

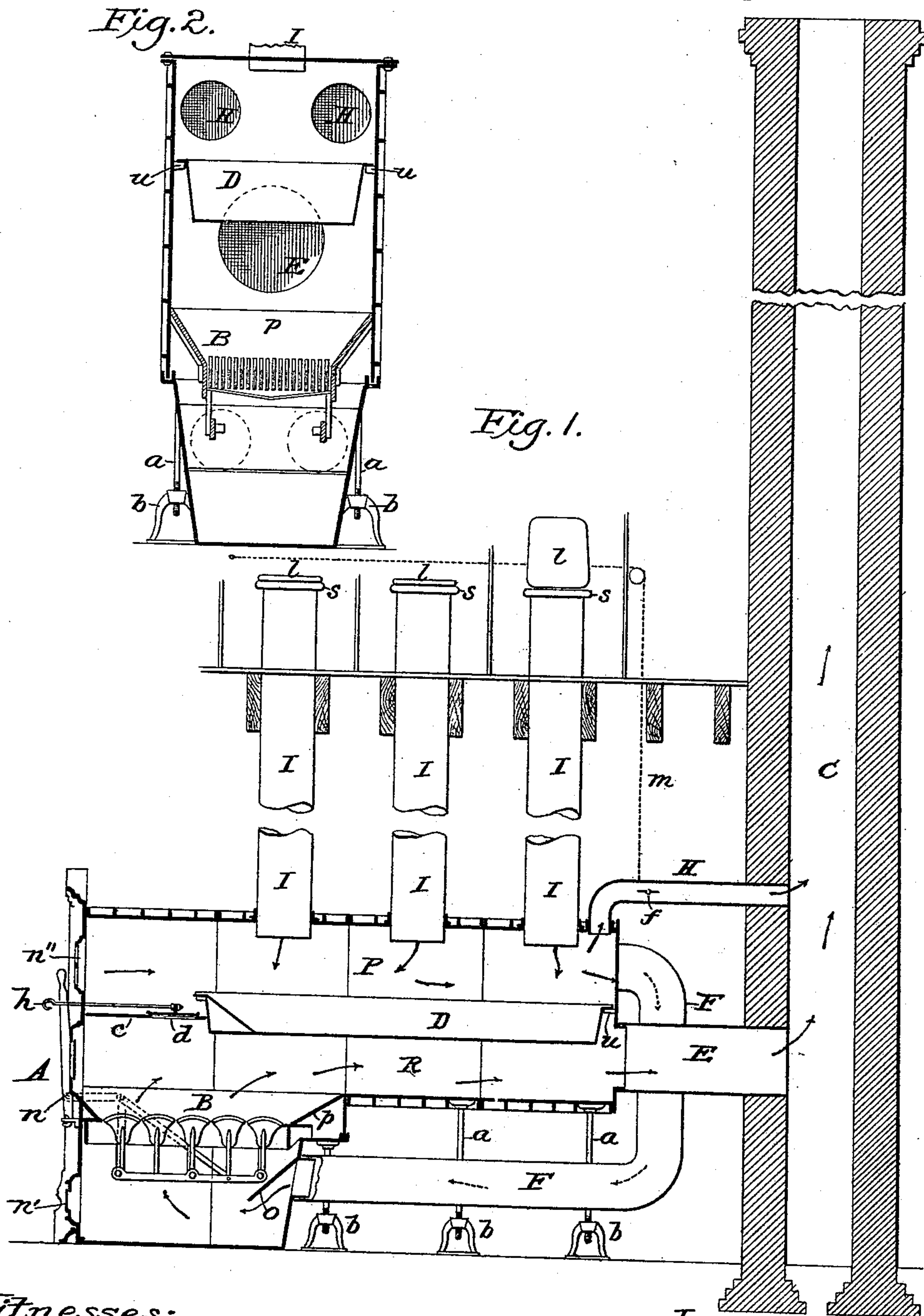
(No Model.)

2 Sheets—Sheet 1.

I. D. SMEAD.
CREMATING CLOSET.

No. 449,970.

Patented Apr. 7, 1891.



Witnesses:

James F. Duhamel
Horace A. Dodge.

Inventor:

I. D. Smead,
by Dodge & Sons
Attys.

(No Model.)

2 Sheets—Sheet 2.

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Fig. 3.

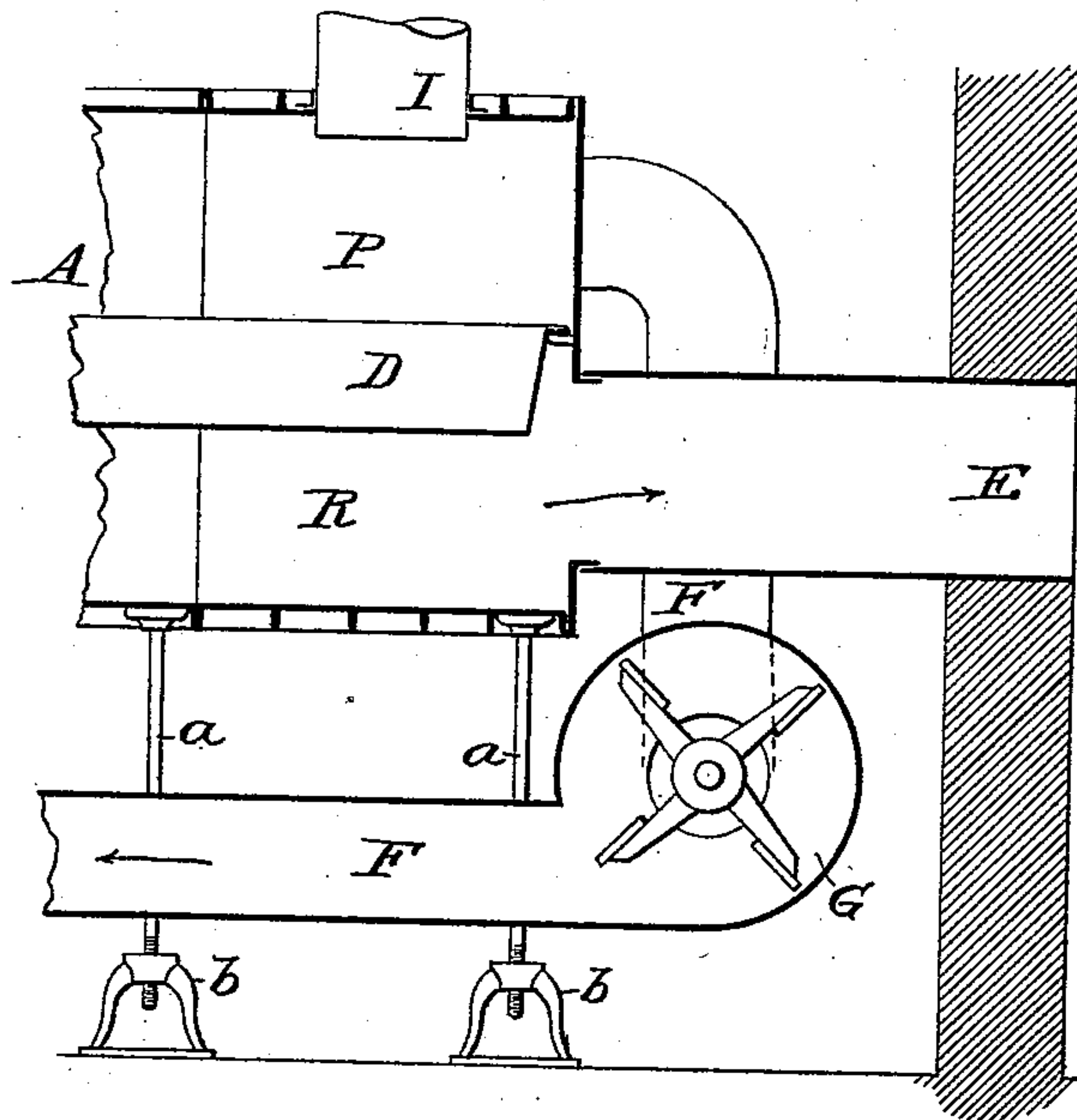


Fig. 4.

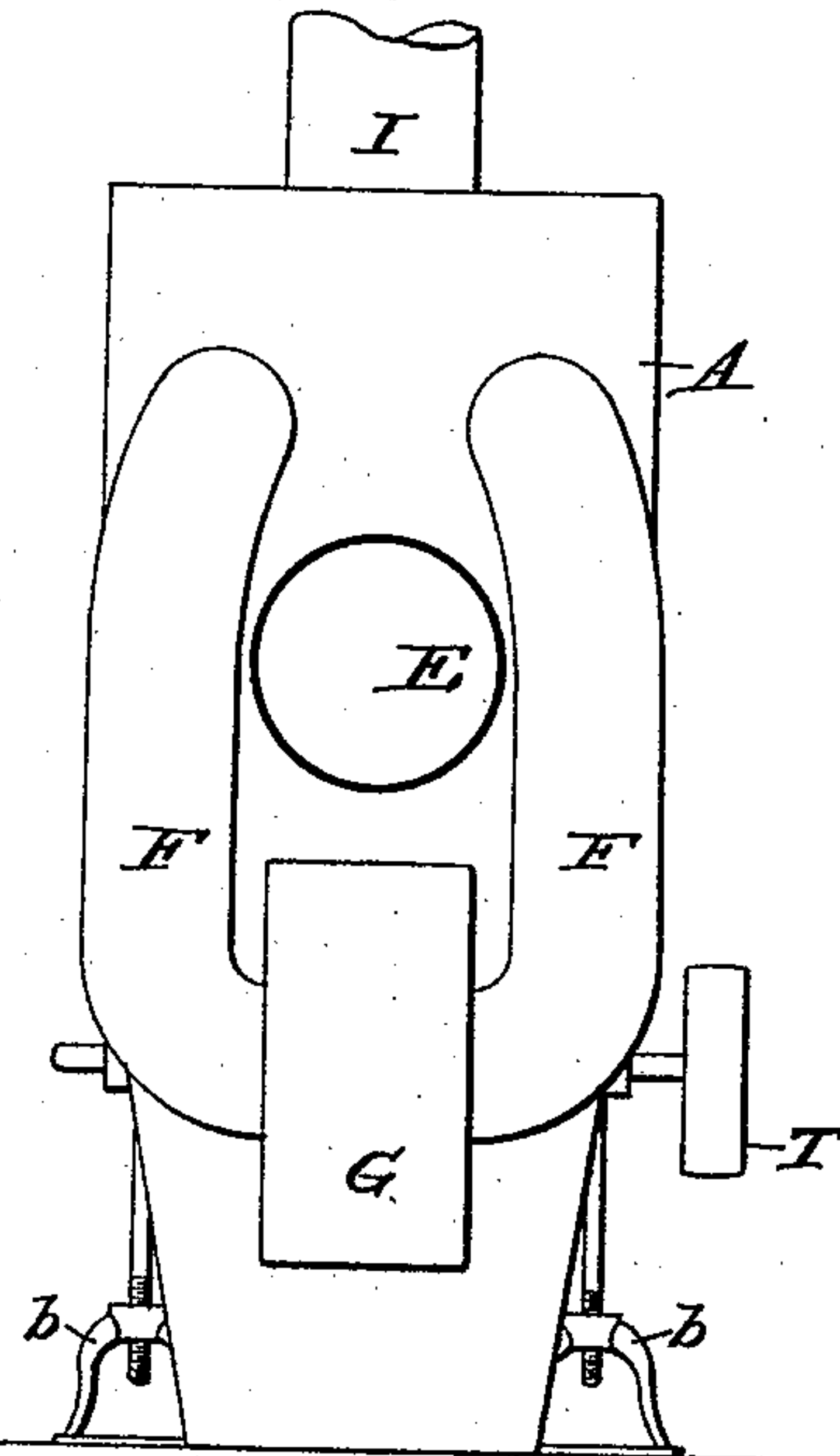


Fig. 5.

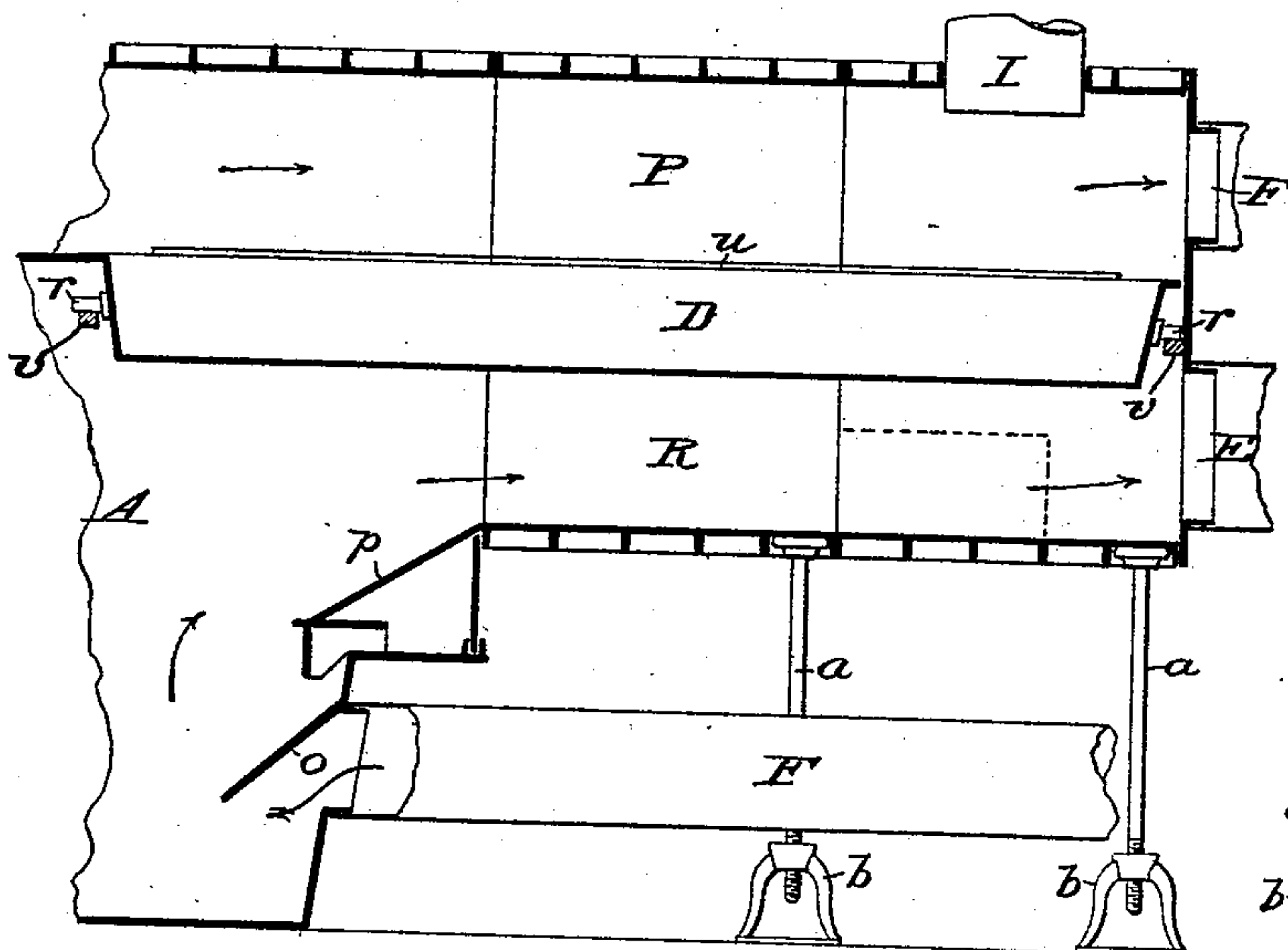
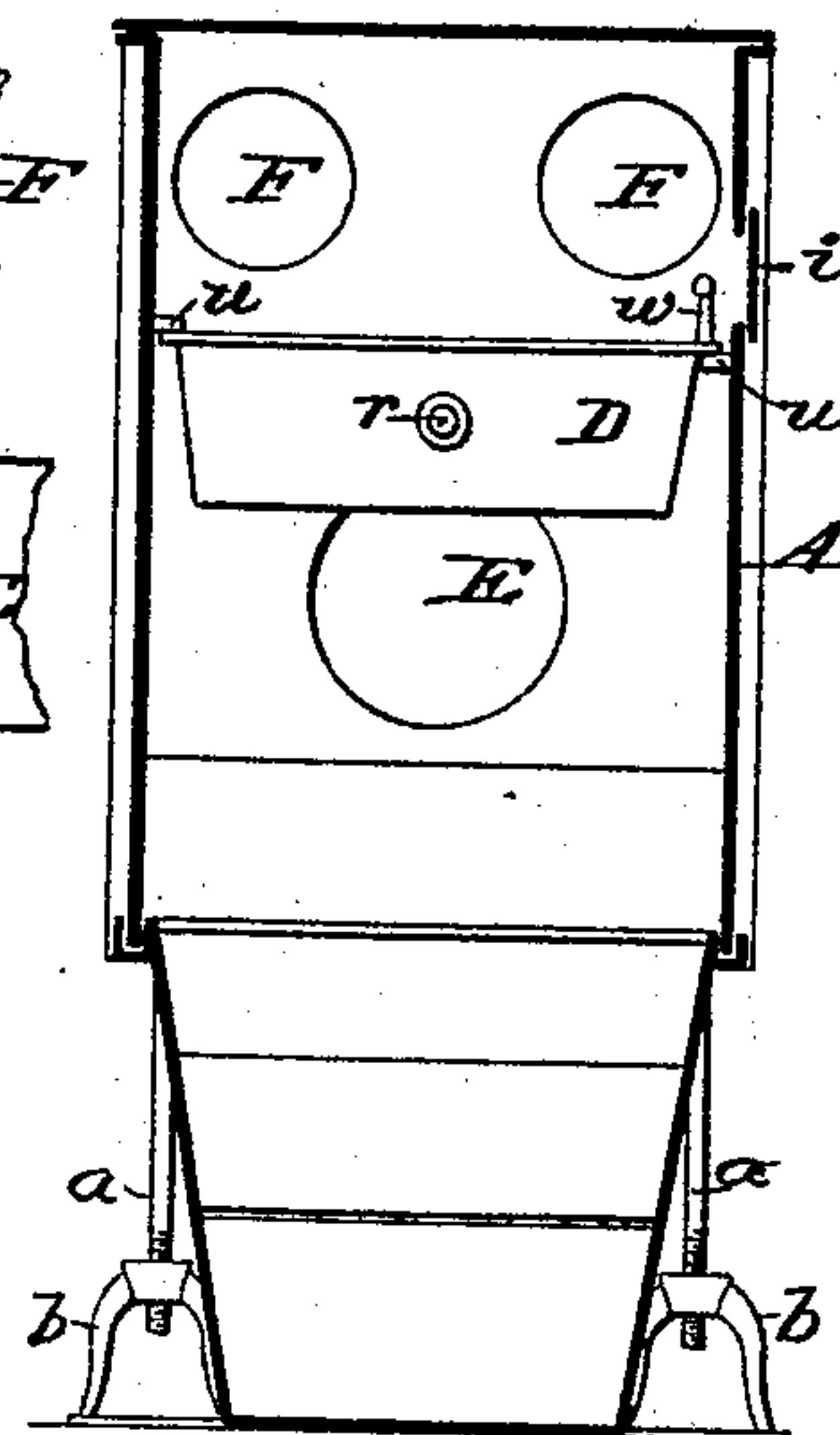


Fig. 6.



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UNITED STATES PATENT OFFICE.

ISAAC D. SMEAD, OF TOLEDO, OHIO.

CREMATING-CLOSET.

SPECIFICATION forming part of Letters Patent No. 449,970, dated April 7, 1891.

Application filed September 24, 1890. Serial No. 366,001. (No model.)

To all whom it may concern:

Be it known that I, ISAAC D. SMEAD, a citizen of the United States, residing at Toledo, in the county of Lucas and State of Ohio, have invented certain new and useful Improvements in Cremating-Closets, of which the following is a specification.

My present invention relates to dry closets; and the invention consists in providing the closet with means for desiccating and cremating all the deposits and for destroying all germs, foul gases, odors, &c., by passing them through a fire, as hereinafter more fully described.

Figure 1 is a central longitudinal section, and Fig. 2 a transverse vertical section of the apparatus. Fig. 3 is a sectional view of the rear part of the same, with a fan applied thereto, and Fig. 4 is a rear elevation of the same. Fig. 5 is a longitudinal sectional elevation showing the receptacle mounted on trunnions, and Fig. 6 is a transverse vertical section of the same.

The object of my present invention is to produce a sanitary closet for use in hospitals, hotels, or other buildings, by which the evolution of the gases and germs produced by putrefactive fermentation shall be prevented, or, if they exist, by which they may be destroyed, and by which, also, all foul odors and gases arising from the deposits shall be effectually neutralized or destroyed instead of being allowed to pass off into the atmosphere either inside or outside of the building. To this end I combine with the process of desiccation described in my prior patents on dry closets the principle or process of cremation, this process of cremation being applied not only to the deposits; but also to the gases and odors arising from the deposits, and to the desiccating air which passes over the deposits. The apparatus which I have devised for this purpose is illustrated in the accompanying drawings. It consists, essentially, of a large furnace preferably composed of a series of cast-iron plates securely bolted together and having their joints made gas-tight, similar to the well-known Smead furnace used for heating large buildings. This is done for the purpose of rendering it portable, so that the apparatus can be manufactured at some central point and then be

shipped and set up wherever needed, and so as to vary the size at will, though it is obvious that it may be built in position of brick, fire-clay, or any suitable material, if desired.

The apparatus or furnace consists of a body A, having a fire chamber B and a grate at its front end, as shown in Fig. 1, it being provided with a fuel-door *n* and a door *n'* for the removal of ashes from the ash-pit, as usual. Its upper front portion is also provided with another door *n''*, which is also provided with a register for the admission of air, and which can be adjusted to regulate the quantity of air admitted, as may be desired.

The body A of the furnace is divided longitudinally into an upper chamber P and a lower chamber R, the division being formed by a transverse plate *c* at the front end, and a pan or deposit-receptacle D, which extends from the plate *c* back to the rear end of the body, as shown in Fig. 1. The pan D is supported on ribs or flanges *u*, cast on or secured to the walls of the body, and if made stationary, as represented in Fig. 1, it may also have supporting-bars placed underneath it at suitable intervals, the use of such bars being dependent upon the length of the pan, and which, of course, will depend upon the number of seats used in the closet. The front end of this pan is preferably made inclined, as shown in Fig. 1, to facilitate the removal therefrom of the ashes or refuse, which can be readily drawn therefrom by a long-handled scraper or hoe inserted through the upper door *n''*.

In the partition-plate *c*, near the front end of the pan, is an opening with a sliding cover *d*, which can be moved to open or close the hole when desired by means of a rod *h*, which projects through the front wall, as shown in Fig. 1. In Figs. 5 and 6 I have shown this pan or receptacle as being mounted at its ends on trunnions *r*, resting on suitable supports *v*, so that it may be turned over to empty it of its contents. In that case one of the ribs *u* along the sides will be located above the edge of the pan and the other below it, as shown in Fig. 6. To enable the pan to be conveniently turned, the trunnions are located some distance from its upper edge, so that in case it should be full, or nearly so,

the weight will not so predominate below the center as to make it difficult to turn it. I have also represented a small slide or door *i* located in the side wall, Fig. 6, to afford access to the pan when it is desired to turn it, and have also shown an upright *w*, secured to the edge of the pan, against which a rod or the hand can be placed to turn it. Other means may be used for turning or tilting the pan to empty its contents—such, for instance, as chains and pulleys or jointed levers suitably arranged, these being mere matters of detail which persons skilled in the art will know how to apply without further description.

The object of arranging the opening in the partition-plate *c* with its slide at the front end of the pan *D* is to enable the person in charge to draw the contents or residuum from the pan onto the fire below. In case the pan be mounted on trunnions, as described, part of its contents will fall on the bottom of the combustion-chamber when emptied, from whence they can readily be drawn forward onto the fire, the rear end of the fire-box being provided with an inclined plate *p* for that purpose. The contents of the pan will, as a general rule, be reduced to ashes, and, if preferred, they may be removed direct without emptying them onto the fire through a door in the side or bottom of the combustion-chamber, located at such point as may be most convenient, as indicated by dotted lines in Fig. 5. As, however, the pan will require to be emptied only at long intervals, and as some portion of the contents may not be reduced to ashes, I prefer to transfer its contents when emptied to the fire in the combustion-chamber, so as to effectually cremate or burn all such matter as may not already have been reduced to ashes. When the pan is mounted on trunnions, it obviously may be extended the entire length of the furnace, in which case the transverse plate *c*, with its slide *d*, will be omitted.

A smoke-pipe *E* leads from the lower or combustion chamber *R* to a stack or pipe *C*, as shown, this stack or pipe being of such a height as to project well above the roof of the building and of surrounding objects, so as to secure a good strong draft and prevent it from being interrupted by the varying or deflected currents of wind outside. The draft of this stack or pipe may be increased, if necessary, by a heater set therein or by a fan, as described in my prior patent, No. 352,157.

The upper chamber *P*, as shown in the several Figs. 2, 4, and 6, has two openings at its rear end, from which pipes *F* extend around to the front part of the combustion-chamber, where they connect with openings in the rear wall of the ash-pit, there being a deflecting-plate *o* arranged across the rear part of the ash-pit, as shown in Figs. 1 and 5, to cause the air and gases which pass from the upper chamber through these pipes to be delivered directly under the fire.

In Figs. 3 and 4 I have shown a fan *G* in-

terposed between the two ends of these pipes or tubes *F* in such a manner as to draw the air and gases out of the upper chamber *P* and force them into the ash-pit and through the fire on the grate, it of course being understood that the door of the ash-pit and also the door of the fire-chamber will be kept closed at such time, the air to support combustion entering through the upper door *n''* into the upper chamber *P*, where it is heated as it passes along, and from thence is conducted to the fire through the pipes *F* and the ash-pit, as above described. While I have shown two of these pipes *F*, it is obvious that one may be made to answer if of sufficient size, more especially if a fan be used, and that they may be run wherever it is most convenient, so long as they connect the upper chamber with the fire at the front.

The closets are to be located directly over the receptacle or pan *D*, as shown in Fig. 1, tubes *I* extending from the closets above down to the upper chamber *P*, so as to deliver the deposits directly into the pan or receptacle *D* from the stories above.

The seats of the closets will be provided with hinged lids *l*, as usual, and these may be connected in any convenient manner with a damper *f* in a direct-draft pipe *H*, leading from the upper chamber *P* to the vent stack or pipe, as shown in Fig. 1, so that when the lid is raised the damper will be opened, it being so weighted or otherwise arranged as to close automatically when the lid is shut down. A very simple means for doing this is shown in Fig. 1, where *m* indicates a chain or cord connected at one end to the damper, passing thence over a pulley, and then along transversely through the several closets, and having its opposite end secured to a stationary object, it running along in guides standing out a little from the rear wall of the closet, so that when any one of the seats is turned up against it it will be forced back, thereby drawing up the end connected to the damper and opening the same. The shutting of the doors of the lid will release the cord, thus permitting the damper to close automatically. If thought desirable, this direct-draft flue may have a Bunsen gas-burner or a small furnace arranged within it, or in an enlargement of it made for the purpose, so that any gas, odor, or germs passing through it shall be subjected to the action of heat of sufficient intensity to burn the gases and destroy any germs that may exist. As, however, this direct draft is only designed to prevent a current from passing upward through the tubes *I* when a lid of a closet is raised, and as I have found by experiment that with a good draft in the vent-stack—such as there should be to make the apparatus work as intended—there is no tendency of the air and gases from the chamber *P* to pass upward through the tubes *I*, but that on the contrary air from the closets above is drawn downward through the tubes *I* into the chamber. In case it be used, instead of the single

chain or cord *m* a separate one may be used and connected with each lid, the object being to prevent the escape of gases and odors from the chamber *P* except through the fire.

5 For that reason I prefer not to use this direct draft when the apparatus is to be used in a hospital or in any place where disease-germs are likely to exist, as one of the principal ob-
10 jects of my invention is to absolutely destroy all such by passing all the air and gases with the accompanying germs through the fire.

To support the body in rear of the fire-chamber I provide a series of metallic rods or posts *a* with a bearing-plate at their upper ends, 15 while their lower ends are provided with a screw-thread to engage with a foot-piece *b*, as shown in the several figures, so that by turning the supports *a* they can be raised or lowered, and thus adjust them so as to afford
20 an equal and uniform bearing throughout, no matter what the length of the body may be.

By making the body of transverse sections in the manner shown its length may be readily increased by merely adding as many sec-
25 tions as may be desired, and thus it can be readily adapted to buildings of various sizes, and as the sections are all made in duplicate one set of patterns will answer for all.

The operation of the apparatus is as fol-
30 lows: A fire being started with the lower draft open until the fuel is well ignited, the register in the upper door *n''* is then opened and the lower draft closed. Air will then enter and pass through the upper chamber, and as
35 this chamber is heated the air will also be heated, whereby its affinity for moisture will be increased, and as it passes along over the deposits in the pan or receptacle it will absorb the moisture from the deposits therein, to-
40 gether with all the odors, gases, and germs arising therefrom and convey them through the pipes *F* into the ash-pit, which, being closed tight, will cause them to pass upward through the fire, which will effectually destroy all the
45 odor, foul gases, and the germs, if there be any, the resulting smoke or gases of combustion passing back through the lower chamber *R* and pipe *E* into the vent-stack, from whence they are delivered to the atmosphere far above
50 any opening in the building in an innocuous condition, and are immediately disseminated in the atmosphere above. While this process is going on the heat in the chamber below is drying, charring, and finally cremating the
55 contents of the pan until they are mainly or wholly reduced to ashes, which at intervals are emptied upon the grate, and by shaking the latter are deposited with the ashes of the fuel in the ash-pit, from whence they are re-
60 moved from time to time as occasion may require. In case any portion of the contents of the pan are not thoroughly or fully cremated they will have become desiccated and more or less carbonized, so that when emptied from
65 the pan upon the fire they will readily be consumed without producing an offensive odor.

The advantages of a closet in which are thus

combined the processes of desiccation and cre-
mation in a sanitary point of view will readily be apparent.

70 It is obvious that instead of passing the air and gases from the upper chamber to and through the fire in the lower chamber, as here shown, they may be passed through a sepa-
75 rate fire located at any point between the upper chamber and the vent-stack, and where this style of closet is used in barracks or similar places where they are to be used by a large number of persons, and in which
80 case it may be desirable to build them of masonry in whole or in part, it may be desirable to so construct them with a separate fire; but for ordinary use I prefer to construct them on
85 the plan shown, as being more economical to construct and to operate, besides being capable of being constructed at the factory, readily transported, and set up wherever wanted.

I am aware that various devices have been patented for burning refuse matter and garb-
age, in some of which the gases and smoke of
90 combustion are conducted to another fire or furnace, and that patents have been granted for closets in which it is proposed to build a fire at intervals to dry and burn the deposits
95 and therefore I make no claim to such devices; but I am not aware that any one has heretofore invented any apparatus by which the excreta is subjected to the desiccating ac-
100 tion of a continuously-passing current of air in one chamber or compartment and simultaneously to the action of heat in another chamber, and in which the desiccating air and gases are conducted to the same fire that heats
the apparatus; and therefore,

Having thus fully described my invention, 105 what I claim is—

1. In combination with one or more closets, a furnace arranged to receive the deposits di-
rect from the closets, said furnace being pro-
110 vided with a desiccating-chamber in which the deposits are subjected to the evaporative action of a continuous current of air, and a second chamber or compartment containing a fire box or grate, said chambers being con-
115 nected by tubes or flues, substantially as shown and described, whereby the air for supporting combustion is made to pass through the desiccating-chamber, and it, together with
120 the gases from said chamber, is delivered to the fire in the other chamber, as set forth.

2. A furnace for dry closets, provided with a desiccating-chamber arranged to receive the
deposits from one or more closets, with means, substantially such as shown, for securing the
125 passage of a continuous current of air through said chamber, and a fire-chamber underneath the desiccating-chamber, the said chambers being connected by pipes or flues arranged to
conduct the air and gases from the desiccating-chamber to the fire in the heating-cham-
130 ber, substantially as and for the purpose set forth.

3. In a furnace for closets having an upper desiccating-chamber and a lower heating-

chamber, a pan arranged to receive and retain the fluids and deposits in the desiccating-chamber, where they can be subjected to the joint action of the current of air passing
5 through said chamber and of the heat in the combustion-chamber, substantially as shown and described.

4. In a furnace for closets having a separate desiccating-chamber, with a pan located there-
10 in to receive and retain the deposits from the closets while being subjected to the joint action of a current of air and heat, means, substantially such as shown and described, for transferring the residue from the pan to the
15 fire-chamber below.

5. The combination, in a closet-furnace, of a desiccating-chamber having an air-inlet at one end and an outlet for the air and gases at its opposite end, with a fire-chamber arranged
20 to heat the desiccating-chamber, and having a separate outlet for the smoke and products of combustion, substantially as shown and described.

6. In combination with a closet and a furnace constructed to operate substantially as
25 described, a direct-draft flue connecting the desiccating-chamber with the vent-stack, said draft-flue being provided with damper, and means, substantially such as described, for
30 operating said damper by the opening and closing of the closet-lids, substantially as and for the purpose set forth.

7. The method or process of treating fecal matter and the odors and gases arising there-
35 from, which consists, first, in subjecting said matter to the action of a current of air and heat, and, second, in consuming the odors and
40 gases arising from said matter by passing the current of air, together with the odor and gases, into or through a fire.

In witness whereof I hereunto set my hand
in the presence of two witnesses.

ISAAC D. SMEAD.

Witnesses:

J. A. SMEAD,

FREDERICK L. GEDDES.