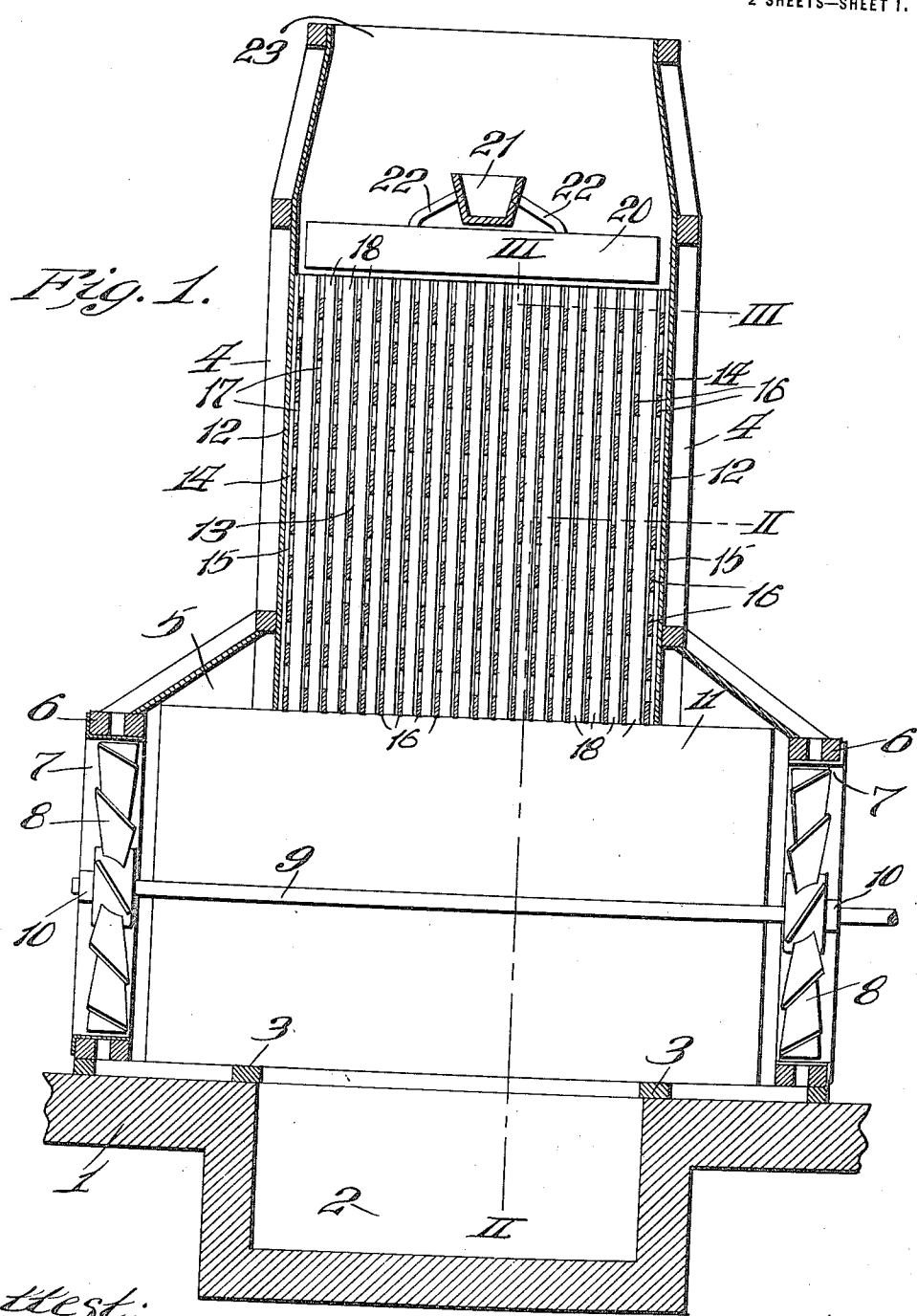


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G. J. STOCKER,
LIQUID COOLING TOWER.
APPLICATION FILED MAR. 26, 1914.

Patented June 13, 1916.
2 SHEETS—SHEET 1.



Attest:
M. O. Hammon

Inventor:
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Fig. 3

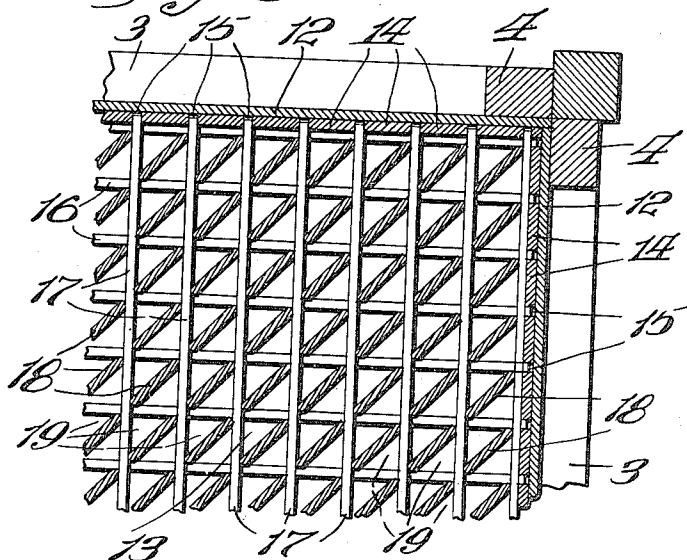


Fig. 4.

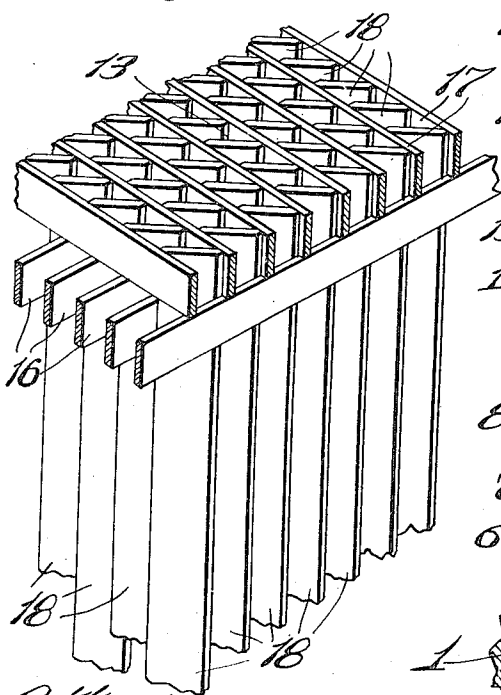
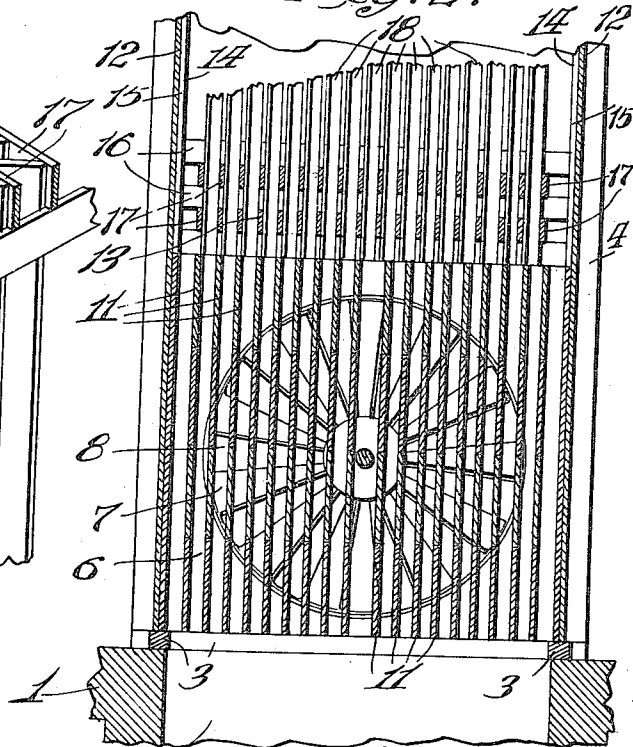


Fig. 2.



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UNITED STATES PATENT OFFICE.

GEORGE J. STOCKER, OF ST. LOUIS, MISSOURI.

LIQUID-COOLING TOWER.

1,187,399.

Specification of Letters Patent.

Patented June 13, 1916.

Application filed March 26, 1914. Serial No. 827,260.

To all whom it may concern:

Be it known that I, GEORGE J. STOCKER, a citizen of the United States of America, residing in the city of St. Louis and State of Missouri, have invented certain new and useful Improvements in Liquid-Cooling Towers, of which the following is a specification:

This device relates to an improvement in liquid cooling towers, and has for its primary object to provide a maximum amount of exposed surface for the travel of the liquid to be cooled.

Another object is to provide an improved way of bracing the checker work.

Other and further objects will appear in the specification, and be specifically pointed out in the appended claims, reference being had to the accompanying drawings exemplifying the invention, and in which,

Figure 1 is a vertical section of this improved tower. Fig. 2 is a vertical section taken on the line II—II, Fig. 1. Fig. 3 is an enlarged horizontal section taken on the line III—III, Fig. 1. Fig. 4 is an enlarged perspective view, partly in section, of a portion of the checker work, and showing the vertical slats mounted therebetween.

Referring to the drawings: 1 designates the foundation of this improved tower. Formed in said foundation is a pit or well 2. Mounted on said foundation 1, and around the well 2 are the sills 3, said sills having uprights 4 supported thereon. The base portion 5 of the tower has formed in the end walls 6 thereof circular openings 7, each of said openings being for the reception of a fan 8, said fan being secured to the horizontal shaft 9 which is mounted lengthwise of the base portion 5 in the bearings 10. Mounted lengthwise in the base portion 5 are a series of vertical partitions 11, said partitions preferably extending from the sills 3 to a point above the fans 8.

The vertical walls 12 of the checker work portion 13 of the tower have mounted on the inside thereof vertical strips 14, said strips being placed at equal distances apart forming spaces 15, said spaces being for the reception of the ends of cross pieces 16 and 17. These cross pieces are mere slats set up on edge and compose the checker work 13. When the checker work is being constructed in the tower, a layer or section of the cross pieces 16 is engaged in the spaces

15, said cross pieces resting on the top of the partitions 11. Then a layer of cross pieces 17 is engaged in the spaces 15 on the opposite sides of the tower, and said cross pieces 17 will rest on the cross pieces 16 at right angles thereto. Then another layer of the cross pieces 16 is mounted on the layer 17, and so on until the checker work is built up to the approximate height shown in Fig. 1. Vertical slats 18 are then inserted in the squares 19 formed by the cross pieces 16 and 17, said slats being the length of the height of the checker work 13. Said slats 18 are arranged obliquely in the squares 19 so the edges of said slats will impinge the corners of said squares. As these slats will snugly fit the squares of the checker work, they will serve as a reinforcement to the checker work, and will firmly bind said checker work together.

Mounted above the checker work 13 are a series of troughs 20, one only being shown. These troughs extend in series across the width of the tower. Mounted above said troughs 20 is a receiving trough 21 which is for the reception of the heated liquid to be cooled.

In the operation of this liquid cooling tower, heated liquid, received by the trough 21 is discharged through the discharge pipes 22 into the troughs 20; said troughs 20, in turn, discharging on to the checker work 13. The fans 8 are then put in motion, and as the liquid runs down the checker work, said fans will draw air through the circular openings 7 into the base portion 5, and between the partitions 11. Then as the outlet 23 is on top of the tower, the air will be forced upwardly through the checker work and through the outlet 23.

A portion of the liquid, when traveling downwardly through the checker work, will drop from section to section of the cross pieces 16 and 17. Whereas, the liquid that engages the upper end of the vertical slats 18 will travel down said slats their full length. And what does not drip between the partitions 11 will engage the walls of said partitions and travel there-down, and will be received by the well 2 from which the liquid is drawn off.

The liquid that engages the cross pieces 16 and 17 will also run down the walls of the partitions 11. The vertical slats 18, which extend the full length of the checker work, will provide a greater cooling area

for the liquid to be cooled, as the liquid will travel more slowly when engaging the surfaces than when dripping through space. The vertical partitions 11, meeting with the bottoms of the vertical slats 18 will cause a greater amount of liquid from said slats to engage the sides of said partitions as it is descending. The vertical slats 18 also serve to firmly brace the checker work together in view of said slats extending the full length of the sections of cross pieces 16 and 17 from which the checker work is constructed. It is obvious that the draft of air forced up through the tower by fans will cool the liquid.

What I claim is:

1. In a liquid cooling tower, horizontally arranged checker work, said checker work being composed of layers of slats set up on edge, each of said layers adapted to rest on another and at right angles thereto, and an obliquely arranged vertical slat located in each opening formed by said checker work, each of said vertical slats adapted to engage all of the vertically alined openings of said checker work, each of said slats adapted to engage diagonally opposing corners of the openings in said checker work.

2. In a liquid cooling tower, horizontally arranged checker work, said checker work being composed of layers of slats set up on edge, each of said layers adapted to rest on another at right angles thereto, thereby forming vertically alined openings, and an obliquely arranged vertical slat located in each set of vertically alined openings, each of said vertical slats adapted to be engaged in diagonally opposing corners of the openings of said checker work, said vertical slats adapted to bind said layers of said checker work.

3. In a liquid cooling tower, horizontally arranged checker work, oblique vertical slats placed within the squares formed by

said checker work, and vertical partitions arranged beneath said checker work, said vertical slats adapted to extend from the top of said checker work to said partitions thereby binding said checker work.

4. A liquid cooling device consisting of a tower, means for introducing a current of air through said tower from the bottom thereof, means of introducing the liquid from the top thereof, a series of interior partitions composed of slats placed horizontally at right angles with each other the height of the tower, and oblique vertical slats placed within the squares formed by said horizontal partitions, said vertical slats extending the length of said partitions to bind said slats and said partitions together.

5. The combination in a tower, of means for introducing a current of cool air at the base thereof, means of introducing a liquid to be reduced in temperature at the top thereof, a series of checker work partitions on the interior of said tower, and an oblique vertical slat placed within each square formed by said checker work, said vertical slats adapted to extend the length of said checker work to form continuous pathways for the introduced liquid.

6. The combination in a tower, of means for introducing a current of cool air at the base thereof, means of introducing a liquid to be reduced in temperature at the top thereof, a series of checker work partitions on the interior of said tower, oblique vertical slats placed within the squares formed by said checker work, and vertical partitions arranged beneath said checker work, said vertical slats extending from the top of said checker work to said partitions.

GEORGE J. STOCKER.

In the presence of—
H. G. FLETCHER,
M. C. HAMMON.