

No. 735,615.

PATENTED AUG. 4, 1903.

L. G. STITT.
INGOT STRIPPER.

APPLICATION FILED MAR. 18, 1903.

NO MODEL.

2 SHEETS—SHEET 1

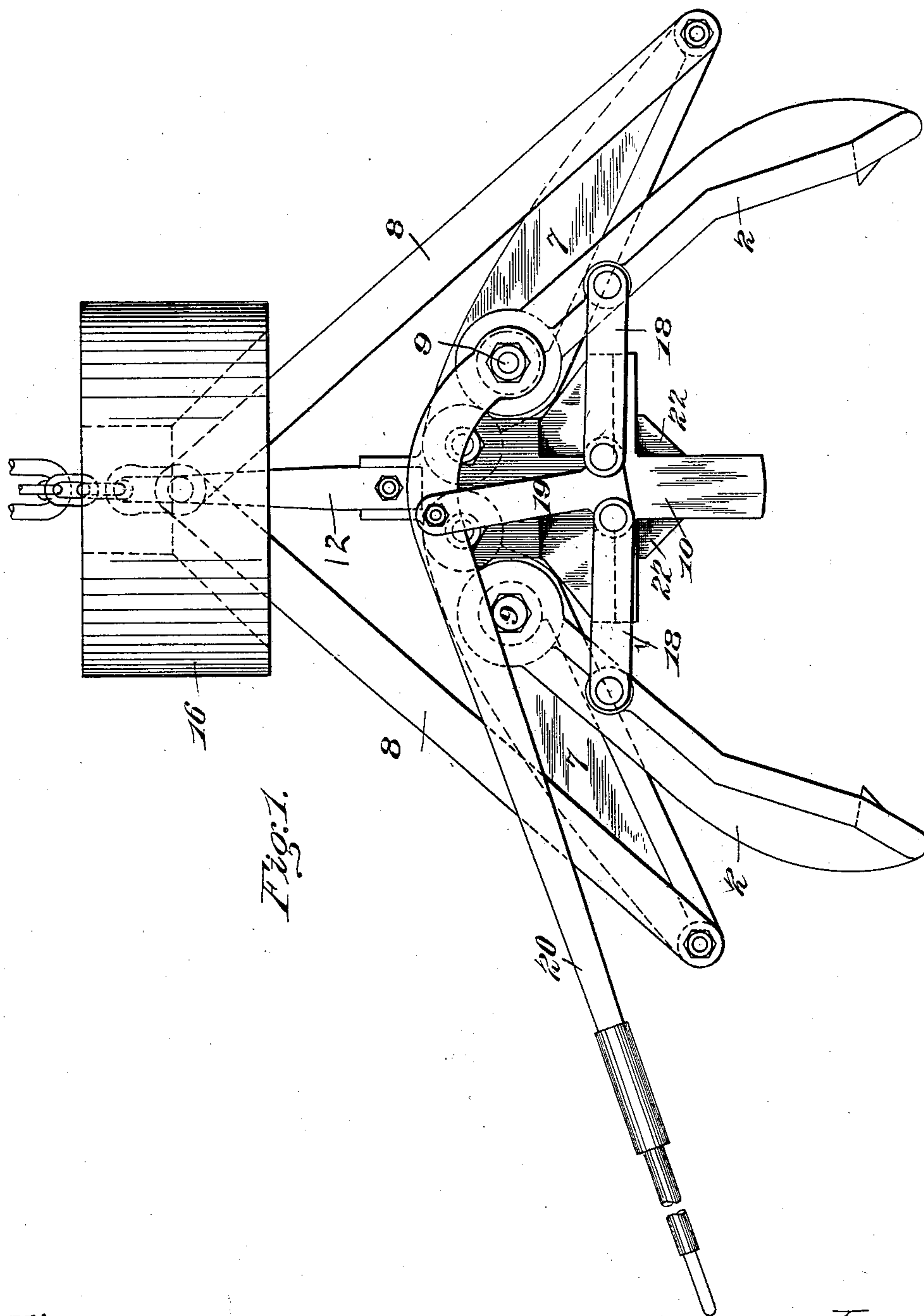


Fig. 1.

Witnesses.

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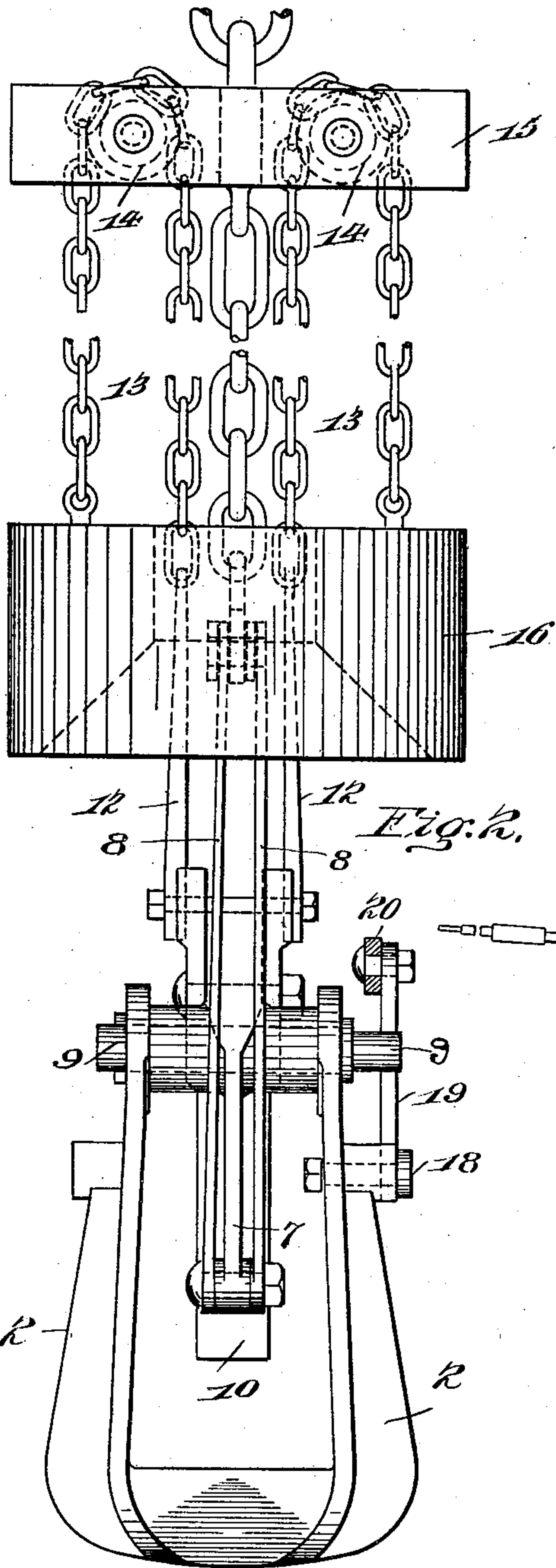


Fig. 2.

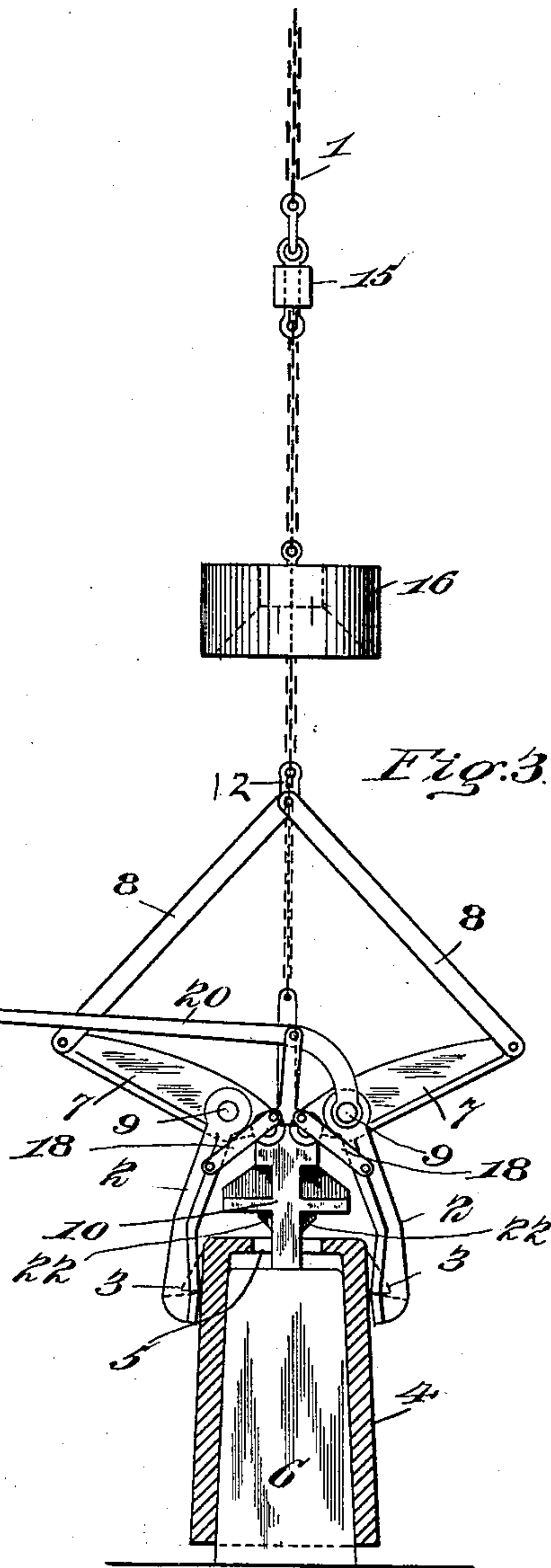


Fig. 3.

Witnesses.

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UNITED STATES PATENT OFFICE.

LEVI G. STITT, OF VANDERGRIFF, PENNSYLVANIA.

INGOT-STRIPPER.

SPECIFICATION forming part of Letters Patent No. 735,615, dated August 4, 1903.

Application filed March 18, 1903. Serial No. 148,424. (No model.)

To all whom it may concern:

Be it known that I, LEVI G. STITT, a resident of Vandergriff, in the county of Westmoreland and State of Pennsylvania, have invented a new and useful Improvement in Ingot-Strippers; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to a device for extracting ingots from their molds; and its object is to produce a device for this purpose whereby the extracting is done entirely by the weight of the mold and its ingot, thus making it unnecessary to use any power other than that for lifting the ingot and its mold.

The most common practice of extracting ingots from their molds comprises a suitable crane or other lifting device which engages the mold and raises the same, together with the ingot therein, and then pushing the ingot out of the mold by means of a ram actuated by hydraulic or other power and projected down through the neck of the mold. In extracting ingots according to the old method it is necessary not only to raise the ingot and its mold, but also to actuate the ram for pushing the ingot out of the mold.

By my invention I dispense with the power for pushing the ingot out of the mold and utilize the weight of the mold and the ingot contained therein for accomplishing this result.

The invention consists, generally stated, of means arranged to be connected to a crane or other lifting device and arranged to engage the mold and lift the same, together with a ram or pusher which is operated automatically by the lifting of the mold and is arranged to engage the ingot and push the same out of the mold. The specific arrangement comprises a combination of links for engaging the molds and levers fulcrumed on said links and connected to the crane or other lifting device, whereby the mold and the ingot contained therein are raised, together with a ram operated by the lifting-levers, and arranged to project through the neck of the mold and push the ingot out of the same. In this manner the combined weight of the mold and ingot serves to extract the ingot from the mold, and this power can be multiplied a number of times in proportion to the relative lengths of the arms of the levers on either

side of the fulcrum-links, and this power is applied directly to the head of the ingot and forces it from the mold. As a result the mere act of lifting the mold and contained ingot serves to strip the mold from the ingot.

In the accompanying drawings, Figure 1 is a side view of the extractor, showing the same open or in position to engage a mold. Fig. 2 is a side view at right angles to that shown in Fig. 1; and Fig. 3 is a view similar to Fig. 1, showing the device engaging the mold and in the act of pushing the ingot out of the latter.

My device can be used in connection with a crane or lifting device of any character or description and operated by any suitable power—such as steam, hydraulic pressure, compressed air, electricity, hand, or other power. The device is merely suspended from the hook of the crane or becomes a part thereof, any suitable means, such as the chain 1, being used for so suspending the device. The device is provided with suitable means for engaging the ingot-mold, this means being shown in the drawings as U-shaped links 2, which engage lugs 3 on the ingot-mold 4. Obviously any other suitable means for engaging a similar or other mold may be employed. The mold shown is of the usual form, having in its top an opening or neck 5. The ingot is shown at 6.

The mold-suspending links 2 are not connected directly to the suspending-chain 1, but have fulcrumed to their upper ends the levers 7, to the outer ends of which are secured suitable suspending means, such as the links 8, which in turn are connected to the chain 1. The latter, together with the links 8, levers 7, and mold-engaging links 2, constitute the suspending means for the ingot-mold, so that by merely raising the hook of the crane the mold, together with the contained ingot, will be lifted.

The inner ends of the levers 7 project inwardly beyond the fulcrums 9 and are connected to a head or ram 10, which is adapted to project down through the opening 5 in the top of the mold and engage the ingot 6 and push the same out of the mold. It will be apparent that by lifting on the outer ends of the levers 7, as occurs in lifting the mold and its ingot, the inner end of said levers will be depressed, thus forcing the ram downwardly

to extract the ingot. In this manner the combined weight of the mold and ingot serves to push the ingot out of the mold, and inasmuch as the portions of the levers projecting outwardly beyond the fulcrums 9 are much longer than the inwardly-projecting portions the combined weight of the mold and ingot will be multiplied a number of times, so that a very heavy pressure is exerted against the ingot.

To return the levers and links to their normal or open position, (shown in Fig. 1,) suitable counterbalancing mechanism for raising the ram 10 is provided, this mechanism comprising a pair of straps 12, connected to the ram and having connected to their upper ends chains 13, which pass over sheaves 14 on a cross-head 15, secured to the chain 1, said chains having connected to their outer or lower ends the counterbalancing-weight 16. This weight is provided with a suitable opening for permitting the suspending-chain to pass through the same and operates vertically over and is guided by said chain. The counterweight 16 is made sufficiently heavy, so that normally it will be in the position shown in Fig. 1—that is, resting on the upper ends of the links 8. This naturally draws the straps 12 and ram 10 upwardly and forces the mold-engaging links 2 outwardly.

In order to cause the links 2 to engage the mold, I connect to said links a pair of links 18, the inner ends of which are connected to a toggle member 19, which in turn is connected to a hand-lever 20, pivoted on one of the fulcrum-pins 9. When the parts are in the position shown in Fig. 1, by merely raising on the lever 20 the links 18 will have their inner ends elevated, thus causing them to draw the links 2 closer together and in that manner bringing them into engagement with the mold. The downward movement of the ram 10 is arrested by suitable stops 22, attached thereto or formed thereon and which come into contact with the top of the mold.

In use the device is suspended by the chain 1 from the hook of the crane. It is then brought over the mold to be stripped, and a workman seizes the lever 20, raises the same thus through the links 18, drawing the mold-engaging links 2 together and causing them to engage the mold. As soon as this is accomplished the lever 20 can be released, and then by merely lifting on the crane the device as a whole is elevated. The first action is to cause the links 8 to pull upwardly on the levers 7. This raises the mold-engaging links 2, and as soon as the weight of the mold and ingot is thrown upon these links they form stationary fulcrums for the levers 7, so that in the further lifting movement of the crane these levers swing on their fulcrums, thus causing the ram 10 to be depressed and brought against the ingot in the mold, and as the lifting proceeds the pushing action of the ram on the ingot is increased in proportion to the combined weight of the ingot and

mold multiplied by the ratio between lengths of the inner and outer arms of the levers 7. The result is that the ingot in all ordinary cases is pushed out of the mold, and this is accomplished practically without raising the ingot off its supporting-base and by no other power than that necessary to raise the mold and ingot. During this operation the counterweight 16 moves upwardly by reason of the downward movement of the ram, which pulls down on the straps 12 and chains 13. The downward movement of the ram is arrested by the stop 22 coming in contact with the top of the mold, and while in such position the device will retain its hold on the mold and enable the same to be entirely removed from the ingot and carried by the crane to the place of deposit. Then by merely lowering away on the crane and setting the mold down upon a car or other support the device will become automatically disengaged therefrom, this being due to the fact that as soon as the links 2 are relieved of the weight of the mold the counterweight 16 overbalances the weight of the ram 10 and descends, thus raising the ram and pushing the links 2 apart to disengage therefrom the lugs 3 of the mold.

It will thus be seen that my device is practically automatic, being operated entirely by the mere act of lifting the ingot and mold. No personal attention is necessary other than to engage the links 2 with the mold by means of the lever 20; but the entire action thereafter is controlled entirely by the lifting and lowering of the crane. In this manner the amount of personal attention is reduced to a minimum and, furthermore, a great saving in power is effected, as the ordinary hydraulic or other power for actuating the ram is entirely dispensed with.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. An ingot-extracting device, comprising means for engaging the mold and lifting the same, mechanism operated by the weight of the mold and ingot and arranged to engage the ingot and force it out of the mold, and a lever arranged to disengage the mold-engaging means from the mold.

2. An ingot-extracting device arranged for connection to a crane or other lifting device and comprising means for engaging the mold and lifting the same, a ram operated automatically by the lifting of the mold and arranged to contact with the ingot and push it out of the mold, and means operated automatically by the lifting of the device when disengaged from the mold for elevating the ram and placing the mold-engaging means in position to engage the mold.

3. An ingot-extracting device arranged for connection to a crane or other lifting device and comprising means for engaging the mold, levers fulcrumed on said mold-engaging means and connected to the crane or the like, a ram operated by said levers and arranged to contact with the ingot and push it out of the mold,

and means acting on the mold-engaging means for disengaging them from the mold.

4. An ingot-extracting device arranged for connection to a crane or other lifting device and comprising means for engaging the mold, levers fulcrumed on said mold-engaging means and connected to the crane, a ram operated by said levers and arranged to engage the ingot and push it out of the mold, and a stop or shoulder on said ram adapted to engage the upper end of the mold and limit the downward movement of the ram.

5. An ingot-extracting device arranged for connection to a crane or other lifting device and comprising means for engaging the mold, levers fulcrumed on said mold-engaging means and connected to the crane, a ram operated by said levers and arranged to engage the ingot and push it out of the mold, and counterbalancing means arranged to normally elevate the ram and spread the levers.

6. An ingot-extracting device arranged for connection to a crane or other lifting device and comprising means for engaging the mold, levers fulcrumed on said mold-engaging means and connected to the crane, a ram operated by said levers and arranged to engage the ingot and push it out of the mold, and counterbalancing means independent of said levers and connected to said ram for raising the same.

7. An ingot-extracting device arranged for connection to a crane or other lifting device and comprising links for engaging the mold, levers fulcrumed on said links and connected to the crane, a ram operated by said levers and arranged to engage the ingot and push it out of the mold, and a hand-lever connected to said links and arranged to cause the same to approach each other to engage the mold.

8. An ingot-extracting device arranged for connection to a crane or other lifting device and comprising links for engaging the mold, levers fulcrumed on said links, means connected to the outer ends of said levers for suspending the same from the crane, a ram connected to the inner end of the levers and ar-

anged to engage the ingot and push it out of the mold, a counterbalancing device fulcrumed on the suspending means, and connections from the same to said ram.

9. An ingot-extracting device arranged for connection to a crane or other lifting device and comprising links for engaging the mold, levers fulcrumed on said links, means connected to the outer ends of the levers for suspending the same from the crane, a ram connected to the inner ends of the levers and arranged to engage the ingot and push it out of the mold, chains connected to said ram and passing over sheaves connected to the suspending means, and a counterweight on said chains.

10. An ingot-extracting device arranged for connection to a crane or other lifting device and comprising links for engaging the mold, levers fulcrumed on said links, means connected to the outer ends of said levers for suspending the same from the crane, a ram connected to the inner end of said levers and arranged for engaging the ingot and push it out of the mold, counterbalancing means for normally holding the ram elevated, a hand-lever, and connections between the same and the links to cause the latter to engage the mold.

11. An ingot-extracting device arranged for connection to a crane or other lifting device and comprising links for engaging the mold, levers fulcrumed on said links, means connected to the outer ends of the levers for suspending the same from the crane, a ram connected to the inner end of the levers and arranged to engage the ingot and to push it out of the mold, a stop on said ram arranged to engage the mold and limit the downward movement of the ram, and counterbalancing means for normally holding the ram elevated.

In testimony whereof I, the said LEVI G. STITT, have hereunto set my hand.

LEVI G. STITT.

Witnesses:

S. A. DAVIS,

M. E. UNCAPHER.