

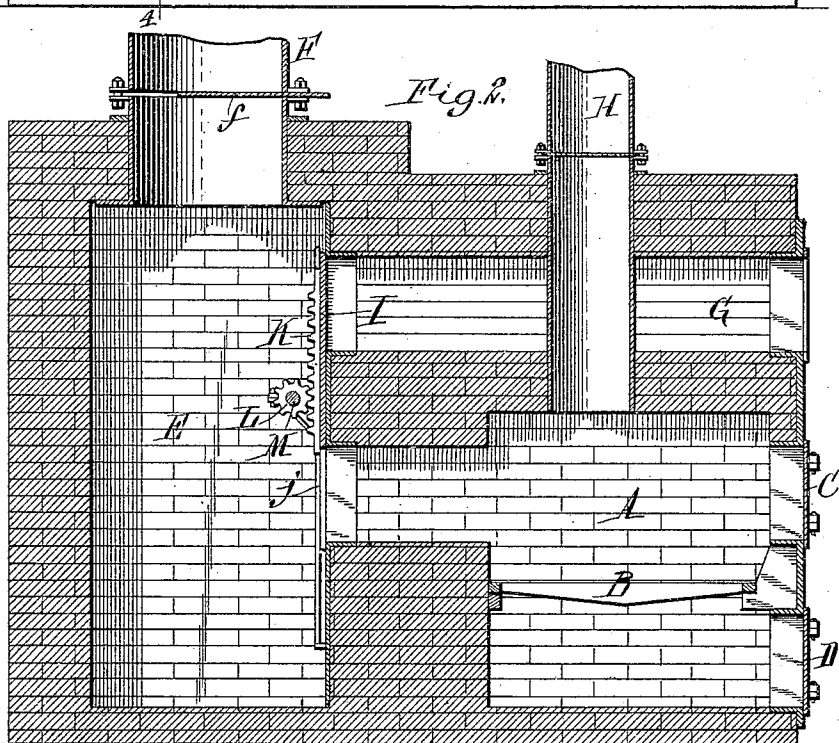
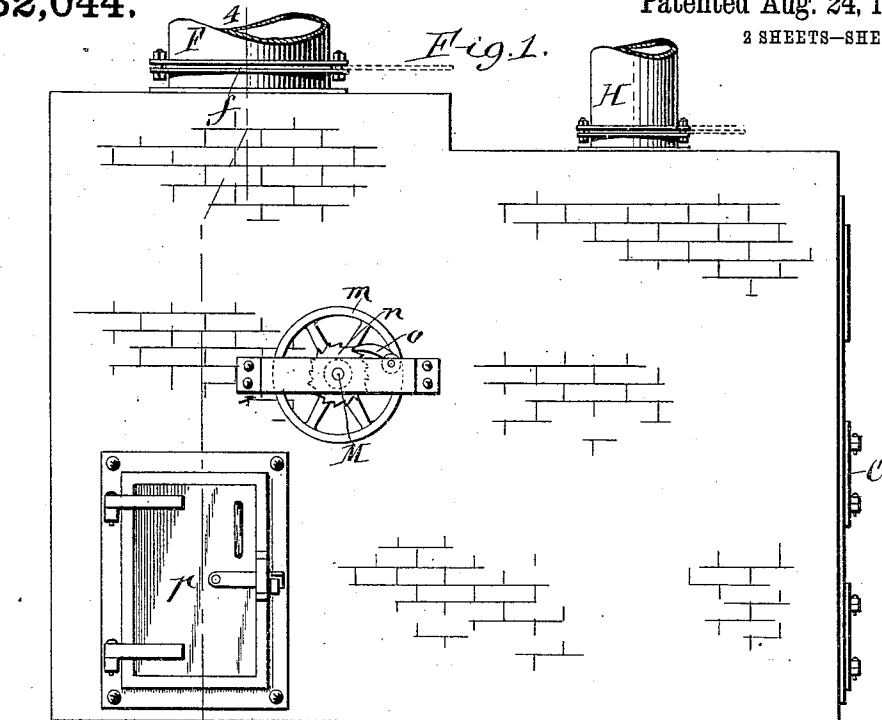
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FURNACE.

APPLICATION FILED SEPT. 28, 1908.

932,044.

Patented Aug. 24, 1909.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

Fig. 3.

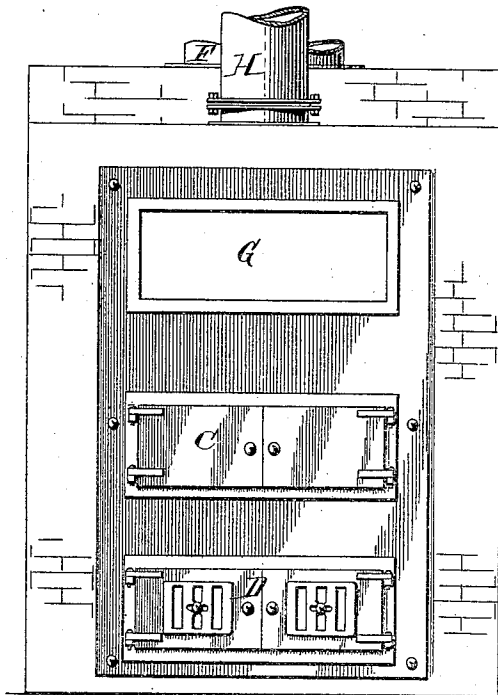
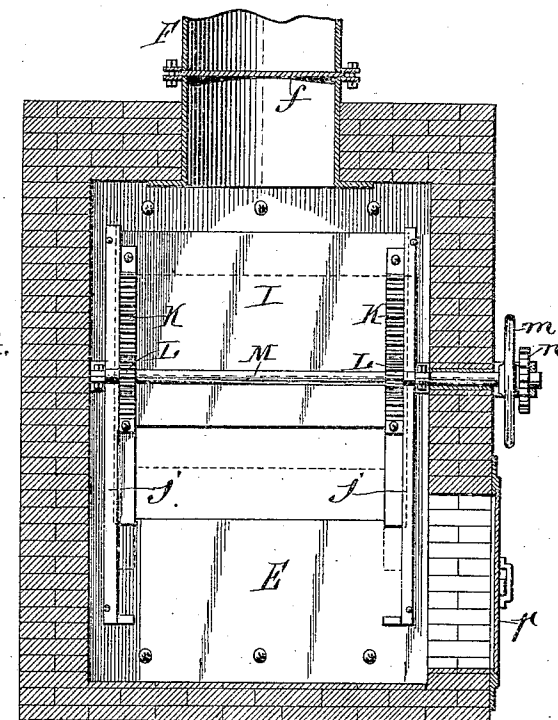


Fig. 4.



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UNITED STATES PATENT OFFICE.

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FURNACE.

932,044.

Specification of Letters Patent. Patented Aug. 24, 1909.

Application filed September 28, 1908. Serial No. 455,104.

To all whom it may concern:

Be it known that I, FREDERICK H. C. MEY, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented a new and useful Improvement in Furnaces, of which the following is a specification.

This invention relates to a heater or furnace designed more especially for supplying hot air to pneumatic malting and drying apparatus, but the same is also useful in connection with other apparatus of various kinds requiring a hot-air supply of a given or variable temperature.

A malting apparatus in connection with which my invention is particularly desirable is shown in Letters Patent of the United States No. 857,954, granted to me June 25, 1907. That apparatus comprises a battery or plurality of malting drums and three air supply trunks connected with each of the drums, one of the trunks being connected with the atmosphere and supplying dry cool air to the drums during the steeping process of the grain, the second trunk furnishing moist air of the proper temperature during the germinating stage of the malting process, and the third trunk being connected with a furnace and supplying dry hot air for drying the malt. In this apparatus, the temperature required during the germinating stage is maintained by properly commingling the hot and cold air from the corresponding trunks before delivering it into the drums, this being done by separate valves or dampers in said trunks.

The object of my present invention is the provision of an improved furnace by which the mixture of hot and cold air necessary to produce the required temperature can be effected within the furnace itself instead of the air-trunks outside thereof, thus simplifying the construction of the valved air trunks and permitting a more convenient and satisfactory regulation of the temperature.

In the accompanying drawings consisting of 2 sheets: Figure 1 is a side elevation of the furnace. Fig. 2 is a vertical longitudinal section thereof. Fig. 3 is a front elevation of the same. Fig. 4 is a transverse section in line 4—4, Fig. 1.

Similar letters of reference indicate corresponding parts in the several views.

A indicates the combustion chamber of the furnace, B the grate, C the fuel doors and D the ash pit doors, all of which parts

may be of any ordinary or well-known construction.

The combustion chamber opens at its rear end into a mixing chamber E extending practically from top to bottom of the furnace and throughout the width of the combustion chamber, and F indicates an air pipe leading from the top of the mixing chamber to the apparatus, not shown, which is to be supplied with hot air. When the furnace is used in connection with a malting apparatus of the kind hereinbefore referred to, the pipe F is connected with the eye of the usual fan which forces the air into and through the malting drums. The hot-air supply pipe F contains a sliding or other suitable damper f.

Above the combustion chamber is arranged a longitudinal cold air flue or passage G which preferably extends from the front end of the furnace to the mixing chamber E for supplying dry cold air to the latter. This flue extends through the front wall of the furnace, as shown, so as to communicate freely with the outer air.

H indicates the smoke stack of the furnace which, in the construction shown, extends from the top of the same through the cold air flue G.

To the rear ends of the combustion chamber and the cold air flue is applied a valve, gate or slide I by which communication between either of the same and the mixing chamber E may be cut off more or less, or altogether, for supplying the proper volume of cold air to the mixing chamber to obtain hot air of the desired temperature. In the preferred construction shown in the drawings, the valve consists of a vertically movable slide arranged at its lateral edges in upright guides j secured to the front wall of the mixing chamber E at opposite sides of the combustion chamber and the cold air flue I and made of such a length from top to bottom that when raised to its upper limit, it completely closes the rear end of the cold air flue and fully uncovers the rear end of the combustion chamber, as shown in Fig. 2 and by full lines in Fig. 4, thus supplying hot air of the maximum temperature; while when the slide is lowered to its limit, it fully closes the rear end of the combustion chamber and completely opens the corresponding end of the cold air flue. When the slide is shifted to an intermediate position, as shown by dotted lines in Fig. 4, it uncovers the rear

ends of both the combustion chamber and the cold air flue more or less, thus communicating a greater or less volume of cold air with the hot air entering the mixing chamber and accordingly reducing and regulating the temperature of the air supplied to the malt-
 5 ing drums or other apparatus.

Any suitable means may be employed for operating the slide I. In the construction
 10 shown, it is provided for this purpose with gear racks K which are engaged by pinions L secured to a horizontal shaft M arranged transversely in the mixing chamber E. One
 15 end of this shaft extends through the wall of the furnace and carries a hand wheel *m* for turning it, and a ratchet wheel *n* engaged by a detent pawl *o* for preventing backward rotation of the shaft and retaining the slide
 in position.

20 The mixing chamber is preferably provided at one side with a door *p* through which it may be entered for cleaning it from time to time.

As the tempering of the hot air from the
 25 combustion chamber is effected by adjusting a single slide or valve in the furnace, this is done more conveniently and more accurately than with a structure requiring two valves to be separately adjusted.

30 I claim as my invention:

1. In a furnace, the combination of the combustion chamber, a mixing chamber communicating with the combustion chamber, a cold air flue also connected with said mixing
 35 chamber, and a single valve applied to the rear portions of said combustion chamber and said cold air flue and constructed to open communication more or less between the mixing chamber and the cold air flue
 40 when communication between the combustion chamber and the mixing chamber is partly cut off, or vice versa.

2. In a furnace, the combination of a combustion chamber, a mixing chamber arranged in rear thereof and communicating
 45 therewith, a cold air flue arranged above the combustion chamber and communicating at its rear end with the mixing chamber, a vertically movable slide applied to the rear
 50 end of the cold air flue and the combustion chamber, and means for operating said slide.

3. In a furnace, the combination of a combustion chamber, a mixing chamber arranged in rear thereof and communicating
 55 therewith, a cold air flue arranged above the combustion chamber and communicating at its rear end with the mixing chamber, a vertically movable slide applied to the rear
 60 end of the cold air flue and the combustion chamber and provided with a gear rack, and a shaft arranged transversely in the mixing chamber and provided with a gear
 pinion engaging said rack.

4. In a furnace, the combination of a combustion chamber, a mixing chamber arranged in rear thereof and communicating
 65 therewith, a cold air flue arranged above the combustion chamber and communicating at its rear end with the mixing chamber, upright guides applied to the front wall of
 70 the mixing chamber, a slide arranged in said guide and controlling communication between the mixing chamber and combustion chamber and cold air flue and provided on
 75 its rear side with a gear rack, and a shaft arranged transversely in the mixing chamber and having a gear pinion engaging said gear rack.

Witness my hand this 25th day of September, 1908.

FREDERICK H. C. MEY.

Witnesses:

C. F. GEYER,

E. M. GRAHAM.