

Aug. 20, 1935.

C. F. ERB

2,011,620

HEATING FURNACE

Filed Nov. 9, 1931

2 Sheets-Sheet 1

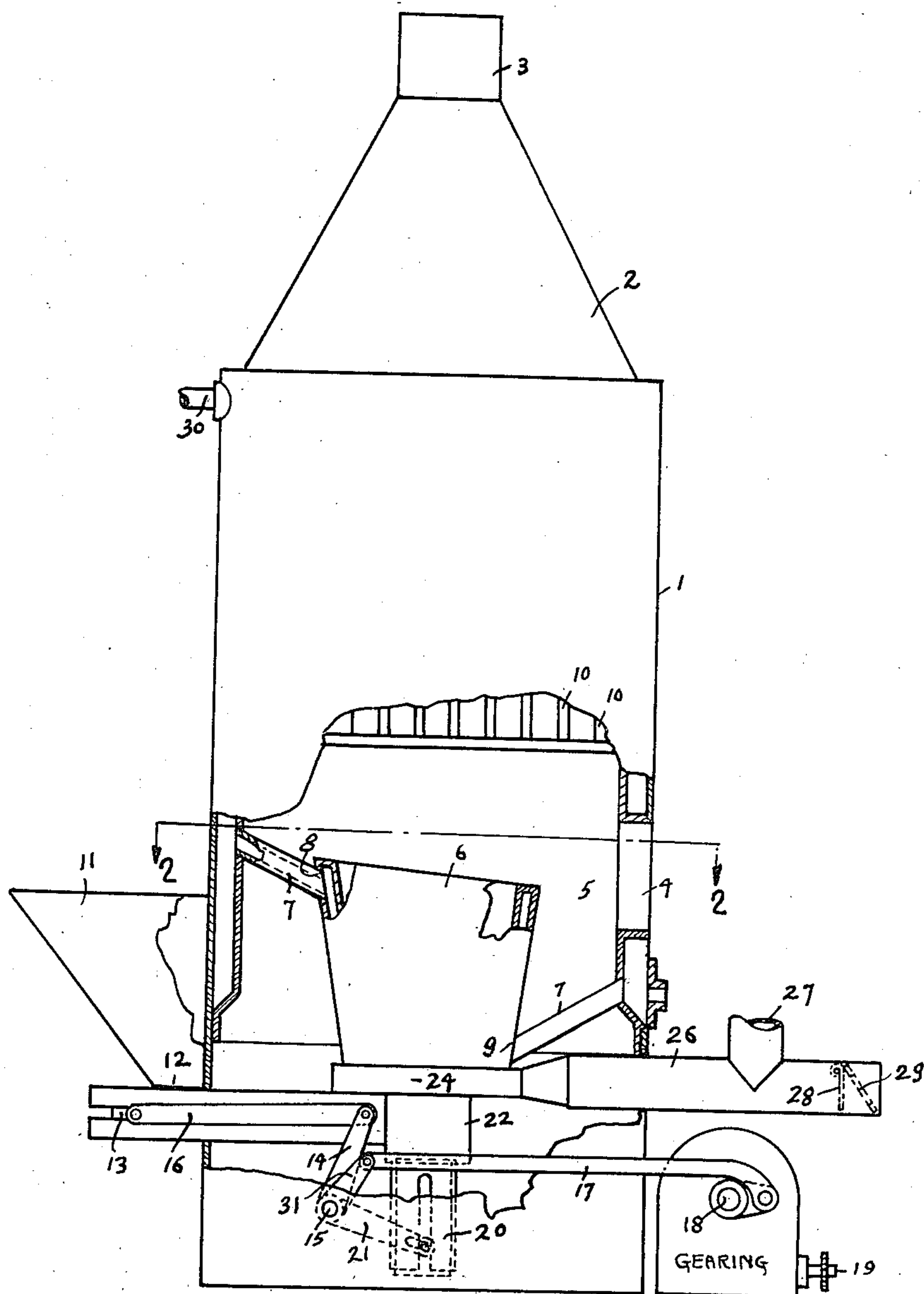


FIG 1

Clarence F. Erb

INVENTOR

BY

*C. L. Harpman*

ATTORNEY

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2 Sheets-Sheet 2

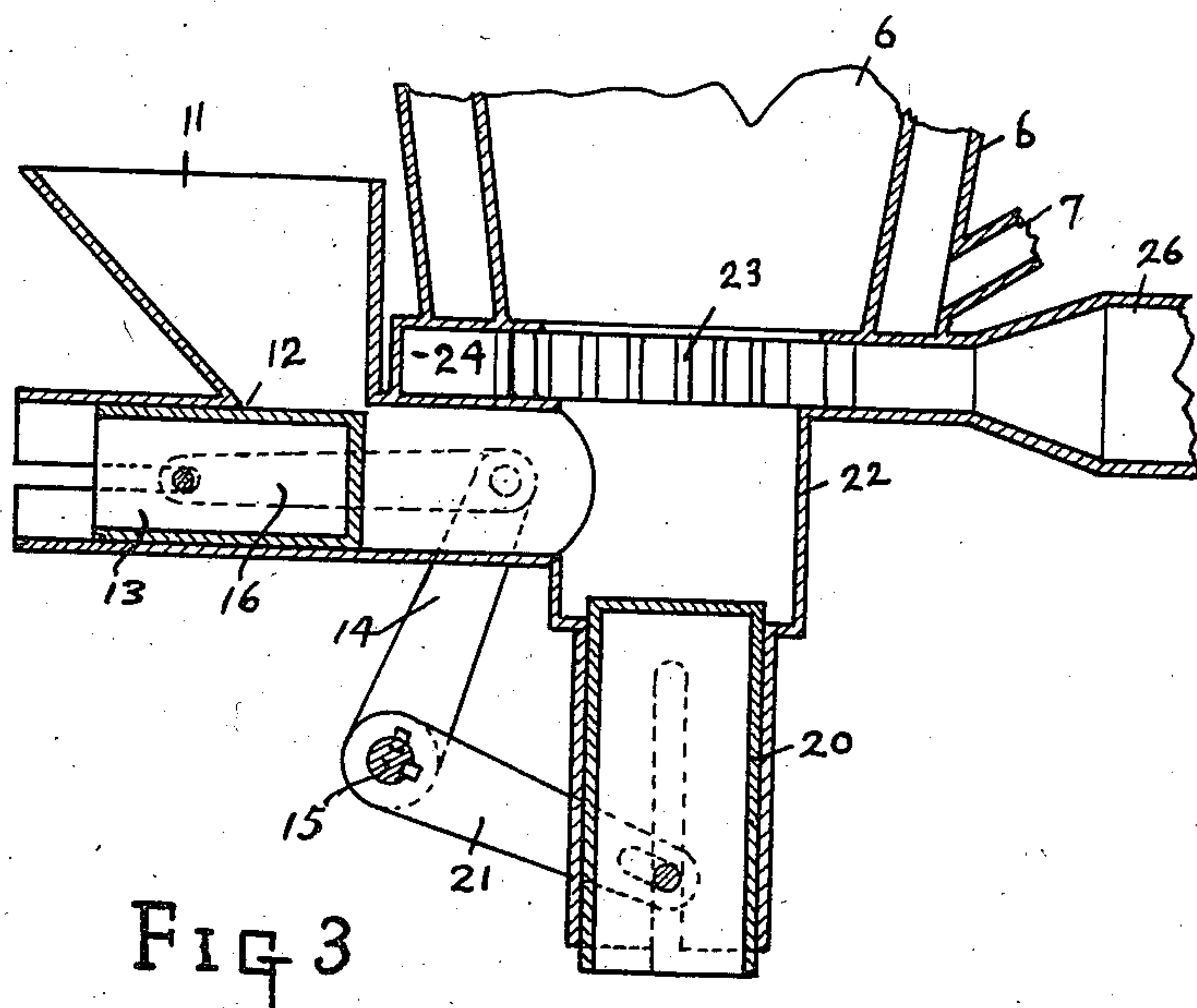
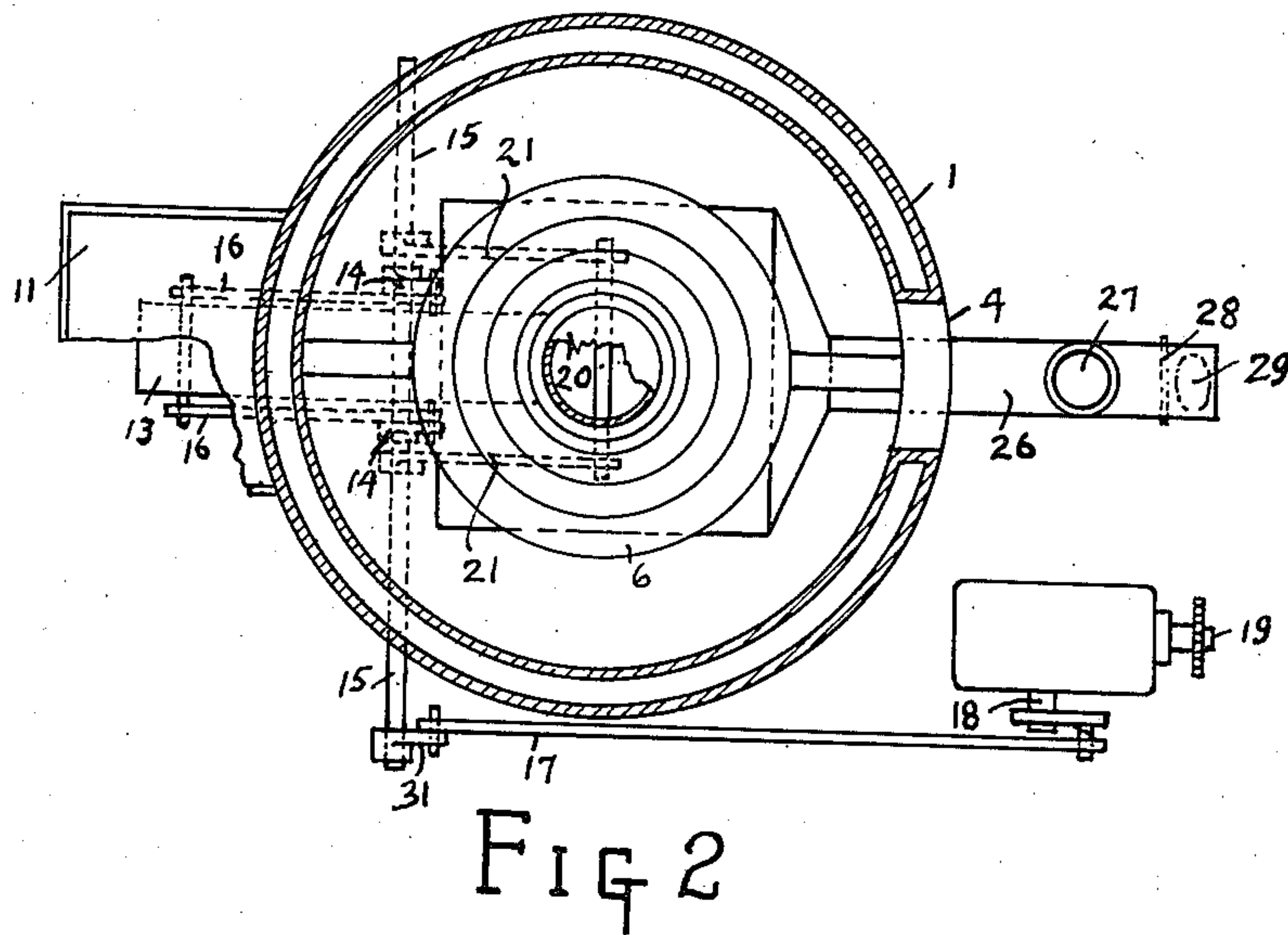


FIG 3

Clarence F. Erb

INVENTOR

BY

*C. C. Chapman*

ATTORNEY



## UNITED STATES PATENT OFFICE

2,011,620

## HEATING FURNACE

Clarence F. Erb, Youngstown, Ohio

Application November 9, 1931, Serial No. 573,787

2 Claims. (Cl. 110—46)

This invention relates to furnaces.

The principal object of this invention is to provide a furnace for the heating of homes, stores, factories, and the like.

Another object of the invention is to provide a furnace having a water jacketed fire pot.

A further object is to provide a furnace having two alternating fuel feed rams.

A still further object is to provide means for automatically actuating said alternating fuel feed rams.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed, can be made within the scope of what is claimed, without departing from the spirit of the invention.

The invention is illustrated in the accompanying drawings, wherein:—

Figure 1 is a side elevation of the device with parts broken away.

Figure 2 is a cross section taken on line 2—2 of Figure 1.

Figure 3 is a detail view of Figure 1 showing a longitudinal section through the fuel feed rams and a portion of the fire pot.

By referring to the drawings it will be seen that there is provided a boiler 1. This boiler 1 is provided with a suitable cover 2 and a smoke outlet 3. The boiler 1 is so constructed that suitable outlets 30 to radiators, for heating rooms at a distance from the furnace, may be attached. It is also evident that if desired, a jacket may be placed about the boiler in order to set up a warm air circulation.

By referring to Figure 1 it will be seen that a fire door opening 4 is positioned in the boiler 1 leading to an interior portion 5 which contains a water jacketed fire pot 6. This water jacketed fire pot 6 has water pipes 7 communicating between the boiler 1 and the water jacketed fire pot 6 at points 8 and 9. It will also be seen by referring to Figure 1 that the boiler 1 is provided with suitable flues 10 which are positioned above the interior portion 5. In operating the device coal or other suitable fuel is put in a fuel hopper 11 where it feeds down to a feed mouth 12 leading to an opening into a fuel passageway in which is positioned a horizontal hollow ram 13. This hollow ram 13 is actuated by means of a pair of arms 14 which is rigidly secured to a rocker shaft 15. These arms 14 are pivoted to a pair of horizontal

links 16. The arms 14 are actuated by means of the rocker shaft 15. This rocker shaft 15 carries a keyed rocker arm 31 to which is pivoted a connecting rod 17 which is moved by means of a crank mounted on a shaft 18. This shaft 18 is actuated by means of any suitable power attached to a shaft 19. It will also be seen by referring to Figure 3 that there is provided a vertical hollow ram 20 which is actuated by means of arms 21 which are keyed to the rocker shaft 15. These arms 21 are caused to move due to the connecting rod 17 which moves the keyed rocker arm 31 and rocks the rocker shaft 15. It will be seen that as the hollow ram 13 is caused to travel outwardly in the fuel passageway, the hollow ram 20 is caused to travel upwardly in a vertical passageway. The ram 13 forces the fuel inwardly into the chamber 22 and the ram 20 forces the fuel upwardly therethrough and into the water jacketed fire pot 6 up through a central opening between support bars 23 which are positioned within an air chamber 24 which is provided with an air inlet 26.

By referring to Figure 1 it will be seen that there is provided a pipe 27 leading to any convenient blower such as a fan. When this blower is in operation a hinged damper 28 is caused to swing back against a stop 29 which is provided with a plurality of openings, thus closing the plurality of openings in the stop 29 and closing the damper 28.

As the fuel is forced up into the water jacketed fire pot 6 the cinders or non-combustible material is forced over the upper edge of the water jacketed fire pot 6 and falls down into an ash pit beneath the furnace. This ash pit is not shown in the drawings.

What I claim is:—

1. In an underfeed furnace comprising a fire pot, a lower central opening in said fire pot, and a fuel hopper positioned in close proximity to said fire pot, the combination of a fuel passage having a horizontal portion underneath said fuel hopper and a vertical portion opening upwardly into the fire pot establishing communication between said hopper and said fire pot, a pair of reciprocating rams, a rock shaft, rocker arms rigidly mounted on said shaft, means connecting said rocker arms with said rams for actuating the same, one of said reciprocating rams moving in the horizontal portion of said fuel passage and the other reciprocating ram moving in the vertical portion of the fuel passage underneath said fire pot for the purpose of forcing fuel upwardly into said fire pot, and means for actuating said rock shaft.



2. In an underfeed furnace, comprising a fire  
pot, a lower central opening in said fire pot, and  
a fuel hopper positioned in close proximity to  
said fire pot, the combination of a fuel passage  
5 having a horizontal portion underneath said fuel  
hopper and a vertical portion opening upwardly  
into the fire pot establishing communication be-  
tween said hopper and said fire pot, a pair of re-  
ciprocating rams, one of said reciprocating rams  
10 moving in the horizontal portion of said fuel pas-

sage and the other reciprocating ram moving in  
the vertical portion of the fuel passage under-  
neath said fire pot for the purpose of forcing  
fuel upwardly into said fire pot, a single rocker  
shaft, rocker arms rigidly mounted thereon, means 5  
connecting the rocker arms with said rams for  
actuating the same and means for actuating the  
rocker shaft.

CLARENCE F. ERB.