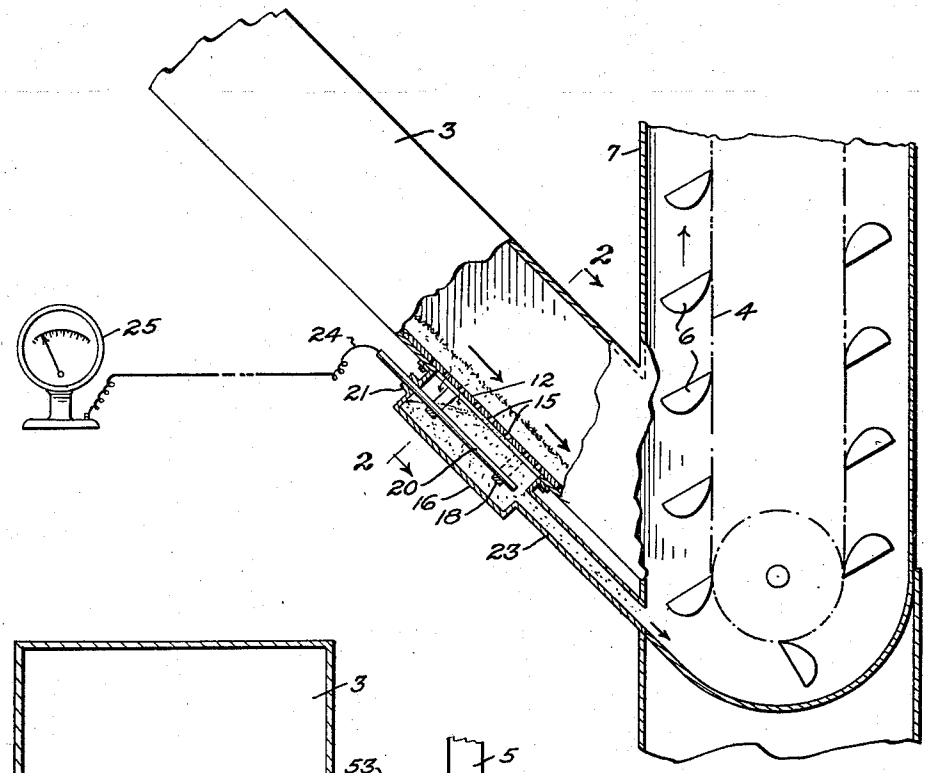
Aug. 2, 1932. L. B. WEST 1,869,788

THERMOCOUPLE POCKET

Filed Sept. 20, 1930

Fig. 1.



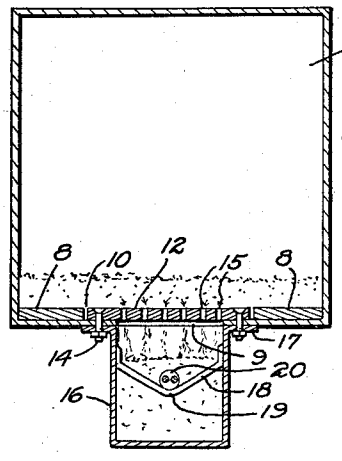


Fig. 2.

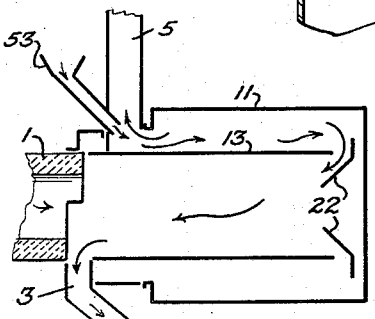
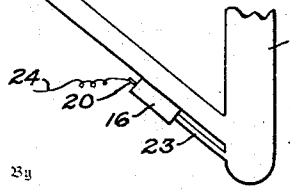


Fig. 3.



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UNITED STATES PATENT OFFICE

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THERMOCOUPLE POCKET

Application filed September 20, 1930. Serial No. 483,369.

This invention relates to a thermocouple pocket and has for its object to provide a construction simple in parts and more efficient in use than those heretofore proposed.

With these and other objects in view the invention resides in the novel details of construction and combinations of parts as will be disclosed more fully hereinafter and particularly pointed out in the claims.

Referring to the accompanying drawing forming a part of this specification in which like numerals designate like parts in all the views,—

Fig. 1 is a side elevational view partly in section illustrating the construction of the thermocouple pocket and its securement;

Fig. 2 is a transverse sectional view taken as on the line 2—2 of Fig. 1 and looking in the direction of the arrows; and

Fig. 3 is a diagrammatic view illustrating the connection of the thermocouple pocket to the device with which it is associated.

This invention includes a housing for a heat sensitive element used to measure the temperature of material in transit, which element if unprotected would be damaged by frictional contact with and impact of the moving material. According to this invention the element, hereinafter referred to as a thermocouple, is not placed in the direct flow of the material but is placed in a shunt current thereof whereby the thermocouple is not subjected to the full force of the major portion of the moving material.

More particularly referring to Fig. 3 there is disclosed a diagrammatic representation of an apparatus for drying and heating material such as shown and described in the U. S. Letters Patent #1,641,108 granted August 30, 1927 to Lawrence B. West. According to the disclosure of said patent the wet raw material is admitted through a hopper 53 to the space between outer and inner heating drums 11 and 13 respectively, the material being advanced in said space in separate compartments toward the right hand end of the drums as seen in said figure, where it is deflected by the cone 22 into the interior of the inner drum 13 in which latter it is repeatedly cascaded across the space of said drum and advanced toward the left hand end thereof to be ultimately discharged through the chute 3. Hot gases from a furnace 1 pass through the inner drum, thence around the cone 22 and through the spaces between the inner and outer drums, eventually reaching the stack 5, the direction of flow of said gases at all times being counter to the flow of the material whereby the latter is subjected to increased heat during the decrease of its moisture contact, as a result of which the material is quite hot and perfectly dry when it is discharged.

The discharge chute 3 leads downwardly to conduct the dried material to an elevator 4 provided with buckets 6 moving in the direction indicated in Fig. 1, whereby said material may be conveyed to an elevated storage bin not shown, said elevator being enclosed in a housing 7 joined with said chute. The pitch of the chute 3 is such as to adequately cause the hot material from the drier to gravitate to the elevator 4.

In operation the material slides through the chute at such a rate that, in a comparatively short time, the thermocouple inserted directly in the path of the material would be damaged if not actually broken, necessitating frequent replacements.

According to this invention the bottom of the chute 3 is provided with a protective lining 8 which may be made replaceable, the chute being of any desired cross sectional shape, it being shown rectangular in Fig. 2. The bottom wall of the chute adjacent the elevator housing 7 is provided with an opening 9 of relatively appreciable size, and the lining 8 is provided with an opening 10 whose edges are concentric with or parallel to the edges of the opening 9, the opening 10 being

of greater dimensions so that a removable plate 12 fitting said opening may be supported by the bottom wall and be secured thereto as by the bolts 14. The plate 12 is provided with a great plurality of perforations 15 lying within the confines of the opening 9 when the plate is in position.

A box-like chamber 16 is secured through flanges 17 to the under side of the chute by the bolts 14, said chamber being of a size to register with the opening 9. The chamber is preferably rectangular and provided interiorly with one or more brackets or saddles 18 adapted as at 19 to support the thermocouple 20 substantially centrally or axially of the chamber. One end wall of the chamber is suitably provided as at 21 with means for securing the thermocouple with respect to the chamber, and the opposite end wall is apertured to communicate with a relief conduit 23 whose other end discharges into the housing 7 of the elevator 4.

The electrical conductor leads of the thermocouple pass as by the cable 24 to any suitable recording instrument diagrammatically indicated at 25.

In operation the heated material such as sand, gravel, or fine stone passes down the chute 3 from the drier, but as the material passes over the plate 12, a portion thereof sifts through the perforations 15 and falls into the thermocouple pocket or chamber 16 filling the latter about as indicated in the drawing, whereby substantially the greater portion of the thermocouple will be covered by the sifted material which has substantially the same temperature as the material in the chute. The sifted material gradually passes out of the chamber 16 through the conduit 23 and joins the main portion of the material in the bottom of the elevator housing 7.

It is obvious that those skilled in the art may vary the details of construction as well as arrangements of parts without departing from the spirit of the invention, and therefore it is not desired to be limited to the foregoing except as may be required by the claims.

What is claimed is:—

1. In a device of the character described the combination of a container with moving material therein, one wall of said container provided with a plurality of spaced apertures through which a portion of said material may pass; means forming a chamber surrounding said apertures to receive said portion; a temperature recording device including a heat sensitive element, the latter disposed in said chamber and extending into said portion; and there being an outlet from said chamber for said portion.

2. In a device of the character described the combination of a container with moving material therein; perforated means in a container wall through which a portion of said material may pass; means forming a chamber below said means to receive said portion; a temperature recording device including a heat sensitive element, the latter disposed in said chamber and extending into said portion; and there being an outlet from said chamber for said portion.

3. In a device of the character described the combination of a container with moving material therein; perforated and removable means in a container wall through which a portion of said material may pass; means forming a chamber below said means to receive said portion; a temperature recording device including a heat sensitive element, the latter disposed in said chamber and extending into said portion; and there being an outlet from said chamber for said portion.

4. In a device of the character described the combination of a chute for heated material, the bottom wall of said chute provided with an opening; a perforated member fitting over said opening and through which a portion of said material may pass; means forming a chamber below said opening and said member to receive said portion; a temperature recording device including a heat sensitive element, the latter disposed in said chamber and extending into said portion; and there being an outlet from said chamber adapted to conduct said portion back to said material.

5. In a device of the character described the combination of a chute for heated material, the bottom wall of said chute provided with an opening; a perforated member fitting over said opening and through which a portion of said material may pass; means forming a chamber below said opening and said member to receive said portion; a temperature recording device including a heat sensitive element, the latter disposed in said chamber and extending into said portion; and there being an outlet from said chamber including a conduit for conveying said portion back to said material.

6. In a device of the character described the combination of a chute; means forming a chamber secured to said chute; a perforated member separating said chute and said chamber; and a thermocouple in said chamber.

7. In a device of the character described the combination of a chute establishing a main stream of material; a by-pass conduit including a chamber establishing a shunt stream of a portion of said material; and a thermocouple in said shunt stream.

8. In a device of the character described the combination of a chute establishing a main stream of material; a by-pass conduit including a chamber establishing a shunt stream of a portion of said material, said chamber secured to said chute with a perforated wall therebetween; a bracket in said chamber; and a thermocouple supported on

said bracket and extending into said shunt stream.

9. In a device of the character described the combination of a chute establishing a main stream of material; a by-pass conduit including a chamber establishing a shunt stream of a portion of said material, said chamber secured to said chute with a perforated wall therebetween; a bracket in said chamber; and a thermocouple supported on said bracket in heat conducting relation to said portion.

In testimony whereof I affix my signature.

LAWRENCE B. WEST.