

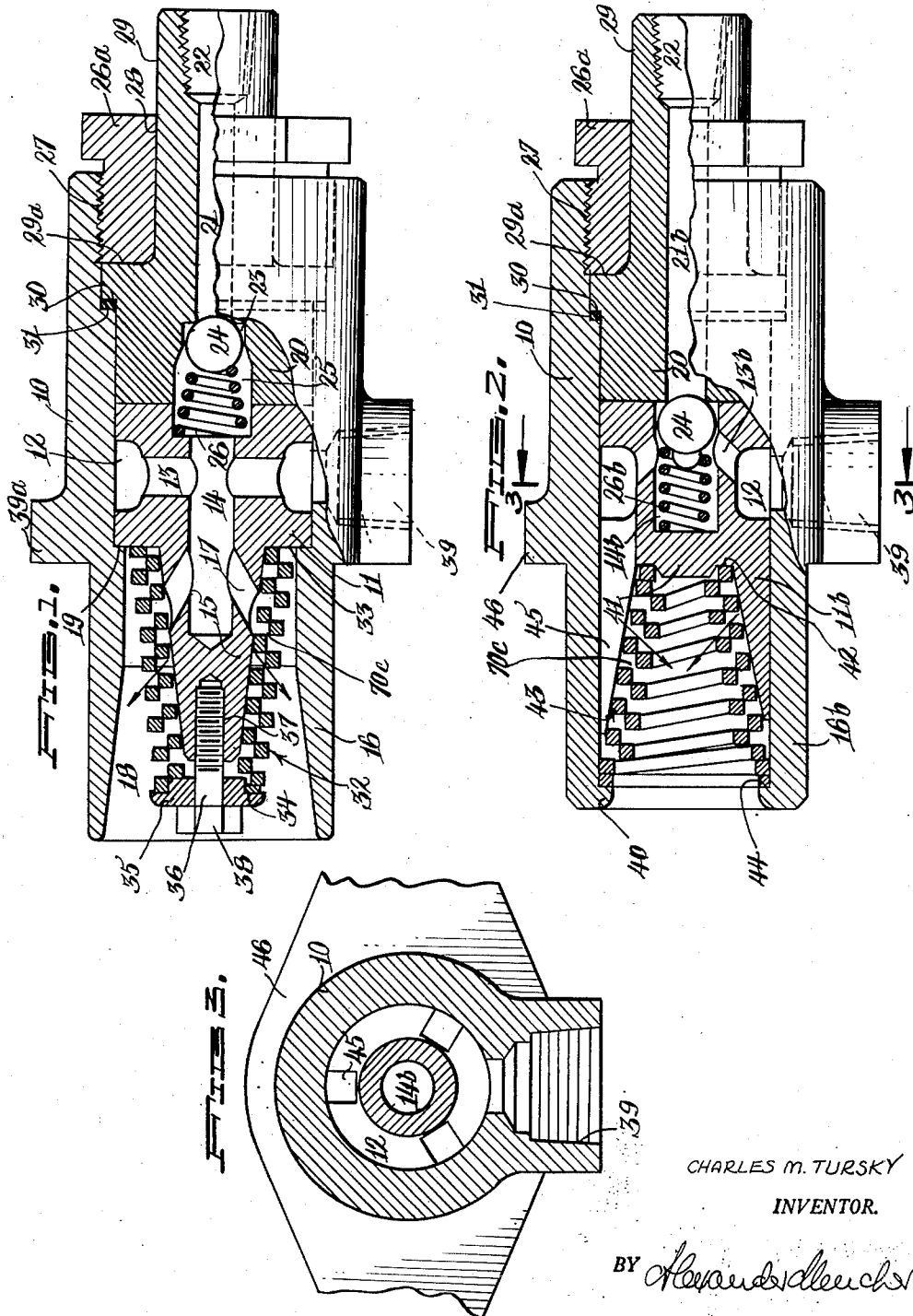
Jan. 4, 1949.

C. M. TURSKY
ADJUSTABLE STRAINER

2,458,118

Filed Feb. 8, 1945

3 Sheets-Sheet 1



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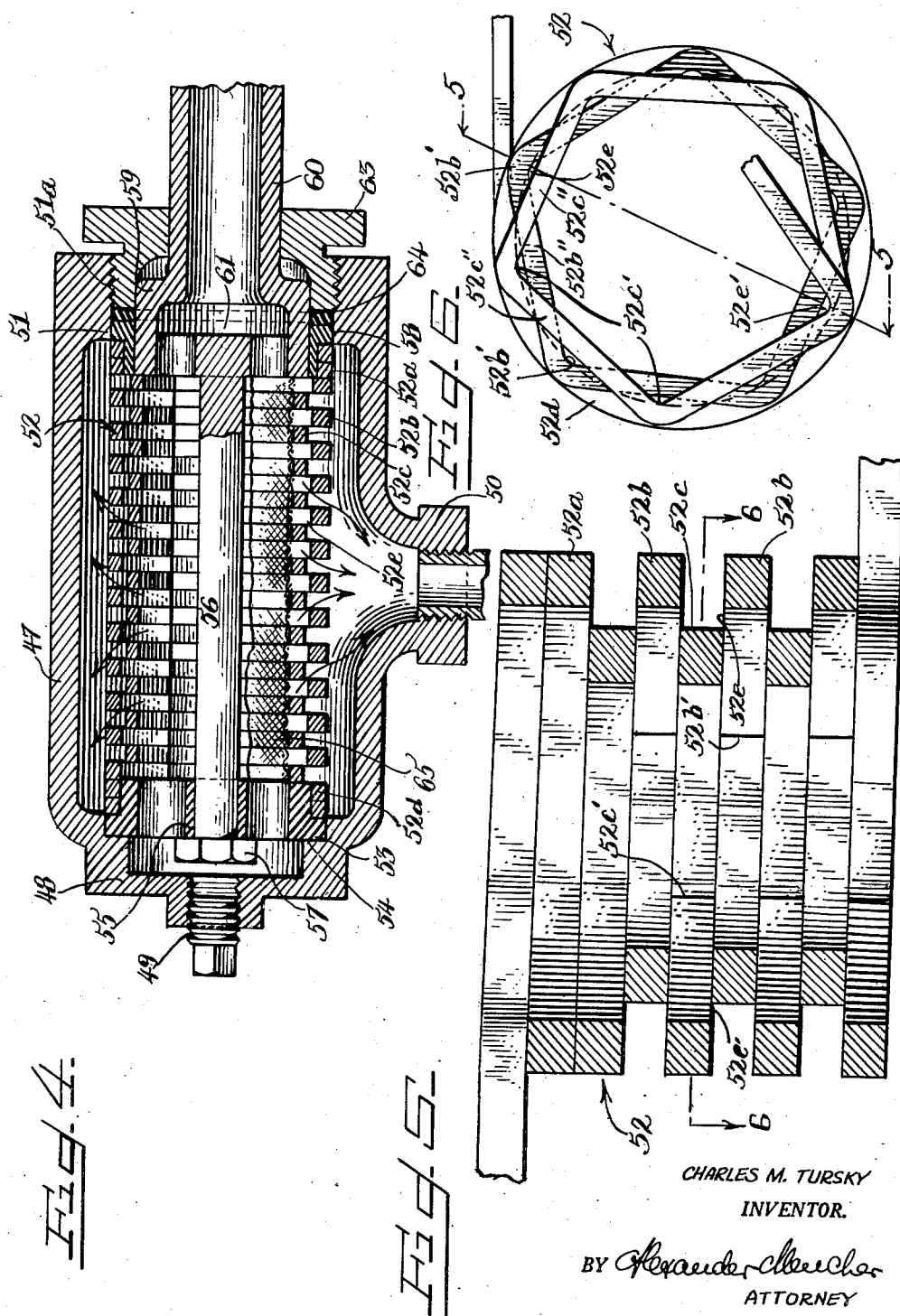
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3 Sheets-Sheet 2



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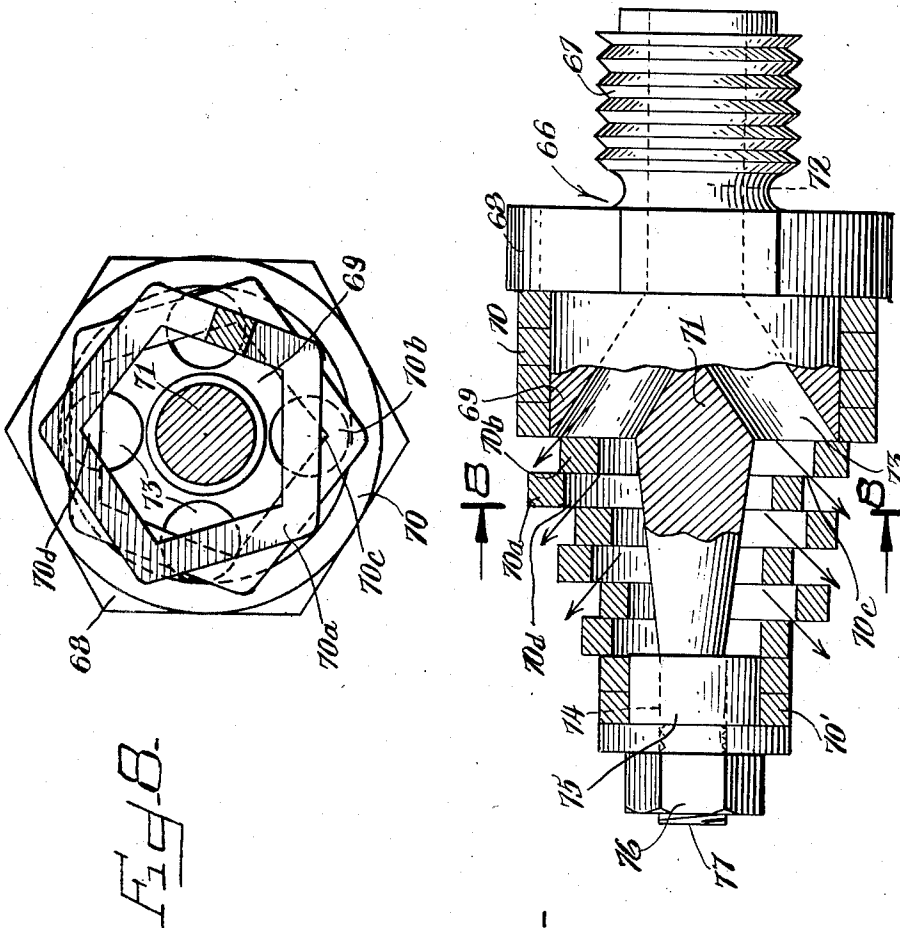
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3 Sheets-Sheet 3



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ADJUSTABLE STRAINER

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Application February 8, 1945, Serial No. 576,877

3 Claims. (Cl. 210-169)

1

This invention relates generally to strainers and/or vaporizers utilizable in high pressure fuel or fluid nozzles.

The main object of the invention resides in the provision of such nozzles incorporating a torsion coil having contacting polygonal walls, vents being provided between the straight arms of the walls of one convolution and the bends of the straight arms of the adjacent convolution, the said coil being adjustable for controlling the size of the vents therein.

In the practice of the invention, a predetermined amount of torsion of the coil is effected for a desired size of the coil vents, the coil in such condition thereafter being locked by compression between mounting members. In this locked position the coil becomes an effective fixed cylinder or cone wherein the arms of all the convolutions except for the triangular corners between the bends and the straight portions of adjacent convolutions are in contact thereby preventing vibration of adjacent convolutions when the coil is subject to uniform or variable pressure. In this manner rigidity and absence of vibration in the coil is at all times maintained.

Another object of the invention is to provide nozzles and strainers wherein the size of the vents is controlled by torsional adjustment of a polygonal coil and wherein any adjustment to required size of the vents remains constant.

A further object of the invention is to provide nozzles and strainers of the above description wherein the torsionally settable coil therein may be of resilient or non-resilient material, such as silver, Monel metal, stainless steel or phosphor bronze.

These objects and other incidental ends and advantages of the invention will hereinafter appear in the progress of the disclosure and as pointed out in the appended claims.

Accompanying this specification are drawings showing preferred forms of the invention wherein corresponding characters designate corresponding parts throughout the several views and wherein:

Figure 1 is a longitudinal sectional view partly in elevation of a high pressure spray jet including feeding and mixing chambers and torsionally settable coil serving as a vaporizer therefor.

Figure 2 is a longitudinal sectional view partly in elevation of a similar high pressure spray jet of slightly different construction.

Figure 3 is a sectional view of Figure 2 along the plane 3-3 thereof.

Figure 4 is a longitudinal sectional view of a

2

liquid strainer incorporating a torsionally settable coil.

Figure 5 is a longitudinal sectional view of the polygonal coil in Figure 4 through plane 5-5 of Figure 6 and is substantially cylindrical in shape.

Figure 6 is a sectional view of the coil shown in Figure 5 along the plane 6-6 thereof.

Figure 7 is a longitudinal sectional view of a low pressure spray nozzle utilizing a substantially conical coil wherein vents are formed between the bends and straight portions of contacting arms of adjacent convolutions, said nozzle being applicable to a garden hose.

Figure 8 is a sectional view of Figure 7 along the plane 8-8 thereof.

A preferred structure shown in Figure 1 depicts a high pressure spray jet having a feeder, a mixing chamber and a vaporizer utilizing the torsionally settable and locked coil hereinafter to be described. Thus, 10 represents an outer casing within which is mixing chamber body 11 having a circumferential groove 12 leading by radial channels 13 into an axial bore 14. A reduced and tapered axial forward extension 15 of body 11 is spaced from the inner outwardly flared walls of the forward end 16 of casing 10 and within which bore 14 terminates inwardly of the front end. A plurality of diagonally disposed openings 17 communicating between the bore 14 and the forward interior 18 of casing 10 is provided in extension 15.

The mixing chamber body 11 at the outer end is held adjacent shoulder 19 formed by a diametric reduction in the chamber of casing 10 while the inner end of said body 11 is fixed in place by a compression member 20 having a projecting and central feeding bore 21 communicating at one end with an internally threaded enlarged bore 22 for engagement of a fuel or gas supply terminal. The compression member 20 at the inner end is provided with an enlarged bore 23 for receipt of a spring urged ball check 24 adapted to close the inner end of the feeding or central bore 21. Between abutting sides of chamber body 11 and member 20 is a bore 25 communicating with and larger in diameter than bores 14 and 23, the outer end of bore 25 providing the seating for spring 26 urged against ball 24.

A threaded plug 26a engages the internally threaded rear end of a casing 10 as at 27 and has a bore 28 slidably mounted on a diametrically reduced portion 29 of compression member 20, said portion carrying bores 21 and 22. The inner end of plug 26a abuts the shoulder 29a formed in the compression member 20. A seal ring 31 is

3

provided between the complementary shoulders of casing 10 and a shoulder 30 in compression member 20 for the usual reasons.

Plug 26a forces the mixing chamber 11 against shoulder 19 by engaging the compression member 20. The parts described are easily disassembled by removing plug 26a whereupon body 20 and body 11 may be withdrawn from casing 10.

Associated with and supported by the tapered member 15 of mixing chamber body 11 is a conical coil generally designated by numeral 32 and serves to provide adjustable vents for vaporization of a combustible mixture. Coil 32 has convolutions which are polygonal in shape the straight arms of one convolution thereof going across the bends of the adjacent convolution thereby forming triangular interstices between contacting adjacent convolutions and affording vents such as 70c shown in Figures 1 and 8. Coil 32 is engaged at the larger diametric end against a concentric portion of front wall 33 of mixing chamber body 11 and at the smaller diametric end against a movable and adjustable seat 34 in a body 35. Body 35 is adjustably secured to the forward head portion of tapered extension 15 by means of a screw 36 penetrating body 35 and engaging an internally threaded axial bore section 37 in extension 15. Coil 32 which at all times has its adjacent convolutions in contact is first torsionally adjusted either inside or outside of casing 10 to effectuate the desired size of vents 70c and thereafter locked in position by tightening screw 36 at the polygonally-shaped head portion 38. If the coil 32 is locked after torsional adjustment within casing 10, access to head 38 is made through the interior 18 of forward end 16 of the casing 10. The casing is also provided with another inlet or outlet 39 communicating with groove 12.

Coil 32 will hereinafter be more fully described in conjunction with Figures 7 and 8. This coil as has been stated before may be made of any resilient or non-resilient material and once torsionally set is locked to maintain uniform size of its adjusted vents 70c. When used over prolonged periods, the coil may be replaced by another. The resiliency of the coil has no bearing on the function thereof since the convolutions at all times are in contact with each other and the vent size depends upon torsional adjustment only.

In Figure 2 is shown another high pressure spray jet substantially similar to that shown in Figure 1 except that the forward end of casing 10 is provided with a bead 40 having an inner shoulder 44 to secure the larger end of a coil 43 similar to coil 32. Moreover, the mixing chamber 11b differs from chamber 11 in that the forward wall 41 provides a shoulder 42 for the reception of the smaller end of coil 43. In addition, the coil 43 has an external support in the form of webs 45 proceeding outwardly from mixing chamber 11b. The mixture of fuel and air or of fuel and other gases proceeds from the outside of coil 43. A spring 26b urging ball 24 is mounted entirely within a central bore 14b of the mixing chamber 11b, the said ball being urged against a uniform axial feeding bore 21b in compression body 20. The fuel fluid or gas proceeds through diagonally disposed openings 13b in mixing chamber 11b and through the peripheral groove 12 to the external portion of coil 43 between the webs 45. Coil 43 is similarly adjusted for torsion and locked between bead

4

44 and shoulder 42 as is coil 32 above described in connection with Figure 1.

In Figure 4 is shown a liquid or fuel strainer having a casing 47 with a closed front end wall 48 provided with a drainage plug 49. The casing 47 is provided with an inlet or outlet port 50 while the inner end of casing 47 is reduced at 51 and partly threaded as at 51a for the introduction of a filter or valve in the form of a polygonal and cylindrically arranged coil generally designated by numeral 52. Coil 52 is mounted within the casing 47 at one end as against a seat 53 engaging a shoulder 54 adjacent the front wall 48. Said seat 54 is shown having a central bore 55 in sliding engagement with a shaft 56, the latter having an end nut 57 on the front end disposed against the outer face of seat 53. Coil 52 at the opposite end is mounted within a seat 58 slidable between the reduced portion 51 and an expanded portion 59 of a tubular feeding or outlet member 60 penetrating the open end of casing 47. Shaft 56 at the inner end has a circular flange 61 slideable on the inner walls of expanded portion 59, the said flange 61 being suitably orificed to admit the liquid from or to member 60, said orifices not being shown in the drawings. The seat 58 is adjustably secured and forced against seat 53 through the medium of coil 52 by nut 63 which engages the threaded portion 51a of casing 47 and which is penetrated by member 60. A gasket 64 between the nut 63, members 59, 51, and seat 58 is provided for the usual reasons. Coil 52 may be provided internally with a gauze or filter 65 therewithin.

It is to be noted that coil 52 may be made of any resilient or non-resilient material similar to coils 32 and 43 except that the coil 52 is substantially cylindrical along the axis. The end convolutions 52a and 52d of coil 52 are preferably circular to engage the seats 58 and 53 while the intermediate and adjacent convolutions 52b and 52c are polygonal in shape. The end convolutions 52a and 52d although designated as being circular may however be polygonal, said polygonal convolutions lying in parallelism and engaging similarly polygonally shaped seats such as 53 and 58 for purposes of preventing rotation of coil 52 between the end mounting seats therefor when twisting the coil for adjusting torsion. Similarly in connection with coils 32 and 43, the end supports therefore may also be polygonal in shape to conform to the end convolutions of said coils for purposes of preventing rotation during adjustment of torsion. Any other method to prevent rotation of the coils 32, 43 and 52 during adjustment of torsion may be used such as anchorage of the free ends of the coils on the supports therefor.

Any convolution of coil 52 designated by numeral 52c has straight arms as indicated by numeral 52c' in Figure 6 and has bends indicated by numeral 52c'. The adjoining and contacting convolution indicated by numeral 52b has bends indicated by numeral 52b' and straight arm portions indicated by numeral 52b''. A plurality of opposite vents such as 52e and 52e' are formed between straight arms 52c'' and bends 52b'. These vents are controlled in size by torsional adjustment of coil 52.

In Figures 7 and 8 is depicted a spray nozzle having a substantially conical coil of polygonal shape and which may be used for a garden hose if desired. Thus, the nozzle generally designated by numeral 66 is provided with an end threaded plug 67 which is adapted to be affixed to a hose

5

or pipe carrying fluid, said plug 67 being affixed to a polygon shaped shoulder 68 of a nozzle body 69, the periphery of said body 69 carrying circular end convolutions 70 of a substantially conical coil for anchorage thereof. The coil at the opposite and smaller end has circular convolutions 70' and intermediate the end circular convolutions 70 and 70' are adjoining polygonal convolutions 70a and 70b. The nozzle body 69 is provided with a forward tapering extension 71, the outer end thereof being cylindrical in form as indicated by numeral 74, the latter having a flanged plug 75 mounted thereon. The periphery of plug 74 serves as the mounting means for the circular convolutions 70' of the coil. A continuation of cylindrical portion 74 of extension 71 is threaded as indicated by numeral 77, said threaded portion being engaged by an end nut 76 which engages the flange of plug 75. The nozzle body 69 is provided with flared bores 73 in communication with the central axial bore of threaded plug 67 and shoulder 68. Because the adjacent contacting intermediate convolutions 70a and 70b of the coil have straight arm portions and bends crossing each other, vents such as 70c and 70d are formed therebetween whereby fluid issuing from bores 73 is forced to pass through said vents disposed exteriorly of the outer surface of extension 71.

It is distinctly understood that the coil above described may be varied in the use of material, means of mounting the ends thereof to permit adjustment of torsion, locking the adjusted positions and in the use of various sizes of the coils. Furthermore, it is understood that minor changes and variations in the location, integration and relative position of the parts of the invention herein may all be resorted to without departing from the spirit of the invention and the scope of the appended claims.

I claim:

1. In a filtering apparatus, a body provided with a fuel chamber, a torsionally settable coil communicating with said chamber and supported on said body, means to releasably lock said coil in any torsionally preset position against said body, the said coil having adjacent polygonal convolutions at all times contacting each other and having openings between adjacent convolutions which are controlled in size by the torsional presetting of the coil, the said openings being formed between the straight arm portions of each convolution intersecting two adjacent straight arm portions of overlying and underlying convolutions in the region spaced inwardly of the bend and crossing bends formed by the straight arm portions of the adjacent convolutions, said openings serving as the filtering means for the feeding liquid, an inlet and an outlet in the body

6

for the flow of liquid through the said coil, the flow of liquid being between the sides of the coil and through the filtering openings.

2. In a filtering apparatus, a casing having an inlet and outlet, a torsionally settable coil mounted within the casing, means to releasably lock said coil in any torsionally preset position against said casing, the said coil having adjacent polygonal convolutions at all times contacting each other and having openings between adjacent convolutions which are controlled in size by the torsional presetting of the coil, the said openings being formed between the straight arm portions of each convolution intersecting two adjacent straight arm portions of overlying and underlying convolutions in the region spaced inwardly of the bend and crossing bends formed by the straight arm portions of the adjacent convolutions, said openings serving as filtering means between said inlet and outlet depending on the sizes of said openings, the fuel flow passing through the said coil between the inlet and outlet, the flow of liquid being between the sides of the coil and through the filtering openings thereof.

3. In filtering apparatus having mounting and locking means for a straining and vaporizing element, a torsionally settable straining coil forming a plurality of adjustably controlled openings for filtering in proportion to the torsion exercised, said coil having a plurality of adjacent and at all times contacting polygonal convolutions, the straight arm portions of each convolution intersecting two adjacent straight arm portions of overlying and underlying convolutions in the region spaced inwardly of the bend and crossing bends formed by the straight arm portions of the adjacent convolutions thereby affording variable openings therebetween controlled by the presetting of the coil, said coil being removably secured to said mounting means and being adapted to be releasably locked thereagainst in any torsionally preset position, an inlet and an outlet in the body for the flow of fuel through the said coil.

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