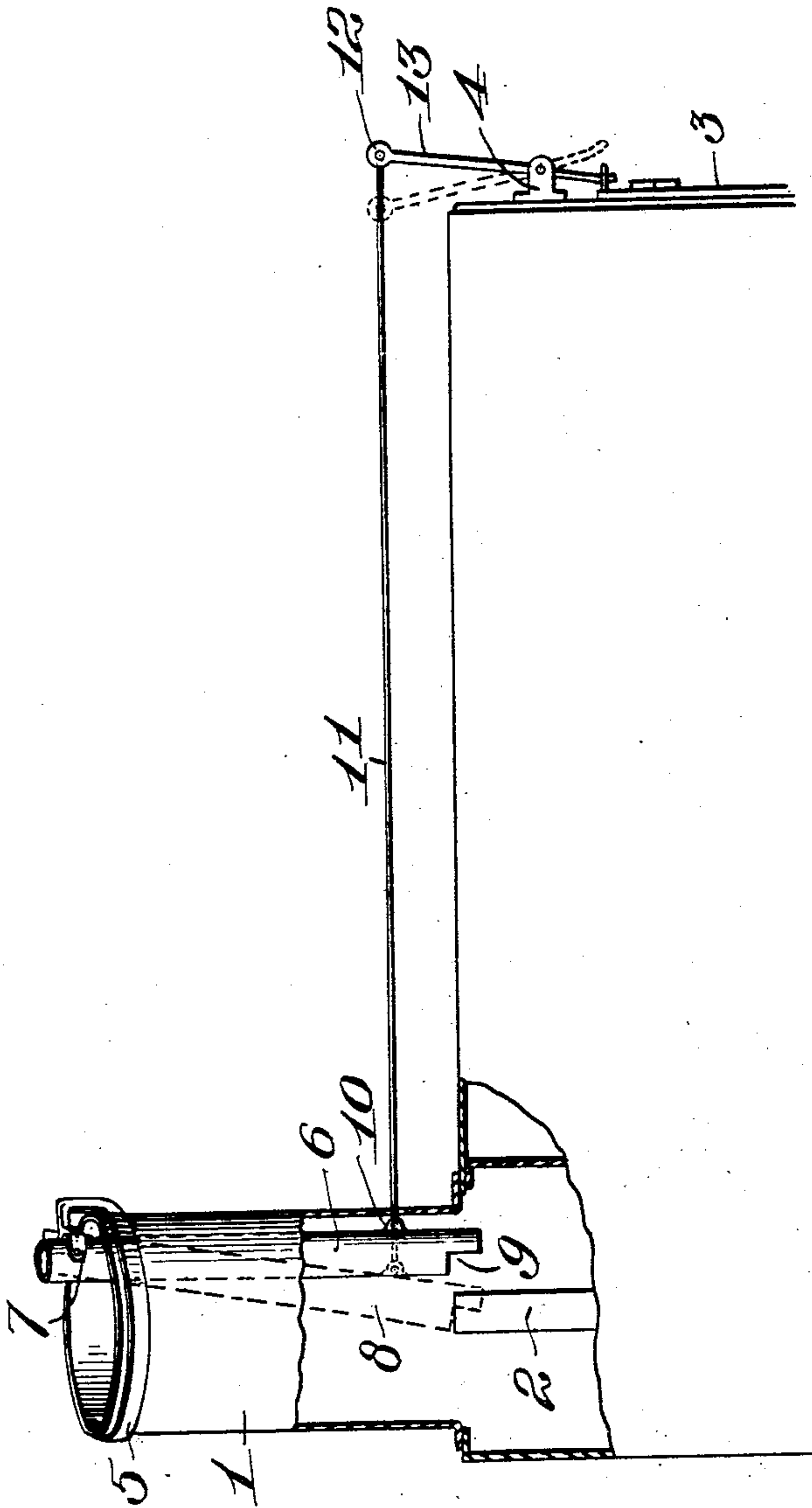


No. 750,669.

PATENTED JAN. 26, 1904.

G. O. LINDGREN.  
AUTOMATIC DRAFT REGULATOR.  
APPLICATION FILED JUNE 23, 1903.

NO MODEL.



Witnesses:  
C. D. Kesler,  
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Inventor  
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By James L. Norris,  
Atty.

# UNITED STATES PATENT OFFICE.

GILBERT O. LINDGREN, OF SIOUX CITY, IOWA.

## AUTOMATIC DRAFT-REGULATOR.

SPECIFICATION forming part of Letters Patent No. 750,669, dated January 26, 1904.

Application filed June 23, 1903. Serial No. 162,788. (No model.)

*To all whom it may concern:*

Be it known that I, GILBERT O. LINDGREN, a citizen of the United States, residing at Sioux City, in the county of Woodbury and State of Iowa, have invented new and useful Improvements in Automatic Draft-Regulators, of which the following is a specification.

This invention relates to certain new and useful improvements in automatic draft-regulators.

Generally when the fire-box door of a boiler has been opened for attention to the fire while the engine continued to run and the steam exhausted into the stack excessive draft has resulted and the cold air striking upon the heated flues and crown-sheets caused contraction of the said parts, thereby resulting in injury thereto and ultimate leaking. Furthermore, excessive draft at such times as the door is usually opened caused a waste of fuel.

The invention particularly aims to construct an automatic draft-regulator which will overcome the foregoing objections and to provide a simple, practical, thoroughly feasible and inexpensive device to cut out the draft caused by the force of exhausting steam while the door of the fire-box is open for attention to the fire, to further provide means to obviate excessive draft while the fire-box door is open for any purpose while the engine remains in motion, and to further provide means for cutting out the forced draft while the door of the fire-box is open.

The invention further aims to construct an automatic draft-regulator which shall be simple in its construction, strong, durable, efficient in its use, and comparatively inexpensive to manufacture.

With the foregoing and other objects in view the invention consists of the novel combination and arrangement of parts hereinafter more specifically described, illustrated in the accompanying drawing, and particularly pointed out in the claim hereto appended.

In describing the invention in detail reference is had to the accompanying drawing, forming a part of this specification, in which is illustrated a part sectional elevation of a boiler with the improved automatic draft-regulator connected in position thereto.

Referring to the drawing by reference-numerals, 1 denotes the stack, and 2 denotes the exhaust-nozzle or end of pipe communicating with port or ports of engine cylinder or cylinders. (Not shown.)

The reference character 3 denotes the door of a fire-box, and above the door of the fire-box is arranged an outwardly-extending arm 4, the function of which will be hereinafter referred to.

Surrounding the upper end of the stack 1 is a band 5, the two ends of which are bent and turned back to extend over the stack and is connected to the vertically-extending conducting-pipe 6, as at 7. The connection between the band 5 and the conducting-pipe 6 is such as to permit of the swinging of the conducting-pipe 6 to the position shown in dotted lines, (indicated by the reference character 8.) Any suitable means may be employed for connecting the upper end of the conducting-pipe 6 to the band 5. The conducting-pipe 6 when extending in a vertical position is arranged at one side of the stack, as shown in full lines. The lower end of the conducting-pipe 6 is cut away, so as to form the depending projection 9. The latter acts as a stop when the pipe 6 is swung inwardly—that is to say, the projection 9 arrests the movement of the pipe 6, so that when it is swung inwardly it cannot pass entirely over the top of the exhaust-nozzle 2. The projection 9 furthermore acts as a means for causing the pipe 6 and the exhaust-nozzle to register with each other.

The lower end of the conducting pipe 6 is pivotally connected, as at 10, to the forward end of the shifting rod 11, and the rear end of the said rod 11 is hinged, as at 12, to the upper end of the rocking lever 13, the latter being pivoted to the arm 4 and its lower end being in the path of the door 3.

When the door 3 of the fire-box is opened, the lower end of the lever 13 will be swung outwardly, imparting a forward movement to the shifting rod 11, which in turn swings the conducting-pipe 6 over the exhaust-nozzle 2, and when the conducting-pipe 6 has assumed such position it will be seen that the exhaust is through the conducting-pipe and not



through or up the stack, and when the door 3  
of the fire-box is closed the conducting-pipe  
6 will resume its normal position, as shown  
in full lines, and when in such position it is  
5 arranged at one side of the interior of the  
stack, or it may be stated that when the con-  
ducting-pipe 6 is in its inoperative position it  
is arranged at one side of the interior of the  
stack.

10 It will be evident by providing a boiler  
with an automatic draft-regulator, as herein  
described, that it will produce increased ef-  
ficiency and longevity to the boiler. It will  
permit of the fireman cleaning the fire-box  
15 while the engine is in operation. It will ab-  
solutely prevent excessive draft contraction  
and expansion of parts, as well as a waste of  
fuel, and it is thought the foregoing and  
other advantages obtained by the automatic  
20 draft - regulator constructed in accordance  
with the foregoing description and taken in  
connection with the accompanying drawing  
can be readily understood, and it will fur-  
thermore be evident that changes, variations,  
25 and modifications can be resorted to without  
departing from the spirit of the invention or  
sacrificing any of its advantages, and I there-  
fore do not wish to restrict myself to the de-  
tails of construction hereinbefore described  
30 and as shown in the accompanying drawing,  
but reserve the right to make such changes,  
variations, and modifications as come prop-  
erly within the scope of the protection prayed.

Having thus fully described my invention,

what I claim as new, and desire to secure by 35  
Letters Patent, is—

In an automatic draft-regulator, the com-  
bination with the stack, exhaust-nozzle and  
the door of the fire-box of an engine of an  
adjustable conducting-pipe arranged within 40  
the stack and cut away so as to form a de-  
pending projection on its lower end, said de-  
pending projection adapted to act as a stop to  
arrest the inward movement of the conduct-  
ing-pipe and to cause the said pipe and noz- 45  
zle to register with one another when the pipe  
is in its adjusted position, a band surround-  
ing and projecting over and above the top of  
the stack, said pipe having its upper end piv-  
otally connected to said projecting portion of 50  
the band, a shifting arm extending at one end  
through the stack and pivotally connected to  
the pipe, and a rocking lever pivotally con-  
nected with the engine, connected at its up-  
per end to the other end of said shifting arm 55  
and having its lower portion extending di-  
rectly in front of said door so that it will be  
engaged and rocked when the door is opened,  
causing thereby the automatic adjustment of  
said pipe, substantially as herein shown and 60  
described.

In testimony whereof I have hereunto set  
my hand in presence of two subscribing wit-  
nesses.

GILBERT O. LINDGREN.

Witnesses:

C. W. TAYLOR,  
H. E. MILLER.