

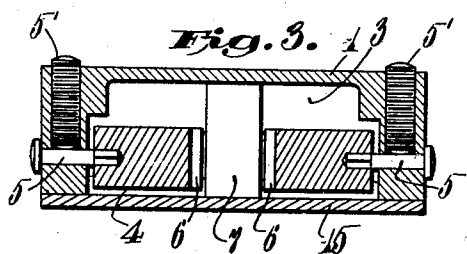
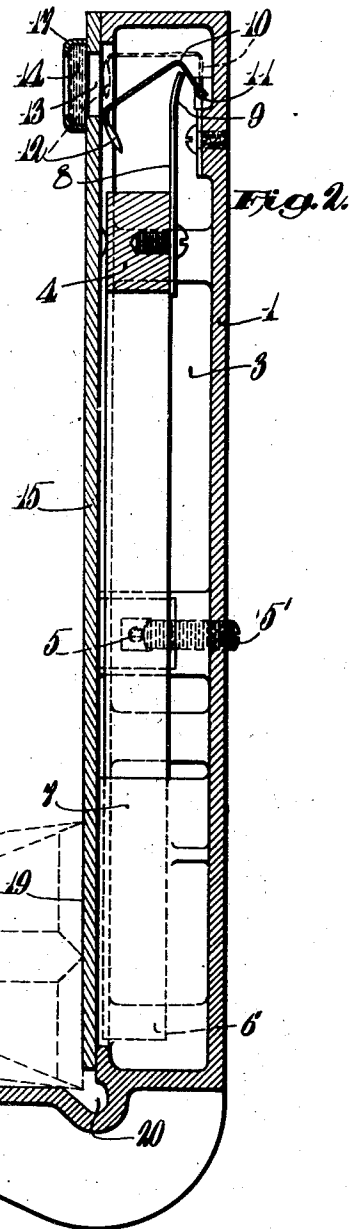
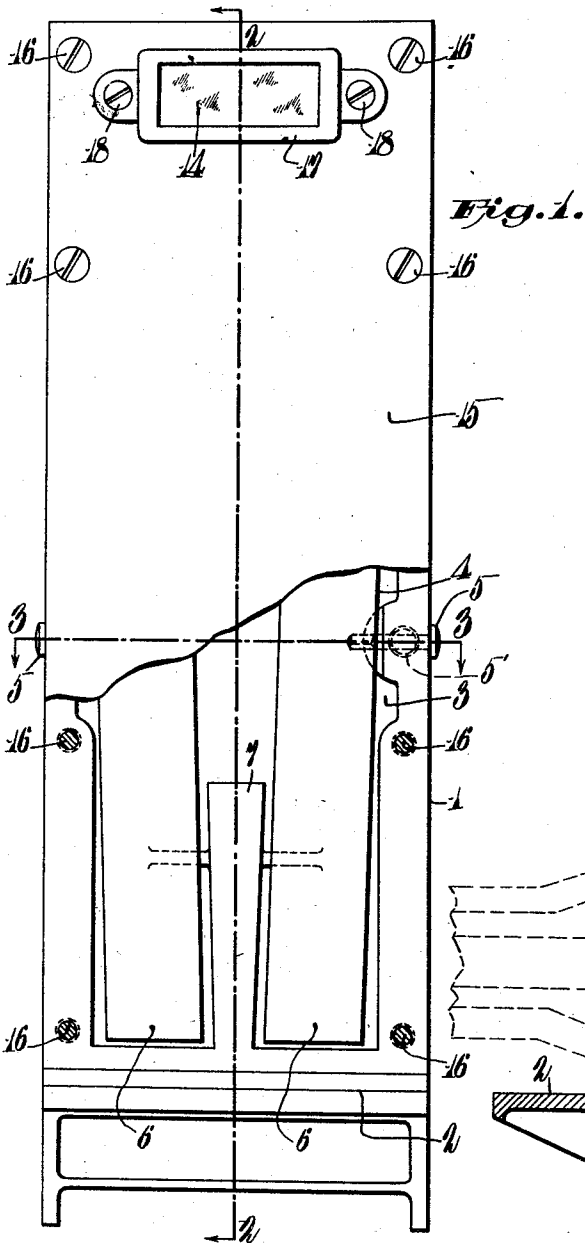
Oct. 14, 1930.

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1,778,653

FURNACE INDICATOR

Filed June 9, 1922



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UNITED STATES PATENT OFFICE

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FURNACE INDICATOR

Application filed June 9, 1922. Serial No. 567,189.

My invention relates to furnace indicators.

It has for its object to provide an improved indicator, especially adapted to use in connection with such articles as drill steels, or the like, which will indicate when the article under heat has reached the desired temperature. A further object of my invention is to provide an improved indicator of the character set forth which is accurate and certain in operation, of a simple and rugged construction adapted to withstand the rough usage to which such a device is subjected in ordinary service, and which is also adapted to be manufactured at small expense.

In the accompanying drawings I have shown for purposes of illustration one embodiment which my invention may assume in practice.

In these drawings,—

Fig. 1 is a front view of one form of my improvement, a portion of the cover being broken away to facilitate illustration.

Fig. 2 is a vertical sectional view on line 2—2 of Fig. 1 with a drill steel shown in dotted lines in operative position.

Fig. 3 is a transverse sectional view on line 3—3 of Fig. 1.

In this illustrative construction I have shown an upstanding frame 1 having a laterally extending support 2, herein a plane shelf, at its lower end and suitably attached thereto, herein formed integral therewith, the lateral support 2 being adapted to support an article to be tested when laid horizontally thereon in adjacency to improved abutment and temperature indicating means carried by the frame 1 and hereinafter described.

Referring more particularly to the member 1, it will be noted that it is herein formed of a non-magnetic material such as brass and provided with an internal chamber 3. Disposed vertically in this chamber 3 is a magnet 4, herein of the horse-shoe permanent magnet type, pivoted between its ends for a limited movement on adjustable steel knife edge triangular pivots 5 carried on the frame 1 and suitably held in place by set screws 5'. Herein this magnet has its poles 6 disposed at the lower end of the chamber 3 and movable on opposite sides of an upstanding par-

tion member 7 of non-magnetic material formed on the back wall of the chamber 3 and projecting to the front of the latter. As shown in Figs. 1 and 2, the magnet 4 also carries upon its upper end an upstanding member 8, herein of brass, projecting upwardly therefrom and herein having a curved end 9 adapted to contact with an elbow lever 10 which is in turn pivoted at 11 on a transverse pivot on the back wall of the chamber 3 and carries on its front end an indicator 12 adapted to be moved into and out of operative position in front of an aperture 13 and glass 14 carried by a cover 15. The location of the pivot relative to the center of gravity of the magnet and the weight of the upstanding member 8 give to the magnet a slight tendency towards clockwise turning, as viewed in Fig. 2, but this is overcome by the weight and leverage of the indicator 12 so that unless the poles of the magnet are influenced by a magnetic body the upper end of the magnet rests lightly against a portion of the cover 15. It will thus be clear that with this arrangement of parts the center of gravity of the magnet 6 and member 8 lies to the rear of and moves away from a vertical plane including the pivots of the magnet when the latter swings due to the approach of a magnetic body. Herein, it will be noted that the cover 15 seals the chamber 3 and is attached to the member 1 by suitable means, such as screws 16, and removable to permit access to the parts inside the chamber whenever desired, while the glass is carried in a suitable casing 17 likewise removably attached, as by screws 18, to the cover. It will also be noted that herein the lower end of the cover 15 presents an upstanding abutment 19 of non-magnetic material for the articles to be tested, although obviously a separate abutment plate may be used if desired, and that the abutment, and herein the whole cover, is formed of a non-magnetic yet conducting material, such as brass. Attention is also directed to the fact that the abutment is braced by the member 7 in such manner as to prevent damage thereto and also does not extend down quite to the level of the supporting surfaces of the mem-

ber 2, a suitable transverse groove 20 being provided between the adjacent extremities of the members 2 and 19.

In the operation of my improved construction it will be evident that when it is desired to determine the temperature of a steel or other object under treatment in a furnace, it is only necessary to place the end of the object on the support 2 with its extremity preferably closely against the lower outer face of the abutment 19. With the article to be tested in this position, if the temperature has not reached the desired point previously determined, i.e. where it loses its magnetic quality, the magnet 4 will be influenced, the lines of force then passing between the poles thereof, the non-magnetic abutment 19, and the steel. As a result the magnet 4 will be attracted to the object and swing about its pivot toward the article under test, moving its member 9 toward the right in Fig. 2 and thereby throwing up the member 10 and indicator 12 so that the indicator will be in front of the glass 14 and visible to an operator who will thus be advised that further heating is required. If, however, the steel has reached the critical point desired, i.e. at which it loses its magnetic quality, the indicator will not be operated and the operator will then know that no further heating is required.

As a result of my improvement, it is made possible to obtain greater certainty of operation. Attention is also directed to that fact that it is made possible for the operator to insure accurate positioning of the article relative to the magnet, the groove 20 permitting the object always to be brought into the same position against the abutment despite the presence of flaring extremities on the article or scale which otherwise, through interfering with the desired location of the articles in the same position, would thereby cause the indicator to function irregularly. It will also be noted that the entire mechanism while thoroughly enclosed, is readily accessible whenever desired to permit replacement or repair and that the indicator mechanism while exceedingly accurate is of such a simple and rugged mechanical character as to permit it to be kept in repair by the average furnace tender or repair man.

While I have in this application specifically described one embodiment which my invention may assume in practice it will be understood that this form of the same is shown for purposes of illustration and that the invention may be modified and embodied in other forms without departing from its spirit or the scope of the appended claims.

What I claim as new and desire to secure by Letters Patent is:

1. A magnetic heat indicator including a frame presenting a lateral article support and an upstanding article abutment, a magnet movable thereon and having its poles dis-

posed adjacent said abutment, and a spacing member between said poles extending into adjacency to one surface of said abutment.

2. In a magnetic heat indicator, an upstanding chambered member, an upstanding magnet disposed in the chamber therein and pivoted between its ends on a transverse pivot, an indicator in said chamber above said magnet and operated upon movement thereof, and means for covering said chamber presenting an indicator opening and including an article abutment in front of both of the magnet poles in said chamber.

3. In a magnetic heat indicator, an upstanding chambered member presenting a laterally extending article support at its lower end, an upstanding magnet disposed in the chamber therein and pivoted between its ends on a transverse pivot, a spacing member between its poles, an indicator in said chamber above said magnet and operated upon movement thereof, and means for covering said chamber presenting an indicator opening and including an article abutment in front of the magnet poles in said chamber.

4. A magnetic temperature indicator comprising a frame, a magnet pivotally mounted on said frame, a member fixed to said frame adjacent said pivoted magnet and providing an abutment surface against which an article to be tested may be placed to locate the same with reference to said magnet, a shelf carried by said frame having a supporting surface upon which such article may be supported during testing, and an indicator device controlled by pivotal movement of said magnet.

5. In a magnetic temperature indicator, the construction set forth in claim 4 wherein said abutment surface and said supporting surface are each in a plane parallel to the axis of pivotal movement of said magnet.

6. A magnetic temperature indicator comprising a frame, a magnet pivotally mounted on said frame in a vertical plane to swing about a horizontal axis, a member fixed to said frame adjacent said pivoted magnet and providing a vertical abutment surface against which an article to be tested may be placed to locate the same with reference to said magnet, a shelf carried by said frame having a horizontal supporting surface upon which said article may be supported during testing, means at the junction of said surfaces providing a transverse groove, and an indicator device controlled by pivotal movement of said magnet.

7. A magnetic temperature indicator comprising a frame having walls defining a chamber, a magnet arranged in said chamber and pivotally mounted on the frame, an abutment member fixed to the frame adjacent said pivoted magnet and providing an abutment surface against which an article to be tested may be placed to locate the same with

reference to said magnet, a non-magnetic reinforcing member disposed in said chamber adjacent said pivoted magnet for maintaining said abutment member in fixed relation to the pivot of said magnet, and indicator means controlled by pivotal movement of said magnet.

8. A magnetic temperature indicator comprising a frame, a horseshoe magnet pivotally mounted on said frame, a member fixed to said frame adjacent the poles of said magnet and providing an abutment surface against which an article to be tested may be placed to locate the same with reference to said magnet, a non-magnetic reinforcing member fixed to the frame between the poles of said magnet for maintaining said abutment member in fixed relation to the pivot of said magnet, and indicator means controlled by pivotal movement of said magnet.

9. In a magnetic temperature indicator comprising a frame having walls defining a chamber, a magnet arranged in said chamber and pivotally carried by said frame, a non-magnetic abutment member fixed to said frame adjacent said pivoted magnet and having an abutment surface against which an article to be tested may be placed to locate the same with reference to said magnet, a shelf carried by said frame having a supporting surface upon which said article may be supported during testing, a non-magnetic spacer member disposed in said chamber between said abutment member and one of the walls of said chamber for maintaining said abutment member in fixed spaced relation to the normal position of said magnet, and indicator means controlled by pivotal movement of said magnet.

In testimony whereof I affix my signature.
WADE H. WINEMAN.