No. 841,402. PATENTED JAN. 15, 1907.

P. B. HOUGHTON.

EXHAUST NOZZLE.

APPLICATION FILED FEB. 9, 1906.

Fig. 1.

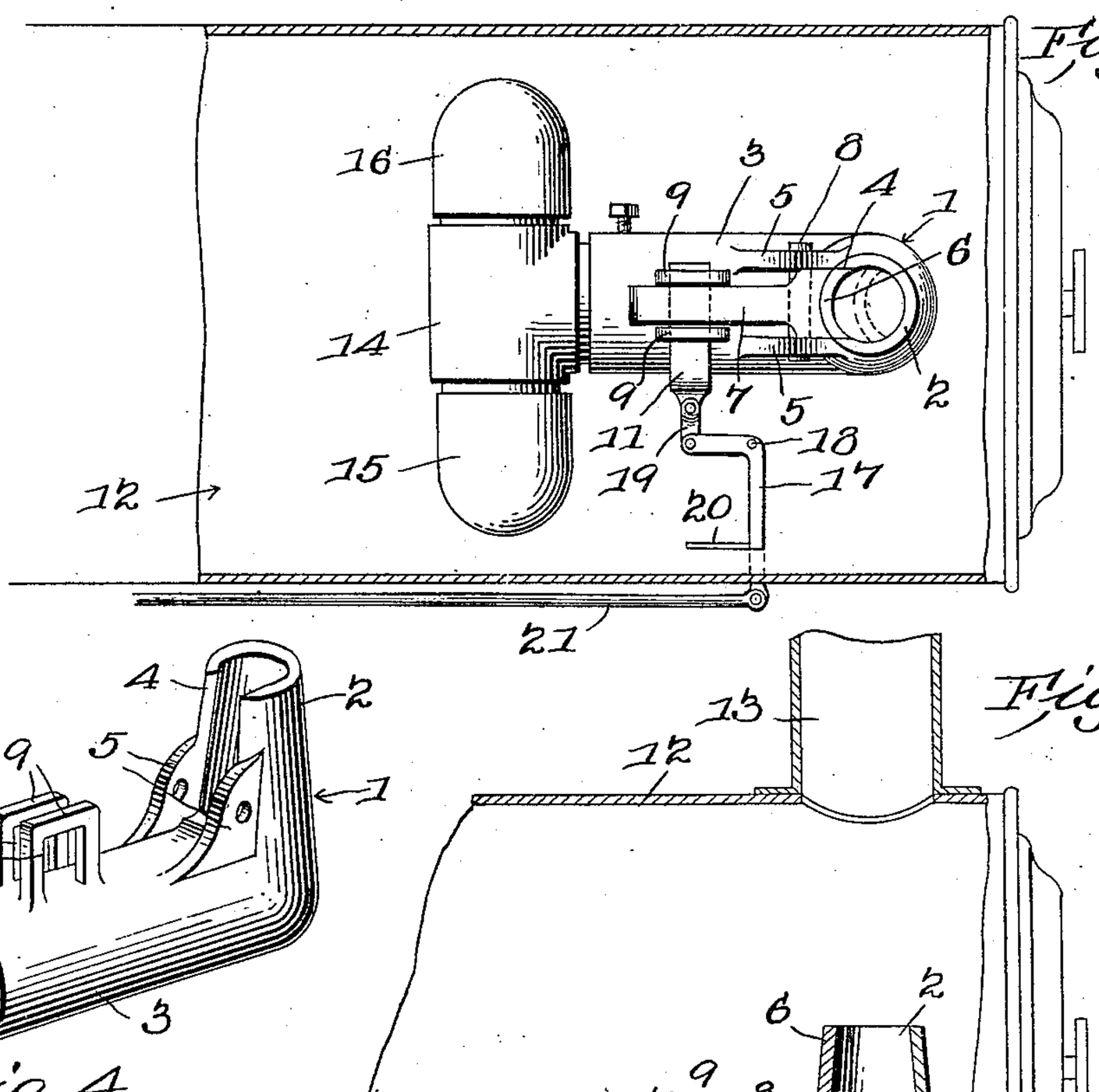

Fig. 2.

Fig. 4.

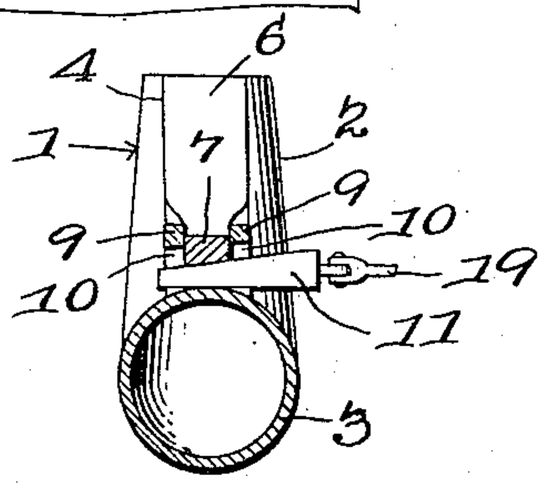

Fig. 3.

WITNESSES:

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PAUL B. HOUGHTON, OF CARPENTER, SOUTH DAKOTA.

EXHAUST-NOZZLE.

No. 841,402. Specification of Letters Patent. Patented Jan. 15, 1907.

Application filed February 9, 1906. Serial No. 300,339.

To all whom it may concern:

Be it known that I, PAUL B. HOUGHTON, a citizen of the United States, residing at Carpenter, in the county of Clark and State of South Dakota, have invented a new and useful Exhaust-Nozzle, of which the following is a specification.

This invention relates to exhaust-nozzles for locomotives, traction and threshing engines, and the like, and has for its object to provide for varying the area of the discharge end of the nozzle in a simple and improved manner, whereby the forced draft through the stack of the locomotive may be readily controlled.

With these and other objects in view the present invention consists in the combination and arrangement of parts, as will be hereinafter more fully described, shown in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that changes in the form, proportion, size, and minor details may be made within the scope of the claims without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings, Figure 1 is a plan view of the present exhaust-nozzle shown in the smoke-box of a locomotive-boiler, the walls of the box being in section. Fig. 2 is a central vertical sectional view of Fig. 1. Fig. 3 is a detail cross-sectional view of the nozzle. Fig. 4 is a detail perspective view of the nozzle with the tiltable nozzle-section removed.

Similar numerals of reference designate corresponding parts in all of the figures of the drawings.

The nozzle 1 of the present invention is substantially L-shaped or in the nature of an elbow and includes the upright tapered nozzle member 2 and the substantially horizontal tubular inlet stem member 3, leading from the bottom of the nozzle proper. What will be termed the "rear" side of the upstanding nozzle member is provided with a comparatively wide longitudinal slot or opening 4, intersecting the top of the nozzle and extending down to the inlet branch 3, there being rearwardly-directed wings or flanges 5 carried by the nozzle at opposite sides of the slot. Working within the slot is an adjustable nozzle portion 6, which is shaped to complete the nozzle and has a substantially horizontal arm 7 extending rearwardly from the lower portion of the adjustable nozzle-section and pivotally supported, as at 8, between the flanges 5. The free end portion of the arm 7 works between a pair of upstanding guide-shoulders 9, and the latter are pierced by corresponding openings 10, extending below the arm for the reception of a beveled or wedge-shaped slide 11, which frictionally engages the under side of the arm. When the slide is forced inwardly, the arm 7 is swung upward, and the adjustable nozzle-section 6 is swung into the nozzle, so as to constrict the passage therethrough, and when the slide is turned outwardly the pressure of the exhaust through the nozzle will force the adjustable section 6 outwardly, so as to return the same to its original position.

It will of course be understood that the present nozzle is designed to be mounted in the usual position within the smoke-box 12 of a steam-boiler, the upright nozzle portion 2 being in alinement with the stack 3, so as to discharge upward into the latter. The inlet branch 3 of the nozzle is connected in any suitable manner with the exhaust-pipes from the cylinders of the locomotive—for instance, by means of a T-coupling 14, which connects with the inlet branch 3 and the exhaust-pipes 15 and 16.

For convenience in controlling the slide 11 from the cab of the locomotive a bell-crank lever 17 is fulcrumed at 18 within the smoke-box and has one end connected to the slide 11 by means of a link 19. The other arm of the lever works through a slot 20 in the adjacent wall of the smoke-box, and a suitable connecting-rod 21 extends rearwardly from the outer end of the lever to the cab, where it is in position for convenient reach by the engineer.

Having thus described the invention, what is claimed is—

1. An exhaust-nozzle having one tiltable section pivotally mounted in the end thereof, a controlling-arm rigidly connected with said tiltable section closely adjacent the pivot-point thereof, and means acting upon said controlling-arm for moving the tiltable section so as to close or open the nozzle.

2. An exhaust-nozzle having its discharge end open and provided with a longitudinal slot, a tiltable nozzle-section working in the slot and provided with an outwardly-directed arm, and a tapered slide working across the arm in frictional engagement therewith for controlling the tiltable nozzle-section.

3. An exhaust-nozzle including an elbow having its outlet branch open and provided

with a slot intersecting its open end, a tiltable nozzle-section working in the slot, an arm carried by the tiltable section and lying across the inlet branch of the elbow, and a tapered slide working between the arm and the inlet branch in frictional engagement with said members to move the arm and tilt the tiltable nozzle-section.

4. An exhaust-nozzle including an elbow having its discharge end open and provided with a longitudinal slot intersecting said open end, a tiltable nozzle-section working in the slot and provided with an arm extending across the inlet branch of the nozzle, guide members upon the inlet branch at opposite sides of the arm and provided with longitudinal openings, and a tapered slide working in the openings between and in frictional engagement with the inlet branch of the nozzle and the arm.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

PAUL B. HOUGHTON.

Witnesses:
B. F. FILBERT,
O. T. SCHMIDT.