering of the pipe even when the pipe deviates from the normal position up to about 45°. In addition, the covering presents relatively low resistance to any escaping gas.

In accordance with the invention, there is provided a collar mounting on a cranked arm for securing it in position adjacent the end or mouth of an exhaust pipe. The cover element is carried at the end of a pivot arm which is pivoted on a cranked leg portion of the cranked arm at a location such that the pivot may be pivoted to present the covering in alignment with and covering the end of the pipe. The cranked arm carries a stop which bears against the edge or flange portion of the cranked arm when the covering is oriented to close the pipe without bearing directly on the end thereof. It has been found extremely advantageous to make the covering element and at least the fulcrum and the stop of a plastic material. The weather cap constructed in accordance with the invention insures the covering of the exhaust pipe during all possible operating conditions and it will operate without producing any rattling noises.

Accordingly, it is an object of the invention to provide an improved weather cap particularly for vertical exhaust pipes of internal combustion engines and the like which provides a covering for the exhaust pipe during the normal range of operation of the vehicle and without any chattering noise.

A further object of the invention is to provide an exhaust cap cover device which includes means for mounting a cranked arm adjacent the end of the pipe in a position such that a fulcrum may pivot thereon beyond the end to be covered, and including a pivot arm which is pivoted on the fulcrum and carries a covering element, the arm being pivotal between an open position spaced outwardly from the end of the pipe and a closed position in which the covering element covers the end of the pipe but does not bear directly against the pipe.

A further object of the invention is to provide a weather cap which is simple in design, rugged in construction and economical to manufacture.

BRIEF DESCRIPTION OF THE DRAWING

In the drawing:

The only figure of the drawing is a partial sectional and partial elevational view of a cap device for covering the end of an exhaust pipe constructed in accordance with the invention.

GENERAL DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to the drawing in particular, the invention embodied therein comprises a cap device for closure generally designated **10** for covering the end of an exhaust pipe **1**. The cap device **10** includes a clamping cover **2** which is formed at one end of a crank arm or fulcrum arm **3**. The fulcrum arm **3** includes a leg portion **3a** which extends beyond the end of the exhaust pipe **1** and is provided with a fulcrum or pivot pin **4** located beyond a mouth or opening **1***a* of the exhaust pipe.

In accordance with the invention a cover arm or closure arm **5** is mounted for pivotal movement on the pivot **4** and it carries a covering element **6** at its free end. The arm **5** carries a cylindrical projection or stop **7** which bears against an oblique edge **12** of the leg **3a** or a flange extension thereof in the soled line closed position indicated in the drawing. In this position the covering element **6** covers the mouth **1***a* but it does not bear against the exhaust pipe **1**. Preferably there is no direct contact between the covering element and the pipe in the closed position and a freely adjustable air gap is maintained

The arm **5** may be pivoted about the pivot **4** to the dotted line position at which the stop **7** bears against the surface **12** when the arm extends obliquely upwardly as indicated. In the open state the stop **7** prevents the arm **5** from falling backwardly to an ineffective position.

I claim:

1. A weather cap for closing preferably vertically disposed pipe lines, particularly exhaust pipe lines of motor vehicles, comprising an arm member having means for securing the arm on an exhaust pipe and including a crank leg portion extending beyond the end of the exhaust pipe, a cover arm member pivoted on said crank leg portion adjacent the end of the exhaust pipe and having a covering element at its free end, said arm being pivotal to a closed position at which said covering element is located over the end of the exhaust pipe, and stop means defined by one of said cranked arm and said cover arm members permitting pivotal movement of said arm to a closed position at which said covering element closes said exhaust pipe without bearing directly on said exhaust pipe.

2. A weather cap, according to Claim **1**, wherein said stop means permits pivotal movement of said arm to an open position where at least a portion of said covering is still aligned with said exhaust pipe.

3. A weather cap for closing preferably vertically disposed pipe lines, particularly exhaust pipe lines of motor vehicles, comprising an arm member having means for securing the arm on an exhaust pipe and including a crank leg portion extending beyond the end of the exhaust pipe, a cover arm member pivoted on said crank leg portion at a location beyond the end of the exhaust pipe and having a covering element at its free end, said arm being pivotal to a closed position at which said covering element is located over the end of the exhaust pipe, and stop means defined by one of said cranked arm and said cover arm members permitting pivotal movement of said arm to a closed position at which said covering element closes said exhaust pipe without bearing directly on said exhaust pipe, wherein said stop means includes a projection defined on said cover arm, said crank leg portion including an oblique edge which is contacted by said stop in each of the end closed positions and opened positions.

4. A weather cap for closing preferably vertically disposed pipe lines, particularly exhaust pipe lines of motor vehicles, comprising an arm member having means for securing the arm on an exhaust pipe and including a crank leg portion extending beyond the end of the exhaust pipe, a cover arm member pivoted on said crank leg portion at a location beyond the end

of the exhaust pipe and having a covering element at its free end, said arm being pivotal to a closed position at which said covering element is located over the end of the exhaust pipe, and stop means defined by one of said cranked arm and said cover arm members permitting pivotal movement of said arm to a closed position at which said covering element closes said exhaust pipe without bearing directly on said exhaust pipe, said crank leg portion carrying a plastic fulcrum, said covering arm being pivotal on said plastic fulcrum, said stop means including a stop on said arm made of a plastic material, said covering element carried at the free end of the said arm also being made of plastic material.

5. A weather cap for closing preferably vertically disposed pipe lines, particularly exhaust pipe lines of motor vehicles, comprising an arm member having means for securing the arm on an exhaust pipe and including a crank leg portion extending beyond the end of the exhaust pipe, a cover arm member pivoted on said crank leg portion at a location beyond the end of the exhaust pipe and having a covering element at its free end, said arm being pivotal to a closed position at which said covering element is located over the end of the exhaust pipe, and stop means defined by one of said cranked arm and said cover arm members permitting pivotal movement of said arm to a closed position at which said covering element closes said exhaust pipe without bearing directly on said exhaust pipe,

said crank arm including a collar adapted to surround an exhaust pipe and a crank leg portion extending obliquely from said collar beyond the end of said exhaust pipe, said crank leg portion including an end face forming a stop surface, said stop means comprising a projection on said covering arm adapted to engage said stop surface and said arm is in a closed position and when said cover arm is in an opened position.

6. A noiseless weather cap for closing an exhaust pipe comprising an arm member having means for securing the arm on an exhaust pipe at a spaced location from the end thereof and leaving the end unobstructed, said arm member having a crank leg portion extending adjacent the end of said exhaust pipe, a cover arm member pivoted on said crank leg portion and having a cover adjacent its free end with a continuous circular skirt portion, said arm being pivotal to a closed position at which said cover is located to extend across the end of the exhaust pipe and with the skirt portion thereof extending around the end, and stop means defined by one of said crank arm and said cover arm members permitting a pivotal movement of said cover arm to a closed position at which said cover closes said exhaust pipe without bearing directly on said exhaust pipe and insuring that said cover does not clatter against said exhaust pipe or projection thereof.