J. H. GROSHANS.

MEANS FOR HEATING CYLINDERS OF EXPLOSIVE ENGINES.

APPLICATION FILED AUG. 17, 1915.

1,211,935. Patented Jan. 9, 1917.

2 SHEETS—SHEET 1.

Fig. 1.

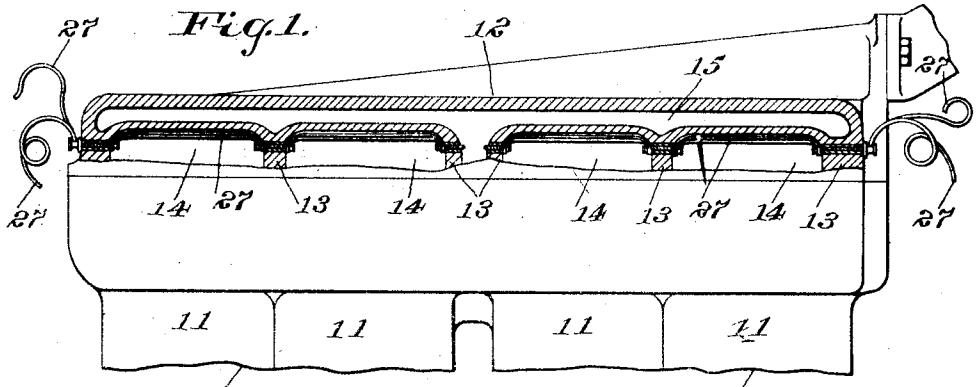
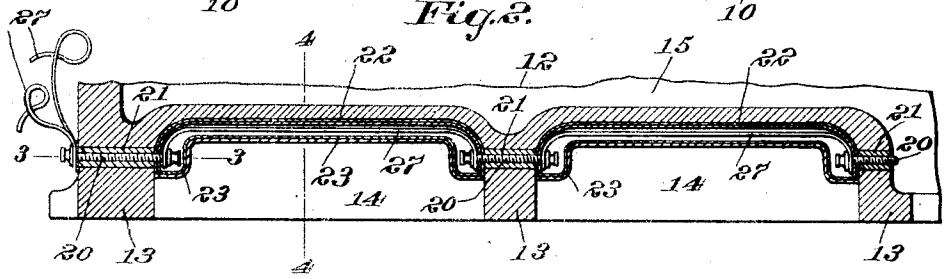


Fig. 2.



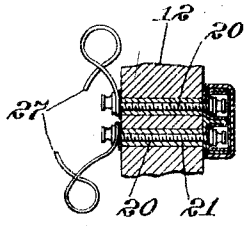
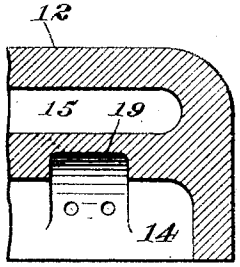


Fig. 3.

Fig. 5.



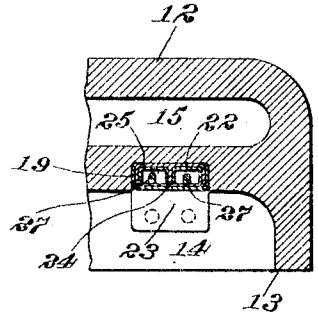


Fig. 4.

Inventor

John H. Groshans

By Mann & Co.

Attorney

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2 SHEETS—SHEET 2.

Fig. 6.

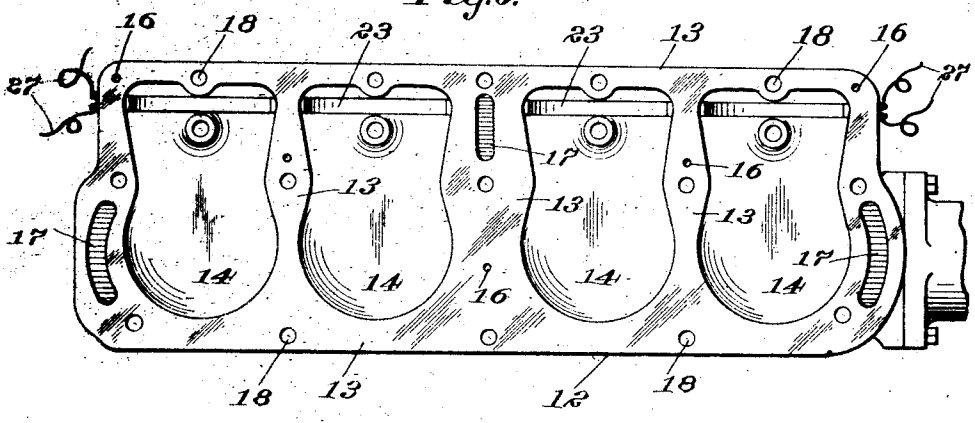


Fig. 7.

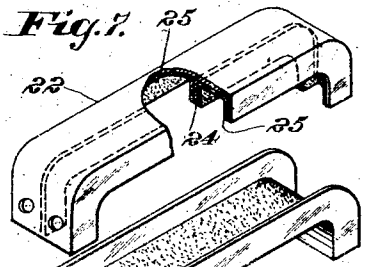


Fig. 8.

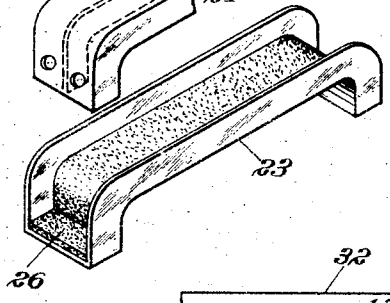
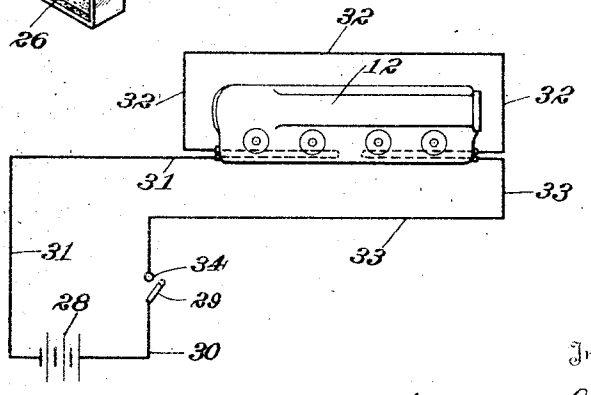


Fig. 9.



Inventor

John H. Groshans

By Mann & Co

Attorney

UNITED STATES PATENT OFFICE.

JOHN H. GROSHANS, OF BALTIMORE, MARYLAND.

MEANS FOR HEATING CYLINDERS OF EXPLOSIVE-ENGINES.

1,211,935. Specification of Letters Patent. Patented Jan. 9, 1917.

Application filed August 17, 1915. Serial No. 45,904.

To all whom it may concern:

Be it known that I, JOHN H. GROSHANS, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Means for Heating Cylinders of Explosive-Engines, of which the following is a specification.

This invention relates to improvements in means for heating cooled cylinders of explosive engines to facilitate starting.

The object of the invention is to provide a simple means whereby the cylinders of explosive engines that have become cooled, especially in cold weather, may be preliminarily heated and thereby materially facilitate the ignition and explosion of a charge when it is desired to start the engine.

A further object is to provide a simple and inexpensive electrical means for heating the cylinders preliminarily to starting the engine.

An example in the practical application of the invention is illustrated in the accompanying drawings wherein,—

Figure 1, shows the upper portion of an explosive engine, with the cover to the cylinders in section and having my improvement applied thereto. Fig. 2, illustrates an enlarged sectional detail through a portion of the cover with my improved heating device in place therein. Fig. 3, shows a horizontal sectional detail through the binding posts at one end of the cover,—the section being taken on the line 3—3 of Fig. 2. Fig. 4, illustrates a cross-sectional detail through a portion of the cover and the heater at the inner side thereof,—the section being taken on the line 4—4 of Fig. 2. Fig. 5, is a similar detail with the heater conduits omitted. Fig. 6, shows an inverted plan view of the detached cylinder cover showing my improved device therein. Figs. 7 and 8, illustrate details in perspective of the two part heater employed in the cylinder cover, and Fig. 9, shows in a diagrammatic way the wiring circuit for effecting an electrical heating of the wires in the heater conduits.

Referring to the drawings by numerals, 10, designates the upper portion of the cylinders of an explosive engine of a type commonly employed in propelling automobiles, and having a plurality of cylinders 11.

In the present instance a single cover member 12, is employed to cover all the cylinders, and this cover has suitable partitions or flanges 13, to seat down on the cylinders and separate one cylinder from the other and at the same time from chambers 14, at the under side of the cover and at the upper end of each cylinder. The cover also has a suitable chambered space 15, with ports 16, and passages 17, therefrom for the circulation of water for cooling purposes, and with bolt-holes 18, whereby it may be secured down on the cylinders in the usual manner.

In carrying out my invention I provide a means for producing a heat that will materially increase the temperature in each cylinder preliminarily to the starting of the engine, whereby the charge in the cylinder may be heated sufficiently to materially aid in its explosion in the starting of the engine.

In the example shown in the accompanying drawing I provide each cover chamber 14, with a recess 19, that extends crosswise thereof, as shown in Fig. 5 of the drawing, and in the partition walls 13, adjacent the two ends of each recess, I provide a binding post 20, which latter is electrically separated from the metal of the cover by means of suitable insulating material 21.

Each recess of the cover 19, receives a heater which latter comprises two sections 22 and 23 respectively. The section 22, being provided with a central partition 24, to form two channels and having insulation 25, around its interior, and the section 23, receiving section 22, and also having insulation 26, on its interior so that heating wires 27, may extend through the two channels and be electrically insulated from the walls of the heater.

In the case of a four cylinder engine, such as shown in the drawing, I prefer to run the heater wires 27, in at one end of the cover through one passage of a heater then through a partition wall 13, to a passage of another heater and then return the wire through the other passages of the same heaters and out at the end of the cover where the wires entered.

The manner of forming the circuit is diagrammatically illustrated in Fig. 9, of the drawing wherein 28, designates a battery or current supply and 29, a switch. A wire 30, connects one side of the current supply or battery with the switch while a wire 31, leads from the other side of the current supply and enters one end of the cylinder cover 12, where it is extended

through the heaters in two cover recesses and returned to the same end where it entered. The wire 32, then connects the outlet end of the heater wire at one end of the cover with the inlet end of the wire to the cover recesses at the opposite end of the cover, and then after passing through the two heaters at said latter end of the cover is returned to the same end where it is connected by a wire 33, with the switch point 34.

When it is desired to heat the cylinders the switch 29, will be closed and the circuit from the current supply through the several heaters will be completed so that the latter will become heated to a sufficient degree to warm the cylinders and thereby facilitate the ignition of the explosive mixture.

While I have elected to show and describe one form of heater device for carrying out my inventive idea, it is to be understood that the invention is not to be restricted to the form shown.

Having described my invention what I claim is,—

1. The combination with an explosive engine having a plurality of cylinders, of a cover extending across the ends of said cylinders and provided with flanges to form chambers on the under side thereof and in register with the cylinders; a heater device extending across each chamber of the cover between said partitions and heater wires extending through the partitions and also through the heater devices in the cover chambers.

2. The combination with an explosive engine having a plurality of cylinders, of a cover extending across the ends of the cylinders and having a plurality of bottom chambers which register with the said cylinders and each chamber being provided with a cross-wise recess; a heater seated in the recess of each cover chamber and provided with two channels and a heater wire extending through one channel of each heater and back through the other channel of said heater.

3. The combination with an explosive engine having a plurality of cylinders, of a cover extending across the ends of the cylinders and having a plurality of bottom chambers which register with the said cylinders and each chamber being provided with a cross-wise recess; a two part heater in each recess of the cover chamber,—one part of said heater having two electrically-separated channels and the other part of said heater receiving the channeled part and a heater wire extending through one channel of said heater part and back through the other channel of said part.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN H. GROSHANS.

Witnesses:

CHARLES B. MANN, Jr.,

BERTHA K. WALKER.