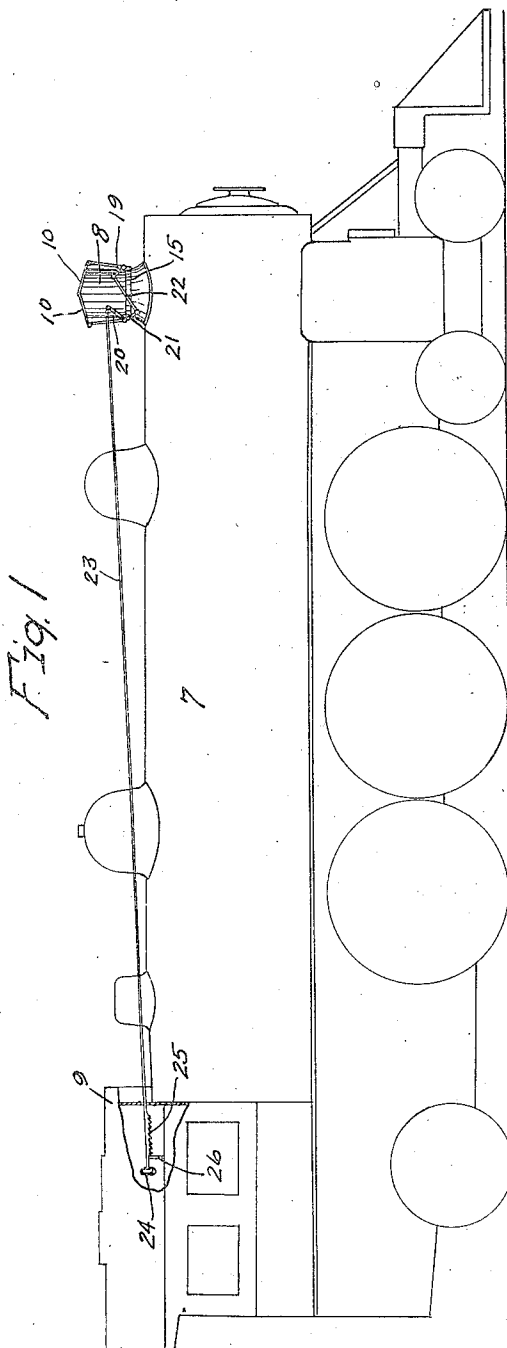


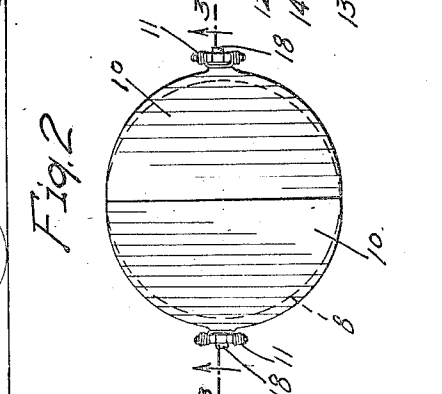
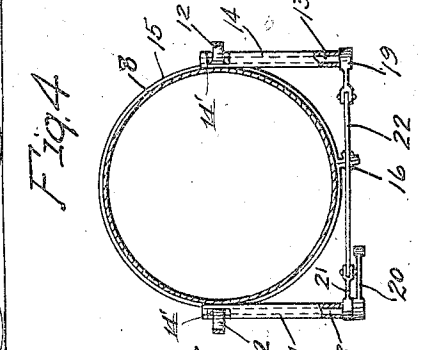
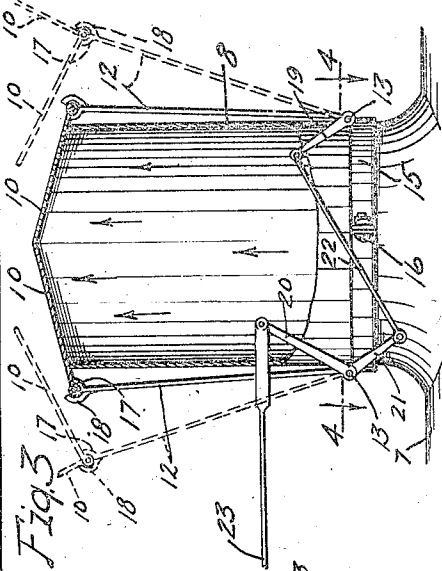
O. B. SCHULZ.
DAMPER FOR LOCOMOTIVE SMOKE STACKS.
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1,291,184.

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WITNESSES
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DAMPER FOR LOCOMOTIVE SMOKE-STACKS.

1,291,184.

Specification of Letters Patent.

Patented Jan. 14, 1919.

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To all whom it may concern:

Be it known that I, OTTO B. SCHULZ, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Dampers for Locomotive Smoke-Stacks; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to dampers for locomotives; and to this end, it consists of the novel devices and combinations of devices hereinafter described and defined in the claims.

As is well known, prior to the adoption of hopper bottom ash pans for locomotives, dampers were used in connection with the ash pans, but in redesigning locomotives to incorporate such ash pans, it was necessary to eliminate the dampers. Since the elimination of dampers in the ash pan, there has been no way provided to check the fire in a locomotive when standing still on a side track or at a station, or when running down grade with the throttle shut off, thus causing a large waste of fuel.

The primary object of my invention is to provide a damper for application to the smoke stack of a locomotive, either at the time of manufacture or to previously built smoke stacks.

A further object of the invention is to provide operating connections whereby the damper in the smoke stack may be positively opened or closed by a trainman in the cab.

A still further object of the invention is to provide a damper for the smoke stack of a locomotive which, when closed, will automatically open with each exhaust from the locomotive and close immediately after each exhaust.

In the accompanying drawings, which illustrate the invention, like characters indicate like parts throughout the several views.

Referring to the drawings:

Figure 1 is a view in side elevation of a locomotive having one form of the improved damper applied thereto;

Fig. 2 is a plan view of the damper shown in Fig. 1, on an enlarged scale;

Fig. 3 is a view partly in side elevation and partly in central vertical section, taken on the line 3—3 of Fig. 2; and

Fig. 4 is a view in horizontal section, taken on the line 4—4 of Fig. 3.

The numeral 7 indicates a locomotive as an entirety, with the exception of the smoke stack 8 and cab 9. Two damper members 10 are connected, by spring hinges 11, to the upper ends of a pair of diametrically opposite front and rear upright arms 12. The springs of the hinges 11 have their ends anchored to the members of said hinges secured to the arms 12, while their intermediate portions bear upon the members of said hinges secured to the damper members 10 and yieldingly hold said members closed. Hinge pins 13, rigidly secured to the lower ends of the arms 12, are journaled in sleeve-like bearings 14, rigidly secured to a clamping band 15. This clamping band 15 is applied around the base of the smoke stack 8, and forms the sole support for the improved damper and operating connections therefor. As shown, the clamping band 15 is transversely divided and the ends thereof are bent outward to form a pair of lugs having aligned bores, through which is passed a draw bolt 16, for frictionally clamping said band onto the smoke stack.

Preferably, as shown, the upper end of the smoke stack 8 is beveled, both forwardly and backwardly from the transverse center of the smoke stack 8, so that the damper members 10 rest obliquely thereupon, as best shown in Fig. 3. Lower fingers 17, on the upper ends of the arms 12, limit the closing movement of the damper members 10 when moved bodily out of engagement with the smoke stack, as indicated by broken lines in Fig. 3. Upper fingers 18, also formed on the upper ends of the arms 12, limit the opening movement of the damper members 10, as also indicated by broken lines in Fig. 3. The bearings 14 extend transversely in respect to the locomotive and project to one side of the smoke stack 8, to-wit: as shown, to the right, and the respective ends of the hinge pins 13 project slightly outward of the ends of the

said bearings. Slots 14' are formed in the sleeve-like bearings 14 to permit the required swinging movements of the damper supporting arms 12 when the damper members 10 are manually moved into positions to open the smoke stack 8.

A crank arm 19 is rigidly secured to the projecting end of the front hinge pin 13 and upper and lower crank arms 20 and 21, respectively, are secured to the projecting ends of the rear or other hinge pin 13 and arranged in the form of a bell crank. The crank arms 19 and 21 project in opposite directions, and a link 22 connects their free ends for imparting simultaneous movements to the arms 12 to positively open and close the damper members 10. The forward end of an operating rod 23 is attached to the upper or free end of crank arm 20, and its rear end portion extends through the front of the cab 9 and is provided with a hand hold 24. Ratchet teeth 25, on the operating rod 23, are arranged to engage a lock plate 26 within the cab 9, to hold the damper members 10, where set. Obviously, the connections 18 to 26, inclusive, afford connections from the damper members 10 to the cab by which said damper members may be manually opened and closed and held in different set positions.

From the above description it is evident that when the damper members are closed by the manually operated connections, they will be automatically opened by each exhaust and then immediately closed by the spring hinges 11. If the locomotive is pulling a train, the damper members in the smoke stack may be manually opened by a trainman in the cab and held open by the latch device provided for the operating rod. When the locomotive is standing still, doing light work, or drifting down hill, the damper members may be manually closed to save fuel, and they will automatically open with each exhaust, as previously described. Also, if the trainman should forget to open the damper members when the locomotive is pulling a train, the dampers will be automatically opened by the exhaust. Obviously, the application of the improved damper to the smoke stack of a locomotive will save a large amount of fuel. It is also evident that the improved damper may be readily applied to a smoke pipe with a comparatively small amount of work and also at comparatively small cost.

What I claim is:

1. The combination with a locomotive, of a damper for the smoke stack thereof, means for manually opening and closing the damper, and a resilient connection between the damper and said means permitting the damper to be opened by the exhaust.

2. The combination with a locomotive, of

a damper for the smoke stack thereof, means for manually opening and closing the damper and for holding the same in different partially open positions, and a resilient connection between the damper and said means permitting the damper to be opened by the exhaust.

3. The combination with a locomotive, of a damper for the smoke stack thereof, of an arm hinged to the smoke stack thereof, a damper for the smoke stack, a resilient connection between the damper and arm permitting the damper to be opened by the exhaust, and means for manually operating the arm to open and close the damper.

4. The combination with a locomotive, of a damper for the smoke stack thereof, of a pair of upright arms having their lower ends hinged to the smoke stack of the locomotive, a damper for the smoke stack comprising a pair of members, resilient connections between the damper members and upper ends of the arms permitting the damper members to be opened by the exhaust, and means for manually swinging the arms to open and close the damper members and for holding the same in different partially open positions.

5. The combination with a locomotive, of a damper for the smoke stack thereof, of a pair of upright arms having their lower ends hinged to the smoke stack of the locomotive, a damper for the smoke stack comprising a pair of members, resilient connections between the damper members and upper ends of the arms permitting the damper members to be opened by the exhaust, a bell crank secured to one of said pair of arms and a crank arm secured to the other thereof, a link connecting one of the arms of the bell crank to said crank arm, a manually operated rod attached to the other arm of the bell crank for swinging said pair of arms to open and close the damper members, and means for securing the rod in different longitudinal adjustments to hold the damper members in different partially open positions.

6. The combination with a locomotive having a smoke stack, the top of which is beveled both forwardly and backwardly, of a pair of upright arms hinged at their lower ends, the one to the front of the smoke stack and the other to the rear thereof, a damper for the smoke stack comprising a pair of members normally resting on the beveled surfaces of the smoke stack, resilient connections between the damper members and upper ends of the upright arms permitting the damper members to be opened by the exhaust, a bell crank secured to one of the pair of arms and a crank arm secured to the other thereof, a link connecting one of the arms of the bell crank to the crank arm, a

manually operated rod attached to the other
arm of the bell crank for swinging said pair
of arms to open and close the damper mem-
bers, and means for securing the rod in dif-
ferent longitudinal adjustments to hold the
damper members in different partially open
positions.

In testimony whereof I affix my signature
in presence of two witnesses.

OTTO B. SCHULZ.

Witnesses:

HULDA LIEDER,
HARRY D. KILGORE.