

P. LULLI.
RAIL BORING BLOWPIPE.
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1,004,179.

Patented Sept. 26, 1911.

Fig. 1.

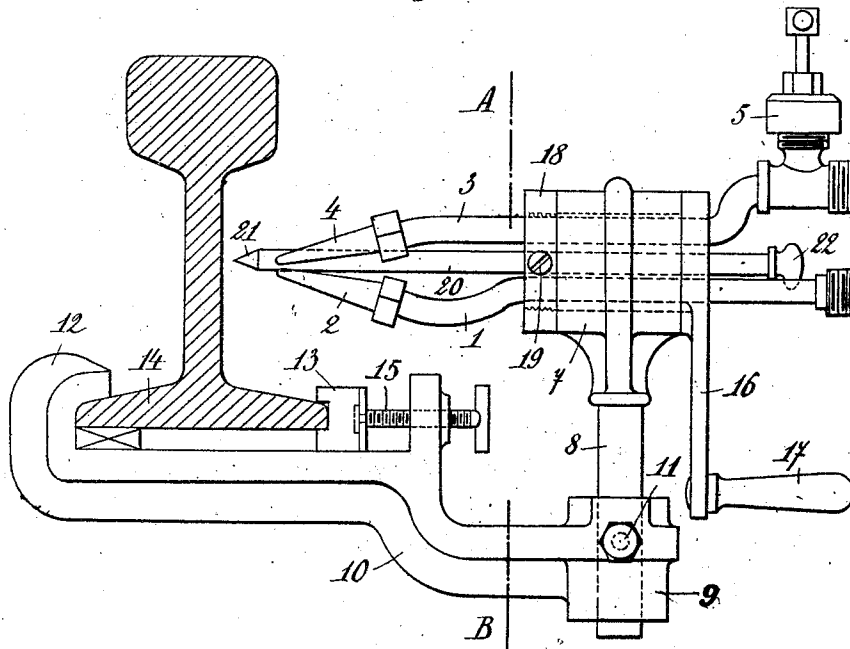
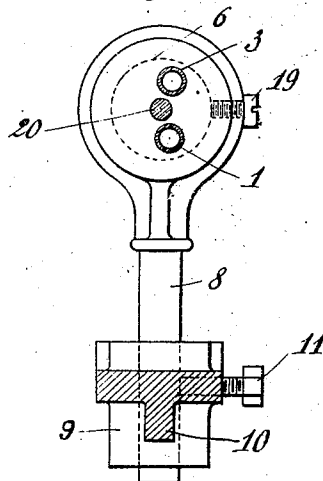


Fig. 2.



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UNITED STATES PATENT OFFICE.

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RAIL-BORING BLOWPIPE. **BEST AVAILABLE COPY**

1,004,179.

Specification of Letters Patent. **Patented Sept. 26, 1911.**

Application filed July 28, 1909. Serial No. 510,084.

To all whom it may concern:

Be it known that I, PRIMO LULLI, a subject of the King of Italy, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Rail-Boring Blowpipes, of which the following is a full, clear, and exact description.

This invention relates to a method of and device for making or boring holes in rails, beams, and iron bars of any kind by means of a heating jet and an oxygen jet.

One purpose of my invention is to secure simple and convenient means for boring holes in rails, said means being adapted to be easily centered with relation to the hole which is to be bored and to remain in working position even when a train is passing over the track; and with said object in view my invention essentially consists in special combinations of parts and arrangements of cooperating elements as will be hereinafter fully described and pointed out in the appended claims.

Referring to the annexed drawing: Figure 1 is a side view of a device constructed according to my invention said device being fixed to a rail and being shown in its working position. Fig. 2 is a transverse section taken on line A-B Fig. 1.

In said figures 1 is a tube provided with a nozzle 2 acting as a heating device or burner when a suitable gas passing through the tube 1 is ignited at the orifice of the nozzle 2. 3 is an oxygen pipe or tube, provided with a nozzle 4 and with a cock or stop valve 5. Said tubes 1 and 3 are mounted in a cylindrical member or plug 6 adapted to rotate within a bearing 7 which is provided with a rod 8 passing through a sleeve or collar 9 arranged at one end of a supporting arm 10. The position of rod 8 in the sleeve 9 can be easily controlled by means of a screw 11. The supporting arm 15 is provided with a hook 12 adapted to engage the rail-shoe 14 and further with a sliding block 13, the position of which is controlled by a screw 15.

The plug 6 is adapted to rotate freely in the bearing 7 and is provided, on one side with a crank 16 having a handle 17. A ring 18 is screwed on the other end of the plug 6 and is held in position by aid of a screw 19. Centrally within the cylindrical plug 6 is passed a rod 20, sliding with lit-

tle friction in said plug and provided with a point 21 at one end, and with a knob 22 at the other end.

When the device just described is to be used to bore a hole in a rail it is fixed to said rail as shown in Fig. 1, the shoe 14 of the rail being engaged between the hook 12 and the sliding block 13 which is then clamped by aid of the screw 15. The position or elevation of the bearing 7 is then adjusted, by means of the rod 8 and the screw 11 in such a manner that the point 21 of rod 20 exactly corresponds with the center of the hole which is to be bored, said center having been previously traced or marked in the rail in the usual manner, such as by means of a punch for instance. When the exact position of the center of the plug 6 has thus been exactly determined, the rod 20 is displaced axially and removed from the rail in order to avoid the deterioration of the point 21 under the action of the heating and perforating jets. The heating gas is then ignited at the orifice of the nozzle 2 and a current of oxygen under pressure is sent through the tube 3 and nozzle 4. Simultaneously the plug 6 is slowly rotated in the bearing 7 by means of the handle 17, the hole being bored in the rail according to the well-known method of boring and cutting iron and steel by means of a heating jet cooperating with an oxygen jet.

As it will appear from the drawing, the device can be fixed in working position and can remain in said position even when a train or a vehicle is passing over the track and without it being necessary to remove the device at each passage of the train or vehicle, as indeed the device has no parts projecting above the track and is placed laterally to said track.

The operation of the device is as follows: The supporting arm 10 is first clamped to the rail to be bored or to some other suitable support; the bearing 7 is next adjusted vertically into position by aid of the point or pointer 21 which is extended toward the rail and moved up or down and laterally, if desired, until its extremity is substantially in apposition with the center of the hole to be bored. The bearing is then clamped in such position, and the point 21 is withdrawn longitudinally some distance from the material. The gas burner is then lighted and the oxygen jet turned on. Thereafter the

intensely hot jet impinges upon the spot to be bored or which is being bored, and fuses the metal against which it is directed. During the course of such action the jets are caused to rotate more or less rapidly about the axis of the bearing, in one direction or the other, which results in effecting a practically perfectly round bore in the rail. The method of boring involved in the present case is therefore quite different from the usual method of operating blow-pipes and the like, in which the flame is advanced along the line which is to be cut whether the latter be straight or circular; the cut being narrow. In the present method, on the other hand, the flame is centered so that the axis thereof is substantially co-incident with that of the hole to be bored; and the flame is then rotated about this axis and does not travel along a line, nor make a narrow cut.

In practice it has been found extremely difficult to form a perfectly circular jet of flame, particularly when the jet is of the type in question, and for this reason if such jet be held fixedly in one position the hole cut will be more or less oval or irregular; but by rotating the jet in the manner described a truly circular small diametered hole is produced.

Having thus described my invention, what I claim is:

1. In a device of the kind described, a heating jet, an oxygen jet, means for centering said jets upon a point to be heated, means for rotating said jets about an axis which passes through said point, and a supporting structure cooperating with said centering means, said jets being adjustable with respect to a portion of said supporting structure.

2. In a device of the kind described, a heating jet, an oxygen jet, supporting means

for said jets adapted to direct said jets toward a point to be heated, and means for rotating said jets about an axis which passes through said point.

3. In a device of the kind described, supporting means, adapted to be fixed to a rail or iron or steel bar, a bearing adjustable on the supporting means, a plug supported in said bearing and adapted to be rotated therein, a heating burner and an oxygen jet, both carried by said plug.

4. In combination, a tube for a heating gas, a tube for oxygen, a member carrying both tubes, means for rotating said member, a centering rod passing through said member, means for adjusting the height of said member and a supporting arm carrying said member and adapted to be fixed to a rail or other bar.

5. In combination, a tube for a heating gas, a tube for oxygen, a plug carrying said tubes, a centering rod sliding with friction through said plug, a bearing in which said plug is adapted to rotate, means for adjusting the elevation of said plug and a supporting arm adapted to be fixed to a rail or other bar.

6. The method of boring relatively small circular holes or recesses in fusible material which comprises directing a fusing flame upon the point where the axis of the hole to be bored passes through the surface of the material and rotating said flame about said axis.

In witness whereof, I subscribe my signature, in the presence of two witnesses.

PRIMO LULLI.

Witnesses:

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