

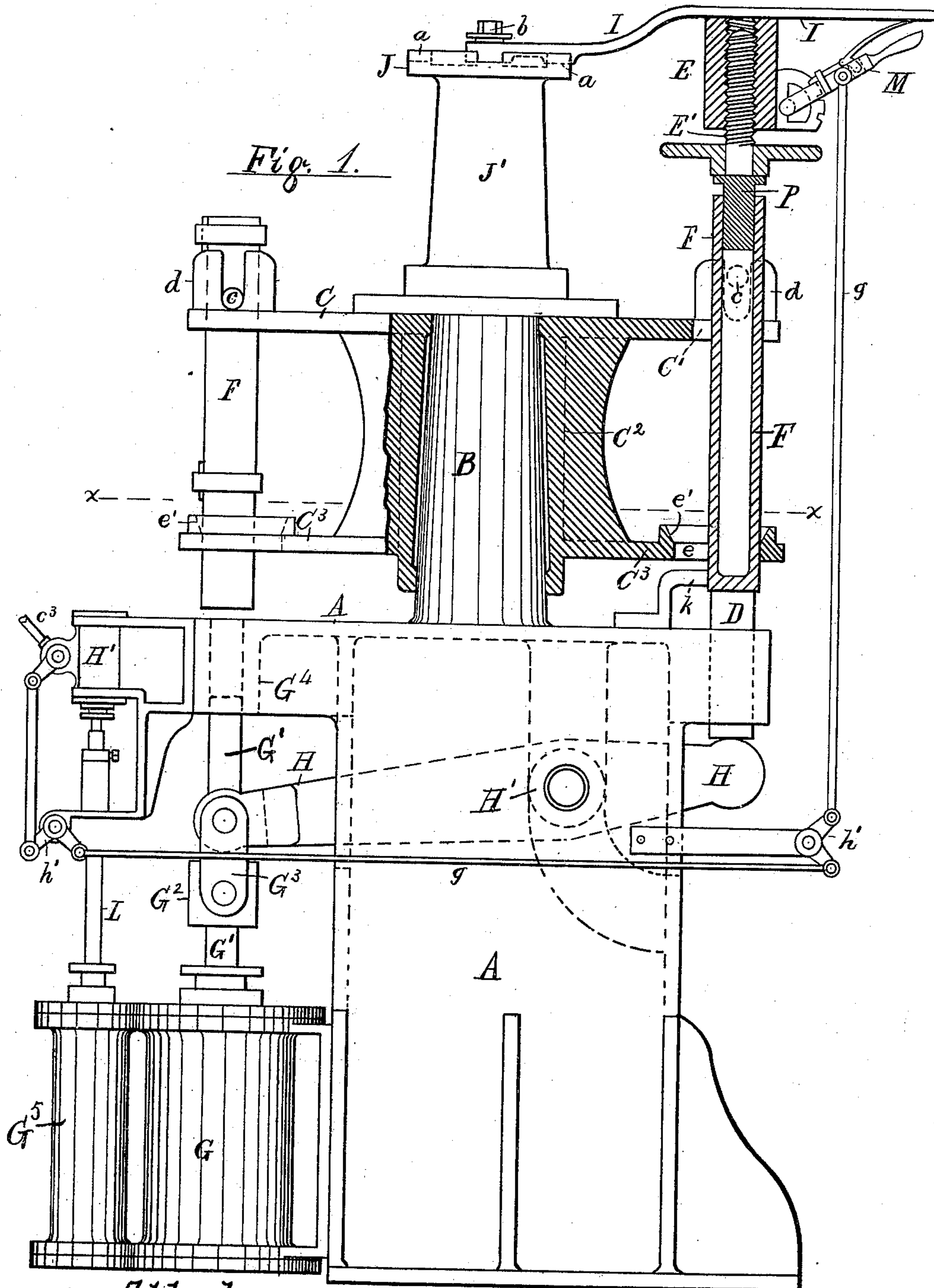
(No Model.)

3 Sheets—Sheet 1.

W. R. HINSDALE.
FLUID METAL PRESS.

No. 330,895.

Patented Nov. 24, 1885.



Attest.

Le. Lee
Henry J. Sheerath

Inventor.

William R. Hinsdale
per Thos. S. Crane, Atty.

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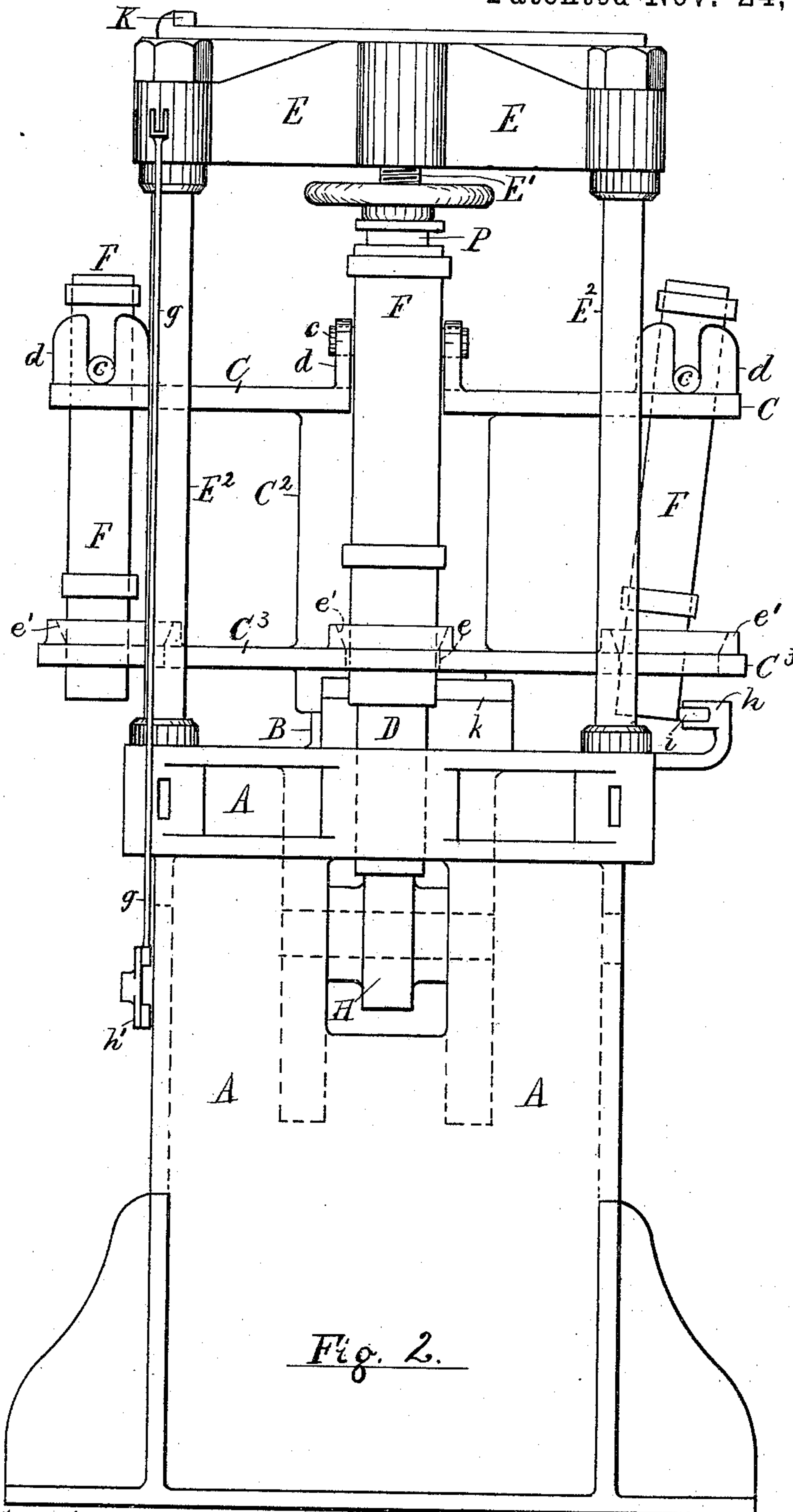


Fig. 2.

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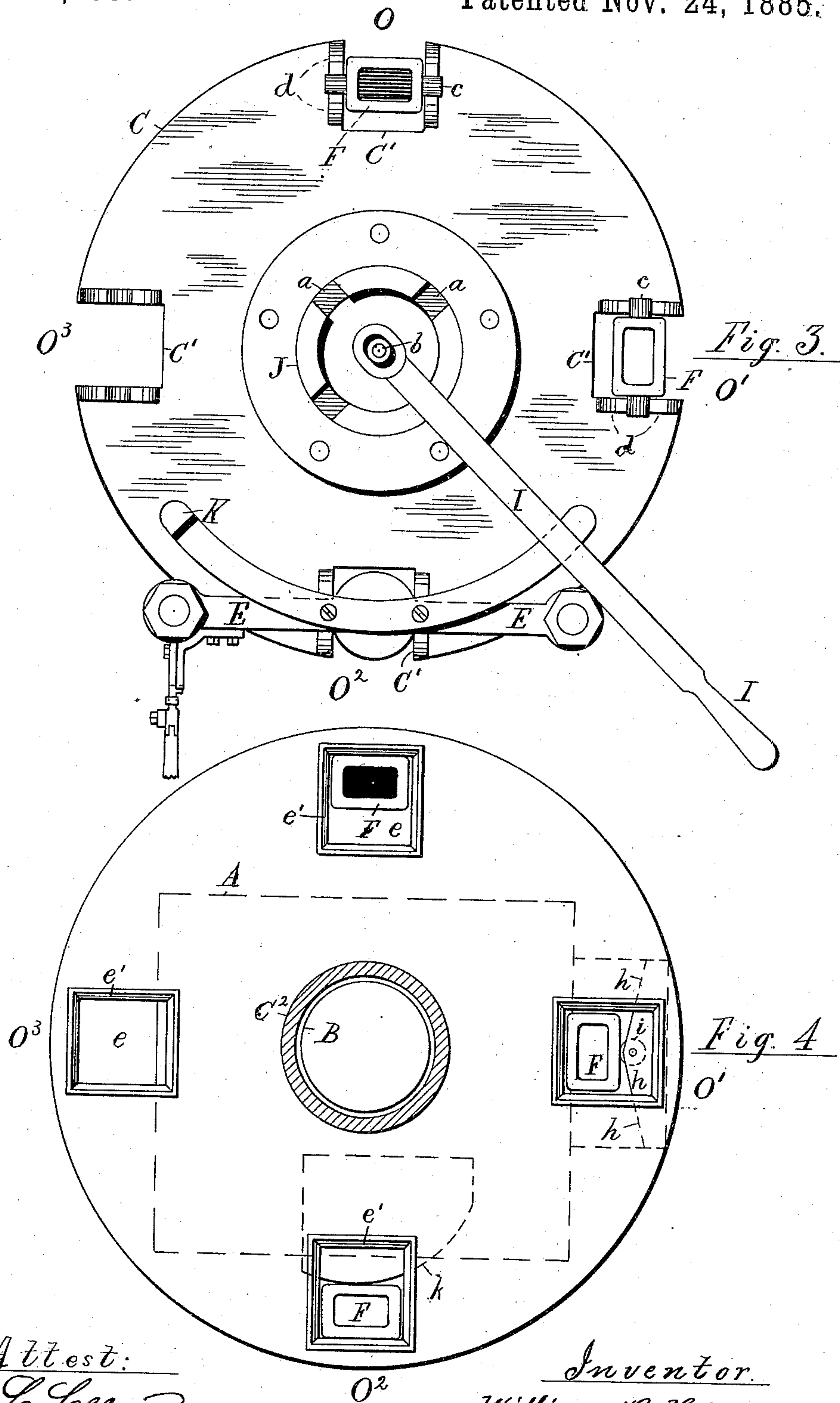
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UNITED STATES PATENT OFFICE.

WILLIAM R. HINSDALE, OF BROOKLYN, NEW YORK, ASSIGNOR TO THE
COMPRESSED STEEL COMPANY, OF CLEVELAND, OHIO.

FLUID-METAL PRESS.

SPECIFICATION forming part of Letters Patent No. 330,895, dated November 24, 1885.

Application filed November 8, 1884. Serial No. 147,423. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM R. HINSDALE, a citizen of the United States, residing in Brooklyn, Kings county, New York, have invented certain new and useful Improvements in Fluid-Metal Presses, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

10 The object of this invention is to avoid the use of a cylinder of a large diameter in a fluid-metal press; and the invention consists in the combination, with a pressure-cylinder and a rotary table for carrying the ingot-molds, of a
15 lever formed with unequal arms, to the longer of which the piston-rod is attached and to the shorter the press-slide.

It also consists in certain means for holding the molds vertically movable, and in certain
20 means for compressing the metal within a mold having a closed bottom by inserting a plunger in the top of the mold after the metal is poured, and then lifting the mold bodily against a fixed abutment.

25 It also consists in an improved means for actuating the compressing-cylinder's valve, when located opposite the pressing-abutment.

In the drawings annexed, Figure 1 is a side elevation, partly in section, of a machine embodying the improvements in the construction,
30 the mold, part of the table, and the abutment being in section. Fig. 2 is a front view of the same. Fig. 3 is a plan of the table and abutment, and Fig. 4 is a section of the machine
35 on line *x x* in Fig. 1.

C is the table, supported upon a central pillar, B, which is shown in Fig. 1 as attached to a bed, A, of hollow box form. The bed may, if preferred, be made in any desired manner, provided it performs the same functions.
40 C' are four notches in the edge of the table, in which the molds are hung by means of round pins *c* formed on the sides of the mold. Bearings *d* are formed at the sides of the notches
45 to receive the pins *c*, and being slotted vertically serve to guide the molds when the latter are pressed upward.

D is the press-slide mounted in one side of the bed beneath the path of the mold, and E
50 is a fixed abutment sustained above the path of the mold by rods E'.

F is the mold, and G is the cylinder for producing the pressure upon the same, the cylinder being located upon the opposite side of the bed from the slide D, and being connected with the
55 slide by an unequally-armed lever, H, pivoted beneath the pillar B in bearings H', so that the movement of the piston-rod G' is greater than that of the slide in any proportion that may be desired.

In the drawings the lever arms are in the ratio of two to one, so that the cylinder requires to be but one-half the area that it would need to be if connected directly with the slide. The end of the lever H over the cylinder is
60 forked to pass the rod G', and it is connected to the latter by a cross-head, G², and two links, G³, the rod being guided in a socket, G⁴, in the bed A, and operating under tension when exerting its pressure. The table C is fitted to
65 the pillar B by means of a sleeve, C², at the lower end of which a flange, C³, is extended horizontally, and formed with openings *e* to fit the lower ends of the pendent molds, and to guide them when pressed upward. To guide
70 the lower ends of the molds when inserted into the openings *e* from above, flaring flanges *e'* are shown formed around their edges, and the openings are made large enough to permit the tipping of the mold inward by a cam, *h*, when
75 pouring, and its tipping outward again by a cam, *k*, before pressing the fluid contents. At O², the station of the abutment E, an operator is stationed to turn the table around from time to time, the molds being inserted in the bear-
80 ings *d* at the station lettered O in Fig. 3, filled with the fluid metal at the station O', moved beneath the abutment and compressed at the station O², and removed from the table at the station O³. To turn the table a lever, I, is
85 pivoted by a bolt, *b*, at the center of a standard, J', which carries at its top a head, J, having four notches, *a*, around its upper edge, into which the lever can be dropped in turn. A stop, K, is affixed to the abutment E to
90 check the lever each time a mold is brought directly beneath the abutment and over the slide D, and the operator at O² is then required to actuate the valve of the cylinder G, and thus operate the press-slide. An auxiliary
95 cylinder, G⁵, is shown applied to the valve-rod L to relieve the operator of the fatigue of mov-

ing the entire resistance of the valve, and the rotary valve of the same is shown connected by rods *g* and cranks *h'* to a handle, *M*, located near the abutment, so as to be easily reached by the operator when the mold has
5 been fully moved over the press-slide.

*c*³ is a pipe supplying steam or compressed air to actuate the piston of the auxiliary cylinder *H'*, and the rotation of its valve by the
10 handle *M* effects an immediate movement of the main valve and piston of the cylinder *G*, and forces the slide *D* upward, carrying the mold with it toward the abutment *E*.

In Fig. 1 the mold is shown in section, and
15 a plunger, *P*, is shown inserted in the mouth of the mold after the metal is poured, the operator purposely leaving an empty space at the top of the mold for such purpose.

To obviate too great a movement of the slide
20 *D* an adjusting-screw, *E'*, is fitted into the lower side of the abutment, and may be turned into contact with the plunger *P* before the slide is actuated. Such screw is, however, stationary during the pressing operation, and is re-
25 garded as a part of the fixed abutment claimed herein.

In another application filed herewith and numbered 147,445 I have shown an apparatus adapted for use with portable molds hav-
30 ing loose plugs fitted into their lower ends, to which plugs pressure is applied by a press-slide moving upward. It will be seen, however, from the above description of my present invention, that it obviates the use of open-
35 bottomed molds having movable plugs inserted therein, and that I am enabled, without using any more apparatus than if operating at the bottom of the mold, to raise the same with all its contents, and secure the pressure at its
40 upper end. As this is the point where the metal is poured in, it is presumably hotter and more fluid than the lower part, and better suited to weld together under pressure, and to produce the desired result.

I am aware that various elements of my in- 45
vention have been heretofore used in other combinations, as in the French Patent No. 112,249, issued April 20, 1876, to Bouniard, and I therefore disclaim the said patent, and claim only the combinations I have specified 50
herein.

I have not claimed herein the cams *h* and *k* for tipping the mold, nor the table-turning de-
vices, as I have claimed them already in my
said patent application No. 147,445. 55

What I claim herein is—

1. The combination, with a rotary table or carrier, of a mold provided with the side pins, *c*, and guides *d*, affixed to the table and adapted to guide the mold when moved vertically and
60 to allow the tipping of the mold, substantially as and for the purpose set forth.

2. The combination, with the pressing-lever *H*, arranged and operated as described, of the rotary table arranged over the same, the hand- 65
lever *I*, for moving the table from the station of the press-slide *D*, as set forth, the pressure-cylinder and valve-chest arranged opposite the press-slide, and connections for moving the valve from the station of the hand-lever *I*, 70
as and for the purpose set forth.

3. In an ingot-press provided with a rotary table, the combination, with the table and its central supporting-pillar, of the bed provided with the pivoted lever *H*, and having the press- 75
slide *D* arranged at one end of such lever, and a pressure-cylinder arranged at the other end of such lever and connected thereto, the whole operated substantially as and for the purpose
80 set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

WILLIAM R. HINSDALE.

Witnesses:

HENRY J. THEBERATH,
L. LEE.