

J. A. HORTON.
 COOLING ATTACHMENT FOR WIRE DRAWING DIES.
 APPLICATION FILED JUNE 14, 1906. RENEWED NOV. 2, 1909.

957,464.

Patented May 10, 1910.

3 SHEETS—SHEET 1.

Fig. 1.

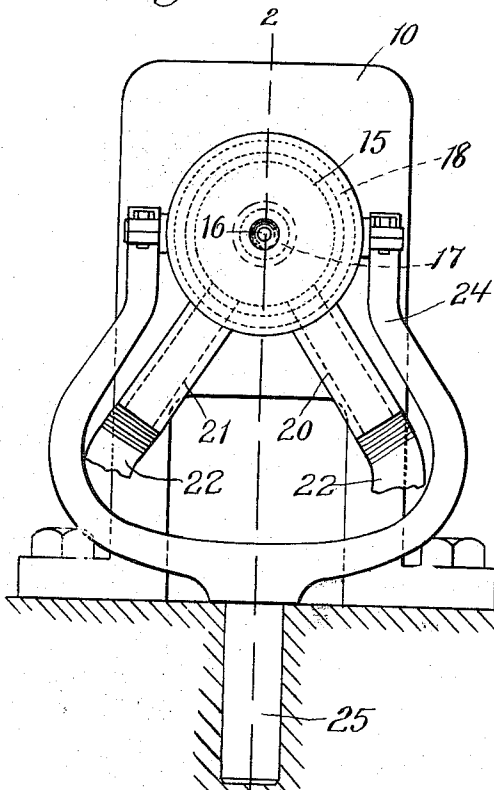


Fig. 2.

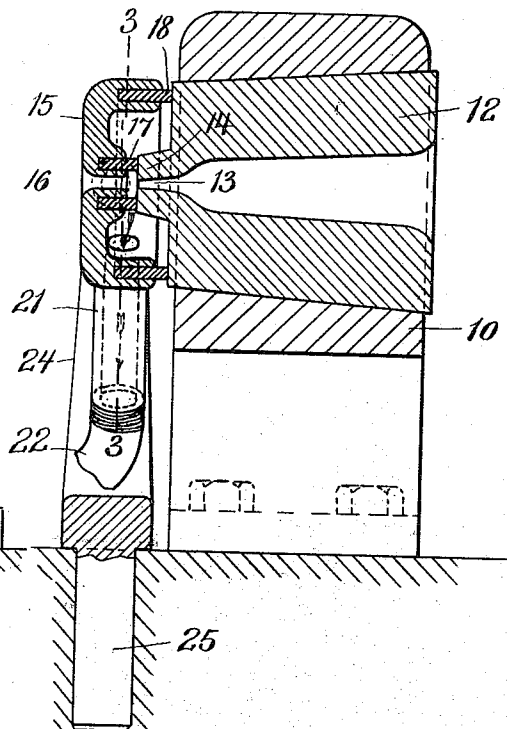


Fig. 3.

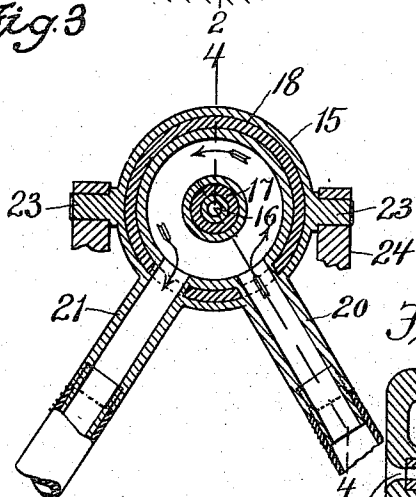


Fig. 5.

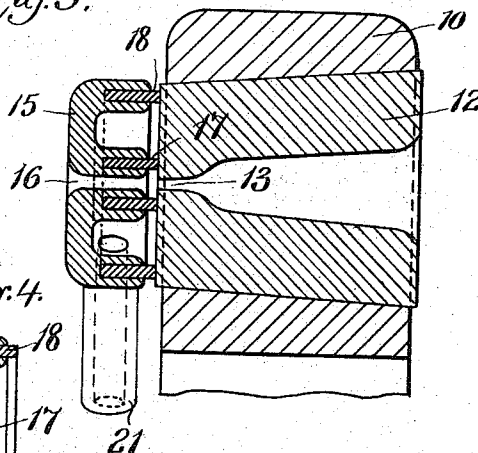
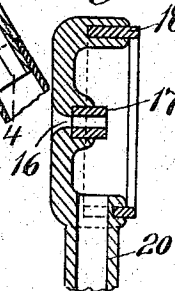


Fig. 4.



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2 SHEETS—SHEET 2.

Fig. 7.

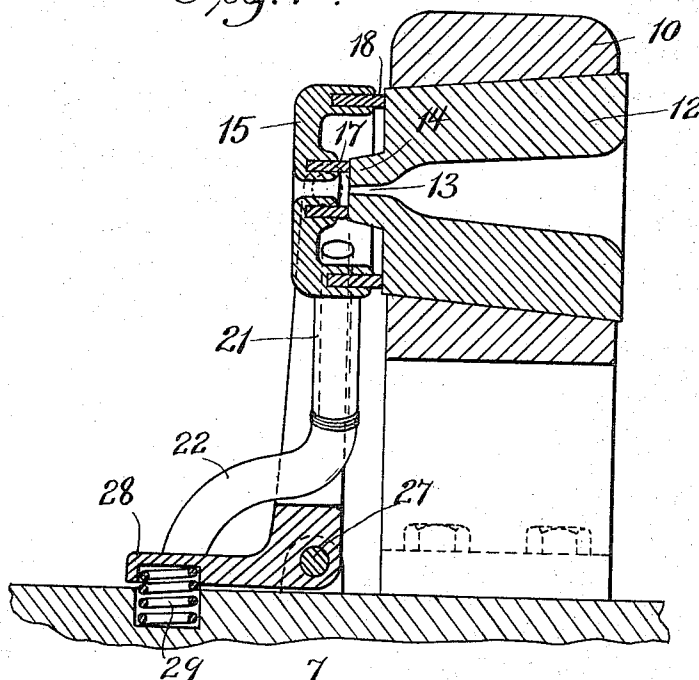
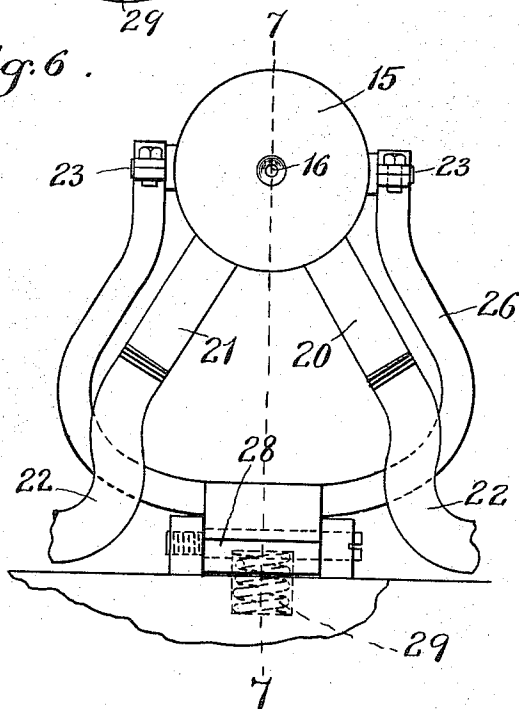


Fig. 6.



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UNITED STATES PATENT OFFICE.

JAMES A. HORTON, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR TO IROQUOIS MACHINE COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

COOLING ATTACHMENT FOR WIRE-DRAWING DIES.

957,464.

Specification of Letters Patent. Patented May 10, 1910.

Application filed June 14, 1906, Serial No. 321,609. Renewed November 2, 1909. Serial No. 525,976.

To all whom it may concern:

Be it known that I, JAMES A. HORTON, of Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Cooling Attachments for Wire-Drawing Dies, of which the following is a specification.

This invention relates to means for cooling wire drawing dies that are used in a dry condition, instead of being submerged in a lubricating liquid.

The invention has for its object to provide means for conducting the cooling fluid in the closest possible proximity to the delivering end of the die; that is, to the end which contains the wire reducing orifice of the die, this being the part of the die where heat is developed by the frictional contact of the wire with the die. By bringing the cooling fluid into close proximity with the delivering end of the die, the maximum efficiency of the fluid is obtained.

The invention consists in the improvements which I will now proceed to describe and claim.

Of the accompanying drawings, forming a part of this specification;—Figure 1 represents portions of a wire drawing machine including the die holder and a die-cooling attachment embodying my invention. Fig. 2 represents a section on line 2—2 of Fig. 1. Fig. 3 represents a section on line 3—3 of Fig. 2. Fig. 4 represents a section on line 4—4 of Fig. 3. Fig. 5 represents a view similar to Fig. 2, showing a slightly modified construction. Fig. 6 represents a view similar to Fig. 1, showing a different form of support for the cooling attachment. Fig. 7 represents a section on line 7—7 of Fig. 6.

The same numerals of reference indicate the same parts in all the figures.

In the drawings, 12 represents a wire drawing die having at its delivering end the usual contracted orifice 13, which reduces the wire drawn through the die. In the construction shown in Figs. 2 and 7 the delivering end of the die is provided with a reduced extension or nose 14, adapted to be compressed by a radial pressure exerted on its perimeter. In the construction shown in Fig. 5 the extension 14 is omitted. The die is supported by a suitable holder 10.

My improved cooling attachment, as here shown, comprises a conduit member, which is open at one side, and is preferably circu-

lar, the said member being preferably composed of a rigid circular body 15, having a central orifice 16 in alinement with the die orifice 13, and side walls adapted to form fluid-tight joints with the delivering end of the die. The said walls preferably terminate at their outer ends in annular rings or packings 17 and 18 of rubber or other compressible material, the inner packing surrounding the central orifice 16, and forming part of an inner wall, while the outer packing 18 surrounds the inner packing and forms part of an outer wall. The said packings are adapted to bear upon the delivering end of the die, and to form a liquid-tight joint therewith. In the construction shown in Figs. 2 and 7 the inner packing 17 bears upon the end of the die extension 14, the outer packing 18 bearing on the end of the body portion of the die, one of said packings being offset from the other. In the construction shown in Fig. 5, the outer edges of the packings are flush with each other, and both bear upon the same surface of the die.

It will be seen that when the packings are seated upon the die, a conduit is formed, composed in part of the attachment and in part of the delivering end of the die, the said conduit being adapted to conduct a cooling fluid in the closest possible proximity to the die orifice, so that the fluid has the maximum cooling efficiency, and absorbs heat directly from the part of the die which is heated by the frictional contact between the die and the wire.

The attachment is provided with suitable pipes 20 and 21 for the admission and escape of the cooling fluid, the said pipes preferably having flexible portions 22 connected with fluid-supplying means, the said flexible portions permitting the attachment to be moved to the extent required in adjusting it to a fluid-tight bearing on the die. The body 15 of the attachment is preferably provided with trunnions 23, which are journaled in bearings in a support which is shown in Figs. 1 and 2 as a yoke 24 having a central trunnion 25 adapted to turn in a socket in the frame or bed of the machine. This construction provides for the various adjustments of the attachment required to enable it to be tightly seated on the delivering end of the die. In the construction shown in Figs. 6 and 7, the trunnions are mounted in a yoke 26, which is pivoted at

27 to ears on the frame of the machine, the yoke being adapted to swing toward and from the delivering end of the die, and provided with an arm 28, which engages a
 5 spring 29, adapted to press the yoke and the attachment mounted thereon toward the die.

My invention is not limited to the details of construction here shown, and may be embodied in any suitably constructed die-cooling attachment, comprising a conduit member open at one side, and adapted to co-
 10 operate with the delivering end of a drawing die in forming a conduit.

The part herein termed the die is often
 15 termed a plate in wire mills. It is to be understood that the terms die and plate are synonymous.

I claim:

1. A die-cooling attachment comprising a
 20 conduit member open at one side and adapted to cooperate with the delivering end of a drawing die in forming a conduit, said member having an inlet and an outlet for a cooling medium.

25 2. A die-cooling attachment comprising a conduit member having a recess, the side walls of which are adapted to form fluid-tight joints with the delivering end of a drawing die, the latter completing the con-
 30 duit, said member having also an inlet and an outlet for a cooling medium.

3. A die-cooling attachment comprising a conduit member open at one side, and having flexible side walls adapted to be seated on
 35 the delivering end of a drawing die, the latter forming a part of the conduit, said member having also an inlet and an outlet for a cooling medium.

4. A die-cooling attachment comprising a
 40 conduit member open at one side, and adapt-

ed to cooperate with the delivering end of a drawing die, in forming a conduit, and a support on which said member is movably mounted, said member having an inlet and
 45 an outlet for a cooling medium.

5. A die-cooling attachment comprising a conduit member open at one side, and adapted to cooperate with the delivering end of a drawing die, in forming a conduit, and a
 50 movable support on which said member is mounted, said member having an inlet and an outlet for the cooling medium.

6. A die-cooling attachment comprising a conduit member open at one side, and adapted to cooperate with the delivering end of a drawing die, in forming a conduit, and a
 55 support to which said member is pivotally connected, said member having an inlet and an outlet for a cooling medium.

7. A die-cooling attachment comprising a
 60 conduit member open at one side, and adapted to cooperate with the delivering end of a drawing die, in forming a conduit, a support for said member which is movable toward and from the die, and means for
 65 yieldingly pressing said support toward the die, said member having an inlet and an outlet for a cooling medium.

8. A die-cooling attachment comprising a
 70 conduit member having a rigid body and flexible annular packings engaged with and projecting from said body, said member having also an inlet and an outlet for a cooling medium.

In testimony whereof I have affixed my
 75 signature, in presence of two witnesses.

JAMES A. HORTON.

Witnesses:

C. F. BROWN,

E. BATCHELDER.