

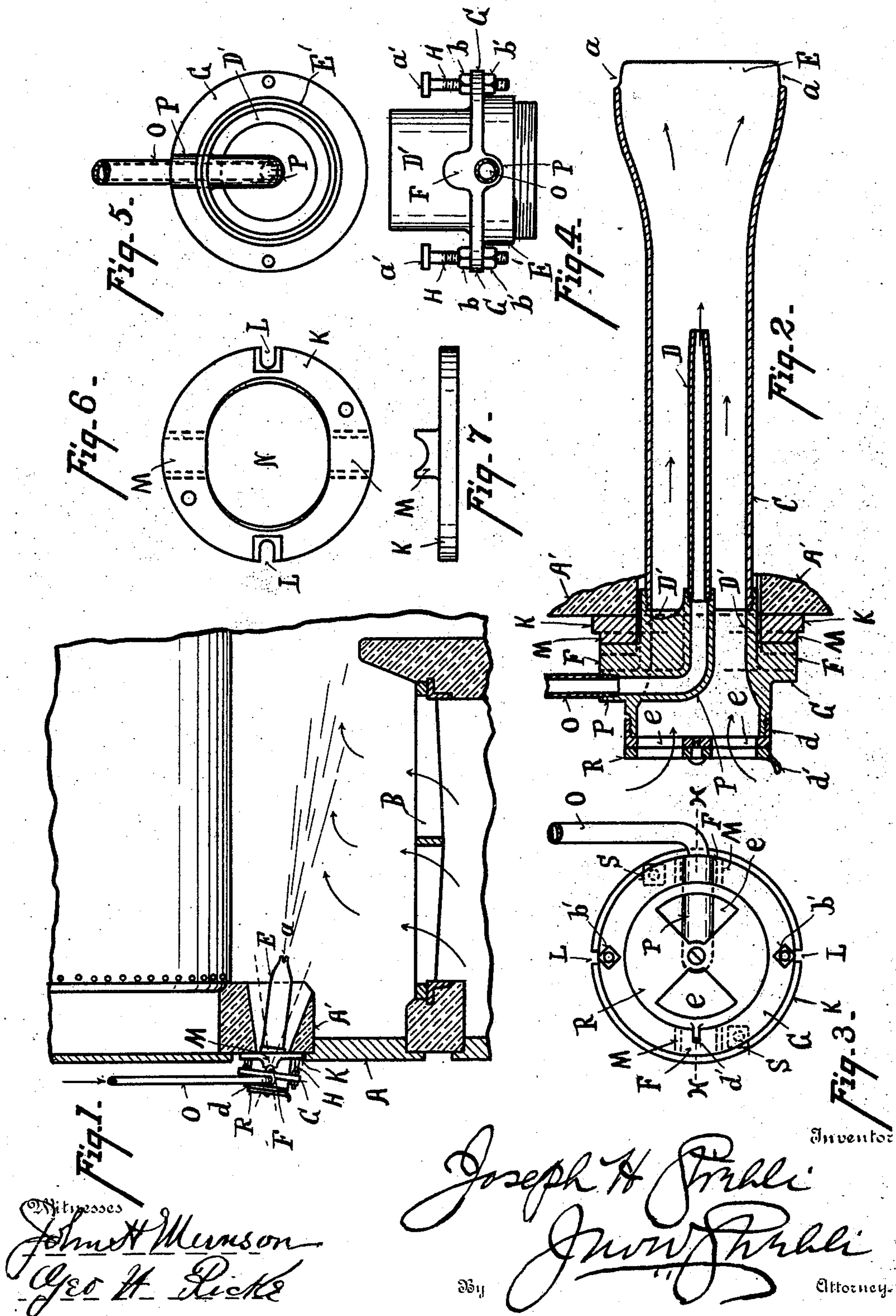
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Patented Jan. 7, 1902.

J. H. STREHLI.
SMOKE CONSUMING DEVICE.

(Application filed Apr. 1, 1901.)

(No Model.)



UNITED STATES PATENT OFFICE.

JOSEPH H. STREHLI, OF CINCINNATI, OHIO.

SMOKE-CONSUMING DEVICE.

SPECIFICATION forming part of Letters Patent No. 690,671, dated January 7, 1902.

Application filed April 1, 1901. Serial No. 53,894. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH H. STREHLI, a citizen of the United States, and a resident of the city of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Smoke-Consuming Devices, of which the following is a specification.

The object of my invention is to produce a cheap, simple, and efficient device for consuming or preventing smoke in furnaces. It belongs to that class of smoke-consumers in which a jet of hot air and steam is sprayed or thrown into the fire at the proper point to produce a gas which makes proper and perfect combustion possible, thus preventing smoke from being formed, all the products of combustion being consumed. According to the custom now in vogue these smoke-preventing devices or attachments or smoke-consumers are set rigidly in a fixed position, so that if the proper plane or angle is not reached in throwing in the hot air and steam the gas is not properly formed, preventing proper combustion, and thus allowing smoke to be formed.

One of the main features of my invention is to so form my smoke-consumer that it may be adjustable, making it possible to regulate the angle or plane in which the spray or hot air and steam is thrown into the fire. In this way the device can be put on any furnace and adjusted so that the spray is thrown into the fire at the proper angle at which combustion will be perfect and then set at that point to do perfect work. If this angle of adjustment is not set at the proper point at first, it can be changed until the proper adjustment is made. This adjustment can all be done outside of the furnace.

In the accompanying drawings, forming part of this specification, Figure 1 is a sectional view of a furnace, showing my smoke-consuming device in position. Fig. 2 is a central longitudinal section of my device. Fig. 3 is a front view of my device—that is, a front view of device shown in Fig. 2; Fig. 4, a detached view of some of the adjustment parts; Fig. 5, a front view of parts shown in Fig. 4. Fig. 6 is a plan view of the trunnion-plate, and Fig. 7 a view in elevation of said plate.

Preferably the device is placed in the front of the furnace over the door, as shown in Fig. 1.

A represents the front of the furnace, and B the grate-bars on which the fire rests.

C represents the air-nozzle, and D the steam-nozzle, of the device. The nozzle C is cylindrical in form, widening and being flattened at its mouth E, the mouth being also open at its sides *a*, as shown in Fig. 2. The air-nozzle is screwed into a short pipe D', which pipe D' has cast with it, at its rear end, a trunnion-ring or annular flange E'. On this trunnion-ring or flange E' are cast the trunnions F. The trunnion-ring has also cast on it the ears G, through which the adjustment-bolts H pass. The trunnion-plate K is preferably shaped as shown, having the slots L cut therein, the bolts H passing through these slots L, the edges around the slots L being countersunk at the rear, so the heads *a'* of the bolts H can rest therein when the plate B is screwed in place on the furnace. In this manner the bolts H are held in proper and rigid position. The plate K has also cast on it, at both sides, the guides or ways M, in which the trunnions F rest and work. This trunnion-plate K has the oblong slot or opening N in it. It is made oblong so that the short pipe D', which is cylindrical, can oscillate or work up and down in said oblong slot N for the purposes of adjustment. The adjustment-bolts H pass through the ears G and through the slots L, nuts *b b'* being placed on the bolts, one on each side of the ears G. (See Fig. 4.) The steam passes through the pipe O, which pipe fits and is screwed into the elbow P, to the other end of which the steam-nozzle D is screwed.

R represents an air-regulator, being formed of two parts *d d'*, the part *d'* working in the part *d*, the part *d* having the air-passages *e e*, which are open except when part *d'* is moved over part *d* to close them. In this way the amount of air which passes into the pipes or nozzles and into the furnace can be regulated so that the smoke-consumption will be perfect.

The device is attached to the boiler-front A and pocket A' by the trunnion-plate K by bolt-and-nut connections S, the nozzles C and D extending into the furnace, as shown in Fig. 1. The plate K is permanent and rigid in position, the rest of the parts of the device being capable of oscillating or moving up

and down on the ways M by reason of the trunnions F moving thereon. This adjustment sets the steam-nozzle D and air-nozzle C at varying angles in the furnace. (See Fig. 1.) This adjustment is made through the medium of the adjustment-bolts H and adjustment-nuts *b b'*. When it is desired to adjust the device, the adjustment-nuts *b b'* are loosened and screwed apart or away from the ears G and the parts tilted to the proper angle through the medium of the trunnions F, moving in the ways M, and when the proper angle is reached the nuts *b* and *b'* are screwed tightly up against the ears G and the parts are held in fixed and rigid position.

The operation of the device is as follows: Air passes through the regulator R and through the trunnion-ring or flange E' and the short pipe D', all of them being hollow and having a passage-way for the air, (see Fig. 2,) the arrows showing the air passing in, (the amount of this air being regulated by the regulator.) The steam is allowed to pass in through the pipes O and P and through the nozzle D. The air and steam mixing at the mouth and being thrown into the fire at the proper angle form the gas which consumes the smoke or prevents the smoke from forming. The steam-nozzle D extending so far into the air-nozzle C and the mouth E being open at the sides, as shown at *a a*, the spray is diffused and spread over a proper surface, so that all parts of the fire are reached, making the action of the device perfect.

The trunnion-plate may be differently formed, as may also the short pipe D' and the trunnion-ring E'. The nozzles C and D may be made of any other desired shape and the mouth E differently formed and the steam-pipe brought into the device in any desired manner. The amount of air may be regulated in any other manner than by the regulator R.

The device may be connected to the furnace in any desired manner. The parts may be made of any desired material and of any shape and contour. The adjustment may be made in any other manner than through the medium of the trunnions and ways and adjustment bolts and nuts, as I do not wish to be limited to any specific means of adjusting the device to varying angles in the furnace.

What I claim as new and of my invention, and desire to secure by Letters Patent, is—

1. In a smoke-consumer air-nozzle C and steam-nozzle D, the steam-nozzle D lying within the air-nozzle C, pipe D', in combination with fixed plate K having ways M, flange E' having trunnions F, all in combination with adjustment-bolts H' and nuts *b, b'* for adjusting the angle at which said nozzles C and D enter the furnace, the plate E' and nozzles tilting for adjustment through the medium of the trunnions F working on the ways M when the nuts *b, b'* are moved to the right or left on the adjustment-bolts H', all combined and operating as and for the purposes set forth.

2. In a smoke-consumer air-nozzle C and steam-nozzle D, the steam-nozzle D lying within the air-nozzle C, pipe D', in combination with fixed plate K having wings M, flange E' having trunnions F, all in combination with adjustment-bolts H' and nuts *b, b'* for adjusting the angle at which said nozzles C and D enter the furnace, the plate E' and nozzles tilting for adjustment through the medium of the trunnions F working on the ways M when the nuts *b, b'* are moved to the right or left on the adjustment-bolts H'; and air-regulator R, all combined and operating as set forth.

JOSEPH H. STREHLI.

Witnesses:

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