

F. H. BERG, JR.
DISPERSION GASKET.
APPLICATION FILED OCT. 14, 1913.

Patented Oct. 15, 1918.

1,281,899.

Fig. 1.

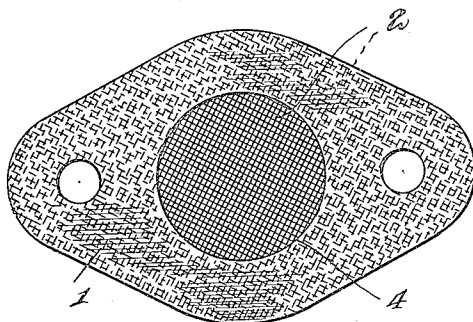
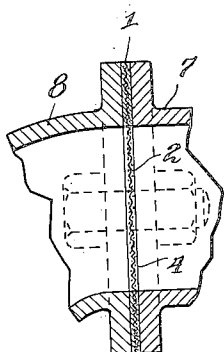


Fig. 3.

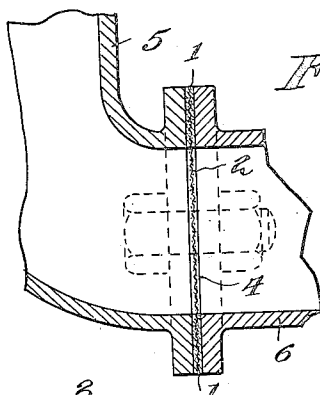


Fig. 2.

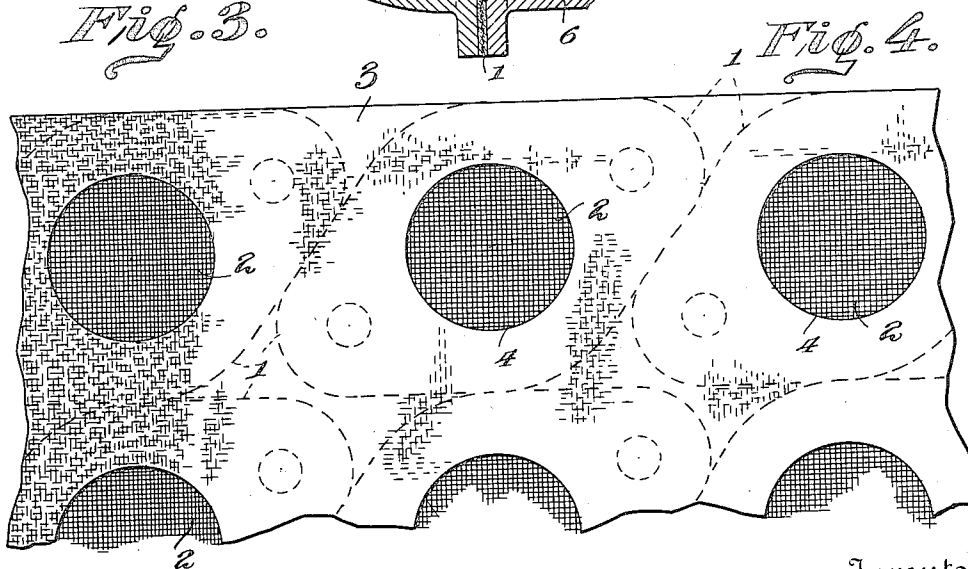


Fig. 4.

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UNITED STATES PATENT OFFICE.

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DISPERSION-GASKET.

1,281,899.

Specification of Letters Patent.

Patented Oct. 15, 1918.

Application filed October 14, 1913. Serial No. 795,173.

To all whom it may concern:

Be it known that I, FRANK H. BERG, Jr., a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Dispersion-Gaskets; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in internal combustion engines, and more particularly to means for confining combustion therein.

The primary object in view is the dispersion of the flame of an explosion for preventing exit thereof from the cylinder of an internal combustion engine.

Further objects in view are the avoidance of ignition of the fuel supply, and avoidance of discharge of dangerous gases, and also avoidance of explosion within a muffler employed in conjunction with an internal combustion engine.

With these and further objects in view, as will in part become apparent and in part be stated, the invention comprises certain novel constructions, combinations and arrangements of parts as will be hereinafter specified and claimed.

In the accompanying drawings,—

Figure 1 is a top plan of a gasket embodying the features of the present invention.

Fig. 2 is a transverse section therethrough, the gasket being illustrated as applied to the intake of an engine.

Fig. 3 is a similar view of the same as applied to the exhaust of an engine.

Fig. 4 is a plan view of a fragment of a web woven for the production of a series of gaskets similar to that seen in Fig. 1.

Referring to the drawing by numerals, 1 indicates the body of a gasket which is preferably formed of asbestos or mineral wool. In the preferred form, the body is woven strands of asbestos or mineral wool sustained and afforded tensile strength by interposed strands of wire, the crossing warp and weft producing an embedded wire mesh 2, and the whole forming a sheet of fabric 3. The said sheet is preferably provided with an interfilling of graphite or pigment, such as red or white lead, shellac, wood or paper pulp, so as to form a substantially solid, comparatively thin, flexible and somewhat

pliable sheet. The gasket 1 is cut from the sheet according to the lay-out indicated in dotted lines in Fig. 4 so as to avoid undue waste and at the same time to cause the several strands of wire forming the mesh to extend obliquely to the longitudinal axis of the gasket. In the course of the weaving, by the employment of appropriate jacquard mechanism, the sheet 3 may be formed with apertures 4 in the fibrous material, one aperture being formed for each gasket, or in lieu thereof the sheet 3 may be woven continuously and in an imperfect form, and thereafter the apertures 4 may be formed by cutting away the fibrous material and picking or blowing the particles thereof from between the mesh of the screen 2, so that in either event, when the fabric is completed, screen 2 will be exposed across each aperture 4. The completed gasket 1 is thus provided with an embedded wire mesh in a pliable, substantially fire-proof body with a portion exposed sufficient to provide a screen adapted to span the given opening of an internal combustion engine. The diagonal or oblique disposition of the wires, while tending to attenuate hydrocarbon fuel, affords the maximum passageway in a given area while offering the requisite obstruction to the passage of a flame for effectively stopping the same.

In the weaving of the sheet 3 according to the preferred method, three strands are employed for each warp and each weft thread, there being an upper and a lower strand of asbestos or other fibrous, preferably non-combustible, substance and an intermediate strand of wire, and a weaving is carried on in the usual manner with an appropriate jacquard mechanism, with the loose strands of fibrous matter being thus bound in and stiffened by the wire, and the wire at the same time being formed into a centrally embedded screen. The jacquard is adjusted to cause the upper strands of fibrous material to be woven into a separate, independent sheet above the wire mesh at the points where apertures 4 are to appear, and the lower strands of fibrous material are similarly woven at the same points into a separate fabric beneath the wire mesh with the wire mesh between the upper and lower fabric and disconnected therefrom at said points, the upper and lower strands of fibrous material and the strands of wire being interwoven into a single integral fabric

at all other points throughout the sheet 3. Thus the exposed fibrous material at the points for apertures 4 are readily accessible for being cut away for forming the apertures 4, and may be with proper care readily removed while leaving the wire mesh in perfect condition. It is, of course, apparent that this is not the only manner in which the sheet 3 may be woven, but, if desired, instead of wire, a single strand of fibrous material may be used and wrapped about the wire in a manner completely covering the same, in which event the apertures 4 are formed by cutting and picking or blowing away the fibrous material at those points necessary for producing the apertures 4, care being exercised in order to remove all particles of fibrous material without injury to the wire for leaving the screen in perfect condition extending across the respective apertures 4.

The completed gasket 1 is adapted for application at various points relative to an internal combustion engine, both for preventing back firing from the engine into the carbureter, and for preventing the flame of the explosion from discharging through the exhaust with the exhaust gases.

Obviously the gasket 1 may be applied at various points between the cylinder of an internal combustion engine and its intake and exhaust. In a multiple cylinder engine one gasket may be applied adjacent each cylinder at the intake and at the exhaust but preferably only one gasket is used for the intake, being disposed between the carbureter and intake manifold, as indicated in Fig. 2, wherein the intake manifold 5 is arranged with the gasket 1 applied thereto, and outside of the gasket is disposed the carbureter 6, a fragment only of the manifold and carbureter being shown. When it is desired to employ but a single gasket for the exhaust side of the engine of the multiple cylinder type, the gasket is disposed between the manifold and the exhaust tube leading to the muffler, as indicated in Fig. 3 wherein 7 indicates the exhaust end of the exhaust manifold and 8 the exhaust tube. Between the elements 7 and 8 is arranged gasket 1 with its opening 4 registering with the bore of tube 8. Obviously the gasket 1 is adapted for use between the cylinders and the respective branches of the exhaust manifold. In such event, the mesh 2 is of a sufficiently coarse gage to allow free escape of carbon and other products of combustion, the mesh, however, being sufficiently fine to confine and disperse the flame. This location of the gasket, however, on some engines will be found undesirable on account of the intensity of the heat.

Gasket 1 may also be placed just in advance of the muffler and at the cut-out, or elsewhere in the exhaust.

Employment of the improved gasket effectively confines the combustion in the cylinder, prevents ignition of the fuel supply, and discharge of dangerous gases, and eliminates the possibility of explosions in the muffler. It also prevents ignition of gases about an automobile, as in a garage where the atmosphere may be more or less saturated with hydro-carbon gas. The gage of the wire mesh 2 may vary somewhat, but for best results, and to avoid interference with the influx of fuel, the gage should be as coarse as possible consistent with the function of dispersion of the flame and prevention of penetration of the mesh thereby. The gage of the wire mesh is preferably ascertained for an engine of a given horsepower by testing the mesh with a flame projected against the mesh at a velocity represented by the expansive power of the charge within the engine, and the coarsest gage is employed which will effectively prevent penetration by the flame.

By repeated and thorough tests I have demonstrated that the use of the gasket does not in any way interfere with the starting or running of the engine, but instead improves the operation of the engine probably due to the incident attenuation of particles of liquid fuel in passing the screen 2.

While I have described as my preferred embodiment the construction of the sheet of fibrous material by weaving the same of strands, it should be apparent that the invention also comprehends the embedding of the wire mesh in a body of an appropriately pliable material, as for instance the ordinary commercial sheet of asbestos. The wire mesh may also be applied between two filaments of asbestos or other like appropriate material while in their original plastic condition and subsequently allowed to dry, or the mesh wire may be otherwise embedded in similar substances and the same results substantially obtained.

Of course, the gasket as supplied on the market as an article of manufacture, in the form seen in Fig. 1, is preferably provided with bolt receiving apertures, as indicated in said figure, and said apertures may be located according to the location of the bolts upon the engine to which the gasket is to be applied. The edge contour of the gasket will also likewise naturally vary so as to conform to the respective engine.

The wire mesh or screen 2 which extends across the opening 4 is valuable, in addition to the purposes above set forth, for stiffening and strengthening the gasket as a whole, and particularly for lending support to the edges of the fibrous material about aperture 4.

When used on the exhaust side the screen 2 will not only obviate explosions in the muffler, but will enable the use of a muffler

unaccompanied by a cut-out. It is common experience that a cut-out is desirable as a sort of relief valve in instances of explosions in the muffler to avoid blowing the muffler to pieces, but with the gasket 1 employed in the exhaust the obviation of the possibility of an explosion in the muffler renders the use of a cut-out unnecessary.

The body or gasket 1 may or may not be provided with the filler, but in either event will consist of asbestos or other appropriate compressible substance coöperating with which is the supporting mesh. In some instances filaments of wood pulp between which is disposed the wire mesh may, be substituted in lieu of asbestos, or other like filaments may be employed so long as the requisite qualities for the purposes intended appear in the substance used.

What I claim is:

1. The combination of a fibrous gasket for a port of an internal combustion engine, and a screen embedded in the gasket with the material of the gasket at opposite sides of

the marginal edge portion of the screen and with the screen extending across the opening of the gasket to control said port.

2. The combination of a fibrous gasket for a port of an internal combustion engine, and a screen embedded in the material of the gasket with the material projecting from opposite sides of the marginal edge portion of the screen to seal the latter at opposite sides about said port, said screen extending across the opening of the gasket for controlling said port.

3. The combination of a woven fabric gasket for a port of an internal combustion engine and a screen extending across the opening of the gasket and having the material of the screen interwoven with the material of the fabric beyond the opening.

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

FRANK H. BERG, JR.

Witnesses:

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