

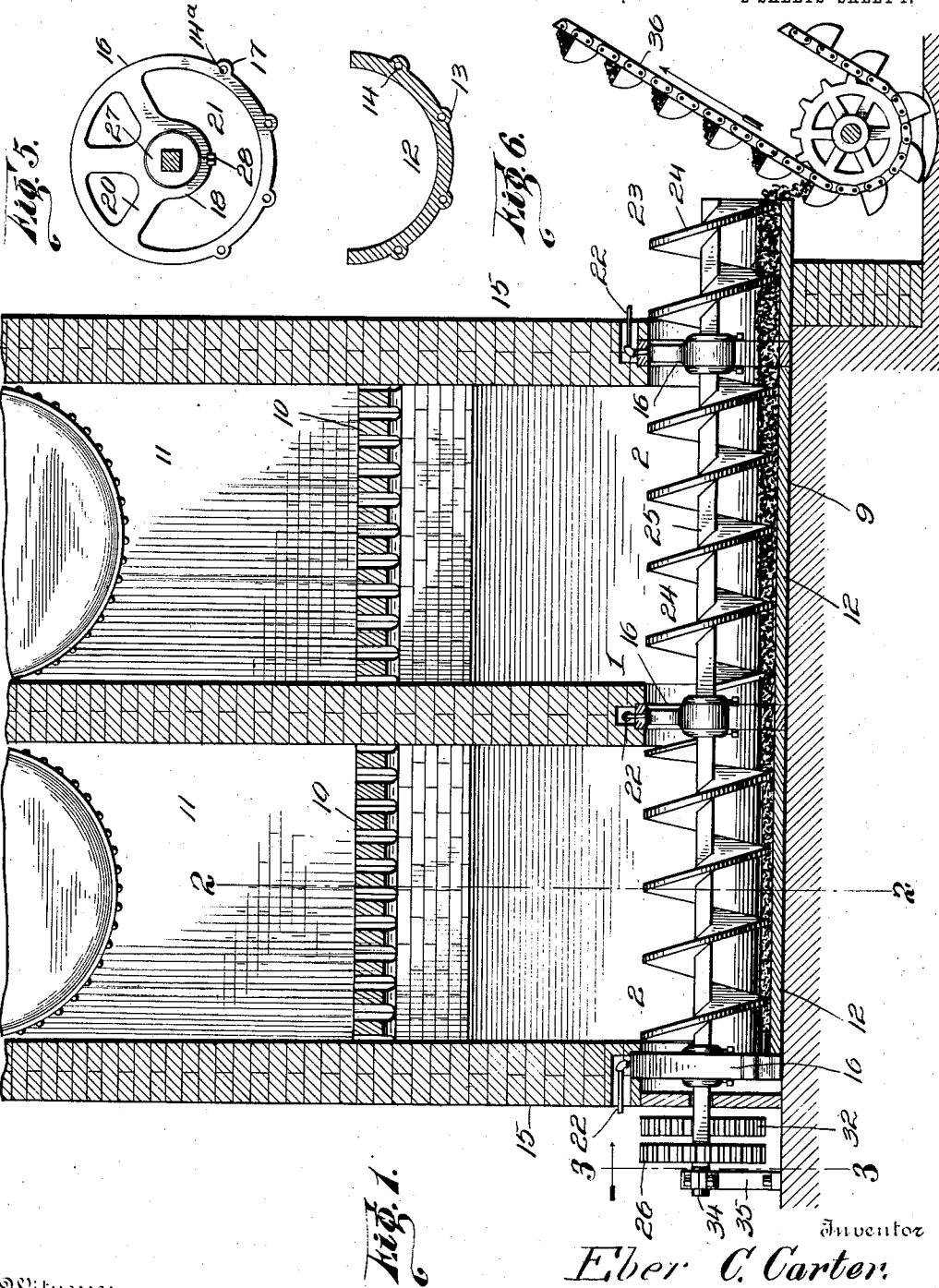
E. C. CARTER.
FURNACE.

APPLICATION FILED DEC. 10, 1909.

Patented Nov. 1, 1910.

2 SHEETS—SHEET 1.

974,120.



Witnesses

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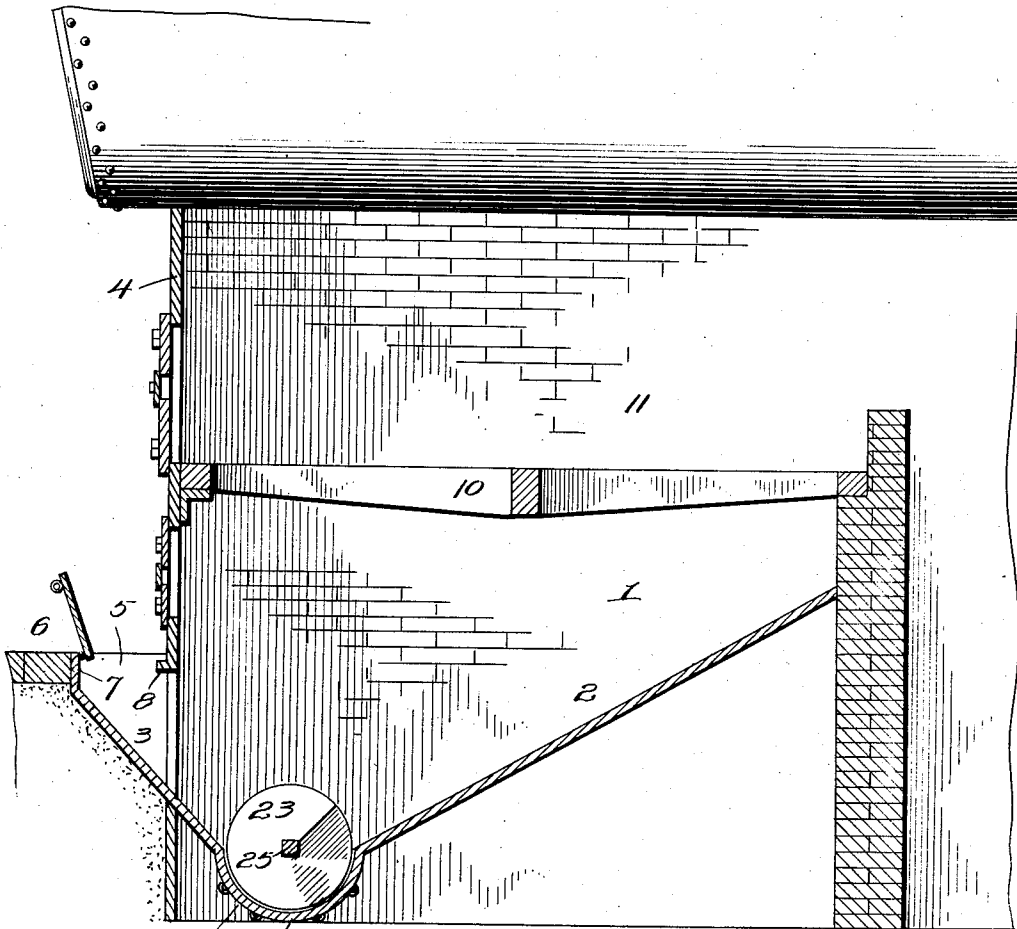


Fig. 2.

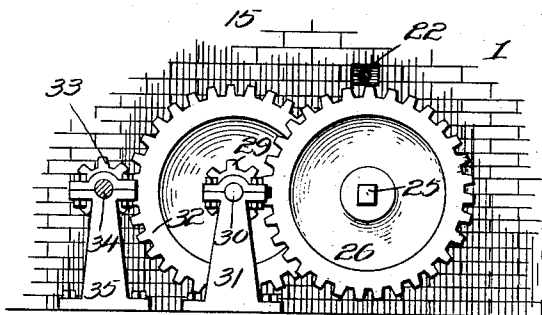


Fig. 3.

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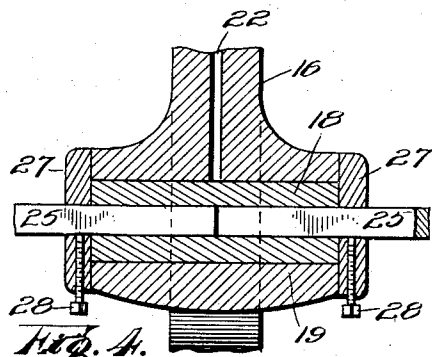


Fig. 4.

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UNITED STATES PATENT OFFICE.

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FURNACE.

974,120.

Specification of Letters Patent.

Patented Nov. 1, 1910.

Application filed December 10, 1909. Serial No. 532,407.

To all whom it may concern:

Be it known that I, EBER C. CARTER, a citizen of the United States, residing at Carrollton, in the county of Greene and State of Illinois, have invented new and useful Improvements in Furnaces, of which the following is a specification.

This invention relates to improvements in steam boiler and other like furnaces, particularly with reference to the construction of the ash pit and the provision of means for carrying off the ashes therefrom, the said invention consisting in the construction, combination and arrangement of devices hereinafter described and claimed.

In the accompanying drawings:—Figure 1 is a vertical transverse sectional view of a steam boiler furnace provided with an ash pit and an ash conveyer constructed in accordance with my invention. Fig. 2 is a longitudinal sectional view of the same on the plane indicated by the line 2—2 of Fig. 1. Fig. 3 is a detail elevation of the gearing for driving the conveyer worm. Fig. 4 is a detail sectional view of one of the bearings for the conveyer worm shafts. Fig. 5 is a detail elevation of one of the said bearings, the conveyer worm shaft being shown in cross section. Fig. 6 is a detail transverse sectional view of the conveyer trough.

In accordance with my invention, the bottom of the ash pit 1 is formed by downwardly converging rear front inclined plates 2—3 which are here shown as iron plates but which in practice may be made of any suitable material. The front inclined plate 3 extends forwardly and upwardly in advance of the front wall 4 of the furnace and an opening 5 is formed between the upper end of said front inclined plate 3 and the said front wall 4 of the furnace in which opening is a door 6, hinged as at 7 and which is adapted to open and close, the said opening 5, and when closed rests at its free side on a supporting flange 8 with which the front wall 4 of the furnace is provided. A conveyer trough 9 connects the lower sides of the downwardly converging rear and front plates 2—3 of the bottom of the ash pit and, hence, ashes and cinders which drop through the grate 10 from the fire box 11 of the furnace will be conveyed by gravity into the said trough. This trough is composed of semi-cylindrical sections 12 one of which is disposed in the bottom of each ash pit of the furnace, as shown in

Fig. 1, and the said sections, which are preferably made of iron or steel and which may be made of any other suitable material are provided at their ends with outstanding radial lugs 13 provided with bolt holes 14. The said sections are spaced apart, and in the said spaces between the trough sections and also at one end of the said trough are heads 16 which are circular in form and are provided on their lower sides with lugs 17 to register with the lugs 13 of the trough sections and provided with bolt openings 14^a. Suitable bolts, which are inserted in the said bolt openings 14 and 14^a secure the trough sections and the said heads detachably together so as to permit the removal and replacing of any of the trough sections or heads.

In the center of each head 16 is a trunnion 18 for a cylindrical bearing 19 which is provided with a cross sectional, rectangular bore that extends from end to end thereof. The said bearing is connected to the upper side of the said head by means of radial arms or webs 20 and the lower side of each head is, hence, formed with an opening 21 coincident with the ash trough 9 so as to enable the trough to be formed partly by the lower sides of the heads 16 and partly by the trough sections 12.

Ducts 22 for conveying lubricant to the bearings 19 are here shown.

A conveyer worm 23 operates in the trough and in the lowered portions of the several ash pits. This conveyer worm is composed of separable sections 24 each of which has a rectangular axle opening, the cross sectional rectangular shaft section 25 extending through the axle opening of each conveyer worm section, said shaft sections extending into the rectangular bores of the trunnions 18. The meeting ends of the shaft sections are disposed in certain of the trunnions of the bearings and the shaft section at the outer end of the conveyer extending through the corresponding trunnion and having a spur gear 26 secured on its outer end. At the ends of the trunnions 18 are caps 27 which have rectangular openings through which the shaft sections extend and are provided with screws 28 which engage the said shaft sections and secure the caps thereto so that the caps by engaging the ends of the bearings keep the trunnions in place therein, the said caps revolving with the shaft sections.

The gear 26 of the conveyer worm shaft is engaged by a pinion 29 on a shaft 30 mounted in suitable bearings 31, the said shaft 30 also having a gear 32 which is engaged by a pinion 33 on a drive shaft 34 one of the bearings of which is indicated at 35. In practice, the shaft 34 is continuously driven by reason of the gear connections between it and the shaft of the worm conveyer, the latter is driven uniformly and at a low rate of speed and acts to automatically and continuously force the ashes from the ash pits through the trough and discharge the ashes at the discharge end of the trough, hence, keeping the ash pits clear at all times.

In Fig. 1, I show a portion of an endless conveyer 36 so disposed that the ashes discharging from the trough, fall into the pockets on the upper lid of said conveyer 36, the latter serving to elevate the ashes to the point where they are loaded into vehicles or accumulated for ultimate disposition.

The door 5 and the chute formed on the front side of the furnace by the inclined plate 3 afford access to the conveyer and enable the stoker to dispose of grate cleanings by dropping them through the door 5 and causing them to be carried off by the conveyer.

Having thus described the invention, what is claimed, is:—

1. A furnace including an ash pit, relatively inclined plates arranged in said pit, and a trough connecting the adjacent edges of said plates to said trough being made up of a series of duplicate sections and heads

interposed between the sections, said heads and sections being formed with offset projections designed to be alined when the parts are assembled, and rods passed through the alined projections of the sections and heads to secure the parts together.

2. A furnace including an ash pit, relatively inclined plates arranged in said pit, a trough connecting the adjacent edges of said plates to said trough being made up of a series of duplicate sections and heads interposed between the sections, said heads and sections being formed with offset projections designed to be alined when the parts are assembled, rods passed through the alined projections of the sections and heads to secure the parts together, each of said heads including a central bearing and being formed beyond the bearing with an opening corresponding in sectional area to and designed to aline with the trough opening, a trunnion rotatably mounted in each bearing, a conveyer made up of a series of sections including a rectangular shaft, the shaft terminals of the respective sections being seated in endwise alinement in openings formed in the trunnion, and means engaging the bearings and trunnions and adapted for removable connection with the shaft terminals.

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

EBER C. CARTER.

Witnesses:

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