C. T. COE.

STEAM JET BLOWER.

APPLICATION FILED SEPT. 3, 1907.

923,490.

Patented June 1, 1909.

2 SHEETS—SHEET 1.

Fig 1

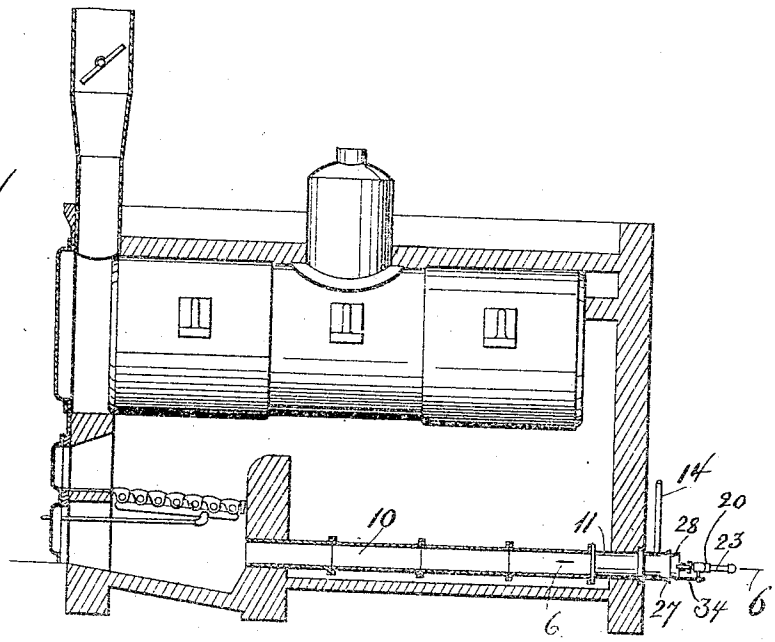


Fig 2

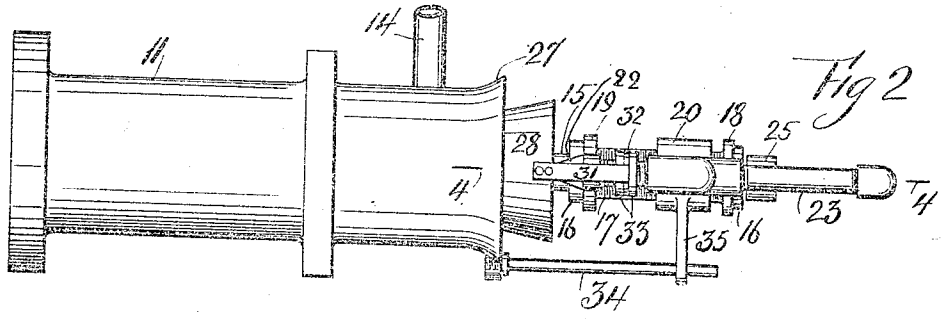
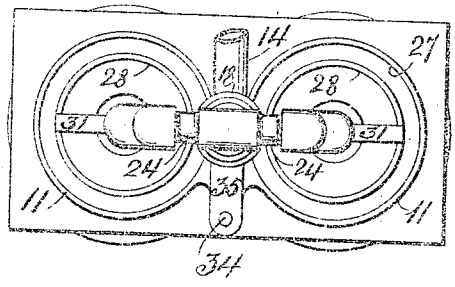


Fig 3



Witnesses
Martin Zimansky
John J. Mallin

Inventor
Charles Thomas Coe
By his Attorney
Aldis Bonneville

C. T. COE.

STEAM JET BLOWER.

APPLICATION FILED SEPT. 3, 1907.

923,490.

Patented June 1, 1909.

2 SHEETS—SHEET 2.

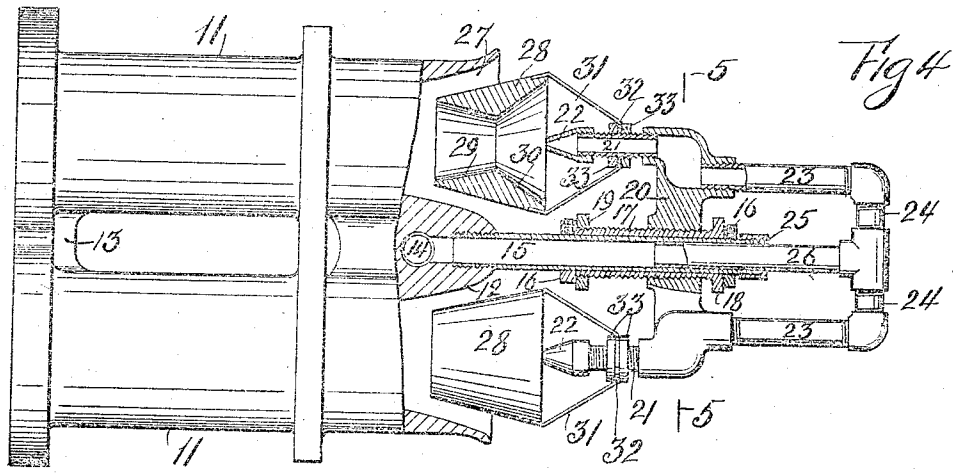


Fig 4

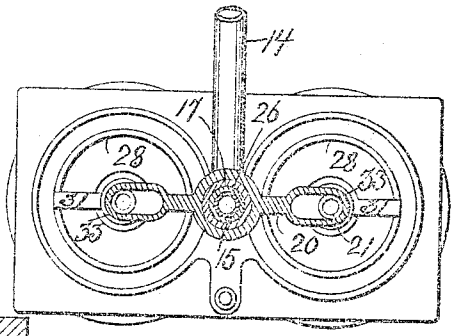


Fig 5

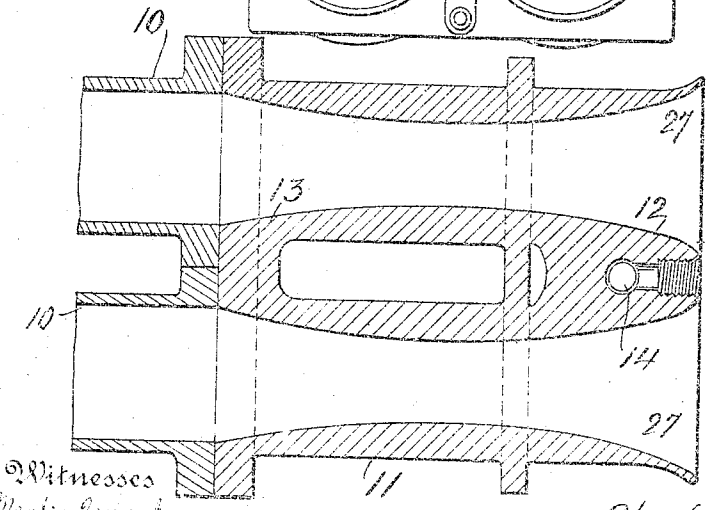


Fig 6

Witnesses
Martin Zimmerly.
John Wiecek

Inventor
Charles Thomas Coe
By his Attorney
A. A. Romeville

UNITED STATES PATENT OFFICE.

CHARLES THOMAS COE, OF ALBANY, NEW YORK.

STEAM-JET BLOWER.

No. 923,490. Specification of Letters Patent. Patented June 1, 1909.

Application filed September 3, 1907. Serial No. 391,040.

To all whom it may concern:

Be it known that I, CHARLES THOMAS COE, a citizen of the United States, and a resident of Albany, in the county of Albany and State of New York, have invented certain new and useful Improvements in Steam-Jet Blowers, of which the following is a specification.

This invention relates to steam jet blowers, and its organization comprises a pair of air ducts which coact with a pair of adjustable funnels, which latter are each adjustably connected with a steam nozzle.

The invention is distinguished from apparatus of a similar nature in the adjustable features of its parts, so that they may be properly located with respect to each other, to suit varying steam pressures and varying quantities of air that may be required to be handled by the blower. These adjustments may be made without disturbing the operations of the apparatus.

In the accompanying drawings Figure 1 exemplifies a partial vertical longitudinal section of a boiler with my invention connected therewith, Fig. 2 shows a partial side view of the invention, Fig. 3 is a right hand end view of Fig. 2, Fig. 4 represents a partial section as on the line 4, 4, of Fig. 2, Fig. 5 shows an end view and section of Fig. 4 on the line 5, 5, and Fig. 6 is a partial enlarged section of a portion of Fig. 1 on the line 6, 6.

In the drawings the invention is shown with conduits 10 extending from the back end of a boiler to the ash pit thereof, and it is evident that the invention could be applied to the front or side of a boiler, and above or below the grates thereof.

To the conduits 10 are attached a pair of air ducts 11, joined at their front ends by a connecting bridge 12 and at their rear ends by a bridge 13. In an opening in the bridge 12 is secured a steam pipe 14, and to the connecting bridge 12 is also secured the steam pipe 15, on which latter are bound two collars 16. A sleeve 17 with a flange 1 and collar 19 is supported on the pipe 15 between the collars 16. The outside of the sleeve 17 is threaded for a cross-head 20, having two cavities that carry the steam nozzle pipes 21 with the nozzles 22. From the said cavities extend the pipes 23 that are joined by the cross-piping 24. On the outer end of the pipe 15 is supported a stuffing box 25, and a pipe 26 extending from the cross-piping 24 enters into and is supported in the pipe 15, passing through the said stuffing box. Located within the flared openings 27 of the ducts 11 are the funnels 28, the inner surfaces of which taper from about their central portions to their edges as shown at 29 and 30. They are held in position by straps 31 that join with collars 32, supported on the pipes 21 between the adjustable nuts 33. A guide rod 34 extends from the ducts 11 and engages with an opening formed in a lug 35 extending from the cross-head 20. It will be noted that about the central portion of each duct is smaller in diameter than its ends.

To operate the invention the ducts 11 with their appurtenances are placed in position as shown. The funnels 28 are placed the requisite distance from the mouths of the ducts, by turning the flange 18 or collar 19, which will cause the cross-head with its appurtenances to travel longitudinally on the sleeve 17, and adjust the opening for the influx of the air between the outer surfaces of the said funnels 28 and the mouths of the ducts 11. The relative positions of the steam nozzles 22 and the funnels 28 are adjusted by means of the nuts 33. When steam is admitted through the pipes 14 and 15 it finds its way out of the nozzle 22 and forces air into and through the ducts 11 and through conduits 10, with the steam issuing from the nozzles.

With this invention it is evident that the relative positions of the funnels 28 with the inlet ends of the ducts 11, and the positions of the steam nozzles with respect to the funnels 28, depends upon the steam pressure in the boiler, and the velocity and quantity of air to be handled by the blower.

A pair of ducts and a pair of funnels have been shown, but it is evident that one duct and one funnel could be used with a boiler.

When the steam leaves the steam nozzle it pulls air with it through the contracted portion of the inner surface of the funnel, and the flaring sides of the funnel after leaving the contracted portion allows the mixture to expand on entering the mouth of the duct and reduces its initial velocity somewhat. As soon as the mixture leaves the funnel it combines with air drawn in through the annular space between the funnel and the mouth of the duct. The duct contracts from the entering end to about its central portion where the charge from the funnel strikes the walls of the duct, and after passing the contracted part of the duct, the mixture again expands when traveling toward the outlet of the said duct, so as not to be of too great a

velocity when entering the ash pit or fire chamber of the boiler.

Having described my invention, I claim:

1. In a blowing apparatus the combination of a duct, a funnel entering the mouth of the duct and adjustable thereto, and a steam nozzle adjustably located with respect to said funnel.

2. In a blowing apparatus the combination of an air duct, a steam supply pipe secured adjacent to the duct, a sleeve having a thread on its outer surface supported on said pipe, a cross-head having a threaded opening, the latter engaging the threads on said sleeve, means to move the cross-head relatively to the sleeve, a steam jet nozzle pipe extending from the cross-head and in connection with the steam supply pipe, a funnel adjustably connected with the steam jet nozzle pipe, to vary the area for the entrance of air through the duct, and to vary the force of the steam supply.

3. In a blowing apparatus the combination of a pair of ducts, a steam supply pipe adjacent thereto, a pair of steam nozzle pipes adjustably connected with said pipe, and a funnel adjustably connected with each nozzle pipe and entering the ducts.

4. In a steam jet blowing apparatus the combination of a pair of ducts, a steam supply pipe adjacent thereto, a pair of steam nozzle pipes adjustably connected with said pipe, a funnel adjustably supported on each of said nozzle pipes entering the ducts and having a contracted portion on the inner surface thereof, and flaring sides at both ends of said contracted portion, said funnels forming with the ducts annular spaces for the influx of air.

5. In a steam jet blowing apparatus the combination of a pair of ducts, each duct being contracted at about its central portion, a steam supply pipe adjacent thereto, a pair of steam nozzle pipes adjustably connected with said pipe, and a funnel having a central contracted portion adjustably secured on each steam nozzle pipe forming an annular space with the ducts.

6. In a steam jet blowing apparatus the combination of a pair of air ducts, a steam supply pipe secured adjacent to the mouths of the ducts, a sleeve threaded on its outer surface supported on the said pipe, a cross-head carried on the sleeve, steam jet nozzle pipes extending from the cross-head and in connection with the steam supply pipe, funnels adjustably connected with the steam jet nozzles, to vary the area for the entrance of air through the ducts, and the force of the steam jet forcing the air through the blowing apparatus.

7. In a steam jet blowing apparatus the combination of a pair of ducts, a steam supply pipe leading from a connecting bridge joining the ducts, a sleeve threaded on its outer surface supported on the said pipe, a cross-head having a threaded opening which latter engages with the threaded sleeve, and having two cavities each of which is threaded at opposite ends, a pair of steam pipes extending from the cavities on one side, cross-piping connecting the latter pipes, a pipe extending from the cross-piping and entering the pipe extending from the connecting bridge, a stuffing box connected up between the two latter pipes, steam nozzle pipes each with a nozzle extending from the cavities in the cross-head, a strap holding a funnel on each nozzle pipe and lock nuts holding each funnel in position opposite the mouth of each duct.

Signed at Albany in the county of Albany and State of New York, this 26th day of August A. D. 1907.

CHARLES THOMAS COE.

Witnesses:

THOS. F. HOGAN,

FRANKLIN W. FISHER.