

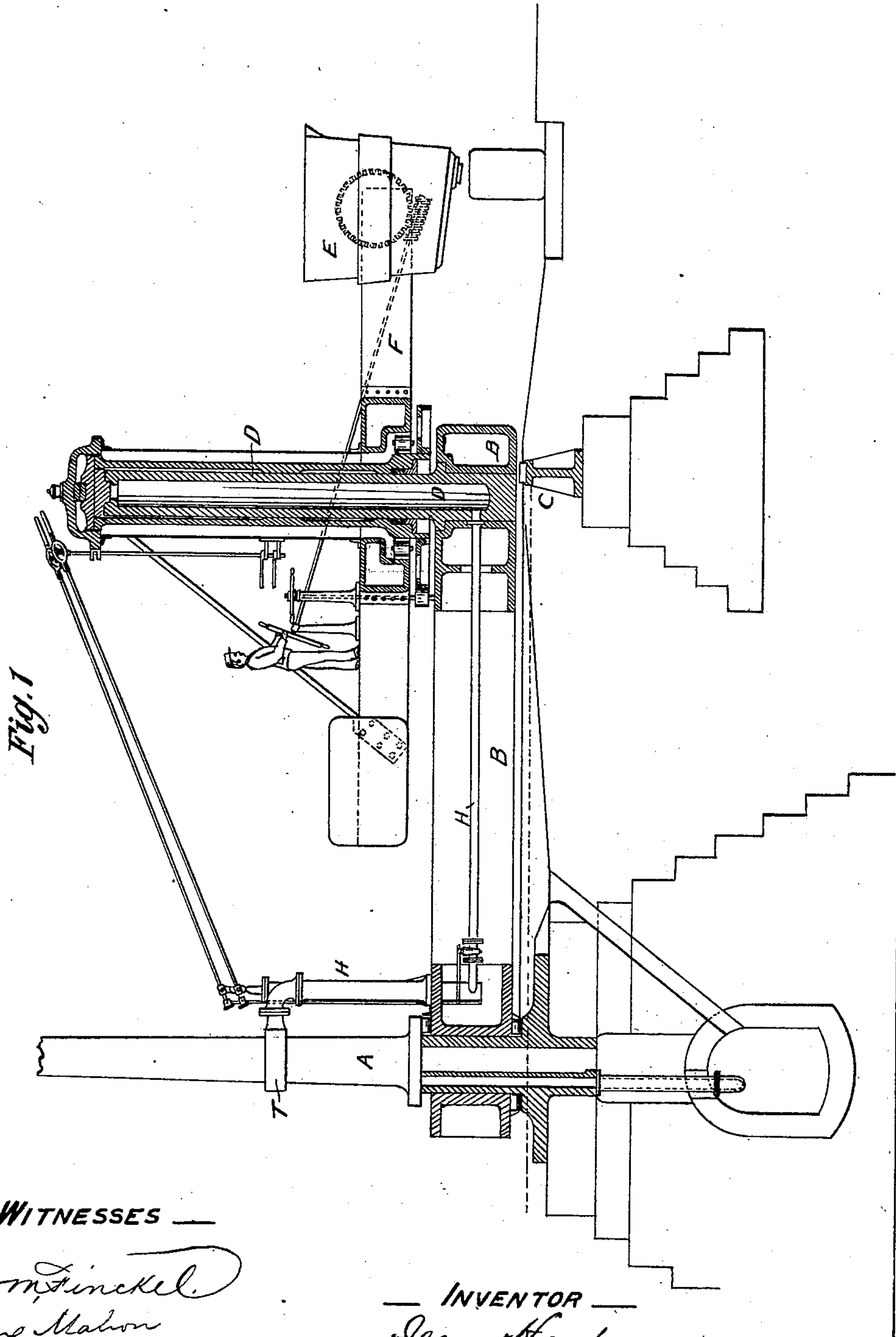
(No Model.)

3 Sheets—Sheet 1.

J. HARTMANN.
HYDRAULIC CRANE.

No. 247,054.

Patented Sept. 13, 1881.



— WITNESSES —

Geo. Finckel.
Alex. Mahon

— INVENTOR —

Jean Hartmann.
by his attorney,
Wm. H. Finckel.

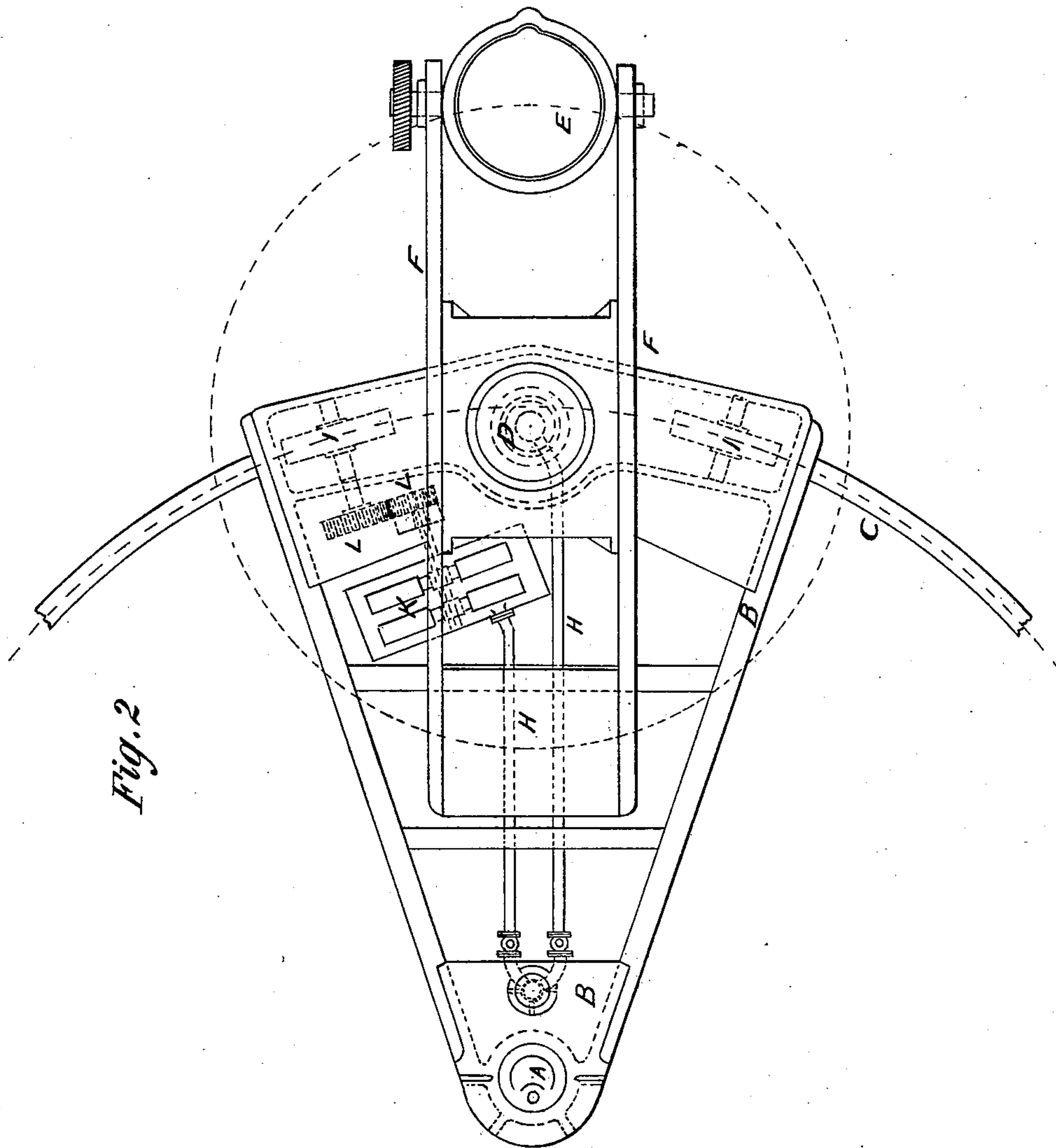
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HYDRAULIC CRANE.

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Patented Sept. 13, 1881.



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(No Model.)

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Fig. 3

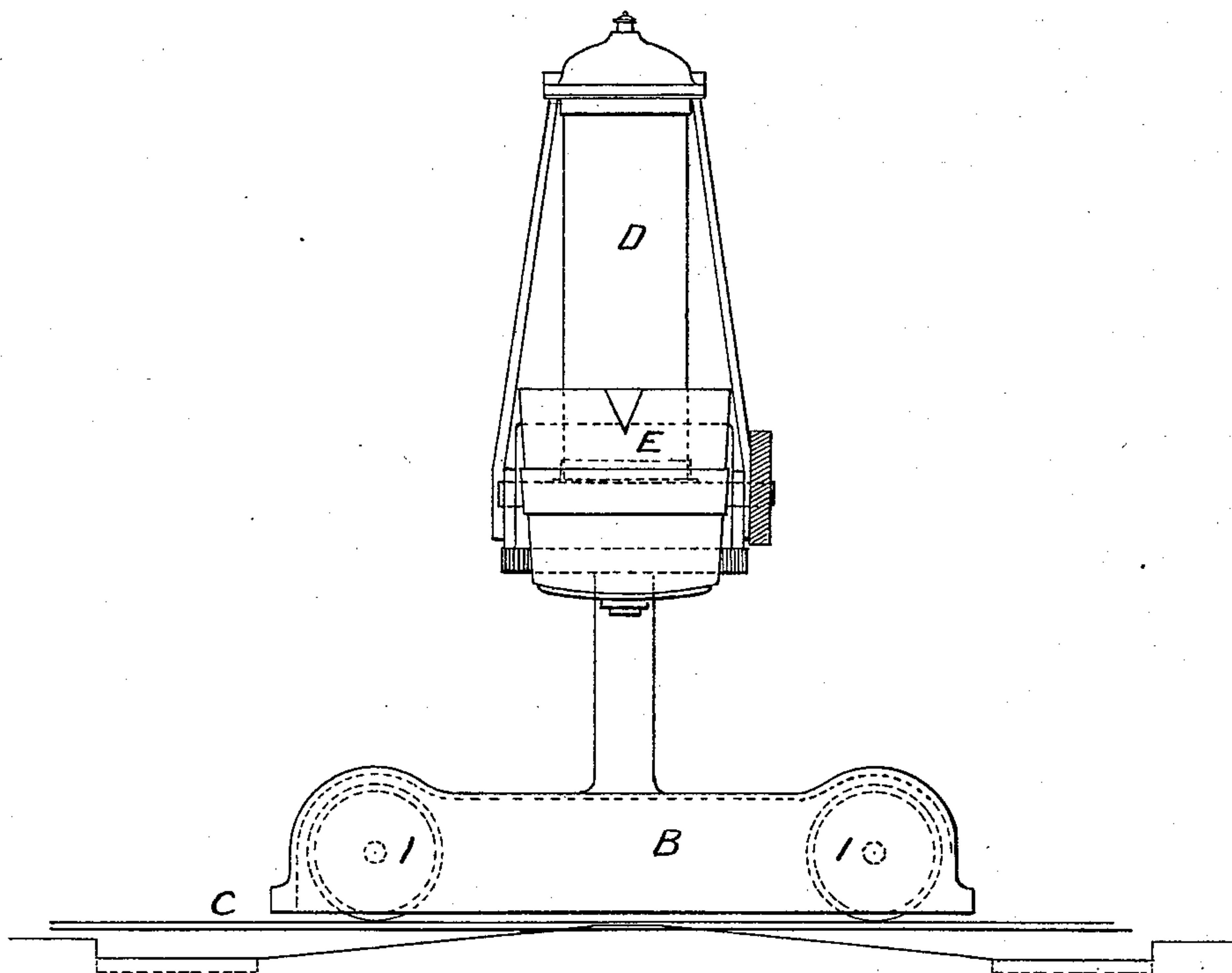
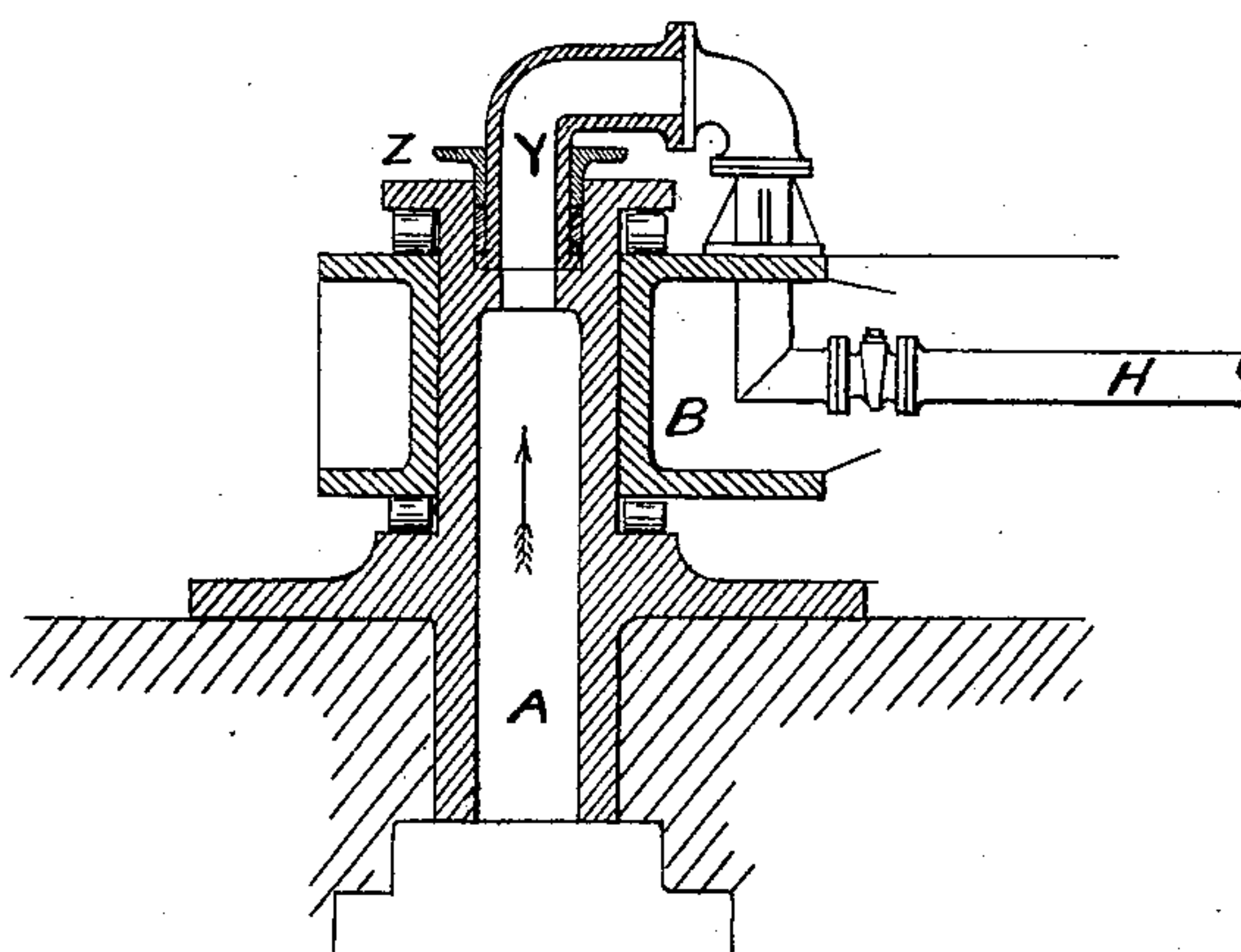


Fig. 4



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UNITED STATES PATENT OFFICE.

JEAN HARTMANN, OF MONT ST. MARTIN, MEURTHE ET MOSELLE, FRANCE,
ASSIGNOR TO SIDNEY GILCHRIST THOMAS, OF LONDON, ENGLAND.

HYDRAULIC CRANE.

SPECIFICATION forming part of Letters Patent No. 247,054, dated September 13, 1881.

Application filed May 21, 1881. (No model.)

To all whom it may concern:

Be it known that I, JEAN HARTMANN, of Mont St. Martin, Meurthe et Moselle, in the Republic of France, have invented a new and useful Improvement in Hydraulic Cranes, of which the following is a specification, reference being had to the accompanying drawings, forming part hereof.

My invention relates to what are known as "center-cranes," such as are now employed in Bessemer works and iron-works for carrying the ladle into which the molten metal is run from the converter or cupola to the ingot or other molds into which its contents are run.

In the arrangements heretofore employed it has been necessary to lift the entire mass of rotating mechanism with the ladle, and this represents the expenditure of much unnecessary power, it being exceedingly difficult and expensive in these arrangements to construct and operate a crane of even twenty feet radius.

The object of my invention is to obviate this and other defects and to produce an effective hydraulic crane which may be readily operated when of twenty-five feet and over radius, and which shall require a much less expenditure of force and water to work.

To these ends my invention consists in dividing the beam or jib of the crane, having one part arranged to be rotated on or with a central pivot or support, and mounted at its outer end upon wheels or rollers, and carrying a hydraulic column, combined with the jib or crane proper, which supports the ladle, and which jib or crane is adapted to rotate about and be lifted by the hydraulic column, as hereinafter fully specified and claimed.

In the accompanying drawings, hereinbefore referred to, in the several figures of which like parts are similarly designated, Figure 1 is a partly-sectional elevation of a hydraulic crane embodying my invention. Fig. 2 is a top-plan view of only so much of a crane as contains my improvement. Fig. 3 is a front elevation, and Fig. 4 a modification in vertical section.

The letter A designates a mast or pivot suitably supported at top and bottom, and prefer-

ably continued through the roof-beam to obtain greater steadiness. This mast may be fixed or may rotate in steps or bearings of suitable construction, and in either case it forms the pivot for a beam, B, which rotates about or with it. This beam B forms what, for convenience, I will designate the "major arm" of the divided crane beam or jib, and it is supported at its outer end by rollers or wheels I upon a rail or track, C, and carries above such wheels an ordinary hydraulic jack or column, D. A hydraulic pressure-pipe, H, connected with an accumulator, and also a water-escape or return pipe, pass through the mast, either from below or above, to the hydraulic cylinder to supply motive power to such cylinder.

F is the crane or jib proper, or what I shall hereinafter designate the "minor arm" of the divided crane. This arm carries the ladle E, and said arm is connected with the hydraulic cylinder as its pivot in such manner as to rotate thereabout, and also so as to be lifted by it in the operations of the ladle.

The major arm may be conveniently operated by a hydraulic engine, K, and gearing L, connected with its rollers, and the minor arm with the ladle may be operated by hand-wheels and levers or otherwise.

The minor arm, its counterpoise, ladle, and operating devices may be of ordinary construction, the novelty residing in its arrangement and mode of operation.

If the pivotal mast is fixed, the water is taken to the cylinder by a circular gland, T.

The wheels or rollers I may be slightly conical, and they run upon the above-mentioned rail C in an arc of a circle or a circular path. This rail may be either immediately beneath the lifting-crane or a little on either side. In the latter case it may be convenient to set the hydraulic cylinder low, so as to work in a circular trench.

In Fig. 4 the pivot or mast is not continued up into the roof, but has a hydraulic pipe, Y, rotating in a water-tight gland, Z, surrounding the head of the pivot, and this pipe connects with the pressure-pipe H.

It will be seen that by my construction it is

only necessary to raise the short or minor arm carrying the ladle, and not the entire rotating arm, which is supported and may be rotated on the center pivot and wheel or wheels before
5 referred to, while the minor arm gives a second movement of rotation, which is utilized in adjusting the position of the ladle and casting small semicircular groups of ingots. The extreme side pressure on the glands which occurs in large hydraulic center-cranes of the
10 ordinary construction is entirely prevented by my arrangement.

In a modern American Bessemer plant the ladle and its carrying jib will be lifted an average height of three feet about one hundred
15 and fifty times in twenty-four hours. Now, the saving in weight to be lifted by the apparatus constituting my invention will be from ten to twenty-five tons, making a minimum
20 saving per twenty-four hours of forty-five hundred foot tons, while all the lifting parts are of much lighter and cheaper construction.

Having thus described my invention, what I claim is—

25 1. In a hydraulic crane, a two-part beam having one portion or arm arranged to rotate about a center pivot and its other arm carrying the ladle and adapted to be lifted above

and rotated upon the former, substantially as and for the purpose described. 30

2. In a hydraulic crane, a ladle-carrying arm having an independent rotation upon a rotating beam or carrier, substantially as and for the purpose described.

3. The improved hydraulic crane hereinbefore described, consisting of a divided beam, the major arm of which is capable of being rotated on or with a center pivot or support, and is sustained at its outer end upon wheels or rollers, in combination with the ladle-carrying hydraulic lifting minor arm placed above or between such wheels or rollers, and capable of rotation independently of the major arm, substantially as set forth. 40

4. In a crane, a divided beam having one arm arranged to be rotated on or with a central pivot or support, and mounted at its outer end upon wheels or rollers, and carrying a motor for the other arm, combined with such other arm, which carries the burden, and is adapted to rotate about and be lifted by such motor, substantially as described. 50

JEAN HARTMANN.

Witnesses:

E. RUSCHER,
E. CINADIEU.