

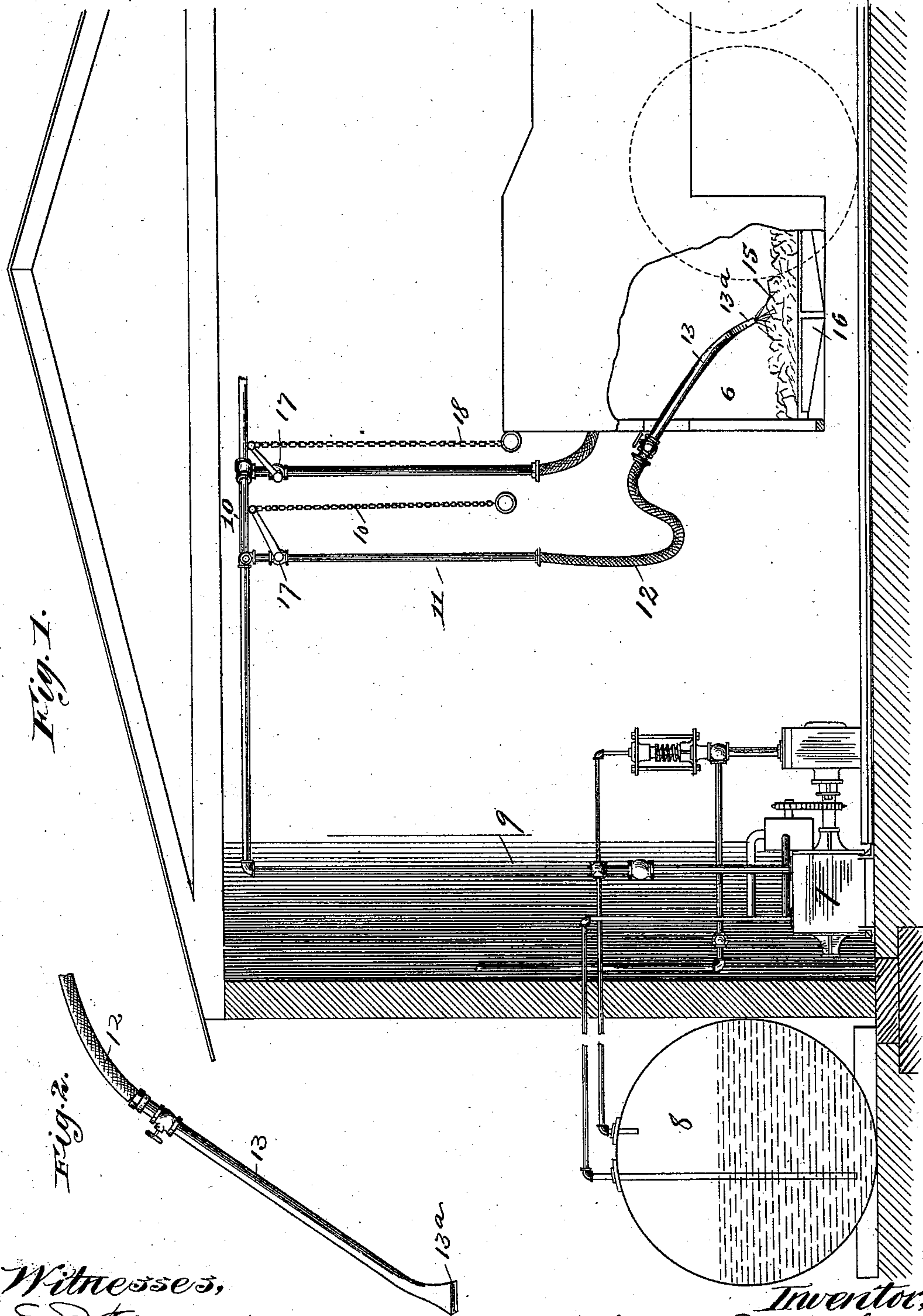
(No Model.)

C. T. SMITH.

METHOD OF AND APPARATUS FOR KINDLING FIRES IN LOCOMOTIVES.

No. 556,167.

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UNITED STATES PATENT OFFICE.

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METHOD OF AND APPARATUS FOR KINDLING FIRES IN LOCOMOTIVES.

SPECIFICATION forming part of Letters Patent No. 556,167, dated March 10, 1896.

Application filed August 24, 1894. Serial No. 521,174. (No model.)

To all whom it may concern:

Be it known that I, CHARLES T. SMITH, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Methods of and Apparatus for Kindling Fires in Locomotives, of which the following is a full, clear, and exact specification.

My invention relates to a method of and apparatus for kindling fires in the fire-boxes of locomotives; and the object of the invention is to more quickly and economically effect ignition of solid fuel in a locomotive fire-box than according to the methods in vogue prior to my invention.

To this end my invention consists, broadly stated, in a means for kindling fires in locomotive-boilers by an igneous blast from a hydrocarbon fuel, which blast is by means of a flexible supply-pipe and a shiftable torch or burner directed downwardly into or across the mass of fuel placed upon the grate-bars within the fire-box.

A practicable means for kindling fires in locomotive-boilers must include a readily shiftable or movable burner or torch which can be carried into the cab and inserted through the door of the fire-box of the boiler, and the kindling or ignition of the fuel must be effected by direction of an igneous blast downwardly or at a suitable angle across the mass of fuel, and, of course, the apparatus must include means for producing a jet of flame which will act upon and rapidly ignite the fuel mass.

I have shown in the accompanying drawings a practical and efficient apparatus of the character above described, and one which is readily adapted for use in a locomotive roundhouse, where it takes up but little room, and which can be readily applied to the kindling of a fire in a locomotive in any stall of the house, thereby obviating the necessity of storing kindling in or adjacent to the building, and which will effect a great economy of material and time in kindling fires.

In the drawings, Figure 1 is a sectional elevation through a roundhouse, a locomotive being indicated therein, and showing in elevation a shiftable burner projected through

the fuel-door of the fire-box and means for supplying hydrocarbon fuel in a finely-divided or atomized condition under blast to the burner. Fig. 2 is a detail view of the shiftable burner and flexible supply-pipe therefor.

In the drawings the fire-box of a locomotive-boiler is indicated at 6, and it will be understood that said locomotive is in one of the stalls. A suitable air-compressor is indicated at 7, and a storage-tank for oil or other fluid hydrocarbon at 8.

9 represents a delivery-pipe through which the fluid in a finely-divided or atomized condition is supplied to the burner under blast, and said pipe may communicate with a header 10, extending around the roundhouse back of the pits and having descending branches 11 at each stall.

12 represents a flexible pipe or tube used for connecting the burner with the supply-pipe or the branch thereof. The burner may be of any convenient form, but it preferably comprises a metal pipe 13, terminating in a flattened nozzle 13^a, as shown in Fig. 2.

The burner is preferably constructed of metal, but no part of it need be of metal or of a refractory material, because the burner is at no time embedded in or subjected to the heat of the combustible mass, and the fluid fuel being delivered under blast of sufficient force to drive the burning particles away from the orifice of the burner the latter does not become heated.

The metal pipe 13, constituting the shank of the burner, may serve as a retort for mingling the air and oil; but this is not a necessary function of the metal pipe 13, because the air and oil may mingle at any point before they reach the burner tip or nozzle.

In use the burner may be inserted through the door of the fire-box, as indicated in Fig. 1, the flexible pipe-section 12 permitting this to be done and also permitting the burner to be shifted in all positions over the mass of fuel (indicated at 15) on the grate-bars 16. The air-compressor being put to work will deliver the fluid finely divided and under blast through the supply-pipe and nozzle, and ignition being effected the burner is shifted over the mass of fuel and the blast penetrates the mass, effecting ignition quickly.

An essential feature is the provision of a flexible section of the fuel-supply pipe, whereby the burner is adapted to be carried into the cab and inserted through the fire-box door. This dispenses with the complicated, expensive and really impracticable apparatus previously described and which have been attempted to be used in kindling furnace-fires. Of course it will be understood that the flexible section, or at least the burner, may be removable, so that it may be carried from stall to stall; but, if preferred, the flexible section may be long enough to reach from stall to stall. It will be found expedient to provide at some point in the supply-pipe, and preferably in the branch 11, a valve, as shown at 17, with a valve-operating chain 18, so that the supply will be controlled at will.

I have not particularly described herein the air-compressor or the means for delivering the fluid fuel to the burner, as my invention may be carried out with any suitable form of apparatus and therefore with a widely-different construction of apparatus from that herein shown.

The method of and apparatus for kindling fires which are above described and herein-after claimed refer only to the kindling of fires in which solid fuel is used, and in which the ignition of the mass of solid fuel is effected by an igneous blast directed downwardly into or across the upper surface of the

mass to be ignited, and does not include those methods in which ignition is effected or attempted to be effected by radiated heat or by a flame ascending through the mass. In other words, my method and apparatus are adapted to the kindling of fires by the direct application of an igneous blast directed downwardly or across the upper surface of the fuel mass to be ignited.

In the drawings the burner is shown in juxtaposition to the solid fuel to be ignited; but this is not necessarily the relation of the burner to the fuel, because the combustible mixture is delivered under such pressure as to drive the igneous blast across a considerable space and into the interstices of the fuel.

I claim—

The herein-described apparatus for kindling fires, in locomotive fire-boxes, comprising means for delivering a hydrocarbon fuel under blast, said means including a flexible pipe and a burner connected with said flexible pipe and adapted to be inserted through the door of the fire-box and shifted over the grate whereby a blast of burning fuel may be directed downwardly to a bed of solid fuel resting upon the grate to effect ignition thereof, substantially as described.

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