

3 Sheets—Sheet 1.

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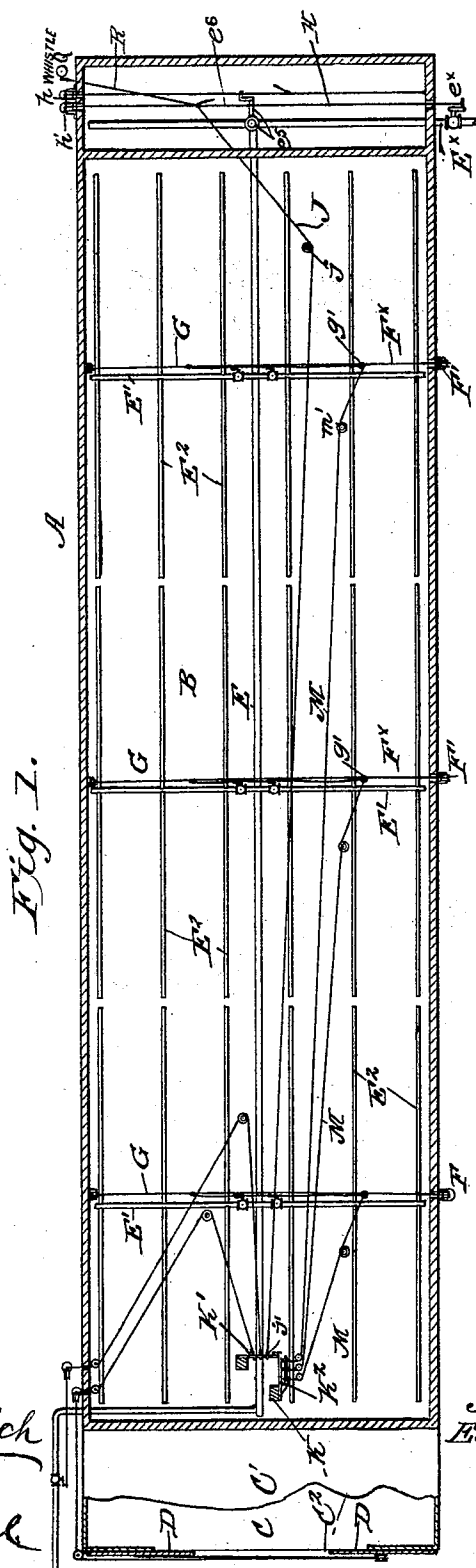


Fig. 1.

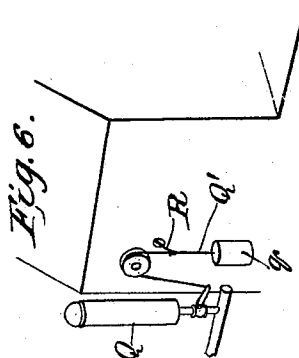


Fig. 6.

WITNESSES:

Fred G. Dietrich

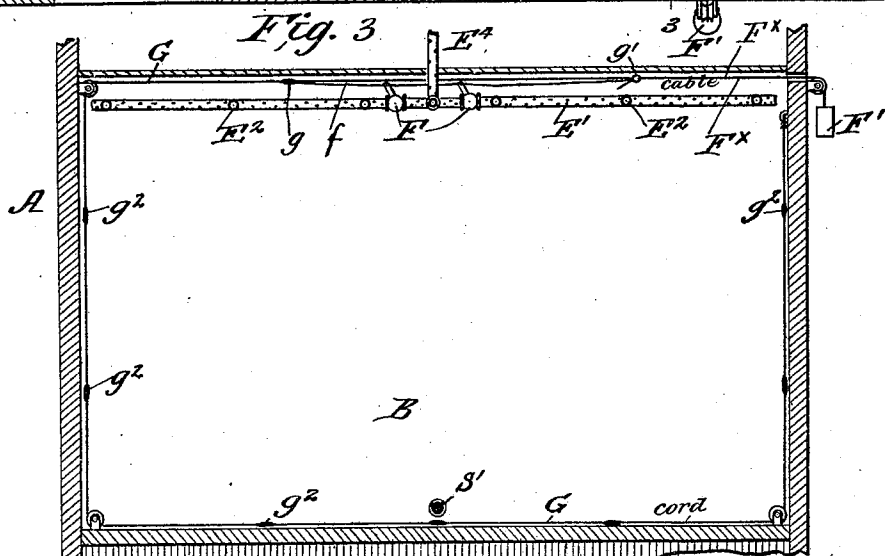
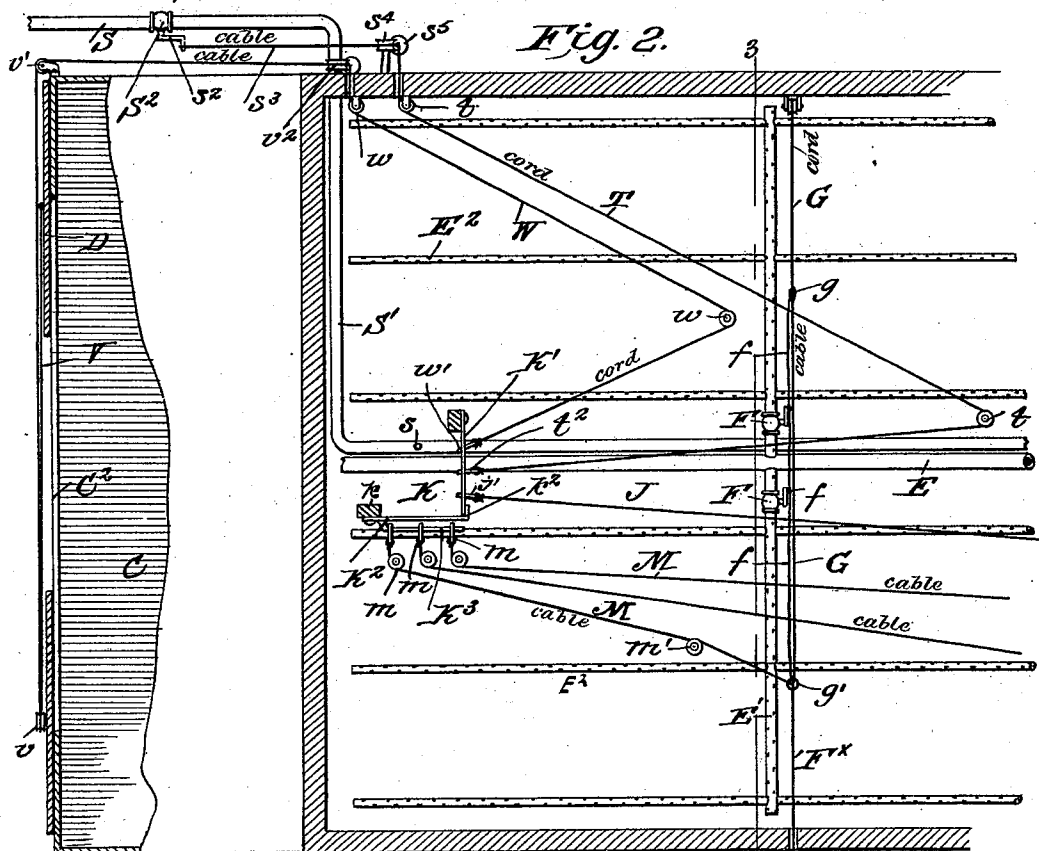
W. B. Blondel

INVENTORS  
James C. Morton  
Edward B. Freeman  
BY *Munn & Co*  
ATTORNEYS

J. C. MORTON & E. B. FREEMAN.  
COMBINED FIRE EXTINGUISHER AND ALARM.

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# UNITED STATES PATENT OFFICE.

JAMES C. MORTON, OF WASHINGTON, NORTH CAROLINA, AND EDWARD B. FREEMAN, OF NORFOLK, VIRGINIA.

## COMBINED FIRE EXTINGUISHER AND ALARM.

SPECIFICATION forming part of Letters Patent No. 516,939, dated March 20, 1894.

Application filed June 9, 1893. Serial No. 477,101. (No model.)

*To all whom it may concern:*

Be it known that we, JAMES C. MORTON, residing at Washington, in the county of Beaufort and State of North Carolina, and EDWARD B. FREEMAN, residing at Norfolk, in the county of Norfolk and State of Virginia, have invented a new and Improved Combined Fire Extinguisher and Alarm, of which the following is a specification.

Our invention relates to a fire extinguishing and alarm mechanism, more particularly adapted for use in connection with lumber driers and the like, and it has for its object to provide a kiln or drier, equipped with a system of flood pipes connected with a suitable source of water or steam supply or both, and with mechanism adapted to open such source of supply in case the kiln gets on fire.

It has also for its object to provide means whereby the draft or stack flue and the doors will be automatically closed and an alarm automatically sounded or given by a whistle or gong at the same time the kiln is flooded.

With other minor objects in view all of which will hereinafter be referred to, our invention consists in the peculiar novel combination and novel arrangement of parts, all of which will hereinafter be first described and then particularly pointed out in the claims reference being had to the accompanying drawings in which—

Figure 1 is a horizontal sectional plan view of a kiln equipped with our improved mechanism. Fig. 2 is a detail plan view illustrating one section of the kiln and our improved extinguishing mechanism on an enlarged scale. Fig. 3 is a transverse section of the kiln taken on the line 3—3 Fig. 2. Fig. 4 is a transverse section taken through the stack, on the line 4—4 of Fig. 1. Fig. 5 is a detail perspective view of the front end of the kiln illustrating the steam pipe valve and the door operating devices. Fig. 6 is a detail view illustrating the whistle operating devices.

The kiln proper A may be in general of the ordinary construction, and has the usual storing or lumber holding compartment B, which opens at its rear end into the stack and the heating chamber C beneath it which extends at the front end under the usual

platform C', and has at such end the draft or feed opening C<sup>2</sup>, adapted to be closed by the slide doors D D, which doors in the present construction are arranged to be closed automatically in case of fire, in a manner hereinafter explained. The chamber C may be formed into a series of furnaces, or may be provided with any other system of heating.

Centrally or on one side of the top of the chamber B and extended longitudinally its entire length is disposed a flood pipe E, which may or may not be perforated and which has a series of lateral perforated pipes E' each of which has in turn a series of longitudinally arranged perforated branch pipes E<sup>2</sup>, such perforated pipes being arranged to form the kiln as it were, into sections, each of which is equipped with devices which will serve in case of fire in any one part or section of the kiln chamber to operate to turn on the water into all the pipes of such section and flood the corresponding part of the kiln.

As the devices which operate all the sections are alike we shall describe but one section in detail.

Referring now more particularly to Figs. 2 and 3 of the drawings, in which the general arrangement of such operating devices is most clearly shown, F F indicate valves, located in the lateral pipes E' at a point adjacent to their connection with the main pipe E, and to such valves is connected the end *f* of a cable F<sup>x</sup>, which extends to one side of the kiln chamber and has a weight F', and to such cable is connected a rope G, one end of which is secured to the kiln wall, while its main portion passes over pulleys at the sides and bottom of the kiln, its free end passing over a guide pulley at the ceiling of the chamber, and is secured to the end *f* of the cable, by a fusible joint *g*, to overcome the normal strain of the weight F' on the valves F F, the rope extends beyond such valves and connects with a ring *g'* on the cable as shown. The rope G has a series of fusible connections *g<sup>2</sup> g<sup>2</sup>*. The main flood pipe E extends into the stack and then branches to the outside as at E<sup>x</sup> and connects with the supply tank X, or if desired may be connected with the city water main or main from steam pump and

such pipe section  $E^x$  has a cut off valve  $e^x$ , with which connects a cable  $H$  which passes over a guide pulley  $h$  and has a weight  $h'$  which is normally held up by means of a cord  $J$  connected thereto, which passes over guides  $j$  on the top of the kiln chamber, and extends to the front end thereof its free end which has a ring  $j'$  fitting on the arm  $K'$  of a trigger device  $K$ . This device consists of the spring arms  $K'$   $K^2$  secured at one end to blocks  $k$  secured to the kiln top, the outer end of one  $K^2$  of which has a lock finger  $k^2$  which normally slips over the end of the member  $K'$  and thereby holds it to its locked position. The member  $K^2$  has a projecting hook like member  $K^3$  over which is adapted to fit rings  $m$  on the ends of cables  $M$ , which pass over guide pulleys  $m'$   $m'$  and connect with rings  $g'$  on the cables  $G$ .

So far as described it will be readily seen that after the several parts have been adjusted to their proper or normal position should a fire occur in the kiln chamber, and the heat or fire either burn the cord  $G$  or sever it by melting one or more of its fusible joints, the weight on cable  $F^x$  would fall and in doing so operate to open the valves  $F$ , and thereby open up communication between the pipe  $E$  and the lateral branch pipes  $E'$  of the particular section or sections in which fire is located. At the same time the cable  $M$  will be pulled upon, which will draw the tripper arms  $K'$   $K^2$  apart, and in so doing free the cord  $J$ , and thereby permit the weight on cable  $H$  to drop and as it does so it will, as it pulls upon the cable, open the valve in the main or flood pipe, and allow the water under full head from the water main or tank to pass out through the perforated pipes in the section where the fire is located.

It should be stated that by making a cord connection  $J$  between the trigger and the valve  $E^x$ , renders the operation of the valve cable  $H$  the more positive, in that in some instances the fire may occur in such parts of the kiln, as to sever the cord in advance of the cord  $G$ , turning on the water as it were before the valves of the sub-pipes are opened. It will be also clearly understood that one cable  $M$  is used for each section of distributing pipes.

From the main flood pipe  $E$  extends a branch section  $E^4$  which projects up into the stack see Fig. 4—and such section has a spray pipe portion  $e^4$  and a valve  $e^5$  with which connects a cable section  $e^6$  also weighted as at  $e^7$ , and such weight  $e^7$  is held up to its elevated position by the cord  $e^8$  which extends up into the stack, such arrangement of devices providing for a flooding of the stack, in that should the fire reach the stack the cord  $e^8$  would burn and thereby permit the weight on the cable  $e^6$  to pull it taut and operate to open the valve  $e^5$ .

Connected with the cable  $H$ , is a cable section  $N$ , which passes over guides in the sides

of the stack and connects at its upper end with a tripper stick  $O$  which when arranged as shown in Fig. 4 serves to hold the stack cut off or valve or trap  $P$  open, it being manifest that so soon as cable  $H$  is drawn taut by the descent of its weight the stick will be pulled from under the trap  $P$  and such trap will close to cut off the draft from the stack.

$Q$ , Fig. 6, indicates an alarm which preferably is in the nature of a steam whistle, or gong, located conveniently near the kiln, at the stack end, to the operating valve lever of which is connected a weighted cable  $Q'$ , the weight  $q$  of which is held normally to its elevated position by a cord connection  $R$ , secured to the cable  $H$ , as shown most clearly in Fig. 1, such construction providing a simple and effective means, for sounding an alarm so soon as the cable  $H$  is released from its locked or normal position, such operation being effected, by the dropping of the weight  $q$ , which will operate the whistle lever, and thereby cause a continued alarm so soon as fire takes place in any part of the kiln chamber.

$S$  indicates a steam pipe, which has a branch member  $S'$  extending into the kiln chamber longitudinally over the floor, and such member has a series of discharge orifices  $s s$  as shown.

$S^2$  indicates a cut off valve, to the lever arm  $s^3$  of which is connected one end of a cable  $s^3$  which cable passes up over a pulley  $s^4$  on the side of the kiln chamber (see Fig. 2) and has at its free end a weight  $s^5$ . Normally this weight is held to its elevated position by means of a cord  $T$ , which passes over guide pulleys  $t t$  on the kiln frame, and has at its free end a ring  $t^2$  which connects with tripper arm  $K'$ , see Fig. 2.

$C^2$  indicates the draft or feed openings at the front or platform end of the kiln over which are held to slide the doors  $D D$  which in practice are supported on guides to close toward the center of the opening  $C^2$ . To one of the doors is secured, preferably at its center a cable  $V$  which passes over a pulley  $v$  on the center of the opposite door, then extends back again and passes over guide pulleys  $v'$   $v^2$ , its free end carrying a weight  $v^3$  as shown. This weight is normally held to its elevated position by a cord  $W$  which passes over guide pulleys  $w w$  in the kiln body, its end which has a ring  $w'$  being secured upon the arm  $K'$  of the trigger devices.

By reference to Fig. 1 it will be clearly understood that as soon as the trigger arm  $K^2$  becomes released in the manner heretofore described, the hold back cords  $T$  and  $W$  will become released and in consequence allow the weights  $s^5$  and  $v^3$  to pull upon their respective cables and at the same time open the valve in the steam pipe, and allow live steam to enter the pipe  $S'$  to discharge into the kiln chamber, to assist in extinguishing the fire, while the doors  $D D$  will be imme-

diately closed to shut off draft from the flue chamber.

From the foregoing taken in connection with the drawings it will be readily understood by the construction shown, that should a fire occur in any part of the kiln, water will be turned in such portion, an alarm be caused to sound, the draft in the kiln stack and at the front end of flue chamber cut off, and a head of live steam turned into the kiln chamber, all in substantially the same moment.

By providing cable connections for supporting the weights and operating the several valves in the water and steam pipes as also the whistle and door operating devices, such connections will not burn out, thereby leaving them in condition to be readily placed back again to their operative positions.

While we have shown our improved devices as in use with a lumber drying kiln, it is manifest that they may be readily and economically applied to any structure in connection with which they may be beneficially used.

The cord connections heretofore referred to may be formed of wire chains of fusible cables if desired.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In a combined fire extinguisher and alarm mechanism, the combination with the drying chamber, the main supply pipe having valved lateral flushing members and a main cut off valve, a weighted cable connected to the valve of the lateral flushing members, a fusible rope secured within the said chamber, and to the cable at a point in advance of its connection with the valves, said rope adapted to hold the weight on the cable up to its elevated position, of a tripper device, a connection between it and the weighted cable adapted to release the tripper when the said cable is pulled upon, a weighted cable H connected to the valve of the main supply pipe and a connection between such cable H and the tripper devices, adapted when the said tripper is held locked to relieve the cable H of its weight strain, all substantially as shown and described.

2. A fire extinguishing apparatus for lumber drying kilns and the like, consisting of a valved main pipe extended longitudinally in the kiln chamber, having a series of valved laterals provided with perforated flushing members, independent weighted cables connected to the valved laterals in each series, fusible cords located in the kiln chamber secured to the said cables and adapted to normally sustain the weight strain on such cables, a tripping mechanism, independent connections between each of the weighted cables, and the trippers, valve releasing means, connected with the valve of the main supply pipe, and connections between the tripper and such means, arranged to hold the said

releasing means from operation when the tripper is in its locked position all substantially as shown and described.

3. In a fire extinguishing mechanism for the purpose described, the combination with the chamber and the stack, the main water pipe, having valved laterals extended in the chamber, the weighted cable connected to the valves thereof, a fusible cord located in such chamber and connected with the said cable to normally sustain the weight in its elevated position, of a cut off or trap plate, in the stack, a tripping stick for holding it up, a trigger device, and connections between such device, the trigger stick and the weighted cable, all arranged substantially as shown whereby the trigger device will be released and the tripper stick pulled from under the stack trap plate, when the fusible cord in the kiln chamber is separated, as and for the purposes described.

4. A fire extinguishing mechanism for lumber driers, comprising a main flood pipe, having perforated valved laterals, a valved steam supply pipe, having a perforated branch member said perforated pipe and flood pipes located within the kiln chamber, weighted cable F<sup>x</sup> connected with the valves of the flood pipes, a weighted cable S<sup>3</sup> connected with the steam pipe valve, a fusible cord held in the kiln chamber arranged to sustain the weight on the cable F<sup>x</sup> to its elevated position, a trigger device, a cord connected to such trigger device and to the cable S<sup>3</sup> for holding its weight to its elevated position, and a connection between the cable F<sup>x</sup> and the trigger, all arranged substantially as shown whereby when the fusible cord separates, the trigger will be released, and cables F<sup>x</sup> and S<sup>3</sup> will pull upon the valves of the flood pipes and steam pipe, to simultaneously discharge water and steam into the kiln chamber as and for the purposes set forth.

5. In a fire extinguishing mechanism substantially as described, the combination with the drying and heating chambers and the slide doors over the opening of the heating chamber, of a main flood pipe having perforated valved laterals, a weighted cable connected to such valves, a fusible cord connection in such chamber adapted to normally sustain the weight on such cable, a tripper device, connected with the weighted cable and adapted to be released as such cable is drawn taut by the fall of its weight, a weighted cable connected to the aforesaid slide doors and a rope connection between the said doors and the trigger device adapted to normally support the weight on the door cable, all substantially as shown and for the purposes described.

6. In a combined fire extinguishing apparatus and alarm, for lumber driers, in combination, the drying chamber, a main flood pipe having valved and perforated laterals, a weighted cable connected to the valves

of such laterals, a fusible cord held in such chamber connected with the said cable to normally hold the weight elevated, a trigger device, an alarm, a weighted operating cable  
5 connected to such alarm, means for holding such operating cable from operation, and cords connecting such means with the trigger and the trigger with the flood pipe valve

operating cable, all substantially as shown and for the purposes described.

JAMES C. MORTON.  
EDWARD B. FREEMAN.

Witnesses:

SAMUEL M. LLOYD,  
GEO. MCBLAIR.