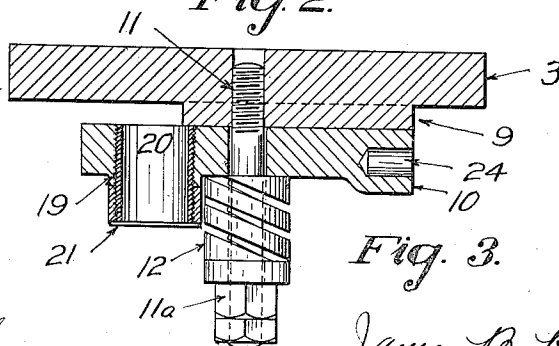
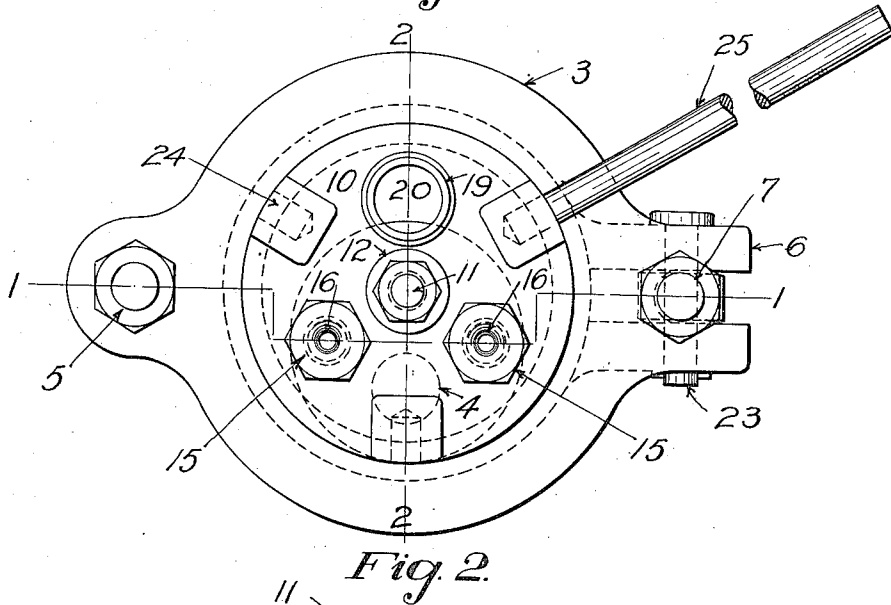
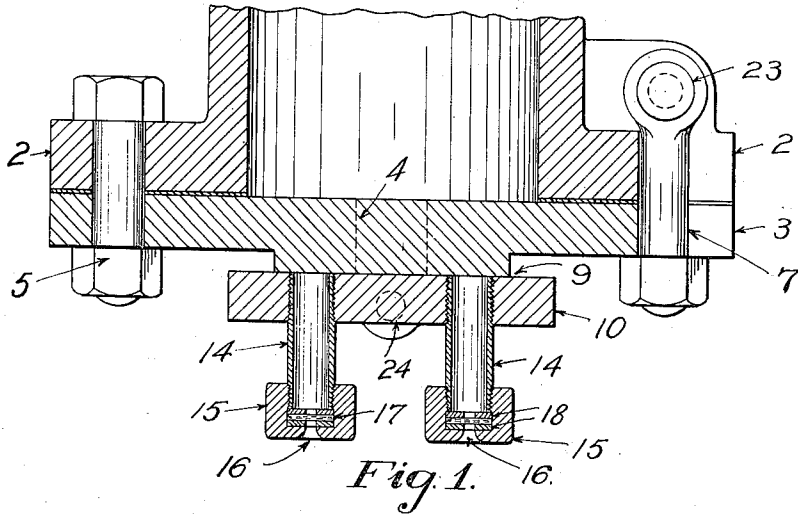


J. B. ROGERS.
EYESIGHT PLATE FOR TWYERS.
APPLICATION FILED MAY 4, 1910.

1,045,189.

Patented Nov. 26, 1912.



WITNESSES

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EYESIGHT-PLATE FOR TWYERS.

1,045,189.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JAMES B. ROGERS, a resident of Ashland, in the county of Boyd and State of Kentucky, have invented a new and useful Improvement in Eyesight-Plates for Twyers, of which the following is a specification.

This invention relates to peep sights or peep holes for blast furnaces, cupolas and any other character of metallurgical or other furnace in which a high heat is maintained.

The object of the invention is to provide a device of the character specified which is simple, which has a long life, which does not readily get out of repair, which will not leak or become leaky in use, which is ready for use at all times, in which the sight glasses may be replaced or changed while the blast is on in the furnace and with absolute ease and safety, in which the eye sight glass is not exposed to the heat of the furnace when in use and therefore does not become dirty or fouled, and in which provision is made for cleaning out the twyer or other opening to the furnace, as well as other advantages which will hereinafter appear.

Generally stated the invention comprises an eye sight plate preferably carrying a plurality of peep or sight glasses and also a poke or cleaning hole and which is movably mounted on the twyer cap or other part of the furnace provided with a peep hole, so that by moving said eye sight plate the sight or peep glass can be brought into and out of register with the peep hole, as well as other features of construction hereinafter described and claimed.

In the accompanying drawing Figure 1 is a sectional view on the line 1—1, Fig. 2 showing the peep sight plate and a portion of the branch of the twyer stock; Fig. 2 is a front elevation of a twyer stock showing the improved peep sight applied thereto; and Fig. 3 is a section on the line 2—2, Fig. 2 (showing the poke hole with bushing.)

In the drawings 1 represents the end of a twyer stock branch, the same being provided with flange 2 having a flat outer face to which is suitably secured the cap or plate 3 closing the said twyer stock branch and provided with the peep hole 4, which peep hole is shown located out of the center of the cap. The cap 3 may be secured to the end of

the twyer stock in any suitable manner, the drawing showing said cap provided at one side with an opening through which passes a bolt 5 and on its opposite side with lugs 6 for receiving between them a swinging bolt 7, so that said plate can be released and swung out of the way upon the bolt 5 as will be readily apparent.

The plate 3 is provided with a flat outer face 9 on which is movably mounted the eye sight or peep hole plate 10. In the particular embodiment shown this plate is rotatably mounted on the cap 3, on a stud bolt 11 which is secured centrally in the cap 3 and passes through a hole in the eye sight or peep hole plate 10 and at its outer end is provided with a head or nuts 11^a between which and the plate 10 is a coiled spring 12 which serves to yieldingly hold the plate 10 tightly against the outer flat face of the cap 3. By adjusting the nuts 11^a the tension of spring 12 may be varied so as to insure a tight fit of plate 10 against cap 3 and form a blast tight closure. This adjustment obviously can be effected while the furnace is in operation and with absolute safety.

The plate 10 carries a pair of peep or sight glasses each comprising a section of tubing 14 threaded into an opening in the plate 10 and at its outer end having threaded thereon a cap nut 15 provided with the peep or sight hole 16 and arranged to clamp the glass 17 against the end of the tube 14 between asbestos or similar washers 18. The plate 10 is also provided with a third hole 20 which serves for the introduction of a poker or the like to remove obstructions in the twyer or peep hole 4, or to which may be attached a steam or gas pipe for introducing steam or gas into the twyer stock, or for any other suitable purpose. The hole 20 may have secured therein a bushing 19 to which a steam or gas pipe can be readily attached. The hole preferably is closed by a leather or similar cap 21 provided with cross shape slits through which the poker can be inserted. The opening 20 may also be used for the introduction of oil or similar fuel into the twyer in case the furnace should become cool, or any suitable pyrometer may be inserted therethrough, or it may be provided with a glass so that through the same photographs may be taken of the condition at the inside of the furnace opposite

the twyer. A pyrometer can also be inserted through tube 14 by removing the cap 15 and glass.

The opening 20 and peep or sight glasses 16 are all located equidistant from the center of plate 10, and in such position that when plate 10 is rotated either one of said openings can be brought into line with the peep hole 4. The plate 10 can be rotated by any suitable means, the drawings showing the edge of the plate provided with sockets 24 for receiving the end of a bar 25 by means of which the plate can be rotated.

Normally the plate will be in the position shown in Fig. 2 with neither one of the three openings registering with the peep hole 4 in the cap 3. Consequently the glasses are not subjected to the heat, smoke or dirt in the twyer, but are protected and remain clean. When it is desired to view the interior of the furnace the plate 10 is rotated to bring either one of the peep glasses 16 into line with the peep hole 4, and after the observations are taken the plate 10 is turned back to normal position. When it is desired to clean out the twyer or measure temperature or the like in the twyer the plate 10 is turned until the opening 20 registers with the peep hole 4 in cap 3 when the necessary cleaning or observation can be effected.

Two eye sight glasses preferably are provided so that if one is disabled the other one will be in condition for use, although a movable plate carrying a single glass would fully answer the purpose of this invention. The spring 12 holds the plate 10 tightly against the outer face of the cap 3, making at all times a blast tight closure. Any wear that occurs can be readily taken up by adjusting the nuts 11^a. The grinding action due to the rotation of plate 10 merely has the effect of grinding a closer fit between plate 10 and the outer face of cap 3. The glasses can, of course, be readily changed or removed or cleaned when the plate is in its normal position, and with absolute safety. The entire plate 10 can be removed and replaced by another by first bringing the opening 20 into register with peep hole 4 and then plugging up said peep hole after which the plate 10 can be safely removed and replaced by another.

The advantages of the arrangement described will be apparent to those skilled in the art.

While the invention has been particularly described with reference to the twyer stock of a blast furnace it will be understood that it can be used upon any furnace whatsoever, to wit, a cupola furnace, an open hearth furnace or any other type of metal-

lurgical furnace, or for that matter furnaces other than metallurgical in which it is necessary or desirable to have a peep hole.

What I claim is:

1. A peep sight for furnaces comprising a cap or furnace member provided with a peep opening, and a plate provided with a plurality of holes each having a peep sight or glass and with a larger opening, said plate being movably mounted on the cap or furnace member and so arranged that either of the peep sights or glasses or said larger opening can be brought into or out of register with the peep opening in said cap or furnace member.

2. A peep sight for furnaces comprising a cap or furnace member provided with an opening, and a plate having a plurality of holes therethrough each provided with a peep sight or glass and with a larger opening, said plate being rotatably mounted on the cap at one side of the opening through the latter, whereby by rotating said plate either of said peep sights or glasses or said larger opening can be brought into or out of register with the opening in the cap or furnace member.

3. A peep sight for furnaces comprising a cap or furnace member provided with an opening, and a plate having a plurality of holes therethrough and each provided with a peep or sight glass, said plate being movably mounted on said cap and arranged to bring either of said glasses into register with the opening in the cap or furnace member.

4. A peep sight for furnaces comprising a cap or furnace member provided with an opening, a plate having a plurality of openings therethrough, one provided with an eye sight glass and another of larger size, said plate being movable on said cap and arranged to bring either of said openings into and out of register with the cap in said furnace member.

5. The combination with a blast furnace having a peep opening formed therein, of a structure secured to said furnace, a shutter movably mounted in said structure to swing laterally of the furnace wall and having openings formed therein arranged in the arc of a circle and adapted to align with the opening of said furnace, and means carried by said structure for holding said shutter in an adjusted position.

In testimony whereof, I have hereunto set my hand.

JAMES B. ROGERS.

Witnesses:

W. A. MANNING,
A. N. RICHARDSON.