

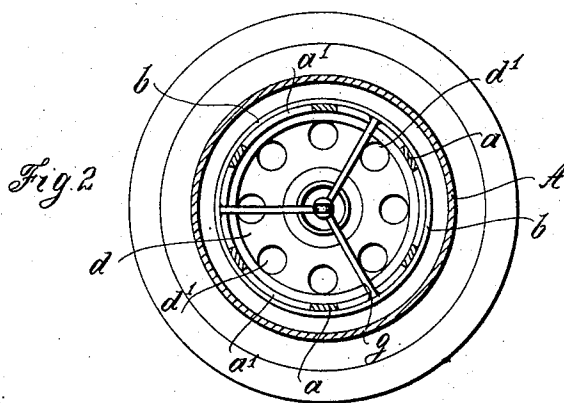
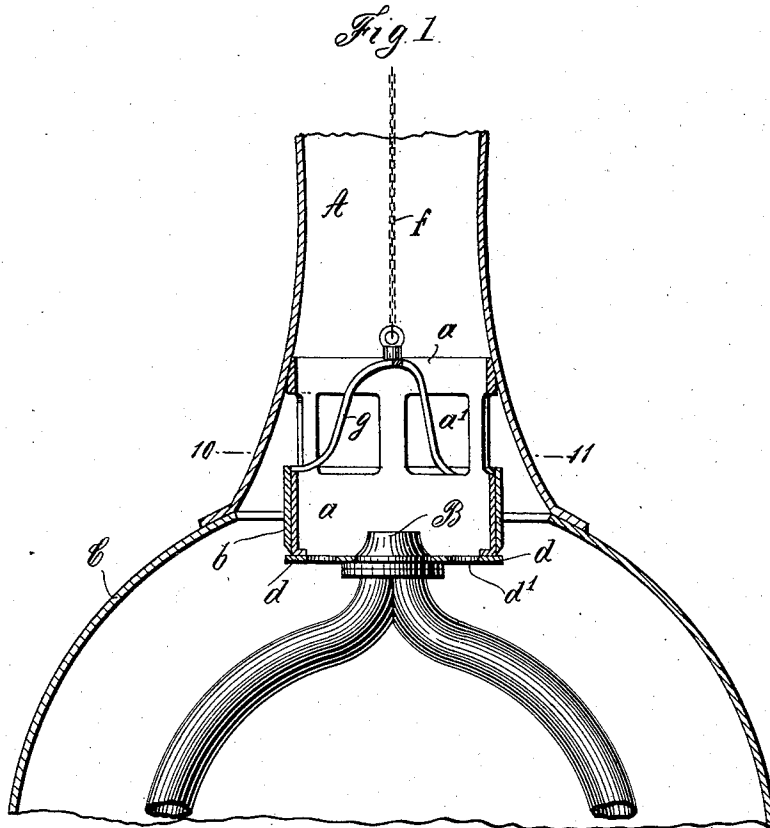
(No Model.)

3 Sheets—Sheet 1.

H. DEGENER & R. DEISSLER.
DRAFT REGULATOR FOR LOCOMOTIVES.

No. 570,983.

Patented Nov. 10, 1896.



Witnesses:

Arthur Walther

R. Herpich

Inventors:
Heinrich Degener
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(No Model.)

3 Sheets—Sheet 2.

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Fig. 3.

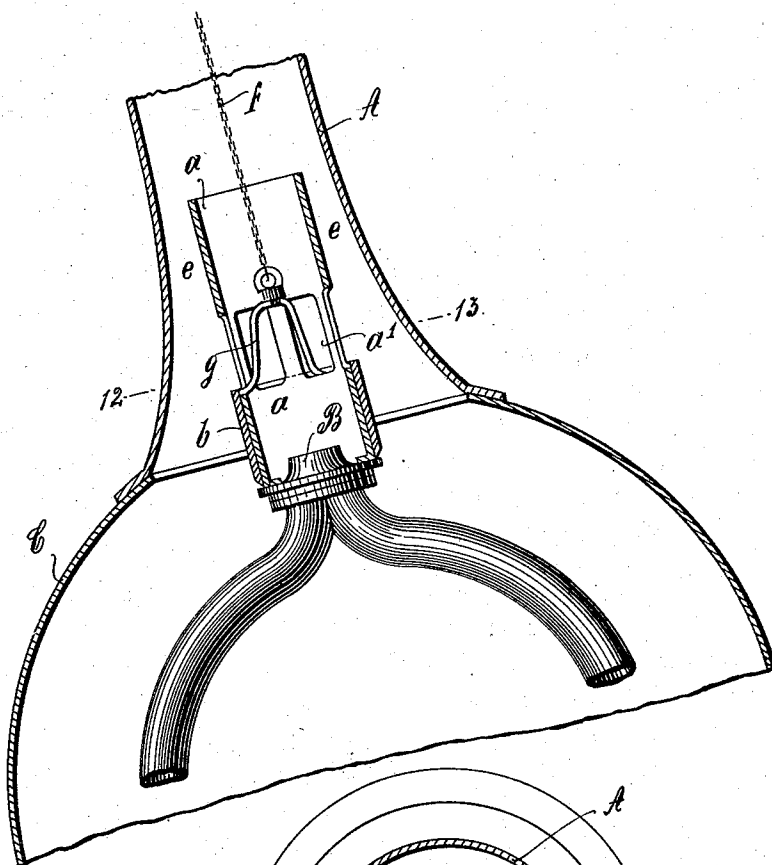
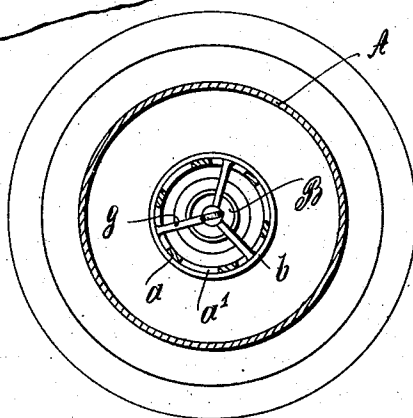


Fig. 4.



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Fig. 5.

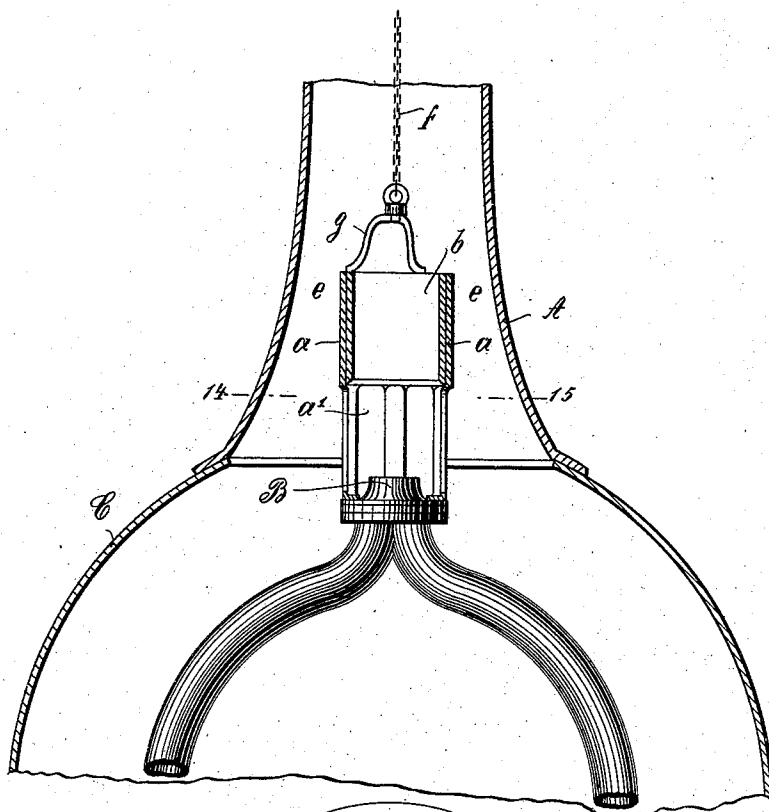
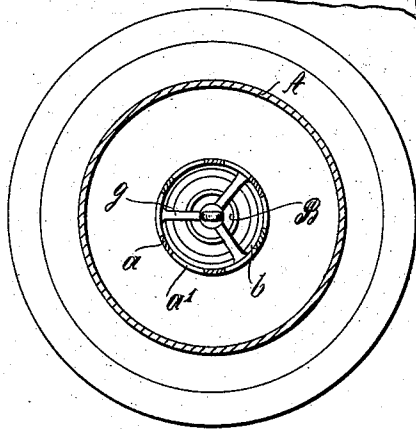


Fig. 6.



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UNITED STATES PATENT OFFICE.

HEINRICH DEGENER, OF RUMMELSBURG, AND ROBERT DEISSLER, OF TREPTOW, GERMANY; SAID DEGENER ASSIGNOR TO SAID DEISSLER.

DRAFT-REGULATOR FOR LOCOMOTIVES.

SPECIFICATION forming part of Letters Patent No. 570,983, dated November 10, 1896.

Application filed June 27, 1895. Serial No. 554,228. (No model.) Patented in Germany July 8, 1894, No. 79,758, and in England November 7, 1894, No. 21,386.

To all whom it may concern:

Be it known that we, HEINRICH DEGENER, a resident of Rummelsburg, near Berlin, and ROBERT DEISSLER, a resident of Treptow, near Berlin, in the Kingdom of Prussia, German Empire, subjects of the King of Prussia, German Emperor, have invented an Improved Draft-Regulator for Locomotives, (for which patents have been obtained in Germany, No. 79,758, dated July 8, 1894, and in Great Britain, No. 21,386, dated November 7, 1894,) of which the following is an exact specification.

The blast-steam of locomotive-engines is, as is known, used in the same for producing the draft for the furnace. Said draft is dependent on the quantity of the blast-steam as well as on the velocity of the same, and both quantity and velocity of the blast-steam are in their turn dependent, first, on the quantity of live steam with which the cylinders are charged at each stroke of their respective pistons, and, second, on the speed of the locomotive-engine.

If the quantity of live steam with which the cylinders at each stroke are charged is but slight or of average or normal magnitude, the quantity of waste steam resulting from that live steam is just as great as to produce the required draft for the furnace, and the fuel will be properly burned and exhausted; but if the cylinders are filled with live steam up to a rather great percentage, say seventy per cent., the draft becomes so strong a one that unburned particles of fuel are torn away from the grate and carried away through the smoke-stack, so great a percentage of live steam is necessary if an ascent is to be overcome, or if the train is a long or heavy one, or if a train is started. There is thus in either of these cases a loss of fuel caused by said strong draft. Lessening the latter by a throttle-valve arranged within the smoke-stack is not an advantageous means, but a disadvantageous one, in that there is then diminished the way not for the furnace-gases only, but for the waste steam, too. The latter would thus cause an increase of the counter-pressure within the cylinders, and the gain attained on one side would be lost on the other. The purpose of our invention, therefore, is

to obviate the said losses of fuel without causing the waste steam to react in the manner just explained, and in order to make our invention more clear we refer to the accompanying drawings, in which similar letters refer to similar parts throughout the different views, and in which—

Figure 1 is a vertical section through the smoke-box and smoke-stack of a locomotive-engine provided with our improved draft-regulator. Fig. 2 is a horizontal section taken on line 10 11 of Fig. 1. Fig. 3 is a vertical section through a modified form of construction. Fig. 4 is a horizontal section taken on line 12 13 of Fig. 3. Fig. 5 is a vertical section through another mode of construction, and Fig. 6 is a horizontal section taken on line 14 15 of Fig. 5.

Our improved draft-regulator consists in general of a casing surrounding the blast-nozzle and arranged partly within the smoke-box and partly within the chimney in such a manner that the waste steam may freely escape into the stack, while either the whole of the furnace-gases or a certain portion thereof is compelled to pass through apertures provided in the mantle or wall of the said casing. Said apertures may be partly or wholly closed, so that the sucking action of the blast-steam upon the air or the furnace-gases, respectively, is correspondingly altered. The blast itself is not affected at all by that casing, but the flow of furnace-gases through the apertures of the same is either lessened or perfectly hindered, according to the position of the part or parts effecting the closing.

Referring to Figs. 1 and 2, *a* designates a fixed casing that is supported by a circular plate *d*, held by the nozzle *B*, and extends upward as far as to touch the walls of the smoke-stack *A*. Said casing is provided with a few large apertures *a'*, and is encompassed by an annular slide *b*, that may be moved in vertical direction by means of a chain *f* by the mediation of a three-armed connecting-piece *g*.

The free surfaces of the apertures *a'* combined are at least equal to the free section of the smoke-stack *A* at the narrowest part of the same, and there is thus no throttling what-

ever of the furnace-gases as long as the apertures of the casing *a* remain perfectly opened. If, however, the slide *b* is raised up to a certain height, the apertures *a'* will then be covered or closed to a corresponding extent, and the sucking action of the blast-steam will therefore be correspondingly altered, as above explained. The apertures *a'* of the casing *a* do not, however, form the only way for the furnace-gases, but there are some apertures *d'* provided in the plate *d*. It is thus to be seen that a certain draft is left even if the apertures *a'* are perfectly closed.

We prefer to construct our improved draft-regulator in such a manner that there exits besides the regulable passage for the furnace-gases also a non-regulable one, *d'*, Figs. 1 and 2, the latter being, however, always of such a section that the draft thereby allowed is strong enough to enable the fire to produce the normal quantity of steam. The draft-regulator is then to come into operation in those cases only in which a greater than the normal quantity is necessary. We have shown two of such constructions in Figs. 3 to 6, in which the cylinder *a* extends upward into the smoke-stack *A*, but leaves (in contradistinction to the other mode of construction, Figs. 1 and 2) an annular channel *e* between itself and the smoke-stack. Said annular channel is the constantly-remaining, non-regulable passage for the furnace-gases, while the interior of the cylinder *a* forms the regulable one. The ring or slide *b* is in Figs. 3 and 4 situated outside the cylinder *a*, and must be raised in order to close the apertures *a'*. In Figs. 5 and 6 the ring *b* is situated inside the cylinder *a* and is to be lowered if the apertures *a'* are to be closed. We prefer to suspend the ring *b* by a chain *f* and a three-armed con-

necting-piece *g*, but we wish it to be understood that we do not in any way limit ourselves to that means. A steel-wire rope, a steel band, a rigid rod, or the like may as well be used.

Having thus fully described the nature of our invention, what we desire to secure by Letters Patent of the United States is—

1. In a locomotive-engine, the combination with the chimney, and with a blast-nozzle arranged in the proximity of said chimney, of a vertical slide surrounding said nozzle, and a guide for said slide; said guide extending from the nozzle up into the chimney, and having a few large apertures the combined free sections of which are at least as great as the free horizontal section of the said guide; said slide being adapted to narrow said apertures, for the purpose as described.

2. In a locomotive-engine having a portion of its chimney contracted, the combination with a blast-nozzle arranged in close proximity to said chimney, of a vertical slide surrounding said nozzle, and a guide for said slide; said guide extending up to the contracted portion of the chimney, and forming a few large apertures the combined free sections of which are at least as great as the free horizontal section of the said guide; said slide being adapted to narrow said apertures, for the purpose as described.

In testimony whereof we have signed this specification in the presence of two subscribing witnesses.

HEINRICH DEGENER.
ROBERT DEISSLER.

Witnesses:

CHAS. M. DAY,
WM. HAUPT.