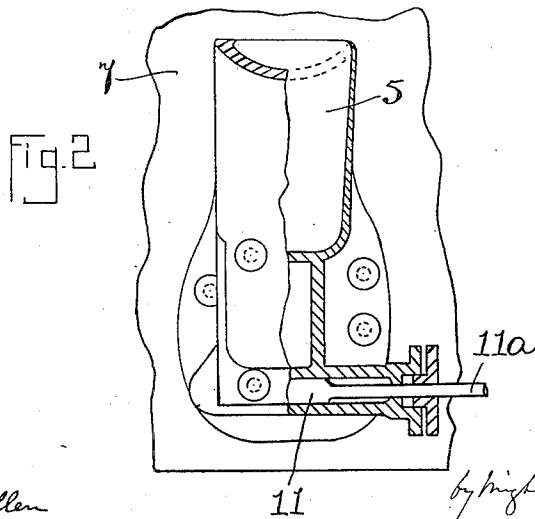
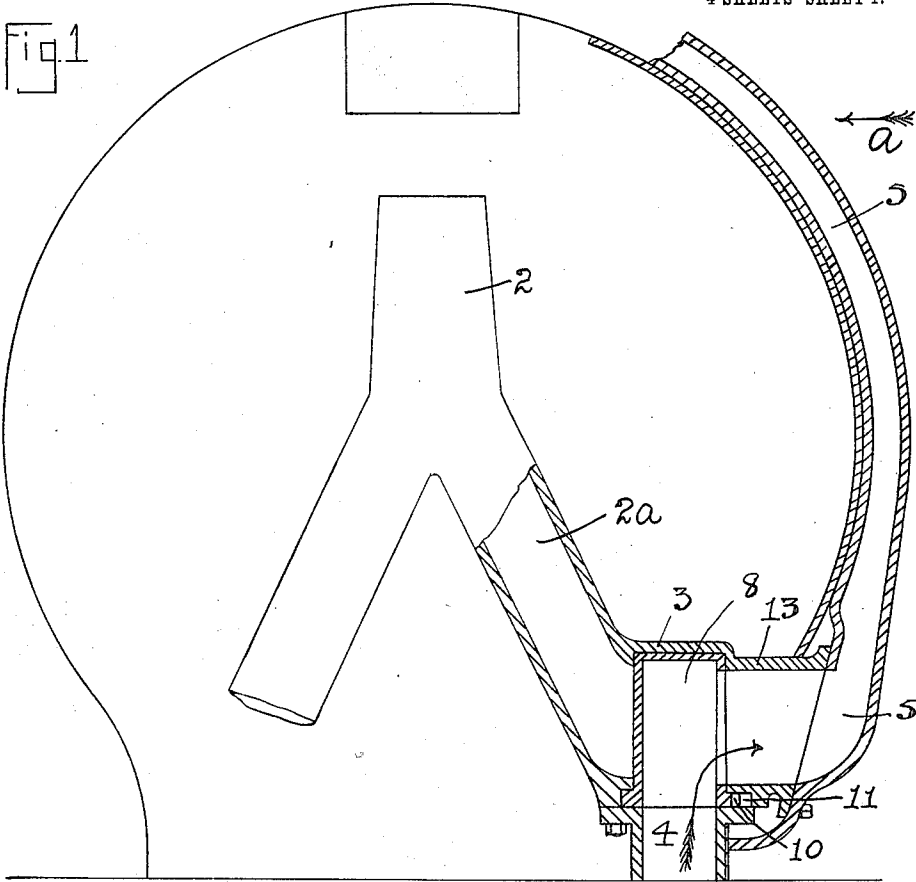


J. KAY.
BLAST PIPE FOR LOCOMOTIVES AND LIKE ENGINES.
APPLICATION FILED JULY 29, 1911.

1,063,452.

Patented June 3, 1913.

4 SHEETS—SHEET 1.



Witnesses

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E. Baeholder

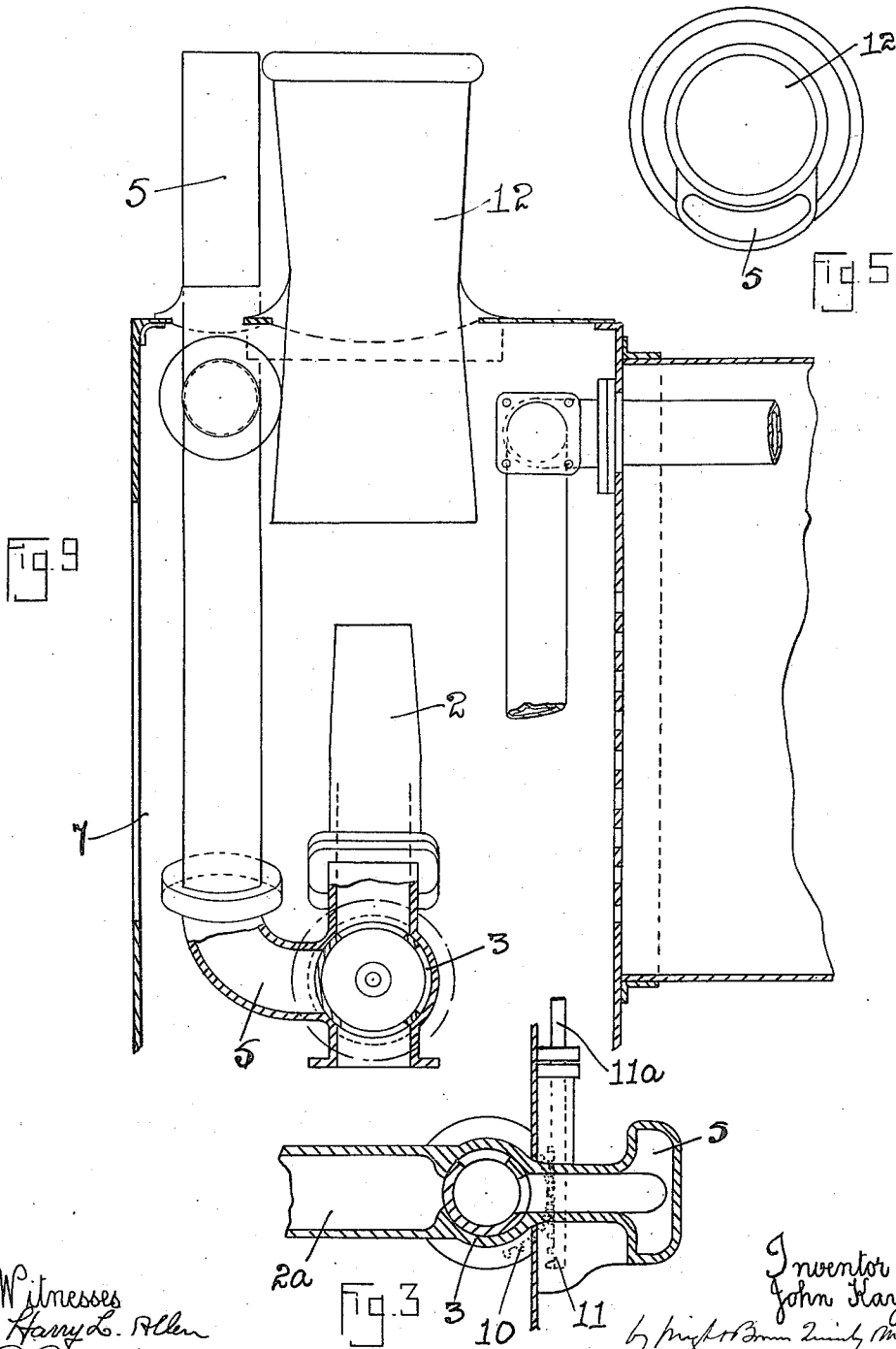
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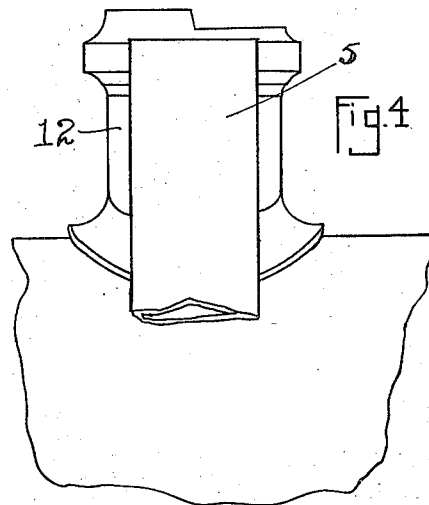
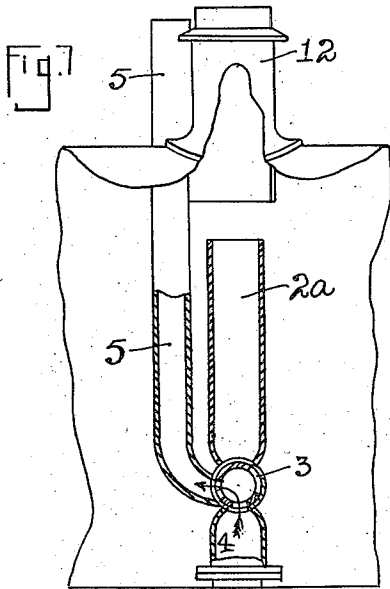
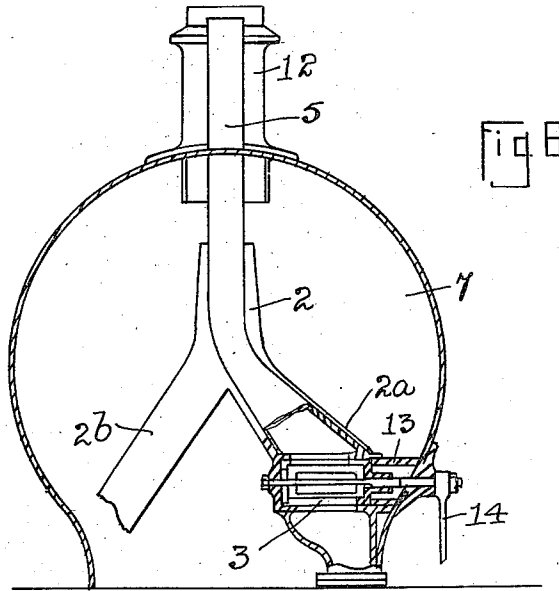
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4 SHEETS—SHEET 3.



Witnesses
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E. B. Belden

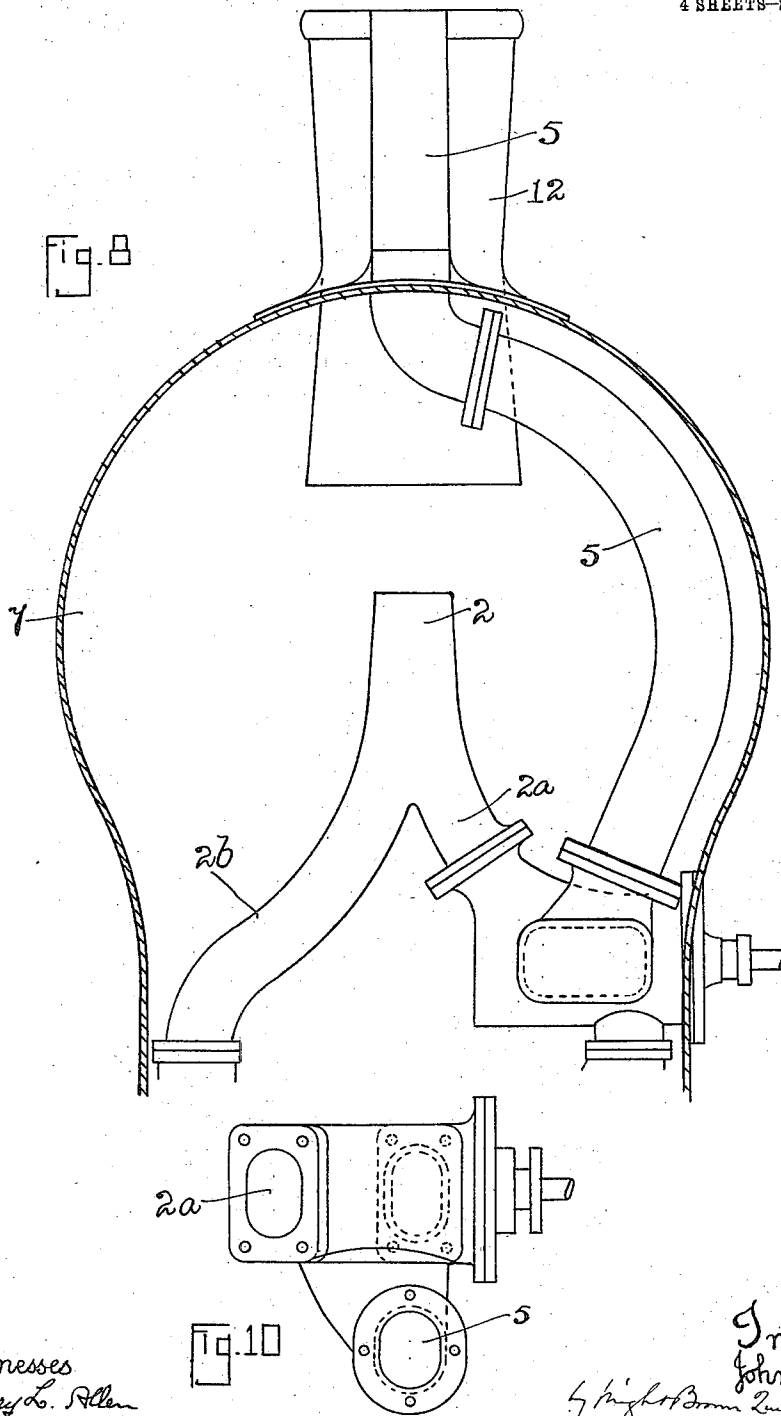
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4 SHEETS-SHEET 4.



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UNITED STATES PATENT OFFICE.

JOHN KAY, OF MANCHESTER, ENGLAND.

BLAST-PIPE FOR LOCOMOTIVES AND LIKE ENGINES.

1,063,452.

Specification of Letters Patent.

Patented June 3, 1913.

Application filed July 29, 1911. Serial No. 641,371.

To all whom it may concern:

Be it known that I, JOHN KAY, a subject of the King of Great Britain, and resident of 29 Hopkins street, Longsight, Manchester, in the county of Lancaster, England, have invented a certain new and useful Improvement Appertaining to Blast-Pipes for Locomotives and Like Engines, of which the following description is a specification.

It relates to the blast pipes of locomotives and like engines through which the steam exhausted from the cylinders passes to cause a draft up the chimney in manner well understood. In the production of these blast pipes great care has to be exercised in the designing and arranging of their shapes and formations so as to afford comparatively easy access to the boiler tubes through the door of the smoke box, and further to arrange that the upper orifice or outlet end of said blast pipe should be in proportion to the opening or inner orifice of the chimney into which the escaping steam from said blast pipe enters. Again the outer end of the blast pipe and the inner end of the chimney must also occupy certain relative positions otherwise the induction of draft by the exhaust steam is greatly interfered with.

In accordance with my invention I make use of said devices which have already been proved to be most efficient, their formation and proportions having been determined by experience, and I now so shape the pipes through which the escaping steam passes from the cylinders of the engines to the chimney that a valve may be mounted in one or other of them in order that said exhaust steam may be turned from passing through the exhaust pipe to go through another pipe or passage without causing any draft to the fire, its escape through said passage being as freely permitted as is its escape through the ordinary blast pipe hence no back pressure is in any way thereby created. The valve thus arranged is brought under the control of the person in charge of the engine. In any attempt to attain this object as heretofore the devices employed have either been arranged so that the whole exhaust steam should be shut off or if not entirely shut off then it should escape through surrounding openings that may be more or less uncovered to permit a portion of steam to escape, or when a valve has been used said valve has been partially opened so

that the exhaust steam might be cut into two currents one going on one side of the valve and the other at the other side thereof and thus said currents by being split up are not effective as draft inducers while their escape is somewhat hampered and therefore causes back pressure, hence in all the varied devices heretofore employed the resultant effects have not been so beneficial as is desirable.

In the accompanying sheets of drawings which are illustrative of my said invention:—Figure 1 is a sectional end elevation of sufficient of the front part or smoke box of a locomotive to show the application thereto of my improved parts. Fig. 2 is a side elevation, partly in section, of certain of the parts shown by Fig. 1, seen in the direction indicated by the arrow *a*. Fig. 3 is a sectional plan of the parts shown by Figs. 1 and 2. Fig. 4 is an elevation of sufficient of a chimney and the upper end of the parts in connection therewith arranged according to my said invention. Fig. 5 is a plan of the parts shown by Fig. 4. Figs. 6 and 7 are sectional end and side elevation respectively (drawn to a reduced scale) showing a modified arrangement of parts as hereinafter explained. Figs. 8, 9 and 10 are sectional end and side elevations and plan respectively (drawn to the same scale as Figs. 1 to 4) of a further modification hereinafter explained.

In carrying my invention into effect I make use of the well known formation of bifurcated (or breeches) pipe 2, one leg 2^a of which is for connecting the steam escaping from one cylinder, while the other leg 2^b is used for the escaping steam from the other cylinder, and into one or other as into the pipe 2^a I insert a valve 3 of such formation that when turned into one position as that shown by Fig. 1, it will entirely stop the passage leading into the leg 2^a and will cause any steam passing through said valve 3 to escape laterally as indicated by the arrow 4, through said valve into an extra escape pipe 5 which may be conveniently placed on the outside of the smoke box 7, as shown by Figs. 1 to 5; thus when the person in attendance of the engine finds that the induction caused by the full blast from both cylinders is more than he requires for the consumption of the fuel in his furnace, he may close the valve 3 as described, so as to conduct the exhaust steam from one cylin-

der to escape by the pipe 5 (as indicated by the arrow 4, Figs. 1 and 7) instead of through the pipe 2, thus avoiding any induction by such escaping steam from said cylinder. Or if the person in attendance requires the full power of the escaping steam from both cylinders to induce the blast, then he turns his valve 3 so that the opening 8 is opposite the pipe 2^a while the passage through the pipe 5 is closed by said valve and thus the draft is induced as desired.

In the arrangements shown by Figs. 1 to 5, the supplementary passage 5 for the exhaust steam is shown outside the smoke box 7 and the valve 3 is shown as having its axis in the vertical plane, so that by the said valve 3 having quadrant teeth 10 formed upon its lower radial flange to gear with teeth in a rack 11, it is clear that the person in attendance may readily operate said valve 3 by any lever screw and hand wheel or other mechanism actuating the rod 11^a which has the rack 11 formed at its outer end.

Instead of the valve 3 being arranged with its axis in the vertical plane it may be arranged with its axis in the horizontal plane as shown by Figs. 6 and 7, in which case the spindle which rotates it may be connected by a lever 14 (Fig. 6) to any rod, lever or other devices within reach of the person in attendance on the engine at any part desired, so that said person may cause the valve 3 to be open for the passage of the exhaust steam through the pipe 2^a, or so that it may escape through the pipe 5 which in such case I may have arranged in front of the pipe 2^a as shown by Figs. 5 and 7; said pipe in this latter case being in front of the ordinary chimney 12, whereas it is to the side of the ordinary chimney 12 in the other arrangements first before described. Or instead of the pipe 5 being in front of the pipe 2^a I may have it arranged as shown by Figs. 8, 9 and 10.

The barrel for the reception of the valve 3 is preferably made in the walls of the pipe 2^a while the covering devices or extensions of said pipe 2^a shown at 13, Fig. 1 (or the covering 13 may be formed on a separate part as shown by Figs. 6 or 8 and 10) protect the devices through which motion is transmitted to the valve 3 against the actions of the hot ashes or the like, which accumulate within the box 7 as is well understood. The arrangement of the devices shown by the several drawings also enables the pipe 2 and its several attachments in-

cluding the parts 2^a 2^b valve 3 and its casing to be readily removed from their seatings within the box 7 to permit the carrying out of repairs to any of the internal tubes with comparatively little more hindrance than heretofore.

Such being the nature and object of my invention, what I claim is:—

1. In a locomotive or similar engine having a blast pipe of bifurcated form, a valve in one of the bifurcations, said valve being movable entirely aside from the path of steam to present no impediment when the passage is open, the other bifurcation being unobstructed, the bifurcation having the valve being provided with a by-pass, and means for manually controlling said valve whereby steam may be entirely cut off from said by-pass or directed through it.

2. In a locomotive or similar engine having a blast pipe of bifurcated form, a valve in one of the bifurcations, the other bifurcation being unobstructed, the bifurcation having the valve being provided with a by-pass, a manually operable rack mechanism for actuating said valve whereby steam may be entirely cut off from said by-pass or directed through it.

3. In a locomotive or similar engine having a smoke box and a blast pipe of bifurcated form located in said smoke box, a valve in one of the said bifurcations, the other bifurcation being unobstructed, a by-pass connected with the bifurcation having the valve, said by-pass being within and shaped to conform to the contour of the inner surface of the smoke box, and means for manually controlling the valve whereby steam may be entirely cut off from said by-pass or directed through it.

4. In a locomotive or similar engine having a blast pipe of bifurcated form, a valve in one of the bifurcations, the other bifurcation being unobstructed, the bifurcation having the valve being provided with a by-pass, said blast pipe and by-pass being detachable so as to facilitate their removal from operative positions, and means for manually controlling said valve whereby steam may be entirely cut off from said by-pass or directed through it.

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

JOHN KAY.

Witnesses:

JOHN WILLIAM THOMAS,
JOHN WHITEHEAD.