

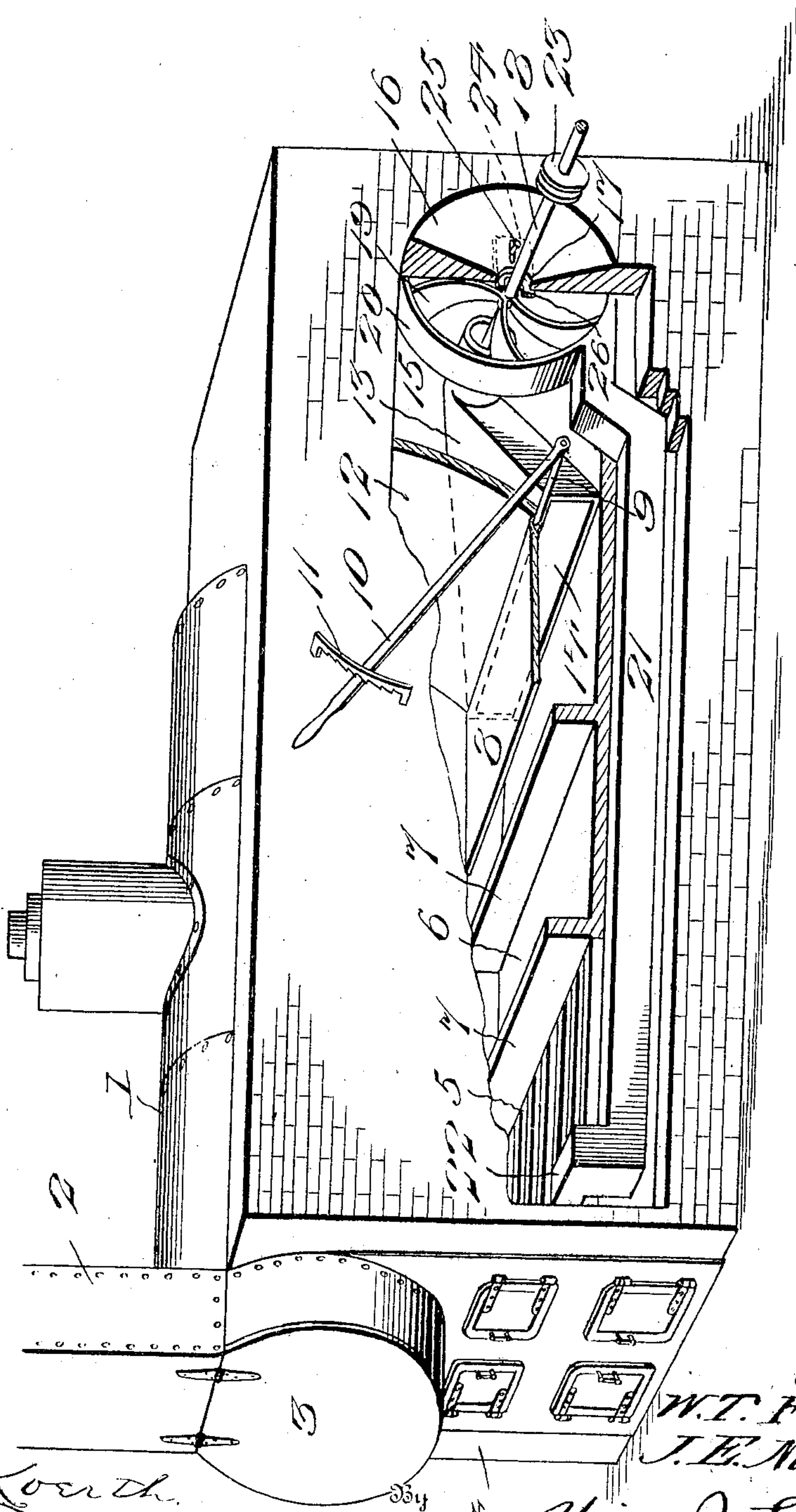
No. 810,741.

PATENTED JAN. 23, 1906.

W. T. FLING & J. E. NICHOLS.

SMOKE CONSUMER.

APPLICATION FILED MAY 18, 1905.



Witnesses

Wm. North.
F. J. Almore

Inventors

W. T. Fling,
J. E. Nichols,

Victor J. Crane
Attorney

UNITED STATES PATENT OFFICE.

WALTER T. FLING AND JOHN E. NICHOLS, OF HOLT, MISSOURI.

SMOKE-CONSUMER.

No. 810,741.

Specification of Letters Patent.

Patented Jan. 23, 1906.

Application filed May 18, 1905. Serial No. 261,010.

To all whom it may concern:

Be it known that we, WALTER T. FLING and JOHN E. NICHOLS, citizens of the United States, residing at Holt, in the county of Clay and State of Missouri, have invented new and useful Improvements in Smoke-Consumers, of which the following is a specification.

This invention relates to smoke-consumers, and has for its objects to produce a comparatively simple inexpensive device of this character which in practice will effectually consume the smoke and similar products of combustion, one wherein the smoke and heated air will be divided and directed to their respective destinations, and one wherein the current of air supplied to the induction-fan may be readily regulated, as required.

With these and other objects in view the invention comprises the novel features of construction and combination of parts more fully hereinafter described.

In the accompanying drawing the figure is a perspective view of an engine-boiler equipped with a smoke-consumer embodying the invention.

Referring to the drawing, 1 designates a boiler of usual construction having a smoke-stack 2, provided at its lower end with a door 3, said boiler, which is shown herein as being of the stationary type, being equipped with a furnace 4.

The furnace 4 has therein a fire or combustion chamber 5, in rear of which is disposed a cinder-pit 6, formed by a pair of fire-walls 7, arranged in spaced relation and extended transversely of the furnace, there being disposed in rear of the second or rear fire-wall 7 a movable separating member or damper 8, preferably in the form of a pivoted metal plate carried by a horizontal transversely-disposed shaft 9, journaled at its ends in suitable bearings in the side walls of the furnace and equipped at one end with an operating member or lever 10, designed for engagement with a tooth-rack 11 for maintaining the damper in adjusted positions, while in rear of the damper there is disposed a partition or arch 12, arranged vertically and designed for directing heated air to the boiler-tubes, it being understood that the heat enters the tubes at the rear of the boiler and travels forwardly for exit through the stack 2.

Disposed in rear of the second fire-wall 7 and appropriately spaced therefrom is a smoke-collecting member or bell 13, having

its enlarged open end or mouth 14 disposed vertically beneath the rear pivoted end of the damper 8, said collector or bell having rearwardly-converging edge walls and terminating at its rear reduced end in a horizontal laterally-projecting tubular delivery portion or section 15, having its outer open end disposed toward one side wall of the furnace, said side wall having formed therein a conical cavity or recess 16, arranged concentric with the tubular portion 15 and terminating in a central opening 17 in axial alinement with the open end of the latter.

Entered through the opening 17 and extending into the open end of the tubular discharge 15 is a shaft 18, journaled in suitable bearings and carrying a fan 19, housed in a marginal or peripheral casing 20, sustained in the furnace and communicating with the rear end of the smoke flue or duct 21 extending longitudinal of the furnace 4 and having at its forward end a laterally-projecting discharge portion or mouth 22, adapted to deliver smoke and other products of combustion into the forward end of the combustion-chamber 5, there being fixed upon the shaft 18 a belt-pulley 23 to permit belt connection of the shaft 18 with any suitable source of power for driving the fan 19.

Slidably connected with the furnace-wall by means of a pin 24, disposed in a slot 25, is a draft-controlling member or valve 26, adapted for regulating the size of the opening 17 to govern the amount of air drawn into the fan 19, for a purpose which will presently appear.

In practice as the heated air and smoke and other products of combustion pass from the combustion-chamber 5 rearwardly in the furnace the cinders will be deposited in the pit 6, and by suitably regulating the separating member or damper 8 the heated air will be directed upwardly against the arch 12, and thence into the tubes, while the smoke and other products of combustion will enter the collecting member 14 and be drawn therefrom by the fan 19 and forced forwardly through the flue or duct 21 for delivery into the combustion-chamber, it being understood that during the operation of the fan a sufficient quantity of air is drawn in and mixed with the smoke and carried with the latter through the flue 21 to the fire-chamber, thus insuring a proper combustion in the latter. It is to be particularly observed that the damper may be adjusted to accord with the volume of smoke rising from the bell and

that the quantity of air taken by the fan 19 may be regulated through the medium of the cut-off valve 26, thus adapting the parts for proper regulation to accord with the state of combustion in the fire-chamber.

From the foregoing it is apparent that there is produced a simple device which may be inexpensively installed and one which in practice will thoroughly and effectually collect the smoke and return the same to the fire-chamber for consumption, thus obviating the passage of smoke through the boiler-tubes, with consequent fouling of the latter, it being understood that in attaining these ends minor changes in the details herein set forth may be resorted to without departing from the spirit of the invention.

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

In a device of the class described, a furnace

provided with a combustion-chamber, a fan-casing, a duct connecting the latter and chamber for communication, one wall of the furnace being provided with a recess terminating in an opening leading through said wall to the casing, a smoke-collecting bell arranged in the furnace and having communication with the casing, a fan in the latter operable for drawing smoke from the member to the casing and forcing it through the duct to the combustion-chamber, a fan-operating shaft extended through the opening in the furnace-wall, and a cut-off valve for regulating the size of said opening.

In testimony whereof we affix our signatures in presence of two witnesses.

WALTER T. FLING.
JOHN E. NICHOLS.

Witnesses:

A. C. EBY,
E. T. HOCKADAY.