No. 649,573. Patented May 15, 1900.

G. K. FISCHER & F. KLEPETKO.

STRUCTURE FOR COOLING FEED WATER, &c.

(Application filed July 6, 1899.)

(No Model.) 2 Sheets—Sheet 1.

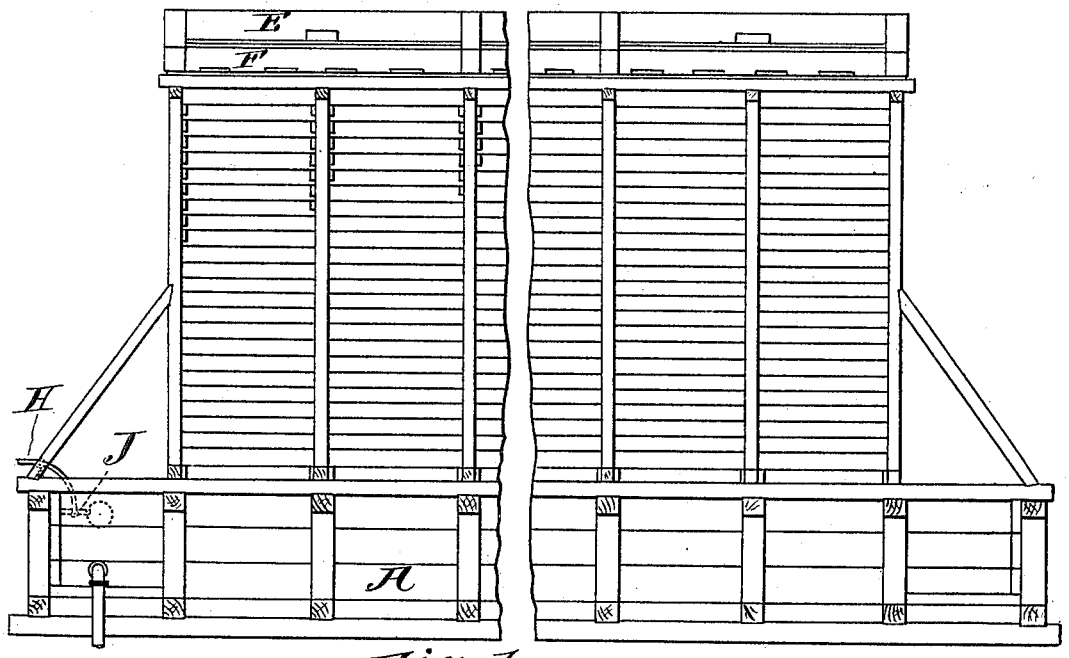

Fig. 1.

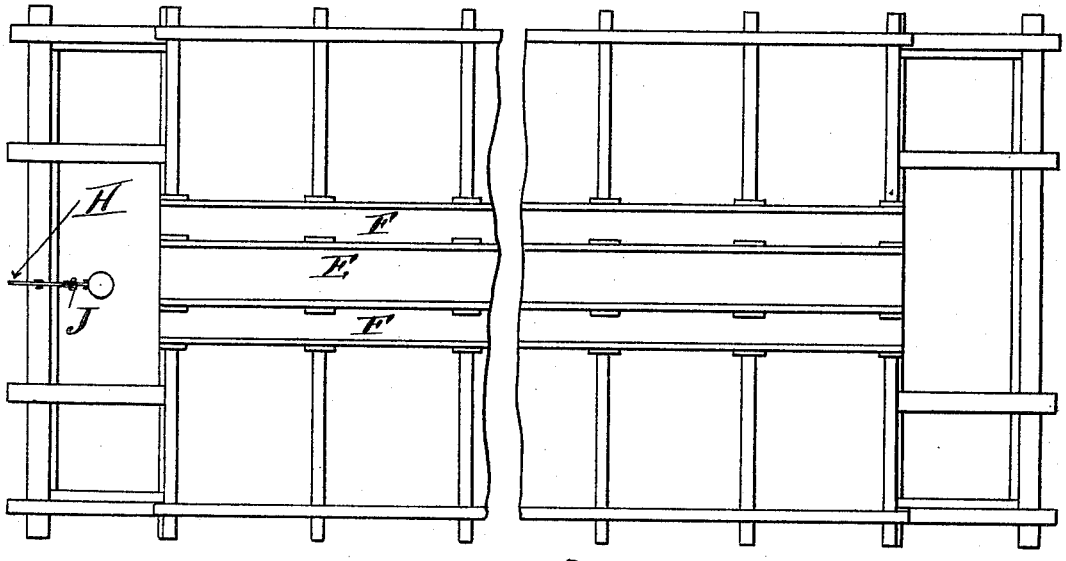

Fig. 2.

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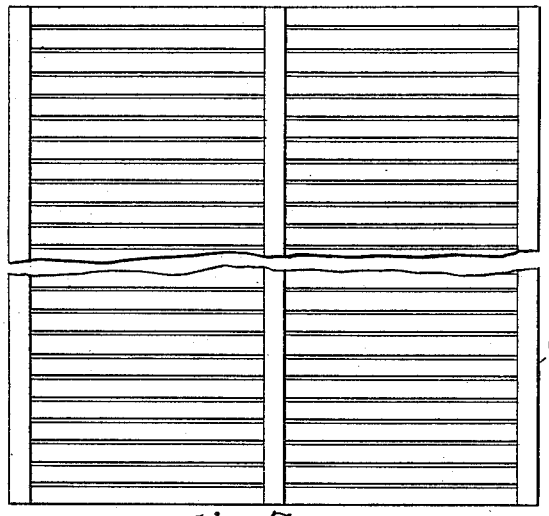

Fig. 7.

Fig. 8.

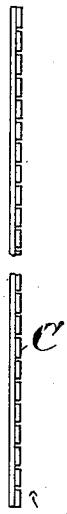

Fig. 9.

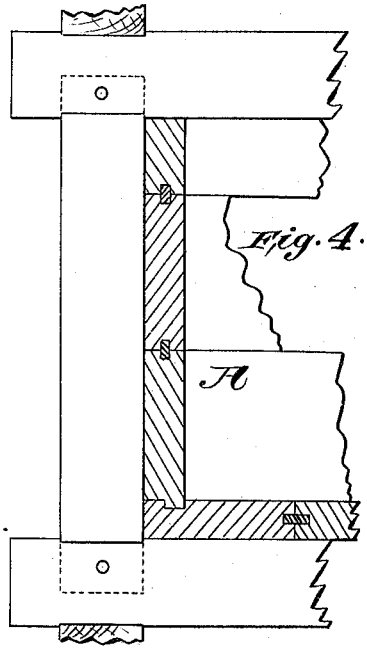

Fig. 4.

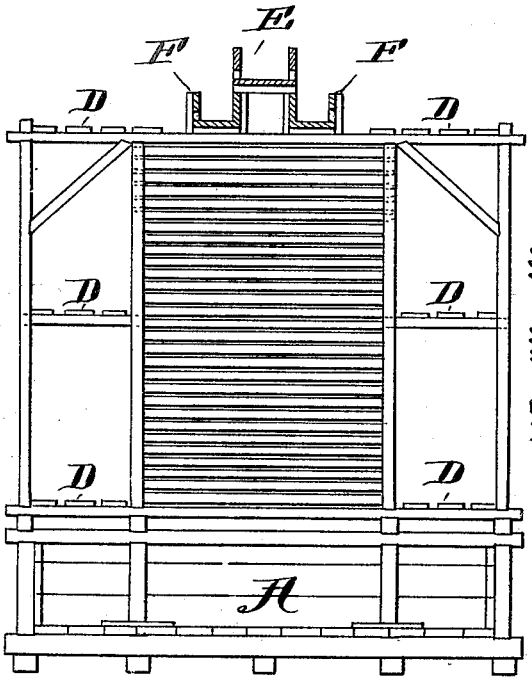

Fig. 3.

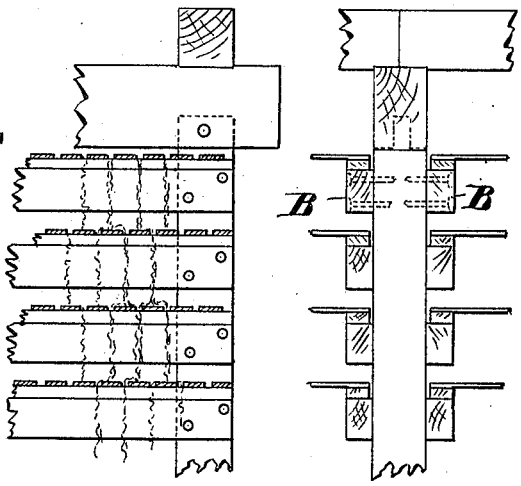

Fig. 6. Fig. 5.

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UNITED STATES PATENT OFFICE.

GEORGE K. FISCHER, OF SALT LAKE CITY, UTAH, AND FRANK KLEPETKO, OF GREAT FALLS, MONTANA.

STRUCTURE FOR COOLING FEED-WATER, &c.

SPECIFICATION forming part of Letters Patent No. 649,573, dated May 15, 1900.

Application filed July 6, 1899. Serial No. 722,940. (No model.)

To all whom it may concern:

Be it known that we, GEORGE K. FISCHER, of Salt Lake City, in the State of Utah, and FRANK KLEPETKO, of Great Falls, Cascade county, State of Montana, have invented certain new and useful Improvements in Structures for Cooling Feed-Water, &c., of which the following is a description, referring to the accompanying drawings.

While designed particularly for cooling hot water by exposing it to cooling-currents of air, the invention is not limited to this use.

The object of the invention is to cool the water by such exposure in a most efficient manner.

Certain incidental objects and results will be apparent from the following description of the invention in its most approved form. We will therefore first describe the best form of the structure now known to us and then will point out in the claim the essential characteristics which we claim as new, useful, and original.

In the drawings, Figure 1 is a side elevation, Fig. 2 a plan view, and Fig. 3 an end elevation, of such structure. Fig. 4 shows a preferred detail of the receiving-tank for the cooled water. Fig. 5 is a detail of the strips for supporting the slatted trays for dripping the water, showing also portions of the said trays in position. Fig. 6 is a cross-section transverse to the slats of the said trays; and Figs. 7, 8, and 9 are bottom view, end view, and edge view of one of the slatted trays.

Throughout the drawings like reference-letters indicate like parts.

The apparatus consists of a large receiving-tank A, on top of which is the framework or scaffolding, which, as illustrated, is intended to be eleven feet high. Secured to this scaffolding are strips B, preferably extending transversely and forming shelves for the slatted trays, frames, or racks C. These trays each consist of a light frame, across which are nailed thin fir laths with an interval of about half an inch between them. However, it must be understood that in describing our preferred construction we do not mean in any way to limit ourselves to the materials, proportions, or designs illustrated or described. These trays C slide into place upon the supports or strips B and when in place are arranged so that the laths of superposed trays drip the water from one to the other, as illustrated in Fig. 6. The laths of successive tiers tend, therefore, to redistribute the water and expose the largest possible surface to evaporation and the cooling effect of passing currents of air. The entire structure or tower is arranged with platforms or galleries D, which admits ready access to the trays, so that they can be drawn out for inspection or repair.

On the top of the structure is arranged a series of distributing-launders and perforated troughs E F, by which the water to be cooled is distributed lengthwise of the structure and delivered onto the upper tier of laths. The large tank A at the bottom receives the water after it has dripped from one tray to another throughout the whole height of the structure in the process of cooling. At one end of the tank A is arranged a water-supply pipe H, controlled by float-valve J. By means of this the water lost by evaporation in the cooling process is compensated for and the water-level in the tank A maintained at a constant point.

The operation of the cooling-tower or cooling structure is as follows: The water to be cooled is delivered into the launder E and flows from thence into the two lateral launders or conduits F and thence onto the upper tier of trays. Coming in contact with the first set of trays, the laths distribute the water horizontally and allow it to drip through the intervals between the laths directly onto the laths immediately beneath. These in turn again distribute it horizontally and drip it onto the next tier of laths, and so on throughout the height of the tower, the water being constantly segregated on account of the position of the laths until it arrives in the receiving-tank beneath. Owing to the horizontal distribution of the laths and their thinness the least possible resistance is afforded to the circulation of air. This gives an excellent cooling effect by means of the natural currents of air without requiring fans or other artificial means. The water only drips a few inches before being arrested and again distributed, and in this manner its descent is

greatly retarded and the cooling correspondingly facilitated.

We are of course aware that water has been cooled by dripping from one perforated tank to another and exposed to currents of air while falling from one tank to another below, and we therefore of course make no broad claim to cooling water by dripping it.

The features which we do claim as novel and as characteristic of our said invention are as follows.

In combination in a water aerating and cooling structure, a framework, a supply conduit or launder, one or more lateral conduits or launders fed from said supply conduit or launder, a plurality of detachable trays or frames carried on said framework and provided with slats extending parallel with the conduits or launders, and set to drip from one to another, galleries or platforms arranged in said framework giving access to said detachable trays, a tank beneath said detachable trays, a water-supply pipe delivering to said tank, and a float-valve governing the delivery from said supply-pipe, substantially as set forth.

Signed this 13th day of June, 1899, at Salt Lake City, Utah, by GEO. K. FISCHER.

GEO. K. FISCHER.

Witnesses:
JAMES COUZENS,
JAMES J. BURKE.

Signed this 15th day of June, 1899, at Great Falls, Montana, by F. KLEPETKO.

FRANK KLEPETKO.

Witnesses:
G. F. MACNAB,
B. ASEMANN.