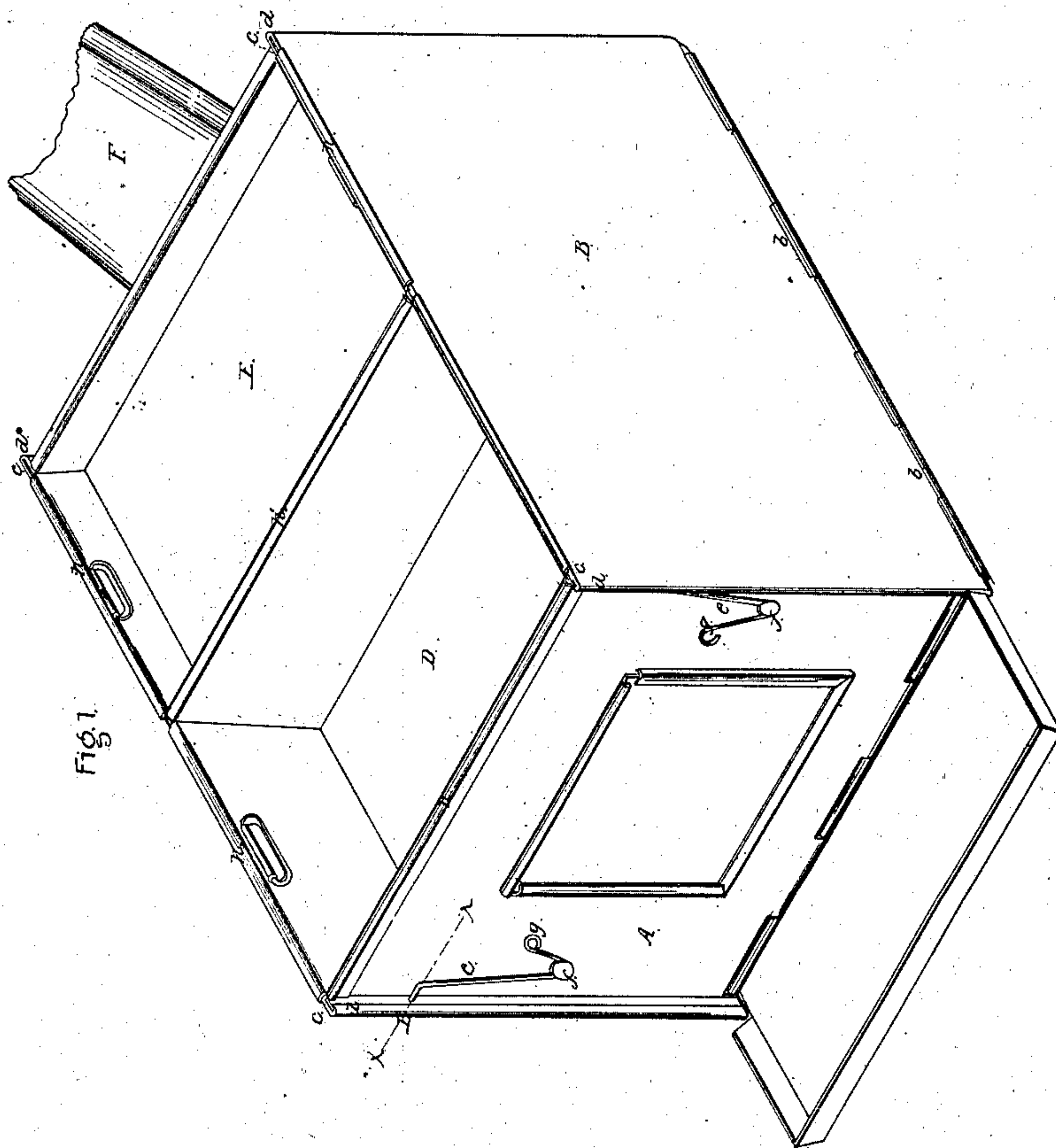


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Fisher & Zinn,
Portable Furnace.

No. 33,079.

Patented Aug 20, 1861.



Witnesses:
J. B. Woodruff
Samuel W. Powell

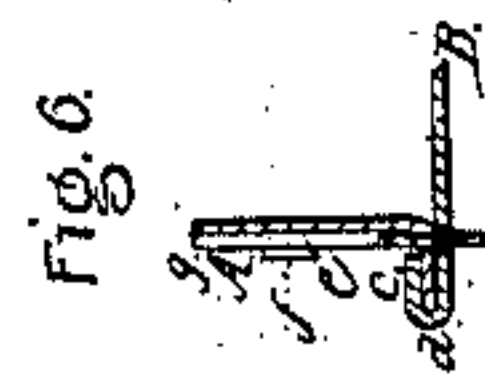
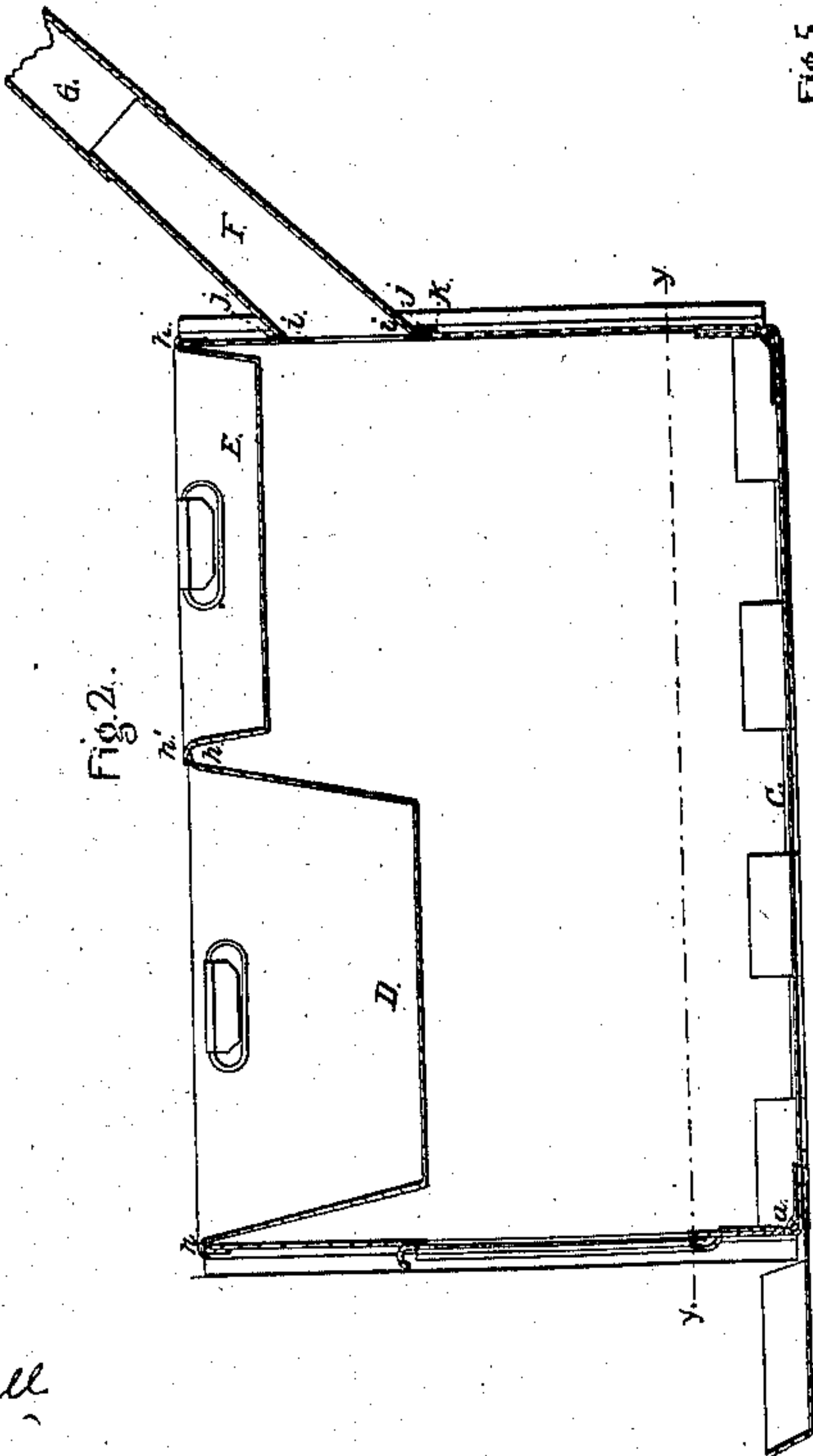
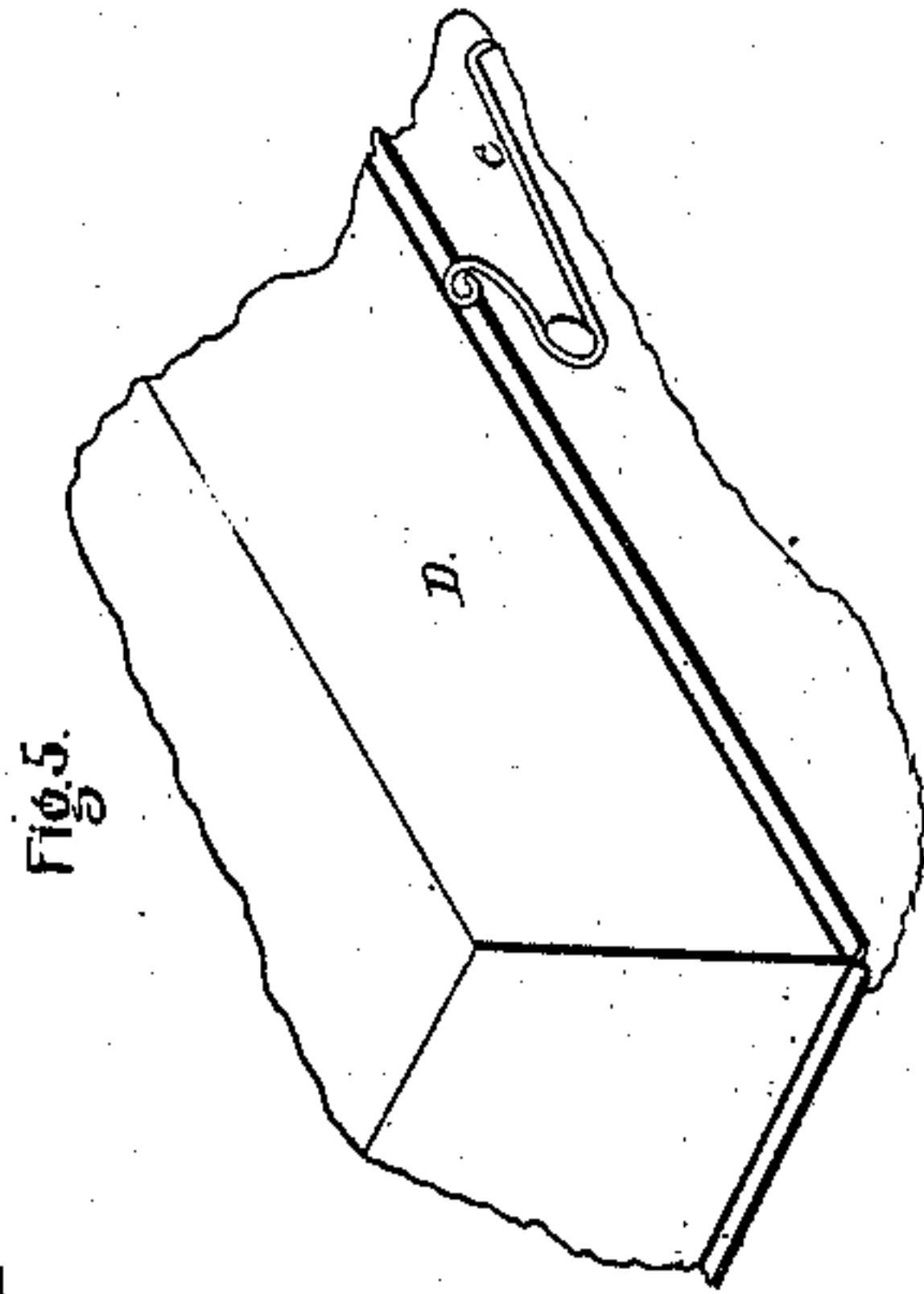
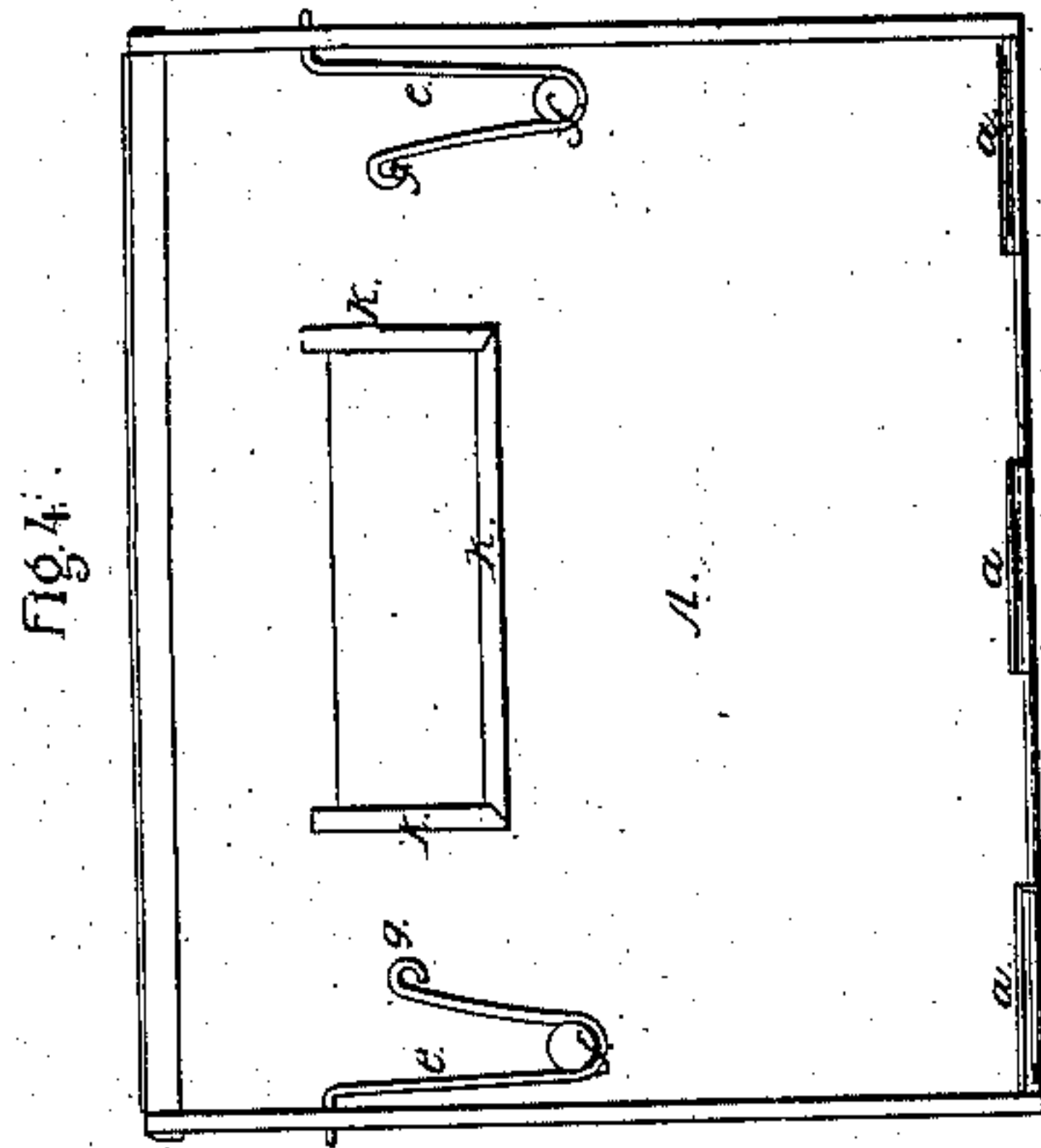
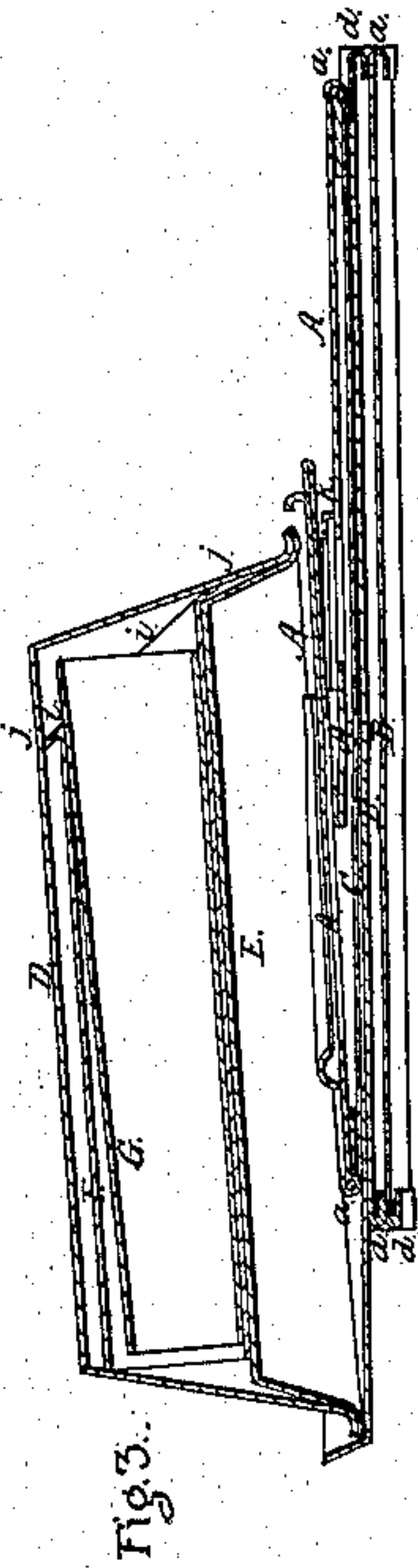
Inventors:
Thomas A. Fisher
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by their attorney
A. H. Smith

Fisher & Zimm,

Portable Furnace.

Patented Aug. 20, 1861.

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UNITED STATES PATENT OFFICE.

THOS. N. FISHER AND J. H. ZINN, OF NEWPORT, PENNSYLVANIA.

STOVE.

Specification of Letters Patent No. 33,079, dated August 20, 1861.

To all whom it may concern:

Be it known that we, THOMAS N. FISHER and J. H. ZINN, both of Newport, in the county of Perry and State of Pennsylvania, have invented certain new and useful Improvements in Cooking-Stoves, which we call "portable folding cooking-stoves," more particularly designed for army transportation and use; and we do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a perspective view of the stove set up for use. Fig. 2 a longitudinal vertical section of the same. Fig. 3. a longitudinal vertical section of the whole apparatus folded and packed for transportation. Fig. 4. a view of the rear end plate exhibiting the method of attaching the pipe thereto. Fig. 5. a view of the method of securing the cooking utensils to the folded ends; and Fig. 6. an enlarged view of the corner joints of the stove.

The nature of our invention consists, first, in hinging the end and side plates of a stove to the bottom plate in such a manner that they may be folded face to face with the said bottom plate. Second, in the peculiar character of the corner joints and keys. Third, in the formation and application of the keys whereby they subserve a four fold purpose. Fourth, in the formation of the top of the stove wholly of the cooking utensils, and so proportioning these as to fit the one within the other, and yet allow, when so placed, of sufficient space between for the reception of the packed stove pipe, &c. Fifth, in the method of attaching the pipe to the rear end plate of the stove.

To enable others skilled in the art to make and use our invention we will proceed to describe its construction and operation.

The stove may be made of either sheet or cast metal. One of which the material is the formed is described, the necessary change of terms when the latter is employed, being obvious. The end plates A, A, are hinged to the bottom plate, C, as seen at *a, a*, in such a manner as to permit them to fold inwardly toward and over each other down upon the upper face of the bottom plate as represented in Fig. 3. In like manner the side plates B, B, are hinged to the bottom plate as shown at *b, b*, but so as to fold in an op-

posite direction; that is, outwardly and under the said bottom plate C, as is also represented in Fig. 3. This however is not essential to this part of our invention; for it is obvious that the end and side plates may be made to fold on the same side of the bottom plate by a modification of the character of corner joints employed or of the relative position of the end and side plate hinges.

Next comes the method devised by us for locking and unlocking the end and side plates so as to fit the stove for unfolding and use or for folding and transportation. This consists in bending each end of the end plates outwardly so as to form a flange *c*, at right angles with the faces of said plates, and in bending inwardly each end of the side plates so as to form a channel or clasp *d*, for the reception of a flange *c*, which parts are held in position or locked together by means of the key *e*, the hooked end of which passes through a hole coincident with both flange or channel or clasp. This lock is more fully illustrated in Fig. 6, which is a horizontal section in the line *x, x*, of Fig. 1. But this is not the only function performed by the keys *e*. It will be perceived that they are pivoted at *f* and that from those points they are provided with eye-like extensions *g*. These are for the purpose of receiving the hooked ends of cords or rods which are designed to suspend the stove from the interior of the tent or without and thus avoid the trouble of leveling uneven ground which would be necessary if feet were the only resort. Feet, however may be used instead, and they always accompany the apparatus. Moreover the suspension of the stove in the manner indicated prevents the keys *e*, from working out of their places and releasing the corner joints. But this is not all: the eye-formed extension of the keys *e*, on the front end plate serve, when the apparatus is folded and packed, to hold firmly in place the cooking utensil D, with its contents E, F, G, (see Fig. 3,) they lapping over the under side of the flanges as represented more clearly in Fig. 5.

We come now to the formation of the top of the stove. This is usually composed of a top plate which is perforated for the reception of the various cooking utensils, and is a fixture with the top and side plates. In one plan however, this top plate is wholly dispensed with and its place assumed by the

cooking utensils themselves which are sustained in the various processes of cooking by means of flanges formed on their upper edges which flanges rest on the upper edge of the end and side plates. This is clearly represented in Figs. 1 and 2 where D and E show the cooking utensils, which although apparently pans are yet capable of being used as oilers and ovens or in any other capacity the exigencies of the camp or the kitchen may demand; and *h h* the flanges, which sustain them, the two contiguous ones *h' h'* overlapping each other so as to prevent the escape of the gases. These are other features appertaining to these cooking utensils which it is important to mention. While the capacity of both must be equal to the capacity of the usual top plate of the stove, yet one of them as E, for instance, must be of sufficiently less area than the other, D, as to be freely admitted within it in the act of packing; and while the utensil D, may be of greater depth, yet it must not be of less than the utensil E, when the latter is placed within the former the packed stove pipe F, and G, the feet or legs or such other implements as may be found to be indispensable in the culinary department. Of course these two cooking utensils may be subdivided into three or more if desired. In such cases however the same rules in respect of relative proportion must always be observed. These features are well represented in Fig. 3, where also the relative proportion between the parts is designed to be substantially illustrated.

The fifth and last point of invention which it is intended here to notice relates to the method we have contrived for readily and efficiently connecting the gas pipe to the gas exit. The old plan is well known. It consists always in forming a collar on the back plate around the gas exit, and, in camp or field operations, in forming the pipe into an elbow. Now, neither of these contrivances would do with our apparatus, because each interferes with its compactness. We do not however intend to limit this part of our invention to its combination with a portable folding stove like ours for it is equally applicable to any other. Our method then, manifests itself in the beveling of the lower end of the pipe at its juncture with the rear

end plate, as seen at *i, i*, Figs. 2 and 3, and in forming around such beveled portion a flange *j, j*, which takes into slides or cleats *k, k*, formed on the rear end plate and around the gas exit except on its upper outline, (see Fig. 4). By these means the pipe is readily attached and detached, while in the former condition it is more securely held than by the usual projecting collar and elbow.

It is only necessary to add to what has already been incidentally said in regard to the operation of this our stove, that in erecting it for use the side plates should be unfolded first and lifted into a vertical position. The end plates may then be raised with the assurance that their flanges will take into the channels of the side plates. The keys next being inserted the lock is complete.

Before the fire is lighted the stove should be filled with earth up to the line *y, y*, of Fig. 2 so as effectually to protect the hinges.

Having thus described our invention and pointed out the manner in which it is to be carried into effect we proceed to state what we claim therein as new and wherein it differs from anything heretofore known to us.

We claim—

1. A stove in which the end and side plates are hinged to the bottom plate so that the said plates may be folded for convenience of transportation.

2. A stove in which the end and side plates are held together and fastened by means of a joint and lock substantially like those above described.

3. The keys *e e* when formed and applied and operating in a three fold capacity as set forth.

4. A stove in which the top plate is wholly substituted by the cooking utensils which utensils are so proportioned in respect of width and depth that one may contain the other or others and other adjuncts of the stove.

5. A stove in which the gas pipe is affixed to the gas exit in the manner specified.

In testimony whereof we have hereunto set our hands.

THOS. N. FISHER.

J. H. ZINN.

Witnesses:

K. M. HARTZELL,

WM. H. HOPPLE.