

J. J. BROWN.
 STEAM CONDENSING APPARATUS.
 APPLICATION FILED JULY 14, 1911.

Patented Jan. 9, 1912.

2 SHEETS—SHEET 1.

1,014,368.

Fig. 2.

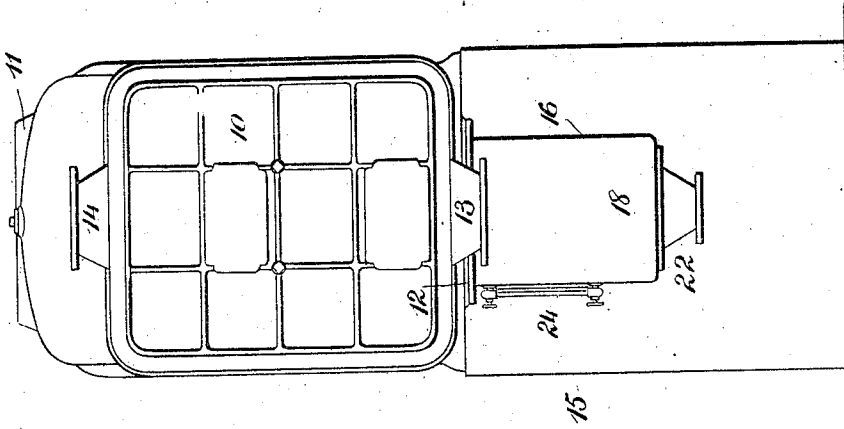
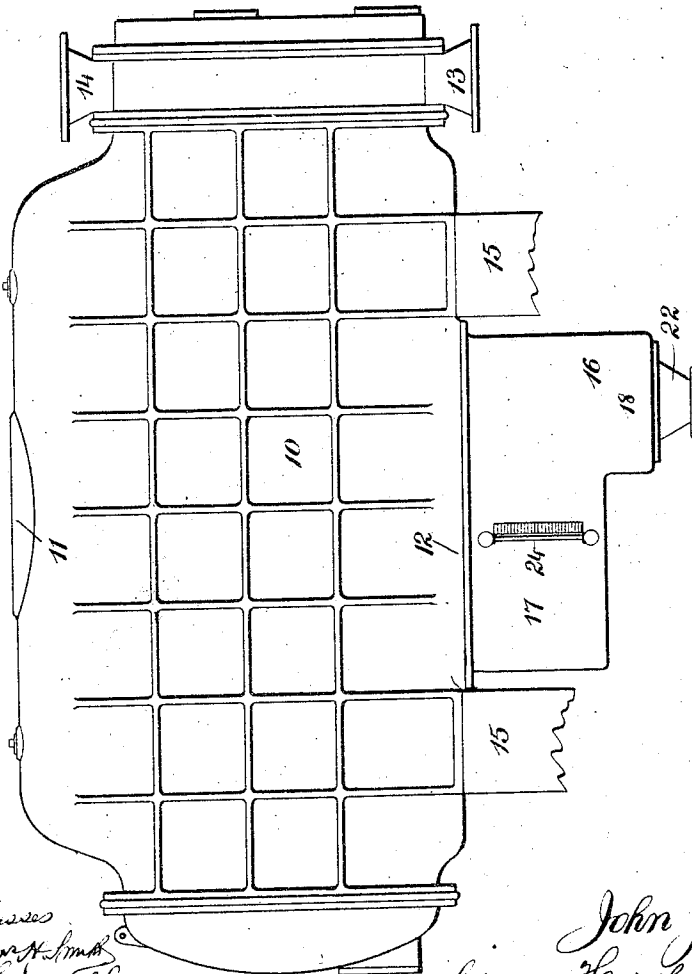


Fig. 1.



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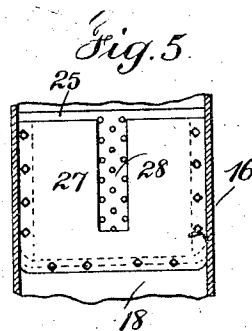
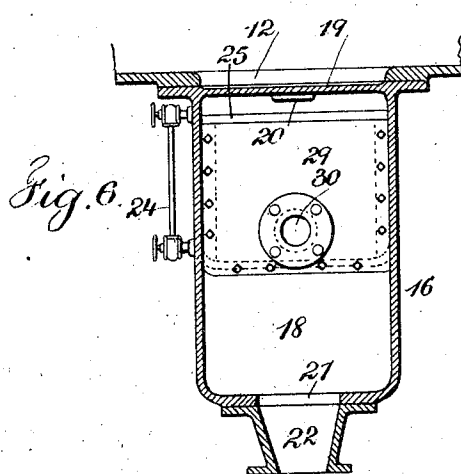
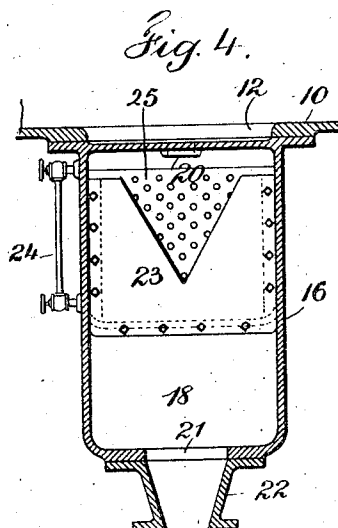
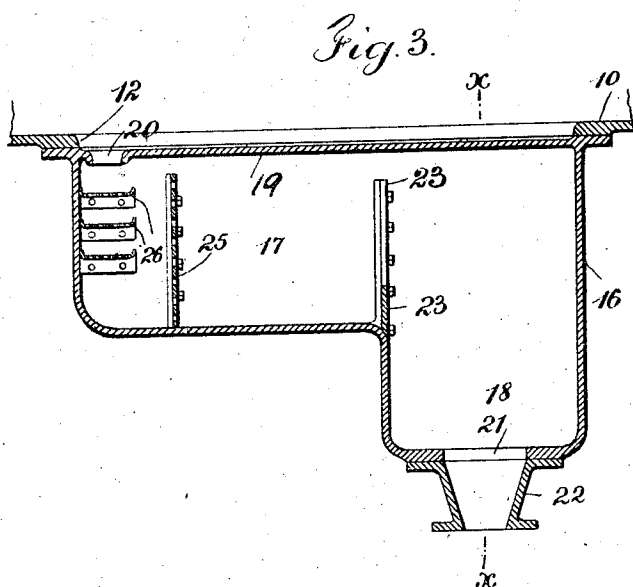
by

Inventor
 John J. Brown.
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2 SHEETS—SHEET 2.



Witnesses

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UNITED STATES PATENT OFFICE.

JOHN J. BROWN, OF ELIZABETH, NEW JERSEY, ASSIGNOR TO WHEELER CONDENSER AND ENGINEERING COMPANY, OF CARTERET, NEW JERSEY, A CORPORATION OF NEW JERSEY.

STEAM-CONDENSING APPARATUS.

1,014,368.

Specification of Letters Patent.

Patented Jan. 9, 1912.

Application filed July 14, 1911. Serial No. 638,443.

To all whom it may concern:

Be it known that I, JOHN J. BROWN, a citizen of the United States, residing in Elizabeth, in the county of Union and State of New Jersey, have invented an Improvement in Steam-Condensing Apparatus, of which the following is a specification.

My invention relates to steam condensing apparatus, and more particularly to the hot-well or receptacle for the water of condensation employed generally in steam condensing apparatus; the object of the invention being to provide a hot-well, by the use of which the amount of steam being delivered to the condenser can be determined at any moment, and with this determination of the amount of steam and the watt meter readings, the consumption of steam per kilowatt hour, can be quickly and easily ascertained at any time.

In carrying out the invention and in conjunction with a condenser of any well-known type, I prefer to employ a hot-well so constructed as to be divided into compartments, from and to which the water of condensation from the condenser is caused to flow, and means for determining the quantity of water flowing between these compartments. I also employ devices for reducing to a minimum the motion of the water of condensation as the same is admitted to the hotwell, so that in commingling with the water already in the compartment in the hotwell to which the water of condensation is first admitted, it will cause as little disturbance as possible. The object of this, as will be hereinafter described, is to obtain a uniform flow of the water from the compartment to which it is first admitted.

In the drawing I have illustrated my invention as applied to a surface condenser, and Figure 1 is a side elevation of a surface condenser with my improved hot-well connected thereto. Fig. 2 is an end elevation of the same. Fig. 3 is a longitudinal section through one form of the hot-well, showing the same connected to a condenser. Fig. 4 is a cross section on line *x, x*, Fig. 3. Fig. 5 is a sectional elevation of a modified form of the invention, and Fig. 6 is a transverse cross-section illustrating a still further modification of the invention.

Referring particularly to the drawing, 10

indicates a condenser of the surface condensing type, provided as is usual with a steam inlet 11, an outlet 12 for the water of condensation, an inlet 13 and an outlet 14 for the circulating water, and suitable posts 15 or other foundations for supporting the condenser, all of which are of the usual and well known form.

Beneath the condenser and preferably immediately connected thereto, I employ a hot-well indicated at 16. This hot-well is preferably so constructed as to be provided with a relatively shallow compartment 17 and relatively deep compartment 18. The hot-well also has a cover or top 19 extending across the outlet 12 of the condenser, and this cover is provided with an opening 20 through which the water of condensation passes from the condenser to the hot-well, and as will be understood, into the shallow compartment thereof. In its bottom or lower portion, the relatively deep compartment 18 is also provided with an opening 21, and a connection 22 may be secured to the bottom of this relatively deep compartment for connection with a pipe line or other means leading to the pump or other device by which the air and water are disposed of.

Extending upwardly from the wall forming the dividing line between the relatively shallow and deep compartments in the hot-well, is a division plate 23 which as illustrated in Figs. 3 and 4, may be provided with a V-shaped notch, so that in reality this division plate forms a weir over which the water of condensation from the relatively shallow to the relatively deep compartment flows.

Exteriorly of the hot-well I employ a gage 24 by means of which the height of the water on the weir may be determined at any time. This gage 24 is provided with a scale graduated to read in gallons of water per minute or pounds of steam per hour. Obviously the relationship between the weir and gage is that with any given weir, the quantity of water which will pass over the same per minute at atmospheric pressure may be ascertained, and the scale, showing the height of the water in the hotwell and consequently the height at which the water stands on the weir, may be graduated accordingly. Obviously the greater the steam

consumption, the higher the water will stand in the hotwell, and therefore the greater the steam consumption, the greater is the amount of the water which will pass over the weir per minute.

In the relatively shallow compartment of the hotwell, I prefer to employ a transverse baffle 25 preferably perforated, and also a series of baffles 26 also perforated and placed in a spaced relationship, one above the other and all immediately beneath the inlet opening 20 to the hot-well. The baffle plates 26 against which the water of condensation strikes in coming into the hotwell, will have a tendency to retard its motion and consequently by the time the water being admitted, reaches the water in the well, this motion of the former has been so reduced as to cause little or no agitation in the latter. It will also be understood that the baffle plate 25 acts more or less as a breakwater to prevent any surging to and fro of the water in the well.

As will be understood, the gage glass may be graduated to a suitable scale to read either in pounds of steam per hour or in gallons of water per minute as hereinbefore described as may be desired by the user of the apparatus, and as will also be understood, by ascertaining the number of pounds of steam per hour being condensed from the gage glass on the hot-well and knowing the output of the generator in the kilowatts, the number of pounds of steam per kilowatt hour may be readily ascertained. By referring to Fig. 5, it will also be apparent that the division plate 27 shown therein, may be provided with a rectangular notch 28, so that the weir instead of being V-shaped may be rectangular, and also by reference to Fig. 6, it will be seen that I may also employ instead of the weirs hereinbefore described, a division plate 29 in which an opening 30, constituting a discharge orifice, is provided. This orifice 30 is shown as circular, but nevertheless the same may be rectangular or of any other shape, without departing from the nature and spirit of my invention, the gage glass being graduated, in any particular instance, in accordance with the form of weir or orifice employed.

I claim as my invention:

1. In a condensing apparatus, the combination with a condenser, of a hot-well having compartments of different depths from and to which the water of condensation flows, and means for determining the flow of the water of condensation through the hot-well.

2. In a condensing apparatus, the combination with a condenser, of a hot-well having a relatively deep compartment and a relatively shallow compartment, and means for determining the flow of the water of

condensation as the same passes from the relatively shallow compartment to the relatively deep compartment.

3. In a condensing apparatus, the combination with a condenser, of a hot-well having a relatively deep compartment and a relatively shallow compartment, means for reducing to a minimum the agitation of the water in the relatively shallow compartment, and means for determining the flow of the water of condensation as the same passes from the relatively shallow compartment to the relatively deep compartment.

4. In a condensing apparatus, the combination with a condenser, of a hot-well having a relatively deep compartment, and a relatively shallow compartment, a weir on the dividing line between the said compartments, and means for reading the height of the water of condensation on the said weir as the same passes from the said relatively shallow compartment to the relatively deep compartment.

5. In a condensing apparatus, the combination with a condenser, of a hot-well having a relatively shallow compartment and a relatively deep compartment, a weir on the dividing line between the said compartments, and a gage for ascertaining the height of said water on the said weir as the same passes from the said relatively shallow compartment to the relatively deep compartment.

6. In a condensing apparatus, the combination with a condenser, of a hot-well having a relatively shallow compartment and a relatively deep compartment, means for reducing to a minimum the agitation of the water in the relatively shallow compartment, a weir on the dividing line between the said compartments, and a gage for ascertaining the height of the said water on the said weir, as the same passes from the said relatively shallow compartment to the relatively deep compartment.

7. In a condensing apparatus, the combination with a condenser, of a hot-well having a relatively shallow compartment and a relatively deep compartment, a series of baffle plates arranged transversely in the said relatively shallow compartment, a weir on the dividing line between the said compartments, and a gage for ascertaining the height of the said water on the said weir as the same passes from the said relatively shallow compartment to the relatively deep compartment.

8. In a condensing apparatus, the combination with a condenser, of a hot well having compartments therein from and to which the water of condensation flows, and means for determining the flow of the water of condensation as the same passes through the well.

9. In a condensing apparatus, the combi-

nation with a condenser, of a hot well having a plurality of compartments, means for reducing to a minimum the agitation of the water of condensation as the same enters the hot well from the condenser, and means for determining the flow of the water of condensation as the same passes from one compartment to another in the hot well.

10 In a condensing apparatus, the combination with a condenser, of a hot well having a plurality of compartments therein, a weir on the dividing line between two of the said compartments and a gage for reading height of the water of condensation on said weir as the same passes from one to the other of said compartments.

11. In a condensing apparatus, the combination with a condenser, of a hot well having a plurality of compartments therein, a weir on the dividing line between two of said compartments on a gage for reading

the height of the said water of condensation on the said weir as the water passes from one of said compartments to the other.

12. In a condensing apparatus, the combination with a condenser of a hot well, a partition therein dividing the hot well into two compartments, means for reducing to a minimum the agitation of the water of condensation as the same enters the hot well from the condenser, a weir on the partition which divides the hot well into compartments, and a gage for reading the height of the water of condensation on the said weir as the water passes from one to the other of the said compartments.

Signed by me this 8th day of July, 1911.

JOHN J. BROWN.

Witnesses:

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W. J. BEST.