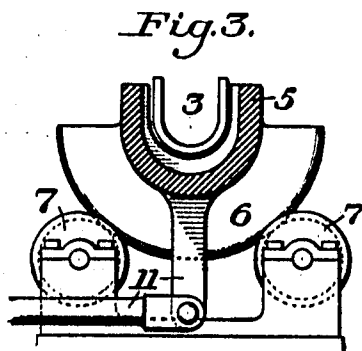
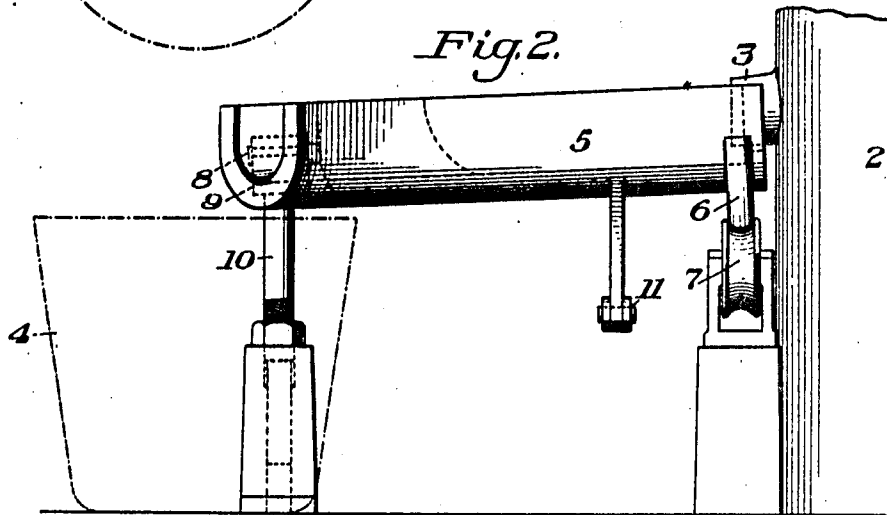
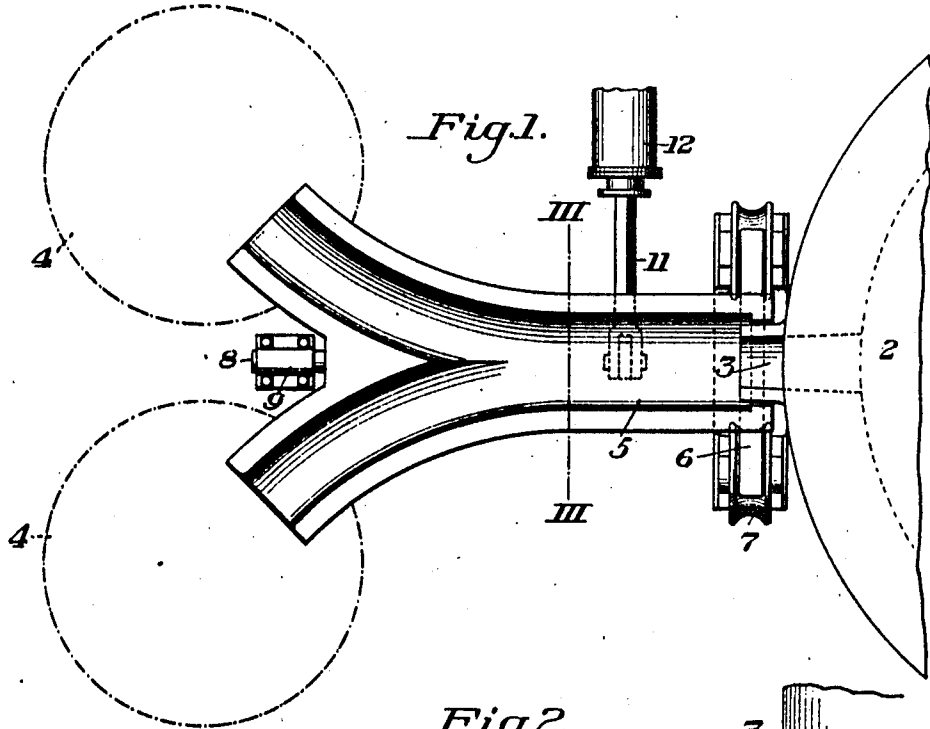


E. L. FORD.  
 LADLE RUNNER.  
 APPLICATION FILED JAN. 13, 1913.

1,061,280.

Patented May 13, 1913.



WITNESSES  
*Jessie E. Dickey*  
*John Tod*

INVENTOR  
*E. L. Ford*

# UNITED STATES PATENT OFFICE.

EDWARD L. FORD, OF YOUNGSTOWN, OHIO.

## LADLE-RUNNER.

1,061,280.

Specification of Letters Patent.

Patented May 13, 1913.

Application filed January 13, 1913. Serial No. 741,648.

*To all whom it may concern:*

Be it known that I, EDWARD L. FORD, a citizen of the United States, residing at Youngstown, in the county of Mahoning and State of Ohio, have invented a new and useful Improvement in Ladle-Runners, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a plan view, somewhat diagrammatic, of a ladle-runner embodying my invention. Fig. 2 is a side view of the same, and Fig. 3 is a section on the line III—III of Fig. 1.

In casting steel from large open-hearth furnaces, that is to say, from furnaces of over seventy-five (75) tons capacity, so much steel is in the ladle that in order to keep it from chilling before all the ingots are cast, the steel must be very hot, often too hot for good work. To obviate this difficulty branched runners are employed, whereby the metal is directed into two ladles; and by means of a movable dam the streams of metal in the respective branches are regulated.

The object of my invention is to provide a branched runner in which the use of regulating dams is obviated and in which the flow of metal through the respective branches is controlled by a rotary movement of the runner, so as to vary the angle of inclination of the different branches.

Referring to the accompanying drawings, the numeral 2 designates a portion of an open hearth furnace having the tapping nozzle 3.

4 designates two ladles into which the hot metal from the furnace is to be tapped.

5 designates the runner which is of Y-form, the branches of the Y being adapted to flow the hot metal into the respective ladles 4. This runner is mounted for rotary movement upon an axis which is coincident with the center of the furnace tapping hole. To obtain this rotary movement, the runner may be mounted in any suitable manner. In the drawing I have shown it as mounted at its furnace end upon a curved shoe 6, supported on the grooved wheels 7. The shoe is curved from a radius struck from the center of the tapping opening 3. The other end

of the runner is shown as having a journal or trunnion 8 which is mounted in a suitable bearing 9 supported on a vertically adjustable post 10.

The axis of the runner may be at any proper angle from the horizontal, but is preferably as nearly horizontal as possible to get the proper rapidity of flow of the metal. The arms of the Y are as long, and the angle between the arms is little or great, as may be necessary to give proper elevation to the respective branches when rotated.

The runner may be rotated in any suitable manner as by connection 11 to a power cylinder 12.

In operation the furnace is tapped in the ordinary way and the metal runs into both ladles when the two branches of the ladle are at the same level. If one ladle fills faster than the other, the runner is rotated so as to raise the branch discharging into that ladle, and this directs more metal into the other ladle. If all the metal in the furnace is to go into one ladle, this can be done by rotating the runner to a position in which the branch over the other ladle is at such an elevation that no metal will run through it. By properly manipulating the ladle the man in charge can direct the metal exactly as he wishes.

The advantages of my invention will be apparent, since it provides a runner which can be readily manipulated to properly distribute the hot metal from a furnace between two different ladles, without the necessity of jamming or similar expedients.

It will be obvious that the manner of mounting and operating the runner can be widely varied without departing from my invention as defined in the appended claims.

What I claim is:

1. A ladle runner having its discharge end formed with two branches which diverge from each other at an acute angle to the longitudinal axis of the runner, the inner walls of the branches forming a relatively sharp metal dividing wedge at the point of the divergence, and supporting means which permit rotation of the runner about its longitudinal axis; substantially as described.

2. A ladle runner having two branches at its discharge end, said branches having their center lines at an acute angle to the

longitudinal axis of the runner, and means  
for rotating the runner about such axis and  
for adjusting it whereby metal may be made  
to flow through both branches simultane-  
ously in the same or in different volume, or  
5 through either branch thereof only; substan-  
tially as described.

In testimony whereof, I have hereunto set  
my hand.

EDWARD L. FORD.

Witnesses:

JESSIE E. DICKEY,  
JOHN TOD.