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1,465,111

H. BOLTSHAUSER
STEAM DRIVEN LOCOMOTIVE

Filed Dec. 11, 1920

Fig. 1

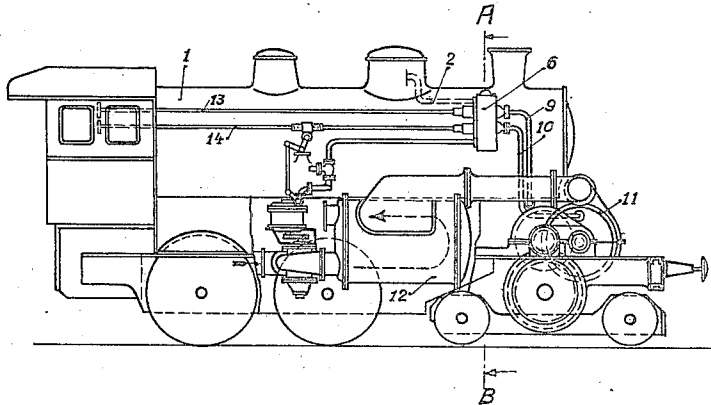


Fig. 2

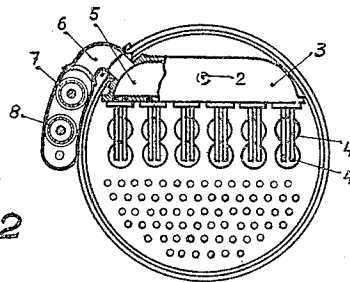


Fig. 3

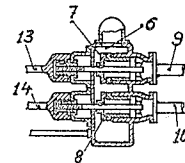


Fig. 5

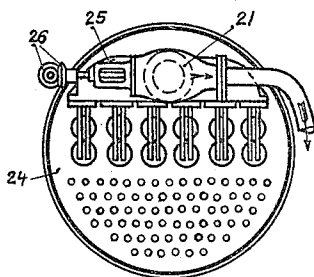
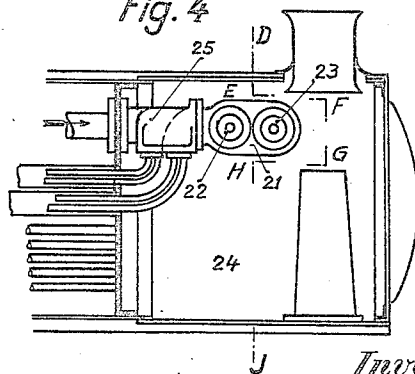


Fig. 4



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UNITED STATES PATENT OFFICE.

HEINRICH BOLTSHAUSER, OF ZURICH, SWITZERLAND.

STEAM-DRIVEN LOCOMOTIVE.

Application filed December 11, 1920. Serial No. 429,932.

To all whom it may concern:

Be it known that I, HEINRICH BOLTSHAUSER, a citizen of the Republic of Switzerland, residing at Zurich, Hardturmstrasse 19, Switzerland, have invented certain new and useful Improvements in a Steam-Driven Locomotive; and I do hereby declare the following to be a clear, full, 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, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

The invention relates to improvements in a steam driven locomotive and particularly to the arrangement of a casing containing the steam distributing members required for the forward and backward running of a steam turbine driven locomotive working with superheated steam. According to the invention this casing is connected immediately to the superheater header. By means of this arrangement the steam from the superheater header reaches the steam distributing members after the shortest travel. Long conduits causing a drop of pressure and loss of heat by radiation are thus avoided. The casing may be arranged without or within the smoke box. In the first case it may be readily opened at any time in order to inspect, clean or refit, if desired, the distributing members. If the casing is provided inside the smoke box little or no special insulation for said casing is required.

Two exemplifications of the invention are shown on the accompanying drawing.

Fig. 1 illustrates a side view of a locomotive in which the casing containing the steam distributing members is arranged outside the smoke box.

Fig. 2 shows on a larger scale a section through the casing, the smoke box and partly through the superheater header along line A—B of Fig. 1;

Fig. 3 shows, also on a larger scale, a vertical longitudinal section through the casing containing the steam distributing members;

Fig. 4 is a vertical longitudinal section of the front part of the locomotive boiler, the casing containing the steam distributing members being arranged in this embodiment within the smoke box.

Fig. 5 illustrates a section through the smoke box along line D—E—F—G—H—J of Fig. 4.

As is seen in Fig. 1 the steam leaves the boiler 1 through a tube 2 and enters the superheater header 3, the superheater consisting substantially of tubes 4. By means of these tubes the steam to be superheated is exposed to the combustion gases and is returned to the front part of the superheater header 3. The steam superheated in this manner flows from the part 5 of the casing 3 through an opening in the shell of the smoke box immediately into the casing 6 containing the valves 7 and 8 (Fig. 3). Valve 7 controls the steam passage for the forward running and the valve 8 controls the steam passage for the backward running of the locomotive. In the first instance the steam is led by means of pipe 9 and in the second instance by means of pipe 10 to the steam turbine 11 which actuates the driving axles of the locomotive through the interposition of reduction gears. The exhaust steam from the steam turbine 11 enters the surface condenser 12. As the casing 6 which contains the valves 7 and 8 is arranged externally of the smoke box, the former can be readily opened in order to clean or exchange the valves. The distributing valves 7 and 8 are actuated from the driver's cab by rods 13 and 14.

As is seen in Figs. 4 and 5 the casing 21 containing the steam distributing valves 22 and 23 is arranged within the smoke box 24 in front of the superheater header 25 and is immediately connected to the latter. The valves are actuated from the driver's cab in the same manner to that shown in Fig. 1, bevel gears 26 being interposed as transmitting members.

I claim:

In a steam driven locomotive, the combination of a header for collecting superheated steam, a casing directly joined to said header, a valve in said casing controlling the steam to be supplied for forward running, a separate valve in said casing to control the steam for backward running, and means extending from the engine cab for separately operating said valves.

In testimony that I claim the foregoing as my invention, I have signed my name.

HEINRICH BOLTSHAUSER.