

No. 750,606.

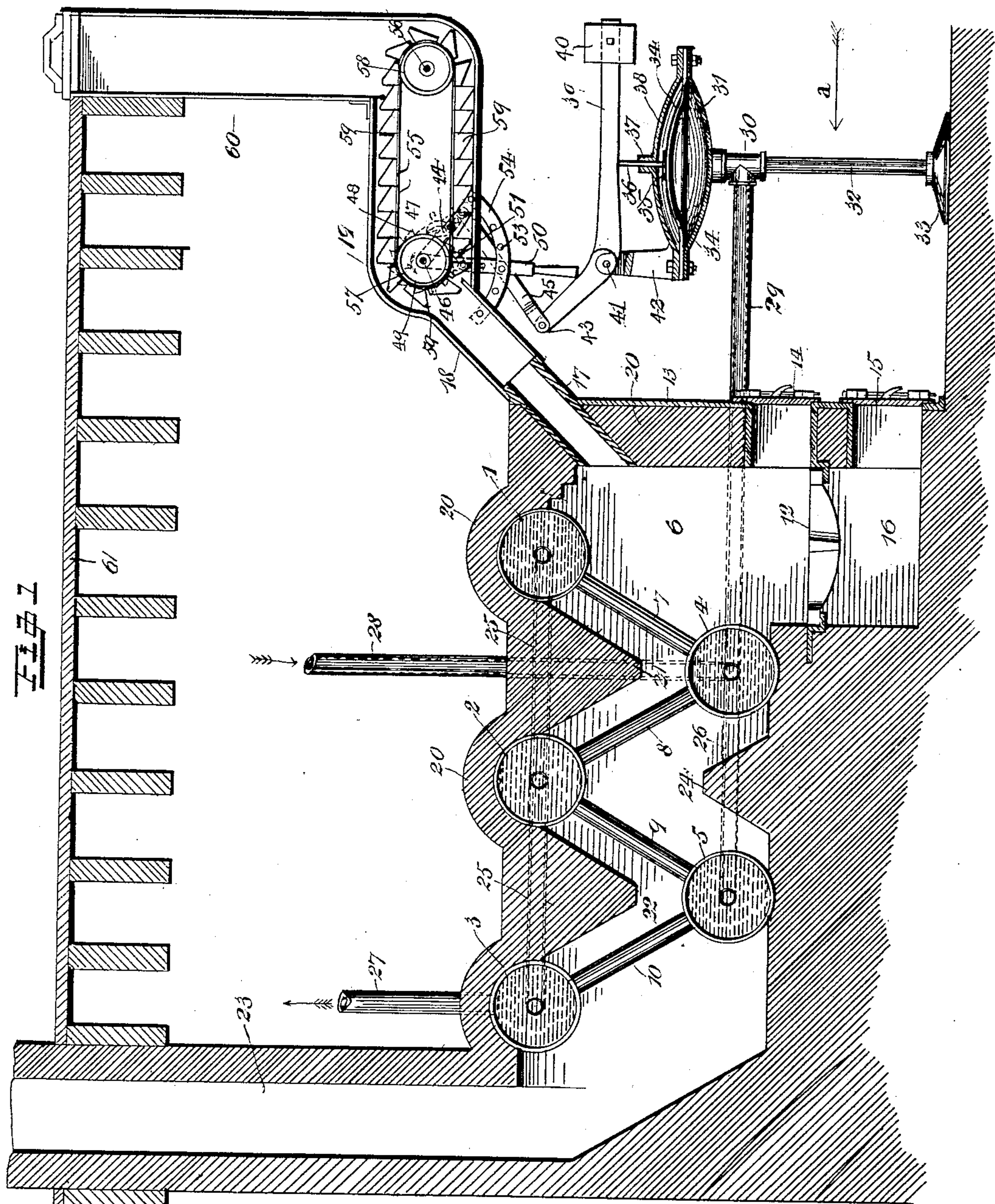
PATENTED JAN. 26, 1904.

C. A. COMMISKEY.
DOMESTIC HEATER.

APPLICATION FILED JUNE 12, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



Inventor

Witnesses

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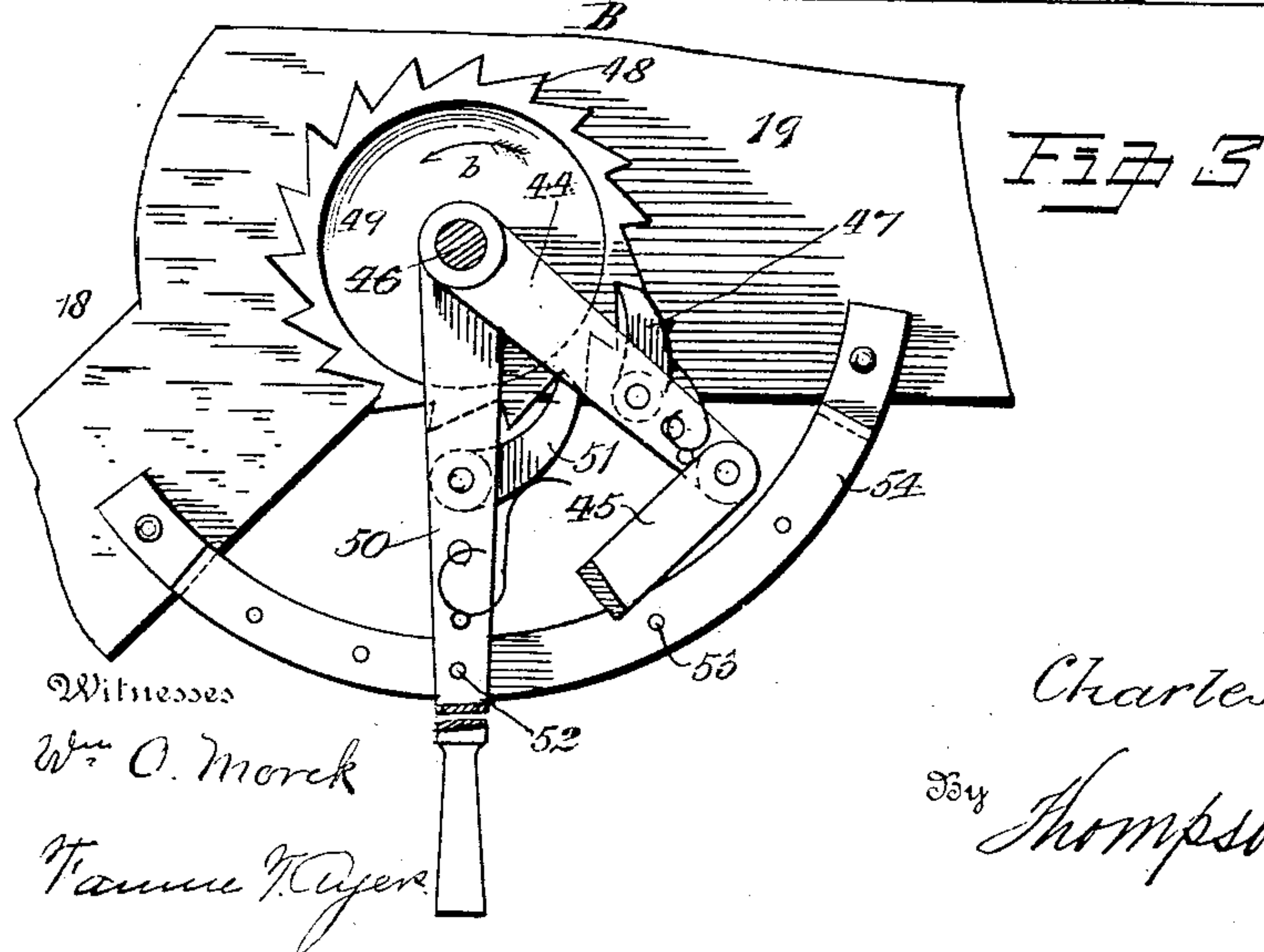
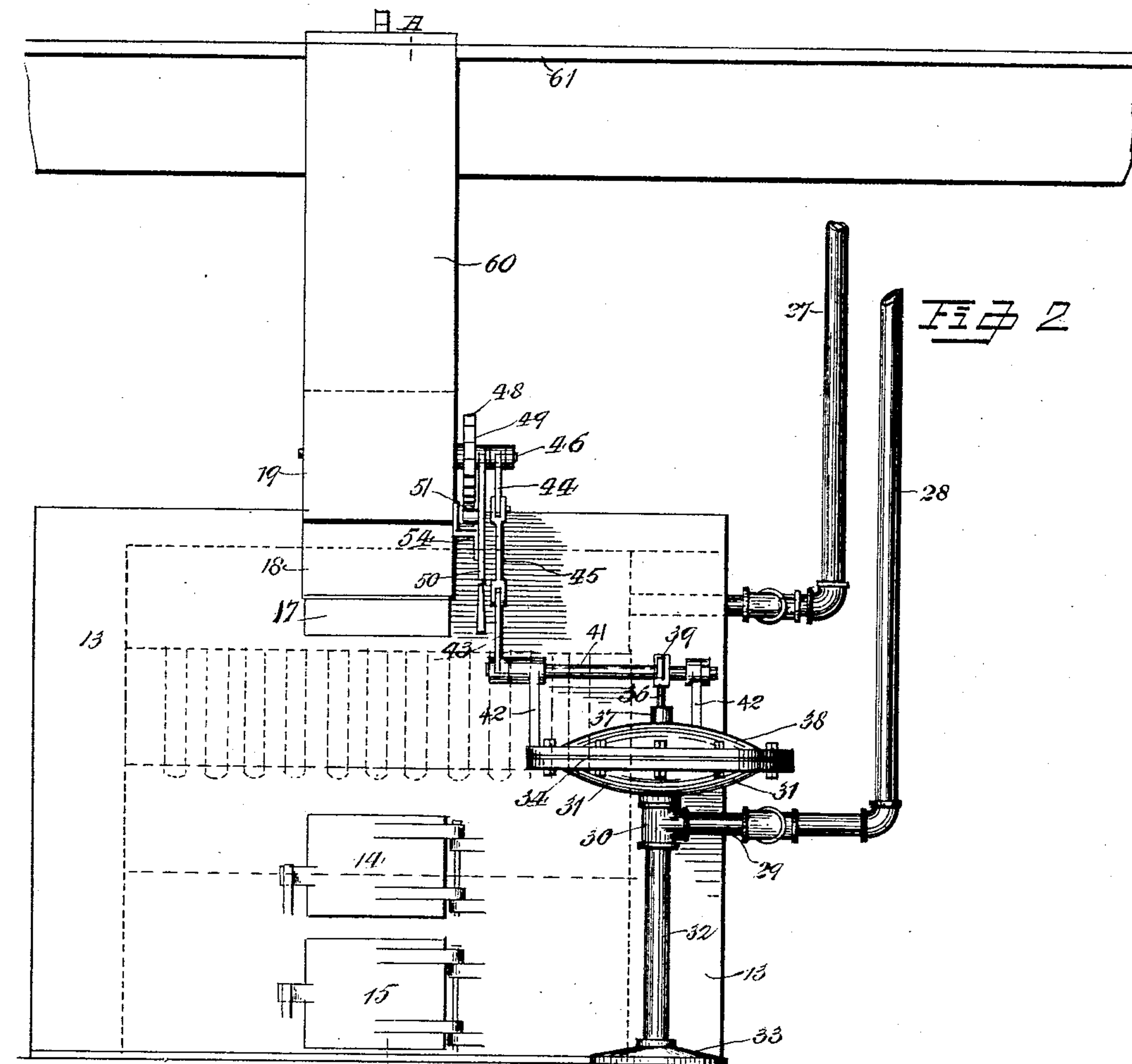
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UNITED STATES PATENT OFFICE.

CHARLES A. COMMISKEY, OF INDIANAPOLIS, INDIANA.

DOMESTIC HEATER.

SPECIFICATION forming part of Letters Patent No. 750,606, dated January 26, 1904.

Application filed June 12, 1903. Serial No. 161,125. (No model.)

To all whom it may concern:

Be it known that I, CHARLES A. COMMISKEY, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented new and useful Improvements in Domestic Heaters, of which the following is a specification.

My invention relates to certain new and useful improvements in domestic heaters or boilers and the means for automatically supplying fuel to the furnaces thereof at such times as when the fuel in the furnace burns low and the pressure of the fluid in the heater falls below the normal, as will be hereinafter more fully set forth, and particularly pointed out in the claims.

The objects of this invention are, first, to provide an economical and safe heater or boiler peculiarly adapted for domestic use and for heating dwellings or buildings; second, to provide means for economically, safely, and automatically supplying fuel to the furnace, and, finally, to provide means for supplying fuel to the furnace independent of the automatic operation, means whereby the heating capacity of the heater may be increased when so desired. I attain these objects by means of the heating apparatus illustrated in the accompanying drawings, in which similar numerals of reference designate like parts throughout the several views.

Figure 1 is a longitudinal sectional elevational view of the heating apparatus, taken through the line A B. (See Fig. 2.) Fig. 2 is a front elevational view of the same and looking in the direction of the arrow *a*, (see Fig. 1;) and Fig. 3 is an enlarged detail view of the pawl-and-ratchet mechanism of the fuel-conveying means.

The boiler or water-heater is composed of an upper series of drums 1, 2, and 3 and a lower series of drums 4 and 5, the drums of the lower series being situated directly and centrally under the spaces between the drums of the upper series of drums, and said drums are arranged to extend transversely of the furnace 6 and in parallel relation to each other. The water-tubes 7 extend from the lower side of the drum 1 to the top side of the drum 4, the tubes 8 from the top side of

said drum 4 to the bottom side of the drum 2, the tubes 9 from the bottom side of the drum 2 to the top side of the drum 5, and finally the tubes 10 extend from the top side of said drum 5 to the bottom side of the end upper drum 3, and thus said tubes 7, 8, 9, and 10 form zigzag connections between said drums, and through them the water freely circulates.

The furnace 6 is preferably constructed of brick and provided with suitable grate-bars 12, and a front 13 is provided with a fire-door 14, an ash-pit door 15, which opens into the ash-pit 16, and a chute 17, connected to the chute 18 of the conveyer inclosing casing 19.

The boiler, constituted of the aforesaid drums 1, 2, 3, 4, and 5 and the water-tubes 7, 8, 9, and 10, is mounted or set in the setting 20 of the furnace 6, and in the spaces between the upper drums are provided the depending deflectors 21 and 22, which are provided for the purpose of deflecting the flame and heated gases escaping from and generated in the furnace 6 from a direct line or course from the said furnace to the chimney 23, thereby causing the products of combustion to be deflected against said water-tubes 7, 8, 9, and 10 to increase their efficiency. Similarly the upwardly deflector or baffle-piece 24 is situated between the lower drums 4 and 5 and provided for the same purpose. The upper horizontally-extending equalizing-pipes 25 connect the upper drums 1, 2, and 3 and are provided for the purpose of equalizing the pressure of the fluid in said drums. Similarly the lower horizontally-extending pipe 26 connects the lower tubes 4 and 5 and is provided for the same purpose. An outlet or radiator pipe 27 extends from one of the top drums, preferably the rear top drum 3, to any suitable radiating means, and a suitable return-pipe 28 extends from the radiating means to one of the lower drums, as the drum 4, to return the condensed steam or cooled fluid to the boiler or heater. A horizontally-extending pipe or head 29 connects with each of the lower drums 4 and 5 and is extended forwardly from the drum 4 to the T-piece 30, secured to the under side or inlet side of the regulator 31. The lower arm of the T-piece

30 is closed and screwed on the top end of the supporting-standard 32, which latter is secured at its bottom end to the base 33. The regulator 31 is provided with a flexible diaphragm 34, on which rests the diaphragm-plate 35, which latter is provided with the vertically-extending stem 36, which latter projects through the bore of the boss 37, formed integral on the cover 38 of the regulator 31 to contact with the lever 39. The lever 39 is provided with a weight 40, which is adjustably secured to the free end thereof, and said lever is fulcrumed on a fulcrum-pin 41, supported on the standard 42, formed integral on the cover 38. The free end of the shorter arm 43 of the weighted lever 39 is connected to the free or swinging end of the pawl-carrying lever 44 by a connecting-rod 45. The pawl-carrying lever 44 is pivotally mounted on the main conveyer-shaft 46, and on the said lever is mounted the spring-pawl 47, which latter is adapted to engage the ratchet-teeth 48 of the ratchet-wheel 49, which latter wheel is securely mounted or keyed on said shaft 46. A hand-lever 50 is also pivotally mounted on said shaft 46, and said lever is provided with a spring-pawl 51, which is also adapted to engage the ratchet-teeth 48 of the ratchet-wheel 49 to prevent the said wheel moving backwardly. The hand-lever 50 is held stationary by a suitable pin passed through the pin-hole 52 of said lever 50 and a pin-hole 53, formed in the segment 54, which latter is secured by suitable rivets or bolts to the conveyer-casing 19. When it is desired to operate the conveyer 55 manually to feed fuel to the furnace independently of the automatic mechanism, the locking-pin of the lever 50 is removed, and the said lever is free to be swung and to be operated manually. The main conveyer-shaft 46 is mounted to turn in suitable bearings formed in the sides of the casing 19, as is also the secondary conveyer-shaft 56, and on the said shafts are mounted the conveyer-pulleys 57 and 58, upon which the conveyer-belt 55, provided with the conveyer-buckets 59, which latter are each of a size to contain the requisite amount of fuel to be fed into the furnace at one time, is mounted and by which pulleys said conveyer-belt and its buckets are carried.

A vertically-extending end chute 60 extends from the floor 61 to the conveyer-casing 19, and the said chute is provided for the purpose of not only forming a coal-magazine, but also a convenient means whereby coal may be supplied directly from an upper floor to said furnace, which is usually situated in a basement.

The automatic apparatus is simple in construction, and its operation will be readily understood from the following description: Sup-

pose a fire has been started in the furnace 6 and the said fire burns freely until the pressure of the fluid in the boiler has been raised to such an extent as to exert sufficient pressure on the diaphragm 34 to raise the weighted lever 39 to its full extent and to lower the arm 43 to its lower position, thereby moving the pawl-carrying lever 44 and its pawl 47 to its lower position and in engagement with the ratchet-wheel 49. Suppose, again, that the fire in the furnace continues to burn and burns down to a low ebb and reduced to such condition as not to impart sufficient heat to the boiler to maintain the fluid contained therein at its normal temperature. Then the temperature of said fluid suddenly falls, thereby permitting the diaphragm 34 to recede, and thereby permitting the weighted lever 39 to fall to operate the ratchet mechanism to move the conveyer 55 to feed the requisite amount of fuel into the furnace to replenish the fire again, and thus the operation is continued until the fuel contained in the magazine has been exhausted.

Having thus fully described this my invention, what I claim as new and useful, and desire to cover by Letters Patent of the United States therefor, is—

1. In a domestic heater, the combination with a furnace, a boiler, a feed-chute, and fuel-containing means, of a fuel-conveying means arranged in said fuel-containing means, a pressure-operated mechanism connected to said boiler and a pawl-and-ratchet mechanism connected to said conveying means and pressure mechanism in such a manner that when the pressure in said boiler is reduced said pressure mechanism operates to cause said conveying means to feed the fuel in said chute into said furnace.

2. In a domestic heater, the combination with a furnace, a boiler, a feed-chute, and fuel-containing means, of a fuel-conveying means arranged in said fuel-containing means, a pressure-operated mechanism connected to said boiler and a pawl-and-ratchet mechanism connected to said conveying means and pressure mechanism in such a manner that when the pressure in said boiler is reduced said pressure mechanism operates to cause said conveying means to feed the fuel in said chute into said furnace, and means for actuating said conveying means independent of said pressure mechanism.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

CHARLES A. COMMISKEY.

Witnesses:

THOMPSON R. BELL,
FANNIE T. AYERS.