

No. 697,863.

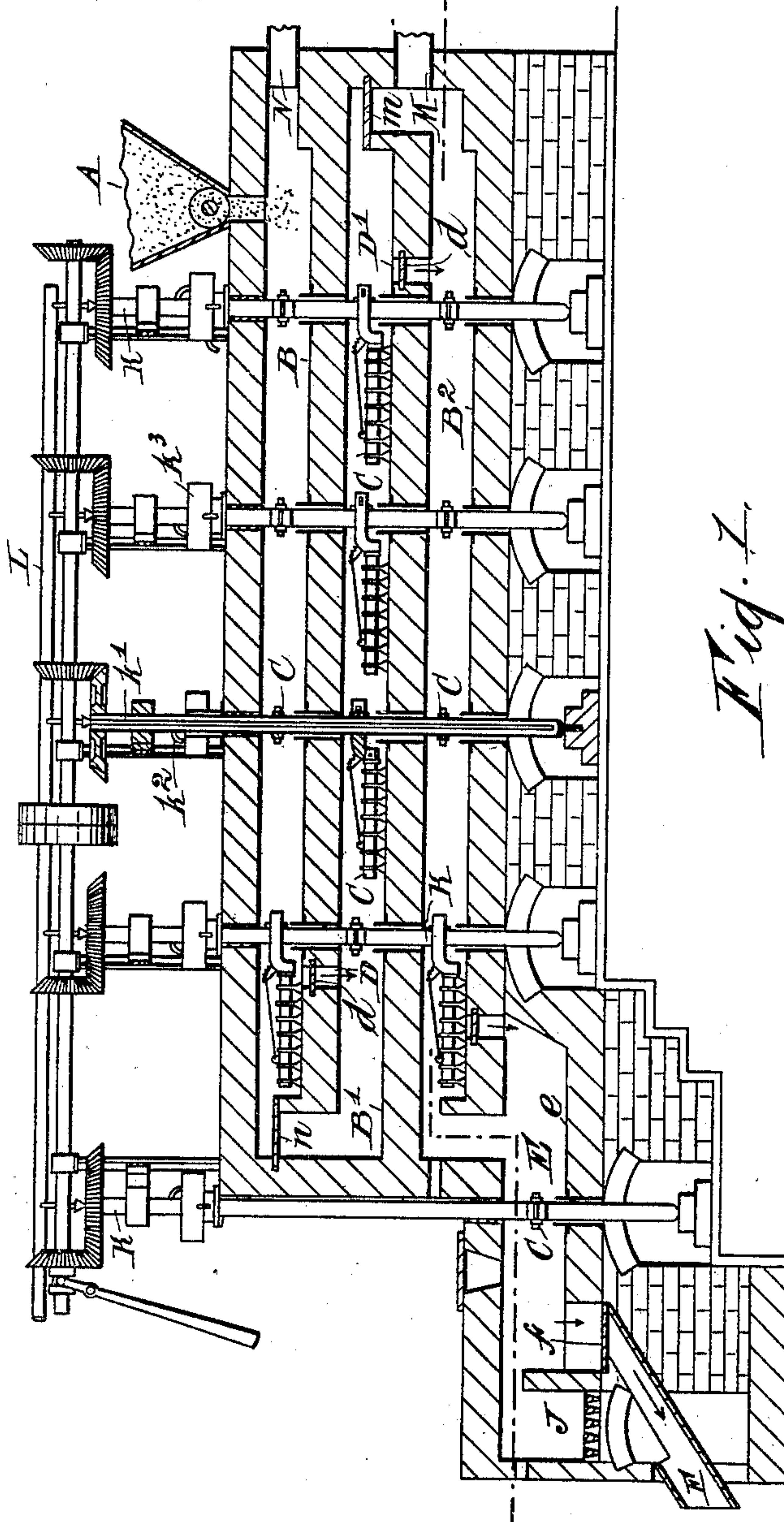
Patented Apr. 15, 1902.

T. D. MERTON.
ORE ROASTING FURNACE.

(Application filed Dec. 31, 1900.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses

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Fig. 2.

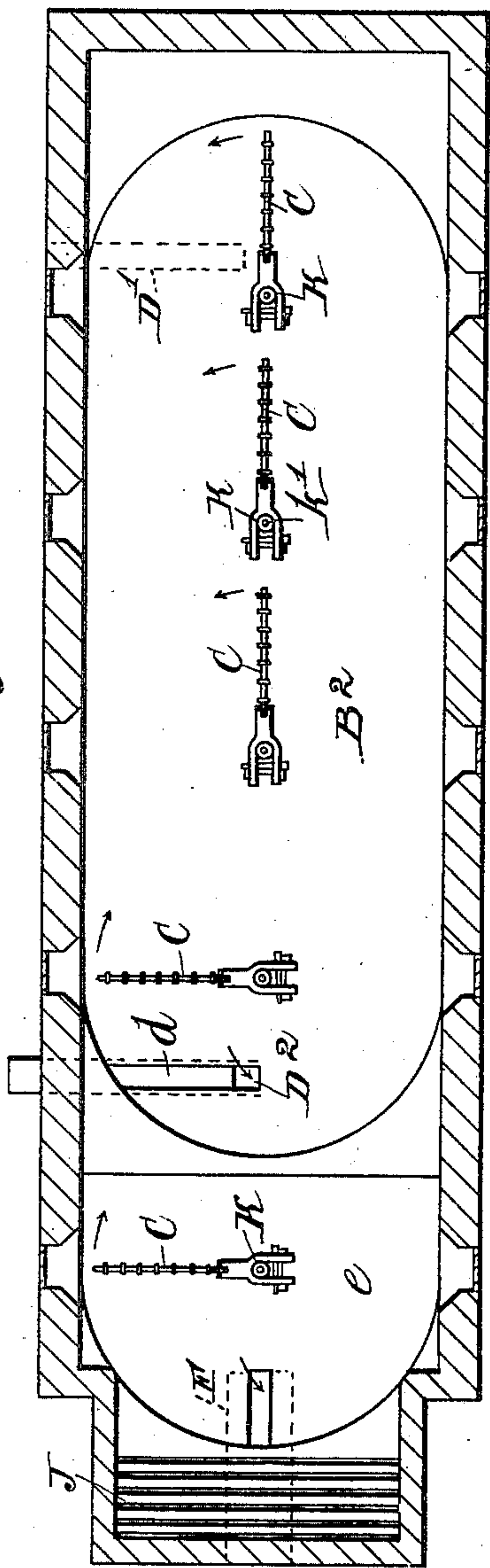


Fig. 5.

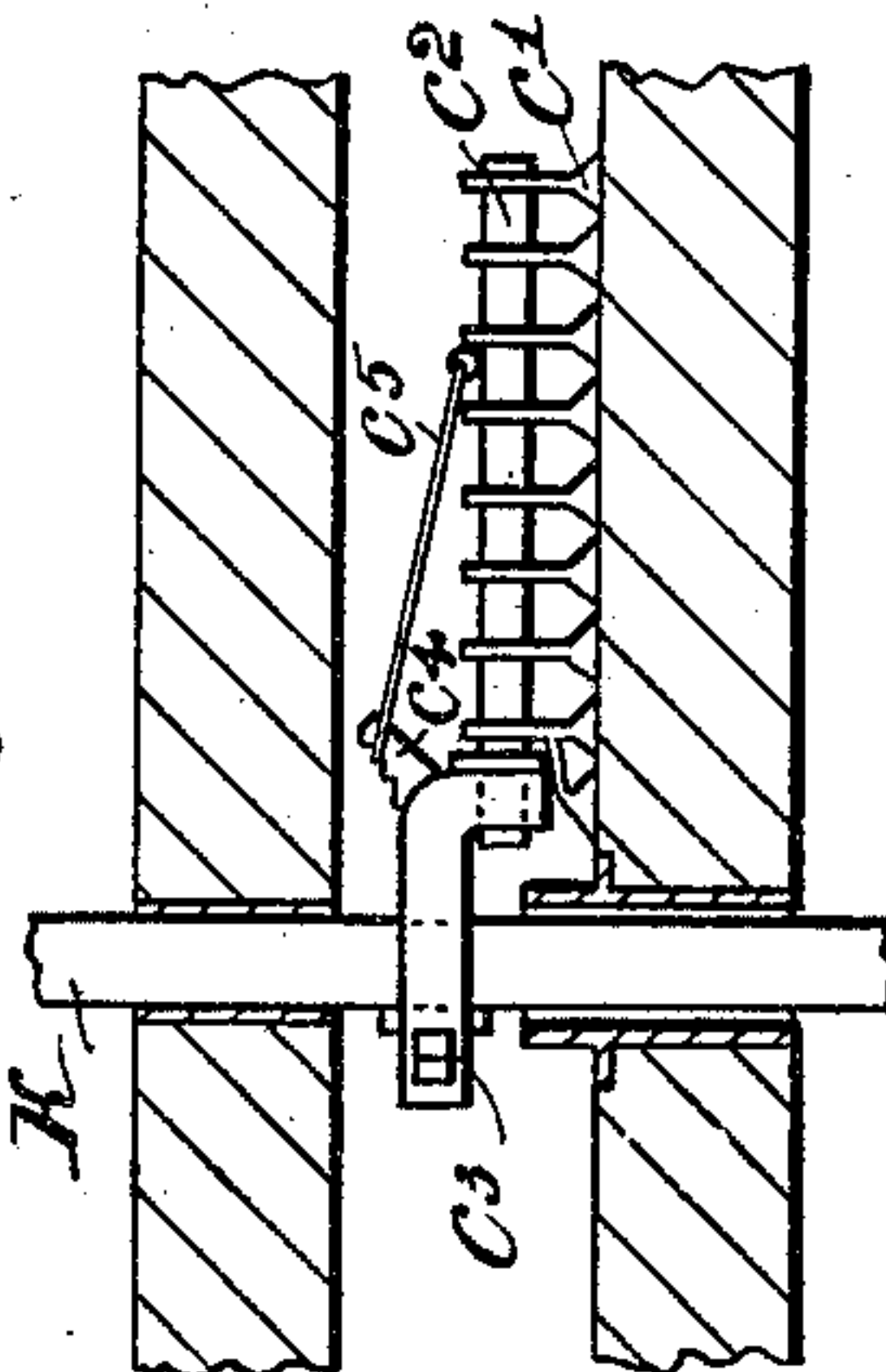


Fig. 4.

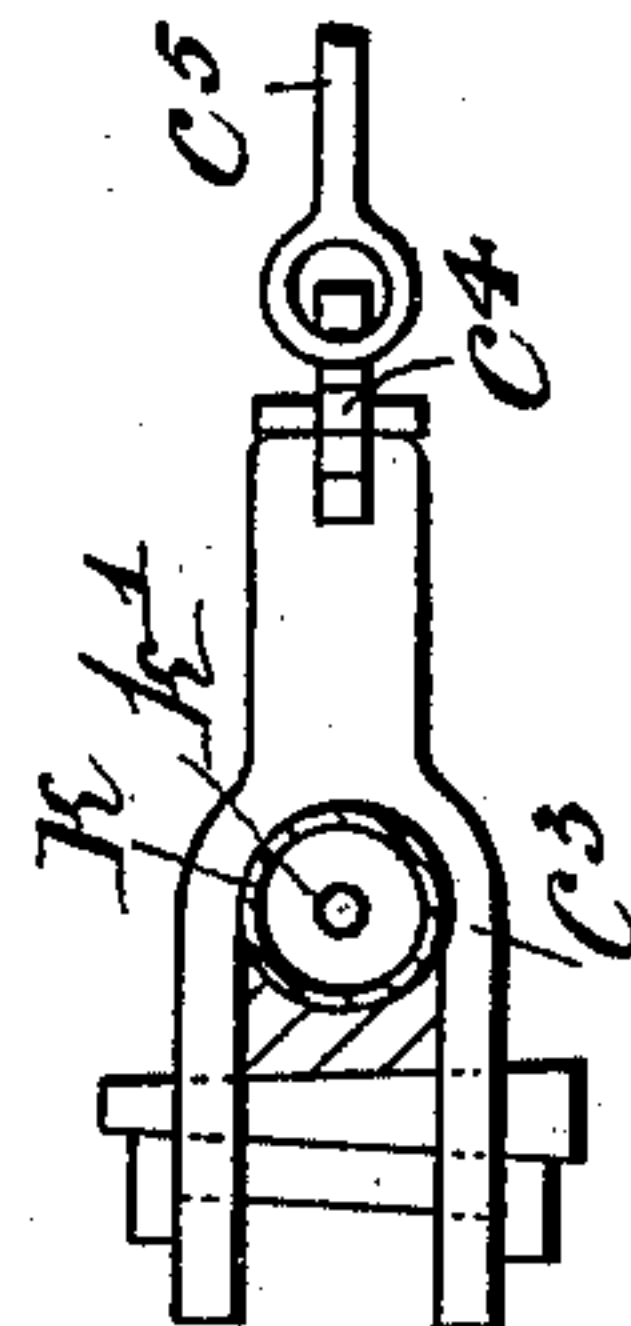
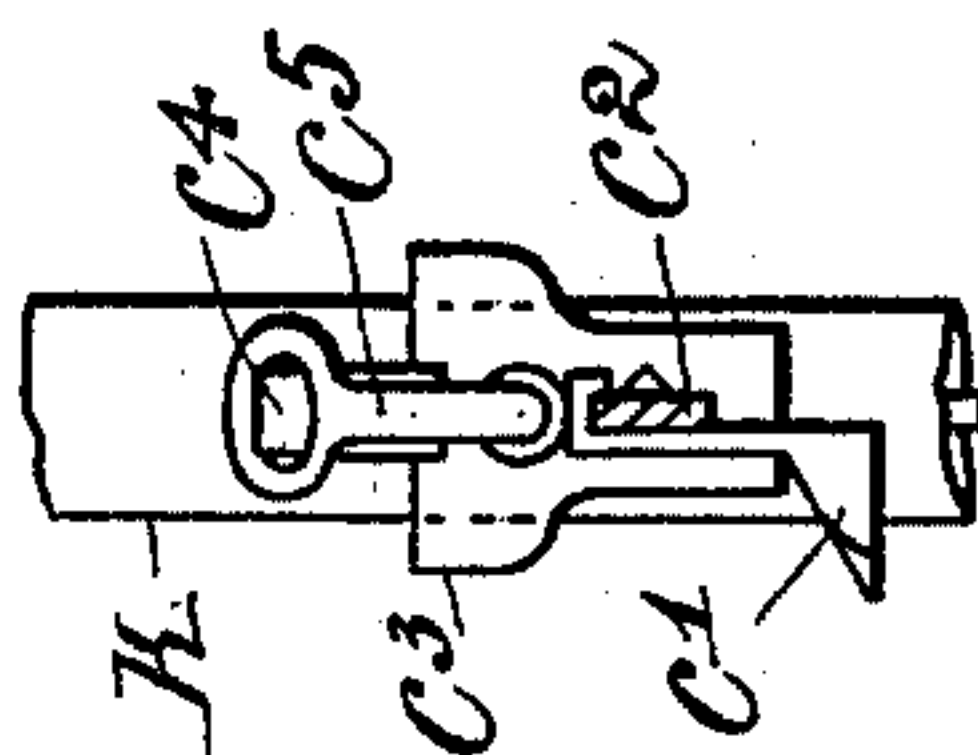


Fig. 3.



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UNITED STATES PATENT OFFICE.

THOMAS DANIELLS MERTON, OF SPOTTISWOODE, VICTORIA, AUSTRALIA.

ORE-ROASTING FURNACE.

SPECIFICATION forming part of Letters Patent No. 697,863, dated April 15, 1902.

Application filed December 31, 1900. Serial No. 41,681. (No model.)

To all whom it may concern:

Be it known that I, THOMAS DANIELLS MERTON, metallurgist, a subject of the Queen of Great Britain, residing at the Spottiswoode Refinery and Metallurgical Works, Spottiswoode, near Melbourne, in the State of Victoria, Australia, have invented an Improved Ore-Roasting Furnace, of which the following is a specification.

10 This invention relates to an ore-roasting furnace; and the objects and advantages thereof will be set forth in the following description, while the novelty will form the basis of the claims succeeding said description.

15 In the drawings accompanying and forming part of this specification, Figure 1 is a vertical central section of a furnace including my improvements. Fig. 2 is a horizontal plan view of said furnace. Figs. 3, 4, and 5 are detail views of the rabbling mechanism hereinafter more particularly described.

Like characters refer to like parts in all the figures of the drawings.

25 A represents a gravity-feed hopper, which is by preference used for supplying the material to be treated onto the end of a hearth B, along which it is caused to travel slowly by means of rotating rabblers C until it reaches the opposite end of said hearth B. In order that the material may be caused to travel along the hearth, the rabbling-arms are set, as illustrated in Fig. 2, so that their paths overlap without coming into contact with each other at any part of their rotation. By this means the rabblers each carry a certain proportion of material around into the path of the next rabbler, and so on to the end of the hearth.

40 A discharge-opening D is provided in the end of the hearth B for the purpose of delivering the material onto the next hearth B'. This opening D is fitted with a slide or cut-off d , which can be withdrawn to a greater or lesser extent in order to regulate the rate of discharge from the upper hearth B onto the lower one B'. In a similar manner the ore under treatment on B' is caused to travel slowly by means of rotating rabblers, as before, until it reaches its opposite end, where it is discharged through another opening D' onto the third or lowermost hearth B², along which

it is again caused to travel slowly by means of rotating rabblers, as before, until it reaches its opposite end, where there is another discharge-opening D², which allows the material to fall onto the hearth e of a rest-chamber E, where it can be allowed to rest or at the will of the furnace-man be rabbled until a sufficient charge has accumulated therein, when by withdrawing a slide f said charge can be delivered by gravitation along a chute F into a revolving finishing-cylinder. (Not shown.)

The rabblers C consist of a number of shoes or shares c' , depending from an arm or bar c^2 , fitted into a fixed arm c^3 , which is secured rigidly by a key and cotter to the hollow spindle or shaft K. This fixed arm c^3 has an upwardly-projecting notched lug c^4 , with which a stay c^5 , extending from the end of the rabbling-arm c^2 , can engage. By adjusting the stay c^5 upon the teeth or notches of the lug c^4 the height of the rabblers can be adjusted so as to just clear the surface of the hearth. This construction also admits of a worn or faulty rabbling-arm being readily removed and replaced by a new one without loss of time, all that is necessary being to disengage the stay c^5 from the notched bar and to withdraw the bar from the fixed arm c^3 .

The spindle K, upon which the rabblers are mounted, is preferably hollow and has a smaller water-supply tube k' extending down its center to near its lower end, so that a supply of water can be fed from a water-main L for the purpose of keeping the spindle cool. This water passing up the interior of the hollow spindle K is allowed to overflow at k^2 into an annular trough or reservoir k^3 , whence it overflows into a trough k^4 , and can thereby be conducted to any place where a supply of hot water is desired. The hollow spindles K have requisite motion imparted to them through the medium of spur-gearing and shafting, as illustrated.

M and N represent discharge-flues which are provided at the end of the furnace and which enable undiluted sulfurous-acid fumes to be drawn off for the manufacture of sulfuric acid by the use of dampers m and n without impairing the efficiency of the roasting of the auriferous material under treatment.

Having described the invention, what I claim is—

In an ore-roasting furnace, a plurality of superposed communicating hearths, a series
5 of hollow vertical shafts passing through the hearths, a water-supply pipe having a series of depending branches corresponding in number with and located in the respective shafts, a driving-shaft common to all and operatively
10 connected with said shafts, arms extending radially from said shafts, means for connect-

ing the arms rigidly yet removably to said shafts, bars connected to said arms, rabbling-shoes detachably depending from said bars, notched lugs extending from said arms, and 15 stay-rods connected to said bars and having eyes to engage the notched lugs.

THOMAS DANIELLS MERTON.

Witnesses:

EDWARD WATERS,

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