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COOLING WATER CIRCULATING APPARATUS

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Fig. 1

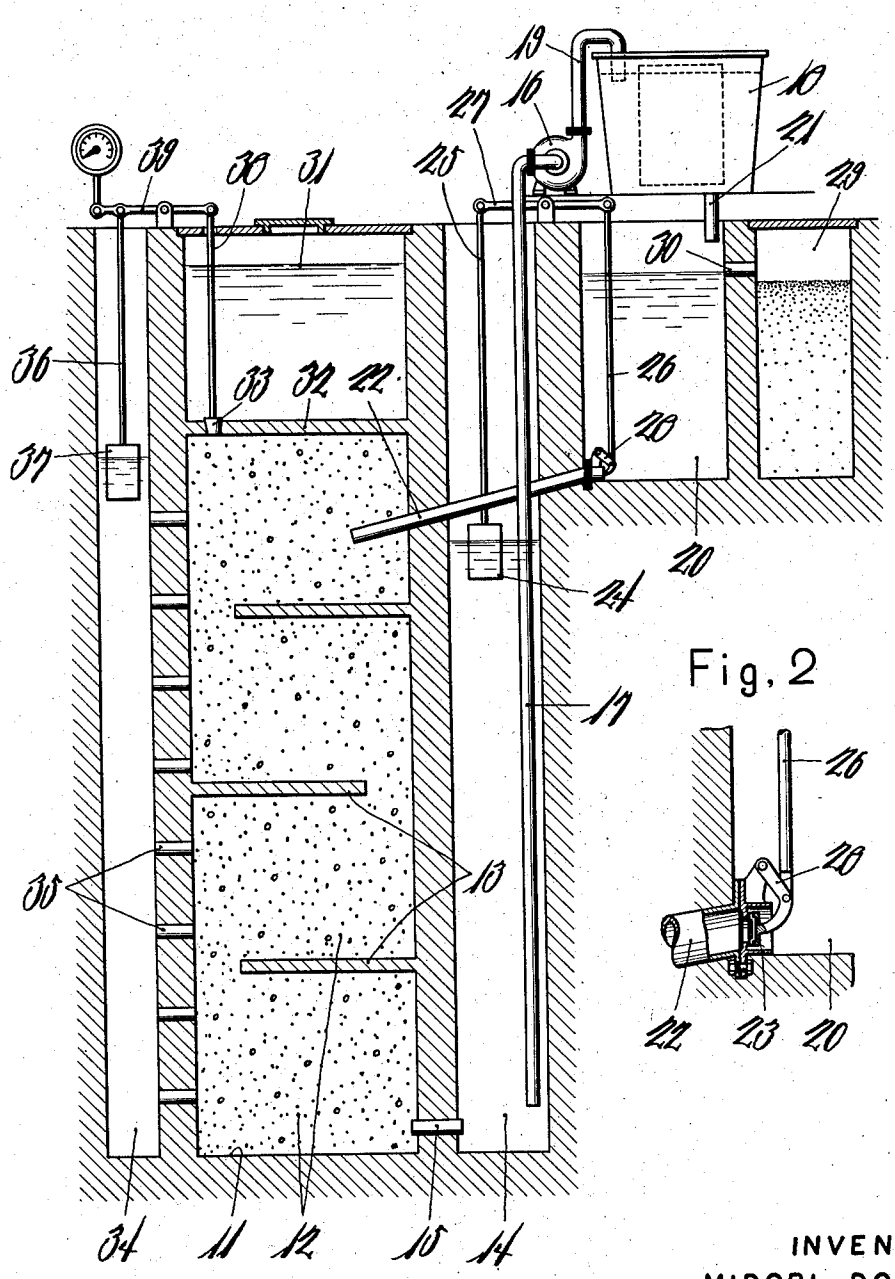


Fig. 2

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COOLING WATER CIRCULATING APPARATUS

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2 Claims. (Cl. 257—122)

This invention relates to cooling water circulating apparatus. It relates particularly to such cooling water circulating apparatus of the type having means for pumping cooling water from a well into a cooling tank, and returning it back to the well.

The object of the present invention is to provide means to cool things effectively by using well water.

With this object in view, the present invention provides a cooling water circulating apparatus comprising a well provided with a ballast layer and alternate partition walls, a reservoir, a pump for pumping the water in the reservoir into a cooling tank, a cooling tank, a drainage basin, a drain pipe between the drainage basin and the well, a supply water basin having a supplementary feed valve, and a water pit having a float to operate the supplementary feed valve. The water pit communicates to the well by holes, and a float rod is connected with a valve rod of the supplementary feed valve by a lever.

According to the present invention, the drainage of the cooling tank is returned back to the well and cooled when passing zigzag through the ballast layer and mixed in the well water, and then flows into the reservoir. This water is pumped into the cooling tank by the pump, and then returned into the well through the drainage basin and the drain pipe so as to be cooled again. And when the well and the water pit sink, the supplementary feed valve is opened automatically by means of the float for the well to be supplied with water. Hence, the quantity of the circulating cooling water is kept constant.

Moreover, the present invention provides a discharge valve at the inlet of the drain pipe, and a float in the reservoir. A float rod is connected with a valve rod by a lever, so that, when the reservoir rises, the valve lever of the discharge valve is operated by the float to close the discharge valve. Thus, overflowing of the well water is automatically prevented.

Other and the further object of the present invention will become apparent from the following specification and claims taken together with the accompanying drawing in which is shown the preferred embodiment of the cooling water circulating apparatus according to the present invention.

Fig. 1 is a sectional elevation view of the cooling water circulating apparatus embodying this invention.

Fig. 2 is a detailed view of a discharge valve.

In Fig. 1, referential character 11 indicates a well provided with a ballast layer 12 and alternate partition walls 13. A reservoir 14 is bored near the well 11, and the both lower parts of the reservoir 14 and the well 11 communicate with each other by a water pipe 15. A pump 16 is installed, and its suction pipe 17 is put into the reservoir 14 so as to pump water into a cooling tank 18 through a delivery pipe 19 of the pump. Under the cooling tank 18 is made a drainage basin 20 so as to receive drainage of the cooling tank 18 through a pipe 21. A drain pipe 22 is installed between the drainage basin 20 and the well 11, and the pipe 22 is provided with a discharge valve 23 as shown in Fig. 2. The reservoir 14 is provided with a float 24, and a float rod 25 is connected with a link 26 by a lever 27 so as to operate a valve lever 28.

When the reservoir 14 rises, the valve 23 is closed. In this case, the water in the drainage basin 20 overflows into a filter chamber 29 through a water passage 30. The water in the filter chamber 29 flows back into the drainage basin 20 when the water in the latter decreases.

A supply water basin 31 is made at the upper part of the well 11, and its bottom plate 32 is provided with a supplementary feed valve 33. And a pit 34 is bored near the well 11, and communicates with the well by holes 35, and the pit 34 is provided with a float 37. A float rod 36 and a valve rod 38 are connected by a lever 39. When the well 11 and the water pit 34 sink, the supplementary feed valve 33 being automatically opened by means of the float 37, the water in the supply water basin 31 is fed into the well. Thus the quantity of the circulating cooling water is kept constant.

It is thought that the invention and its advantages will be understood from the foregoing description and it is apparent that various changes may be made in the form, construction and arrangement of the parts without departing from the spirit and scope of the invention or sacrificing its material advantages, the form hereinbefore described and illustrated in the drawing being merely a preferred embodiment thereof.

Having thus described my invention, what I claim and desire to secure by Letters Patent of the United States is:

1. A cooling water circulating apparatus comprising a well provided with a ballast layer, alternating partition walls extending inwardly from the sides of said well, a reservoir communicating with said well adjacent the lower portion thereof, a cooling tank, a pump for pumping water from said reservoir into said cooling tank, a drainage basin located below said cooling tank, a drain pipe extending between the lower portion of said drainage basin and the upper portion of said well, a supply water basin having a supplementary feed valve located above said well for supplying said well when the level of water therein falls, and a water pit adjacent said well and communicating therewith having a float for operating said supplementary feed valve.

2. A cooling water circulating apparatus according to claim 1 wherein a float is provided in said reservoir controlling said drain pipe, and a filter chamber positioned adjacent said drainage basin having communication therewith at the upper portion thereof to receive any overflow therefrom.

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