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H. H. HARRIS

1,788,794

TEMPERATURE INDICATING MEANS AND PROCESS

Filed Oct. 13, 1928

Fig. 1.

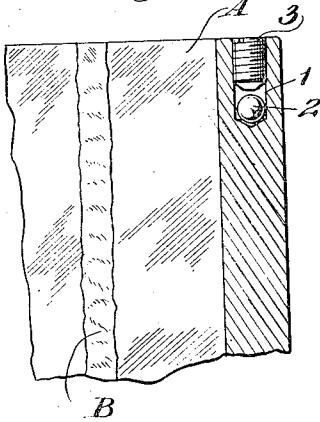


Fig. 2.

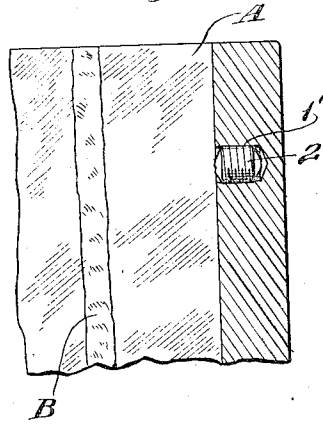


Fig. 3.

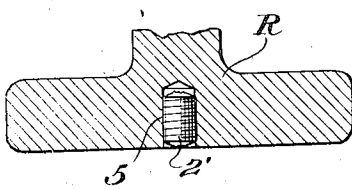


Fig. 4.

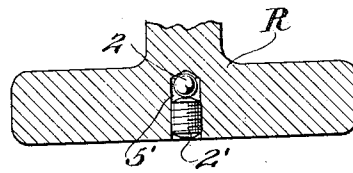


Fig. 6.

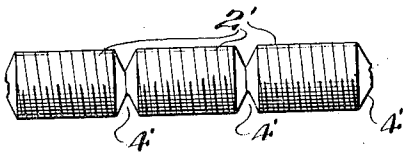


Fig. 5.

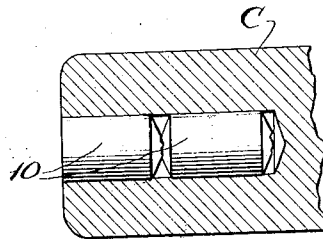
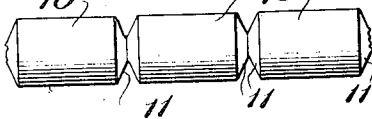


Fig. 7.



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TEMPERATURE-INDICATING MEANS AND PROCESS

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This invention relates to indicators or telltales adapted to be employed in the art of heat treating apparatus.

The primary object of this invention is to provide an indicator or telltale for use in connection with heat treating apparatus, more particularly referring to heat treating oven structures, such as the heat treating boxes, conveyor rails, and chains, which are subjected to a high degree of heat.

A further object of this invention is to provide a device of the above mentioned character adapted to indicate the surpassing of the degree of heat to which the heat treating apparatus has been subjected, for the purpose of indicating to the factory carelessness on the furnace operator's part in exceeding the maximum degree of heat which the apparatus is supposed to stand without being damaged.

A still further object of this invention is to provide a device of the above mentioned character having comparatively few parts to get out of order, which is simple in operation and construction, and which is adapted to be readily inserted in or applied to oven or heat resisting apparatus.

Other objects and advantages of the invention will become apparent during the course of the following description.

In heat treating apparatus such as used in heat treating ovens, including the cast boxes, conveyor rails and chains damage often occurs from subjecting the apparatus to a degree of heat greater than the guaranteed service limit. Frequently the furnace operator will become negligent and allow the temperature of the furnace oven to rise to a much greater degree of heat than such guaranteed service limit, thus causing considerable damage to the apparatus which is very expensive. The apparatus including the boxes, rails and conveyor chains are then returned to the factory for replacement as having failed to give the number of guaranteed service hours at a specified degree of heat called for in the guarantee.

It is an object of this invention to prevent such practice by providing a telltale indicator on each piece of apparatus which when observed will indicate to the factory office

whether the service guarantee rate has been exceeded during the use of the apparatus thereby rendering the service guarantee accompanying the apparatus void.

All of which is more particularly described and ascertained hereinafter, by way of example, having reference to the accompanying drawing, wherein:

Figure 1 is a fragmentary cross sectional view of a carburizing box showing the manner in which the indicator or telltale is associated therein.

Figure 2 is a similar view of a carburizing box showing a modification of the telltale indicator positioned in the inner face of one of the side walls of the box.

Figure 3 is a fragmentary cross sectional view of a conveyor rail used in heat treating ovens, showing a modified form of telltale positioned in the flange portion thereof.

Figure 4 is a fragmentary cross sectional view of a conveyor rail showing an embodiment of the invention applied thereto.

Figure 5 is a cross sectional view of a chain connecting pin showing an embodiment of the invention associated therewith.

Figure 6 is a longitudinal elevation of a series of indicators embodying the invention which may be separated and used independently.

Figure 7 is a similar view showing a modified form of indicator.

In the drawing, wherein for the purpose of illustration attention is first directed to Figures 1 and 2, the reference character A designates the side walls of a carburizing box secured at its edges by welding B.

As shown in Figures 1 and 2 openings 1 and 1', may be drilled in the top edge of the side wall of the carburizing box, or the opening may be drilled in the inner face of the side wall to receive a metal alloy pellet 2 having a predetermined melting point which approximates the limit of heat to which the box is intended to be subjected. The pellet may be secured in place by a screw threaded plug 3, which is received in corresponding screw threads in the drilled opening 1.

As shown in Figure 2, a screw threaded plug 2' is inserted in the opening 1' in cor-

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responding screw threads formed in the opening and then the plug may be broken off therein from a series of similar screw threaded plugs, shown in Figure 6. The screw threaded plugs are formed of metal alloy having a melting point which approximates the limit of heat to which the carburizing boxes are intended to be subjected, as for instance, brass, silver, or nickel alloy.

As shown in Figure 6, the screw threaded plugs 2' are serrated at 4' to allow each plug 2' to be separately broken off in an easy manner.

Referring to Figures 3 and 4 which show conveyor rails R having screw threaded openings 5 and 5' respectively, in their base portions to receive the fusible elements 2', and if desired a pellet 2 as shown in Figure 4, both formed of an alloy having a melting point which is correspondingly the same as the intended limit of heat which the rails are intended to be subjected.

I contemplate the use of one or a plurality of fusible elements in connection with the particular type of device to which the invention is applicable.

In Figure 5, is represented a conveyor chain fin C showing a modified form of indicator or fusible element 10, inserted therein, as shown in Figure 7. The fusible plugs 10 are formed with serrations 11 for easy manipulation as hereinbefore described. The fusible plugs 10 may also have a melting or fusing point similar to the above described plugs 2' and their function is the same.

It is to be understood, that the form of the invention herewith shown and described is to be taken by way of example only, and that various changes in the shape, size, and arrangement of the parts may be resorted to without departing from the spirit of the invention or the scope of the subjoined claims.

What I claim is:

1. In combination, a carburizing box adapted to be subjected to temperatures conducive to proper heat treatment of articles therein and a metallic tell-tale fusible at a predetermined temperature imbedded in the wall of said box whereby a record is created by said tell-tale of the subjection of said box to temperatures beyond the predetermined limit for which it was designed.

2. The process of indicating overheating if present in a heat treatment furnace, which includes inserting in a metallic part or article that is to go into the furnace an element of melting point lower than the melting point of said part or article, and higher than permissible furnace temperature, subjecting same to the furnace temperature, and removing same from the furnace whereby the tell-tale element will have been melted if there has been overheating in the furnace.

3. Process according to the last preceding claim in which the tell-tale element is con-

cealed in the wall of the part or article, and is exposed to view only upon dismantling for inspection after removal from the furnace.

In testimony whereof I affix my signature.
HENRY H. HARRIS.

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