H. B. ANDERSON.

INDICATING DEVICE FOR HEAT TREATMENT OF METAL.

APPLICATION FILED APR. 14, 1913.

1,124,234. Patented Jan. 5, 1915.

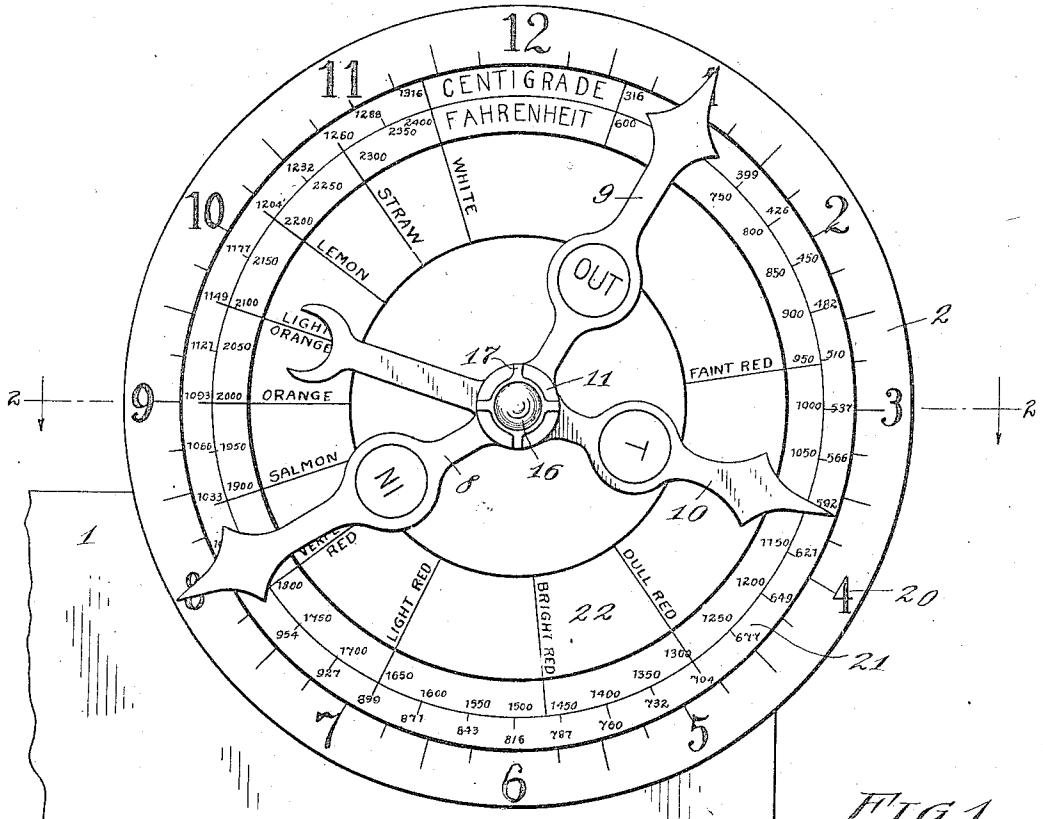


FIG. 1

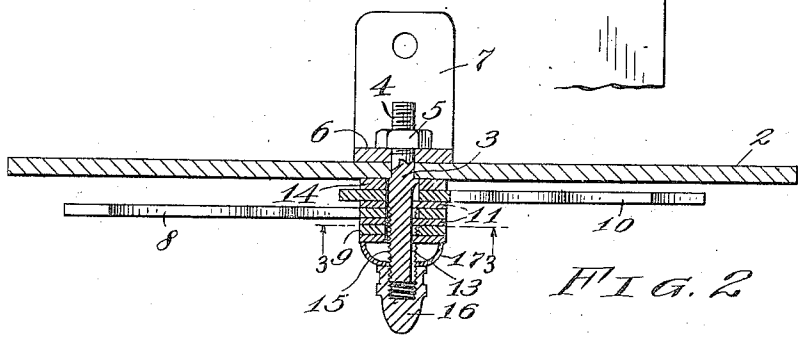


FIG. 2

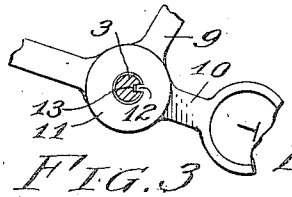


FIG. 3

WITNESSES:

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UNITED STATES PATENT OFFICE.

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INDICATING DEVICE FOR HEAT TREATMENT OF METAL.

1,124,234. Specification of Letters Patent. Patented Jan. 5, 1915.

Application filed April 14, 1913. Serial No. 761,133.

To all whom it may concern:

Be it known that I, HAROLD B. ANDERSON, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Indicating Devices for Heat Treatment of Metal, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

This invention relates to an indicating device designed for the use of furnace men connected with the heat-treatment of steel or other metal, although the device may be employed for other cognate purposes. It has been discovered and the fact is now well known, that the strength, elasticity, permanence, toughness, hardness, and other qualities of steel or other metals can be modified greatly by proper manipulation, one of the most important manipulations being the maintaining of the metal parts at a predetermined degree of heat for a predetermined length of time, the temperature and duration of the treatment depending upon the metal and upon the results desired. These quantities, namely temperature and time, are different for different metals, and even for different consignments of the same metal and are ascertained by experts and engineers after a long and careful series of laboratory experiments. The directions as to time and temperature formulated by them are communicated to the furnace men who are relied upon to carry out such directions. It ordinarily results, however, that a considerable percentage of the work is spoiled because the furnace men become confused as to the temperatures to be maintained or forget or make mistakes as to the time. Heretofore the furnace man has been obliged either to rely upon his memory for the quantities, to jot down the same upon slips of paper which might become disarranged or lost, or to chalk up the quantities upon the wall near the furnace in which case his numbers frequently became confused with numbers previously placed there.

Among the objects of this invention are the provision of a simple and convenient indicator having different members which can be set to indicate the various quantities so as to avoid the danger of the workman's becoming confused as to the same; the provision of a simple and inexpensive construction permitting the setting and secure holding of the various indicators or pointers without the possibility of moving any of the other pointers; while further objects and advantages of the invention will appear as the description proceeds.

One of the constructions in which my invention can be embodied is illustrated in the drawings accompanying and forming a part of this application, wherein:

Figure 1 represents a portion of a furnace having my improved indicating device attached thereto; Fig. 2 is a cross sectional view through the indicating device taken substantially on the line 2—2 of Fig. 1; and Fig. 3 is a cross sectional view of the stud taken substantially on the line 3—3 of Fig. 2.

Describing the parts by reference characters, 1 represents a portion of a furnace which may be of the usual or any desired type, and 2, a circular metallic plate secured thereto in a convenient and easily visible location. Projecting forwardly from the center of the plate 2 is a stud 3, here shown as a shouldered member projected through an aperture in the plate and having threads 4 at its rearward end receiving a nut 5. Between the nut and the rearward side of the plate 2 the arm 6 of a bracket 7 is inserted, which bracket serves for the attachment of the indicator to the furnace. Pivoted upon the stud 3 are a plurality of pointers 8, 9, 10, said pointers being separated by means of washers 11, each of which is formed with an internal projection or finger 12 engaging a slot 13 formed in the side of the stud 3. The rearmost pointer is spaced from the face of the plate by means of a washer 14 as shown in Fig. 2. The outer end of the stud is threaded as at 15 for the reception of a suitable thumb nut 16, an elastic metal spider 17 being located inside of the nut 16, so as to place a yielding tension upon the various pointers. A washer 11 is preferably interposed between the spider and the outermost pointer so that the turning of the pointer shall not tend to rotate this spider and thereby change the adjustment of the nut 16.

The periphery of the plate 2 is provided with dial graduations as shown at 20 in Fig. 2 running from 1 to 12 with suitable fractional indications so as to designate the hours and fractional hours of the day. Within the hour graduation scale is formed

a temperature scale 21 covering all of the range ordinarily employed in the heat treatment of metals, in the present instance from 600° to 2400° F. In the present embodiment I have illustrated the dial as formed with both centigrade and Fahrenheit scales so as to be applicable for all installations. In most installations some kind of direct reading pyrometer is employed so that the workmen can regulate the heat of the furnace intelligently. In case such refinement is not employed and the workman is left to determine the proper temperature from the color of the metal, I have illustrated inside of the temperature scale a color scale denoted at 22, graduating the same approximately in accordance with the appearance of steel to the average man at the various temperatures.

In the embodiment here shown one of the pointers, as 8, is marked with the word "In"; another, as 9, with the word "Out"; and the third, as 10, with the letter "T." The length of the pointers 8 and 9 is greater than that of the pointer 10 since the two former are designed for coöperation with the hour scale and the third for coöperation with the temperature scale. Supposing that it be required to heat the particular steel being treated to a temperature of 600° C. for five hours. The workman places the pointer marked "T" at the 600° position upon the centigrade scale and manipulates his furnace to bring it to this temperature. Then, assuming that he attains this uniform and stable temperature and introduces his metal at 8 a. m. he will set the pointer marked "In" at the point 8 on the hour dial and will place the pointer marked "Out" at the point 1 on the hour dial, thereby indicating that the material is to be taken out at that time. It will then be impossible for him to raise the excuse of forgetfulness or confusion in case he fails to remove it at the proper time, and if he should be accidentally called away it would be possible for another workman to remove the metal without specific instructions. The interposition of the washers 11—11 between the different pointers prevents the movement of one pointer being transmitted to the next, while the elastic character of the spider 17 interposes a continuous pressure against the pointers which permits their easy setting without allowing them to become disturbed by jarring or vibration.

While I have described my invention in connection with a heat-treatment furnace for metals, it will be obvious that the same can be used for many other purposes, as in the extraction of lard and tallow, the distilling of liquors, the refining of oils, the manufacture of chemicals, the case hardening or malleableizing of iron and the like. Also it will be obvious that the different pointers may be distinguished by colors, and that other scales or temperatures can be employed depending upon the operations conducted. All of such modifications I esteem within the scope of my inventive idea.

What I claim is:—

In an indicator for use in connection with the heat treatment of metal, the combination, with a metal plate, of a rigid stud carried by the plate and having a groove in its side, a plurality of superposed, independently revoluble pointers pivoted upon said stud, washers between adjacent pointers and having internal fingers engaging said groove, and means secured to said stud and pressing said pointers and washers yieldingly together, said pointers being provided with indicia whereby they may be visually distinguished from each other, and said plate being formed with dial graduations coöperating with said pointers.

In testimony whereof, I hereunto affix my signature in the presence of two witnesses.

HAROLD B. ANDERSON.

Witnesses:
HAROLD E. SMITH,
BRENNAN B. WEST.