

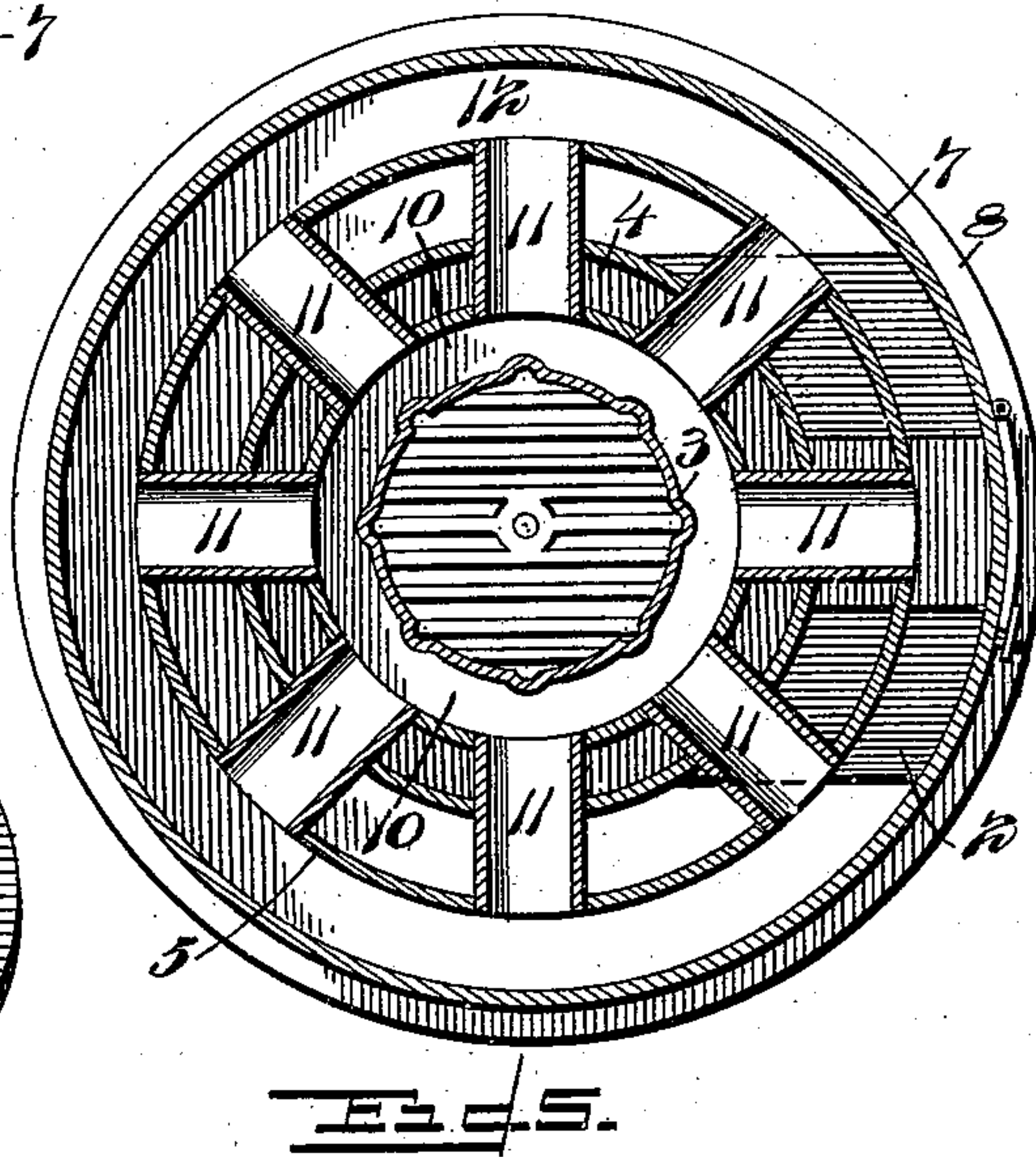
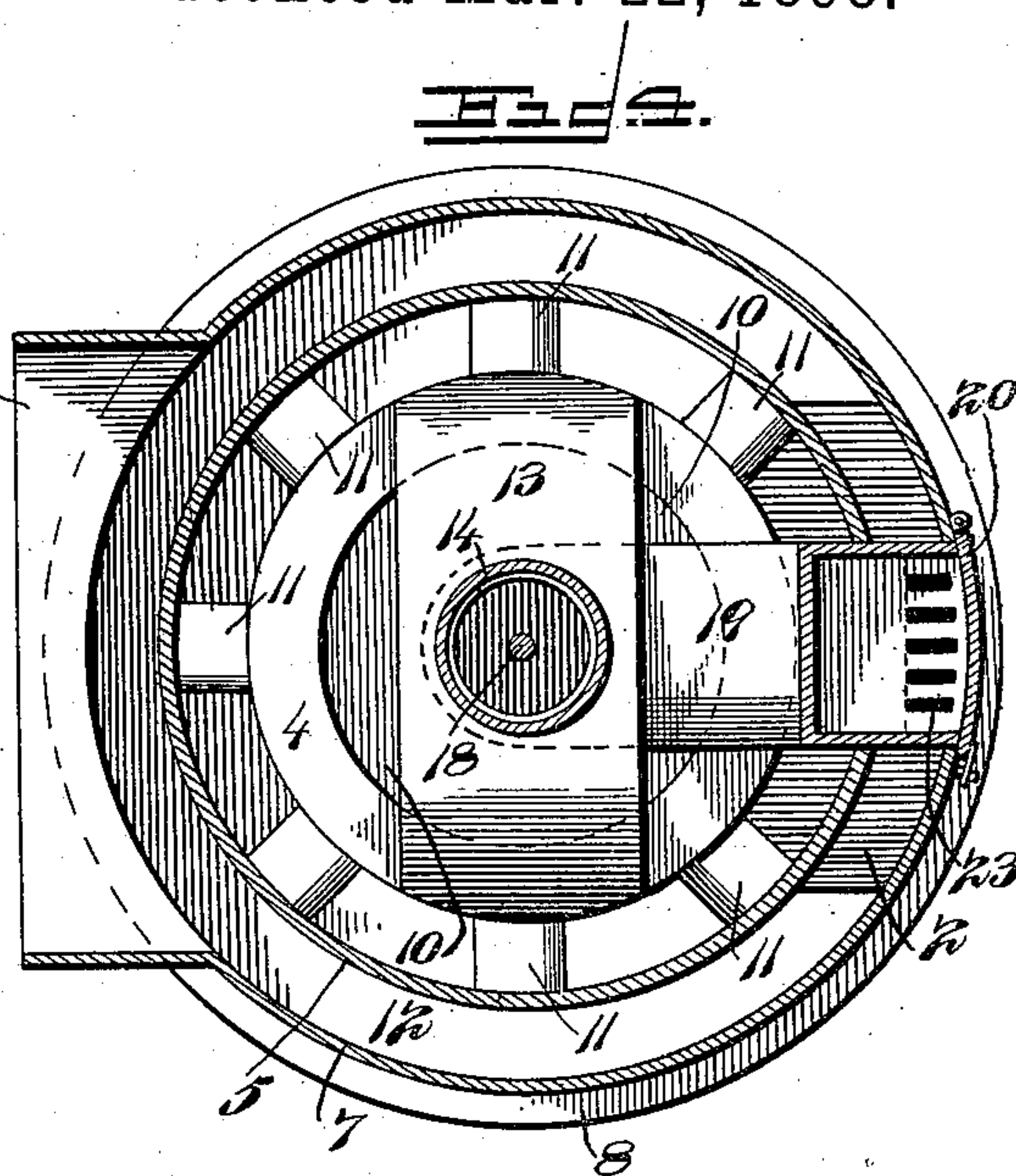
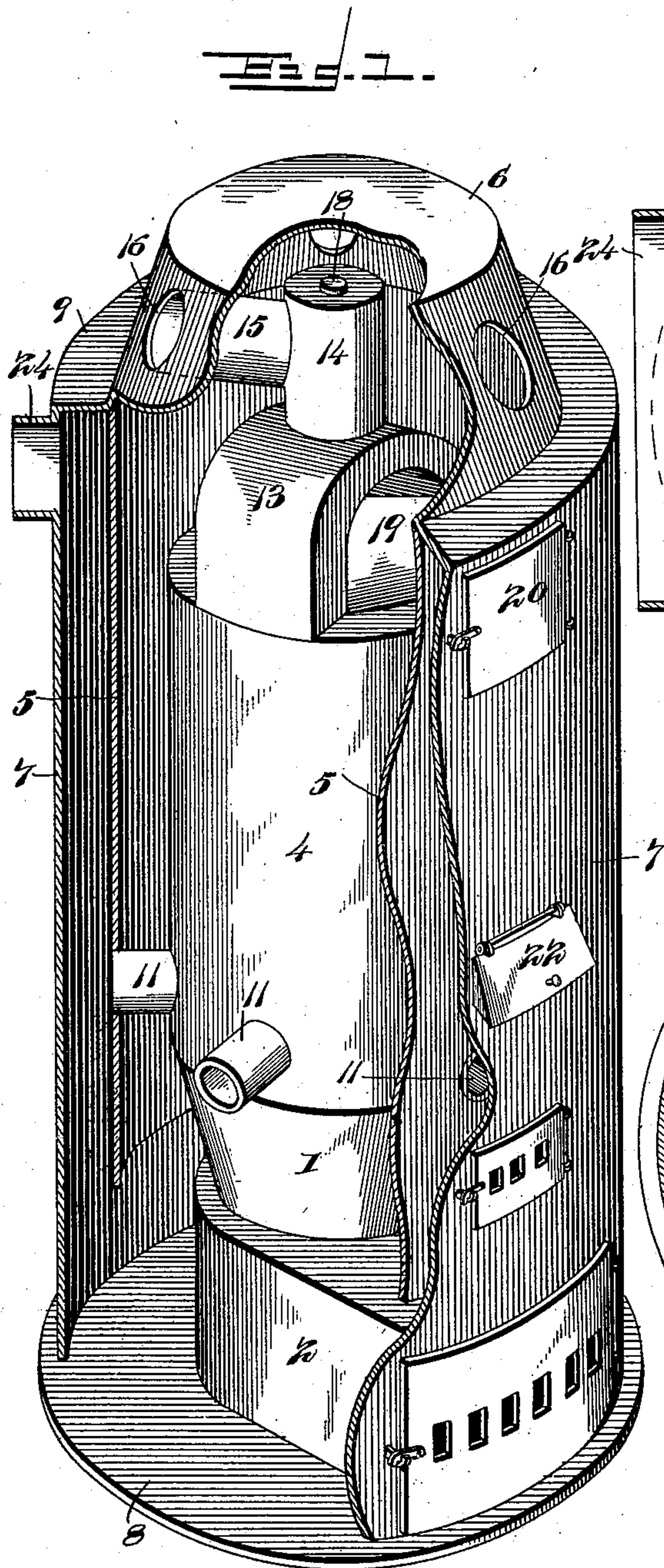
(No Model.)

2 Sheets—Sheet 1.

A. BAIR.
HOT AIR FURNACE.

No. 601,115.

Patented Mar. 22, 1898.



Inventor

Alvin Bair

Witnesses

E. S. Stewart
U. B. Hillyard.

By *Two* Attorneys,

C. A. Snow & Co.

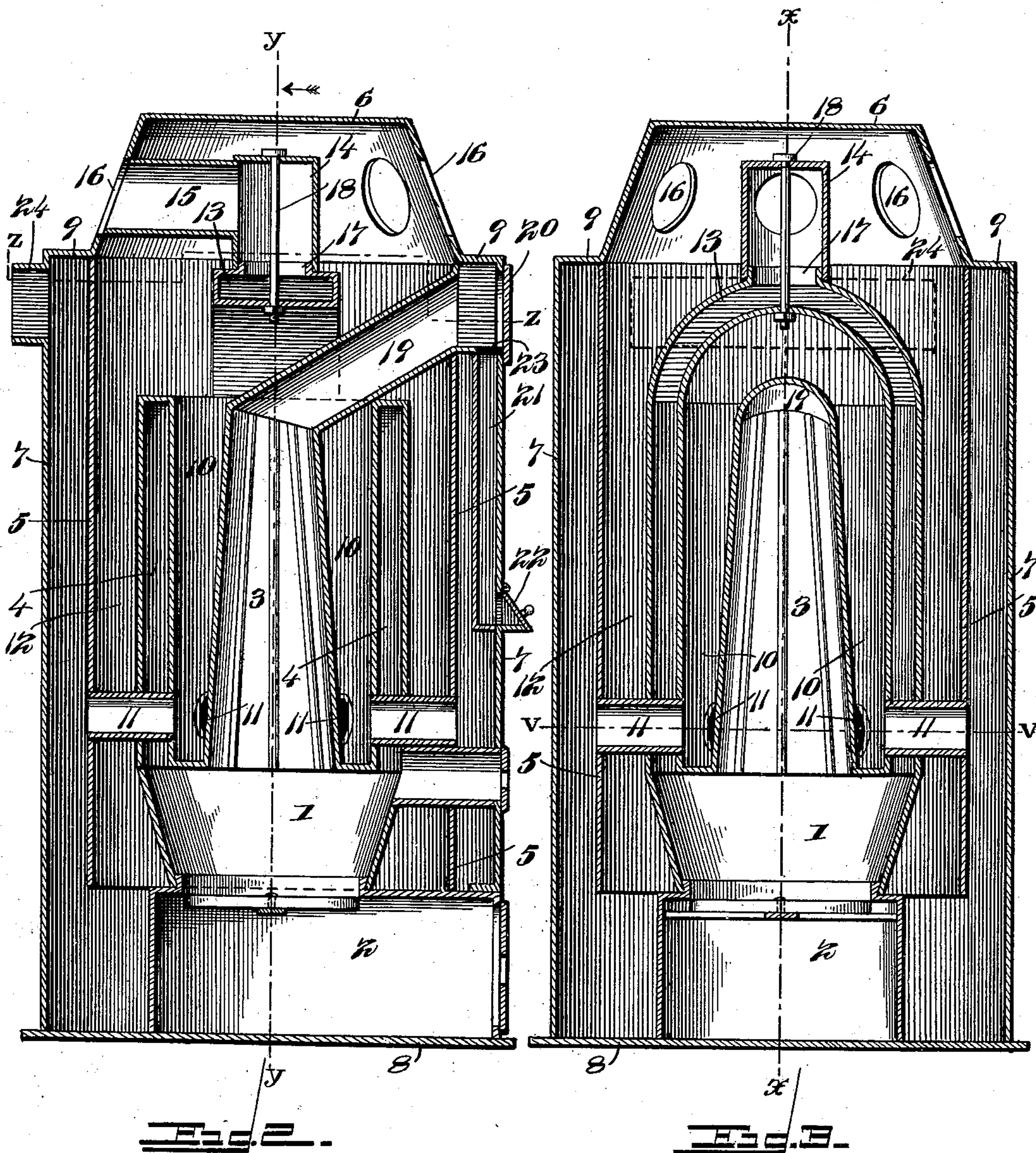
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UNITED STATES PATENT OFFICE.

ALVIN BAIR, OF TIFFIN, OHIO.

HOT-AIR FURNACE.

SPECIFICATION forming part of Letters Patent No. 601,115, dated March 22, 1898.

Application filed March 16, 1897. Serial No. 627,790. (No model.)

To all whom it may concern:

Be it known that I, ALVIN BAIR, a citizen of the United States, residing at Tiffin, in the county of Seneca and State of Ohio, have invented a new and useful Hot-Air Furnace, of which the following is a specification.

This invention relates to hot-air furnaces, and is designed most especially as an improvement on the furnace patented to A. Steinbrick and myself April 7, 1896, No. 557,753.

One of the principal objects of the improvement is to utilize all or nearly all the heat radiated from the furnace and prevent loss by radiation of the heat into the room or place in which the furnace is located.

Another object of the improvement is to supply air to the furnace through the magazine and prevent escape of smoke and gas, the air entering a passage communicating with the feed-chute at a point below the latter.

A still further object of the improvement is to provide for conveniently and economically connecting the smoke-pipe with the furnace, the latter having an exit-pipe mounted so as to be turned to be brought into register with any one of the openings in the hot-air jacket to receive the smoke-pipe.

Other objects and advantages will suggest themselves to persons skilled in the art as the nature of the invention is understood, and to this end reference is to be had to the following description and the accompanying drawings.

The improvement is susceptible of various changes in the form, proportion, and the minor details of construction without departing from the principle or sacrificing any of the advantages thereof, and to a full disclosure of the invention an adaptation thereof is shown in the accompanying drawings, in which—

Figure 1 is a perspective view of a furnace embodying the essential features of the present invention, parts being broken away to show more clearly the interior construction and disposition of the parts. Fig. 2 is a vertical section on the line X X of Fig. 3. Fig. 3 is a section on the line Y Y of Fig. 2, looking in the direction of the arrow. Fig. 4 is a plan section on the line Z Z of Fig. 2. Fig. 5 is a plan section on the line V V of Fig. 3.

Corresponding and like parts are referred to in the following description and indicated

in the several views of the accompanying drawings by the same reference characters.

The furnace comprises a fire-pot 1, ash-pit 2, magazine 3, an annular hollow combustion-chamber 4, an inner jacket 5, surmounted by a crown 6, and an outer jacket 7, the latter extending to and resting upon the base 8. A ring 9 connects the upper ends of the jackets 5 and 7, and the inner jacket 5 terminates above the base 8 preferably about on a level corresponding with the top portion of the ash-pit. An annular space 10 is formed between the magazine 3 and the inner shell, forming the hollow combustion-chamber 4, and this space is closed at its lower end and is open at its upper end and has free communication with the upper portion of the jacket 5. A series of horizontal pipes 11 establish communication between the annular space 10 and the annular space 12, the latter being formed between the jackets 5 and 7, and these pipes are disposed radially and extend through the annular combustion-chamber 4.

A hollow arch 13 spans the space 10 and communicates with the annular combustion-chamber 4 at diametrically opposite points, and is provided at its upper end or highest point with an exit-pipe 14, the latter being centrally disposed and so connected with the arch 13 as to be turned to bring its horizontal branch 15 in register with any one of the series of openings 16 provided in the side of the crown 6. As shown, the top portion of the arch 13 is formed with an opening from which extends a collar 17, the lower end of the exit-pipe 14 fitting over the collar 17 and being retained in place by a bolt or similar fastening 18, passing centrally through the vertical portion of the exit-pipe 14 and making connection with the upper part of the said pipe and with the lower portion of the arch 13. The smoke and gases escape from the combustion-chamber by way of the arch 13 and through the exit-pipe 14 to the smoke-pipe, (not shown,) which makes connection with the horizontal portion 15 of the exit-pipe through any one of the hot-air openings 16, as may be found most convenient. By this construction it will be readily understood that the smoke-pipe may come from any direction and can be connected to the furnace in an economical manner, since the exit-pipe

14 can be turned to accommodate itself to the position of the smoke-pipe.

The chute 19, communicating with the magazine, extends through a side of the furnace and is closed by a door 20. A passage 21 communicates with the mouth of the chute 19 and is formed vertically on the inner side of the outer jacket 7, and its lower end opens outward through the jacket 7 a short distance above the level of the fire-pot and is closed by a door 22. To prevent coal falling into the passage 21 and choking the same, its upper end is protected by a grate 23, and any dust or small particles of coal which may fall through the grate 23 will accumulate at the lower end of the passage 21 and can be removed by opening the door 22. The purpose of the passage 21 is to supply air to the furnace through the magazine when the lower drafts are cut off and prevent the escape of smoke or gas into the room, which would happen if the door 20 were opened or provided with damper-controlled openings for the admission of air from this source.

The jacket 7 is provided on one side near its upper end with a collar 24 to make connection with the pipe for supplying fresh air to the furnace to be heated prior to being distributed to the various rooms or apartments to be warmed. The cold air entering at 24 passes downward through the space 12 beneath the jacket 5, thence upward through the space formed between the jacket 5 and combustion-chamber 4 and into the crown 6, thence to the various rooms to be heated by way of pipes communicating with the several openings 16. Some of the air will pass through the pipes 11 into the hot-air space 10 and will be warmed and pass into the crown 6, to be distributed in the manner well understood. The heat radiated from the combustion-chamber will warm the air passing through the space inclosed by the jacket 5, and the small

amount of heat radiated from the jacket 5 will be taken up by the air passing through the space 12. Hence little or no heat will be lost by radiation.

Having thus described the invention, what is claimed as new is—

1. In a furnace, the combination of a jacket surrounding the body of the stove and forming a hot-air space, a centrally-disposed magazine having a lateral chute at its upper end opening through a side of the jacket, a vertical passage within the hot-air space and having its upper end communicating with the lower wall of the chute at its receiving end, and its lower end opening through the jacket at a considerable distance below the receiving end of the chute, a grate at the juncture of the vertical passage with the chute, and a door for closing the lower end of the said vertical passage, substantially as set forth.

2. In a hot-air furnace, the combination of a crown having a series of openings for connection therewith of the hot-air pipes, a hollow arch communicating with the combustion-chamber and having an opening in its top side surrounded by a collar, an exit-pipe closed at its upper end and having its lower end fitted over the said collar, and having a lateral branch which is adapted to be brought in register with any one of the openings in the crown, and a bolt passing through the exit-pipe and arch and corresponding openings in the lower wall of the arch and the upper closed end of the exit-pipe to retain the latter in place, substantially as set forth.

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

ALVIN BAIR.

Witnesses:

FRANK NARHER,
CLYDE C. BAIR.