June 1, 1954

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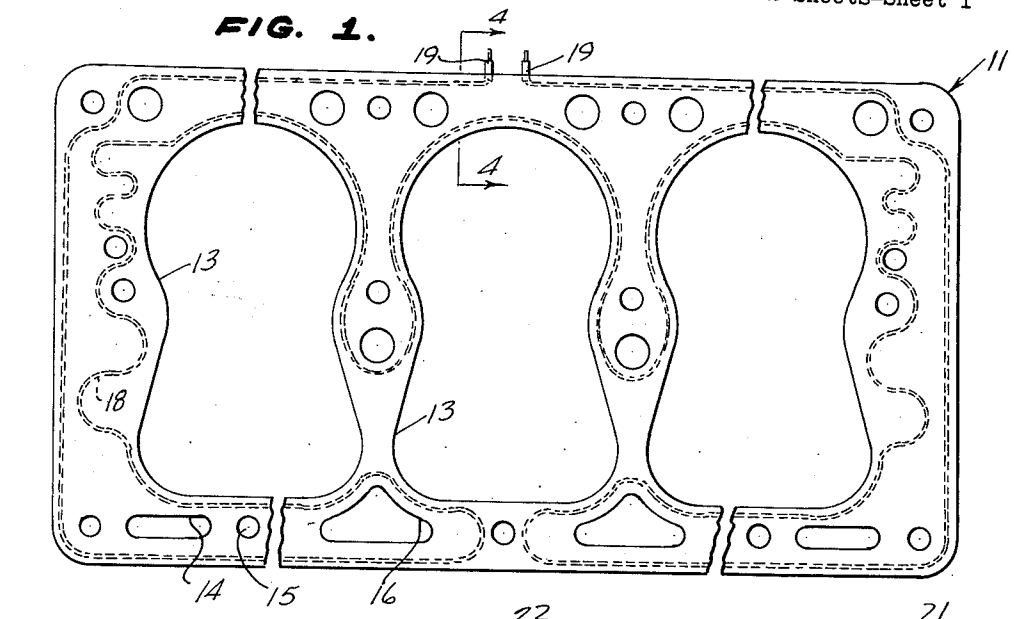
2,680,185

HEATER GASKET

Filed April 17, 1953

2 Sheets-Sheet 1

FIG. 1.



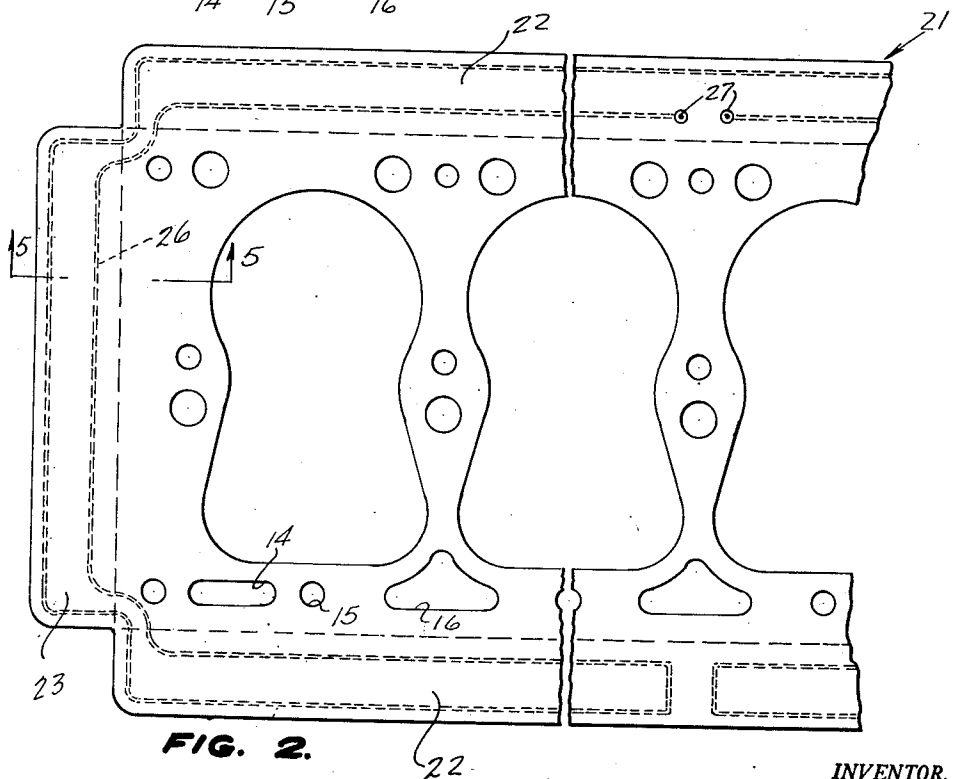


FIG. 2.

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FIG. 3.

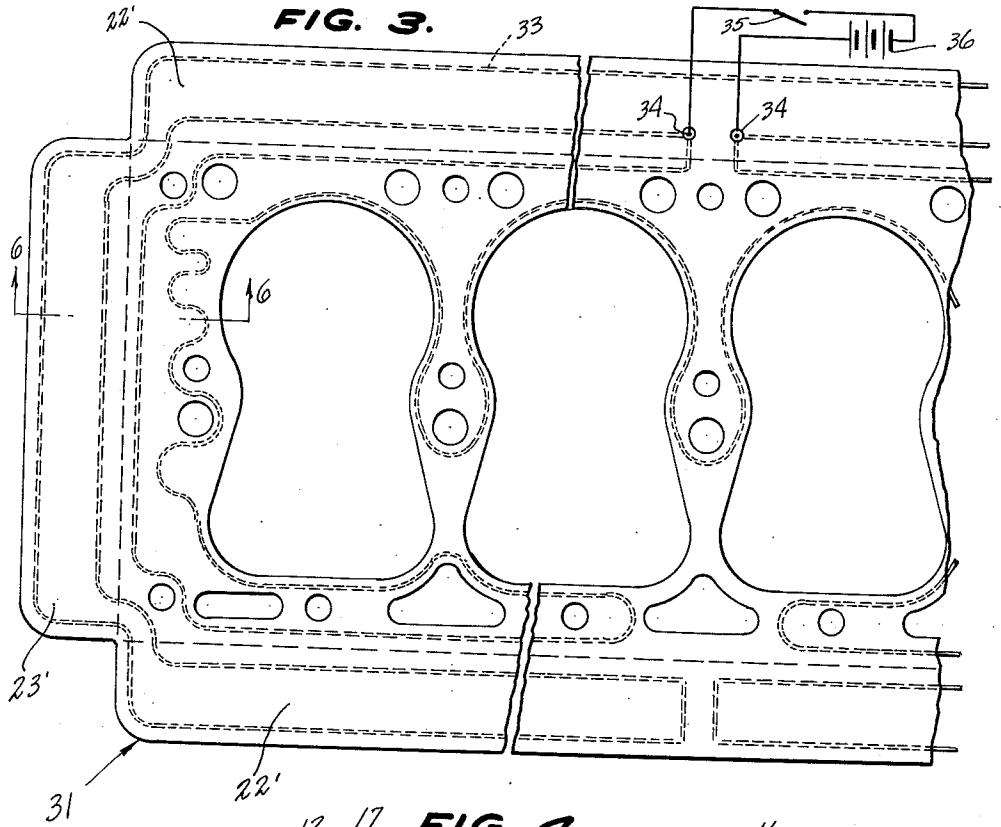


FIG. 4.

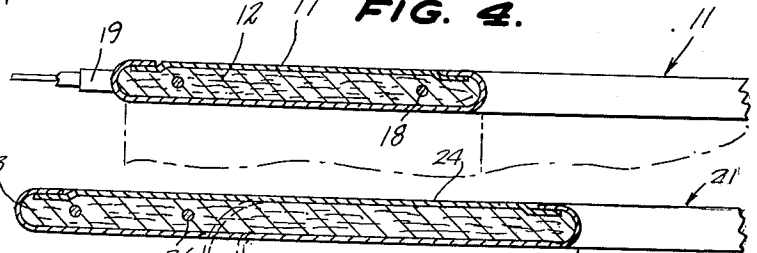


FIG. 5.

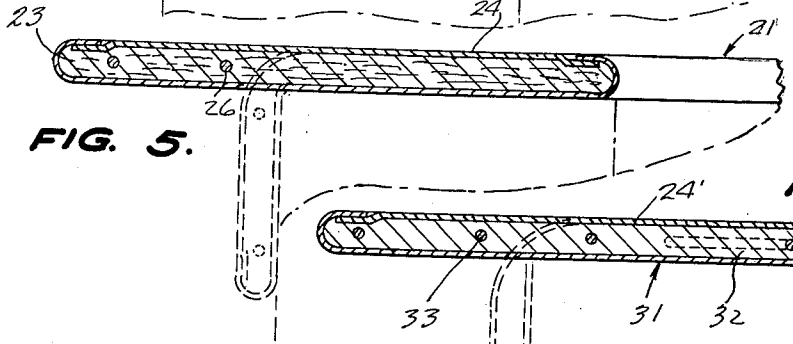
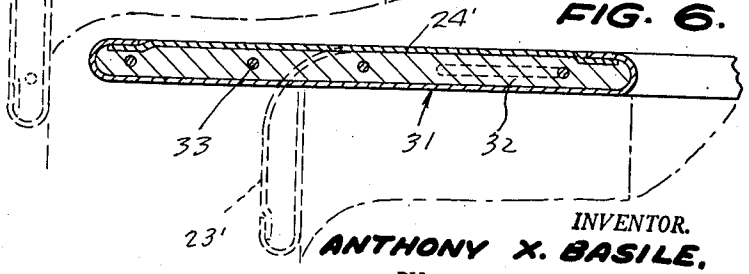


FIG. 6.



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HEATER GASKET

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2 Claims. (Cl. 219—19)

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This invention relates to internal combustion engines, and more particularly to means for preheating an internal combustion engine.

A main object of the invention is to provide a novel and improved means for preheating the upper portion of an internal combustion engine, such as the engine of an automobile, to facilitate starting the engine in cold weather, said means being embedded in the sealing gasket between the cylinder head and the cylinder block.

A further object of the invention is to provide an improved heating element for preheating an internal combustion engine to facilitate starting thereof, the heating element being combined with the sealing gasket which is interposed between the cylinder head and cylinder block of the engine, the preheating element being simple in construction, being easy to install, and being suitable for use on a wide range of internal combustion engines and similar machines.

Further objects and advantages of the invention will become apparent from the following description and claims, and from the accompanying drawings, wherein:

Figure 1 is a plan view of a sealing gasket for use between the cylinder block and cylinder head of an internal combustion engine, said sealing gasket being provided with a heater element in accordance with the present invention.

Figure 2 is a fragmentary plan view of a modified form of combined heating element and sealing gasket according to the present invention.

Figure 3 is a fragmentary plan view of a further modified form of combination engine heating element and sealing gasket according to the present invention.

Figure 4 is an enlarged cross sectional detail view taken on the line 4—4 of Figure 1.

Figure 5 is an enlarged cross sectional detail view taken on the line 5—5 of Figure 2.

Figure 6 is an enlarged cross sectional detail view taken on the line 6—6 of Figure 3.

Referring to the drawings, and more particulary to Figures 1 and 4, 11 designates a gasket unit adapted to be interposed between the cylinder block and cylinder head of an internal combustion engine, such as the engine of an automobile. The gasket 11 comprises a generally rectangular flat body 12 of resilient deformable material such as cork or the like, said material being preferably an electrical insulator. The body 12 is suitably apertured, as at 13, and at various locations, such as 14, 15 and 16 to provide the usual openings for the cylinders, pistons, valves, bolts and the like. The body 12 is encased in a sheath of thin deformable sheet material, as shown at 17, such as metal foil or the like.

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Designated at 18 is a heater wire which is embedded in the body 12 and which is looped in the manner illustrated in Figure 1 so as to extend through the various portions of body 12 so as to transmit heat to said body over substantially its entire area when the heating wire is connected to a suitable source of current. As shown in Figure 1, the heater wire 18 is looped around the various apertures in the body 12 and extends along the margins of the major apertures 13 so as to transmit heat efficiently into the cylinders to the pistons and to the other moving parts of the engine.

The ends of the heater wire 18 extend through insulating sleeves 19 at one side edge of the gasket and may be connected through a suitable control switch to the automobile battery or other suitable source of current.

Referring now to the form of the invention illustrated in Figures 2 and 5, the gasket is designated generally at 21 and comprises a main portion adapted to be interposed directly between the cylinder block and cylinder head of an internal combustion engine, and respective side flaps 22, 22 and 23, 23 provided respectively at the longitudinal sides and at the opposite ends of the gasket, the side flaps being integrally formed with the major portion of the gasket. The protective sheath, shown at 24, encases the flaps 22 and 23 as well as the major portion of the gasket and is otherwise similar to the sheath 17 employed in the form of the invention illustrated in Figures 1 and 4. The heater wire is shown at 26 and extends through the flaps 22 and 23, as illustrated in Figure 2, the ends of the heater wire emerging through insulating sleeves 27, 27 at the intermediate portion of one of the longitudinal side flaps 22. The embodiment of the invention illustrated in Figures 2 and 5 is employed as a sealing gasket and the side flaps 22 and 23 are turned downwardly to rest adjacent the engine block, whereby the engine block will be heated when the heater wire 26 is energized by connecting the terminals thereof through a suitable switch to the automobile battery or other suitable source of electric current. It will be understood that the flaps 22 and 23 are bent downward manually to rest against the vertical side and end surfaces of the engine block after the gasket has been installed. When thus bent downwardly, the flaps 22 and 23 are in close proximity to the surfaces of the en-

gine block and the heater wire 26 may therefore efficiently transmit heat to the block.

Referring now to the form of the invention illustrated in Figures 3 and 6, the combination sealing gasket and heater is designated generally at 31 and comprises a body of resilient deformable material similar to that employed in Figures 2 and 5, said body being designated at 32. The body 32 is formed with the integral side flaps 22', 22' and the integral end flaps 23', 23'. The body is encased in the thin deformable sheath 24', similar to that employed in the form of the invention shown in Figures 2 and 5. Embedded in the body is the heater wire 33 which extends around the various apertures and over substantially the whole area of the major portion of the body 32, as well as through the respective flaps 22', 22' and 23', 23'. The ends of the heater wire 33 emerge through a pair of insulating sleeves 34, 34 provided in one of the side flaps 22' and said wire ends are connected through a switch 35 to the battery 36, the said battery being either the automobile battery or a suitable separate source of current. The form of the invention shown in Figures 3 and 6 is installed in the same manner as that of Figures 2 and 5, the flaps 22' and 23' being turned downwardly to vertical positions, as shown in Figure 6 in dotted view so as to be disposed closely adjacent to the vertical side and end surfaces of the engine block. The heater wire 33 is thus employed for heating not only the joining surfaces between the engine block and the cylinder head but also the vertical side surfaces around the block, whereby heat is applied over a relatively large surface of the block and whereby heat transfer between the heater wire and the engine occurs at an increased rate.

It will be readily understood that the combination gasket and heating element may be employed on various types of internal combustion engines, such as those employed in automobiles, marine motors, motorcycle engines, aircraft engines, diesel engines, motors employed in military equipment, and the like, namely, in any type of engine wherein pre-heating is desirable to facilitate starting or for other reasons. Thus, heat may be furnished to the engine or other machine in cold weather to facilitate starting of the engine or machine.

While certain specific embodiments of improved combination sealing gaskets and heating elements for internal combustion engines have been disclosed in the foregoing description, it will be understood that various modifications within the spirit of the invention may occur to those skilled in the art. Therefore, it is intended that no limitations be placed on the invention except as defined by the scope of the appended claims.

What is claimed is:

1. In an internal combustion engine having a cylinder block and a cylinder head, a sealing gasket adapted to be interposed between said block and cylinder head to provide a seal therebetween, said gasket comprising a flat body fabricated wholly of resilient deformable electrically insulating material, a sheath of thin deformable sheet material surrounding said body, and a heater wire embedded in said body and extending therethrough, said wire being formed with a plurality of loops disposed over the area of said body, said heater wire having its ends projecting from said body through said sheath, whereby said ends may be connected to a source of electric current.

2. In an internal combustion engine having a cylinder block and a cylinder head, a sealing gasket adapted to be interposed between said block and cylinder head to provide a seal therebetween, said gasket comprising a flat body of resilient deformable electrically insulating material, respective flaps integrally formed at the margins of said body adapted to project outwardly from the cylinder block and head and to be folded downwardly adjacent said block, a sheath of thin deformable sheet material surrounding said body and flaps, and a heater wire embedded in said body and extending therethrough and through said flaps, said wire being formed with a plurality of loops disposed over the area of said body, said heater wire having its ends projecting from said body through said sheath, whereby said ends may be connected to a source of electric current.

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