

Isaac Smith.  
Composition Die Holder.

117119

Fig. 1.

PATENTED JUL 18 1871

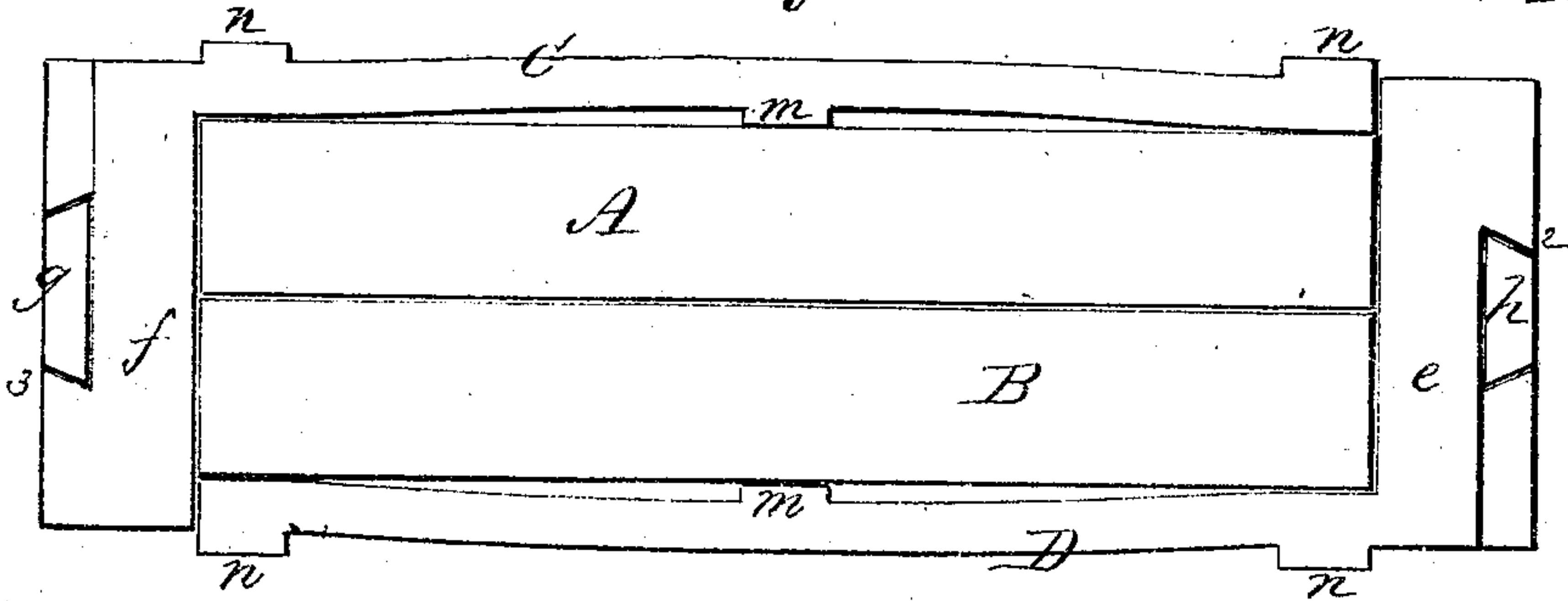


Fig. 2.

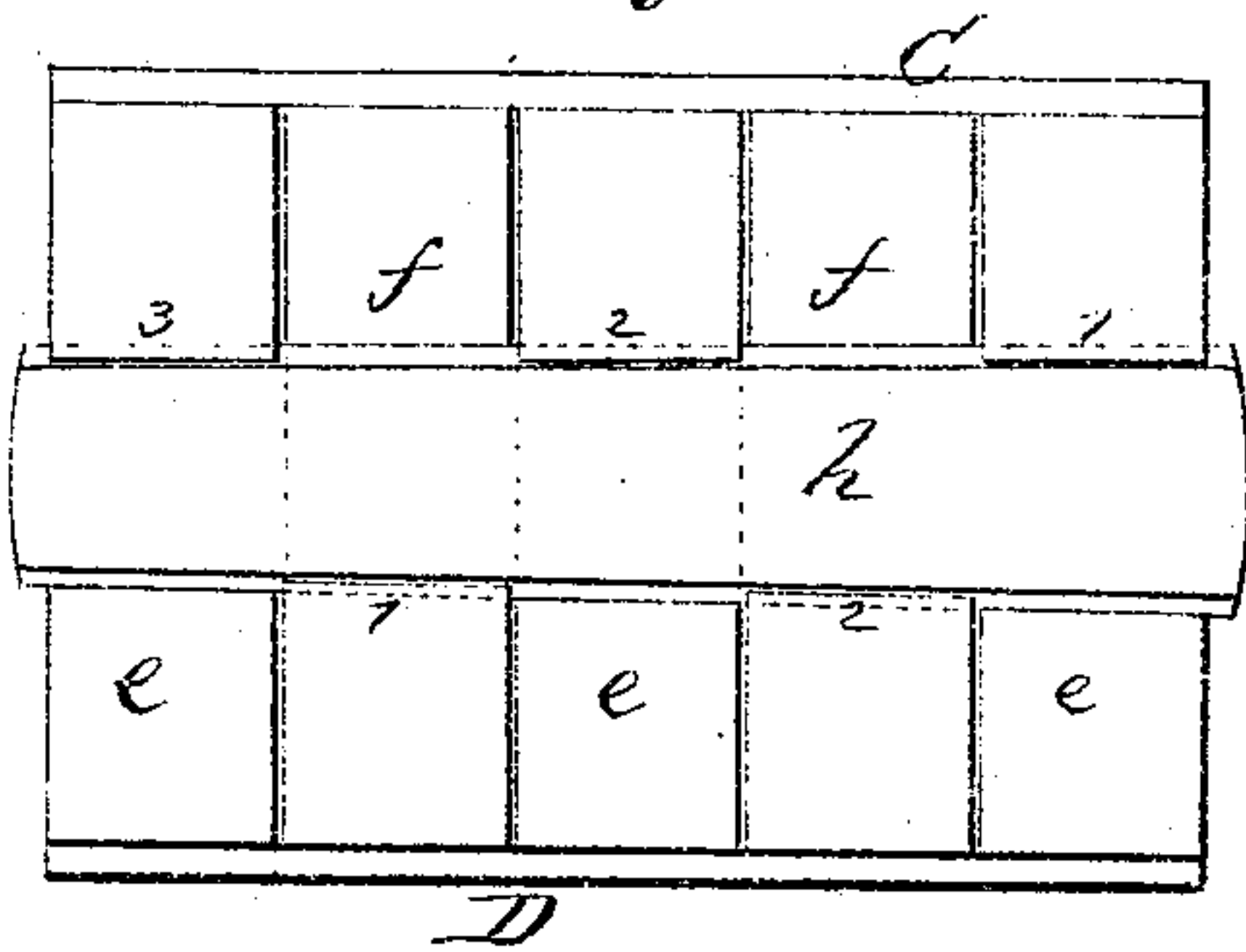


Fig. 3.

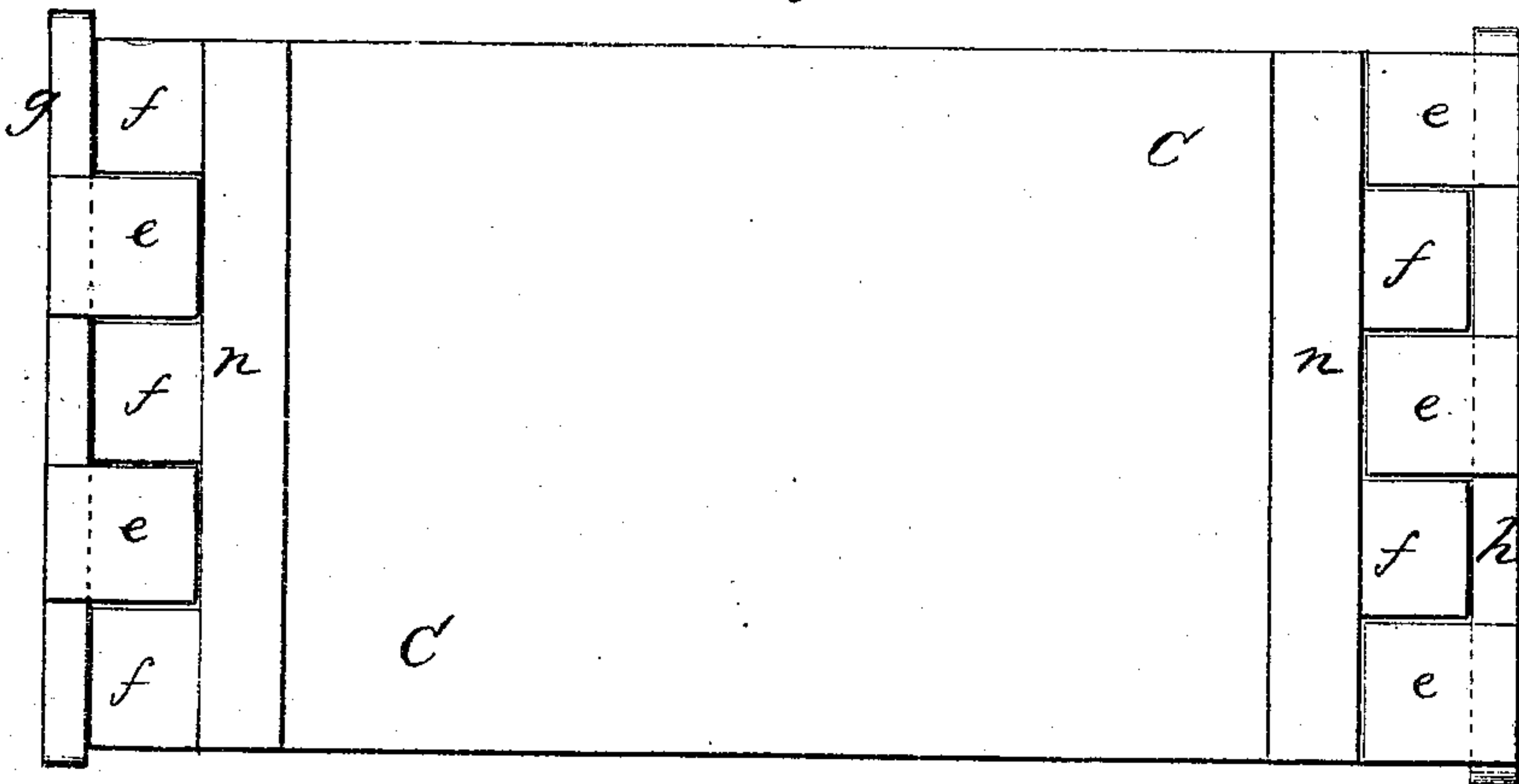
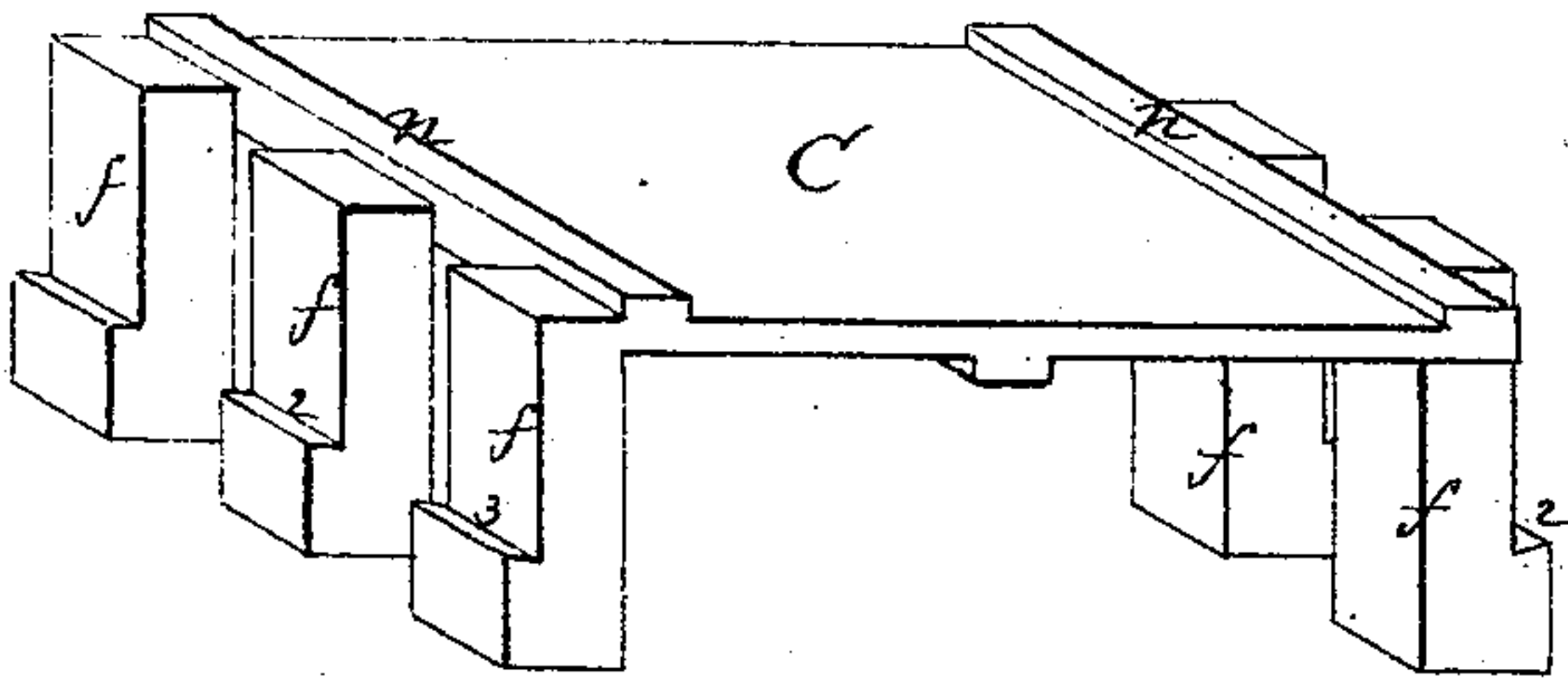


Fig. 4.



Witnesses:

Chas. E. Warren.  
Peter De Lacy

Inventor:

Isaac Smith.  
By attorney.  
J. N. McIntire



# UNITED STATES PATENT OFFICE.

ISAAC SMITH, OF NEW YORK, N. Y., ASSIGNOR OF ONE-HALF HIS RIGHT TO WILLIAM SANDERSON, OF SAME PLACE.

## IMPROVEMENT IN MOLDS FOR COMPOSITION ARTICLES.

Specification forming part of Letters Patent No. 117,119, dated July 18, 1871.

*To all whom it may concern:*

Be it known that I, ISAAC SMITH, of New York city, in the county of New York and State of New York, have invented a new and useful Composition Die-Holder; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawing making part of this application.

My invention relates particularly to dies for molding composition articles by compression, and in which the molded material has to be confined for a short time until it sets or becomes perfectly hard and solid. Previous to my invention it has been customary, in the manufacture of various articles molded by compression from plastic compositions, to subject the dies containing the material to a proper degree of pressure, to bring the parts together perfectly, in a press of some sort, and to retain the dies or molds in the press long enough to allow the molded material to become set, so that it would not expand or partially force apart the parts of the die and lose its proper shape. In this method of practice the press has to remain in a state of rest a greater or longer time, and, where a great quantity of work has to be done, the loss of the use of the press or time sacrificed to this retention of the dies in the press is of great importance. I propose by my invention to save all this time, and not occupy the press by the retention of the dies therein, by providing a simple and efficient means for holding or locking the parts of the molding-dies together immediately after the die shall have received the pressure to which it is subjected in the press, and so that the die may be almost instantaneously removed from the latter. And to these ends my invention consists in the employment, in connection with the usual die, of a clamping device or holder, which is put into the press with the die, and, while there, has its parts so locked together as to hold the parts of the die securely and perfectly, as will be hereinafter more fully explained.

To enable those skilled in the art to make and use my invention, I will proceed to describe it more fully, referring by letters to the accompanying drawing, in which—

Figure 1 is a side view, Fig. 2 an end view, and Fig. 3 a top view of an ordinary die with my invention applied thereto, and Fig. 4 is a perspective view of one-half of the clamping device removed from the die.

In the several figures the same part is designated by the same letter of reference.

A and B represent the two parts of an ordinary die, such as generally used in molding composition articles by compression. C and D are two clamping or holder-plates, which are formed with lugs *e* and *f* at each end, by means of which the two plates are clamped about the dies, (with the aid of wedges *g h*,) as will be presently described. Each of the plates C and D, it will be observed, is formed or provided with three ribs or fillets running crosswise, one of said ribs, *m*, being about the middle of the plate and in the face that comes adjacent to the die; the other two, *n n*, being near the end of the plate and on its outer surface, or that side that comes adjacent to the platen of the press. The object and functions of these projecting ribs will be presently explained.

The operation of the devices just alluded to is as follows: The plastic composition from which the desired article is to be made having been put into the die and the parts A B of the latter having been brought together, the clamps or holding-plates C D are placed around or on opposite sides of the die A B, as seen, and the die and holder-plates are together put into the press, where by suitable pressure the parts of the die A B are forced together and the composition contained between them is molded into the desired shape, (as usual;) but the holder-plates C D are also forced toward each other (the die being held between them) until the wedges *g h* can be placed in position, as seen in Fig. 2, to lock them together, when the whole fixture is removed from the press and the parts of the die will be firmly held together by means of the plates C D, which are keyed or locked together through the medium of these lugs *e f* and the wedges *g h*. The peculiar shape of the lugs *e f*, with their projections 1 2 3 having inclined shoulders for the bearings of the keying-wedges *g h*, is clearly shown in the drawing, and this construction I have found to be simple and efficient; but other forms and other means of locking the holder-plates securely together may of course be adopted, in carrying out my invention, without departing from the spirit of the same. As the clamping-plates are provided each with a rib, *m*, which forms the bearing on the die, and two ribs, *n n*, which come in contact with the plate of the press, it follows that when the pressure is applied each of the



plates C D is sprung or distorted from a perfect plane, as clearly shown in Fig. 1, the extremities of the said plates being sprung or bent toward each other and against the die-plates A B. The forming and arrangement of the clamping-plates thus, so that they will be sprung in the press operation, is very important, since thereby the natural tendency of the die-plates or holder-plates, or both, to bulge or spring apart when the apparatus is taken out of the press is completely overcome, and the parts of the die are held perfectly together until the composition shall have set. I have learned by practice and experience that even with the plates A B and the clamps C D made very much thicker than is necessary for the molding operation, the die-plates and holder-plates, (no matter how securely locked together near the ends,) when removed from the press, will be more or less bulged or forced apart near the middle by the expansion or pressure of the confined material, thus permitting an imperfect formation of the article; and I have discovered that, by springing the stock or material out of its normal shape, (disturbing it from a plane,) as shown, in an opposite direction to that into which the confined material would naturally force it, this bulging of the parts of the die is effectually overcome.

It will be understood that, in order to carry

out this characteristic feature of my invention, it is not necessary to adopt the precise construction shown—*i e.*, the ribs *m* and *n n*—as any mode of construction embracing the described mode of operation will answer. For instance, the surfaces of the plates could be made convex on the side next the die and concave on the face against which the press operates, or the plates of the die may be so shaped; but I have found that the simple projections answer very well for the purpose of springing the material of the plates and accomplishing the desired end.

Having explained my invention so that one skilled can make and use it, what I claim as new, and desire to secure by Letters Patent, is—

1. In molding composition articles by compression, a die-clamp, constructed and operating substantially as and for the purpose set forth.

2. The holder-plates or die-plates, or both, so made that in the act of forcing the parts of the die together the material of which they are made will be sprung in the manner and for the purpose set forth.

In testimony whereof I have hereunto set my hand and seal this 12th day of December, 1870.

ISAAC SMITH. [L. S.]

Witnesses:

J. N. McINTIRE,  
CHAS. E. WARREN.