

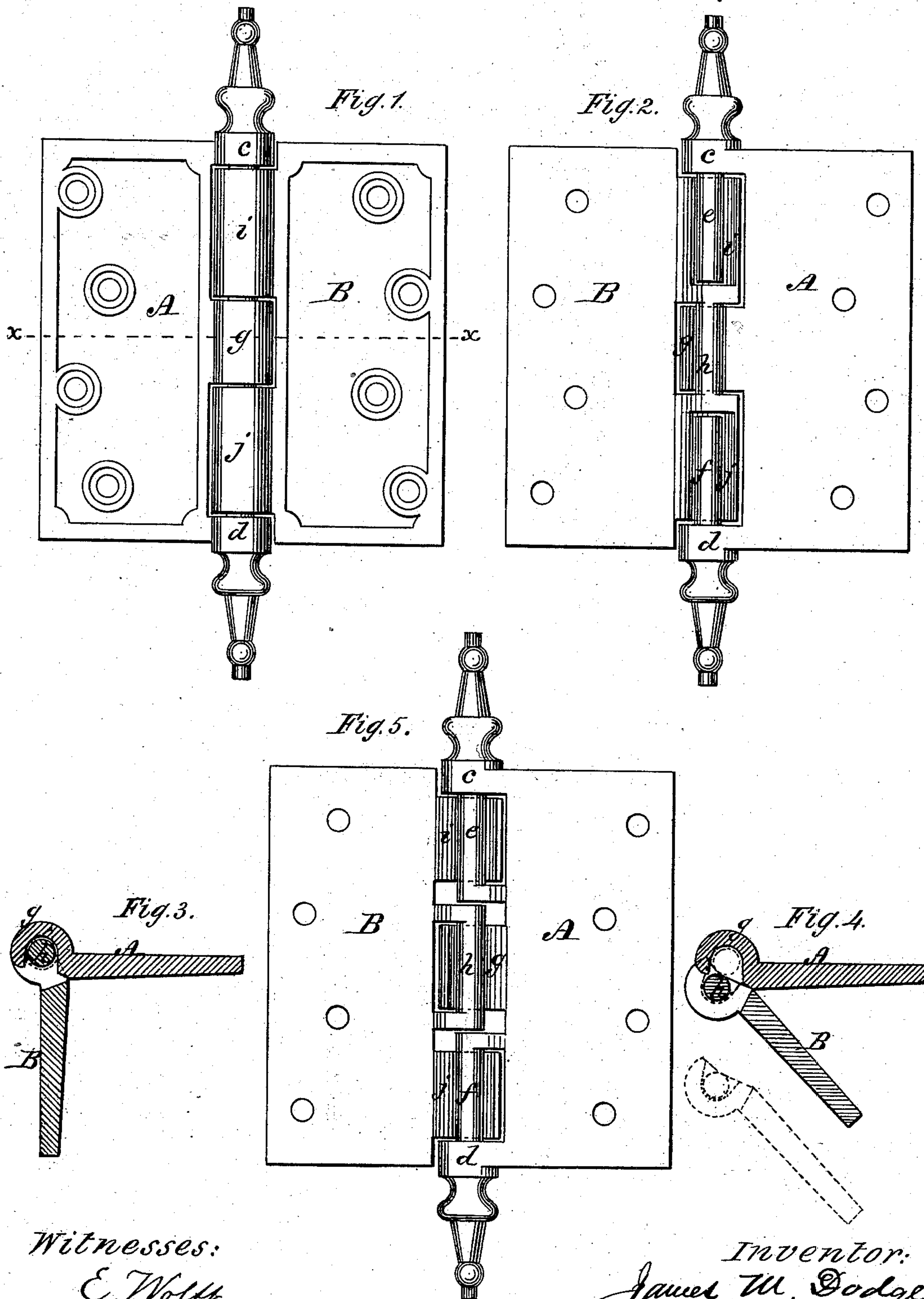
(Model.)

3 Sheets—Sheet 1.

J. M. DODGE.
Hinge Joint, &c.

No. 239,739.

Patented April 5, 1881.



Witnesses:
E. Wolff.
Jacob Felbel

Inventor:
James M. Dodge
By atty.
J. M. C. Carter

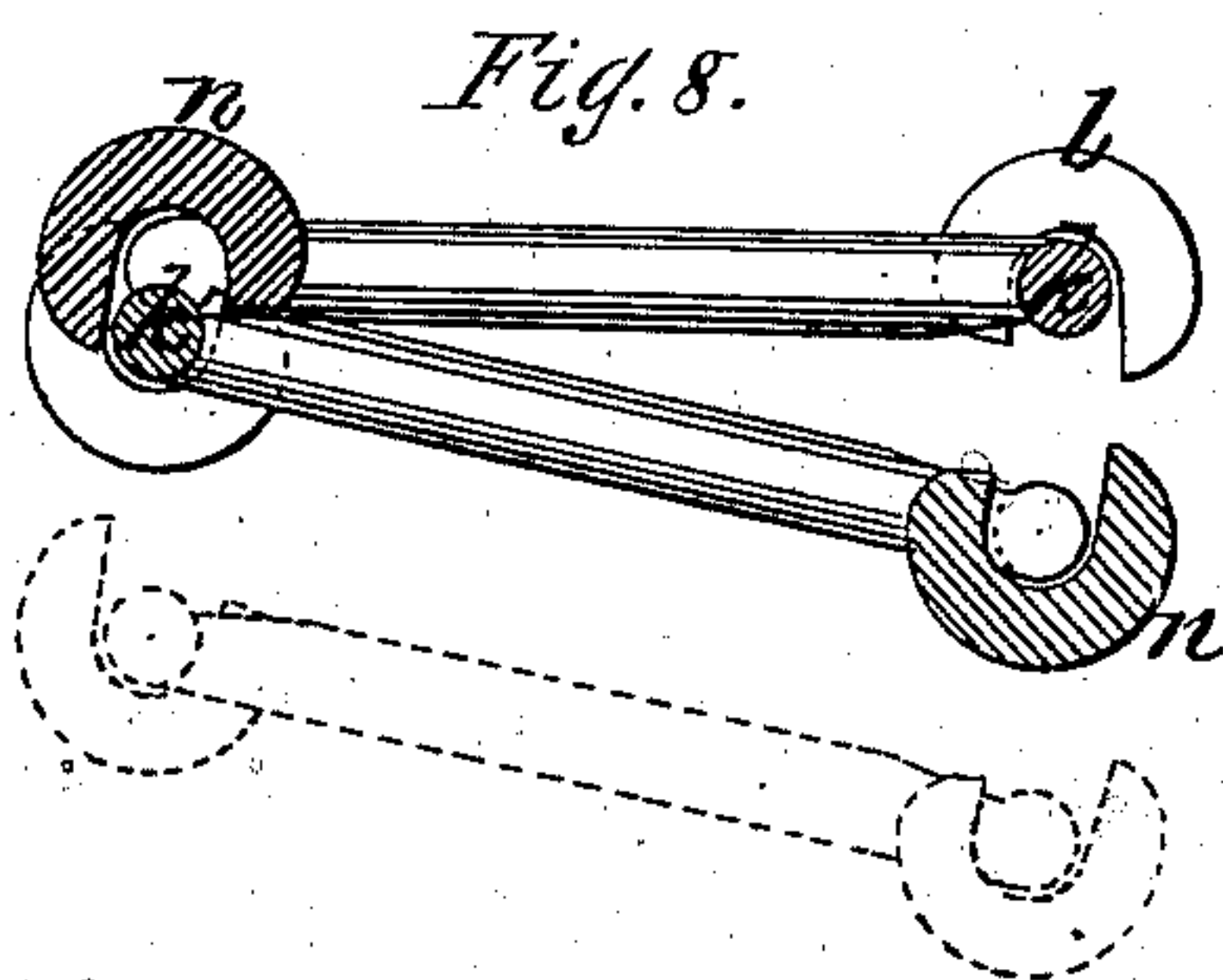
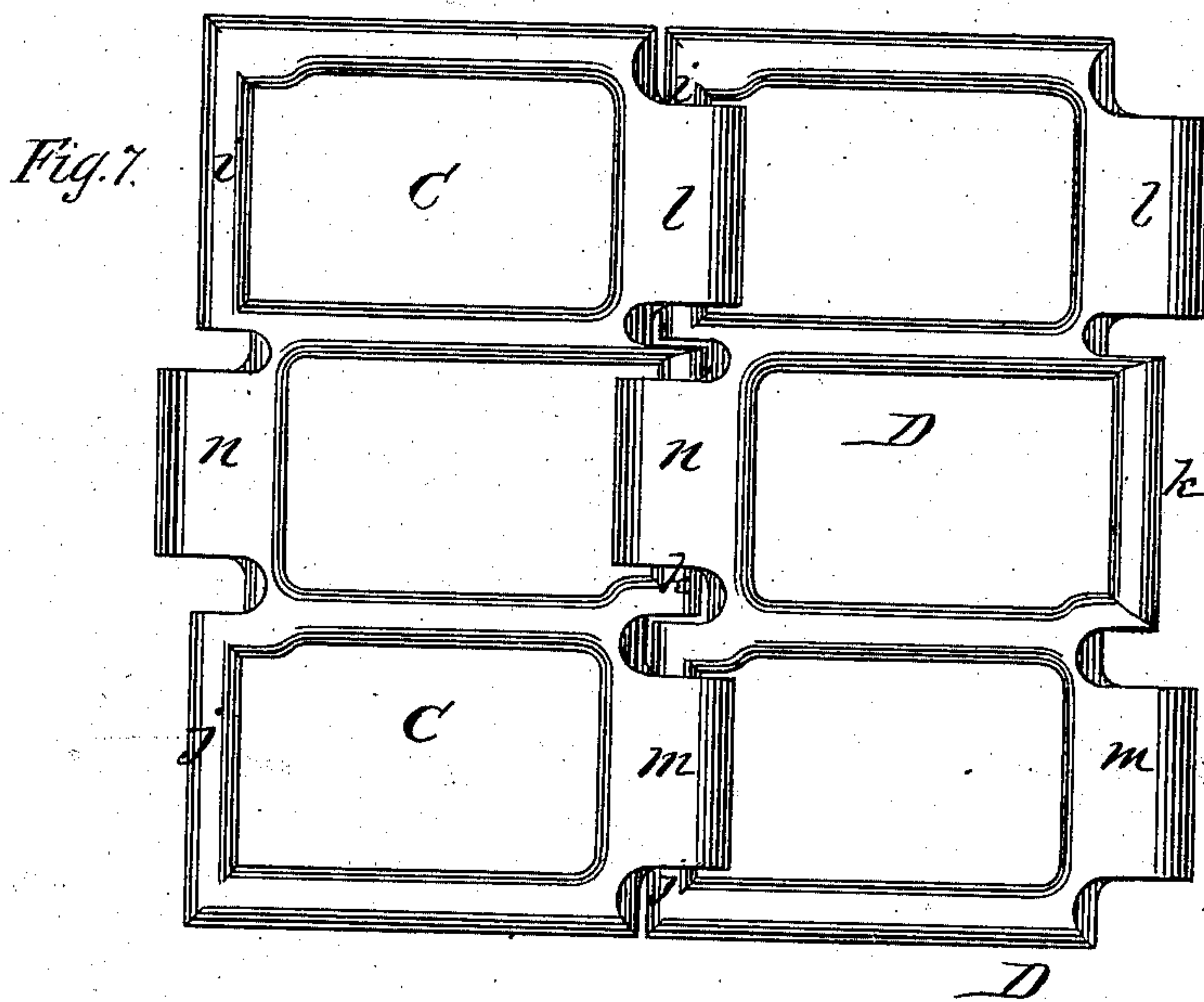
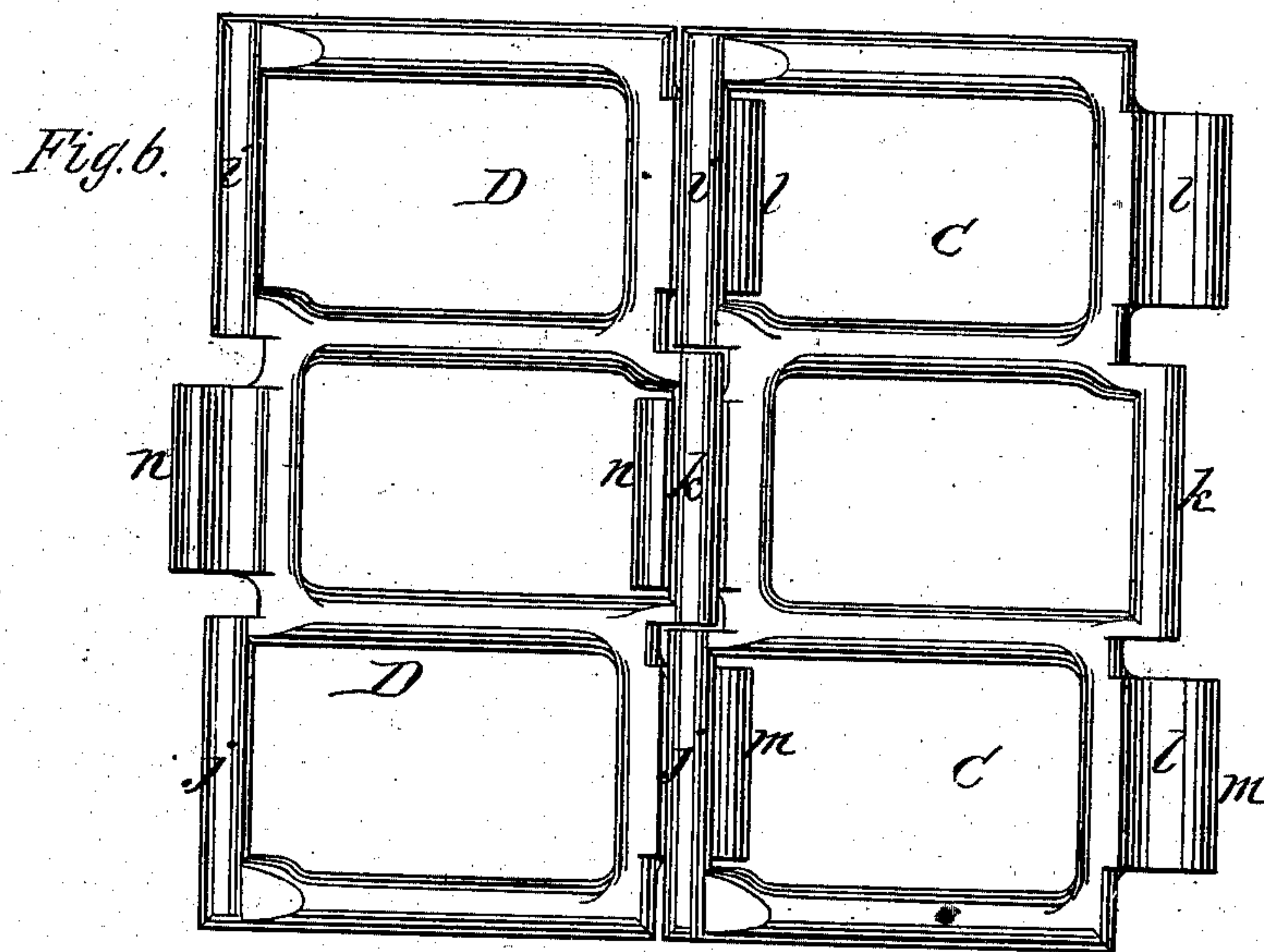
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J. M. DODGE.
Hinge Joint, &c.

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No. 239,739.

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Fig. 9.

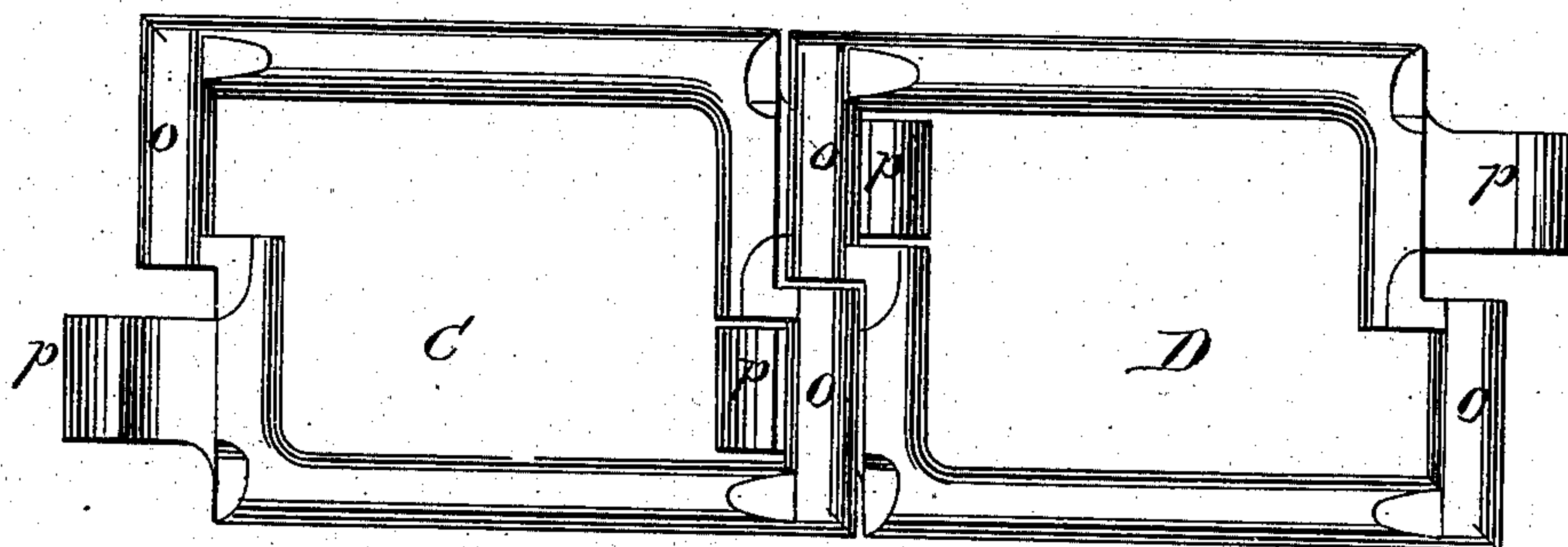


Fig. 10.

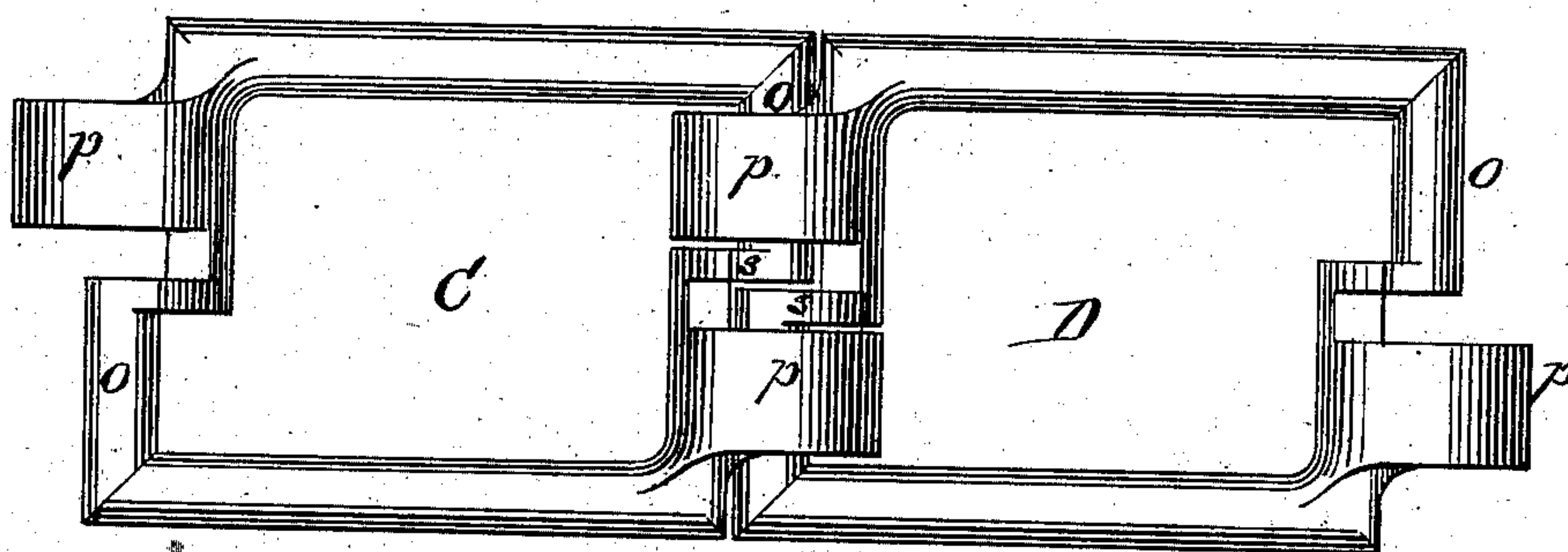
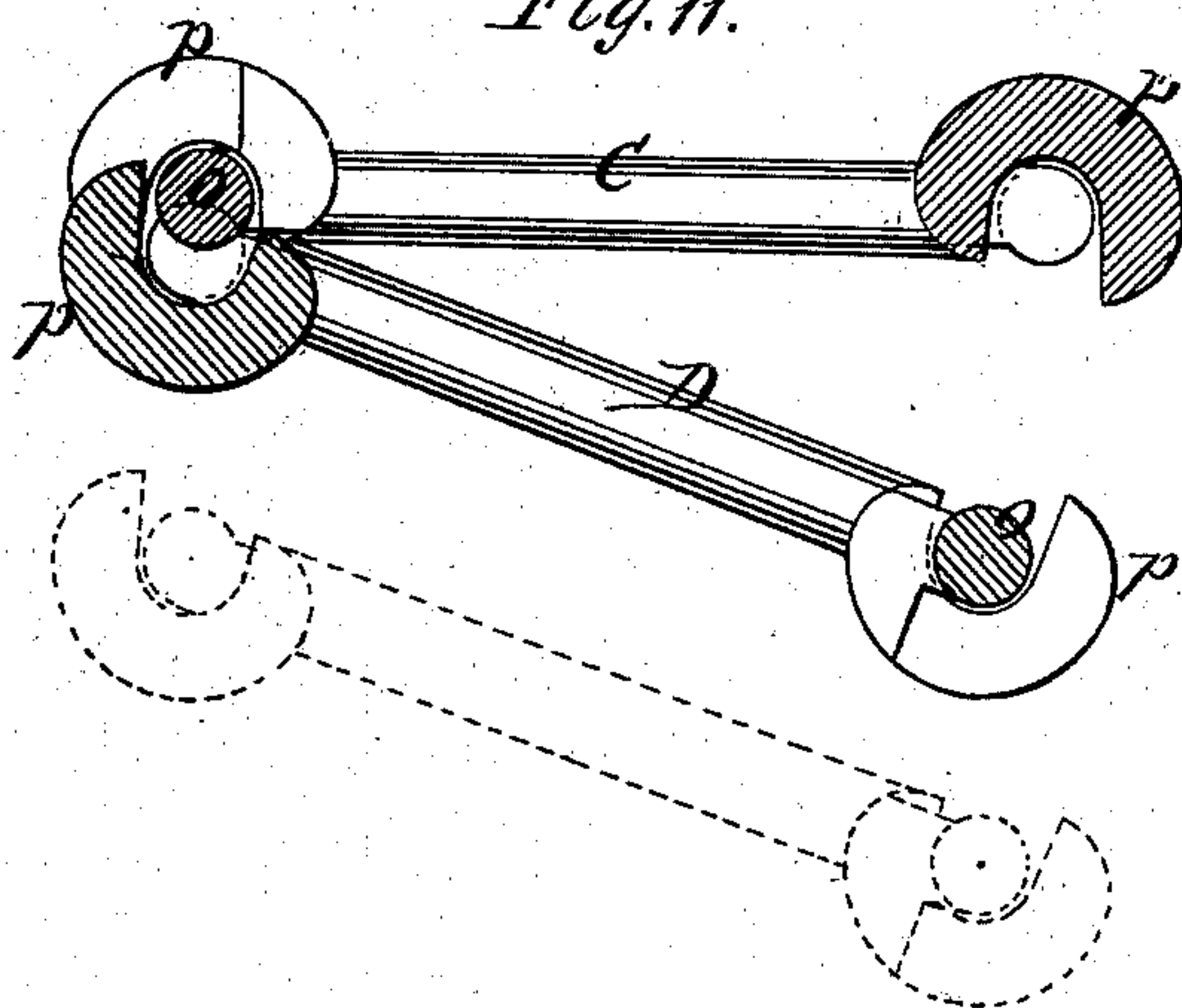


Fig. 11.



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UNITED STATES PATENT OFFICE.

JAMES M. DODGE, OF NEW YORK, N. Y.

HINGE-JOINT, &c.

SPECIFICATION forming part of Letters Patent No. 239,739, dated April 5, 1881.

Application filed August 14, 1880. (Model.)

To all whom it may concern:

Be it known that I, JAMES M. DODGE, of New York, in the county of New York and State of New York, have invented a new and useful Hinge-Joint, applicable also to joints of other articles; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making part of this application.

My invention relates to a novel structure of detachable hinge-like joints, adapted more particularly to the manufacture of cast hinges, but applicable, also, in the manufacture of what are known as "detachable drive-chains" and in the manufacture of other articles or goods in which two or more cast-metal parts are to be hinged together in a manner to permit a designed, but not a casual, uncoupling of such parts.

The main object of my invention is the manufacture, in a more economical manner, of such articles, the structure of those portions composing the hinge-like joint or articulation being such that no cores have to be set in the operation of casting the parts.

To these main ends and objects my invention consists in a hinge-joint composed of two or more open hook-like devices and two or more pintle-like devices on the two parts of the hinge or other article designed to be coupled together, each part of the hinge or other article being provided or formed with such open hook and pintle like devices, arranged alternately and substantially in line—that is, with the pintle-like device or devices (if there be more than one in each part of the hinge or other article) in line with the hollow or hollows of the hook or hooks in which are designed to work the similar pintle-like devices of the other half of the hinge, all as will be hereinafter more fully described.

To enable those skilled in the art to make and use my invention, I will proceed to describe it more fully, referring by letters of reference to the accompanying drawings, making part of this specification, and in which is illustrated, in several forms of hinges and chains, my invention as I have practically applied it.

Figure 1 is a face view, with the leaves opened out, of a cast-iron door hinge or butt made according to my invention. Fig. 2 is a back view, with the leaves in the same position; Fig. 3, a cross-section at $x\ x$, Fig. 1, with the

leaves or parts of the hinge turned, on their joint, into planes about at right angles to each other; and Fig. 4 is a similar sectional view, but with the parts still farther turned on their axis of motion and into the relative position in which they have to be brought to effect their separation, said figures showing, by dotted lines, the manner of separation of the parts of the hinge.

At Fig. 5 is shown, in back view, with the leaves turned into the same plane, a modified form of hinge embracing my novel construction of joint and having the two end pintles, as well as the middle one, connected or cast fast with the part to which they belong at both ends of each of said pintles.

At Fig. 6 is a face view; at Fig. 7, a back view; and at Fig. 8, a cross-sectional view, with the parts illustrated as turned into the position for, and showing by dotted lines the separation of, the parts of a detachable drive-chain or chain-belt embodying my invention, while at Figs. 9, 10, and 11 are shown, respectively, like views of another form of chain having its joints or articulations made according to my invention.

In describing in detail by the drawings the construction and operation of the parts of the articles shown, I will first separately refer to the figures showing the hinges, and subsequently and more briefly allude to those showing the chains.

Wherever the same parts appear in the various figures of the drawings they will be found designated by the same letters of reference.

A and B represent the two leaves or parts of a hinge, such as is most usually made of cast-iron, either common gray iron or malleable, but cast with a conformation of parts to form the joint between them that is peculiar to my invention.

As represented, the part A of the hinge is cast with two lugs, $c\ d$, near either end of the leaf, from which project two pintle-like devices, $e\ f$, arranged in line, and each coincident with the axis of the hinge, while from the middle portion of the leaf, and from the same side or edge from which project the lugs $c\ d$, projects an open hook or hook-like device, g , the socket-like interior of which corresponds substantially in cross-section with, and which is de-

signed to accommodate, as shown, the pintle-like device *h* of the other part, B, of the hinge. This other part, B, is cast, as shown, with two open hooks or socket-like devices, *i j*, the adjacent closed ends of which serve to sustain the pintle-like portion *h*, and the latter, as well as the interiors of the hook-like devices *i j* (in which are accommodated the pintles *e f* of part A) are all in line and coincide with the axis of motion of the hinge.

The drawings explain better than words can the peculiar shapes and relative arrangements of the devices alluded to as going to make up each half of the hinge, and also clearly show how the two parts couple and work together, and how they may be separated.

By reference now to Figs. 3 and 4 it will be seen that two hinge parts, such as A and B, made as shown and described, and then coupled together to make an operative hinge, while they may be turned clear around to the position seen at Fig. 3, or even farther, (which is farther than they can possibly be turned when in practical use for the purposes for which hinges are employed,) without any liability of any separation of the parts, they may be separated and reunited when turned into the relative position seen at Fig. 4 by moving the parts as there illustrated, from which it will be understood that though the construction of the joint portions with the open hooks, as shown, is such that these hook-like receptacles for the pintles, as well as the rest of the hinge, can be readily cast without any cores, yet, when coupled together, the parts of the hinge are quite as inseparable, and have as perfect a joint for all practical purposes, and when applied to a door and frame or other place where hinges are used, as the ordinary hinge in which cylindrical sockets or housings for the accommodation of the pintle or pintles have to be cored out in the process of casting the hinge parts.

The principle of operation of the modified form of hinge seen at Fig. 5 is the same as that of the hinge exhibited in the preceding figures, and it possesses, of course, the same advantages of economy of manufacture.

In a hinge made according to my invention, though the parts, when in use, are inseparable, they may, by removing the hinge from the place at which it may have been applied, be separated, and thus either part may, if broken, be replaced by a duplicate part, or this substitution may be readily made in putting together parts of the manufacture to pack the articles for the market.

In the chain shown at Figs. 6, 7, and 8 duplicate parts C and D are employed, each in the case shown being composed of three open links or sprocket-wheel links cast in one piece, so that a series of such pieces, when coupled together, will make a chain-belt three links wide. As shown, each piece of the chain has literally three-link end bars, *i j k*, and three open coupler-hooks or hook-like sockets, *l m n*, the disposition of these several devices being

such that there are on one side of the chain-piece two end bars, *i j*, and one coupler-hook, *n*, while on the opposite side are two coupler-hooks, *l m*, and one end bar, *k*. The arrangement of the coupler-hooks and end bars is such that those at each side of the chain-piece are in line, and when the pieces C and D are coupled together the end bars of each chain-piece fit and work in the coupler-hooks of the adjoining chain-pieces and form perfect hinge-joints. When, however, any two adjacent parts are turned into the relative position seen at Fig. 8, they may be taken apart, as illustrated by the dotted lines at said figure; but so long as the chain parts are retained in any of the relative positions which it is possible for them to occupy when the chain is in practical operation it is quite impossible for them to become detached.

At Figs. 9, 10, and 11 the drive-chain shown is of that form in which the chain is composed, widthwise, of a single open link, and therefore each chain-piece or single link composing the chain here shown is formed or provided with one pintle-like device, *o*, and one coupler-hook, *p*, at each end of each link, the arrangement of said devices being such, as shown, that when two or more such links are coupled together a detachable drive-chain is formed, the open spaces of which (for the accommodation of the sprockets of the wheels on which such chains are usually used) are each perfectly rectangular in contour. In this modification of chain, embracing my invention, each chain piece or link has two end bars or pintle-like devices and two coupler-hooks, the pintle-like device at each end being exactly opposite the coupler-hook of the other end, and, as in the other form of chain shown and both forms of hinge, all the coupler-hooks of each casting open in the same direction or at the same side of the casting, so that the casting of the parts of the chains, or hinges, as the case may be, without any cores is made easy and economical.

In the form of chain last described I have provided interlocking-lugs *s*, the roots of which come together, when the parts of the chain may be turned as far as possible in a working position, and form stops, instead of the limit of motion being dependent on the coming together of the ends of the side-bar portions of the links.

Of course many variations in the detail conformations of the parts and various applications of my novel detachable joint may be made without departing from the principle of my invention, the gist of which rests, primarily, in the employment, in the hinge-like joint, of any two parts designed to be thus jointed, of open hook-like couplers and pintle-like devices, whereby the casting of the parts may be done without cores and at the same time a perfect hinge-joint produced for working purposes; and, secondarily, in having all the open hook-like devices of each casting open out at the same side, to further facilitate the manu-

facture of those articles in which the castings preferably have each two or more such coupler-hooks.

5 Having now so fully explained the nature of my invention and those modes of carrying it out which I have so far employed in practice as to enable those skilled in the art to make and use various articles of manufacture embodying my novel hinge-like joint, what I
10 claim as new, and desire to secure by Letters Patent, is—

1. A joint for hinges, drive-chains, and other articles made of cast metals, composed of open hook-like sockets and pintle-like devices or
15 bars cast on the parts designed to be hinged together, and arranged, as described, with at least one hook-like socket and one pintle-like device on each part, so that when the hinged parts shall be turned into a certain position

the pintle-like device can pass bodily and later- 20 ally through the opening of the hook-like socket, as and for the purpose set forth.

2. A joint for hinges, drive-chains, and other articles, composed of open hook-like sockets and pintle-like devices or bars cast on the parts 25 designed to be hinged together, the arrangement of the sockets and bars being such that one of the said parts shall have alternately two or more sockets and one or more bars, while the other shall have two or more bars 30 and one or more sockets, as set forth.

In testimony whereof I have hereunto set my hand and seal this 11th day of August, 1880.

JAMES MAPES DODGE. [L. S.]

In presence of—

BURROUS M. SAUNDERS,
CHAS. S. BURTON.