July 18, 1933. C. MINTNER 1,918,860

CLOSURE SEAL FOR VERTICAL COKING RETORTS

Filed March 16, 1931

Fig. 1.

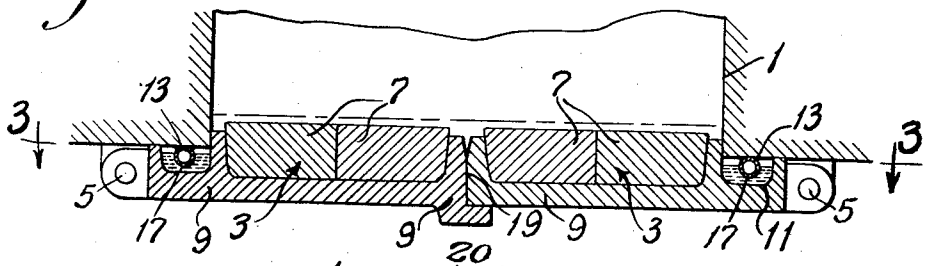


Fig. 2.

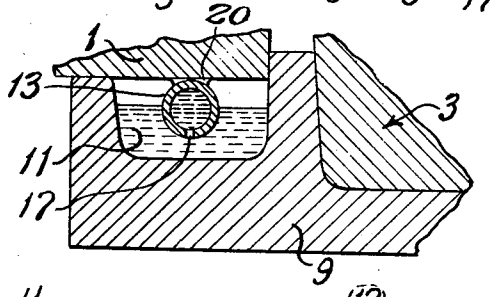


Fig. 3.

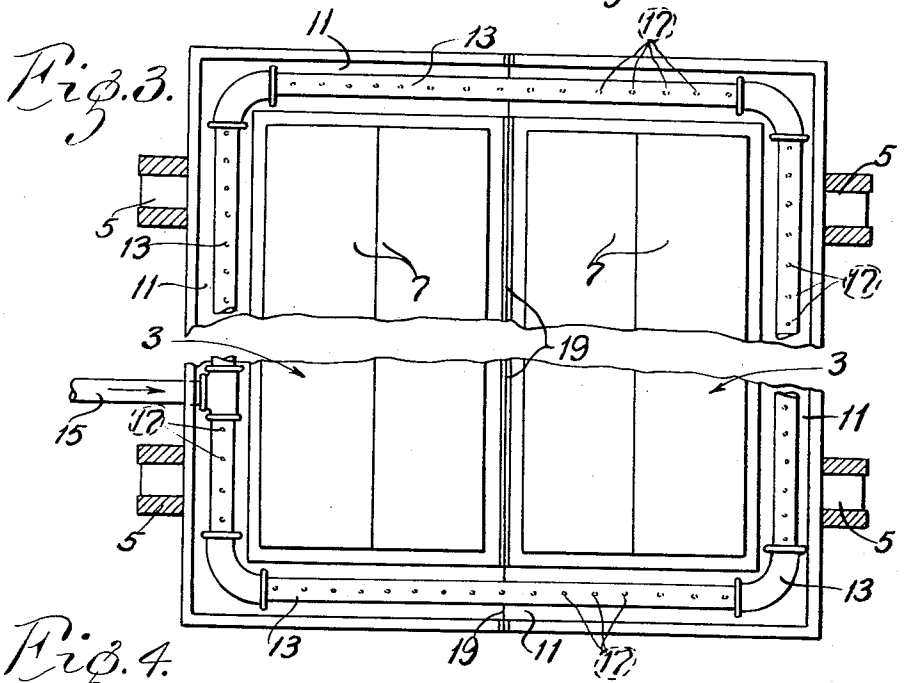
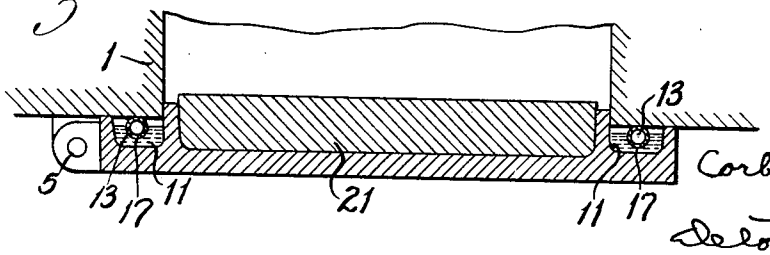


Fig. 4.



Corban Mintner,
Inventor,
Dolor G. Haynes
Attorney

Patented July 18, 1933 1,918,860

UNITED STATES PATENT OFFICE

CORBAN MINTNER, OF ST. LOUIS, MISSOURI, ASSIGNOR TO ST. LOUIS & O'FALLON COAL COMPANY, OF ST. LOUIS, MISSOURI, A CORPORATION OF MISSOURI

CLOSURE SEAL FOR VERTICAL COKING RETORTS

Application filed March 16, 1931. Serial No. 522,966.

This invention relates to seals, and with regard to certain more specific features, to liquid seals adapted for installation on the delivery doors of coke retorts and the like.

Among the several objects of the invention may be noted the provision of a seal of the class described which is adapted, in use, to maintain a condition of air-tightness without necessitating close-fitting, expensive, parts; a seal which likewise functions as a trap to prevent communication with the interior of the apparatus sealed thereby; a seal which is adaptable to doors of substantially any shape or type of closure; and a seal of the class described which is simple in construction and operation. Other objects will be in part obvious and in part pointed out hereinafter.

The invention accordingly comprises the elements and combinations of elements, features of construction and arrangements of parts which will be exemplified in the structure hereinafter described, and the scope of the application of which will be indicated in the following claims.

In the accompanying drawing, in which is illustrated two of various possible embodiments of the invention,

Fig. 1 is a vertical section of the delivery door of a retort, illustrating the application of the present invention thereto;

Fig. 2 is an enlarged vertical section, being a fragment of Fig. 1;

Fig. 3 is a horizontal section taken substantially on line 3—3 of Fig. 1; and

Fig. 4 is a vertical cross section similar to Fig. 1 illustrating the application of the present invention to an alternative form of retort door.

Similar reference characters indicate corresponding parts throughout the several views of the drawing.

Referring now more particularly to Fig. 1, there is illustrated at numeral 1 a member to be closed, such as the delivery, or discharge end of a vertical coking retort of design usual in the art. Closing the end of the retort 1 is a closure, comprising a pair of doors 3, hinged as at 5, and provided with the customary refractory linings 7 set in the metal portions 9 of the doors.

In retorts of the class described, it is desirable that, during coking, no air or oxygen be permitted to enter the retort at the discharge door as such air or oxygen, combining with the gases issuing from the carbonizing, hot mass within the retort, is likely to engender explosive gas mixtures within the retort or possibly even lead to disastrous fires.

It has been a custom heretofore to eliminate such air leakage by accurately machining or packing the discharge doors whereby a close, accurate fit is secured. This method has several disadvantages, such as the increased cost occasioned by the accurate shaping of parts, the frequency of replacement necessitated by the slight warping or misshaping of the doors by the heat of the retort, and the like.

The present invention provides a sealing means adapted for such uses which permits of a considerable tolerance of piece size and/or shape and which is adapted for continuous use even though such pieces change their shape under heated conditions.

The sealing means of the present invention is formed in the following manner:

The doors 3 are formed so as to overlap the end of the retort 1 throughout the engagement thereof. In the surface of the doors 3 thus juxtaposed to the retort end is formed a continuous peripheral channel 11 (see also Fig. 3), adapted to completely surround the retort 1.

Welded at weld 20, or otherwise securely affixed to the under side of the retort 1 is a feed pipe 13. The pipe 13 is provided with an inlet 15, and numerous holes 17 are formed in the under side of said pipe 13. The pipe 13 is positioned so that, upon closing of the doors 3, it lies substantially centrally in the channel 11. It is desirable that the joint between the pipe 13 and the retort bottom 1 be water or air-tight throughout its length.

Suitable door opening and closing means (not shown) are provided for the doors 3.

The seal or trap is effected in the following manner:

With the doors 3 in closed position water or

other suitable liquid is forced into the pipe 13, whence it runs into the channel 11 from the holes 17. A liquid level is thus established in the channel 11 as shown in Fig. 2. The water from the channel 11 runs or seeps between the doors 3 at their joint 19 from the outer ends of said joint 19, and spreads inwardly along said joint, thus also sealing this joint. Throughout the time that it is desired to maintain the seal, water is continuously forced into the pipe 13 at a rate sufficient to maintain the desired level in the channel 11, the leakage which takes place at various points being constantly made up. It will be noted that the feed pipe 13 extending into the channel 11 below the liquid level therein (see Fig. 2) forms an effective liquid trap, which aids in preventing outside air from reaching the interior of the retort.

The present invention is well adapted for use on other types of doors than those shown as 3 in Figs. 1, 2 and 3. For example, it may be installed in connection with a single door or closure member 21, as illustrated in Fig. 4, wherein the entire channel 11 is contained in the one door 21 and leakage is minimized.

In view of the above, it will be seen that the several objects of the invention are achieved and other advantageous results attained.

As many changes could be made in carrying out the above constructions without departing from the scope of the invention, it is intended that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

I claim:

1. A vertical coking retort closure seal comprising, in combination with the retort and its closure, an annular feed pipe affixed to and surrounding the end of said retort, means for supplying liquid to said feed pipe, and a channel in said closure adapted, upon closing of said closure, to receive said feed pipe, said feed pipe including means for delivering liquid into said channel whereby a liquid level is set up therein, said liquid level cooperating with said channel and said feed pipe to effect a liquid trap, whereby substantial entrance of exterior gases into said retort is prevented.

2. A vertical coking retort closure seal comprising in combination with the retort and its closure, an annular feed pipe affixed to and surrounding the end of said retort, means for supplying liquid to said feed pipe, and a channel in said closure adapted, upon closing of said closure, to receive said feed pipe, said feed pipe including means for delivering liquid into said channel whereby a liquid level is set up therein, said liquid level cooperating with said channel and said feed pipe to effect a liquid trap, whereby substantial entrance of exterior gases into said retort is prevented, said feed pipe being welded to said retort in a gas-proof manner throughout its length.

CORBAN MINTNER.