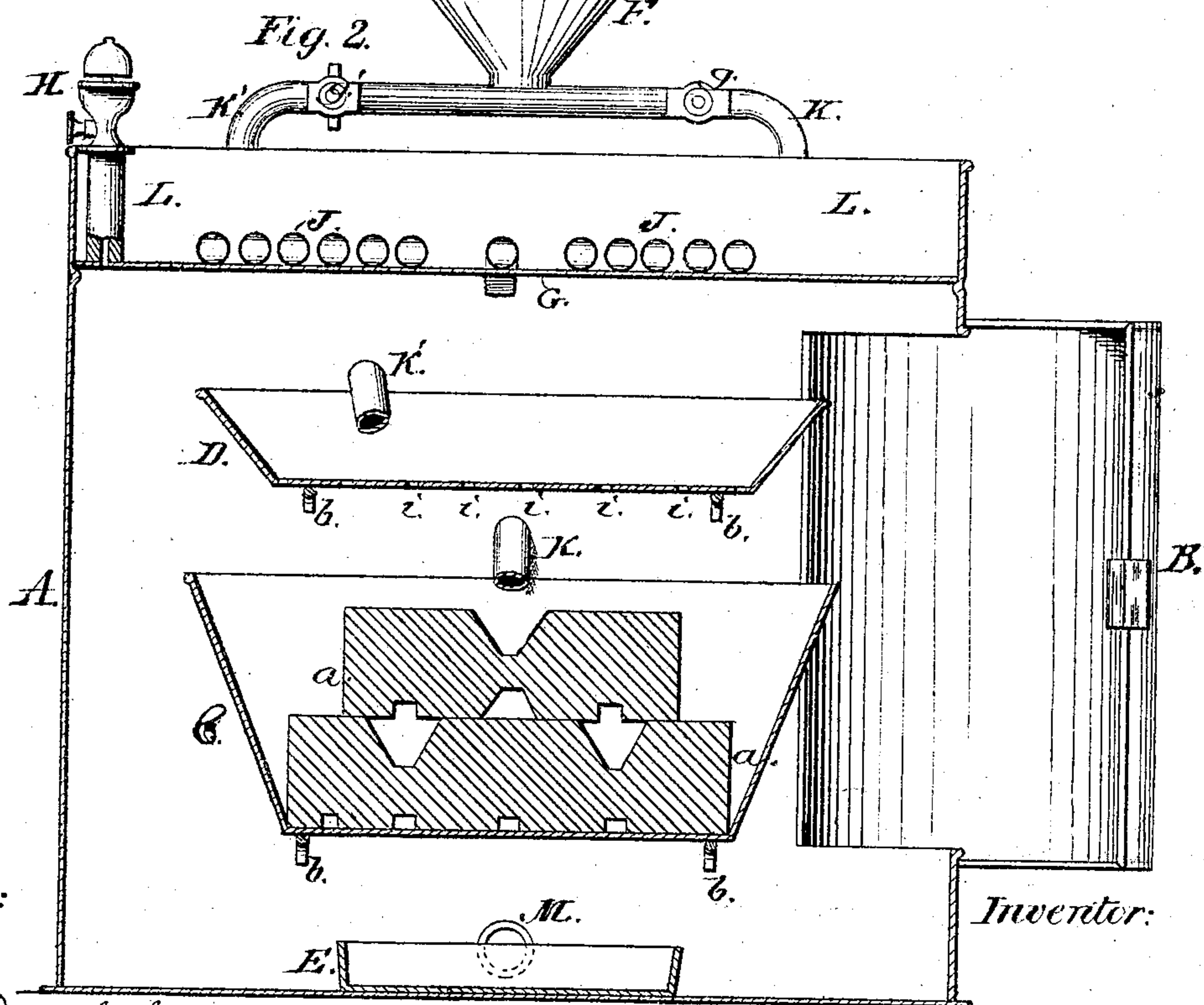
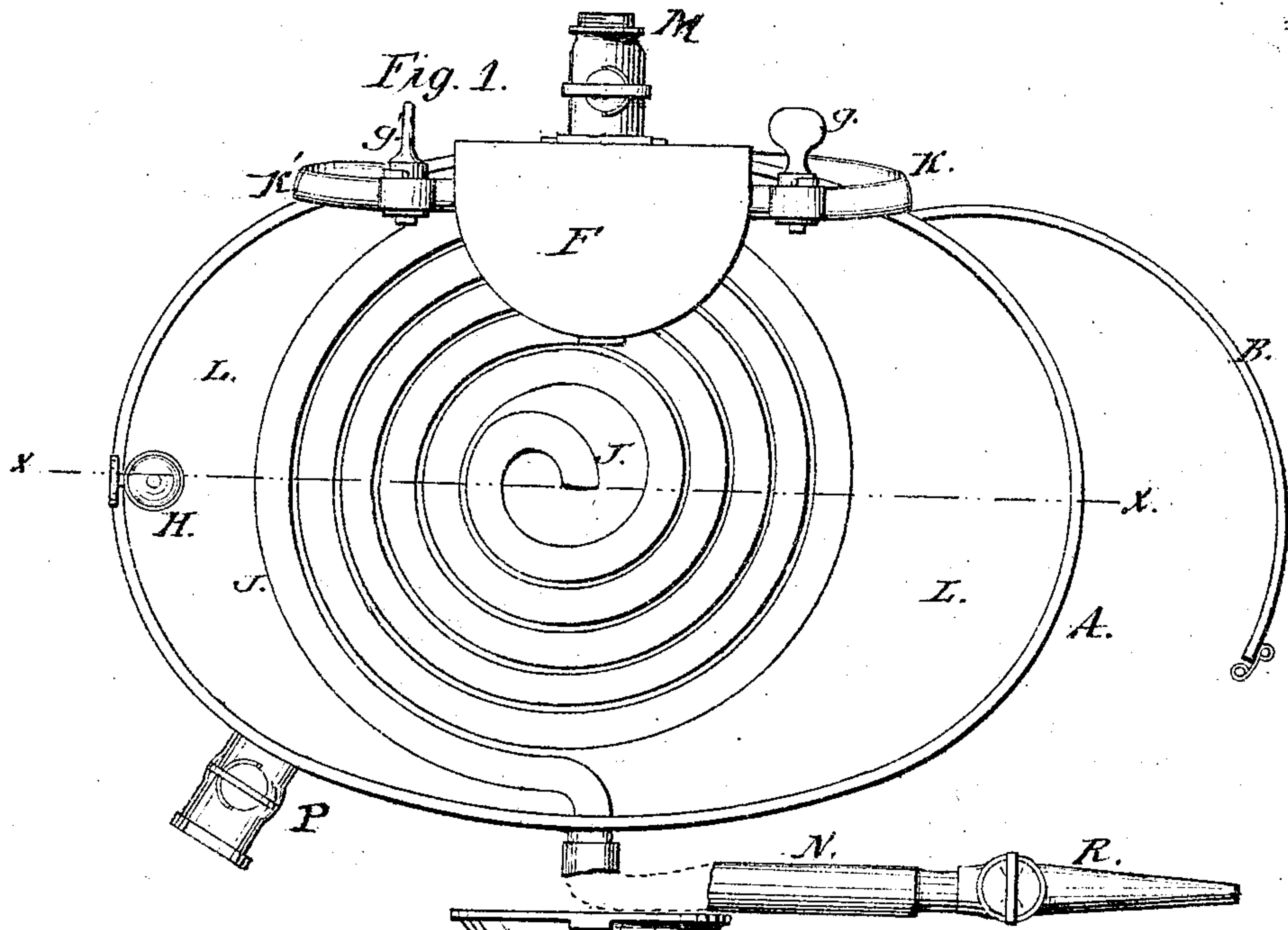


F. HEIDELMANN.

Fumigating and Disinfecting and Exterminating Vermin.

No. 152,372.

Patented June 23, 1874.



Witnesses:

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UNITED STATES PATENT OFFICE.

FREDERICK HEIDELMANN, OF QUINCY, ILLINOIS, ASSIGNOR OF ONE-HALF HIS RIGHT TO JOHN TRZECIAK AND CHARLES F. SCHMIDT, OF WASHINGTON, DISTRICT OF COLUMBIA.

IMPROVEMENT IN FUMIGATING AND DISINFECTING, AND IN EXTERMINATING VERMIN.

Specification forming part of Letters Patent No. **152,372**, dated June 23, 1874; application filed June 20, 1874.

To all whom it may concern:

Be it known that I, FREDERICK HEIDELMANN, of Quincy, in the county of Adams and State of Illinois, have invented certain new and useful Improvements in Fumigating and Disinfecting, and in Exterminating Vermin, &c.; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification, in which—

Figure 1 is a plan view of a machine embodying my invention. Fig. 2 is a vertical section taken on the line *x x* of Fig. 1.

The objects of my invention are more thoroughly to fumigate and disinfect dwellings, ships, &c., to do so in a more convenient and less dangerous manner than heretofore practiced, to purify clothing, &c., and any vessel or barrel, and to kill or drive away vermin, rats and mice, insects, &c., and kill or stupefy various animals.

A is a case of metal or other material practically impervious to air and gases, and which may be rendered air-tight by closing the door B, closely packed around its margins, or in any other manner fitting the case air-tight when closed. The case A may be made sufficiently strong to resist great pressure, and may be provided with a safety-valve. The interior of the case or box A is divided into three compartments by wires *b*. In the middle chamber, resting upon the wires, is the main-pan or receptacle C, which contains a bar or piece, or two or more bars or pieces, of hot iron, cut and placed as shown, or otherwise constructed and arranged, that liquid may run through or over them, and come in contact with as much of their surfaces as possible; or, the pan may contain glowing coals, or unslaked or caustic lime. The last is what I prefer to use. In the upper compartment is the pan D, the bottom of which is perforated by a number of holes, *i*, and in the lowest chamber, resting on the bottom of the case, is the small pan E. F is

a reservoir, into which one or any number of the liquids hereinafter named may be poured. The reservoir communicates with the pan C directly by the pipe K having the cock *g*, and with the upper chamber containing the perforated pan by the pipe K' having a cock, *g'*. It is obvious that the pipes K and K' may be provided with valves to prevent regurgitation. Upon the top G of the case A is the coiled pipe or worm J J, which communicates at its inner extremity with the interior of the case or box, and is provided at its outer end with a flexible or other pipe, N, having a nozzle or cock, R. The coiled pipe J J is contained within the vat or pan L L formed by the top of the case A, and its ends projecting beyond the top. A pipe or spigot, P, serves to drain the vat. M is a tube provided with a stop-cock, and leading into the lower part of the case to let in a little air when desired—*e. g.*, when the sulphur-tinder, described further on, is beginning to burn. H is a whistle, which may be in the form of the common steam-whistle.

Suppose the pan C to have been filled with unslaked lime; one or more of the liquids hereinafter named are poured into the reservoir, the cock *g'* is opened, and the liquid, running through the pipe K' upon the perforated pan or grid D, will fall like rain upon the quicklime in the pan C below. The intense heat evolved in the combination of part of the water with some of the caustic lime to form a hydrate at once converts the remainder of the water into steam, which passes through the coil J J and pipe N, and out of the nozzle R upon turning the cock.

If the fumes coming from the nozzle R are intended to kill, sulphur-tinder must have been hung upon the lower wires, and paper, rags, or the like, soaked in oil, petroleum, benzine, camphene, or spirits placed directly under it in the lowest basin E and lighted.

If the pan C contains live coals, the manner of proceeding would be the same; but if pieces of hot iron have been placed in the pan C a quantity of sulphur is thrown directly upon them, the door is closed quickly, and the liquid

is permitted to run from the reservoir directly upon the hot iron in the pan by opening the cock of pipe K.

If it be desirable not to have the fumes, gases, or vapors pass hot into the tube N and from the nozzle, the coil or worm J J is covered or surrounded by water or ice placed in the vat L on top of the case A.

If desired to test the tension of the vapors within the case previous to opening the cock R, or permitting them to escape otherwise, this may be done by means of the steam-whistle.

The whistle has also other uses in connection with the case and the gases generated, which will hereafter be described, but it may be left off entirely.

It is obvious that the whole machine may be of other form, size, or shape without departing from the spirit of my invention.

The substances which I prefer to use for fumigating and disinfecting, or for the extermination of vermin, insects, rats and mice, or for stupefying, are sulphur, phosphorus, pitch, tar, balsam of peru, turpentine, ammonia, petroleum, alcohol, chloroform, sulphuric acid, vinegar, ether, carbolic acid, and the like. The gases or vapors may leave the machine hot, or be so cooled before escaping as not to set fire to the most inflammable substances.

To fumigate where there is a corpse, or in a sick chamber, live coals are put into the pan C, and upon them are thrown juniper-berries or laurel, bay or oleander, incense or fumigating-powder, frankincense, pastiles, perfume, or any aromatic or agreeably-smelling, purifying, or refreshing substance. The door is then quickly closed, and one of the liquids—*e. g.*, vinegar—is allowed to run from the reservoir into the perforated pan, whence it will fall in drops upon the coals, and be converted into steam, which will force itself through the coiled pipe and nozzle upon opening the cock and carry with it the aromatic fumes. If hot iron be used in the pan instead of coals, the liquid may be allowed to run through both pipes—*viz.*, upon the perforated pan, and also directly upon the middle one—but both cocks should not be opened at once. The upper one should be opened first.

I will now enumerate some uses to which my invention may be applied, and will describe some methods whereby it may be carried out in particular cases.

To purify and freshen old wine-casks, &c., it is only necessary to throw sulphur upon the hot iron plates, close the door quickly, and then insert the open nozzle into the bung-hole of the cask, while for beer-barrels pitch is used. In neither case is water or ice placed on or around the coil or worm, but the fumes enter the barrels hot. Thoroughly to disinfect bed clothing, wearing apparel, &c., or free the same from vermin, it is best to put the things into a cask, box, or barrel having a perforated bottom and a hole at the top.

The machine is then charged with sulphur, vinegar, carbolic acid, any or all, or the like, and the nozzle is put into the hole. Water or ice is placed in the vat on top to cool the gases before they enter the keg, and prevent setting the clothes on fire, and the fumes are allowed to pass through until the things are purified.

To kill rats and mice, moles, &c., or render their abode uninhabitable, the machine is charged with sulphur, tar, oil of vitrol, &c., and the nozzle, wound with wet rags to make it fit tight, introduced into their holes. Ants and roaches, as well as the thousands of bugs, pinchers, and other beetles, which collect under stacks of grain, and are such a source of annoyance to those working at a thrashing-machine when the bottom bundles are going through—inasmuch as they not only run over them and pinch them, but are in great quantities mashed and mixed with the threshed grain—may be gotten rid of in a similar manner. Bees, wasps, and hornets may be killed by sulphur, and in the case of bees, not to injure the honey, the coil should be covered with water.

To purify slaughter-houses, butcher-shops, &c., it is only necessary to charge the machine, open the escape-cock, and close the doors at night. In the morning the place will be pure and fresh, and free from flies, &c. To clear an ordinary room of flies or mosquitos, let the sulphurous fumes escape for a few moments, and then open doors and windows for fresh air. Insects, worms, caterpillars, &c., on trees may be killed by letting the fumes ascend among the branches. As the machine may be made very light, the invention may be of great service to the hunter. By charging the machine and inserting the nozzle into a hollow tree where a raccoon, squirrel, or other animal has taken refuge, he can easily kill or stupefy it according to the substance employed, when the animal will fall to the bottom, and be captured without the necessity of felling the tree.

It is to the huntsman also, as well as the farmer, that the whistle may be of great service. The machine is easily and cheaply charged, while the gases generated will blow the whistle with such force that it may serve as a call or as an alarm of any kind. By having the machine, say, in the house, and keeping the reservoir filled with water, and having the middle pan filled with caustic lime, the door B being closed and the whistle-cock open, a terrific alarm might be given in an instant, by merely opening the cock K. Said cock K might be opened automatically by opening a door, by burning off a thread, or by other means.

My invention is especially adapted to the fumigating of dwellings where there have been infectious diseases, and of ships, without the danger of setting them on fire, as in the case of the Austria, the Atlanta, and

others. It is also adapted to ridding ships of rats and mice. It is well known that the most thrifty and industrious cat, if cast entirely upon her own resources, would not partake of enough rat flesh on shipboard to keep up a pleasant reminiscence of the taste, as the rats and mice live almost entirely between the timbers, while they gnaw into the food stored in the hold below; also that traps are regarded by these creatures with curiosity, truly, but also with contempt, as instead of getting into a box to procure means of subsistence they have only to come out of one. The machine need not be taken below at all. It may be on deck, or, if the vessel be in port, on the dock or wharf, and a long pipe may lead from it into the hold. In the case of emigrant-ships, the machine is excellently adapted to fumigating between decks in the steerage, purifying and disinfecting the air, and disturbing and causing the demise of the large collection of lice, fleas, and bed-bugs.

The invention may also be adapted to fumigating individuals in case of itch, swollen limbs, &c., using sulphur, camomile-flowers, &c.

Having thus fully described my invention, what I desire to claim, and secure by Letters Patent, is—

1. The method of fumigating herein described, in which the fumigating or disinfecting vapors are generated in a closed chamber, and caused to issue from the same by pressure, and either hot or cold, substantially as described.

2. The method of fumigating herein described, in which the fumigating-vapors may be generated at a distance from the place to be fumigated, and conveyed to the same, substantially as specified.

3. The combination, with the case of a dis-

infecting apparatus, of a pan adapted for receiving hot iron, coals, or lime, the pipe K having cock *g*, and a reservoir, for the purpose described.

4. The combination, with the case of a disinfecting apparatus having a tight-fitting door, B, of the pan C, perforated pan D, and pipe K', having cock *g'*, for the purpose described.

5. The combination of the case A, pans C, D, and E, pipes K, K', and M, and wires *b*, adapted to support sulphur-tinder, substantially as described.

6. The combination, with the close case of a disinfecting apparatus, of a coil or worm, and a nozzle-pipe, substantially as specified.

7. The combination, with the closed case of a disinfecting apparatus, substantially as described, of a whistle, whereby an alarm may be sounded, substantially as specified.

8. The combination, with the generating-chamber of a disinfecting apparatus, and the conducting worm or coil, of a vat for holding ice or water, whereby the vapors passing from the chamber through the coil may be cooled, substantially as specified.

9. In a machine for fumigating and disinfecting, the method of cooling the gases or vapors before they leave the machine, by causing them to pass through a pipe or pipes, which pipe is cooled by the application of water, ice, ether, or any substance which will deprive it of heat, substantially as described.

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

FREDERICK HEIDELMANN.

Witnesses:

ROBT. G. DYRENFORTH,
FRANK L. FREEMAN.