Oct. 22, 1968 A. B. HUSTON 3,407,027

AUTOCLAVE SHELL CONSTRUCTION

Filed May 13, 1964

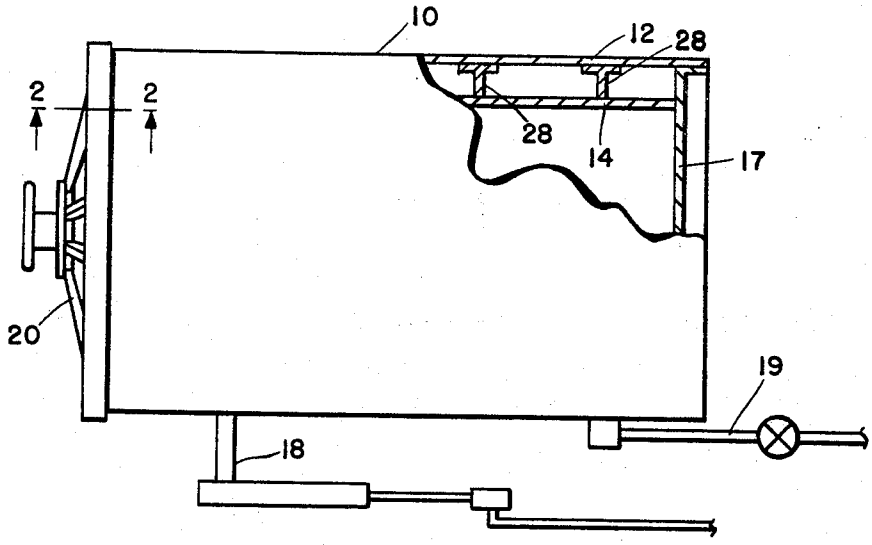


FIG. 1

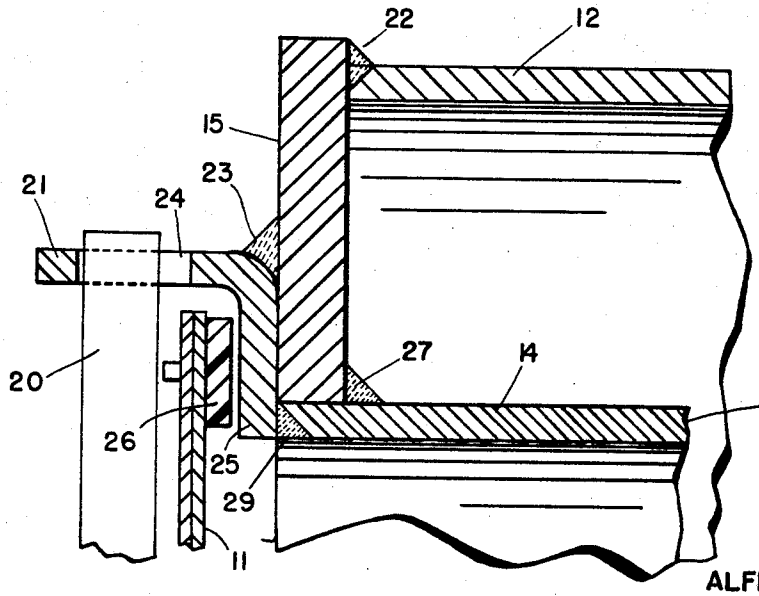


FIG. 2

INVENTOR.
ALFRED B. HUSTON
BY
Charles L. Lovercheck
Attorney

United States Patent Office

3,407,027

Patented Oct. 22, 1968

3,407,027

AUTOCLAVE SHELL CONSTRUCTION

Alfred B. Huston, Erie, Pa., assignor to American Sterilizer Company, Erie, Pa., a corporation of Pennsylvania

Filed May 13, 1964, Ser. No. 366,969

2 Claims. (Cl. 21—91)

ABSTRACT OF THE DISCLOSURE

In the present invention, it has been found possible to reduce the thickness of skins of bulk sterilizers by spacing them apart to provide the strength requirements and to provide the proper stress design. The end ring design is such that it is possible to keep the door arms shorter than prior designs. The spacing angle welded to the end ring makes it possible to provide a corrosion-proof sealing surface and locking arm support with a minimum amount of material and effort.

This invention relates to pressure chambers and, more particularly, to autoclaves.

The purpose of this invention is to provide an autoclave chamber and end ring structure with clamping arrangement so designed that the outer shell may be made of plain structural steel and the inner shell and end ring may be made of a high quality corrosion resistant material. The chamber is so designed that the corrosive gases will not come in contact with the outer shell and end ring. Therefore, they may be made of low quality, inexpensive material where structural strength is required.

Present sterilizers are expensive and difficult to fabricate in large sizes. In order to make a simple and efficient chamber, it has been discovered that it is possible to make bulk sterilizers with one-fourth inch nickel clad inner shell and not over five-sixteenth inch outer shell. To obtain the strength required for large wall areas and higher pressures, these working skins may be spaced apart according to strength requirements to obtain the proper stress design. The end ring design disclosed herein keeps the door arms short. The spacing angle welded to a true end ring makes it possible to form a corrosion proof sealing surface and locking arm support inexpensively.

It is, accordingly, an object of the present invention to provide an improved autoclave chamber.

Another object of the invention is to provide an autoclave with a spaced inner shell and outer shell, the inner shell being made of corrosion resistant material and an end fastening ring of corrosion resistant material attached to the inner shell for attaching door fasteners thereto.

A further object of the invention is to provide an autoclave which is simple in construction, economical to manufacture, and simple and efficient in operation.

With the above and other objects in view, the present invention consists of the combination and arrangement of parts hereinafter more fully described, illustrated in the accompanying drawing and more particularly pointed out in the appended claims, it being understood that changes may be made in the form, size, proportions, and minor details of construction without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawing:

FIG. 1 is a side view partly in cross section of a chamber according to the invention; and

FIG. 2 is a cross sectional view taken on line 2—2 of FIG. 1.

Now with more particular reference to the drawing, the chamber **10** shown has an inner shell **14** and an outer shell **12** and a door **11**. The rear end of the chamber is

closed by an end member **17**. The outer shell **12** is connected to the inner shell at the door end by an end ring **15**. A fastening ring **25** is welded to the end ring **15** at **23** and to the inner shell **14** at **29**. The end ring **15** is welded to the inner shell at **27** and to the outer shell at **22**. The outer shell **12** and inner shell **14** are held in spaced relation by stay bars **28**.

The fastening ring **25** is made of angle shaped material having an outwardly directed end flange **21** with spaced opening **24** therein to receive the outer ends of the door arm **20**. The connection between the inner shell **14** and the fastening ring **25** will be a gas tight connection to provide a continuous inside surface of the material of which these two members are made to the gas inside the chamber.

The inner shell **14** and the fastening ring **25** will be made of high corrosion resistant material while the outer shell **12** and the end ring **15** may be made of flange grade material. These flange grade materials are lower in cost than the corrosion resistant material and, therefore, it is possible to make a structurally strong chamber utilizing the low cost material for structural strength while the lining and fastening ring **25** are made up of more expensive material.

The arms **20** for the door **11** are of conventional design common to this type of chamber. The door has a suitable seal **26** engaging the fastening ring **25**.

The chamber may be provided with a suction line **19** and a drain line **18**, which may be of conventional construction.

It will be seen that the chamber is made of a double walled construction wherein the only high quality material is the inner shell **14** and the fastening ring **25**. By utilizing the structure disclosed herein, it is possible to make the large bulk sterilizers and autoclaves of thinner inner shell material and to space the inner and outer shells apart as desired to obtain the required strength without regard to the length of the door arms **20**. To obtain the strength requirement for large wall areas and high pressures, these working skins would be spaced further apart accordingly to obtain the proper structural strength. This would necessitate a different approach to end ring design to keep the door arms as short as practical. This is accomplished by the structure disclosed herein more economically and inexpensively.

The foregoing specification sets forth the invention in its preferred practical forms but the structure shown is capable of modification within a range of equivalents without departing from the invention which is to be understood is broadly novel as is commensurate with the appended claims.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. an autoclave comprising

an inner shell made of a first corrosive resistant material and defining a chamber,

an outer shell spaced from said inner shell and made of a second material,

an end ring made of said second material connecting said inner shell to said outer shell,

a fastening ring made of said first material and overlying a part of said end ring adjacent said inner shell around its entire circumference,

said fastening ring being welded to the end of said inner shell around its entire circumference providing a gas tight connection therewith,

a door,

sealing means on said door engaging said fastening ring,

and means on said fastening ring engaging fastening

means on said door for holding said door in closed relation,

said inner shell extending axially outward beyond said outer shell,

said end ring being attached to the outer periphery of said inner shell and said end ring resting against the end of said outer shell and welded thereto.

2. The autoclave recited in claim 1 wherein

said means on said fastening ring comprises outwardly directed flanges,

spaced openings in said flanges,

and arms overlying said door and having ends disposed in said openings.

References Cited

UNITED STATES PATENTS

2,470,776	5/1949	Jewell	220—10
2,767,962	10/1956	Blackburn	220—15
3,261,627	7/1966	Wallden	292—6

JAMES H. TAYMAN, JR., *Primary Examiner.*