

J. F. & H. M. BROWN.
 FRONT END ARRANGEMENT.
 APPLICATION FILED FEB. 14, 1910.

958,720.

Patented May 24, 1910.

2 SHEETS—SHEET 1.

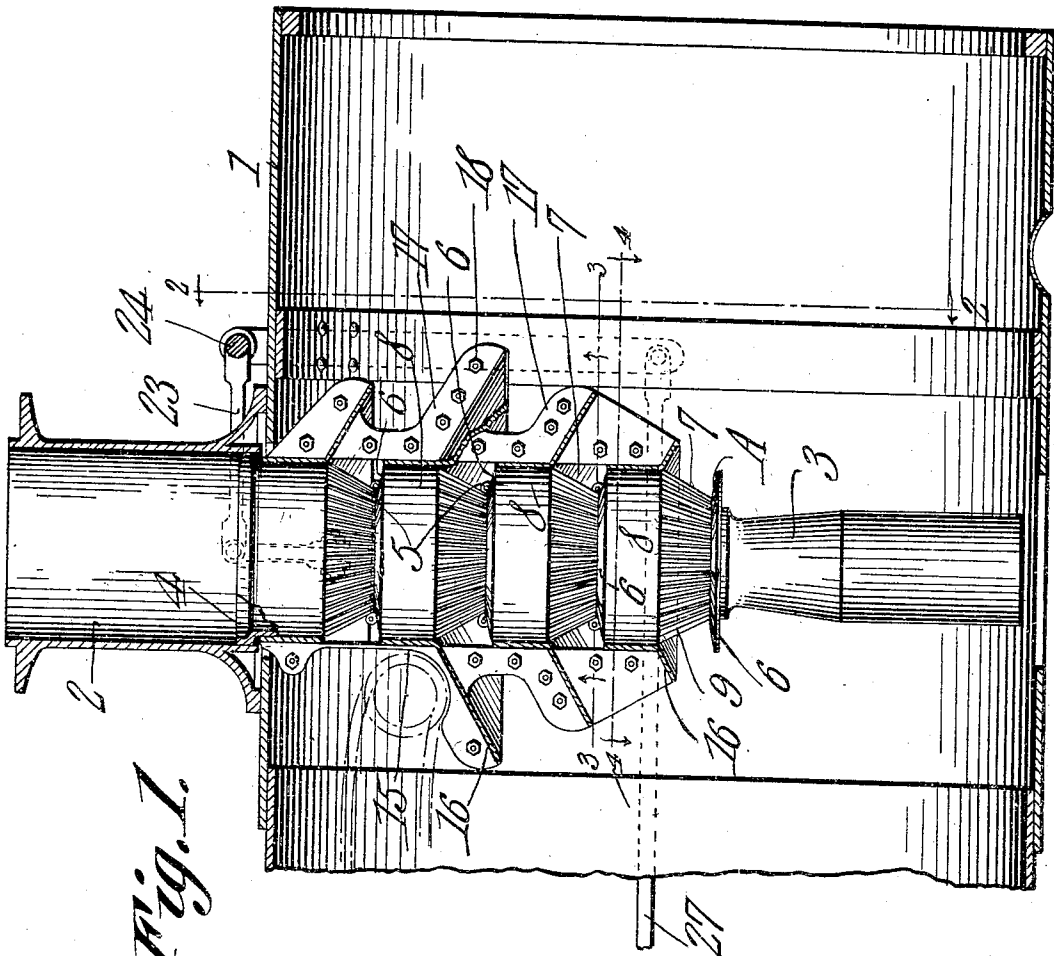


Fig. 1.

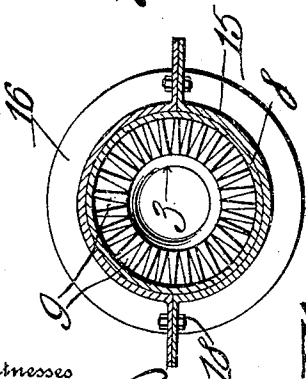
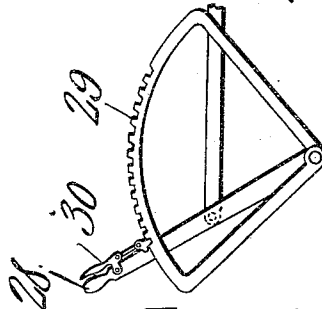


Fig. 4.



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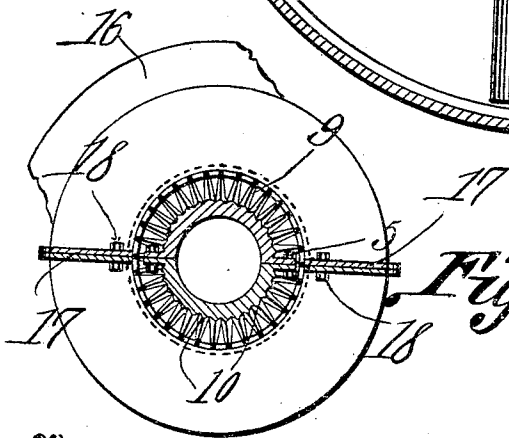
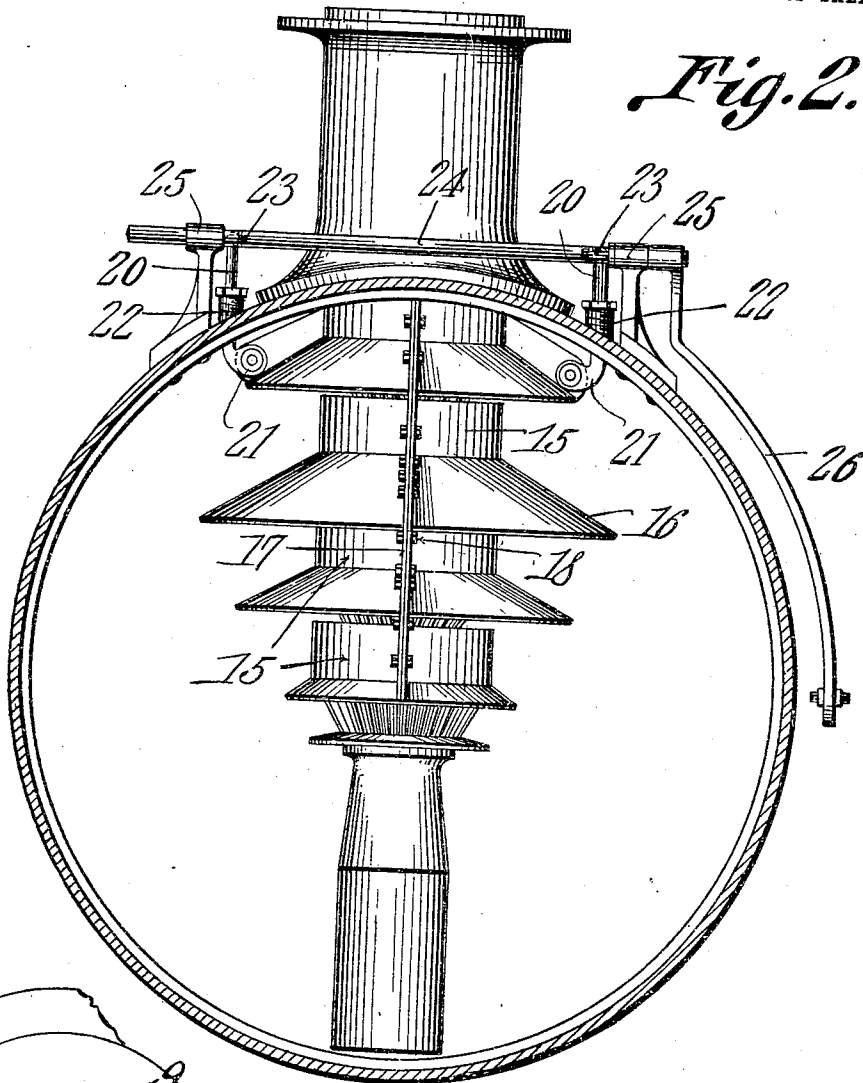


Fig. 3. Joseph F. Brown, Jr.
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UNITED STATES PATENT OFFICE.

JOSEPH F. BROWN AND HERMAN M. BROWN, OF BRISTOL, TENNESSEE.

FRONT-END ARRANGEMENT.

958,720.

Specification of Letters Patent.

Patented May 24, 1910.

Application filed February 14, 1910. Serial No. 543,706.

To all whom it may concern:

Be it known that we, JOSEPH F. BROWN and HERMAN M. BROWN, citizens of the United States, residing at Bristol, in the county of Sullivan and State of Tennessee, have invented a new and useful Front-End Arrangement, of which the following is a specification.

This invention relates to a front end arrangement for locomotives and may be termed an adjustable draft, spark, and front end arrangement.

The object of the invention is to provide a device of the character mentioned which is adapted to control and adjust the draft of the locomotive as well as to prevent the escape of sparks or cinders.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangements of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the embodiment of the invention herein set forth can be made within the scope of the claims without departing from the spirit of the invention.

In the accompanying drawing forming part of this specification,—Figure 1 is a longitudinal vertical section through the front end of the locomotive constructed in accordance with the present invention. Fig. 2 is transverse vertical section through the front end of the locomotive provided with the improvement of the present invention. Fig. 3 is a horizontal section through the draft appliance and spark arrester on the line 3—3 of Fig. 1. Fig. 4 is a section on the line 4—4 of Fig. 1.

Like reference characters indicate corresponding parts in the different figures of the drawing.

The reference numeral 1 indicates the smoke box or front end of the locomotive; 2 the smoke stack, and 3 the exhaust nozzle.

The stationary portion of the improvements of the present invention is indicated generally by the reference letter A and is connected at its lower end with the nozzle 3 and at its upper end is fitted into the base of the smoke stack 2, as indicated at 4. This stationary member is formed of cast or other suitable metal in two vertically extending sections which are bolted together, as indicated at 5. The member A is formed with a

plurality of sloping portions 6, a plurality of cone-shaped portions or structures 7 which flare outwardly from their lower to their upper ends, and, a plurality of annular imperforate portions 8. It will be understood, as before mentioned, that the parts 6, 7 and 8 are cast or otherwise formed integral with each other in two longitudinal sections which are bolted together so as to form a circular structure. The cone-shaped portions 7 are formed with a plurality of slots 9, which as shown in Figs. 3 and 4, flare from their inner to their outer ends. In other words, said slots 9, which are vertically extending slots, as shown, are narrow at their inner ends and wide at their outer ends, the wide outer ends of said slots forming throats to receive and break up sparks, cinders and the like. The flaring slots 9 may be formed in the structures 7 in any suitable manner. For instance, by forming said structures with a plurality of bars which are V-shaped in cross section, as indicated at 10, said flaring slots will be produced between said bars.

Surrounding the stationary structures 6, 7 and 8 is a vertically slidable structure formed in two sections suitably bolted together. Said slidable structure consists of a plurality of annular portions 15 having flaring or conical skirt members 16 extending from the lower portions thereof, the next to the upper skirt member 16 being larger in diameter than the lower and upper skirt members. Starting from the bottom of the device, each skirt member 16 except the top one is larger than the skirt member immediately below it. Formed integral with the skirt members 16 are vertically extending web portions 17, the web portions of the two halves of the sliding member being bolted together, as indicated at 18.

The means for operating the vertically slidable draft member, are shown in Fig. 2 as consisting preferably of a pair of rods connected at 21 with the vertically slidable draft rods and extending outward through packing members 22 in the smoke box, said rods 20 at their upper ends being connected with arms 23 fixed upon a transversely extending shaft 24 which is journaled in brackets 25 on the smoke box or front end, and is provided with a downwardly extending fixed arm 26. The arm 26 is connected by means of a draw rod 27 with an operating lever 28 located in the engine cab and

having combined therewith a segmental rack 29 adapted to be engaged by the catch 30 of the handle 28. By means of the controlling lever or handle 28 the engineer can raise or lower the sliding member of the draft device so as to regulate the draft or, by shutting off the same completely, can prevent the escape of sparks and smoke. The draft apparatus of the present invention is strong, simple, durable and inexpensive in construction as well as thoroughly efficient in operation.

The devices of the present invention provide a greater length of stack, thus producing the prolonged draft on the fire. It also prevents fire from being thrown from the smoke stack and effects a saving of fuel by permitting the draft to be adjusted to different points while the engine is running. It also effects a thorough cleaning of the front end and serves to distribute the draft equally through the flues. Finally, it permits smoke to be eliminated while running through cities where there are smoke ordinances, at which times the draft can be entirely closed so as to allow only the exhaust of steam.

What is claimed as new is:

1. In a front end arrangement, the combination with a nozzle and stack, of a stationary structure located between the nozzle and stack and having an imperforate annular portion and a flaring slotted portion, and a slidable structure surrounding said stationary structure and having annular openings therein.

2. In a front end arrangement, the combination with a nozzle and stack, of a stationary structure located between the nozzle and stack and having an annular imperforate portion and a flared portion formed with slots which are approximately V-shaped in cross section, and a slide member surrounding said stationary structure and having an annular opening therein and a skirt connected therewith.

3. In a front end arrangement, the com-

bination with an exhaust nozzle and stack, of a stationary structure located between the nozzle and stack and comprising a plurality of imperforate annular portions, and a plurality of conical portions formed with outwardly flaring walls, and a slide member surrounding said stationary structure and having a plurality of imperforate portions and a plurality of skirt members of different diameters.

4. In a front end arrangement, the combination with a nozzle and stack, of a plurality of structures movable relatively to each other, one of said structures having a plurality of imperforate annular portions separated from each other by flaring slotted portions, and the other structure having a plurality of annular imperforate portions and intermediate annular openings.

5. In a front end arrangement, the combination with a nozzle and a stack, of a stationary structure surrounding said nozzle at its lower end and fitted into said stack at its upper end, said stationary structure comprising one or more annular imperforate portions and one or more slotted annular portions, and a movable structure surrounding said stationary structure and having an annular opening adapted to register with the annular slotted portion of the stationary structure, and an annular imperforate portion adapted to register with the annular imperforate portion of the stationary structure, said movable structure being adapted to be moved so as to cause the imperforate portion of the movable structure to register with the slotted portion of the stationary structure.

In testimony that we claim the foregoing as our own, we have hereto affixed our signatures in the presence of two witnesses.

JOSEPH F. BROWN.
HERMAN M. BROWN.

Witnesses:

C. H. RHODES,
BEN C. COCHRAN.