

UNITED STATES PATENT OFFICE.

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MOUNTING FOR THERMOCOUPLE WELLS.

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To all whom it may concern:

Be it known that I, DANIEL M. FOSTER, a citizen of the United States, and a resident of Youngstown, county of Mahoning, and State of Ohio, have invented a new and useful Improvement in Mountings for Thermocouple Wells, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

Thermo-couples, as generally employed about steel plants, e. g., in the hot mains leading to the furnaces and elsewhere, are encased in tubular jackets or "wells" which project into the main through which passes the air or gas whereof it is desired to ascertain the temperature. The standard equipment for thus securing the well on the thermocouple in place includes a sleeve or bushing interiorly threaded to receive the outer end of the well and exteriorly threaded to engage with an interiorly threaded flange provided on the outside of the wall through which the well is designed to project. Where conditions of service require either the frequent removal of the well or its replacement for the purpose of repairing the thermocouple, the mounting just described has been found unsatisfactory for the reason that the threaded joint between the sleeve and flange is very difficult to break after it has been subjected to the high temperatures encountered in such service.

The object of the present invention, accordingly, is to provide a mounting that, while adapted to firmly support the well when in use, will nevertheless permit the ready removal thereof when this becomes necessary or desirable. To the accomplishment of the foregoing and related ends, said invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims, the annexed drawing and the following description setting forth in detail certain mechanism embodying the invention, such disclosed means constituting, however, but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawing:—

Fig. 1 is a transverse section of my improved mounting showing a thermocouple well as supported thereby in a hot main, a broken section of the latter only appearing;

and Fig. 2 is a perspective view of the outer portion of such mounting.

It will be understood of course that it is immaterial, so far as the present improvements are concerned, in what connection the thermocouple is employed, the illustrated use being typical merely. As shown in Fig. 1, the well 1 for the thermocouple 2 is designed to project through a suitable radial aperture 3 in the wall 4 of a hot main. The main body of such well is ordinarily constructed of brick or equivalent heat-resistant material encased by a metal shell 5, and to the latter is riveted, or otherwise firmly attached, an internally threaded flange 6 in direct alignment with the opening 3.

The mounting of present interest comprises two members 7 and 8. The first of these is a male plug member of elongated cylindrical form, the lower end thereof being internally threaded to receive the outer open end of the well 1. The outer end of said member has flattened faces 9, as shown in Fig. 2, to permit a wrench to be readily engaged therewith, and laterally projecting from such outer end is a radial pin 10, the function of which will be presently described. Immediately below such outer end, member 7 is formed with a tapered portion 11 that is adapted to fit tightly in the complementarily tapered throat 12 of the female plug member 8. Said member 8 is externally threaded to engage with the threaded opening in flange 6, its outer portion being formed with flat faces for engagement with a wrench, and in addition such outer end is provided with a lug or finger 13 disposed to lie alongside of the outer end of the male plug member 7 and formed with a recess 14 adapted to engage the pin 10 on such outer end of member 7. The outer edge of the recess is inclined or beveled inwardly towards the rear of the recess and the location of the latter is such that the pin 10 bears against such inclined edge so that upon rotation of the member 7 in the direction indicated the tapered portion 11 thereof is forced into firmly seated position in the bore of the member 8.

From the foregoing construction just described, it readily follows that the plug member 7, carrying with it the thermocouple well, can be readily detached by simply partially rotating the same so as to free the pin 10 from engagement with such lug or finger 13. Conversely, when it is

desired to replace the well in its mounting the plug member 7 is simply inserted in the opening or bore in plug member 8 and then given a partial turn in the opposite direction, as will be readily understood.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed, provided the means stated by any of the following claims or the equivalent of such stated means be employed.

I therefore particularly point out and distinctly claim as my invention:—

- 15 1. The combination with the well of a thermo-couple or like device, of a mounting therefor including an inner plug member to which said well is attached, said member having a beveled portion, an outer
- 20 plug member in the form of a sleeve having a beveled seat for the reception of such beveled portion on said inner member, and means adapted to secure said inner member in seated position in said outer member.
- 25 2. The combination with the well of a thermo-couple or like device, of a mounting therefor including an inner plug member to which said well is attached, said member having a beveled portion, an outer plug
- 30 member in the form of a sleeve having a beveled seat for the reception of such beveled portion on said inner member, and elements carried by said members, respectively, and adapted upon relative rotation

thereof to secure said inner member in 35 seated position in said outer member.

3. The combination with the well of a thermo-couple or like device, of a mounting therefor including an inner plug member to which said well is attached, said member 40 having a beveled portion, an outer plug member in the form of a sleeve having a beveled seat for the reception of such beveled portion on said inner member, a radially projecting pin on said inner member, and a lug on said outer member dis- 45 posed to lie alongside said inner member and having a recess adapted to engage with said pin upon relative rotation of said member.

4. The combination with the well of a thermo-couple or like device, of a mounting therefor including an inner plug member to which said well is attached, said member 50 having a beveled portion, an outer plug member in the form of a sleeve having a beveled seat for the reception of such beveled portion on said inner member, a radially projecting pin on said inner member, and a lug on said outer member dis- 55 posed to lie alongside said inner member and having a recess adapted to engage with said pin upon relative rotation of said members, the outer edge of such recess being in- 60 clined, so as to force said inner member into firmly seated position. 65

Signed by me, this 10 day of May, 1922.

DANIEL M. FOSTER.