

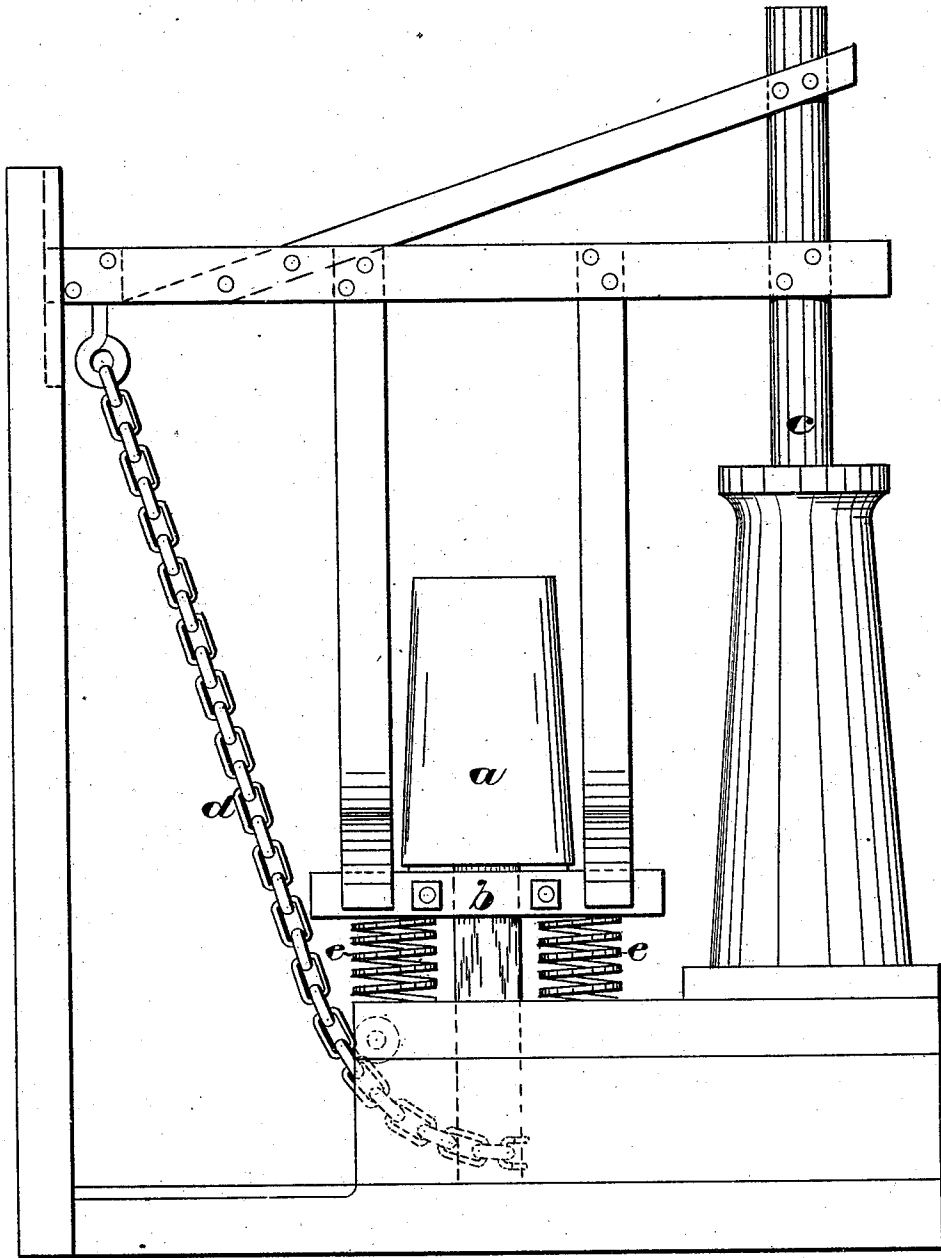
(No Model.)

J. ILLINGWORTH.

PROCESS OF SMOKING MOLDS IN CASTING INGOTS.

No. 373,186.

Patented Nov. 15, 1887.



WITNESSES:

INVENTOR:

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UNITED STATES PATENT OFFICE.

JOHN ILLINGWORTH, OF NEWARK, NEW JERSEY.

PROCESS OF SMOKING MOLDS IN CASTING INGOTS.

SPECIFICATION forming part of Letters Patent No. 373,186, dated November 15, 1887.

Application filed June 25, 1887. Serial No. 242,434. (No model.)

To all whom it may concern:

Be it known that I, JOHN ILLINGWORTH, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in the Process of Smoking Molds in the Casting of Ingots; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawing, and to letters of reference marked thereon, which form a part of this specification.

This invention relates to certain improvements in the process of casting ingots successively described in certain contemporaneous applications for patents before the United States Patent Office, respectively numbered, serially, 240,875 and 241,163, the object being to smoke the mold more easily and perfectly, to secure a more perfect quality of steel, and to enable the ingot to be drawn from the mold more easily; and the invention consists in smoking the mold substantially as will be hereinafter set forth, and finally embodied in the clauses of the claim.

The accompanying drawing shows a mold or ingot machine which may be employed in carrying out the invention, but to which I do not wish to be understood as limiting myself in any manner.

In said drawing, *a* indicates a bottomless mold suitably supported on an appropriate bed. *b* is a clamp or device for grasping the ingot and drawing it down when actuated by a crane, *c*, or other suitable motive device. *d* is a chain attached to either the crane *c* or to another separate crane, and *e e* are springs for raising the grasping arms or clamps *b* after the casting has once been lowered. These devices shown have been fully described in the previously-filed contemporaneous applications above referred to, and further description of the machine is deemed unnecessary.

In carrying out the process a casting is made in the mold *a*, the bottom being provided with a plug, "dummy", or other false bottom, which may be a previously-cast ingot, and above the

same is poured liquid steel equal in quantity to the amount required for the desired ingot, partly filling the mold, the mold having been previously smoked by any well-known process. After thus making the first casting and allowing the same to stand and cool for one minute, more or less, and partly harden, a second casting is poured, filling the mold more or less completely. When this latter casting has cooled sufficiently, the whole casting is then lowered by means of the clamp *b*, as described in the previously-filed applications, so that the casting extends below the bottom of the mold sufficiently to allow an ingot to be broken therefrom, and at the same time forming at the upper part of the mold a chamber for the reception of additional metal. Into this chamber, upon the top of the casting, is then poured or sprinkled a little resin or other suitable substance capable of producing or qualified to produce a suitable smoke when brought into contact with the highly-heated or partly-molten metal.

The resin coming in contact with the metal, an imperfect combustion is produced, and the smoke, partly arising, settles in part on the side walls of the mold, rendering the same more perfectly suited to receive the subsequent casting. The process of lowering the casting in the mold, introducing the smoke-producing substance, and then introducing an additional quantity of molten metal may be repeated as often as is desirable in a continuous process.

This process of employing the hot casting at the lower end of the mold to ignite the material for producing the smoke for preparing the mold for a subsequent casting I believe to be novel.

It will be understood that the process of alternately smoking the mold and drawing the ingot down by means or methods described, or by any other means or methods, I also believe to be novel.

Having thus described the invention, what I claim as new is—

1. The process herein described, which consists in applying the smoke-producing material to a hot casting in the mold, as and for the purposes set forth.

2. The process herein described of smoking a mold for a second or subsequent casting, which consists in casting an ingot in a mold, lowering the casting in the mold, and introducing to the chamber thus formed smoke-producing material, substantially as and for the purposes set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 23d day of June, 1887.

JOHN ILLINGWORTH.

Witnesses:

CHARLES H. PELL,
OSCAR A. MICHEL.