

2,810,631

Filed Aug. 24, 1953

Fig. 1 is a cross-sectional view of a mechanical assembly. It features a main body 11 with a central bore 12. A shaft 13 passes through the bore, secured by a nut 14 and a lock washer 15. A piston 16 is positioned within the bore, with a spring 17 and a ball 18. A seal 19 is located at the left end of the assembly. Other labeled components include 20, 21, 23, 25, 31, 41, 43, 45, 47, 49, 51, 53, 56, and 57.

BY *H. Anne Walker*
ATTORNEY

1

2,810,631

FLASH ARRESTER

William A. Kanenbley, Newark, N. J.

Application August 24, 1953, Serial No. 379,714

(Filed under Rule 47(b) and 35 U. S. C. 118)

5 Claims. (Cl. 48—192)

This invention relates to flash arresters and more particularly concerns flash arresters which use dry granular materials in the suppression of flashback in flammable gas distribution systems.

In order to prevent fires and explosions in flammable or explosive gas systems which may result from flashback originating due to spark or other causes, it is customary to insert flash arresters in the conduits supplying a gas, such as acetylene.

At present, there are several flash arresters containing granular materials which are available and have been used. Often this type of flash arrester has a hollow body which contains granular material confined between drilled retaining plates. In such a device, the gas normally flows through the retaining plates and the interstices formed by the particles of the granular material to the point of use. Upon the occurrence of a flashback, the disassociation wave passes backward with explosive force through the supply line to the flash arrester where the flashback is supposed to be arrested and thus prevent further disassociation and consequent explosions.

However, in some instances, these arresters have not been completely satisfactory in suppressing flashback. It is believed that one of the factors affecting the effectiveness of these arresters is the inadequate provision for adverse service conditions, such as vibration and jarring which cause voids in the granular material due to packing. In other instances the present granular-type arresters have not suppressed the flashback, regardless of the effect of service conditions during use.

The two essential features in such flash arresters are suitable flow characteristics and an ability to suppress flashback. It is obvious that these features are interdependent since, for example, the provision of a small pressure drop by use of large particles will mitigate against the ability to suppress flashback due to the large gas passages among particles.

It is the primary object of this invention to provide an improved flash arrester at reasonable cost which has suitable flow characteristics and is effective in stopping flashback in acetylene distribution systems and hence prevents damage to an entire acetylene filling plant or parts thereof.

A further object is the provision of an improved flash arrester which is less apt to have its effectiveness reduced by vibration or jarring while in service which often tends to form voids in granular materials.

Another ancillary object is the provision of a flash arrester which is easily and reliably susceptible of being repaired or reconditioned after suppressing flashback.

The instant invention accomplishes the foregoing objects in the illustrated embodiments by having a compressed wire slug positioned exteriorly of a retaining plate which confines, along with another plate and screens, the granular material. This wire slug serves to aid in the suppression of flashback and to protect the confining plate and screens. In addition, this wire slug is urged inwardly by an element of the flash arrester so that the

2

granular material is preloaded or resiliently compacted and hence vibration or other causes are not as likely to cause voids in the granular material during normal operation. Further, the arresters are suitably constructed so that the impact of flashback is transmitted substantially uniformly to the face of the granular material and hence the possibility of forming voids at the time of flashback is minimized. To this end the flash arresters are constructed so that the retention plate can slide axially, after flashback, against the granular material. Furthermore, the components, the wire slug, the retention plates, the granular material and other elements, are suitably constructed and proportioned in combination so as to provide suitable flow characteristics as well as improved resistance to flashback.

The achievement of the above-mentioned objects and others, along with the advantages and features of the invention, will be more clearly apparent from the following description and the accompanying drawing.

In the drawing:

Figure 1 is a full scale, longitudinal sectional view disclosing the features of a flash arrester which is suitable for use between a supply cylinder and an acetylene manifold.

Figure 2 is a full scale, longitudinal sectional view of another form of a flash arrester which is especially suitable for the large pipelines of an acetylene filling plant.

Referring to Figure 1, it can be seen that reference numeral 11 designates the hollow body of the flash arrester. The right axial bore 12 of the body 11 is threaded and receives the hollow nut 13 whose bore diverges outwardly at the interior end portion thereof. The outer end of the bore of the nut 13 is threaded for the reception of a conduit which passes acetylene to a torch or some other device. It is to be noted that nut 13 has an interior annular edge 15 which bears against part 53 which will be subsequently described. An annular lead gasket 14 is positioned on the annular bottom ledge 56 forming the interior terminus of bore 12. The hollow nut 13 bears against this lead gasket 14 by means of an annular ledge 57 which has an exterior diameter less than that of bore 12 but greater than the diameter of the bore 31 of the body 11. This construction prevents gas leakage and an excess preloading of the granular material via nut 13 and wire slug 53. Further description of this construction will be made hereinafter.

The other, left axial portion of the body 11 also has a threaded bore 16. A nosed conduit 17 is threaded into bore 16. The outwardly-disposed, nosed portion of conduit 17 has a coupling nut 19 surrounding the nosed end and abutting its collar 20. Normally this coupling 19 would thread onto a conduit leading to an acetylene cylinder with the result that acetylene will flow through check valve 21, the other parts of the arrester and out through the bore of nut 13.

Referring to the interiorly-located end of conduit 17, it can be seen that a ball check valve 21 is seated in seat 23 which is formed at the interior end of the bore of conduit 17. The ball check valve 21 is urged into its seat 23 by spring 25 which axially abuts a retention plate 41 of the interior of the flash arrester which will now be described.

In the medium-size middle bore 31 of the flash arrester body 11, a relatively thick, bronze plate 41 is disposed against the ledge 43 which forms the left terminus of bore 31. This plate 41 has twelve, $\frac{1}{16}$ of an inch diameter, drilled holes, is a quarter of an inch thick in order to withstand the impact of the flashback without bending and has a diameter $\frac{5}{8}$ of an inch. To the right from plate 41 but abutting this plate 41, some Monel

3

woven wire screens 45 are disposed. There are three screens which respectively (in a direction away from plate 41) have meshes of 30, 50, and 100. They serve to prevent the granular material 47 from moving through the holes in plate 41. The granular material 47 occupies a cylindrical space formed in part by bore 31 which is $\frac{5}{8}$ of an inch in diameter and $\frac{7}{16}$ of an inch in length. This granular material is number sixty grit silicon carbide which is a commercial grinding compound made by the Carborundum Company. This grit is characterized by the fact that only about 1.4% will pass through a No. 50 standard Tyler screen while about 53% passes through a No. 60 and about 38% passes through a No. 70. Another set of screens which are identical to screens 45 serves to contain the granular material at the right end thereof and abuts another plate 51. The set of screens 49 are, of course, arranged so that the 30 mesh screen abuts plate 51.

Plate 51 which, along with screens 49, serves to confine the granular material 47 at the right end thereof is $\frac{1}{8}$ of an inch thick and has twelve, $\frac{1}{16}$ of an inch diameter, drilled holes. This 51 plate is also made from bronze. The twelve drilled holes and the Monel screens serve to distribute flashback to the entire face area of the granular material 47. To the right of plate 51 and abutting it is a compressed Monel wire slug 53 which serves as a fire screen and as a part of the means which serves to preload the granular material 47. This wire slug 53 is composed of wires which are about 0.0045-0.006 of an inch in diameter having an alloy composition of about 67% nickel and about 30% copper. The weight of slug 53 is about 5.8 grams and its length is about $\frac{1}{4}$ of an inch. With air at 50 p. s. i. g. and flowing at 50 cubic feet an hour through the slug 53, the pressure drop is preferably less than 8 inches of water.

It is to be noted that hollow nut 13 by means of its annular lip or edge 15 urges first the wire slug 53 and then plate 51 inwardly so that the granular material 47 is compacted and resiliently preloaded. As above mentioned, the lead washer 14 is placed on the ledge 56 which is formed at the bottom of bore 12 so that the extent to which hollow nut 13 can be threaded into bore 12 is limited with the result that the granular material 49 cannot be compressed excessively. The exterior annular ledge 57, formed on nut 13, bears against the lead gasket or washer 14. The lead gasket 14 also provides a gas seal.

The above-described, check valve 21 serves to prevent the flow of acetylene from the manifold into a cylinder at lower pressures.

It is to be appreciated that the Figure 1 flash arrester is particularly suited for the suppression of flashback which comes from a torch manifold and moves towards an acetylene cylinder, so that the flashback first hits wire slug 53. It is obvious that wire slug 53 could be duplicated exteriorly of plate 41 with the result that flashback from either direction, as might occur in some installations, would be suppressed by the wire slugs and granular material. In this event the retention plate 51 should be a duplicate of plate 41 in order that it will not bend under the impact of flashback passing first through plate 41. This type of a flash arrester is especially suitable for connections leading from a bank of cylinders. This basic idea of a two-way arrester embodying the invention is incorporated in the large flash arrester shown in Figure 2 which will now be described.

Referring now to Figure 2, it can be seen that the pipeline arrester is similar to the above described arrester for cylinder connections insofar as the granular material, screens, plate and wire slug are concerned. The body 61 has a large, threaded bore 63 in the right end portion and a hollow nut 65 is threaded into bore 63. A $\frac{3}{4}$ of an inch conduit 66 is threaded into the bore 67 of nut 65 and extends outwardly therefrom. It is to be noted

4

that nut 65 has a larger bore 69 interiorly of bore 67 and that a ledge 71 is formed at the juncture of bore 69 and bore 67.

Referring to the other end of the flash arrester, it can be seen that a $\frac{3}{4}$ of an inch conduit 73 is threaded into bore 75 of the flash arrester body 61. It is to be noted, with respect to both conduits 66 and 73, that the interior ends of these conduits are positioned in the body 61 so that part of flow of any flashback towards the interior of the flash arrester will flow over the ends of these conduits into the larger-diameter bores 67 and 75 respectively and then into contact with the outer faces of the annular, inwardly-extending lips 109 and 87 which will be described subsequently.

The flash arrester body 61 has a medium-diameter bore 77 which extends between small bore 75 and large bore 63 in the left and right ends respectively of the body 61. At the junctures of these bores 75, 77 and 63 respectively, ledges 78 and 79 are formed. Medium bore 77 is lined with an aluminum sleeve 81 which is $\frac{1}{16}$ of an inch thick. At the left end of the lined bore 77, it can be seen that a $\frac{1}{8}$ of an inch thick lead gasket 83 contacts ledge 78 and the interior surface of lining 81. The lead gasket 83 has an outside diameter of 1 and $\frac{7}{8}$ of an inch and an inside diameter of 1 and $\frac{5}{8}$ of an inch. Abutting the interior face of gasket 83 is an aluminum cup 85 which has its exterior annular surface contacting the interior surface of lining 81. Aluminum cup 85 has an inwardly extending lip 87 which terminates in an axial opening 89. The interior transverse surface of lip 87 slopes inwardly towards large bore 91 of cup 85. A compressed-Monel-wire, cylindrical slug 93 is positioned in bore 91. This slug is 1 and $\frac{3}{8}$ of an inch in diameter and $\frac{1}{2}$ of an inch long. It serves as a fire screen and as a means for preloading granular material as will be described further hereinafter.

Abutting wire slug 93 is a cylindrical aluminum disc 95. This disk 95 is also slidably contacting the aluminum sleeve 81 at the disc's outer annular surface. It is to be noted that disc 95 does not touch cup 85 due to the intervening wire slug 93. Disc 95 has thirty-six, $\frac{1}{16}$ of an inch diameter holes, a 1 and $\frac{7}{8}$ of an inch diameter and a thickness of $\frac{5}{8}$ of an inch. Abutting disc 95 is a set of screens 97 which is a duplicate of the previously described set 45 of screens except for diameter. To the right of screens 97 is a 1 inch length of the previously described granular material 47. This material is designated by reference numeral 99. To the right of screens 101 which are duplicates of screens 97 except for being in reverse order is another aluminum disc 103 which is constructed exactly as is disc 95. Bearing against the outward central face of disc 103 is another wire slug 105 which is a duplicate of wire slug 93. This wire slug 105 is encased by another aluminum cup 107 which corresponds to the above-described cup 85. It is to be noted that the inwardly extending lip 109 of cup 107 terminates in an opening 111 which has a smaller diameter than the interior diameter of conduit 66. This relation also exists between the interior diameter of conduit 73 and opening 89 of cup 85 at the other end of the flash arrester. It is also apparent that outwardly of both openings 111 and 89 there are cylindrical spaces which have diameters greater than the respective bores of conduits 66 and 73, as above-mentioned.

A lead gasket 115 having the same inside diameter as lining 81 and an outside diameter which is somewhat less than the diameter of bore 63 is positioned between ledge 79 and the interior annular face of nut 65. By this construction including lead gasket 115, it can be seen that the interior face of the outer transverse annular portion of cup 109 does not bear directly against plate 103 as evidenced by annular space 117. As above-mentioned, a similar arrangement exists between plate 95 and cup 85 at the other end of bore 77 of the flash arrester, as evidenced by annular space 119. With the foregoing ar-

rangement it is apparent that an interiorly directed, longitudinal forcing by cups 85 and 107 is transmitted respectively through slugs 93 and 105 to plates 95 and 103 so that the granular material 99 is preloaded in a manner similar to that in the Figure 1 flash arrester.

The slugs 93 and 105 are also made of pressed Monel wires having the same composition and diameter as slug 53. The weight of these larger slugs is about 47-53 grams. When tested for pressure drop, these wire slugs 93 and 105 have a pressure drop of less than 5 p. s. i. g. when air at 100 p. s. i. g. is flowing through the slugs at a rate of 2500 cubic feet an hour.

It is to be understood that, during normal operation with both arresters prior to flashback, acetylene flows through the wire slugs, retaining plates, the screens, and the interstices between the particles of granular material without an undue pressure drop and so in a manner which is satisfactory for the respective uses of the flash arresters.

In operation, the two above-described flash arresters basically function in a similar manner to suppress flashback or the disassociation of acetylene to carbon and hydrogen. Thus, with reference to the Figure 1 embodiment and assuming a disassociation wave is moving inwardly through the bore of nut 13 it can be visualized that the very rapidly moving flashback wave first impinges with great force against the face of the wire slug 53 and so urges the wire slug 53 against the retaining plate 51 which, in turn, slides against the granular material so that the granular material is compacted to the extent that it becomes gas tight in the usual case since some of the granular material is pulverized. It is to be noted that the axial means or plate 41 which restrains the granular material is of sufficient strength to withstand the resulting force of this impact so that it does not bend with the dangerous consequence of the granular material being rearranged. This rearrangement is believed to be a principal factor in flashback passing through granular-type arresters and so causing a continuation of disassociation.

Immediately after the above-described impact, the flashback or hot disassociation flow passes into the adjacent interstices formed by the fine wires of the slug 53 and it is believed that most of the heat of the flow is extracted by the wire slug 53 which is made of the above-described wires, having a thermal conductivity of about 130 B. t. u. sq. ft./hr./° F./inch of thickness and a specific heat of about 0.127 B. t. u./#./° F. so that the plate 51 is protected. Thereafter, the cooled flashback passes through the holes in plate 51 and the screens 49 and is thus uniformly distributed into the adjacent granular material, outwardly from the pulverized part, where the granular material spreads out the flashback through the small interstices among the particles with the result that the flashback intimately contacts the granular material and is thus further cooled. Assuming that the granular material was not made gas tight due to the impact, it is believed that the resulting channeling in the granular material retards the rate of flow and snuffs out any flame so that, with the aforementioned cooling, any flashback passing through the granular material, after having heat extracted by the wire slug, is rendered incapable of initiating disassociation. This cooling and dividing action provides a safety factor for the possibility of flashback gases passing through the granular material under some circumstances. Thus, if the granular material is not made substantially gas tight by this impact and gases pass there-through, these gases will not be capable of propagating flashback of the acetylene which is in the conduits removed from those through which the flashback has passed since the granular material will have completed the deactivation of the flashback begun by the wire slug 53.

Referring to functioning of the wire slug 53, it is apparent that, since the greater and hottest part of the flashback heat is absorbed by the multiplicity of wires forming the wire slug, the plate 51 and the set of wire screens

49 are protected from damage due to heat or other adverse effects of the flashback. This extraction of heat by the wire slug was visually obvious since examination of wire slugs used in testing the flash arresters showed that they were sometimes melted or dished as much as 50%.

It is also possible that part of the heat absorbed by the wire slug 53 is due to residual acetylene which may have been pushed ahead of the disassociation wave and then trapped in the granular material outwardly from the pulverized part. This residual acetylene would tend to be disassociated, with a large release of heat, by the heated wire slug since the wires of this slug would be likely to have been heated to the temperature which will promote disassociation.

Another significant feature is the means for resiliently pre-loading the granular material by structure including the wire slug 53. In this manner the vibrations and jarring which occur in acetylene filling plants due to compression vibration, connecting and disconnecting cylinders and other causes do not as readily cause packing of the granular material and the consequent voids which seriously impair resistance to flashback. This resilient preloading of the granular material is provided by means of the wire slug 53 as urged inwardly by the annular edge 15 of hollow nut 13 against the plate 51 and the granular material 47. With this arrangement the resilient wire slug 53 acts somewhat like a spring and functions to keep the granular material preloaded by intercepting vibrations which might normally tend to pack the granular material and cause voids.

From the foregoing it is apparent that a flash arrester which can be reconditioned, after flashback, easily by simply replacing the wire slug 53, the screens and the granular material 47 has been provided. By intercepting initially the flashback as above mentioned, the wire slug serves as a protective barrier to prevent heat damage to plate 51 so that this simple reconditioning can be made. Plate 41 is of sufficient strength to withstand the force transmitted to it due to the impact of flashback and hence does not require replacement in the usual case because of bending or distortion.

The operation of the Figure 2 embodiment is basically similar to the Figure 1 embodiment. Of course, the Figure 2 arrester is constructed to accommodate large flows of the order of 3000 C. F. M. and to suppress flashback entering this large arrester from either direction since it is to be placed in the large pipelines of an acetylene filling plant. Unlike the service conditions confronted with the Figure 1 arrester, the service conditions encountered in acetylene pipelines require that the flash arresters used therein be capable of stopping flashback from either direction. The fact that larger flows at pressures of about 325 p. s. i. g. are handled also caused another modification, besides increasing the size, in the basic structure comprising a wire slug, a slidable plate, screens and granular material. Thus, the danger of either of the retaining plates bending when subject to the impact of flashback in large flow conduits on immediately adjacent axial structure is avoided by intercepting part of the flashback wave before it impinges on the wire slug. This is accomplished by the inwardly extending lips 109 and 87 of the aluminum cups 85 and 107. This accounts for the only significant operational difference between the two arresters.

Assuming that a high-speed, large-flow flashback wave is moving in conduit 66 towards the large flash arrester, it can be visualized that the flashback flows over the interior edge of conduit 66 into bore 67. The outer peripheral flow in bore 67 will impinge on the annular, transverse face of lip 109 having a diameter less than bore 67 and so transmit a force to the peripheral portion of retaining plate 103 through the body portion of aluminum cup 107 and the peripheral portion

7

of wire slug 105. The non-intercepted flashback wave, of course, will flow through axial opening 111 of aluminum cup 107 and act on the face of the axial portion of wire slug 105 which face, it is to be noted, is larger in diameter than opening 111 since the interior face of lip 109 diverges outwardly in an inwardly direction. Of course, this force will also force the removed structure including plate 95, wire slug 93, and cup 85 into a more rigid relation so that an opposing force for the impact of the flashback is provided almost instantly. The result of this construction and action is that any tendency to bend the plate 103 adjacent the axis of the plate in manner which would permit rearrangement of the granular material with danger of the flashback passing through the granular material without deactivation is avoided. It is believed apparent that the impact of the flashback is transmitted more or less uniformly to the face of the granular material by plate 103 and that, as this plate 103 slides inwardly against the granular material, part of the granular material will be pulverized and the granular material will be compacted or compressed into a gas-tight condition without any tendency to form voids.

The extraction of heat from the flashback by the wire slug 105 occurs in a manner which is similar to the action described in relation to the Figure 1 flash arrester. It is to be appreciated that the likelihood of any flashback gases passing through the Figure 2 arrester is more remote since this arrester is normally used with high pressure acetylene in relatively long pipelines which, as indicated by tests, assures in most cases that the impact of flashback therefrom will pulverize and compact the granular material into a gas-tight condition.

The manner of preloading the granular material 99 in the Figure 2 arrester is functionally similar to the Figure 1 means. The inclusion of the aluminum cup 107 requires that structure be provided which does not permit the axially-tightening means (hollow nut 65) to transmit a force through rigid structure to the granular material. The provision of this structure through the arrangement of plate 103, wire slug 105, lead gasket 115, and cup 107 is evidenced by annular space 117. With this arrangement, it is apparent that the resiliency possessed by the wire slug 105 is effective in preloading the granular material 99 when the bottom of the hollow nut 65 bears against lead gasket 115 and transmits a force through aluminum cup 107 to the wire slug 105.

It is to be understood that, at the time of assembly of both arresters, the quantity of granular material exceeds that quantity which would merely occupy the space for granular material in the assembled arrester with the result that, when fully assembled, the wire slug will effect a preloading of the granular material. In this manner the vibration, due to the compressor or similar causes, is not as likely to effect a packing of the granular material with the consequent creation of voids which tend to permit flashback to pass through the flash arrester.

It is considered significant that the impact of the disassociation wave drives parts of the arresters toward the center of the arrester to such an extent that substantial gas tightness is effected by pulverizing and compacting the granular material under the service conditions usually encountered. At lower pressures of acetylene, probably below 200 p. s. i. g., as might be encountered in the use of the small Figure 1 arrester, this arrester has proved its effectiveness by preventing the disassociation from passing therethrough although the shock of the impact is not always sufficient to pack the grit or granular material gas tight.

It is to be noted that the wire slugs of both embodiments serve as fire screens or barriers as well as providing a means for preloading the granular material. As men-

8

tioned, this preloading results from filling the arresters with granular material at the time of assembly to the extent that the hollow nuts 13 or 65 must compact the granular material, through the somewhat resilient slugs 53 or 105, in order that the nuts 13 or 65 can bear against the respective lead gaskets 14 or 115. These lead gaskets serve to prevent an excessive preload on the granular material.

As above suggested in relation to the small Figure 1 arrester, it is to be understood that, for small flows at high pressures (about 325 p. s. i. g.) as encountered in the conduits between a filling manifold and a bank of cylinders the flash arrester can be adapted for such use by duplicating wire slug 53 at the other end of the arrester and by replacing plate 51 with one the size of plate 41. Of course, the check valve would be rearranged so that it closed in the opposite direction since a conduit corresponding to 17 would be connected to a cylinder where flashback would be more likely to occur in relation to a filling manifold which would pass acetylene into the bore of nut 13.

In summary, it is to be noted that the instant invention provides a combination of means which stops flashback by extracting heat and usually stopping the flow by the coaction of a wire slug and granular material. Structural arrangements and proportioning of elements in relation to the force of the flashback are provided for transmitting the impact of the flashback uniformly to the granular material so that disarrangement does not occur but rather that a uniform tight packing of the granular material results. A further improvement resides in the means for preventing the packing of granular material and hence the creation of voids during normal service so that the effectiveness of the flash arrester is not impaired.

From the foregoing it is believed apparent that an improved flash arrester for a reasonable cost has been provided which combines features to give adequate flow and reliable suppression of flashback. Further, the arrester is easily reconditioned and less apt to have its effectiveness reduced by vibration or jarring while in normal service.

It is to be understood that this invention is not limited to the specific illustrative embodiments and details herein disclosed but includes such modifications and substitutions as fall within the scope of the appended claims.

I claim:

1. A flash arrester for an acetylene distribution system comprised of a body having an acetylene flow path, a plate positioned in said path and intercepting the entire path, said plate being slidable in said path and having passages therethrough, perforate means in said flow path spaced from said plate for confining granular material between it and the inward side of said plate, finely-divided granular material between said plate and said means, a wire slug bearing against the other side of said plate and so disposed as to normally exert a resilient pressure force upon said plate, said wire slug covering the openings of said passages in said plate, adjustable means contacting said wire slug and arranged to urge said wire slug against said plate which in turn serves to compact said granular material between said plate and said first mentioned means.

2. A flash arrester for acetylene distribution system comprised of a body having an acetylene flow path, a plate positioned in said path and intercepting the entire path, said plate being movable in said path and having passages therethrough, perforate means in said flow path inwardly of said plate confining finely-divided granular material between it and the inward side of said plate, a pressed wire slug of resilient structure bearing against the other side of said plate and covering the openings of said passages in said plate, and said wire slug being so disposed as to normally exert its resiliency as a pressure force against said plate, adjustable means contacting said wire slug and arranged to urge said wire slug against said plate

9

which in turn serves to compact said granular material, and said pressed wire slug being made from a multiplicity of wires having small diameters and good heat absorbing characteristics.

3. A flash arrester according to claim 2 in which the adjustable means contacting said wire slug includes an annular member having a radially inwardly extending structure, said structure extending into said flow path and being so constructed as to transmit force derived from an inwardly moving disassociation wave to the periphery of said slidable plate.

4. A flash arrester comprising a body having a chamber therein, said body having an inlet passage extending to said chamber, a first perforate plate and screen assembly extending across said chamber near said inlet passage, a second perforate plate and screen assembly spaced from said first assembly and extending across said chamber, a quantity of finely-divided silicon carbide in said chamber between said assemblies, both of said assemblies having the plates thereof movable inwardly in said chamber, a wire mass abutting said second perforated plate and covering the perforations of said second plate, said mass being resilient and particularly disposed so as to exert its resiliency as a pressure force on said second plate.

5. A flash arrester comprised of a smooth walled channel, a quantity of finely-divided silicon carbide in said channel, said carbide being compacted in said channel

10

by means including a first perforated plate, a second perforated plate being slidably positioned in said channel and extending completely across said channel, means retaining said slidably positioned plate in said channel and having a gas passage which has a substantially smaller cross sectional area than said channel, said means including a wire slug bearing resiliently against said second plate and having a cross sectional area greater than said gas passage, means urging said wire slug against said second plate such that the resiliency of said slug acts as a pressure force against said second plate causing the finely divided silicon carbide confined between said first and second plates to be resiliently compacted.

References Cited in the file of this patent

UNITED STATES PATENTS

1,039,006	Ziller	Sept. 17, 1912
1,266,665	Davis	May 21, 1918
1,303,123	Smith	May 6, 1919
1,407,610	Westlund	Feb. 21, 1922
2,391,592	Pierson	Dec. 25, 1945
2,482,457	Boedecker	Sept. 20, 1949

FOREIGN PATENTS

744,473	France	Jan. 26, 1937
590,803	Germany	Jan. 11, 1934