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H. W. DIETERT

2,080,168

MOISTURE TELLER

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FIG. 1

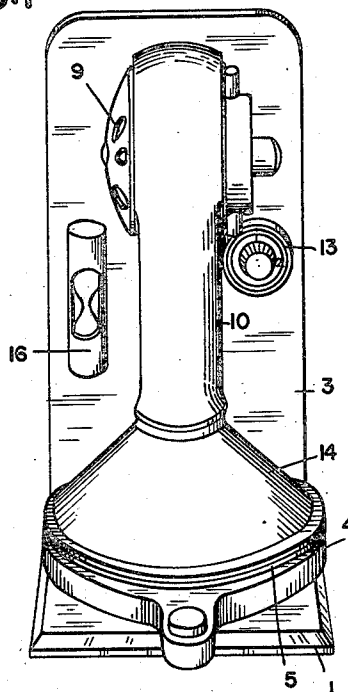


FIG. 2.

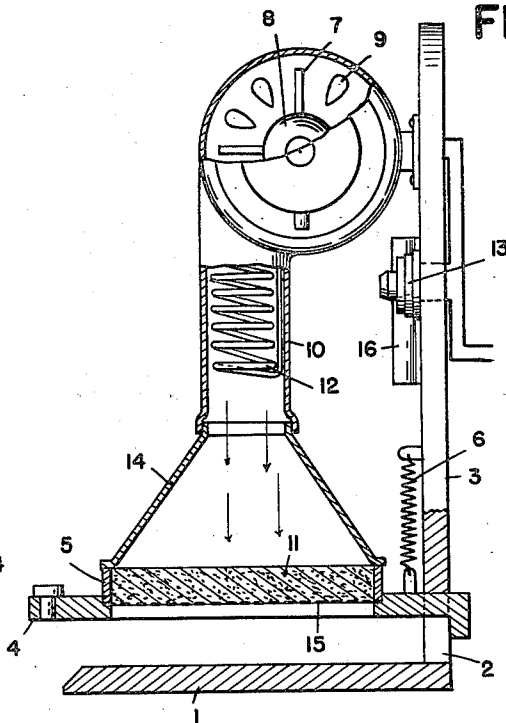


FIG. 3.

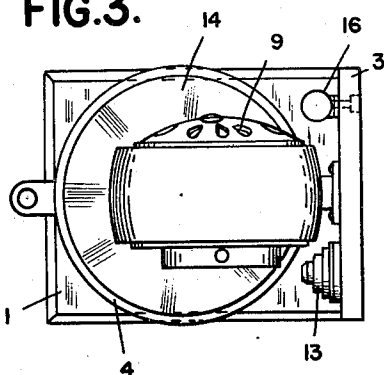
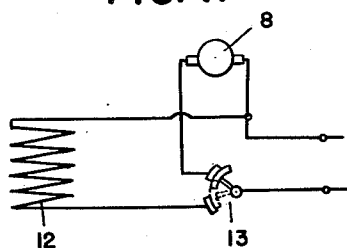


FIG. 4.



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## UNITED STATES PATENT OFFICE

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## MOISTURE TELLER

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9 Claims. (Cl. 34—26)

This invention relates generally to sand testing and drying apparatus and refers more particularly to a moisture teller for use in foundries.

One of the essential objects of the invention is to provide a device of the type mentioned that fulfils the need of a quick and accurate moisture test and that meets the most exacting requirements whether they be speed, accuracy, economy, flexibility or simplicity.

Another object is to provide a moisture teller that is capable of drying sand samples faster and more efficiently than is possible with conventional devices.

Another object is to provide a portable moisture teller that can be manufactured at a comparatively low cost and that is economical to operate.

Other objects, advantages and novel details of construction of this invention will be made more apparent as this description proceeds, especially when considered in connection with the accompanying drawing, wherein:

Figure 1 is a perspective view of a moisture teller embodying my invention;

Figure 2 is a vertical sectional view through the moisture teller;

Figure 3 is a top plan view of the moisture teller;

Figure 4 is a diagrammatic view illustrating the electrical connections of the device.

Referring to the drawing, 1 is a substantially L-shaped stand having a slot 2 in the upright portion 3 thereof receiving a depressible holder 4 for a pan 5 of molding sand. 6 is a coil spring for normally retaining the holder 4 in raised position. 7 is a fan operated directly from an electric motor 8 for circulating air from suitable inlets 9 in the fan casing or housing downwardly through a restricted neck 10 thereof to the sand 11 in the pan 5. 12 is an electric heating element in the neck 10, and 13 is an electric switch in circuit with and adapted to control both the fan 7 and heating element 12.

As shown, the stand 1 is preferably a light aluminum casting so that the moisture teller may be moved about as desired to any suitable location in a foundry or sand testing laboratory where electric current is available. The direct motor driven fan 7 is a compact unit resulting in a reliable source of air under relatively low pressure. The air is drawn by said fan through the inlets 9 and passed over the electric heating element 12 where it is heated to approximately 212° F. The heated air then passes into a downwardly flared portion 14 of the casing which serves as a diffuser to spread the heated air substantially uniformly over the entire area of the sand in the

pan. In this connection it should be noted that the area of the pan 5 is relatively large, hence a greater amount of sand may be spread in a thin layer and will dry faster.

In use the holder 4 may be readily depressed to permit the pan 5 to be inserted in or removed from the device. Preferably the bottom 15 of the pan is formed from Monel metal filter cloth of approximately five hundred mesh. When it is desired to test and/or dry foundry sand, the motor 8 for the fan may be started by turning the switch 13 to its first position, and the heating element 12 may then be energized by turning the switch to its second position. A sample of the sand 11 is placed in a relatively thin layer in the pan 5, and the latter is placed on the depressed holder 4. Upon being released, the holder will be moved upwardly by the spring 6 until the pan abuts and substantially closes the lower flared end 14 of the casing. The heated air from the diffuser 14 passes through the sand, converting the moisture contained in the sand into steam which is blown out by the air current, thus quickly drying the sand free of moisture. If desired, a one-minute sand glass such as 16 on the upright portion 3 of the stand may be rotated to a vertical position as an indicator for the operator. When approximately three-fourths of the sand in the upper part of the glass has moved downwardly to the lower part thereof, representing approximately forty-five seconds, the holder 4 may be depressed so that the pan 5 may be removed to permit the heated sand therein to cool. Such dried and cooled sand may then be weighed or otherwise tested as desired.

What I claim as my invention is:

1. A device of the class described, comprising a stand, a fan housing rigid with said stand and having a vertical outlet, and a depressible sand pan support mounted to slide on the stand in alignment with said vertical outlet.

2. A device of the class described, comprising a stand having a base and an upright portion, a fan housing carried by said upright portion and having an air outlet extending toward said base, and a depressible sand pan support carried by the stand between the base thereof and said air outlet.

3. A device of the class described, comprising a stand having a base and an upright portion, a fan housing carried by said upright portion and having a downwardly flared air outlet opening toward said base, a sand pan holder carried by the upright portion of said stand and movable toward and away from the flared outlet, and

actuating means for the holder operable to cause a sand pan carried thereby to substantially close the flared outlet of the fan housing.

4. A device of the class described, comprising  
5 a depressible pan carrier, a fan housing having a flared air outlet opening toward said carrier, and a pan on said carrier at the mouth of said flared air outlet opening, the area of said outlet opening and pan being relatively large whereby  
10 a large quantity of material may be spread in a relatively thin layer in said pan to be dried rapidly by the air discharged from said opening.

5. A device of the class described, comprising  
15 a depressible pan carrier, a fan housing having an air outlet opening toward said carrier, a pan on the carrier engageable with the outlet and having a relatively fine mesh bottom upon which material to be dried by air from the outlet may be supported and through which air from the  
20 outlet may be discharged.

6. A device of the class described, comprising  
a stand, a conduit for air carried by said stand and having a downwardly opening outlet, a sand pan engageable with and adapted to receive air  
25 from said outlet, a fan for forcing air through the outlet into said sand pan when the latter is in engagement with the outlet, and means carried by the stand for moving said pan into engagement with said outlet.

7. A device of the class described, comprising a stand having a base and an upright portion, a conduit for air carried by the upright portion of said stand and having an outlet discharging toward said base, a fan for forcing air through said outlet, and means carried by the upright portion of said stand for holding a sand pan in proximity to the outlet of said conduit for receiving air therefrom.

8. A device of the class described, comprising  
10 a depressible sand pan carrier, a conduit for air having an outlet opening toward said carrier, a sand pan on the carrier and movable by the latter into proximity to the outlet for receiving air therefrom, and a fan for forcing air through the  
15 outlet into said sand pan when the latter is in proximity to the outlet.

9. A device of the class described, comprising  
a stand having a base and an upright portion, a  
20 conduit for air carried by said upright portion and having an outlet discharging toward said base, a sand pan holder carried by the upright portion of said stand and movable toward and away from said outlet, and actuating means for  
25 the holder operable to cause a sand pan carried thereby to be positioned in proximity to the outlet to receive air therefrom.

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