

(No Model.)

L. WELKER.

AUTOMATIC FIRE EXTINGUISHER FOR OIL ROOMS.

No. 512,927.

Patented Jan. 16, 1894.

Fig. 1.

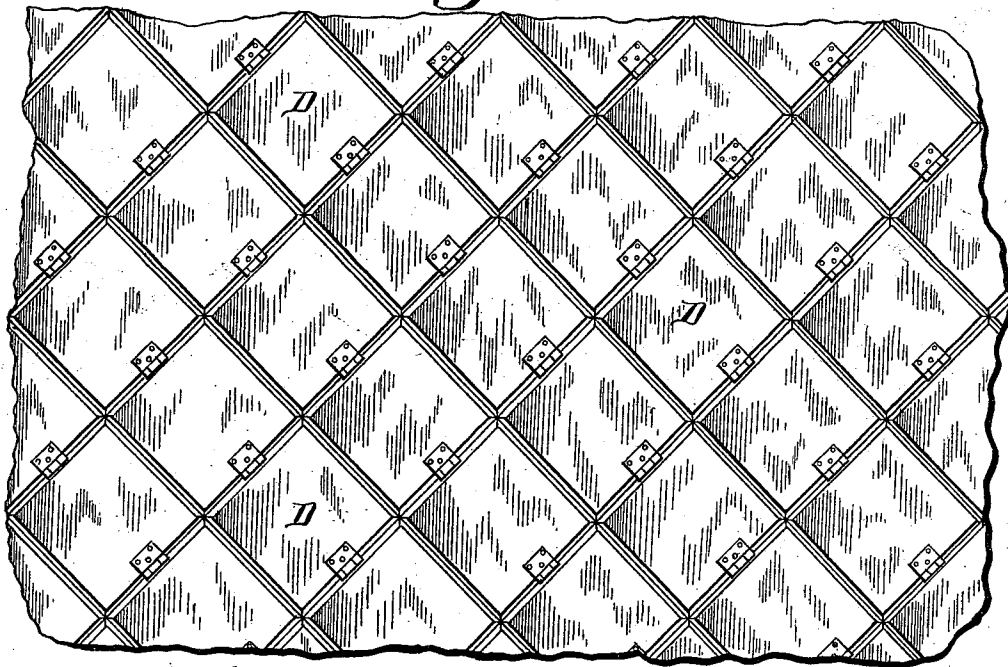


Fig. 2.

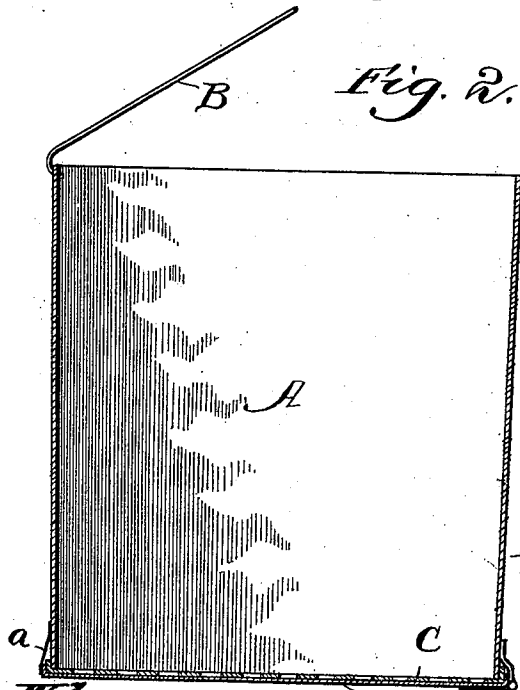
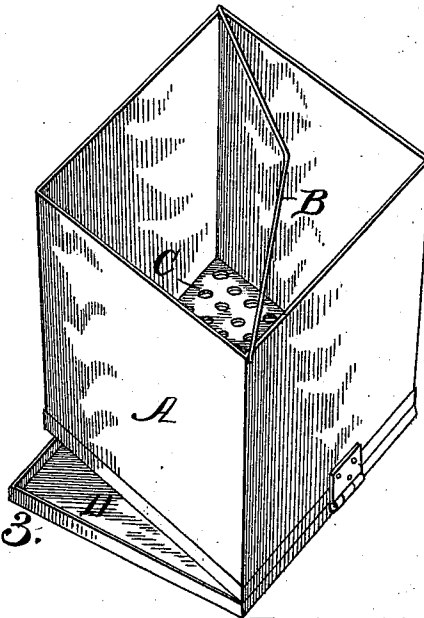


Fig. 3.



Inventor.

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UNITED STATES PATENT OFFICE.

LOUIS WELKER, OF WILLIAMSPORT, PENNSYLVANIA.

AUTOMATIC FIRE-EXTINGUISHER FOR OIL-ROOMS.

SPECIFICATION forming part of Letters Patent No. 512,927, dated January 16, 1894.

Application filed June 1, 1893. Serial No. 476,223. (No model.)

To all whom it may concern:

Be it known that I, LOUIS WELKER, a citizen of the United States, residing at Williamsport, in the county of Lycoming and State of Pennsylvania, have invented certain new and useful Improvements in Automatic Fire-Extinguishers for Oil-Rooms; and I do hereby declare the following to be a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

In many varieties of business, such as in furniture factories, carriage factories, &c., where paints, oils, naphtha, benzine, alcohol and similar inflammable liquids are employed, it is customary to store those materials in a small room, isolated as much as possible from the other rooms of the factory. Should such inflammable materials become ignited, from spontaneous combustion or otherwise, a fierce and intense fire springs up so rapidly, that it is almost impossible to extinguish it by the ordinary means now employed. Automatic fire extinguishing devices of every kind have been before suggested, and which have been used in such store rooms, and elsewhere, but, so far as I am aware, those automatic fire extinguishers have operated either by sprinkling water on the fire, or by smothering the flames by steam or a chemical gas or liquid. Regarding the second variety of extinguishers, I have found that they are not altogether certain in operation, especially when a fire is well started, and further that such extinguishers do not operate with sufficient rapidity to fill all requirements of a perfect device. Furthermore, such extinguishers are expensive to operate, and the steam or gas, being generally under pressure, tends to leak and waste away, so that such extinguishers fail to operate at critical times.

Regarding the first variety of fire extinguishers, my experiments have demonstrated to my mind, that while water, sprinkled over an ordinary fire, when first started, is an effective extinguishing agent, it is entirely worthless when used to extinguish a fire of such combustible materials, not only on account of the intensity of such flames, but because such materials will float on the water, and will continue to burn thereon, unaffected

by the water. I have discovered that the most effective extinguishing agent for a fire produced by the ignition of oil, naphtha, alcohol, and similar liquids, is a substance like sand, or which possesses the characteristics of sand. When sand, or a substance possessing the characteristics of sand, is thrown on a fire produced by the ignition of such combustible materials, I have observed that the effect produced is much quicker than with a water extinguisher. The tendency of the sand, or substance possessing the characteristics of sand, appears to be two-fold. In the first place the sand tends to cover up the burning substance in a layer of varying depth, and excluding oxygen from the flames, smothers the same with great effectiveness. In addition to this effect I have noticed that the sand acts as an absorbent, and by its porosity, absorbs a large proportion of the burning liquid, and carries it up into the layer of sand where it cannot burn. These effects are not produced by water, since water will not form in a layer above the burning substance, but sinks below it, and water will not of course absorb the burning liquid and hold it in suspension, like the sand. A substance possesses the characteristics of sand, therefore, when it possesses the requirements above set forth, viz: to be such as to form a layer over the burning liquid, to smother the flames, and to be sufficiently porous to absorb a portion of the liquid. Earth, powdered rock, powdered glass, fine iron particles, heavy dust, and shot all possess these requirements, and are mentioned as substances possessing the described characteristics of sand, and are therefore to be included as equivalents thereof. The preferable material, however, which I will use in carrying out my invention to be hereinafter described, is coarse, dry, sharp sand, which material is very cheaply procured, flows very freely, is easily kept dry and answers every purpose with great effectiveness.

In carrying out my invention, I propose to place a quantity of sand, or substance possessing the above characteristics of sand, adjacent to the store room of factories, or elsewhere, normally confined under pressure, and in withholding such substance in confine-

ment by a valve, trap, or equivalent mechanical element, normally locked, but adapted to be released by heat, and to allow such sand, or substance possessing the described characteristics of sand, to fall, or be forced, onto the flames and to cover such flames in a layer of varying depth, to smother the same, as above set out. Such sand may be confined within the ceiling of the room, or be suspended in a vessel or receptacle held above the floor and in either case, broadly considered, the sand will be under pressure. I prefer, however, to place the sand, or substance possessing the described characteristics of sand, in a number of metallic receptacles or vessels, suspended from the ceiling of the room, side by side, so as to occupy all, or substantially all of the ceiling space. The said metallic receptacles or vessels are to be provided with a hinged bottom, normally closed so as to retain the sand therein, but adapted to be opened by the heat of the burning material, and to allow the sand to drop upon, and smother the same. In order that the mechanical construction of such vessels or receptacles may be understood, and the manner in which they are to be used may be comprehended, I direct attention to the accompanying drawings, forming a part of this specification, and in which—

Figure 1. is a plan view of a ceiling showing my improvements suspended therefrom; Fig. 2. a sectional view of one of the vessels or receptacles; Fig. 3. a perspective view thereof.

In all of the above views corresponding elements are designated by the same letters of reference.

A. represents the body of the vessel or receptacle, which is to be made preferably of galvanized iron, in lieu of which, however, tin, brass, copper, wood or other suitable material may be substituted. This body A. is shown as being made in the form of a truncated pyramid, its lower end being smaller than its upper end, so that a large number of the vessels or receptacles may be nested together for convenience and economy in transportation. Any other shape may, however, be employed, that shown being preferable.

B. is the bail or handle of the vessel or receptacle, which I have shown as being secured to opposite corners thereof, and being right angled, so that such bail or handle, in transportation, may be thrown to either side, and be parallel with two of the sides of the body A.

By making the bail or handle B. right angled as shown, it will center itself on the hook, nail, or chain, by means of which the vessel or receptacle will be suspended from the ceiling, so that such vessel or receptacle will always hang evenly therefrom.

Near the lower end of the body A. is placed a perforated bottom C. the perforations therein being of sufficient diameter to allow the

sand or other substance to flow freely through the same.

D. is the bottom proper of the body A. which I have shown as being hinged at one side, and which is directly beneath the perforated bottom C.

The bottom D. is adapted to be normally closed, so as to retain the sand, or other substance within the body of the receptacle, but upon the heat in the room rising to too great a temperature, the said bottom is to be released, so as to open and allow the sand to fall upon and extinguish the flames. This result may be accomplished in a great many ways such as by means of a small piece of soft solder, at *a*. A sufficient number of these vessels or receptacles having been obtained, I close the bottoms D. of the same in any desired manner, as above indicated, and fill the body A. of each with a sufficient quantity of sand, or substance possessing the described characteristics of sand. I then suspend the said vessels or receptacles from the ceiling of the room, by means of hooks, nails, chains or other supporting devices, so that the said vessels or receptacles will hang therefrom, side by side, as shown in Fig. 1.

By making use of the perforated bottoms C. a large percentage of the weight of the sand, or other substance, will be supported thereby, instead of by the bottom D, which may thereby be normally closed by more delicate and sensitive means than would otherwise be possible. The vessels or receptacles, being thus suspended from the ceiling, will not obstruct the room in any way. Should a fire become started in the oil, naphtha, or other inflammable liquid, the heat therefrom will cause the bottom D. to swing open (either by melting the soft solder *a* burning the retaining cord, or operating the thermostat or heat regulator), thereby allowing the sand, or other substance, to flow through the perforated bottom C. onto the flames, acting to extinguish the same as before explained. The sand thus being deposited on the flames, will not only quickly extinguish the same, but will not leak through the floor, and damage materials and products below the same, like water. By making the vessels or receptacles of metal, as before explained, the sand or other substance, will be kept always in a dry condition, so that it will flow rapidly through the perforated bottom C, and be distributed gradually, and in an even manner over the burning material. If the sand, or other material, is to be confined in pipes, or distributed on the flame in other ways, contemplated by this description care should be taken that such sand, or such other material, should be kept perfectly dry, so as to be spread evenly and gradually over the burning substances. It should be understood that I am not limited to the particular means or manner described, of distributing the sand, or other substance over the flames, since there are many other means and

methods for accomplishing the same purpose.

Having now described my invention, what I claim is—

5 1. The means for extinguishing fires, which consists of confined sand, or other substance possessing the described characteristics of sand, normally under pressure, and adapted to be released by heat, and distributed, substantially as set forth.

10 2. The means for extinguishing fires in rooms, which consists of a plurality of vessels or receptacles, suspended above the floor, and having openings therein, normally closed, and
15 sand, or other substance possessing the described characteristics of sand, in said vessels or receptacles and means for releasing such sand by heat, substantially as set forth.

20 3. As a means for extinguishing fires, a vessel or receptacle, having the bottom D. nor-

mally closed, but adapted to be released and opened by heat, and sand, or other substance possessing the described characteristics of sand, in said vessel or receptacle, substantially as set forth.

25 4. As a means for extinguishing fires a vessel or receptacle, having the perforated bottom C. the bottom D. beneath the same, normally closed by soft solder, or other substance affected by heat, said vessel or receptacle being filled with sand, or other substance possessing the described characteristics of sand, substantially as set forth.

30 In testimony whereof I affix my signature in presence of two witnesses.

LOUIS WELKER.

Witnesses:

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ANTOINETT L. SOHON.