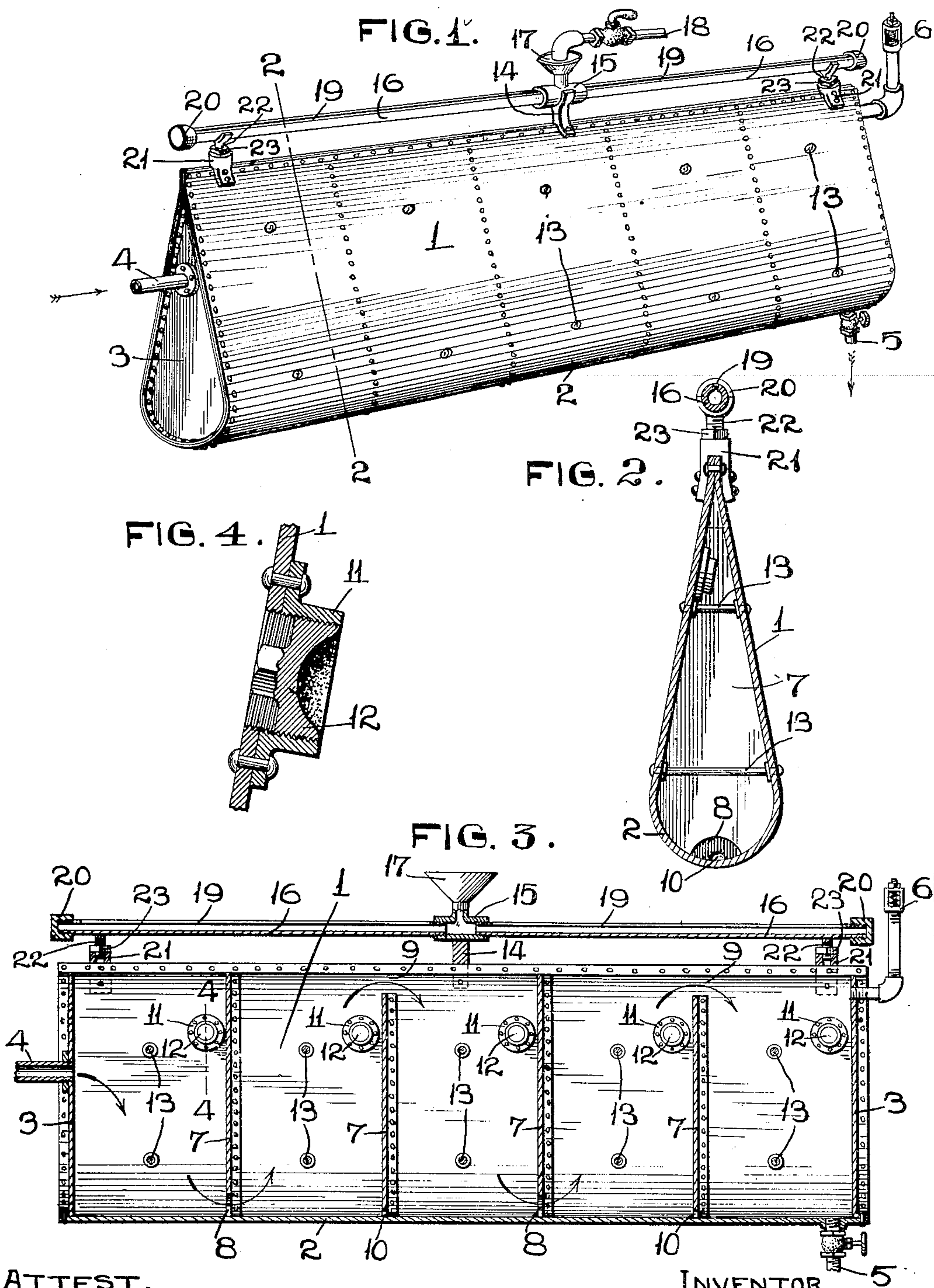


No. 835,260.

PATENTED NOV. 6, 1906.

P. H. SELLERS.  
STEAM CONDENSER.

APPLICATION FILED APR. 24, 1906.



ATTEST.

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# UNITED STATES PATENT OFFICE.

PRESTON H. SELLERS, OF EAST ST. LOUIS, ILLINOIS.

## STEAM-CONDENSER.

No. 835,260.

Specification of Letters Patent.

Patented Nov. 6, 1906.

Application filed April 24, 1906. Serial No. 313,479.

*To all whom it may concern:*

Be it known that I, PRESTON H. SELLERS, a citizen of the United States, and a resident of East St. Louis, Illinois, have invented certain new and useful Improvements in Steam-Condensers, of which the following is a specification containing a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to a steam-condenser particularly adapted for use in ice-manufacturing plants and the like.

The object of my invention is to construct a simple inexpensive steam-condenser which may be used singly or in series and which will furnish the water of condensation to the reboiler at a temperature as near the boiling-point as is possible.

A further object of my invention is to arrange a series of baffle-plates on the interior of a steam-condenser in order to cause the steam to traverse a tortuous path through the condenser, thus remaining a longer time therein than if it passed direct from the inlet to the outlet.

A further object of my invention is to arrange an adjustable cooling-water pipe immediately above the steam-condenser in order that the supply of water will be at all times discharged evenly over the surfaces of the condenser.

A further object of my invention is to construct a condenser wherein the interior surfaces thereof, together with the surfaces of the baffle-plates, may be easily and quickly cleaned.

To the above purposes my invention consists of certain novel features of construction and arrangement of parts, which will be hereinafter more fully set forth, pointed out in my claims, and illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of a condenser of my improved construction. Fig. 2 is a vertical section taken on the line 2 2 of Fig. 1. Fig. 3 is a vertical section taken longitudinally through the center of my improved condenser. Fig. 4 is an enlarged detail section taken on the line 4 4 of Fig. 3.

The body 1 of my improved condenser is constructed of suitable sheet metal, such as galvanized iron, and is in the form of an elongated tank, the side walls of which are riveted together at their upper edges, which side walls extend from the point where they are joined downwardly and outwardly on

slight angles, and the bottom 2 of the body is rounded. Heads 3 are fixed in the ends of the tank thus formed, and extending through one of said heads is an inlet-pipe 4.

Leading downwardly from the bottom of the tank adjacent the opposite head 3 is an outlet-pipe 5, through which the water of condensation passes to the reboiler.

Located in the upper end of the last-mentioned head 3 and extending outwardly therefrom is a relief-valve 6 of any suitable form, which is adapted to automatically open when the steam-pressure within the tank becomes excessive.

Located on the interior of the tank and riveted thereto is a series of vertically-disposed baffle plates 7, and through the lower ends of an alternate pair of these baffle-plates are steam-openings 8.

Through the upper ends of the remaining pair of baffle-plates are the steam-openings 9, and through the bottom of this last-mentioned pair of baffle-plates are small drain-openings 10.

Riveted to the inner face of one of the side walls in each compartment formed by the baffle-plates 7 and immediately in front of said baffle-plates are the projecting flanges 11, which are normally closed by the screw-plugs 12.

Extending transversely between the side walls of the tank 1 and in the center of each compartment therein are suitable stay-rods 13, the ends of which are fixed to the side walls of the tank in any suitable manner.

Fixed to the center of the tank at the top thereof is a saddle 14, and supported thereby is an inverted-T connection 15, to which are connected the inner ends of a pair of water-discharge pipes 16, which extend longitudinally in both directions immediately over the top of the tank 1.

Connected to the union 15 is a funnel 17, into which discharges the pipe 18, which delivers the cooling-water.

In the top of the pipes 16 are the longitudinally-extending slots 19, and closing the ends of said pipes 16 are caps 20.

Fixed on top of the ends of the tank 1 are brackets 21, and extending downwardly thereinto are screw-bolts 22, the upper ends of which are forked to receive the outer ends of the pipes 16.

Nuts 23 are located upon the screw-bolts and normally rest on top of the brackets 21.

In the practical use of my improved con-



denser the steam enters the tank through the supply-pipe 4 and passes alternately beneath and over the various baffle-plates 7 in said tank, as indicated by the arrows in Fig. 3, and by the time said steam enters the last compartment at the right hand of the tank it has become condensed, and the water of condensation, which is extremely hot and close to the boiling-point, discharges through the outlet-pipe 5 and is delivered to the re-boiler. The water of condensation readily flows along the bottom of the tank through the large steam-openings 8 and through the small drain-openings 10 and finally passes out through the pipe 5.

The cooling-water discharging into the funnel 17 from the pipe 18 passes outwardly through the longitudinally-extending pipes 16 and discharges therefrom through the slots 19. The water falling from the pipes 16 discharges onto the acute apex of the tank 1 and flows thence downwardly over the sides of the tank and finally leaves said tank at the lower end of the rounded bottom thereof. Thus the cooling-water is evenly distributed over the entire sides and bottom of the tank, which action, together with the retarding of the steam in the tank by means of the baffle-plates, very rapidly condenses said steam.

By manipulating the nuts 23 the screw-bolts 22 are raised or lowered to change the elevation of the ends of the pipes 16, so as to cause an even flow or distribution of the cooling-water from said pipes. This adjustment is not possible where the cooling-water discharges from a trough or pipe which is rigidly-fixed to the top of the tank, as very often one end of the tank is lower than the other.

When it is desired to clean the interior of the tank and the faces of the baffle-plates, the screw-plugs 12 may be removed, and a hose and suitable cleaning instruments are inserted through the openings in the sides of the tank, which are normally closed by said screw-plugs. These openings are preferably located adjacent to the front faces of the baffle-plates in order that any oil which is mixed with the steam and which is deposited on said baffle-plates, together with scale or other sediment, may be easily and quickly removed.

A condenser of my improved construction is simple, strong, and durable, and while condensing the steam perfectly keeps the water of condensation at a very high temperature, in which condition it is delivered to the re-boiler. The cooling-water is delivered evenly over the entire sides and bottom of the condenser-tank, and said tank can be easily cleaned and is self-draining.

Condensers of my improved type are usually located on top of a building or an ele-

vated structure and are therefore practically exposed to the atmosphere and elements, and it very frequently happens that the building or structure will settle or sag slightly on one side or the framework will warp as a result of variation in temperature. Where the water-discharge pipe is rigidly fixed on top of the tank and one end of said tank settles slightly, the cooling-water will only discharge over about one-half or one-third of the sides of the tank, and to remedy this it is necessary to lift one end of the entire tank, whereas by my improved construction the water-discharge pipe can be readily adjusted so as to occupy a true horizontal plane, and thus the cooling-water will be equally discharged at all points along the top of the tank.

I claim—

1. The combination with a condenser-tank of inverted-V shape in cross-section, of a series of brackets fixed on top of said tank, screw-bolts extending downwardly into said brackets, the upper ends of which screw-bolts are forked, nuts located upon the screw-bolts on top of the brackets, and a water-discharge pipe arranged in the forked upper ends of the screw-bolts and provided throughout its length with a longitudinally-extending slot; substantially as specified.

2. A condenser, constructed with a tank of inverted-V shape in cross-section and having its lower end rounded, vertically-adjustable members arranged on said tank adjacent its ends, a longitudinally-slotted water-discharge pipe carried by said adjustable members, a series of baffle-plates arranged on the interior of the tank, there being steam-passages formed through the lower ends of certain of the baffle-plates, there being steam-passages formed through the upper ends of the alternate baffle-plates, there being drain-openings formed in the lower ends of the last-mentioned baffle-plates, there being clean-out openings formed in one side of the condenser immediately in front of the baffle-plates, and screw-plugs normally closing said clean-out openings; substantially as specified.

3. The combination with a condenser-tank of inverted-V shape in cross-section, of a water-discharge pipe arranged immediately over the apex of said tank, and adjustable supports arranged between the ends of the pipe and the tank; substantially as specified.

In testimony whereof I have signed my name to this specification in presence of two subscribing witnesses.

PRESTON H. SELLERS.

Witnesses:

M. P. SMITH,  
E. L. WALLACE.