

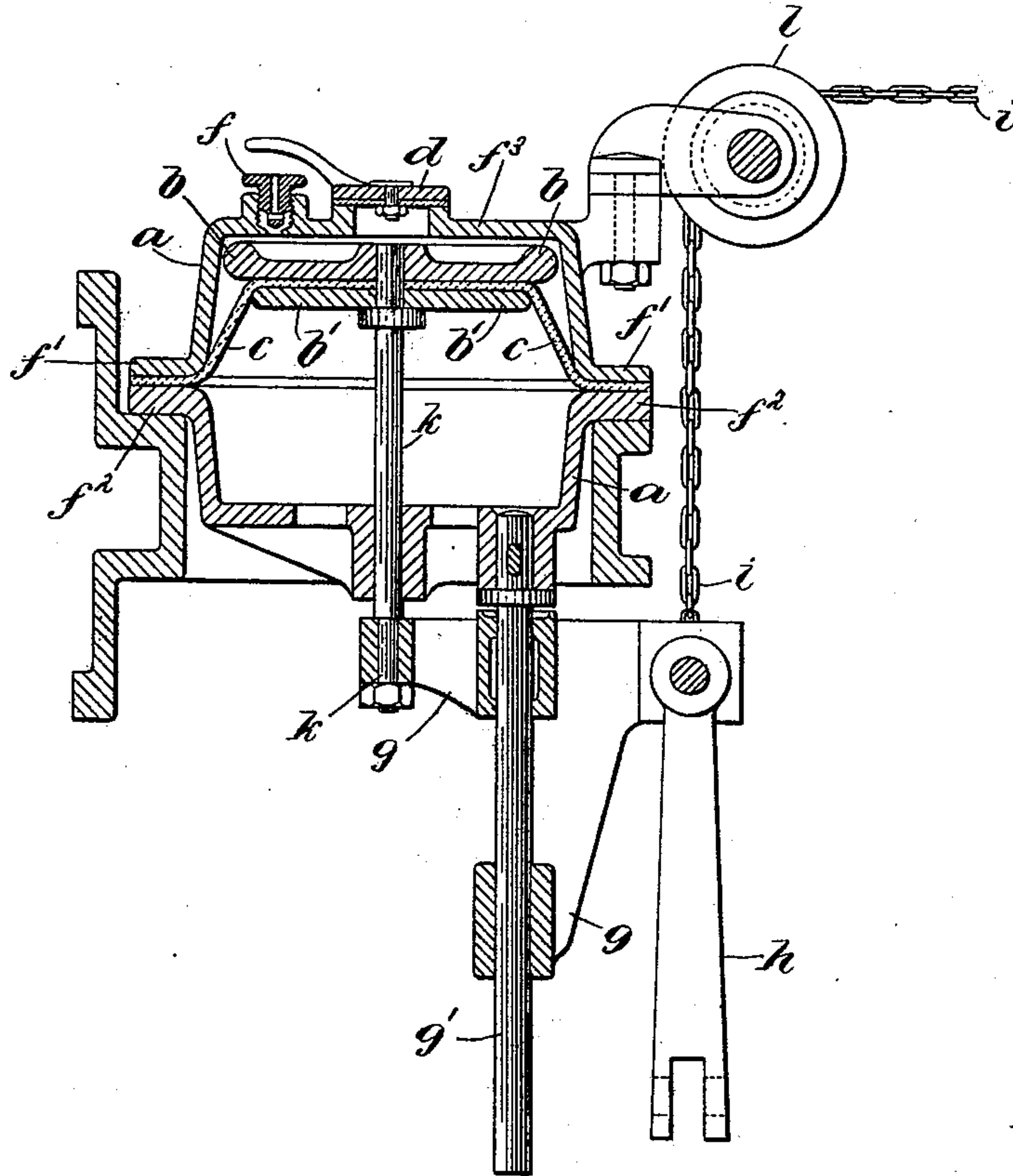
(No Model.)

T. LANGER.

DRAFT REGULATING APPARATUS FOR FURNACES.

No. 538,046.

Patented Apr. 23, 1895.



Witnesses:
Thomas M. Smith.
Louis Winterberger

Inventor:
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UNITED STATES PATENT OFFICE.

THEODOR LANGER, OF VIENNA, AUSTRIA-HUNGARY.

DRAFT-REGULATING APPARATUS FOR FURNACES.

SPECIFICATION forming part of Letters Patent No. 538,046, dated April 23, 1895.

Application filed January 19, 1893. Serial No. 458,990. (No model.) Patented in Germany November 19, 1891, No. 67,095; in Belgium March 11, 1892, No. 101,968; in France October 31, 1892, No. 217,567, and in Austria-Hungary January 5, 1893, No. 1,379 and No. 1,256.

To all whom it may concern:

Be it known that I, THEODOR LANGER, a subject of the Empeor of Austria-Hungary, residing at Vienna, Austria-Hungary, have in-
5 vented certain new and useful Improvements in Draft-Regulating Apparatus for Furnaces, (for which I have obtained Letters Patent in Austria-Hungary, tom. 45, folio 1,379, and tom. 27, folio 1,256, dated January 5, 1893; French
10 Letters Patent No. 217,567, dated October 31, 1892; Belgian Letters Patent No. 101,968, dated March 11, 1892, and German Letters Patent No. 67,095, dated November 19, 1891,) of which the following is a specification.

15 My invention relates to draft regulators for furnaces and has for its principal object to provide an apparatus for automatically regulating the supply of air to furnaces in general, and more particularly to the class known as
20 smoke consuming furnaces.

It is well known that in grate furnaces to which the fuel is supplied intermittingly, the quantity of air requisite for complete combustion must not be constant, but must be supplied in proportion to the amount of hydro-
25 carbon produced upon the grate in consequence of the dry distillation of the fuel. Therefore a greater quantity of air is required immediately after feeding the furnace and the
30 supply of air must be diminished in the same measure as the production of smoke gases decreases, and as the fuel is consumed. The apparatus shown in the annexed drawing and to be hereinafter described is intended to ef-
35 fect this regulation of the supply of air.

My improved apparatus consists of a box or casing *a*, which is placed close to the furnace, the draft of which is to be regulated. Between the flanges *f'* and *f''*, of the box *a*, a
40 cup or membrane *c*, of leather or any other flexible material is tightly fixed in such manner as that it may be reversed or turned inside out as it is moved from the top part to the bottom part of the box *a*. The mem-
45 brane *c*, is held between two plates *b* and *b'*, forming a piston or head, to which a piston-rod *k*, is attached. By this membrane piston the part of the box *a*, opposite the rod *k*, is

hermetically closed against the other part of the box. The cover *f''*, of this hermetically
50 closed space is provided with a relief valve *d*, and an air regulating screw *f*. Upon a guide *g'*, attached to the box *a*, slides a head *g*, to which the piston rod *k*, is attached. The sliding head *g*, is by means of a link *h*, or in
55 any other suitable manner movably connected with the air register of the furnace, and with a chain *i*, passing over a roll *l*, or in any other suitable manner, with the furnace-door, in such manner that by the opening of the door,
60 the membrane piston in the box *a*, will be raised, so as to quickly drive out the air above it through the valve *d*. After closing the door, the piston will return with a speed depending upon the position of the air regu-
65 lating screw *f*, and with the same speed will regulate the air register of the furnace. In this manner the supply of air to the furnace is regulated automatically and a complete consumption of the smoke, without an excess
70 of air, is insured.

As a matter of course the apparatus described may be reversed in such manner as that the box *a*, may be connected with the
75 furnace door and piston rod *k*, attached to the furnace. The operation of the cataract may also be reversed in such manner as that the piston is made to draw the air from the closed part of the apparatus through the relief valve and the escape of air be regulated by the screw
80 *f*, as the piston returns to its initial position.

Having thus described the nature and objects of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In draft regulating apparatus, the com-
85 bination with a box, of a membrane, a piston-head with its rod, a relief-valve and an air regulating device, substantially as and for the purposes set forth.

2. In draft regulating apparatus, the com-
90 bination with a box, of a membrane, a piston or head with its rod, a relief-valve, an air regulating device, a guide and a sliding head connected with said rod, substantially as and for the purposes set forth.

3. In draft regulating apparatus, the com-
95

5 bination of a box provided with a membrane,
a piston or head having a rod, a relief-valve,
an air regulating device, a guide and a slid-
ing head connected with said rod and with a
furnace door of a steam boiler and draft regu-
lating device thereof, substantially as and for
the purposes set forth.

In witness whereof I hereunto set my hand
in presence of two witnesses.

THEODOR LANGER.

Witnesses:

FERDINAND SATTLER,
VICTOR TISCHLER,
Engineer.