

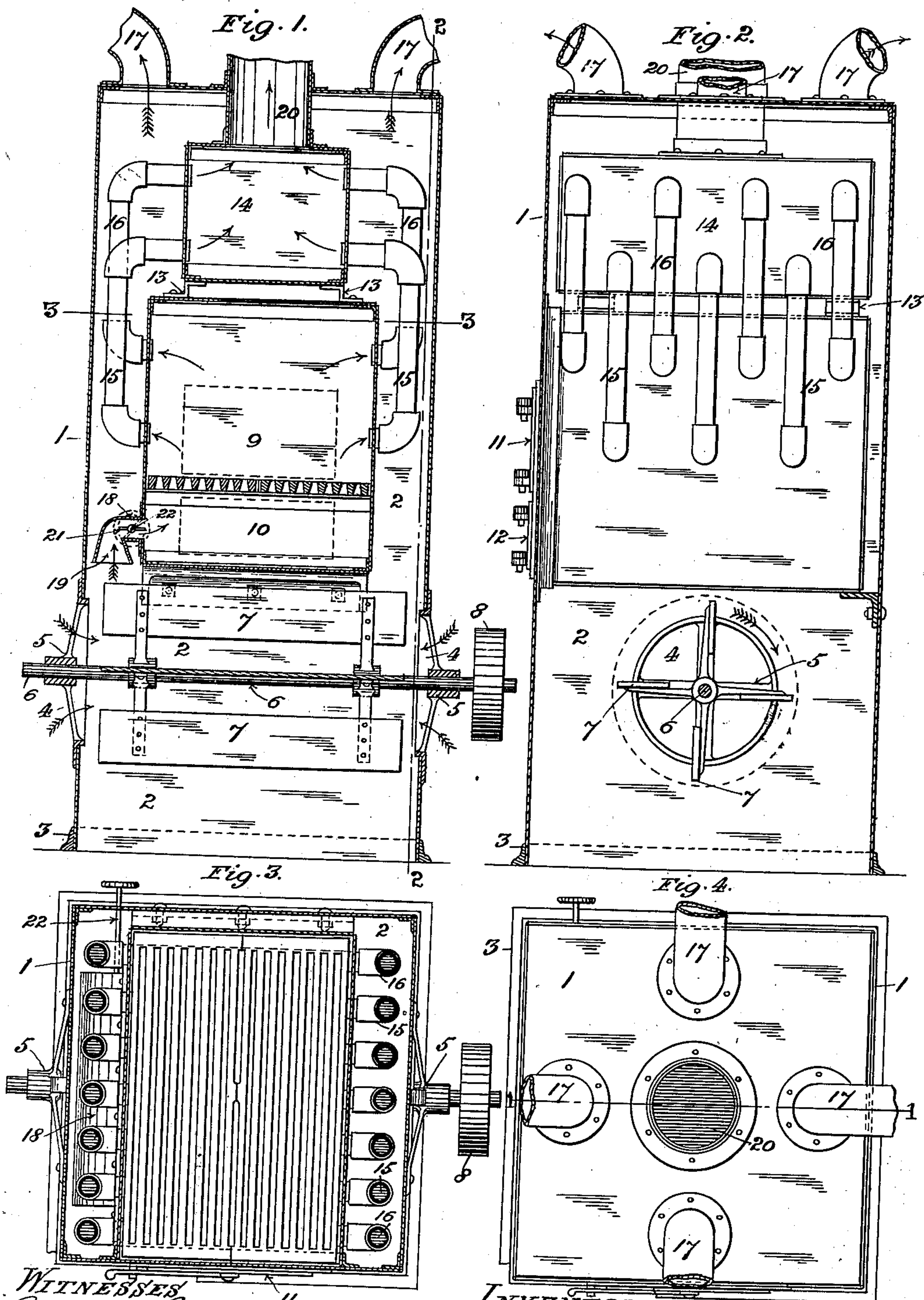
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Patented Jan. 10, 1899.

H. BAETZ.  
HOT AIR BLOWER FURNACE.

(Application filed Feb. 9, 1898.)

(No Model.)



WITNESSES  
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# UNITED STATES PATENT OFFICE.

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## HOT-AIR BLOWER-FURNACE.

SPECIFICATION forming part of Letters Patent No. 617,432, dated January 10, 1899.

Application filed February 9, 1898. Serial No. 669,676. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY BAETZ, a citizen of the United States, residing at St. Louis, State of Missouri, have invented certain new and useful Improvements in Hot-Air Blower-Furnaces, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part thereof.

My invention has relation to improvements in hot-air furnaces; and it consists in the novel arrangement and combination of parts more fully set forth in the specification and pointed out in the claims.

In the drawings, Figure 1 is a vertical middle section on line 1 1 of Fig. 4. Fig. 2 is a section taken at right angles to Fig. 1 on line 2 2 of Fig. 1. Fig. 3 is a horizontal section on line 3 3 of Fig. 1, and Fig. 4 is a top plan of the casing of the furnace.

The object of my invention is to construct a hot-air furnace which shall expose a maximum heating-surface to the air-currents passing through the hot-air chamber thereof, one in which a portion of such currents can be utilized to force the draft through the combustion-chamber, one which while it possesses the advantage of presenting a large amount of heating-surface shall at the same time be compact, and one presenting further and other advantages better apparent from a detailed description of the invention which is as follows:

Referring to the drawings, 1 represents the outer casing of the furnace, the interior of which constitutes the hot-air chamber 2. The casing is preferably rectangular in cross-section, the lower edge thereof being stiffened by an angle-iron 3. Formed in two opposite walls of the casing near the base thereof are two openings 4, within which are mounted spiders 5, which serve as bearings for the fan-shaft 6, the latter being provided with a suitable fan 7 within the casing and with a belt-pulley 8 outside the casing, motion being imparted to the pulley from any suitable source of power. (Not shown.) Extending from the front wall of the casing—that is, the wall adjacent to those between which the fan-shaft is mounted—to within a suitable distance of the rear wall of the casing is a fire-box comprising a combustion-chamber 9, proper, and

an ash-pit 10, the base of the latter extending to a short distance from the edge of the fan-blades and being located directly over the latter. The combustion-chamber and ash-pit are provided with the usual doors 11 and 12, respectively.

Mounted upon suitable supporting angle-pieces 13 on top of the fire-box is a smoke-drum 14, the said supports serving to raise the base of the drum a suitable distance above the upper wall of the fire-box to permit of the free circulation of air through this space and around the drum. Connecting the adjacent vertical side walls of the combustion-chamber and drum, respectively, and establishing communication between the interiors of said chamber and drum are uptake-flues 15 16, respectively, the former leading from the combustion-chamber at a point immediately over the fuel to the lower portion of the drum and the latter from the upper portion of the combustion-chamber to the upper end of the drum. This multiplicity of flues serves to break up the ascending currents of air, permitting the latter to freely circulate among the pipes and around the drum, this arrangement exposing a large amount of heating-surface and thoroughly heating the air driven in by the fan. The drum is provided with an escape-flue 20, passing through the upper wall of the casing. The latter is provided with hot-air pipes 17, which may conduct the warm air to any place where the same is needed. Passing through the wall of the ash-pit and establishing communication between the same and the chamber of the casing is a longitudinally-slitted box or tube 18, having an outer depending flaring mouth 19, the mouth 19 serving to collect a portion of the air-currents forced by the fan and direct them under the fuel to effect a forced draft. The tube is provided with a valve or damper 21, operated by a rod 22 from without the casing to close or open the mouth of the tube at will, such dampers and means of operating the same being of usual construction and no special claim being made thereon.

It is apparent that the present furnace is susceptible of minor changes without affecting the spirit of my invention. For example, instead of having a fan for forcing the air against the flues and drum it may draw the air, in which event the relative location of



the parts would be varied. I wish it to be understood, too, that I do not limit myself to the nature or character of the fuel to be used. The same can be coal, coke, wood, gas, and the like. As seen from the drawings, the lengths of the pipes or flues 15 16 are the same, the alternating arrangement here shown being resorted to to better distribute the escape of the combustion products into the drum and to break up as much as possible the air-currents coming in contact with the exterior of such pipes.

Having described my invention, what I claim is—

15 1. In a hot-air furnace, a suitable casing, a fire-box mounted within the same and extending from the front wall thereof to within a suitable distance of the rear wall, a fan-shaft mounted in the side walls of the casing below the fire-box, a fan carried by said shaft, a drum mounted at a suitable distance above the fire-box and extending rearwardly to within a suitable distance of the rear wall of the casing, a double series of flues alternately  
25 connecting the lower and upper portions of the adjacent vertical side walls of the combustion-chamber and drum respectively near

the top and bottoms of said walls, an escape-flue for the drum leading through the top wall of the casing, means for operating the fan-shaft, a tube leading from the chamber of the casing through the wall of the ash-pit and carried between the grate of the fire-box for directing a portion of the air-currents into the fire-box, and a valve for controlling the said tube, substantially as set forth. 30 35

2. In a hot-air furnace, a suitable casing, a fire-box located within the same, a drum mounted over the fire-box, a multiplicity of flues having the terminals of one set disposed at a different elevation from that of the other set, that is to say, breaking joint with one another in their points of connection with the fire-box and drum respectively, the casing being provided with openings for the admission of air into the air-chamber, substantially as set forth. 40 45

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

HENRY BAETZ.

Witnesses:

EMIL STAREK,  
IELAH W. CAREY.