

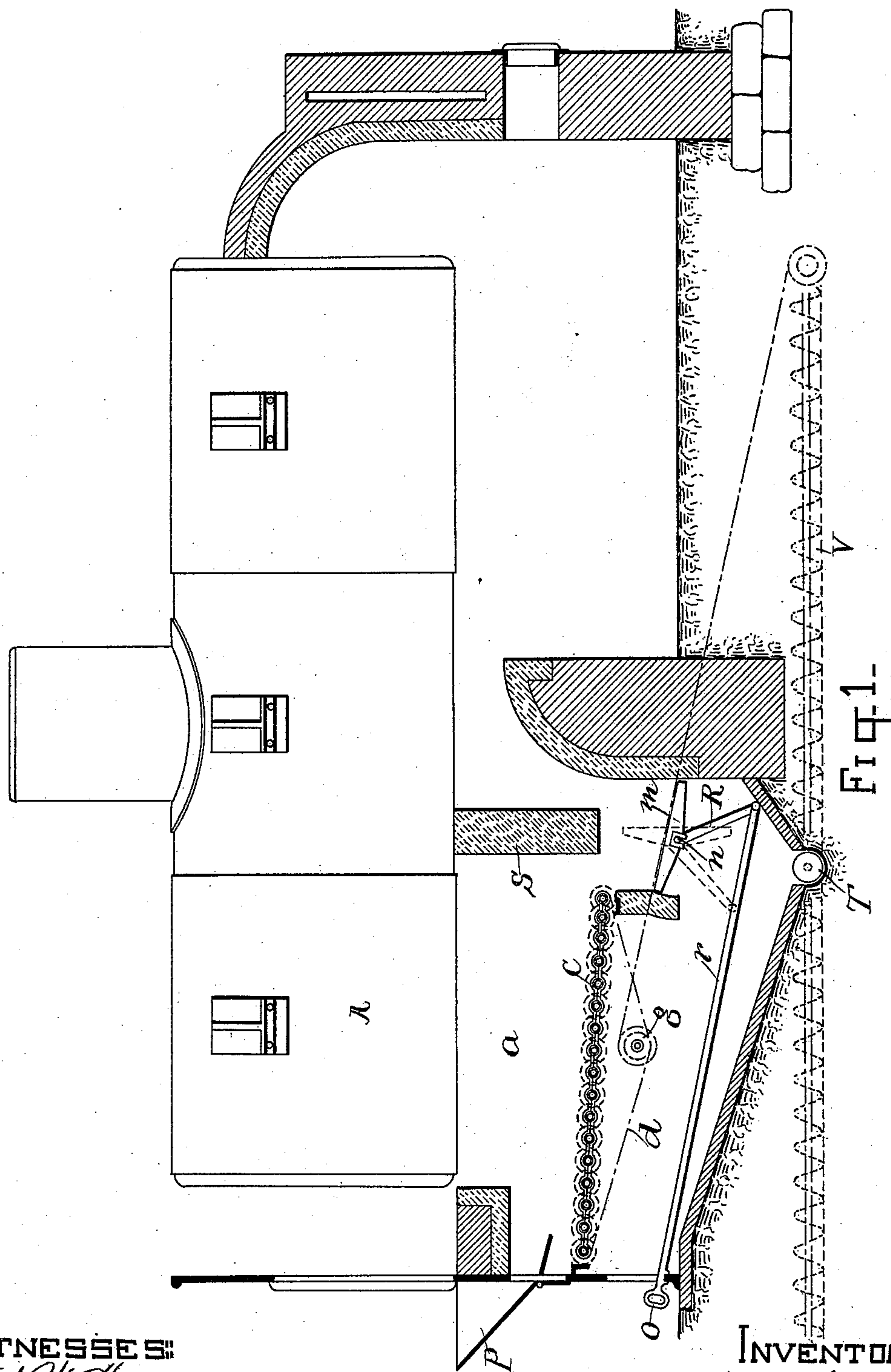
(No Model.)

3 Sheets—Sheet 1.

A. JAY.  
FURNACE.

No. 522,215.

Patented July 3, 1894.



WITNESSES:

Fred W. Hersey.  
Edward Johnson

INVENTOR:

by Aaron Jay  
Ed Diney  
Atty

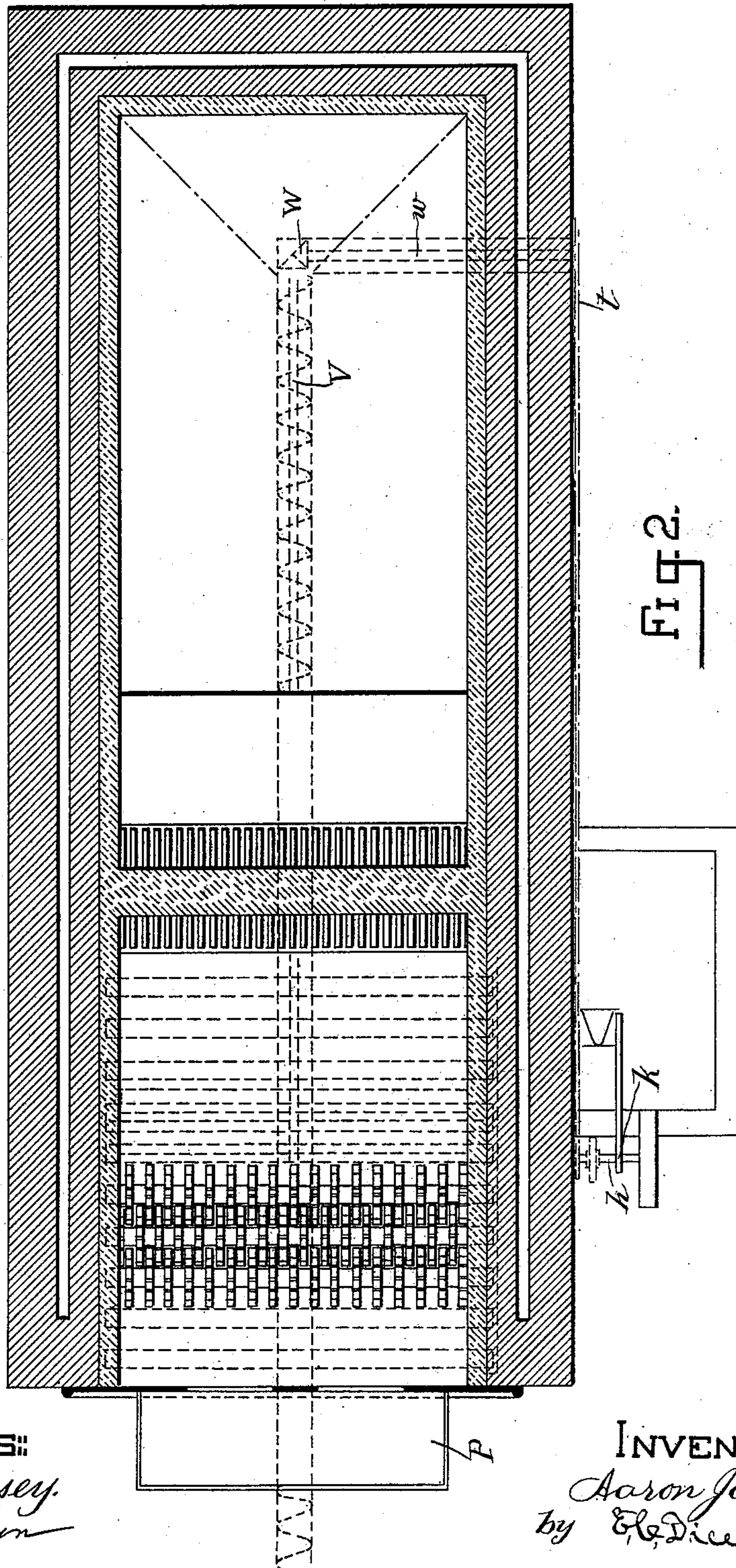
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3 Sheets—Sheet 2.

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Patented July 3, 1894.



WITNESSES:

*Fred W. Hersey.*  
*Edward Johnson*

INVENTOR:

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*Atty.*



(No Model.)

3 Sheets—Sheet 3.

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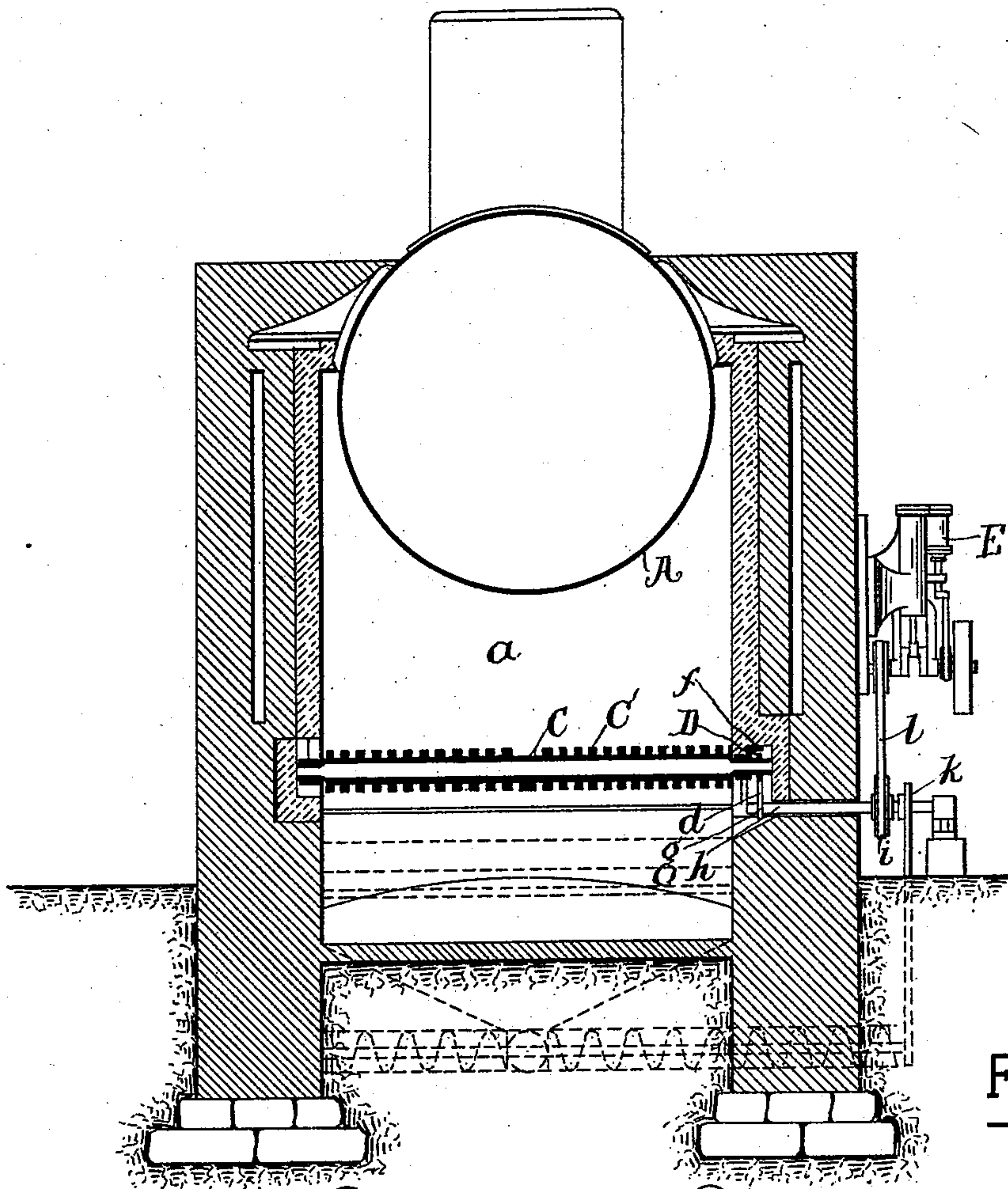


Fig. 3.

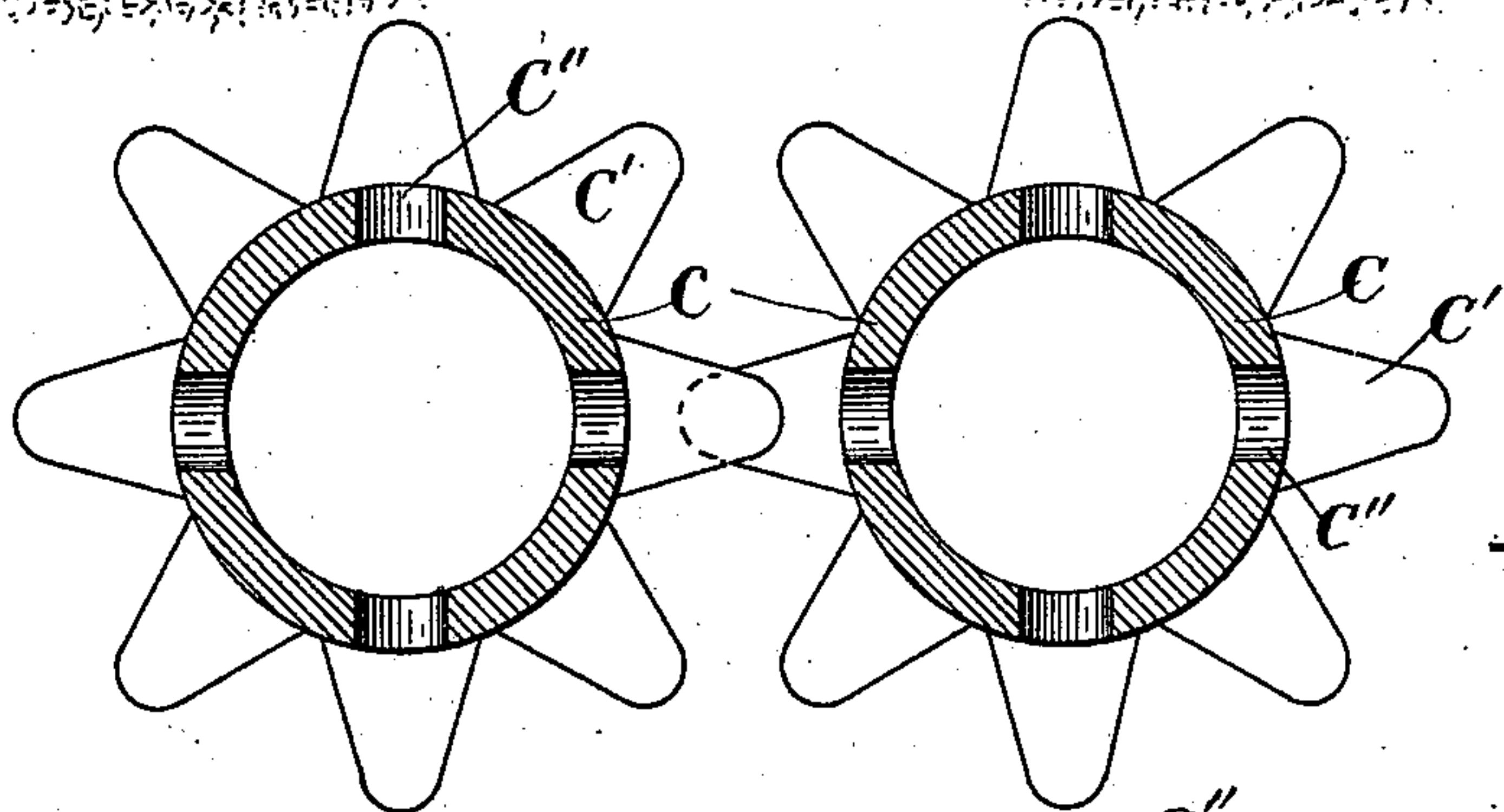


Fig. 4.

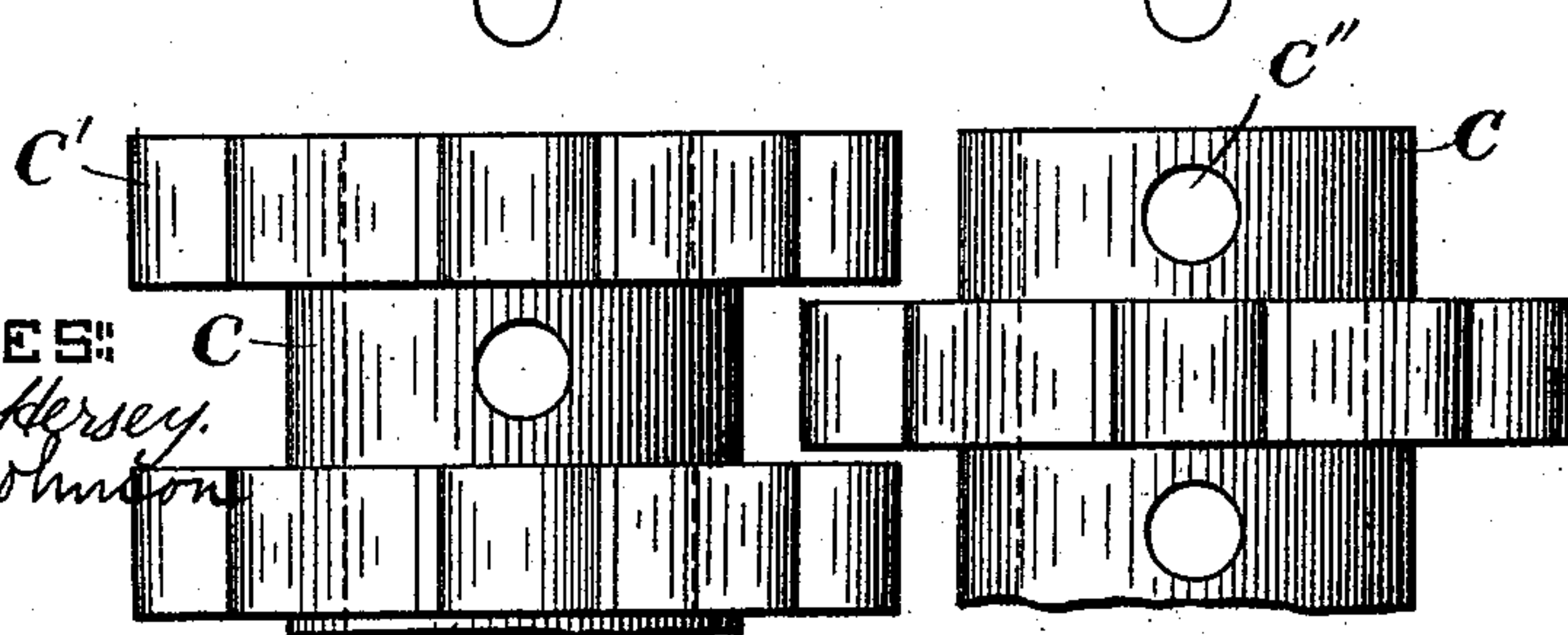


Fig. 5.

WITNESSES:

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INVENTOR:

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# UNITED STATES PATENT OFFICE.

AARON JAY, OF CHICAGO, ILLINOIS.

## FURNACE.

SPECIFICATION forming part of Letters Patent No. 522,215, dated July 3, 1894.

Application filed December 13, 1893. Serial No. 493,600. (No model.)

*To all whom it may concern:*

Be it known that I, AARON JAY, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have  
5 invented certain new and useful Improvements in Furnaces and Furnace - Grates, of which the following is a specification.

The object of my invention is to produce a furnace in which the combustion is complete  
10 and which may be operated easily; also to produce a means by which the ashes may be constantly removed from the pits and chambers of said furnace. I produce these results by the means illustrated in the accompanying  
15 drawings, in which—

Figure 1 is a vertical section of the furnace showing the boiler in elevation. Fig. 2 is a horizontal section showing the revolving grate and the dump grate in plan. Fig. 3 is  
20 a vertical cross section showing the means by which the bars of the grate are made to revolve. Fig. 4 is a cross section of the grate bar and Fig. 5 is a plan of the same.

Similar letters refer to like parts throughout the various views.

In the drawings, "A," represents the boiler, which may be of any approved pattern. "a," represents the furnace of said boiler. The grate of this furnace is made of a set of revolving grate bars, C, resting in the walls of  
30 the furnace and having on them the cogs, C'. On the end of each one of these grate bars, C, is a sprocket wheel, D, shown in Fig. 3 of the drawings. Over this sprocket wheel passes the sprocket chain, d, which chain is driven  
35 by the sprocket wheel, g, on the shaft, h, which shaft is driven by an engine on the side of the boiler wall as will be more fully explained later on. The sprocket wheels, D, on the  
40 ends of the grate bars are placed within the furnace wall and are protected from ashes and dirt by the shield, f, which piece is placed close enough to the sprocket wheels to prevent the driving chain from being displaced.  
45 By this arrangement the grate bars are made to revolve slowly but constantly in the direction of the rear of the furnace and thus the fuel is constantly carried in that direction during its combustion. The grate bars, C,  
50 are made hollow as will be seen by reference to Figs. 4 and 5 of the drawings and at short intervals along the grate bar are placed the

holes, C'', which enable a passage of air through the grate bars and also a more free passage of air through the fuel upon the  
55 grate. At the rear of the revolving grate is placed the dump grate, m, which is composed of the grate bars, m, resting upon the rod, n, which rod is supported in the walls of the furnace.  
60

Connected with the grate, m, is the arm or lever, R, and connected with said lever is the rod, r, having at its outer end the handle, O, which is out in front of the furnace as is shown in the drawings. By the movement of  
65 this rod, the grate may be revolved on the rod, n, and thus dumped which position is shown in dotted lines in Fig. 1 of the drawings. Just over this dump grate is the deflecting arch, S, which throws the unconsumed  
70 gases against the incandescent fuel upon the dump grate, m, and thus, with the aid of the white heat to which said deflecting arch will be heated, all gases from the fuel will be fully and completely consumed.  
75

On the front of the furnace is the hopper P by which means the fuel is placed in the furnace. Upon the side of the furnace is placed the engine E, see Fig. 3 of the drawings, which engine drives the shaft, h, by  
80 means of the link belt, l, and the sprocket wheel, i, placed upon said shaft. Upon this shaft is also placed the sprocket wheel, k, which drives the cross conveyer, T, by means of a link belt passing between the two. In  
85 the back part of the furnace is the shaft, w, driven by a link belt t which connects said shaft with the shaft, h. At the end of the shaft, w, is placed a bevel gear, W, by which means the motion is conveyed to the conveyer V. This conveyer carries all dust or  
90 ashes that may find their way into the combustion chamber, forward to the front of the furnace, and, besides keeping the combustion free from ashes and soot, it also carries all  
95 ashes that may find their way into the ash pit, toward the front of the furnace at which place there may be a receptacle into which they drop. The conveyers T carry the ashes from the sides of the ash pit to the center  
100 where they are engaged by the conveyer, V, which carries them out to the front of the furnace. By this means the ashes in the ash pit and combustion chamber are constantly



being carried off and said chamber and pit are at all times free from ashes and soot.

Having thus described my invention, what I desire to claim and secure by Letters Patent

5 is—

1. In a furnace, the combination of the chamber adapted to receive the solid products of combustion, the said chamber having its bottom formed of plane surfaces inclined to  
10 a central line, the conveyers located in the said base in a line coincident with the line of convergence of the said plane surfaces adapted to carry the said products of combustion to a central point, and the auxiliary con-  
15 veyer leading from the said central point to the exterior of the chamber, substantially as described.

2. In a furnace, the combination of the chamber adapted to receive the solid products  
20 of combustion, the main conveyer located in the bottom of the said chamber and longitudinally of the same, adapted to convey the solid products of combustion to the exterior of the chamber, and the auxiliary conveyer located  
25 on both sides of the main conveyer and trans-

versely of the chamber to carry the solid products of combustion to the said main conveyer, substantially as described.

3. In a furnace, the combination of the grate formed of continuously rotated bars  
30 adapted to gradually feed the fuel inwardly, the pit or receptacle formed immediately back of the inner end of the said grate to receive the incandescent fuel, the said furnace, grate and receptacle being designed to receive  
35 air from beneath the grate and to convey the same together with the gases of combustion to the rear of the combustion chamber over the burning fuel, the deflector mounted im-  
40 mediately above the said pit or receptacle and extending downwardly to within a short distance of the upper opening of the pit to throw the gases of combustion upon the incandescent fuel contained therein, and the dump-  
45 ing grate mounted in the lower end of the pit or receptacle, substantially as described.

AARON JAY.

Witnesses:

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LOUIS ROSE.