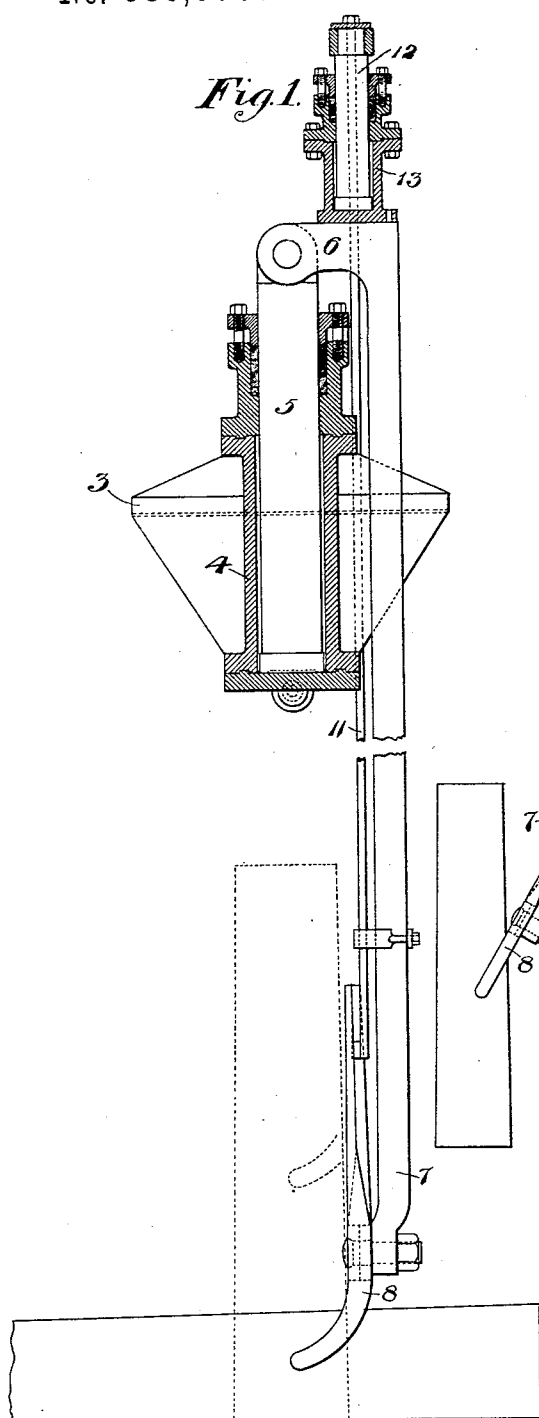
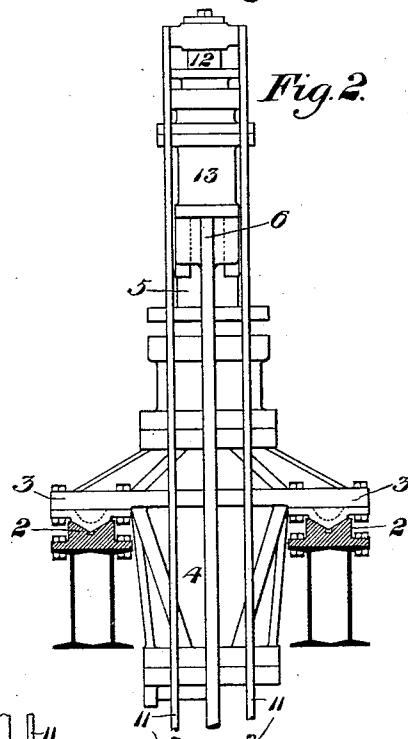
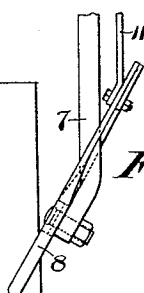
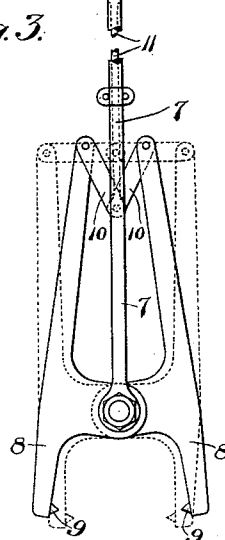


(No Model.)

H. B. A. KEISER.
INGOT TONGS.

No. 588,070.

Patented Aug. 10, 1897.



WITNESSES

W. W. Swartz
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UNITED STATES PATENT OFFICE.

HENRY B. A. KEISER, OF BRADDOCK, PENNSYLVANIA, ASSIGNOR TO THE
CARNEGIE STEEL COMPANY, LIMITED.

INGOT-TONGS.

SPECIFICATION forming part of Letters Patent No. 588,070, dated August 10, 1897.

Application filed April 28, 1893. Serial No. 472,189. (No model.)

To all whom it may concern:

Be it known that I, HENRY B. A. KEISER, of Braddock, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Ingot-Tongs, 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 side elevation, partly in section, of my improved ingot-tongs arranged to act vertically. Fig. 2 is a rear view of the same, and Fig. 3 is a view of a modification.

Like symbols of reference indicate like parts in each.

In the drawings, 2 represents an elevated track, on which in suitable bearings rests the wings or carriage 3, which extends from the main hydraulic cylinder 4, which is thus supported between the tracks in a vertical position and is capable of being moved on the track from place to place. Within the cylinder 4 is the plunger 5, to the upper end of which outside of the cylinder is pivoted the bent arm 6 of the vertical supporting-bar 7, which bar extends down outside of the cylinder and to the lower end of which the tongs 8 are bolted, the tongs being bolted to the bar at the pivotal point of the jaws. The jaws of these tongs are curved, so as to extend horizontally out of the vertical plane occupied by the bar 7, and are also spread to inclose the ingot and are provided with the conical gripping-teeth 9. Pivoted to the upper ends of the lever-arms of the tongs are the toggle-arms 10, which at their inner ends are pivoted to the vertical rod 11, the upper end of which is secured to the plunger 12 in the vertical hydraulic cylinder 13, so that when the plunger 12 is lifted in the cylinder the toggle-levers will spread and close the jaws of the tongs on the ingot.

Instead of curving the jaws of the tongs so as to bring them out of the line of the vertical bar 7 the bar itself may be bent at its lower end, as is shown in Fig. 3.

The operation is as follows: The tongs being open, as shown in Fig. 2, and the carriage 3 being brought to the desired position over the ingot to be tilted, power having been applied to raise the plunger 5, which elevates

the tongs until the gripping-teeth are brought to about the middle portion of the standing ingot, power is applied to the plunger 12 in the cylinder 13, which, raising the rod 11, causes the teeth of the jaws to close on the ingot at a point outside of the center of gravity, the horizontal extension of the jaws being less than one-half the width of the ingot, which causes the vertical part of the tongs to act as a stop to prevent the jaws from gripping the ingot beyond or at the point of the center of gravity. This formation or the equivalent thereof is an essential part of my improvement. By applying further power to the plunger 5 the ingot is raised from the ground, and owing to its being supported outside of its center of gravity it will at once swing into a horizontal position, when it may be transported by means of the track 2 and lowered by allowing the plunger 5 to descend in the cylinder 4.

The advantages of my invention will be evident to those skilled in the art. By the use of my improved tongs the hot ingots may be lifted and tilted from a vertical to a horizontal position without the workmen having to approach the ingot, as has heretofore been necessary, and owing to the rigid support of the tongs and the curved jaws the ingot when tilted is prevented from swinging, enabling the work to be done with small expenditure of time and labor.

I am aware that ingots have been lifted and tilted from a vertical into a horizontal position by means of tongs suspended by chains, in the use of which it is necessary for the workman to fasten the tongs to the ingot by hand and in the use of which great difficulty has been experienced in placing the ingot in the position desired owing to the swaying of the tongs when the ingot is tilted.

What I claim is—

1. The combination with suitable lifting mechanism of a vertical lifting and supporting bar attached at its upper end thereto, tongs pivoted to the bar and having jaws provided with conical teeth arranged to engage the ingot outside its center of gravity and allow its swinging thereon, links pivoted to the jaws, and an operating-rod for the links; substantially as described.

2. The combination with suitable lifting
mechanism of a vertical lifting and support-
ing bar attached at its upper end thereto,
tongs pivoted to the bar and having jaws ex-
5 tending at an angle to the general plane of
the vertical bar and provided with conical
teeth arranged to engage the ingot outside
its center of gravity and allow its swinging
thereon, links pivoted to the jaws, and an
10 operating-rod for the links; substantially as
described.

3. The combination with a movable car-

riage, of two motive cylinders carried there-
on, a rigid supporting-bar carried by one cyl-
inder, tongs pivoted to the bar, and an op- 15
erating-bar for the tongs arranged to be op-
erated by the other cylinder; substantially
as described.

In testimony whereof I have hereunto set
my hand.

HENRY B. A. KEISER.

Witnesses:

W. B. CORWIN,

H. M. CORWIN.