(No Model.)

J. PRICE.

SMOKE HOUSE.

No. 327,453. Patented Sept. 29, 1885.

Fig. 1.

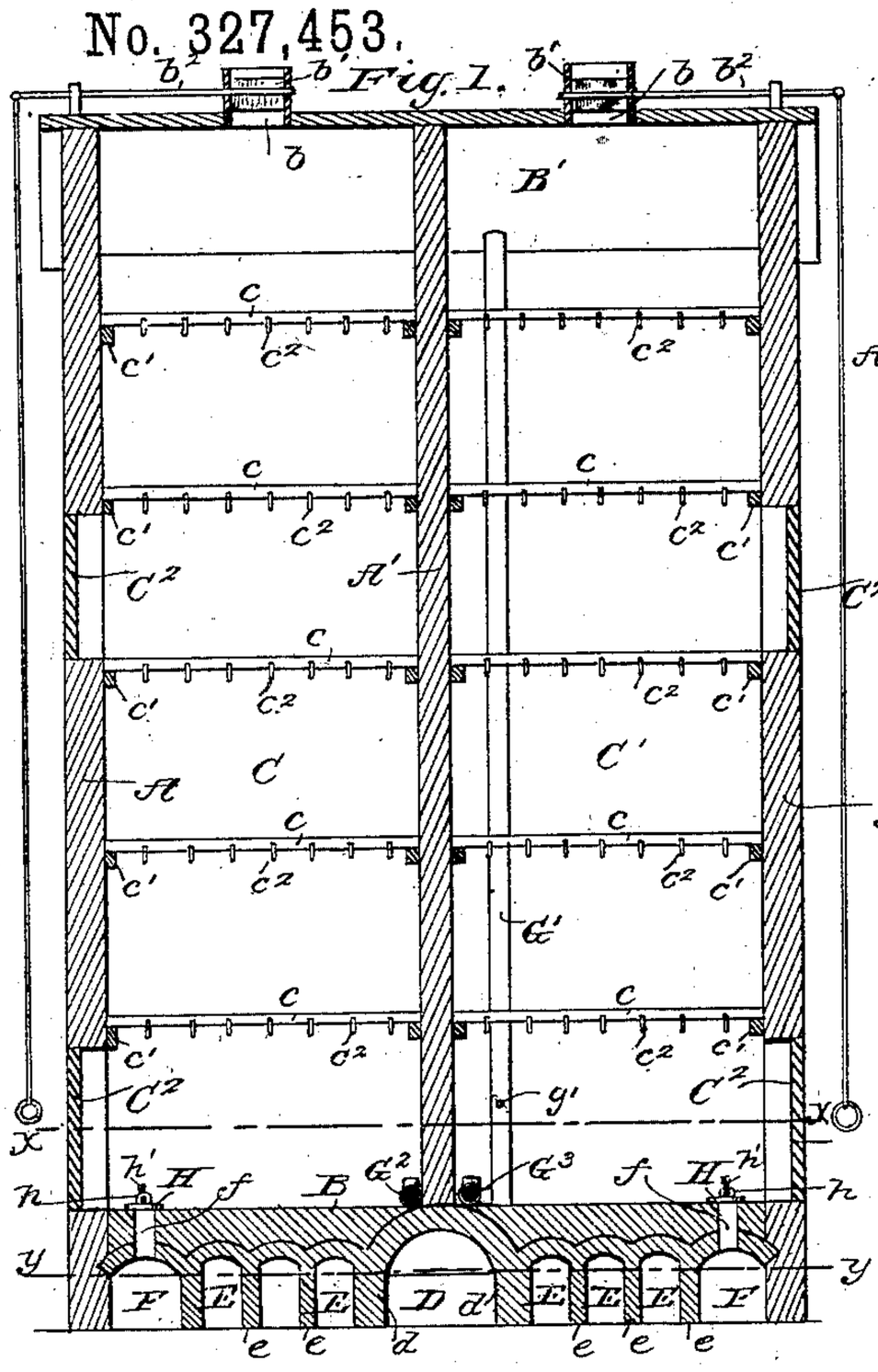


Fig. 3.

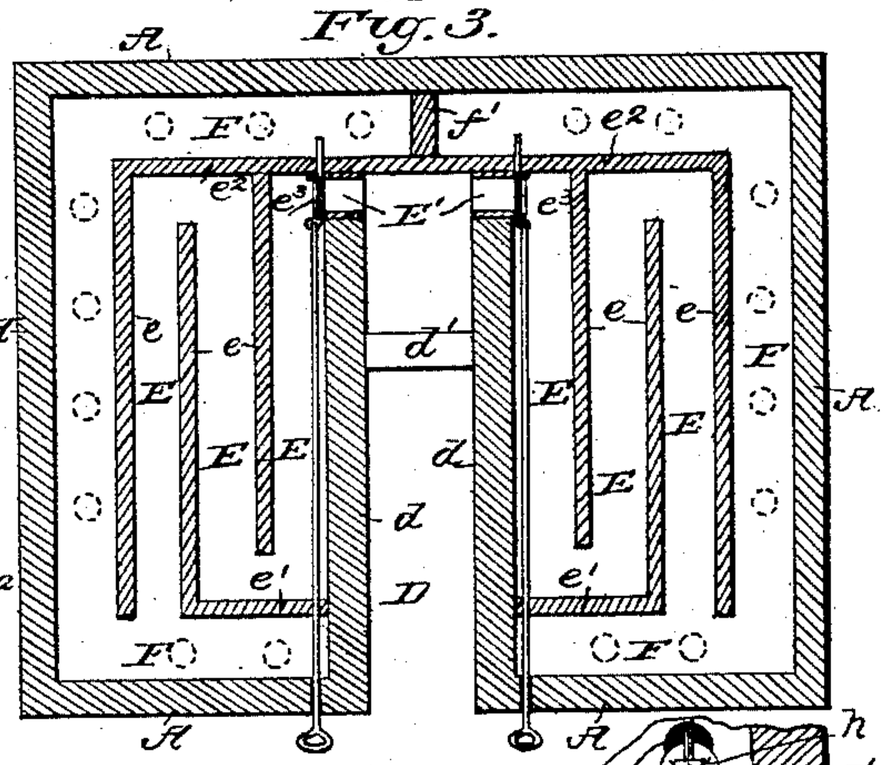


Fig 4

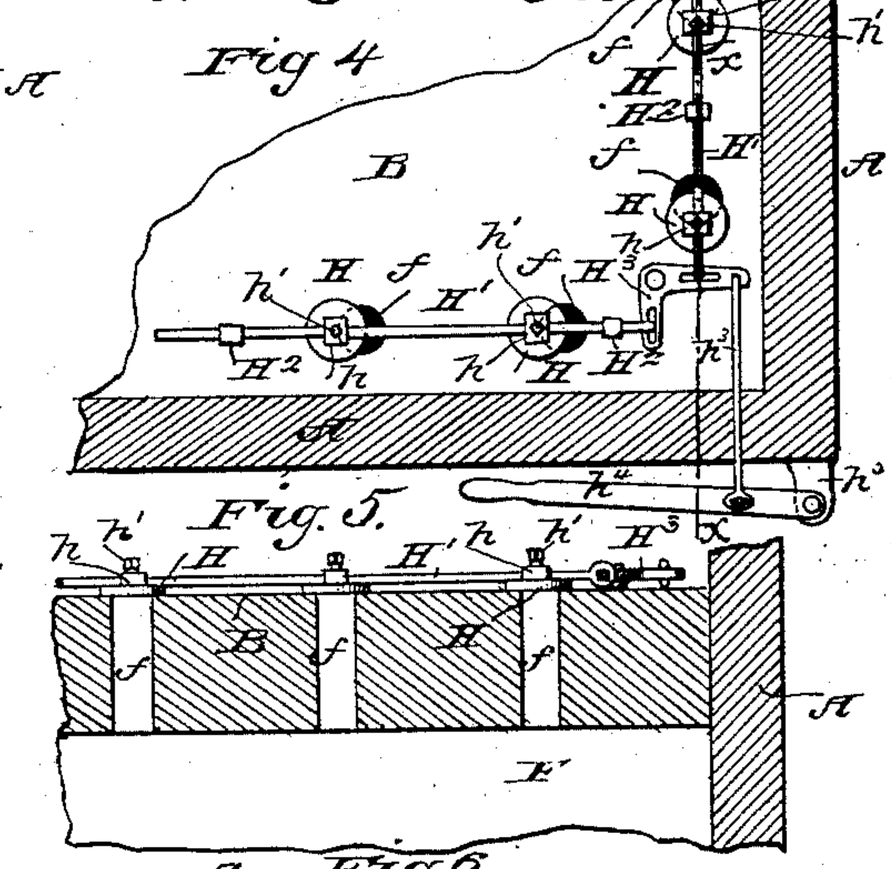


Fig. 5.

Fig. 2.

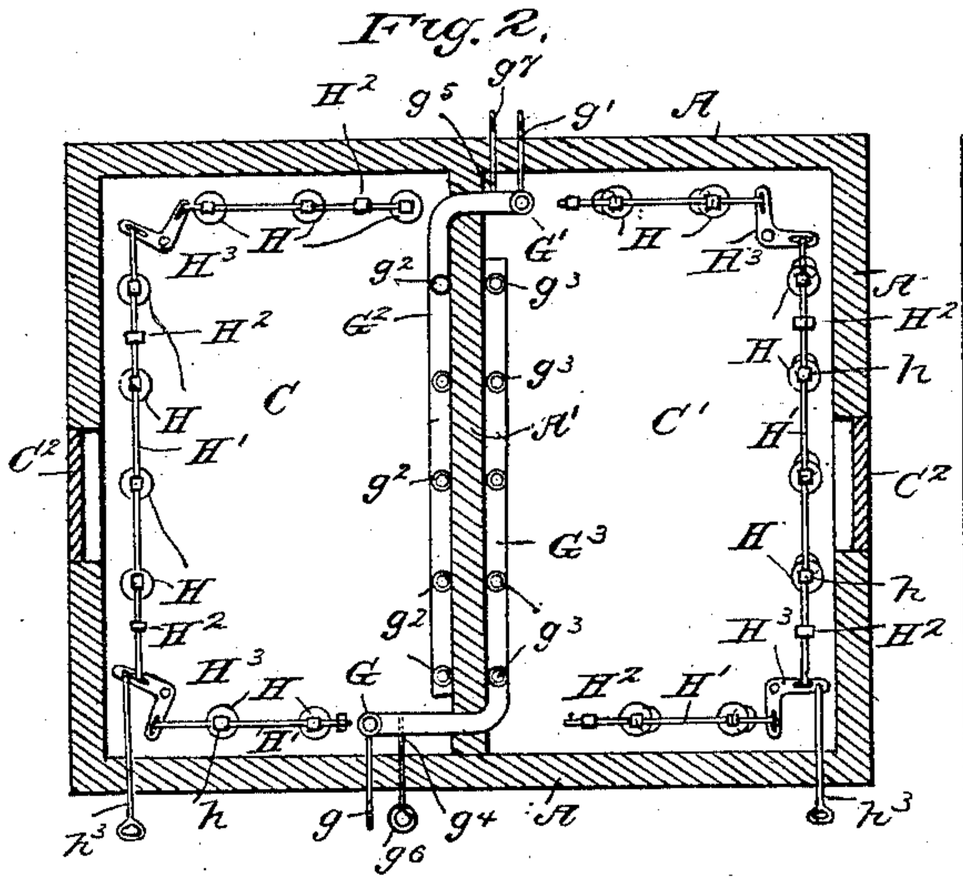
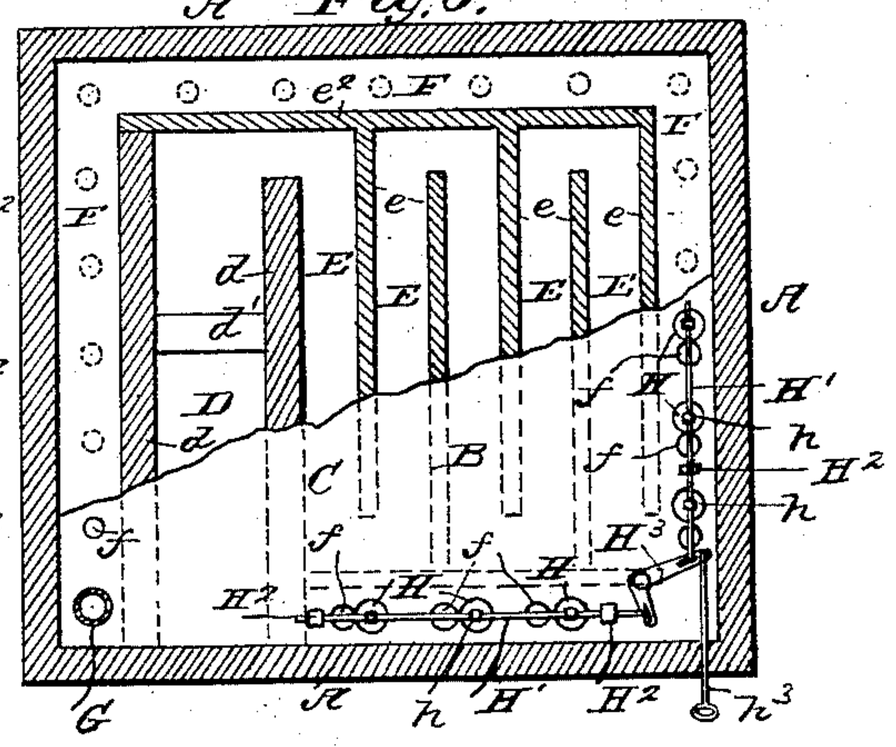


Fig. 6.



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UNITED STATES PATENT OFFICE.

JOHN PRICE, OF CHICAGO, ILLINOIS.

SMOKE-HOUSE.

SPECIFICATION forming part of Letters Patent No. 327,453, dated September 29, 1885.

Application filed May 8, 1884. (No model.)

To all whom it may concern:

Be it known that I, JOHN PRICE, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Smoke-Houses; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

The object of this invention is to provide an improved construction in smoke-houses, or structures for containing meats while being cured by the action of smoke.

A principal feature of novelty in the structure herein illustrated as embodying my invention consists in the combination, with a suitable furnace in or near the base of the structure in which the wood or other material for producing smoke is burned, of a flue or smoke-passage connecting the furnace with the interior chamber of the smoke-house, said flue being extended longitudinally in a tortuous course upon or beneath the floor of the said chamber, so that the heat given off by the smoke and other products of combustion passing through it may be utilized to heat the chamber for the purpose of properly drying the meats preparatory to smoking them. By the use of such flue also an extended passage is formed, whereby the smoke is desirably cooled before being discharged into the chamber, and danger of fire by reason of extreme heat or of sparks in the smoke passing to the chamber avoided.

The smoke-passage above mentioned, as herein shown, is preferably constructed of masonry, of which the bottom or floor of the chamber is composed, the said passage being formed by a series of flues arranged side by side and connected at their ends, so as to afford a continuous passage through them. The said flue, as herein shown, also preferably communicates with the interior of the smoke-house by means of a valved opening or openings, and is provided with a valved exit-pipe extending to the open air, so that, by properly arranging the valves controlling the said openings in the exit-pipe, the smoke from the furnace may either be discharged into the open air through said exit-pipe, as is desirable when the meats are being dried preparatory to smoking them, or permitted to enter the chamber through the said openings. The exit-pipe, as herein shown and desirably constructed, is extended upwardly through the interior of the smoke-house, so that the heat given off by the said pipe may be utilized in drying the meats therein.

The invention also embraces an improved construction in a smoke-house having two chambers, as hereinafter more particularly described.

In the accompanying drawings, Figure 1 is a sectional view of a smoke-house embodying my invention. Fig. 2 is a plan section of the same, taken upon line *x x* of Fig. 1. Fig. 3 is a horizontal section through the fire-box and flues beneath the floor of the chamber, taken upon line *y y* of Fig. 1. Fig. 4 is a detail plan view of a part of the floor of the smoke-house, showing the upper ends of the openings connecting the flue with the interior of the smoke-house and valves for controlling the said openings. Fig. 5 is an enlarged vertical section taken upon line *x x* of Fig. 4. Fig. 6 is a plan view of another form of smoke-house, having a portion of the floor broken away to show the flue thereof.

The smoke-house shown in the accompanying drawings as embodying my invention, is rectangular in plan view, and has four exterior walls, A, a floor, B, and a roof, B′, the latter being provided with aperatures U, for the exit of smoke from the interior of the structure. The smoke-house shown is constructed in the usual manner, of considerably greater height than width, so as to form a high and narrow chamber or chambers, in which the meats are placed and subjected to the action of smoke introduced near the floor of the chamber or chambers, and which rises between and about the hams or pieces of meat and makes its exit at the openings *b*. In the form of structure shown in Figs. 1, 2, and 3 the space within the walls A is divided into two parts or chambers, C and C′, by means of a transverse partition-wall, A′, said chambers being provided in the usual manner with doors C^2, through which the meats may be inserted and removed, and also with a series of movable horizontal bars, *c*, which rest at their ends upon stationary strips

c' at either side of the chambers, and which are provided with hooks c^2, upon which the meats to be cured are hung.

Centrally beneath the floor B of the smoke-house is placed a furnace, D, preferably formed by side walls, d, extending inwardly at right angles from one side of the structure, and which communicates at its rear end with flues E, located at either side of said furnace beneath the chambers C and C′. The said flues preferably terminate at their outer ends in passages F, which extend around the structure adjacent to the outer walls thereof, and are provided with valved openings f, through which the smoke from the flues E is delivered to the chambers.

The flues E are, as herein shown, preferably formed by means of walls e, which are arranged parallel with each other and with the side walls, d, of the fire-box and walls e' and e^2 at right angles thereto, the walls e^2 being arranged transversely of the walls d of the fire-box, at the rear of the latter, and parallel with the exterior wall of the structure, so as to form parts of the passage F, above referred to.

In the form of the device shown in Figs. 1, 2, and 3 the walls e, forming the flues E, are arranged symmetrically at either side of the fire-box, and the openings E′, between the rear ends of the walls D and the walls e^2, by which the smoke and products of combustion pass from the said fire box and flue E, are provided with valves e^3, whereby all of the said smoke and products of combustion may be permitted to pass into the flue beneath one of the chambers, or a greater or less proportionate quantity of them to either flue, as desired. In this form of device, also, the passage F is divided at a point midway of the structure and at the rear of the fire-box by means of a partition-wall, f', so that the flues and passages under the chambers are separate, and may be independently regulated and controlled.

In order to permit the immediate escape of smoke from the flues E to the open air when it is desired to heat one of the chambers for the purpose of drying the meats contained therein preparatory to smoking them, pipes G G′ are provided, said pipes, as herein shown, being connected with the passages F, at either side of the structure, and provided with valves or dampers g g', by which the pipes may be closed when the smoke is to be delivered into the chambers. The pipes G and G′ are preferably extended upwardly through the chambers C and C′, so that the heat given off thereby may be utilized in heating the said chambers for the purpose of drying the meats.

To the pipes G and G′, at points above the floor of the structure, are preferably connected horizontal flues or pipes G^2 G^3, the flue G^2, which is connected with the stack G′ in the chamber C′, being extended through the partition-wall A′, and into the chamber C′, and provided with a series of exit-apertures, g^2, and the pipe G^3 being connected with the stack G in the chamber C, and extending through the partition-wall A′ into the chamber C′, and similarly provided with exit-apertures g^3. The pipes G^2 and G^3 are provided at a point near the stacks G and G′ with dampers or valves g^4 g^5, the parts of the pipes G^2 and G^3 adjacent to the pipes G and G′, as herein shown, being arranged parallel with the front and rear walls of the structure, so that the rods g^6 and g^7 of the dampers may be extended outwardly through said walls, and the dampers thereby operated from the exterior of the building.

The apertures f, connecting the passages F with the chambers C and C′, are provided with suitable valves or dampers, H, preferably connected together by devices constructed in such manner that they may all be operated at once from the exterior of the building, as will be hereinafter more particularly described.

In the operation of curing meats placed in one of the chambers the several valves H therein are closed, as is also the valve in one of the pipes, as G^2, connected with the pipe, as G, passing through said chamber, and the valve, as g, in the latter pipe is opened, thus permitting the escape of smoke to the outer air while the meats are being dried by the upper current of warm air in the chamber caused by the heat from the flue in the floor thereof. After the meat has been sufficiently dried the valve g is closed and the valves H are opened, thus permitting the desired inflow of smoke to the chamber.

It is obvious that by closing one or the other of the dampers e^3 between the furnace and the flue E all the smoke and products of combustion from said furnace may be caused to pass beneath the floor of one of the chambers, and one chamber only thus operated at a time. When both of the chambers C C′ are in operation, however, one of them is preferably used for drying at the time the meat is being smoked in the other, and the purpose of the pipes G^2 G^3, before described, is to carry the smoke and products of combustion that have passed beneath the floor of one chamber for the purpose of heating the latter into the opposite chamber, and thereby preventing the waste of the smoke by its exit to the outer air. When, for instance, meat is being dried in the chamber C and smoked in the chamber C′, the several valves will be placed in the position indicated in Fig. 2, the valve H, as therein shown, being closed to prevent the escape of smoke into the chamber, the valve g in the stack being also closed to prevent the escape of the smoke to the outer air, and the valve g^4 in the pipe G^3 being open to allow the smoke, after having passed through the flues beneath the chamber C, to enter the chamber C′, wherein it is utilized together with the smoke entering the chamber from the openings.

The several valves H, for controlling the passages f, preferably consist, as herein shown, and illustrated more clearly in Figs. 4 and 5, of flat metal plates or disks, constructed to rest

in a slide upon the surface of the floor B, and operated by means of rods H′, the means of attachment of the disks with the rods herein shown consisting of lugs or prominences *h* upon the disks, provided with horizontal apertures for the rods, and with set-screws *h′*, whereby the disks may be clamped at desired points thereon.

The rods mentioned are preferably held in stationary guides H^2, fixed in the floor B, and each rod is attached to the series of disks located at one side of the chamber. The rods H may be extended at their ends through the wall of the chamber and provided with handles whereby they may be moved and the passages *f* thereby controlled from the outside of the structure. Preferably, however, the adjacent ends of the rods in each of the chambers are connected at the corners thereof with bell-crank levers H^3, pivoted to the floors of the chambers so as to swing in a horizontal plane, and which are so arranged that the longitudinal movement of the rod at one side of the chamber will produce a corresponding longitudinal movement of the other rod or rods connected with it.

The several rods, connected as above described, are in the form of device herein shown operated from the exterior of the structure by means of a rod, h^3, attached to one of the bell-crank levers and extended outwardly through the wall of the chamber, said rod, as shown in Fig. 4, preferably being connected with a lever, h^4, fulcrumed to a stationary arm, h^5, whereby said rod may be moved and all the disks in the chamber shifted at once.

The valves or dampers e^3, for closing the openings between the flues E and the furnace, are preferably operated, as herein shown, by means of rods e^4, which are extended through the front wall of the building near the furnace-opening, so that they may be in convenient reach of the person attending to the fire.

In the construction shown in the drawings, also, the openings *b* in the roof of the structure for the exit of smoke from the chambers C and C′ are preferably provided with valves or dampers *b′ b′*, for controlling said openings and thereby regulating the movement of smoke through the chambers, and consequently the draft of the fire, at times when the products of combustion therefrom are discharged into the chambers. The said rods are operated by rods b^2 b^2, extending horizontally beyond the outer wall of the building and provided with cross-arms and ropes, by which the said dampers may be operated from the ground.

An important advantage of the construction in the two-chambered kiln above described is, that by using the smoke from the flue beneath the chamber which is being heated in the chamber in which the meats are being smoked a great saving of fuel is effected.

I claim as my invention—

1. The combination, in a smoke-house, of a furnace and a series of parallel connected flues, E, located beneath the floor of the chamber and forming a tortuous smoke-passage, a valved opening or openings connecting the smoke-passage with the chamber, and a valved passage connecting the said smoke-passage with the open air, substantially as described.

2. The combination, in a smoke-house having two chambers, C and C′, of a furnace and a separate smoke-flue located beneath the floor of each of the said chambers, and communicating with the said furnace and chambers by valved openings, substantially as and for the purpose set forth.

3. The combination, in a smoke-house having two chambers divided by a partition-wall, of a central furnace, D, smoke-flues E, arranged beneath the floors of the chambers and communicating therewith by valved openings, a pipe, G, in communication with one of the flues E, and extending upwardly through one of said chambers to the open air, a damper, *g*, in said pipe, a pipe, G^3, extending from the pipe G through the said partition-wall and opening into the adjoining chamber, a valve in said pipe G^3, substantially as and for the purpose set forth.

In testimony that I claim the foregoing as my invention I affix my signature in presence of two witnesses.

JOHN PRICE.

Witnesses:
C. CLARENCE POOLE,
OLIVER E. PAGIN.