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COMBINATION MECHANICAL EQUIPMENT SUPPORT AND
INTERNAL WATER DISTRIBUTION PIPING
SYSTEM FOR COOLING TOWERS

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2 Sheets-Sheet 2

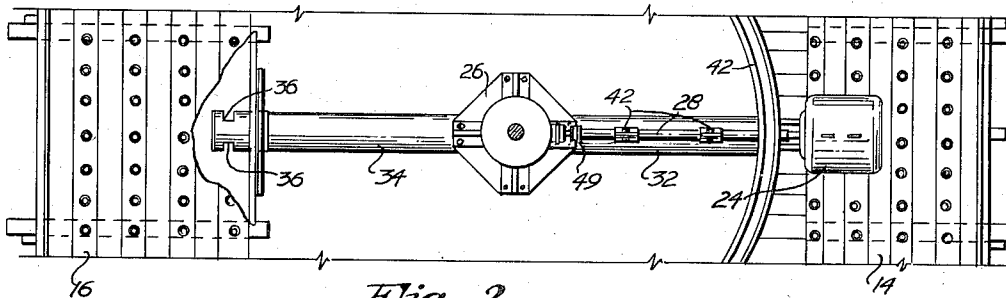


Fig. 2.

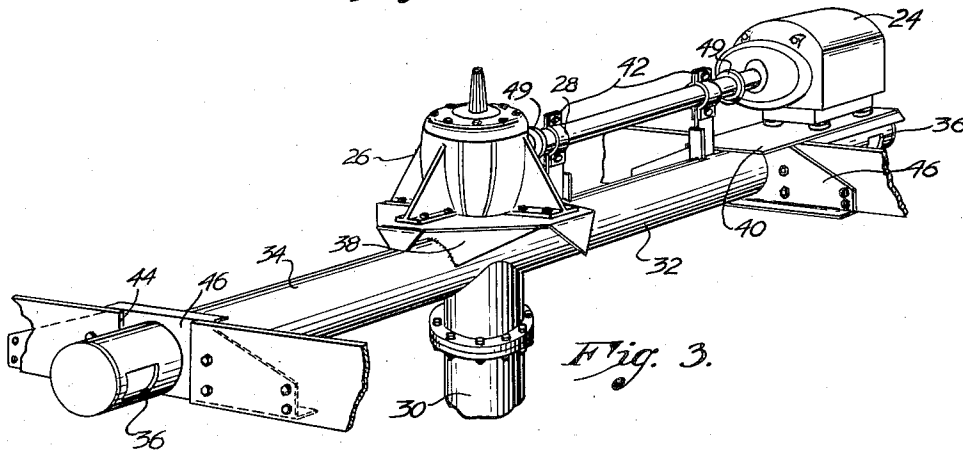


Fig. 3.

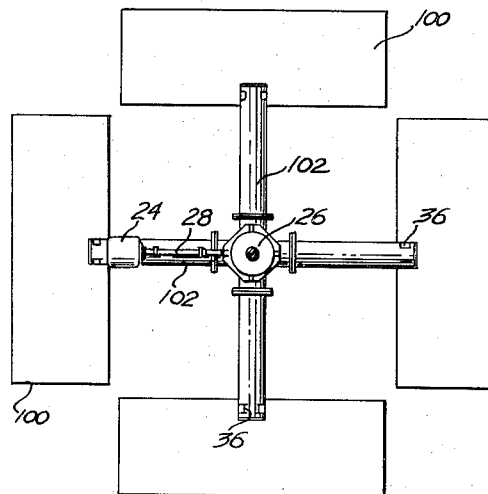


Fig. 4.

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COMBINATION MECHANICAL EQUIPMENT SUPPORT AND INTERNAL WATER DISTRIBUTION PIPING SYSTEM FOR COOLING TOWERS

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1 Claim. (Cl. 261—24)

This invention relates to improvements in water cooling towers and particularly to the structure thereof for conveying the hot water to the distributing elements and the support for the fan commonly employed for the purpose of forcing or inducing a draft therethrough.

It is the most important object of the present invention to provide a less expensive, but more rigid means combined in a single unit for not only supporting the fan, but for directing the hot water to the tower above the fill assemblies thereof.

Another important object of the present invention is to provide a riser in the nature of a loadbearing member interiorly disposed within the tower for the purpose of directing hot water thereto and supporting the fan, thereby eliminating unsightly external piping and at the same time eliminating structure heretofore necessary for supporting the fan and having no relationship to the external pipes.

A further object of the present invention is to provide in connection with the aforementioned upstanding load-bearing tube, laterals or branches leading from the uppermost end of the riser and discharging into the distributing elements of the tower, and which branches serve additionally for mounting not only the gear box that is operably connected with the fan, but the prime mover that is remotely coupled with the gear box exteriorly of a fan ring surrounding the fan.

Other objects include important details of construction to be made clear as the following specification progresses.

In the drawings:

Figure 1 is a fragmentary, side elevational view of a combination mechanical equipment support and internal water distribution piping system for cooling towers made according to the present invention, parts being broken away and in section to reveal details of construction.

Fig. 2 is a fragmentary, plan view thereof showing the tower displaced 180° from Figure 1, the fan being entirely removed.

Fig. 3 is an enlarged, fragmentary, perspective view of the uppermost end of the piping system showing the gear reducer for the fan and the prime mover therefor; and

Fig. 4 is a schematic plan view illustrating a modified form of the invention.

The essential components of the water cooling tower shown in Fig. 1 of the drawings, include a pair of opposed hot water distributing elements, here in the form of basins 10 and 12 overlying fill assemblies 14 and 16 respectively and through which the water emanating from the elements 10 and 12 gravitates for collection in a sump 18 underlying the assemblies 14 and 16.

The tower includes additionally means for forcing air through the assemblies 14 and 16 in the nature of a

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fan 22 driven by prime mover 24 through reduction gearing within gear box 26 that is operably coupled with prime mover 24 by shaft 28.

In accordance with the novel principles of the instant invention the hot water to be cooled is directed into the basins 10 and 12 by an internal, tubular riser 30 suitably supported within the tower and provided with a pair of lateral extensions or branches 32 and 34 rigid to the uppermost end of the riser 30 and communicating therewith.

The extensions 32 and 34 are provided with opposed outlets 36 that discharge into the corresponding basins of the illustrated distributing elements 10 and 12. Gear reduction box 26 is provided with a base 38 that is secured rigidly to the branches 32 and 34 directly above the riser 30. Similarly, the prime mover 24 has a base 40 secured to the branch 32, which also supports shaft guards 42. These guards prevent "whipping" or self-destruction of the parts in event either of the couplings 49 should break.

Basins of the illustrated distributing elements 10 and 12 are provided with clearance openings 44 in the innermost walls thereof for the corresponding extensions 32 and 34 and which openings 44 are closed by plates 46 attached rigidly to the extensions 32 and 34 and bolted or otherwise attached to the basins 10 and 12.

A fan ring 48 surrounds the fan 22 above the branches 32 and 34 and an opening 50 in the fan ring 48 clears the shaft 28.

In Fig. 4 of the drawings there is illustrated a plurality of hot water distribution basins 100, together with a plurality of radial tubes or branches 102 discharging into corresponding basins 100 and it is, therefore, seen that within the concepts of the instant invention, any number of basins can thus be fed with hot water and the piping system will adequately support the fan, its gear box and prime mover, while at the same time permitting disposition of the said prime mover at a practical operating point with respect to the gear box 26 and fan 22.

Having thus described the invention what is claimed as new and desired to be secured by Letters Patent is:

Combination mechanical equipment and internal hot water distribution apparatus for use in hot water cooling structure provided with an upright tower having an air inlet, a pair of horizontally spaced supports in the upper part of the tower, an upwardly facing air outlet between said supports, a horizontal hot water distribution basin adjacent at least one of said supports, a cold water sump and a fill assembly in the tower between the basin and the sump, said apparatus being adapted to be hoisted from the ground as a complete unit and mounted in place in the upper part of the tower, and comprising an elongated, cylindrical lateral having load bearing characteristics and of somewhat greater length than the distance between said supports; a pair of longitudinally spaced mounting plates secured to the lateral in perpendicular relationship to the longitudinal axis of the same and spaced apart a distance substantially equal to that between the supports whereby the plates may be rigidly secured directly to respective supports with said lateral bridging the distance therebetween, at least one end of the lateral extending outwardly from a respective plate, adapted to be positioned in overlying relationship to said basin and provided with an opening for discharging hot water directly from the lateral into the basin; a gear box rigidly mounted on, supported by and extending away from the lateral in axial alignment with said outlet medianly between said plates and adapted to rotatably mount a horizontal fan; a motor rigidly mounted on and

supported by the lateral adjacent one of the plates; shaft means carried by the lateral operably interconnecting the gear box and said motor; and an elongated, upright supply riser serving to bear some of the load of the apparatus, disposed within the tower and communicating with the lateral substantially medianly between said plates for supplying hot water to the lateral.

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