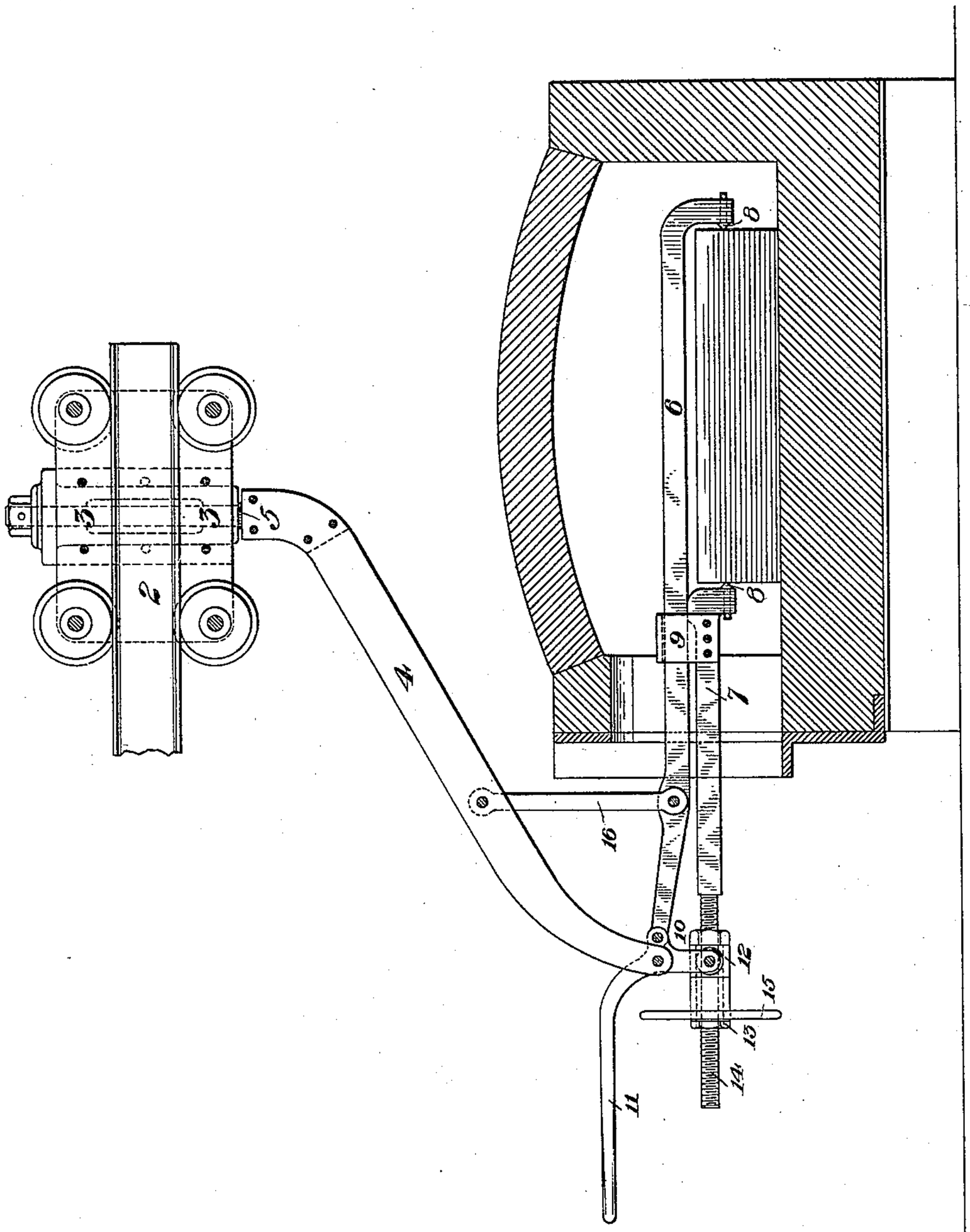
(No Model.)

S. FORTER.

MILL APPLIANCE.

No. 428,301. Patented May 20, 1890.



WITNESSES

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MILL APPLIANCE.

SPECIFICATION forming part of Letters Patent No. 428,301, dated May 20, 1890.

Application filed March 26, 1890. Serial No. 345,337. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL FORTER, a citizen of Switzerland, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Mill Appliances, of which the following is a full, clear, and exact description.

My invention relates to an improvement in apparatus for charging metallurgical furnaces—such as heating-furnaces—and is designed especially as an improvement on the device described in a prior patent granted to Samuel Forter and Julian Kennedy, No. 410,108, dated August 27, 1889.

The invention is illustrated in the accompanying drawing, which shows the apparatus in side view in connection with a heating-furnace, which is shown in vertical section.

Referring to the drawing, 2 represents the jib of a crane by which the charging apparatus is supported, and 3 is a trolley mounted on said jib, so as to be capable of being moved longitudinally thereon.

4 is a depending arm or rod, which at its upper end is swiveled to the trolley on a vertical axis, and from the trolley extends in a backwardly-inclined position.

The gripping mechanism of the charging apparatus consists of two bars 6 and 7, which are provided with spikes 8 or other means adapted to grip or hold the metal piece or ingot. The bars 6 and 7 are connected by means of a coupling-box 9, which permits the bar 6 to be moved longitudinally.

10 is a bell-crank lever provided with a handle 11. The elbow of this lever is pivoted to the rod or frame 4. One of its arms is pivotally connected to the end of the bar 6, and the other of its arms is pivotally connected with a tubular sleeve or collar 12, loosely encircling a nut 13, which fits on a threaded portion 14 of the bar 7. This nut is provided with a hand-wheel 15, by which it may be rotated on the threaded portion of said bar.

16 is a brace or supporting bar, which connects the bar 6 with the arm 4.

The operation of the apparatus is as follows: If it be desired to remove an ingot or bloom from the heating-furnace, the bar 7 is moved by means of the hand-wheel 15, so as to make the distance between the spikes at the ends of the bars 6 and 7 a little greater than the length of the ingot. The crane of which the jib 2 forms part and the trolley thereon are moved so as to direct the arms 6 and 7 toward the door of the furnace, and the swiveled connection between the rod 4 and the trolley enables said bars 6 and 7 to be directed at right angles to the furnace-door, even though the jib itself be at an acute angle thereto. Then by moving the trolley on the jib the bars 6 and 7 are inserted into the furnace directly above the ingot, and the jib is then lowered, so as to cause the spikes at the ends of the bars to be opposite to the ends of the ingot, the ends of the bars being separated sufficiently to inclose the ingot by elevating somewhat the hand-lever 11. When the bars are in position, the hand-lever is depressed thereby by operation of the bell-crank lever 10, bringing the spikes at the ends of the bars into contact with the ingot, and if the crane-jib be elevated the weight of the ingot, acting on the said bars, will so move the said bell-crank lever as to produce a relative motion of the bars in opposite directions and to cause the spikes at their ends to firmly seize the metal piece, which, on being raised from the floor of the furnace, may be carried to any place within the sweep of the crane. When the jib is lowered to deposit the ingot on the floor or other support, the relief of the weight of the metal from the bars 6 and 7 will produce a relative motion of said bars, so as to release them from the ingot and permit them to be removed therefrom.

I do not make herein any specific claim to the construction of said bars and their operative mechanism, since that is covered by the patent referred to, and the improvement which I desire to cover specifically herein relates to the rearward extension of the supporting rod or frame 4 and the swiveling thereof to the trolley, said arrangement enabling the apparatus to be introduced into the furnace-door whatever be the angle of the jib relatively thereto and causing the device to be properly balanced relatively to its support from the jib, since the center of gravity of the device, when carrying the metal bloom or ingot, is substantially in a vertical line with the axis of said bar in the trolley.

Without limiting myself specifically to the particular form of the gripping device and its operative mechanism, what I claim herein is—

1. The combination, with gripping mechanism extending in a substantially horizontal direction and comprising gripping-bars acting in opposite directions, of a crane and trolley and a supporting-bar swiveled to said trolley, substantially as and for the purposes described.

2. The combination, with gripping mechanism extending in a substantially horizontal direction, of a crane and a supporting-bar suspended from the crane and connected with the gripping mechanism at a place below and back of the place of suspension from the crane, substantially as and for the purposes described.

In testimony whereof I have hereunto set my hand this 22d day of March, A. D. 1890.

SAMUEL FORTER.

Witnesses:
W. B. CORWIN,
THOMAS W. BAKEWELL.