

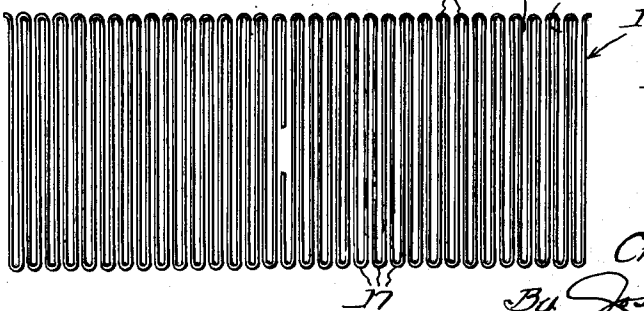
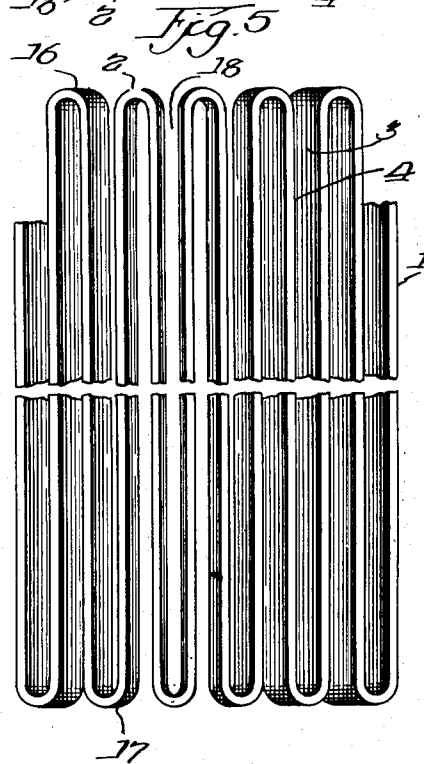
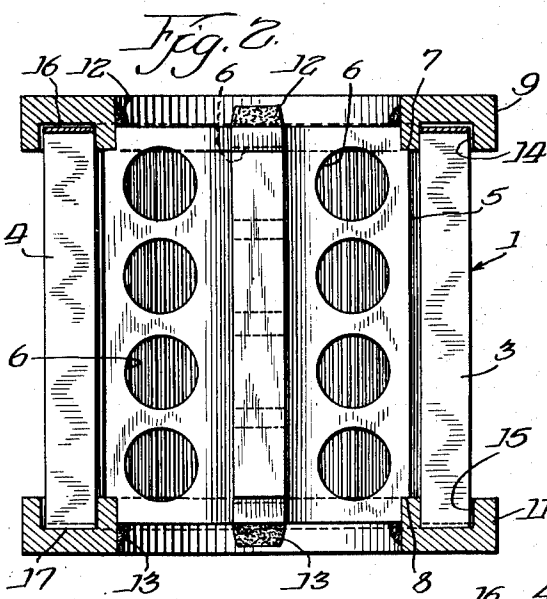
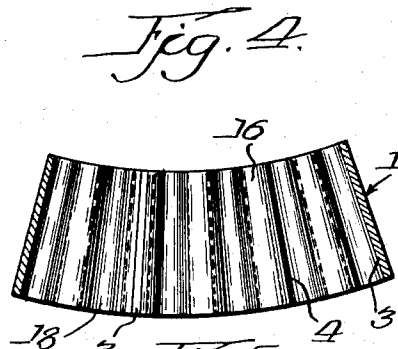
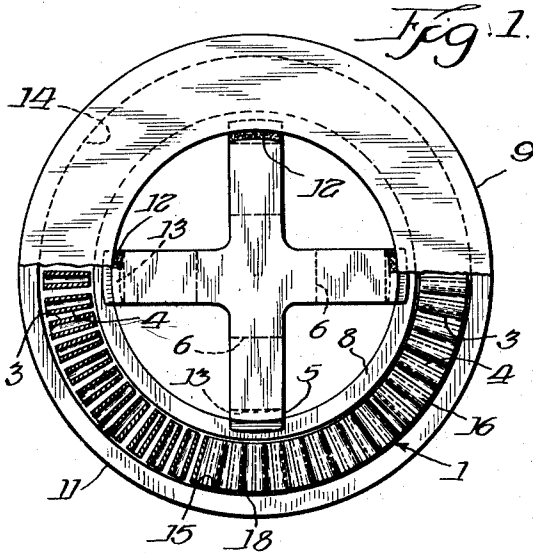
April 15, 1952

C. A. GIAUQUE

2,593,293

STRAINER

Filed March 4, 1948



Inventor:
Charles A. Giauque.
By Joseph O. Lange, Atty.

UNITED STATES PATENT OFFICE

2,593,293

STRAINER

Charles A. Giauque, Berwyn, Ill., assignor to
Crane Co., Chicago, Ill., a corporation of Illi-
nois

Application March 4, 1948, Serial No. 12,937

4 Claims. (Cl. 210-169)

1

This invention broadly relates to strainers and more particularly it is concerned with the novel construction of a strainer in which the straining element therefor is made of folded thin flat strips as hereinafter described in more detail after which it is wrapped around into a cylindrical shape with the adjoining ends welded or otherwise connected together.

Heretofore, one of the principal objections leveled against available constructions has been the requirement for making strainers largely in cast or welded material and therefore not only were the constructions relatively expensive but frequently were furnished inaccurate dimensionally with respect to the size and proportions of the apertures through which the liquid passes in the course of being strained.

Thus it is a further important object to provide a strainer construction in which the strainer is preferably fabricated entirely from parts capable of quick and convenient assembly and also possessing sufficient flexibility to form several sizes without substantial modification.

A further important object is to provide for a strainer formed by folding thin flat strips forming scallops or a series of undulations and capable of providing for Venturi outlets therebetween to facilitate the easy flow of fluid through the strainer thereby formed.

Other objects and advantages will become more readily apparent upon proceeding with the following specification read in light of the accompanying drawings in which

Fig. 1 is a fragmentary sectional view of the strainer embodying my invention.

Fig. 2 is a front fragmentary section taken near the center of Fig. 1 across several planes.

Fig. 3 is a side view of the folded thin flat strips constituting the strainer portion before being bent or rolled around to form the assembled strainer.

Fig. 4 is a magnified fragmentary plan view of the construction shown in Fig. 3.

Fig. 5 is a fragmentary front exterior view of the folded thin strips taken on a rolled around section shown in Fig. 4.

Similar reference numerals refer to similar parts throughout the several views.

Referring at the outset to Fig. 3, a preferably continuous thin flat strip of metal or other material is first cut to the desired length and then severally folded and corrugated transversely to its length in the manner illustrated to form an unbroken series of bends or serrations extending circumferentially, the folded strip thereby con-

2

stituting the strainer element, and being generally designated 1. The number of folds is optional, depending on the closeness of the flow spacing desired and the length of the strainer element.

If the initially cut strip as referred to is not sufficiently long to provide for a continuous folded periphery during the course of being annularly positioned or wound about a spider 5, as hereinafter referred to more specifically, several strip pieces may be joined together at complementary ends as indicated at 2 in Fig. 5. It should, of course, be clear that the type of material from which the thin flat strip is made is not significant, since its selection depends largely upon the bendability thereof and the service for which the strainer is ultimately to be used.

It should be understood, as shown more clearly in Fig. 1, that as to the oppositely disposed surfaces 3 and 4 of the folded strip 1, line flow takes place over the latter surfaces and between the folds of the strip. The flat strip when thus folded is annularly arranged about the spider 5, the latter element preferably having its longitudinal arms provided with the ports 6 and having an annular shoulder at the top and bottom thereof, as at 7 and 8 respectively, for receiving and supporting the upper and lower rings 9 and 11. These rings preferably are weld sealed by means of the tack welds 12 and 13 to the rings 9 and 11 respectively. The latter rings are preferably provided with the grooves 14 and 15 to receive the upper and lower end portions 16 and 17 of the flat strips as indicated, the width of the grooves 14 and 15 being of about the same width as the strip 1, thereby to receive the folded portions of the latter member as stated.

It should be noted as shown more clearly in Fig. 4 that when the flat strips are multitudinously folded to form the many serrations and are circumferentially mounted to extend around the spider 5, the interstices or spaces formed between the surfaces 3 and 4 are preferably of substantially radially extending form when viewed in the transverse section indicated at 18. It will, of course, be appreciated that the latter form of passage is desirable in promoting increased fluid flow capacity therethrough.

The number and form of the folds and shape of the adjoining sections or surfaces will, of course, vary with the service encountered.

It will be apparent that by simply folding a thin flat strip of desired width into a desired number of serrations or undulations, the folds or strip scallops can be spaced apart or drawn together (accordion-like) to suit the nature of the liquid

3

being handled. Thus, a relatively simple and inexpensive type of strainer can easily be made. It will also be apparent that by eliminating costly fabrication and providing instead for a flexibility commensurate with the type or character of liquid to be handled, it is a relatively simple matter to handle cheaply special orders for such strainers from time to time.

Thus it should be clear that the particular shape of the strainer structure and the detailed relation of parts may vary quite substantially throughout a wide range without departing from the principles hereinabove described. It is proposed therefore that the claims need not be otherwise limited.

I claim:

1. In a strainer, the combination comprising a centrally positioned spider member with arms having ports therethrough, a strainer element extending annularly around the said spider, the upper and lower end limits of the spider and of the strainer element being defined by a pair of annular members cooperating with end portions of the said spider and the strainer element, the said strainer element consisting of a substantially continuous thin flat strip severally folded transversely of its length, the folds extending substantially vertically and parallel to the central axis of the strainer to provide for flow spaces between the folds, whereby the folds provide for radially extending elongated passages from the outside peripheral limits of the strainer element to the interior substantially between the arms of the said spider member.

2. A strainer, the combination comprising a centrally positioned spider member having arms with transverse ports, a strainer element wound around end limits of the arms of the said spider member, a pair of spaced-apart annular elements, the upper and lower portions of the spider and of the strainer element being retained by the said annular elements, the strainer element consisting of a substantially vertically extending continuous thin flat strip series-folded and placed on end to provide radially arranged elongated spaces vertically extending between the folds when the strainer element is extended around the arms of said spider, the spaces being wider at their outer limits.

3. In a strainer construction comprising a

4

ported supporting means, upper and lower grooved annular members fastened to the opposite end edges of the said supporting means, a strainer element mounted between said latter annular members, the strainer element consisting of a thin flat strip folded transversely to its length with folds extending vertically, the folded strip being positioned on rounded ends of the folds and formed to extend annularly around the

ported supporting means thereby to provide for flow passages therebetween of substantially radially extending form when viewed in transverse section.

4. In a strainer, the combination comprising a spider member having vertically extended arms with ports, a strainer element wound around and with transverse edges contacting the arms of the said spider member, the upper and lower portions of the strainer element being contained within a pair of spaced apart annular members supported by end portions of the said spider, the strainer element being mounted between the said annular members and consisting of a substantially continuous thin flat strip formed by substantially vertical series folding to provide for elongated flow passages between the folded portions of the flat strip when the strainer element is extended annularly to enclose the said spider member, the folded portions being of substantially uniform height throughout said annular extension.

CHARLES A. GIAUQUE.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
231,066	Long	Aug. 10, 1880
1,615,559	Tark	Jan. 25, 1927
1,717,313	D'Olier	June 11, 1929
2,081,198	Hahn	May 25, 1937
2,218,800	Williams	Oct. 22, 1940
2,279,423	Vokes	Apr. 14, 1942
2,410,371	Vokes	Oct. 29, 1946

FOREIGN PATENTS

Number	Country	Date
105,789	Australia	Nov. 24, 1938