No. 875,991. PATENTED JAN. 7, 1908.

J. E. GILSON.

AIR COOLING APPARATUS FOR EXPLOSIVE ENGINES.

APPLICATION FILED MAY 16, 1907.

Fig. 2.

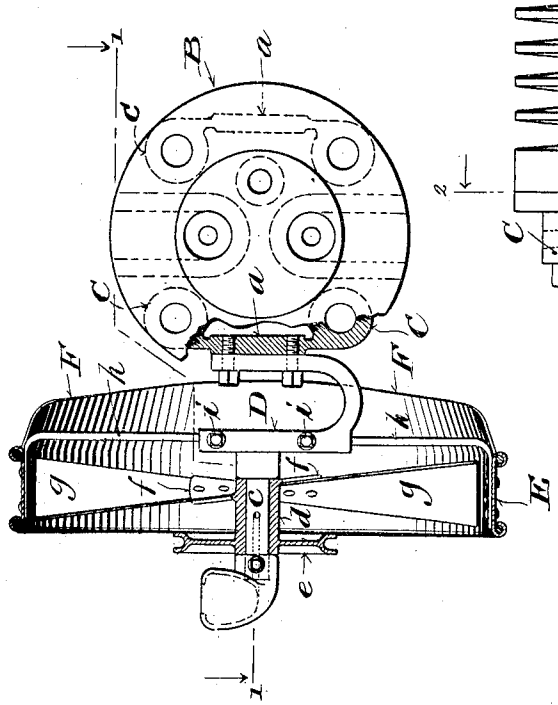
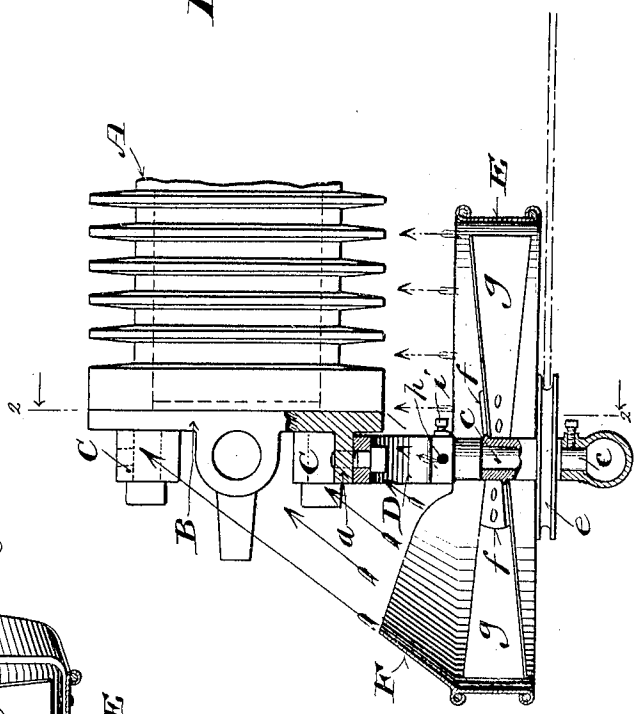


Fig. 1.



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UNITED STATES PATENT OFFICE.

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AIR-COOLING APPARATUS FOR EXPLOSIVE-ENGINES.

No. 875,991. Specification of Letters Patent. Patented Jan. 7, 1908.

Application filed May 16, 1907. Serial No. 374,056.

To all whom it may concern:

Be it known that I, JOHN E. GILSON, a citizen of the United States, and resident of Port Washington, in the county of Ozankee and State of Wisconsin, have invented certain new and useful Improvements in Air-Cooling Apparatus for Explosive-Engines; and I do hereby declare that the following is a full, clear, and exact description thereof.

The object of my invention is to provide a durable, economical and effective air-cooling apparatus for explosive-engine cylinders, said invention consisting in certain peculiarities of construction and combination of parts as hereinafter described with reference to the accompanying drawings and subsequently claimed.

In the drawings: Figure 1 represents a plan view of the head and portion of an engine-cylinder having attached thereto a cooling-fan embodying the features of my invention, the view being partly broken away and in section, as indicated by line 1—1 of Fig. 2, and Fig. 2, a sectional end-view of same, as indicated by line 2—2 of Fig. 1, illustrating the manner of attaching the fan to the cylinder-head, which head is shown detached from said cylinder.

Referring by letter to the drawings, A indicates a portion of a circumferentially flanged cylinder of an explosive-engine, having secured thereto a head B that is provided with the usual gas-inlet and discharge-openings, spark-plug connections and bosses C, through which bosses retaining-bolts for said head and cylinder are fitted. Said bosses C are connected by vertical strengthening-webs *a*, to one of which is bolted a fan-supporting bracket D, as shown. Projecting from the bracket is a shouldered stud *c* having loosely mounted thereon a hub *d* of a driving-pulley *e*, the said hub being also formed with radial wings *f*, to which are secured the vanes *g* of a rotary fan, there being a suitable dope-cup for lubricating the hub fast on the end of its bearing-stud.

In order to obtain an economical driving-gear together with efficiency in cooling, fans of the type to which my invention pertains are usually located in the position as shown. In this position the axis of the fan with relation to the cylinder is such that approximately half the air-current generated by said fan is thrown directly against the rear end portion of the cylinder at a right-angle to its bore, while a portion of the remaining half of the air passes edgewise over the cylinder-head. The described arrangement results in considerable loss of cooling efficiency owing to the fact that the head of the cylinder where the explosion takes place receives no direct air current, but only a slight portion which is deflected edgewise thereof, while the greater portion of one-half of the fan capacity to the rear of said head is entirely lost.

To overcome the above objectionable feature and utilize the entire fan-capacity, the said fan in this instance is provided with an annular casing or band E concentric to the fan, which serves the double purpose of confining the air from shedding radially of the vanes and also acts as a guard therefor. This casing or band is supported from the bracket D, by means of spokes *h*, confined in apertures in said bracket and secured thereto by suitable set-screws *i*, the outer end of the spokes terminating in feet, which feet are riveted to said band, as shown in Fig. 2, of the drawings.

That portion of the band which projects beyond the rear of the head B, for approximately half its diameter, is provided with a segmental hood-extension F, which extension forms an inwardly inclined deflector, its angle being sufficient to throw the air directly against the rear face of the head or towards the axis of the fan, as indicated by full line arrows, while the opposite half of said fan-area directs the air in a line parallel with said fan-axis, as indicated by the arrows in dotted lines.

From the foregoing description it will be thus seen that the peculiarities of the formation of the combined guard and casing results in an economical and efficient increase in the capacity of the cooling-fan, with no material increase in cost of manufacture over the present cooling-fans of the type to which the invention pertains.

I claim:

1. An explosive-engine cylinder a rotary fan supported in connection with the cylinder parallel to same, and a circular casing for the fan having a hood-extension inclined inward toward the axis of said fan beyond the cylinder-head.

2. An explosive-engine cylinder, a bracket secured to the head of the cylinder, a rotary fan supported in connection with the bracket

parallel to said cylinder and a circular casing for the fan having a hood-extension inclined inward toward the axis of said fan beyond the cylinder head.

3. An explosive engine-cylinder, a bracket in detachable connection with the head of the cylinder, a rotary fan supported in connection wth the bracket parallel to said cylinder, and a circular casing for the fan having a hood-extension inclined inward toward the axis of said fan beyond the cylinder-head.

4. An explosive-engine cylinder having head-bosses, a web connecting the bosses, a bracket attached to the web, a rotary fan supported in connection with the bracket parallel to said cylinder, and a circular casing for the fan having a hood-extension inclined inward toward the axis of said fan beyond the cylinder-head.

5. An explosive-engine cylinder having head-bosses, a web connecting the bosses, a bracket bolted to the web, a rotary fan supported in connection with the bracket parallel to said cylinder, and a circular casing for the fan having a hood-extension inclined inward toward the axis of said fan beyond the cylinder-head.

6. An explosive-engine cylinder, a bracket in connection with the head of the cylinder, a shouldered stud projecting from the bracket at a right-angle to said cylinder, a rotary fan having the hub thereof loosely mounted on the stud, and a circular casing for the fan having a hood-extension inclined inward toward the axis of said fan beyond the cylinder-head.

7. An explosive-engine cylinder, a bracket in connection with the head of the cylinder, a shouldered stud projecting from the bracket at a right-angle to said cylinder, a rotary fan having its hub loosely mounted on the stud, a belt-pulley rigid with said hub, and a circular casing for the fan, having a hood-extension inclined inward toward the axis of said fan beyond the cylinder-head.

8. An explosive-engine cylinder, a bracket in connection with the head of the cylinder, a shouldered stud projecting from the bracket at a right-angle to said cylinder, a lubricator attached to the stud, a rotary fan-and-pulley hub loose on said stud between the shoulder of same and the lubricator, and a circular casing for the fan having a hood-extension inclined inward toward the axis of said fan beyond the cylinder-head.

9. An explosive-engine cylinder, a bracket in connection with the head of the cylinder, a rotary fan supported in connection with the bracket parallel to said cylinder, spokes also in connection with said bracket, and a circular casing for the fan in connection with the spokes and having a hood-extension inclined inward toward the axis of the fan beyond the cylinder-head.

10. An explosive-engine cylinder, a bracket in connection with the head of the cylinder, a rotary fan supported in connection with the bracket, parallel to said cylinder, spokes set in apertures of said bracket, set-screws arranged to secure the spokes, and a circular casing for the fan attached to said spokes and having a hood-extension inclined inward toward the axis of the fan beyond the cylinder-head.

11. An explosive-engine cylinder, a bracket in connection with the head of the cylinder, a stud projecting from the bracket at a right-angle to said cylinder, a driving pulley having a hub loosely mounted on the stud and provided with radial wings, fan-vanes secured to the hub-wings, and a circular casing for the fan having a hood-extension inclined inward toward the axis of said fan beyond the cylinder-head.

In testimony that I claim the foregoing I have hereunto set my hand at Port Washington in the county of Ozankee and State of Wisconsin in the presence of two witnesses.

JOHN E. GILSON.

Witnesses:
HARRY W. BOLENS,
T. A. BOERNER.