

(No Model.)

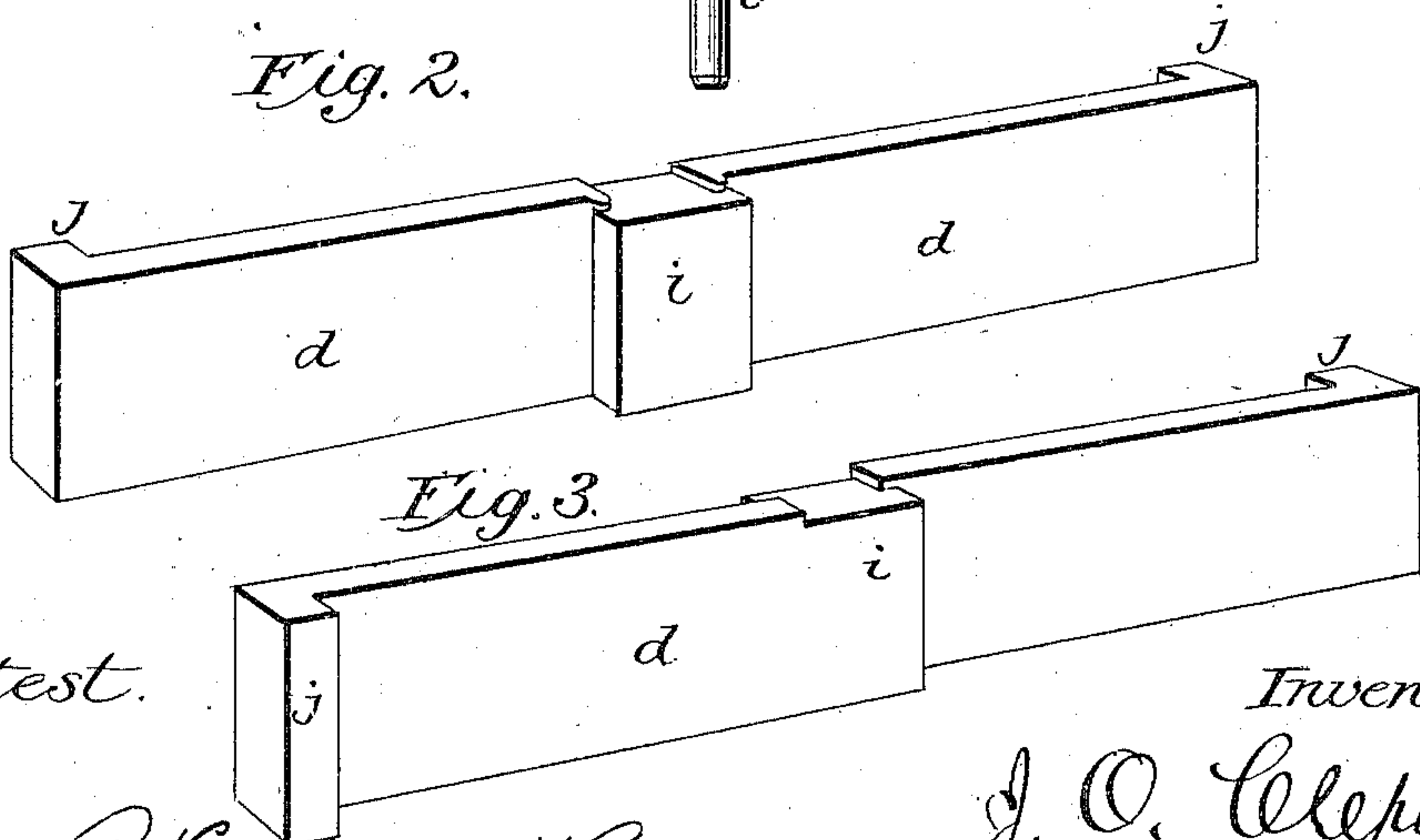
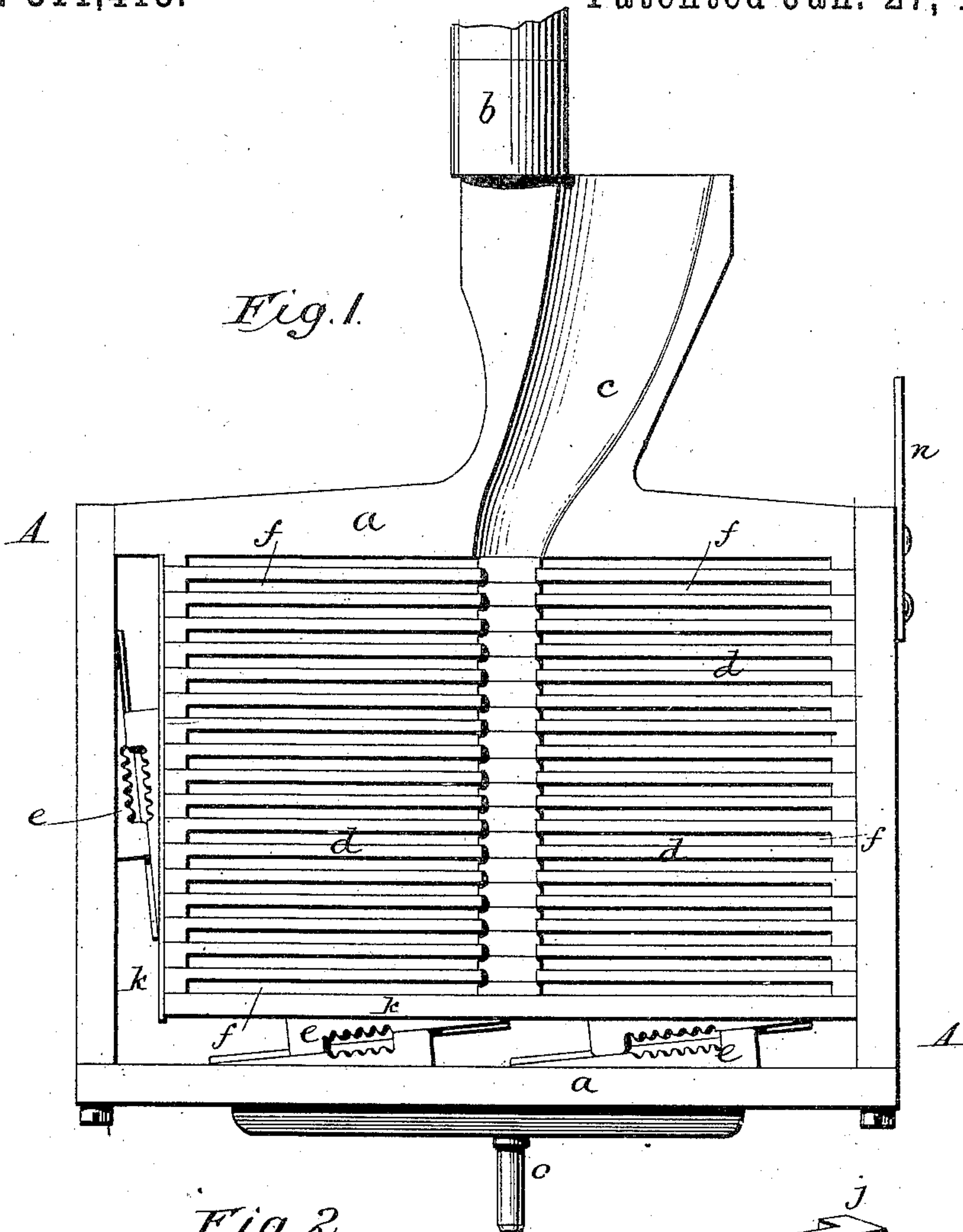
3 Sheets—Sheet 1.

J. O. CLEPHANE.

CASTING APPLIANCE FOR STEREOTYPE BARS.

No. 311,413.

Patented Jan. 27, 1885.



Attest.

Jedney P. Hollingsworth
Harry Shipley

Inventor.

J. O. Clephane
By his atty
Philip T. Dodge

(No Model.)

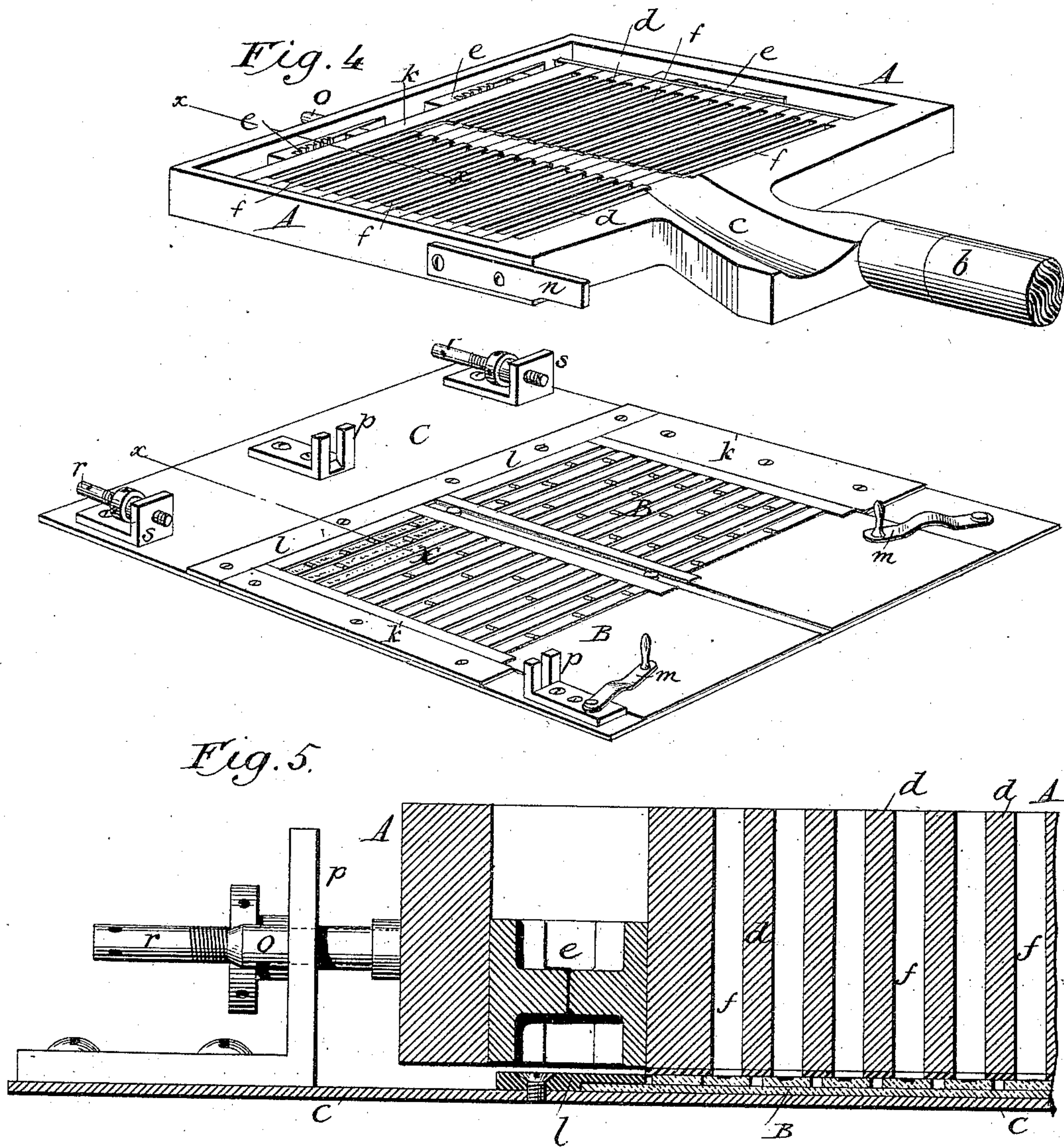
3 Sheets—Sheet 2.

J. O. CLEPHANE.

CASTING APPLIANCE FOR STEREOTYPE BARS.

No. 311,413.

Patented Jan. 27, 1885.



Attest.

Frederic P. Hollingsworth
Harry Shipley

Inventor.

J. O. Clephane.
By his Attorney
Philip T. Dodge.

(No Model.)

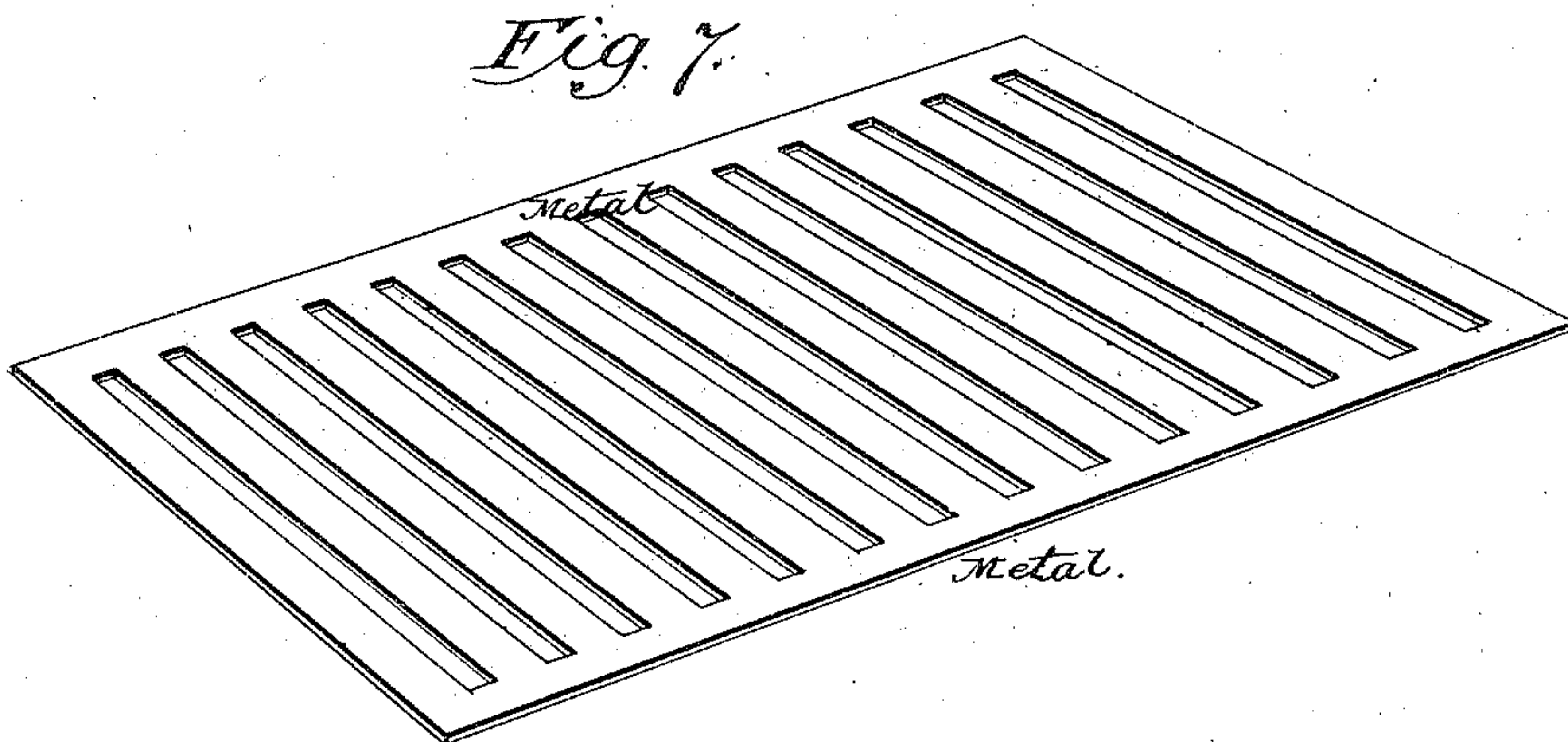
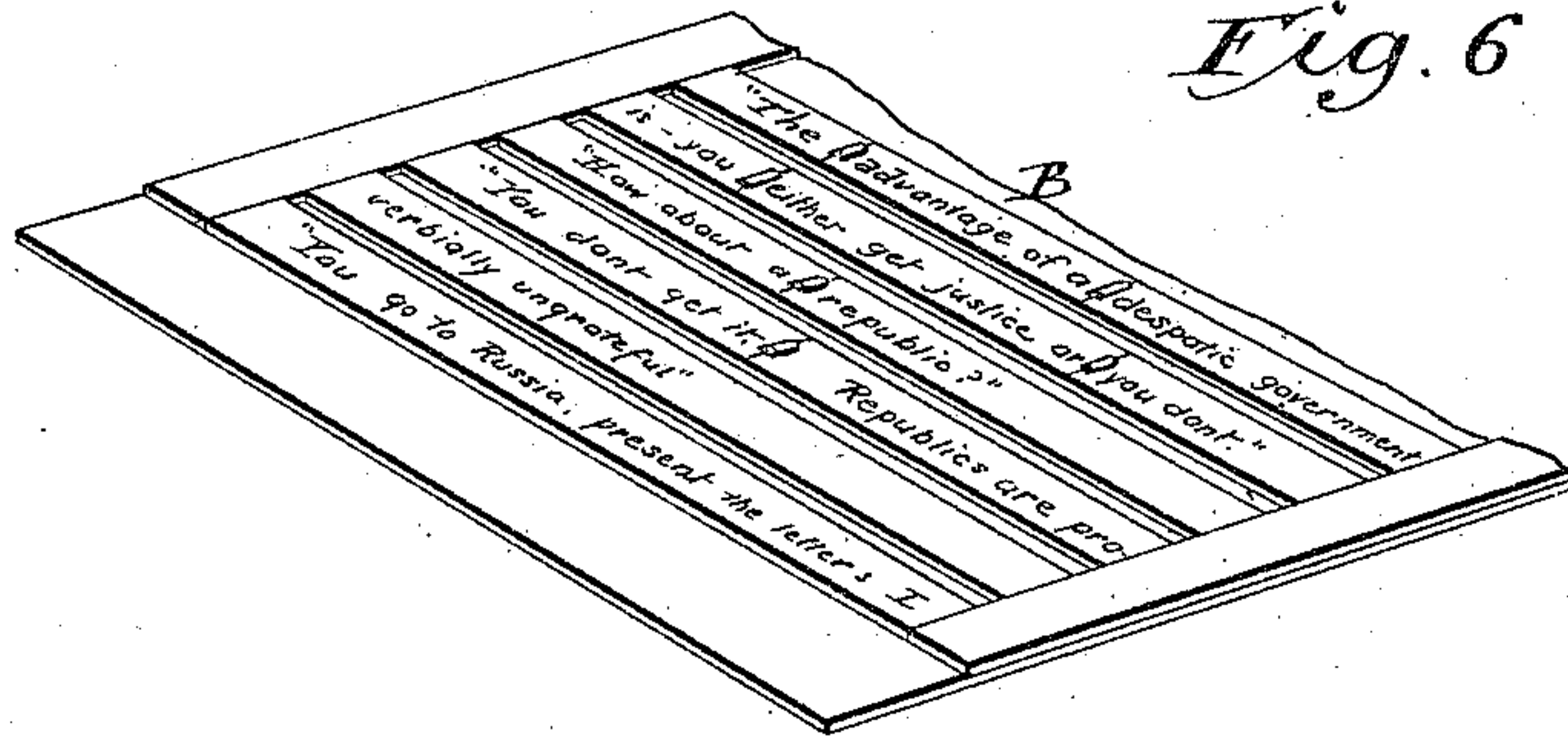
3 Sheets—Sheet 3.

J. O. CLEPHANE.

CASTING APPLIANCE FOR STEREOTYPE BARS.

No. 311,413.

Patented Jan. 27, 1885.



Attest.

Sidney P. Hollingsworth
Harry Shipley

Inventor.

James O. Clephane
By his attorney,
Philip T. Dodge

UNITED STATES PATENT OFFICE.

JAMES O. CLEPHANE, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR
TO THE NATIONAL TYPOGRAPHIC COMPANY, OF WEST VIRGINIA.

CASTING APPLIANCE FOR STEREOTYPE-BARS.

SPECIFICATION forming part of Letters Patent No. 311,413, dated January 27, 1885.

Application filed August 20, 1883. Renewed November 12, 1884. (No model.)

To all whom it may concern:

Be it known that I, JAMES O. CLEPHANE, of Washington, in the District of Columbia, have invented certain Improvements in Casting Appliances, &c., for Stereotype-Bars, of which the following is a specification.

My invention has reference to that method of producing stereotypes wherein a number of printing-bars, each representing a line, are cast simultaneously and independently of each other from a matrix-sheet having the characters arranged therein in parallel lines, as described in various applications for Letters Patent hitherto filed in the name of John H. White.

It is the particular aim of the present invention to simplify the means employed, to secure greater facility of operation, and to avoid the difficulties which have been hitherto encountered on account of the expansion and contraction of the mold-frame and the adhesion of the molten metal to the other metallic surfaces.

With these ends in view the invention consists in a mold-frame for producing a number of printing-bars, the slotted body of the frame being composed of a number of bars each having a length double that of the required printing-bars, as hereinafter explained.

It further consists in a mold composed of a series of parallel shouldered bars, an encircling-frame, and intermediate devices by which the bars may be quickly secured within the frame and as readily released after the casting operation, to permit the removal of the printing-bars or castings.

It further consists in peculiar improved means for retaining and adjusting the matrices and the mold-frame in the proper relative positions.

It further consists in a metallic slotted plate for employment between the matrix-sheet and the mold-frame, as contradistinguished from the paper sheet hitherto employed.

Referring to the accompanying drawings, Figure 1 represents a top plan view of my mold-frame. Figs. 2 and 3 represent perspective views of the bars of which the body of the mold is composed, the two bars shown dif-

fering slightly in form. Fig. 4 is a perspective view showing the mold-frame, the matrix-sheets thereunder, and the means for retaining the mold and matrices in position. Fig. 5 is a vertical section through the mold-frame, the matrix-sheet, and the support for the sheet, the section being taken on the line x' of Fig. 4. Fig. 6 is a perspective view of one end of the matrix-sheet. Fig. 7 is a perspective view of the slotted plate employed between the mold-frame and matrix.

Referring first to the construction, attention is directed more particularly to the mold-frame A, which will be seen to consist of an external rectangular frame, a , provided with a handle, b , and an inlet spout or mouth, c , and of a series of internal parallel bars, d , secured firmly in position by means of quoins or wedges e . It is necessary that the frame shall contain, as shown, a series of parallel slits or openings, f , each of a suitable size to receive a single printing-bar, the slots being spaced and otherwise arranged to correspond with the line of characters upon the matrix-sheet with which the mold will be used.

In my improved mold each bar d is made of a length somewhat more than double the length of the printing-bars. Each bar d is constructed with a central offset or shoulder, i , and a central depression, and with two shoulders or offsets, j , at its ends. These offsets serve to maintain the proper separation of the faces of the bars, in order to leave the slots or openings between them, and to close the outer ends of the slots thus formed. The offsets j at the ends of the bar may both be upon one side, as represented in Fig. 2; or they may be upon opposite sides, as represented in Fig. 3.

It will be perceived that upon assembling the bars side by side, as represented in Fig. 1, there will exist between each bar and the next two grooves or slots, f , arranged end to end, but separated from each other by the intervening shoulder or offset, i , the two bars thus securing the production of two slots adapted for the formation of two independent printing-bars. After placing the bars within the inclosing-frame, which should be of suitable size to leave a space around them, I apply

plates *k* at one end and at one side of the series of bars, and, introducing the wedges or quoins between these plates and the frame, force or drive them tightly home to their places, so as to apply a strong compression both endwise and sidewise against the bars. In this manner the bars are locked securely together within the frame, the result being a mold containing two series or rows of slots or openings. After the introduction of the molten metal the quoins are released, the effect of which is to release instantly the entire series of bars *f*, so that after lifting the frame therefrom they may be readily separated from each other to permit the removal of the printing-bars or castings.

I do not claim, broadly, as my invention a slotted mold-frame consisting of a series of bars locked together, my improvements consisting in the formation of the bars of double length, or, in other words, so that each pair of bars will produce slots for the formation of two casts or printing-bars, and in confining the bars by means of a frame which entirely encircles them, as contradistinguished from the frame which confines the bars on two sides only.

Passing next to the devices which are employed in connection with the mold-frame, I make use of matrix-sheets *B*, substantially such as described in the various applications of J. H. White, before referred to. Each sheet consists, as shown, of a backing sheet or plate having upon its face a number of fixed parallel strips, each strip containing a single line of indented characters or letters.

In constructing these matrix-sheets for use with my devices I arrange the base-sheet to extend at one end beyond the indented strips, as represented in Fig. 6, for a purpose which will be presently described.

For the purpose of supporting these matrix-sheets, and of holding the mold in the proper relation thereto, I provide, as shown in Figs. 4 and 5, a metallic base-plate, *C*, provided with two parallel fixed guides or shoulders, *k'*, adapted to bear closely upon the edges of the two matrix-sheets, which may be introduced between them, as represented in Fig. 4. I also apply to the base-plate, across one end at right angles to the guides *k'*, a fixed bar or guide, *l*, the edge of which is undercut or rabbeted, as shown in Fig. 5, so that the end of the matrix-sheet may be thrust therein, as shown in said figure. The upper surfaces of the guides *k'* and *l* are adapted to lie flush with the upper surface of the indented matrix-strips, as shown in Figs. 4 and 5.

It will be observed that when the matrix-sheets are seated upon the plate *C*, as above described, and illustrated in Fig. 4, they will be confined securely in position against movement either endwise or in a lateral direction. As an additional means of holding them in place, I may employ, if desired, two swinging elastic pressure-fingers, *m*, pivoted to the base-plate, as shown in Fig. 4.

For the purpose of holding the frame in the

proper position laterally above the matrix-sheets, I provide the frame, as shown in Fig. 4, with two longitudinal guide-arms, *n* and *o*, the former located centrally at the rear end and the latter located upon one side.

Upon the plates I secure two corresponding slotted studs, *p p*, adapted to receive the guides upon the mold.

In placing the mold above the matrices its guides are dropped into the slotted studs, which insures an exact alignment of the openings in the mold with the strips of the matrix.

In order to secure the proper longitudinal adjustment of the mold-frame, I provide the stationary plate or sheet *C* at its rear end with two horizontal screws, *r*, passing through fixed studs *s*. These screws are designed to bear against the end of the mold-frame, serving as stops therefor, and also as a means of accurately adjusting the same in an endwise direction to bring its openings directly over the characters in the matrices. By means of these screws compensation may be made for the expansion and contraction of the frame or for the slight variations which may exist between one frame and another.

While it may be preferred to employ the screws in the form and manner shown, any equivalent adjusting-stops may be employed provided they are adapted to adjust the frame in the direction indicated.

For the purpose of facilitating the application of the mold-frame to the matrix, and of avoiding injury to the latter during the operation, I propose to employ between the mold-frame and the matrix a thin metallic plate or sheet, such as represented in Fig. 7, provided with slots corresponding as nearly as possible in form and arrangement with those in the frame. This plate is similar in form to that described in the application of John H. White, filed March 13, 1883, No. 88,048, but differs therefrom in that, instead of being constructed of paper, pasteboard, or non-conducting material which would withstand high temperatures without appreciable expansion, it is constructed of metal which will expand and contract under varying temperatures. This thin sheet may be conveniently and accurately fitted to the surface of the matrix without danger of injuring the latter, and when adjusted it serves as a support upon which the mold-frame may be quickly and tightly applied. The plate and the mold are, in fact, but parts of a single mold, the slots of the two registering in such a manner that the molten metal may pass through them to the matrix, and thus produce printing-bars with flat surfaces.

The advantages incident to the use of non-expansible sheets are not fully secured by the use of my metallic sheet; but, on the other hand, the metallic sheet is possessed of advantages not attained by the others.

Having thus described my invention, what I claim is—

1. A mold-frame for producing a series of

independent printing-bars, the same consisting of detachable shouldered bars, a frame encircling the same, and intermediate quoins or fastening devices, substantially as described.

5 2. The combination, substantially as herein described, of the continuous inclosing-frame, the internal-shouldered bars *d*, and the quoins or tightening devices.

3. In a mold for casting stereotype-bars in
10 series, the combination, substantially as herein set forth, of the encircling-frame, the series of internal-shouldered bars, devices for applying pressure to said bars in a lateral direction, and devices for applying pressure to said bars
15 in an endwise direction.

4. In a casting frame or mold, a series of detachable bars provided with shoulders or offsets both at the end and at the middle, substantially as described, whereby each pair of
20 bars is adapted to the formation of two castings.

5. In a mold for casting stereotype-bars, the mold-bars provided with shoulders or offsets at the ends and at the middle, and with a central depression for the admission of the liquid
25 metal.

6. In an apparatus for casting stereotype-bars, a base-plate, C, provided with longitudinal shoulders or guides *k*, and with a transverse guide, *l*, rabbeted or undercut, as described.
30

7. In combination with the matrix-sheet having the indented lines or strips thereon, the

bed-plate provided with guides *k* and *l*, adapted to engage the edges of the sheet, as described and shown.

8. In combination with the matrix-supporting plate provided with guides *p*, the mold-frame provided with longitudinal guides *n* and *o*, whereby the mold-frame may be secured against lateral movement, but permitted to
40 move endwise.

9. In combination with the matrix-supporting plate and the mold-frame, adjustable stop devices, substantially as described, whereby the mold-frame may be adjusted relatively to
45 the matrix.

10. In combination with a mold frame having a series of slits or openings therein, the plate C, provided with means, substantially as described, for securing the matrix-sheets firmly
50 in position thereon, and means, substantially as described, for guiding and adjusting the mold-frame with respect to the other parts.

11. The combination, substantially as herein described, of the matrix-sheet, the mold-
55 frame containing a series of slits or openings, and the intermediate slotted plate constructed of metal, as contradistinguished from a plate of papier-maché or other non-conducting material.

JAS. O. CLEPHANE.

Witnesses:

C. P. WEBSTER,
C. H. SMITH.