

H. H. DOW.
 WATER SEAL.
 APPLICATION FILED NOV. 6, 1907.

957,314.

Patented May 10, 1910.

2 SHEETS—SHEET 1.

Fig. 1

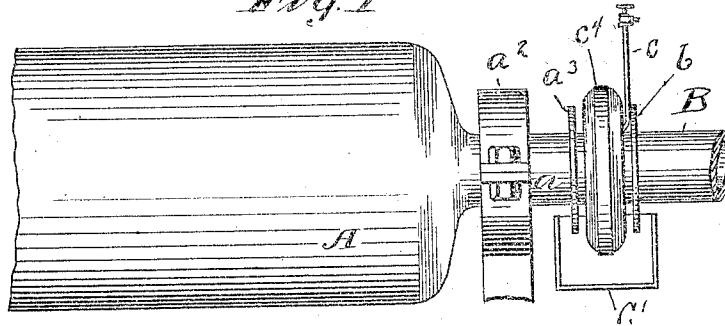


Fig. 2

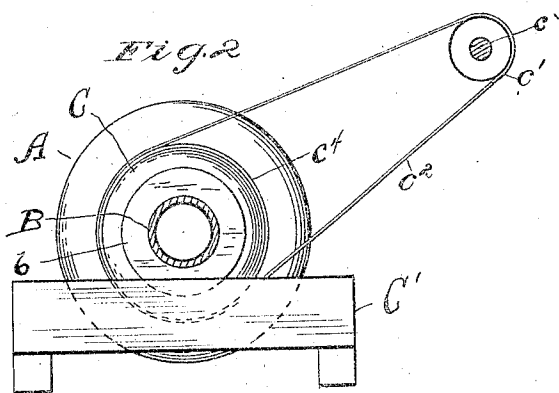
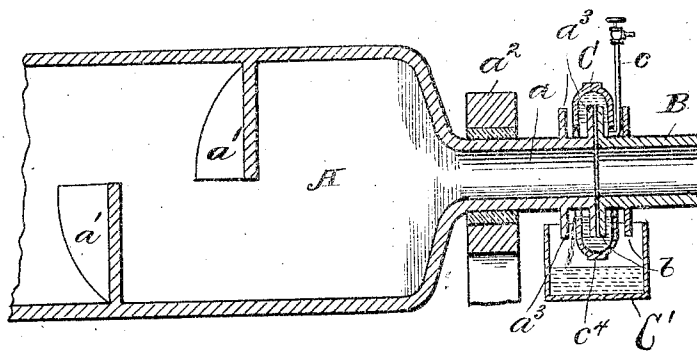


Fig. 3



Witnesses:

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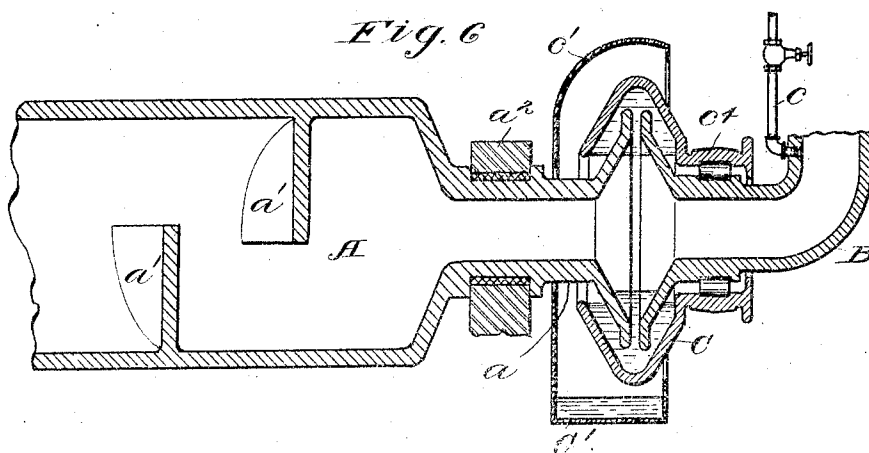
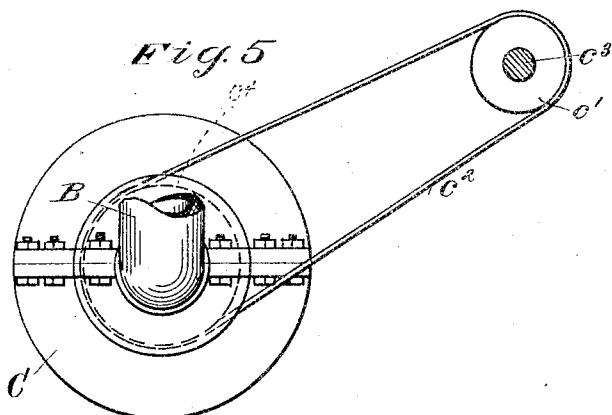
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WATER SEAL.

957,314.

2 SHEETS—SHEET 2.



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WATER SEAL.

957,314.

Specification of Letters Patent.

Patented May 10, 1910.

Application filed November 6, 1907. Serial No. 400,997.

To all whom it may concern:

Be it known that I, HERBERT H. Dow, a citizen of the United States, resident of Midland, county of Midland, and State of Michigan, have invented a new and useful improvement in Water Seals, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other constructions.

This invention relates, as indicated, to liquid seals, and is designed particularly with a view to supplying a seal of this character that will be adapted to effect a closure between horizontally disposed members. A particular occasion for the employment of a liquid seal of the character in hand arises in connection with gas producer apparatus where the producer cylinder or drum is made rotatable about a horizontal, instead of a vertical axis. For divers, well understood, reasons, this arrangement of cylinder is a preferable one, but heretofore difficulty has been experienced in securing an effective closure of the joint between the cylinder and the conduit leading therefrom. It is then with a view to supplying a form of liquid seal available for the purpose noted, and in other analogous situations, that the present invention has been devised, said invention consisting of the means hereinafter fully described and particularly pointed out in the claims.

The annexed drawings and the following description set forth in detail certain mechanism embodying the invention, such disclosed means constituting, however, but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawings:—Figure 1 represents, in more or less conventional fashion, a side elevation of a horizontally disposed gas producer cylinder and the connection between the same and a fixed conduit leading therefrom, such connection embodying my several improvements; Fig. 2 is an end elevation of such connection; and Fig. 3 is an axial cross-section thereof; while Figs. 4, 5 and 6 represent, in views corresponding with the front elevation, end elevation and axial cross-section of the preceding figures, a modified construction of the seal.

Having reference to the first three of the

figures just described, A will be seen to designate the horizontally disposed drum or cylinder of the producer. Such drum is formed with a hollow trunnion *a* as shown, through which the gases generated therein are led. Interiorly the drum is further provided with spiral ribs *a'* designed to effect a proper agitation of the contents of the cylinder, as well as to move the same therealong. The trunnions *a* of such cylinder, the one only appearing in the figures, are supported in suitable bearing *a''* and project a short distance there beyond, as shown. I provide such extending end of the trunnion with a pair of spaced, encircling, ribs, or flanges *a'*. The contiguous end of the conduit B, which conduit is alined with trunnion *a*, is similarly provided with spaced, encircling, ribs, or flanges, *b*. Inclosing the two adjacent of said flanges *a'* and *b* is an annular, trough-like, liquid-retaining element, C rotatably mounted adjacent to the respective trunnion and pipe ends in any suitable manner, a sufficient space being provided between said element and ends, however, to permit the free entrance of liquid from between flanges *a'* or *b*, as the case may be, into such liquid retaining element. The liquid, preferably consisting, in the case in hand, of water, is admitted through a supply pipe *c*, the discharge end of which is located at a point adjacent to the opening just described as existing between member C and end of pipe B. Rotation of element C may be effected by any suitable means, the illustrative means provided for this purpose consisting simply of a pulley *c'* mounted on a counter shaft *c''* that is connected with trough-like element C by a belt *c'''*, such element being provided with a suitable face *c''''* for the reception of the belt. When in operation, then, member C is driven at a relatively high speed, such as will develop sufficient centrifugal force to maintain a layer of water in the inwardly opening trough of the element about its entire periphery. This layer will of course be deepest below where a discharge more or less continuous of the liquid will occur. Such escaping liquid is collected in a trough *C'* or the like and thence conducted to the waste, the place of the escaping liquid being taken by that supplied by the stream entering through supply pipe *c*.

The presence of the outermost of the respective pairs of flanges *a'* and *b* is not con-

sidered essential, since the full operative effect of the seal will obviously be had without the same. In Figs. 4 to 6, inclusive, will accordingly be found illustrated a form of the device in which the elements just noted have been omitted. A further modification will be observed in connection with the means for introducing the liquid into the annular trough-like member C; instead of directing the discharge end of liquid supply pipe *c* between member C and conduit B as in the form first illustrated, such pipe is connected with the conduit and the liquid allowed to escape from the interior thereof into the trough through the opening between its end and the end of trunnion *a*. By making the wall of annular trough C lower on one side than on the other, (the left in Fig. 6) a correspondingly larger opening is provided on such side, and such liquid as escapes from the trough will escape on this side. A hood *c'* rising continuous with one wall of receptacle C amply provides for gathering up the liquid thus escaping and diverting the same to the receptacle.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed, provided the means stated by any one of the following claims or the equivalent of such stated means be employed.

I therefore particularly point out and distinctly claim as my invention:

1. In a device of the character described, the combination with the two members to be joined, of an independent rotary liquid-retaining element engaging the contiguous ends of said members.

2. In a device of the character described, the combination with the two members to be joined, of an independent rotary liquid-retaining element engaging the contiguous ends of said members, and means for supplying a stream of liquid to said element.

3. In a device of the character described, the combination with the two members to be joined, of outwardly projecting flanges borne by the contiguous ends of said members respectively, an independent rotary liquid-retaining element engaging said flanges, and means for supplying a stream of liquid to said element.

4. In a device of the character described, the combination with the two members to be joined, of outwardly projecting flanges borne by the contiguous ends of said members, an independent annular rotary trough-like element opening inwardly and engaging said flanges, and means for supplying a stream of liquid to said element.

5. In a device of the character described, the combination with the two members to be joined, of two spaced annular outwardly projecting flanges borne by each of the contiguous ends of said members, an annular rotary trough-like element opening inwardly and engaging the two adjacent of said flanges, and means for supplying a stream of liquid to said element.

6. A liquid seal comprising in combination with the two members to be joined, two pairs of spaced annular outwardly projecting flanges borne by the two members to be joined respectively, a rotary trough-like liquid-retaining element opening inwardly and engaging the two adjacent of said flanges, and means for supplying a stream of liquid to said element.

7. In a device of the character described, the combination with horizontally fixed and rotating members, of a pair of spaced, annular, outwardly projecting flanges borne by each of the contiguous ends of said members, a rotary trough-like liquid-retaining element opening inwardly and engaging the two adjacent of said flanges, and means for supplying a stream of liquid to said element.

8. A liquid seal for a horizontal gas producer comprising, in combination with the rotary drum of such producer and a pipe alined with the discharge end of said drum, a pair of spaced, annular, outwardly projecting flanges borne each by said drum end and the contiguous end of said pipe, respectively, a rotary trough-like liquid-retaining element opening inwardly and engaging the two adjacent of said flanges, and means for supplying a stream of liquid to said element.

9. A liquid seal comprising outwardly projecting flanges borne by the two members to be joined, respectively, a rotary, trough-like, liquid-retaining element opening inwardly and engaging said flanges, and means for supplying a stream of liquid to said element.

10. A liquid seal for a horizontal gas producer comprising, in combination with the rotary drum of such producer and a pipe alined with the discharge end of said drum, a pair of spaced, annular, outwardly projecting flanges borne by said drum end and contiguous end of said pipe, respectively, a rotary, trough-like, liquid-retaining element opening inwardly and engaging the two said flanges, and means for supplying a stream of liquid to said element.

Signed by me this 17 day of October, 1907.

HERBERT H. DOW.

Attested by—

THOS. GRISWOLD, Jr.,
JAMES C. GROVES.