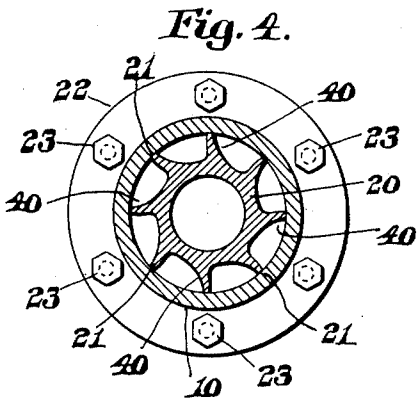
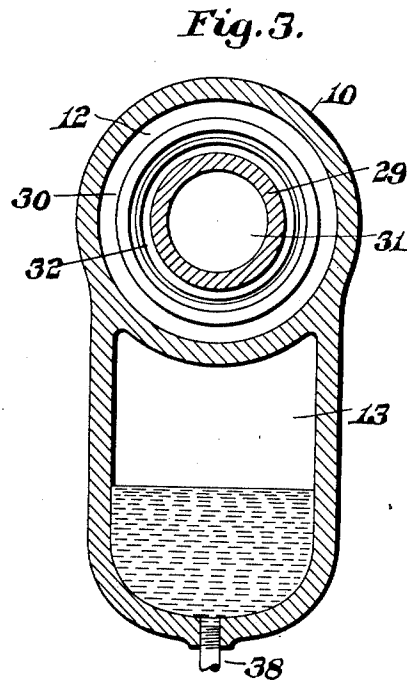
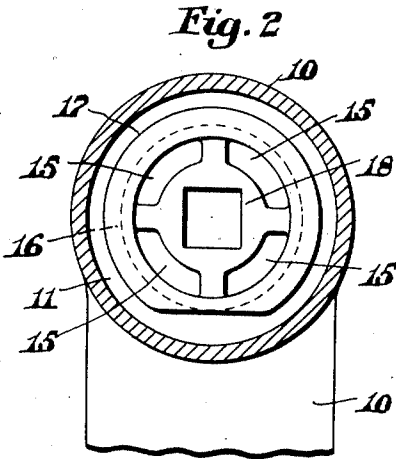
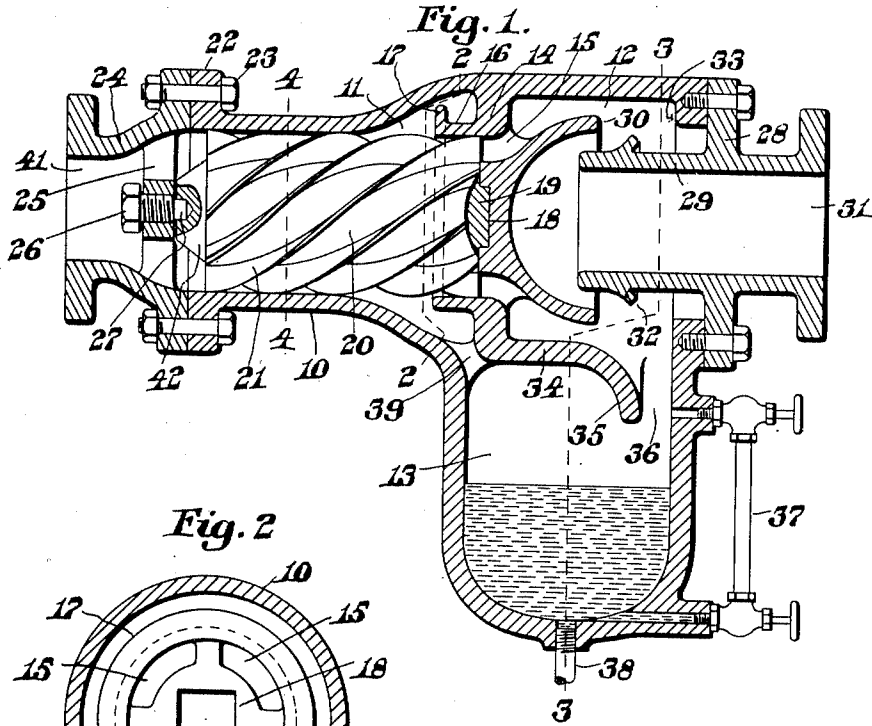


W. L. WRIGHT,
 STEAM AND OIL SEPARATOR,
 APPLICATION FILED APR. 21, 1920.

1,360,349.

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Inventor:
 William L. Wright,
 by Walter E. Lombard,
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UNITED STATES PATENT OFFICE.

WILLIAM LINCOLN WRIGHT, OF CAMBRIDGE, MASSACHUSETTS.

STEAM AND OIL SEPARATOR.

1,360,349.

Specification of Letters Patent. Patented Nov. 30, 1920.

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To all whom it may concern:

Be it known that I, WILLIAM LINCOLN WRIGHT, a citizen of the United States of America, and a resident of Cambridge, in the county of Middlesex and Commonwealth of Massachusetts, have invented certain new and useful Improvements in Steam and Oil Separators, of which the following is a specification.

This invention relates to separators particularly adapted to remove oil or other liquids from steam and has for its object the provision of a simple and effective device in which the passing steam is deflected in various directions prior to its exit from the device, thereby causing the oil or other liquid therein to be separated from the steam and collected in a receptacle provided for this purpose.

The invention consists primarily in a collecting receptacle combined with an inlet chamber and an outlet compartment both communicating with said receptacle and in which the inlet compartment is provided with means for deflecting the incoming steam outwardly in helical paths prior to its admission to the outlet compartment which contains means for converging the steam inwardly prior to its exit from said casing.

The invention further consists in certain novel features of construction and arrangement of parts which will be understood readily by the description of the drawings and to the claims to be hereinafter given.

For the purpose of illustrating the invention, one preferred form thereof is illustrated in the drawings, this form having been found to give satisfactory and reliable results although it is to be understood that the various instrumentalities of which the invention consists can be variously arranged and organized and the invention is not limited to the precise arrangement and organization of these instrumentalities as herein shown and described, except as required by the scope of the appended claims.

Of the drawings:

Figure 1 represents a vertical longitudinal section of a device embodying the principles of the present invention.

Fig. 2 represents a transverse vertical section of the same on line 2, 2 on Fig. 1.

Fig. 3 represents a transverse vertical section of the same on line 3, 3 on Fig. 1, and

Fig. 4 represents a transverse vertical section of the same on line 4, 4 on Fig. 1.

Similar characters indicate like parts throughout the several figures of the drawings.

In the drawings, 10 is a casing having a chamber 11 and a compartment 12 alined therewith, said casing also having a receptacle 13 beneath said compartment 12.

Between the chamber 11 and the compartment 12 is a partition 14 having a plurality of passages 15 extending therethrough and forming a means of communication between said chamber 11 and compartment 12.

The wall 14 is provided with an annular flange 16 extending into the inner enlarged end of the chamber 11, the end of said flange 16 being provided with a bead 17 on the periphery thereof.

The partition or wall 14 is also provided with a flat-sided depression 18 in which is positioned a flat-sided projection 19 formed upon the inner end of a cylindrical member 20 having a plurality of helical blades 21 extending therefrom, the outer edges of said blades contacting with the inner wall of the chamber 11 near the outer end thereof.

The casing 10 has an annular flange 22 against the outer face of which is secured, by bolts 23, the member 24 having a spider 25 therein as indicated in Fig. 1 of the drawings.

The spider 25 has mounted therein a threaded member 26 having a reduced end 27 positioned in a depression in the outer end of the member 20.

This member 26 is adapted to be adjusted to retain the member 20 in position and the squared projection thereof positioned in the flat-sided depression 18 prevents the member 20 from rotating about its axis.

To the opposite end of the casing 10 and in axial alinement with the chamber 11 and member 24 is secured a member 28 having a tubular depression 29 extending into the compartment 12 with its inner end positioned in a cup-shaped projection 30 formed upon the wall 14 between the passages 15.

The member 28 has an outlet passage 31 therethrough and in the periphery of said tubular projection 29 is a curved flange 32 between the outer end of the cup-shaped member 30 and the wall 33 of the casing 10.

Between the compartment 12 and the re-

ceptacle 13 is a partition 34 curved downwardly at 35 thus leaving a passage 36 adjacent the wall 33, said passage 36 providing a means whereby any liquid in the compartment 12 will flow downwardly through said passage 36 into the receptacle 13.

The receptacle 13 is provided with the usual gage 37 to indicate the amount of liquid in the receptacle 13.

The liquid collected in the receptacle 13 may be drawn off as desired through the discharge pipe 38.

The enlarged inner end of the chamber 11 is connected to the receptacle 13 by means of passages 39.

The helical blades 21 are provided on one side thereof with curved surfaces 40.

In operation the steam enters the device through the inlet passage 41 and having passed through the openings in the spider 25 strikes against the cone-shaped end 42 at the outer end of the member 20 thus forcing the steam outwardly into the helical grooves formed by the blades 21.

As a result of this construction the steam is subdivided as it passes through the chamber 11 and contacting with the surfaces 40 is forced outwardly against the walls of said chamber 11.

This action causes a portion of the oil or liquid in the steam to be separated therefrom and pass downwardly into the bottom of the enlarged end of the chamber 11 and then through the passages 39 into the collecting receptacle 13.

Any liquid separated from the steam in the chamber 11 and dropping from the walls of said chamber onto the periphery of the tubular flange 16 will be retained on said flange by the bead 17 and pass downwardly through the passages 39 into the said collecting receptacle 13.

The steam passing through the outlet passages 15 from the chamber 11 into the compartment 12 will be at first forced outwardly by the curved outer surface of the cup-shaped member 30 and then will be converged within said cup-shaped member prior to its passage from the compartment 12 through the outlet passage 31.

Any liquid separated from the steam and collecting on the walls of said compartment 12 will pass downwardly onto the upper surface of the partition 34 and pass therefrom through the passage 36 into said collecting receptacle 13.

In like manner any liquid separated from the steam which may be on the periphery of the tubular projection 39 will pass downwardly therefrom through the passage 36 into the collecting receptacle 13.

It will be seen therefore that as the steam passes from the inlet 41 to the outlet 31 through the chamber 11 and compartment 12, said steam will first be forced outwardly

in helical paths against the walls of the chamber 11 and then into the compartment 12 where it will be converged prior to its exit from the casing 10.

By this means any oil in the steam will be thoroughly separated therefrom and collected in the receptacle 13 provided for this purpose.

In like manner steam having other liquid contained therein will have said liquid eliminated therefrom and collected in the receptacle 13 thereby providing a means whereby when it passes through the outlet 31 it will be free from moisture.

The present device is simple in construction, easily assembled and cheaply made.

It is believed that the operation of the device and its many advantages will be thoroughly understood without further description.

Having thus described my invention, I claim—

1. In a device of the class described, a casing provided with an inlet and outlet and a receptacle for the collection of the liquid separated from the steam; a member having a plurality of imperforate helical blades interposed between said inlet and receptacle; a steam compartment adjacent said outlet communicating with the inlet end of said casing by a plurality of passages and also communicating with said receptacle; and means between said member and outlet for conducting the separated liquid to said receptacle.

2. In a device of the class described, a casing provided with an inlet and outlet in alinement and a laterally disposed receptacle for the collection of the liquid separated from the steam; a non-revoluble member having a plurality of imperforate helical blades interposed between said inlet and receptacle; a steam compartment adjacent said outlet communicating with the inlet end of said casing by a plurality of passages and also communicating with said receptacle; and means between said member and outlet for conducting the separated liquid to said receptacle.

3. In a device of the class described, a casing having a cylindrical chamber enlarged at the inner end and provided with inlet and outlet ports at opposite ends thereof; a member in said chamber provided with a plurality of imperforate helical blades extending to the wall of the outer end of said chamber; and a liquid receptacle communicating with the enlarged end of said chamber.

4. In a device of the class described, a casing having a cylindrical chamber enlarged at the inner end and provided with inlet and outlet ports at opposite ends thereof; a member in said chamber provided with a plurality of helical blades extending to

the wall of the outer end of said chamber; a liquid receptacle communicating with the enlarged end of said chamber; and a cylindrical flange surrounding the inner end of said bladed member.

5. In a device of the class described, a casing having a cylindrical chamber enlarged at the inner end and provided with inlet and outlet ports at opposite ends thereof; a member in said chamber provided with a plurality of helical blades extending to the wall of the outer end of said chamber; a liquid receptacle communicating with the enlarged end of said chamber; and a cylindrical flange surrounding the inner end of said bladed member and having a laterally extending bead at the end thereof.

6. In a device of the class described, a casing having a cylindrical chamber with an end wall provided with outlet passages and a flat side depression; a bladed member in said chamber having a flat sided end projection positioned in said depression; a spider secured to the outer end of said chamber casing; a threaded member therein with its end projecting into a depression in the outer end of said bladed member; and a liquid receptacle communicating with the inner end of said chamber.

7. In a device of the class described, a casing having a cylindrical chamber and a receptacle communicating with the inner end thereof; imperforate means within said chamber for deflecting the steam in helical paths and against the wall of said chamber as said steam passes through said chamber; and an auxiliary compartment communicating with the outlet end of said chamber and provided with a steam outlet and passages to said receptacle.

8. In a device of the class described, a casing having a cylindrical chamber communicating with the inlet; an auxiliary compartment communicating with the outlet end of said chamber and a receptacle beneath said compartment communicating with said chamber and compartment, said auxiliary compartment having a steam outlet therefrom; and means within said chamber for deflecting the steam in helical paths and against the wall thereof and into said auxiliary compartment.

9. In a device of the class described, a casing having a cylindrical chamber communicating with the inlet, an auxiliary compartment communicating with the outlet end of said chamber and a receptacle beneath said

compartment communicating with said chamber and compartment; a cup-shaped member extending into said compartment between the passages connecting said chamber and compartment; a steam outlet to said casing having a tubular projection extending into said cup-shaped member; and means within said chamber for deflecting the steam in helical paths and against the wall thereof.

10. In a device of the class described, a casing having a cylindrical chamber communicating with the inlet, an auxiliary compartment communicating with the outlet end of said chamber and a receptacle beneath said compartment communicating with said chamber and compartment; a cup-shaped member extending into said compartment between the passages connecting said chamber and compartment; a steam outlet to said casing having a tubular projection extending into said cup-shaped member; a partition in said casing between said compartment and said receptacle having a passage therethrough beneath said tubular projection; and means within said chamber for deflecting the steam in helical paths and against the wall thereof.

11. In a device of the class described, a casing having a receptacle and an aligned chamber and compartment communicating with said receptacle and separated from each other by a wall having steam passages therethrough and means located above said receptacle for deflecting the incoming steam outwardly in helical paths in said chamber and subsequently deflecting said steam inwardly in said compartment to the outlet from said casing.

12. In a device of the class described, a casing having a receptacle and an aligned chamber and compartment above said receptacle and both communicating therewith, said chamber and compartment being separated by a wall having steam passages therethrough; means within said chamber deflecting the incoming steam outwardly in helical paths prior to admission to said compartment; and means within said compartment for converging the steam prior to its exit through the outlet from said casing.

Signed by me at 746-7 Old South Bldg., Boston, Mass., this 9th day of April, 1920.

WILLIAM LINCOLN WRIGHT.

Witnesses:

WALTER E. LOMBARD,
NATHAN C. LOMBARD.