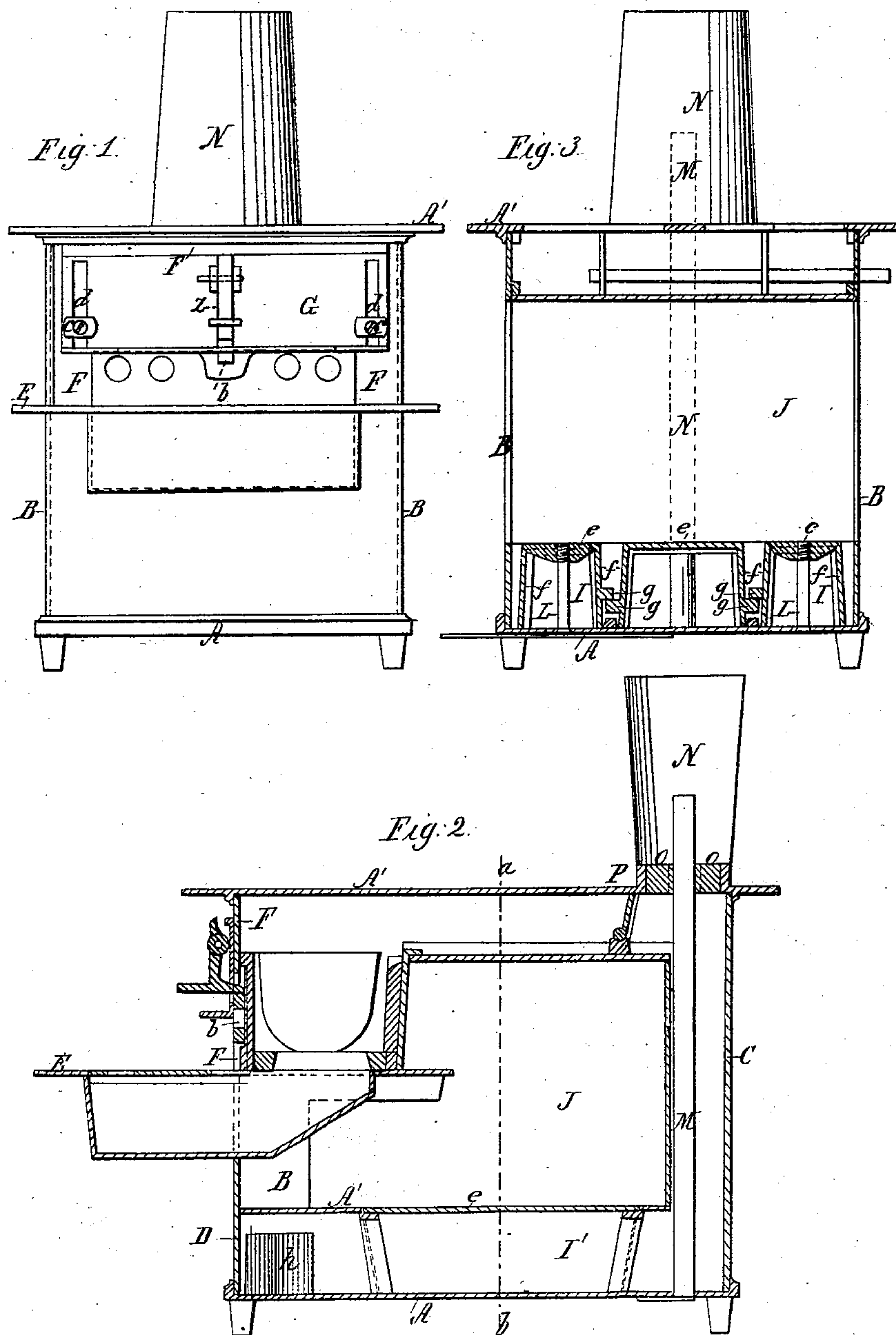


J. De Frain, Cook Stove.

No. 95,664.

Patented Oct. 12, 1869.



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Cook Stove.

No. 95,664.

Fig. 4.

Patented Oct. 12, 1869.

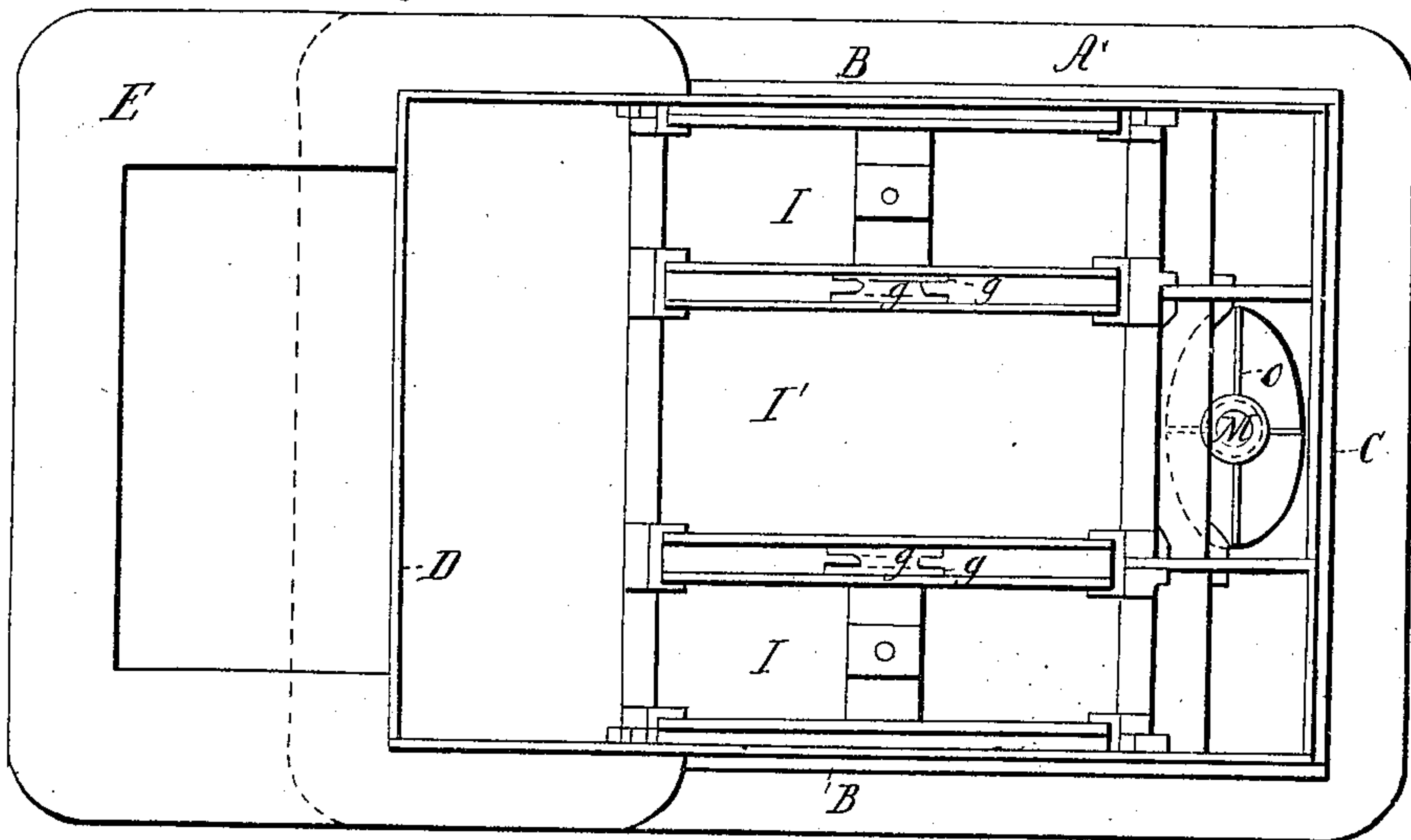


Fig. 5.

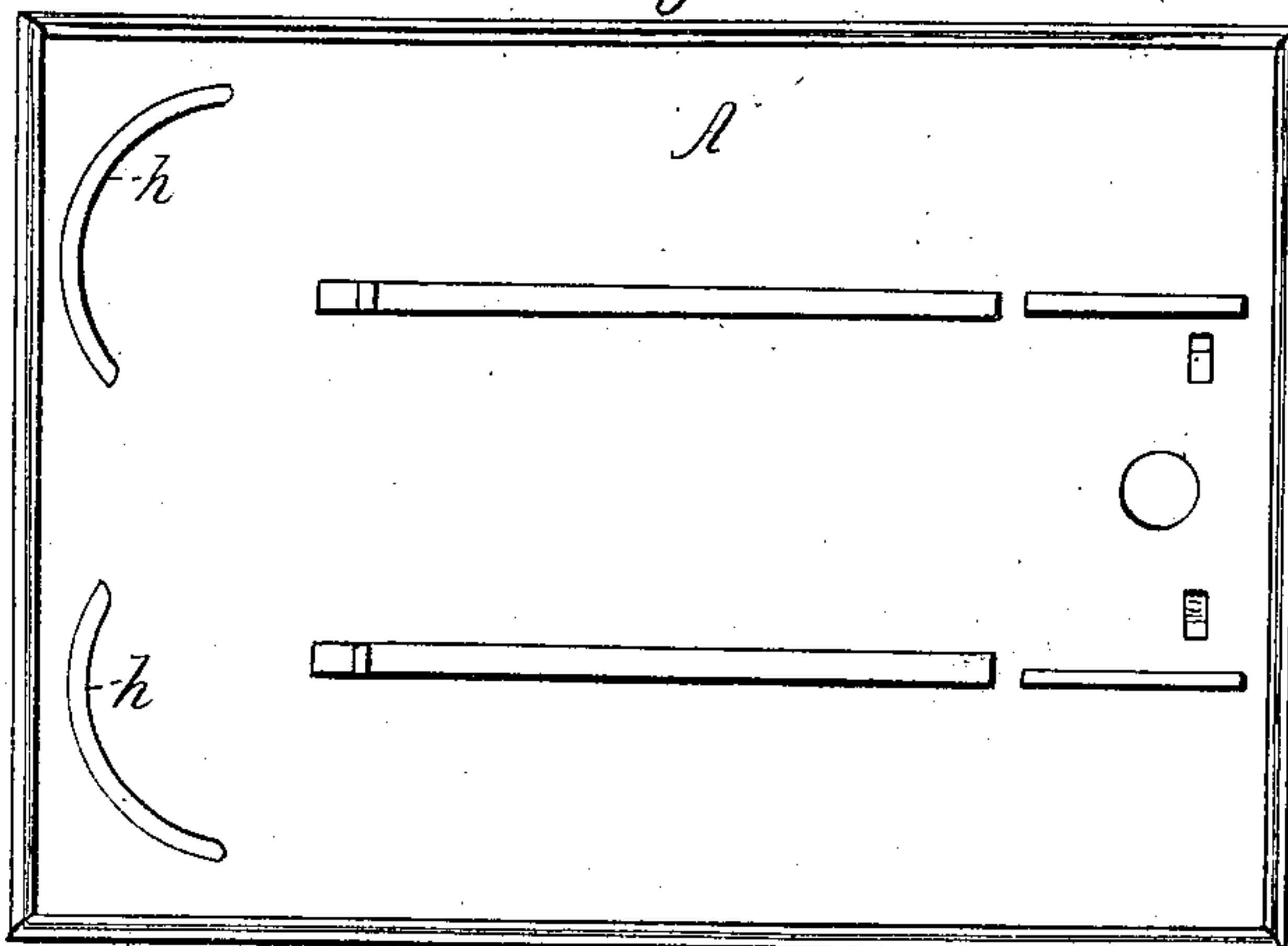


Fig. 6.

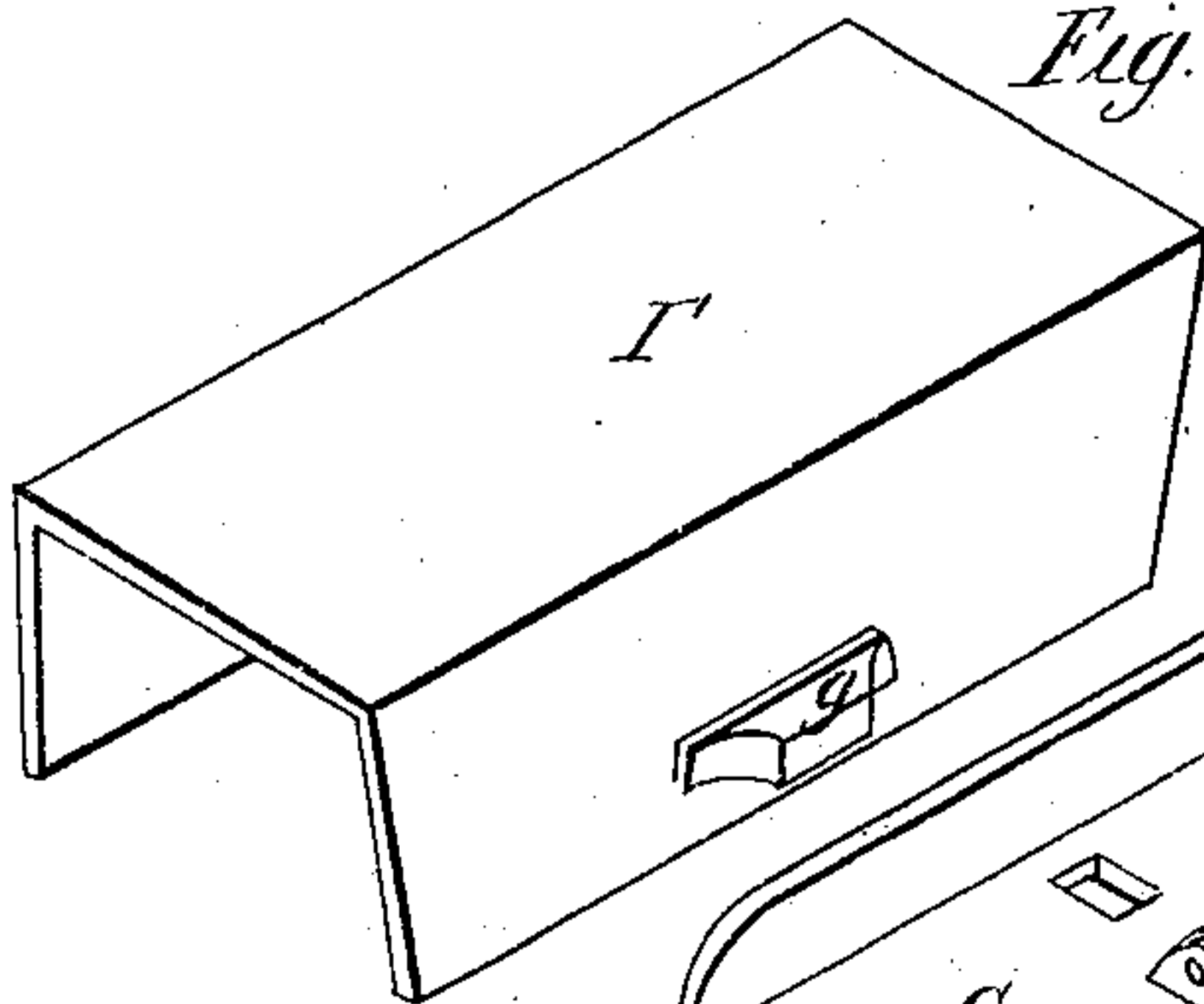
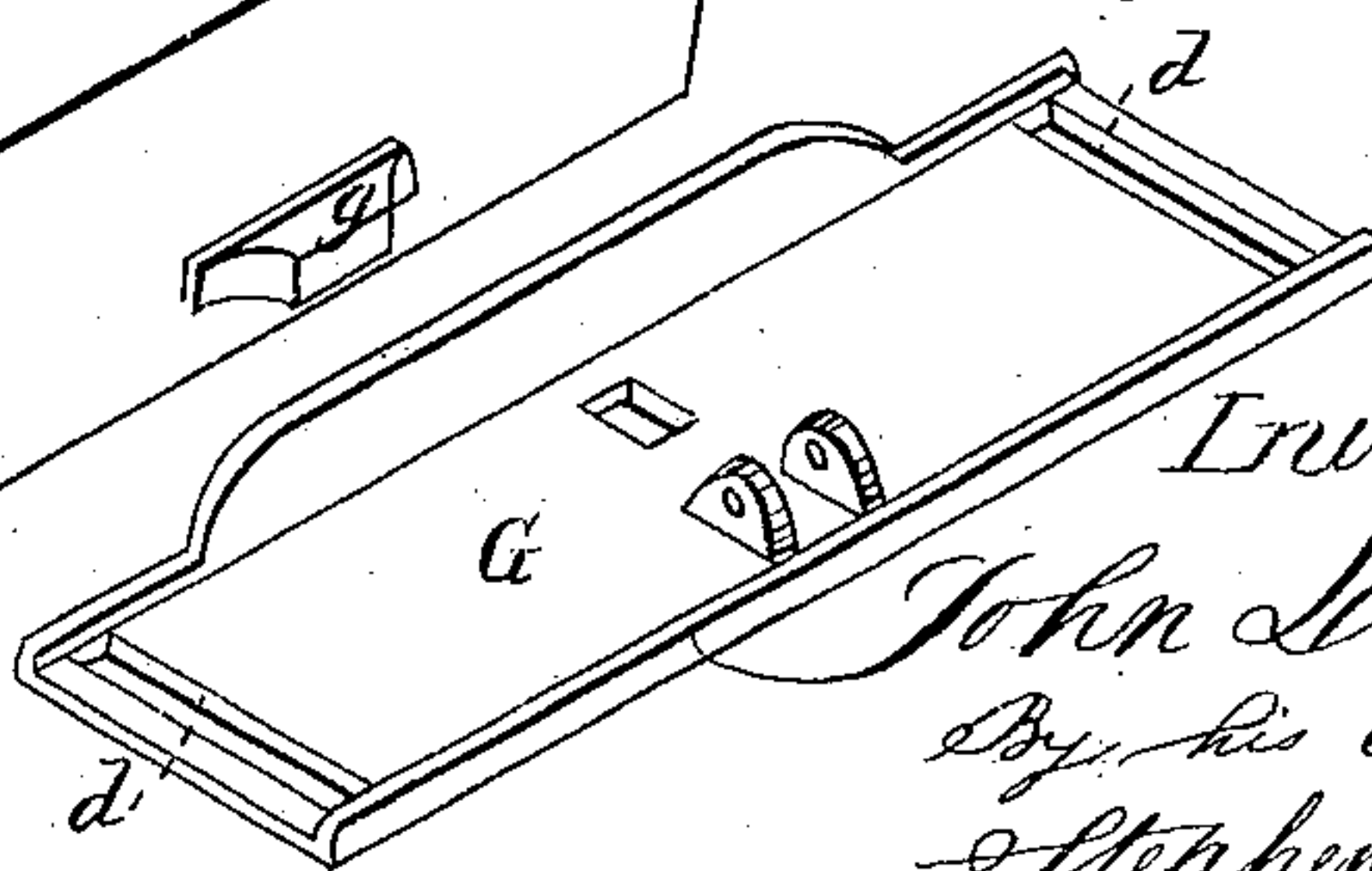


Fig. 7.



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JOHN DE FRAIN, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR
TO HIMSELF AND WILLIAM CALLAHAN, OF SAME PLACE.

Letters Patent No. 95,664, dated October 12, 1869.

COOKING-STOVE.

The Schedule referred to in these Letters Patent and making part of the same.

I, JOHN DE FRAIN, of the city of Philadelphia, and State of Pennsylvania, have invented certain Improvements in Cooking-Stoves, of which the following is a specification.

The nature of my invention consists, in the first place, in the construction of the fire-door, and its arrangement with the front of the stove, in such a manner as to admit of a vertical sliding movement, when adjusted for regulating the draught to the fire. The object of this arrangement is to prevent the opening of the door taking up any of the hearth-room, as in ordinary stoves, and thus to retain the whole area of the hearth for the reception of things used in cooking. It is also for obtaining an equal draught throughout the entire range of the grate.

In the second place, it consists in the construction of the hot-air flues, at the bottom of the oven, with vertical plates cast with sectional pieces of the bottom, so as to obtain additional heating-surface, for the complete heating of the lower part of the oven, to accomplish more perfect cooking.

In the third place, it consists in making these flues detachable, for the purpose of easily cleaning out dust and ashes carried by the draught, and lodged on the bottom of the stove beneath the oven.

In the fourth place, it consists in the construction of the bottom-plate of the stove with curved plates, for giving an easy turn to the air in passing into the return hot-air flue.

And in the fifth place, the improvement consists in the combination of a tube leading from the bottom of the stove to the interior of the smoke-pipe, whereby the hot air is conveyed from beneath the stove, to prevent the floor being burned or heated, and the draught through the smoke-pipe is increased.

To enable persons skilled in the art to which my improvements appertain to apply them to practice, I will now proceed to give a full and exact description of the same.

In the accompanying drawings, which make a part of this specification—

Figure 1 is a front elevation of the improved stove.

Figure 2 is a vertical section through the middle of the stove.

Figure 3 is a cross-section at the line *a b* of fig. 1.

Figure 4, on Sheet No. 2, is a reverse plan of the stove, with the bottom-plate *A* removed.

Figure 5 is a top view of the bottom-plate *A*.

Figure 6 is an isometrical view of the middle hot-air flue *I*.

Figure 7 is a similar view of the fire-door *G*.

Like letters in all the figures indicate the same parts.

The drawings represent a flat-top stove. The improvements are, however, applicable to other kinds of stoves.

A is the bottom-plate, and *A'* the top-plate.

B B are the side-plates; *C*, the back-plate; and *D*, the front-plate, beneath the hearth *E*.

F is the front-plate above the hearth, with which is connected the door *G*, which has a sliding vertical movement between the guide-strips *a a*, for the regulation of the draught to the fire, the door being held by means of the pawl *H*, which falls into connection with either of the openings *b* in the plate *F*, as may be required, as seen in fig. 2. A rack, if desired, may take the place of the said openings *b*.

The door is held in place against the plate *F* by means of the screws *c c*, which pass through the cross-slots *d d*, at the ends of the door. The said door is shown in detail in fig. 7.

By this arrangement of the fire-door, an equal draught to the fire is obtained throughout the whole breadth of the fire-place, and the hearth is left clear to sit anything on, whereas, in the usual arrangement of the fire-doors, when they are but partly open the draught is very unequally distributed, and the hearth is obstructed, so as to often occasion much inconvenience. To remedy the latter evil, without getting rid of the former, the fire-doors have sometimes been arranged to move laterally. But this has been found to be objectionable, as by their projecting out beyond the sides of the stove, they are liable to catch the attendant's clothes.

I construct the hot-air flues *I I* at the bottom of the oven *J*, and which communicate with the vertical hot-air flues *K K*, and the central return-flue *I'*, with a horizontal plate, *e*, and vertical side-plates *f f*, in one casting, the combined horizontal plates *e* making the whole breadth of the main portion of the bottom *A'*. The object of this is to get a considerable additional heating-surface for the bottom of the oven, and thus overcoming the difficulty usually experienced. By means of this construction of the flues, I obtain all the heat required, having in a No. 8 stove over four hundred square inches of heating-surface in addition.

To overcome the difficulty of cleaning out the flues, I make the said flues *I I* and *I'* removable, by providing their vertical sides *f* with lugs *g*, as seen in figs. 3 and 6.

The lugs on the said sides *g* of the central flue *I'*, coming under the lugs on the contiguous sides of the flues *I I*, the screw-bolts *L L* hold all the flues firmly on the bottom *A* of the stove, which also forms the bottom of the flues, as seen in fig. 3. The central flue *I'* is shown in detail in fig. 6. The flues *I I* are of similar construction.

The bottom *A* is provided with curved plates *h h*, which project from its upper surface to about half an inch of the bottom of the oven, as seen in fig. 2. The

peculiar arrangement of the plates is shown in fig. 5. The object of these plates is to give a free turn to the air as it passes from the flues I I into the return-flue I', to prevent it lodging in the corners beneath the oven J. These plates, by not being projected to the bottom A' of the oven, admit of a sufficient quantity of air passing over their upper edges, to heat the corners of the bottom of the oven, without impeding the draught.

There is a tube, M, connected at its lower end with the bottom A of the stove, and at its upper end with the smoke-pipe N, by means of the bridge O in the collar P, for carrying off the hot air from beneath the stove, to prevent the burning or heating of the floor, as seen in figs. 2 and 3. This arrangement of the said tube M with the smoke-pipe N also serves to increase the draught through the latter.

I claim as my invention—

1. The vertical sliding door G, combined and arranged with the front plate F, substantially in the manner and for the purposes herein described.

2. The construction of the flues I I and I', with vertical side-plates *f f*, in connection with the horizontal plates *e*, for gaining additional heating-surface, as above specified.

3. The curved plates *h h* on the bottom A, arranged and operating in relation to the flues I I and I', as above described.

In testimony whereof, I have hereunto set my hand and affixed my seal, this 4th day of September, 1869.

JOHN DE FRAIN. [L. s.]

Witnesses:

STEPHEN USTICK,
W. W. DOUGHERTY.