

No. 707,783.

Patented Aug. 26, 1902.

C. W. ISBELL.

PROCESS OF MANUFACTURING ILLUMINATING GAS.

(Application filed June 13, 1901.)

(No Model.)

Fig. 2.

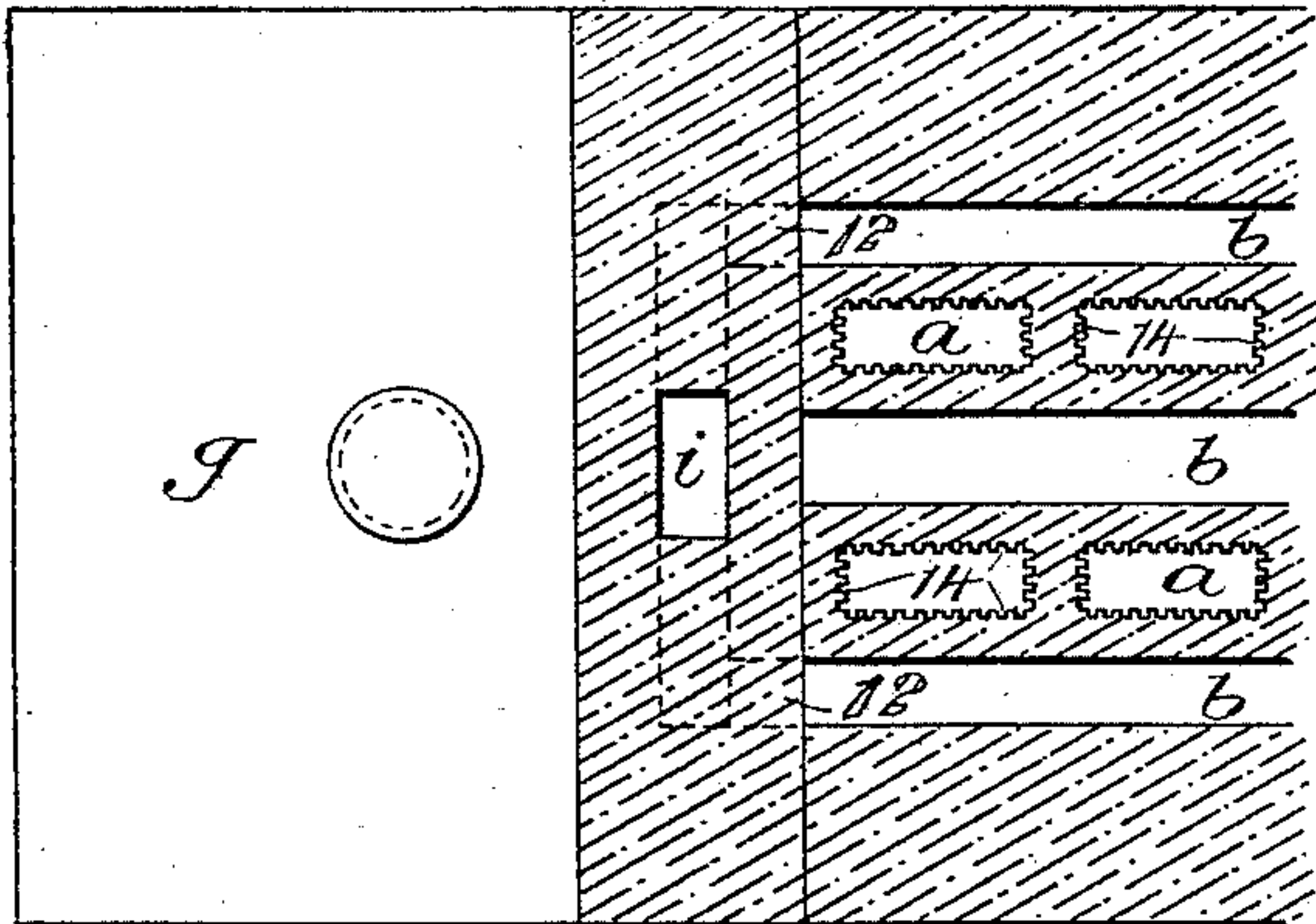


Fig. 3.

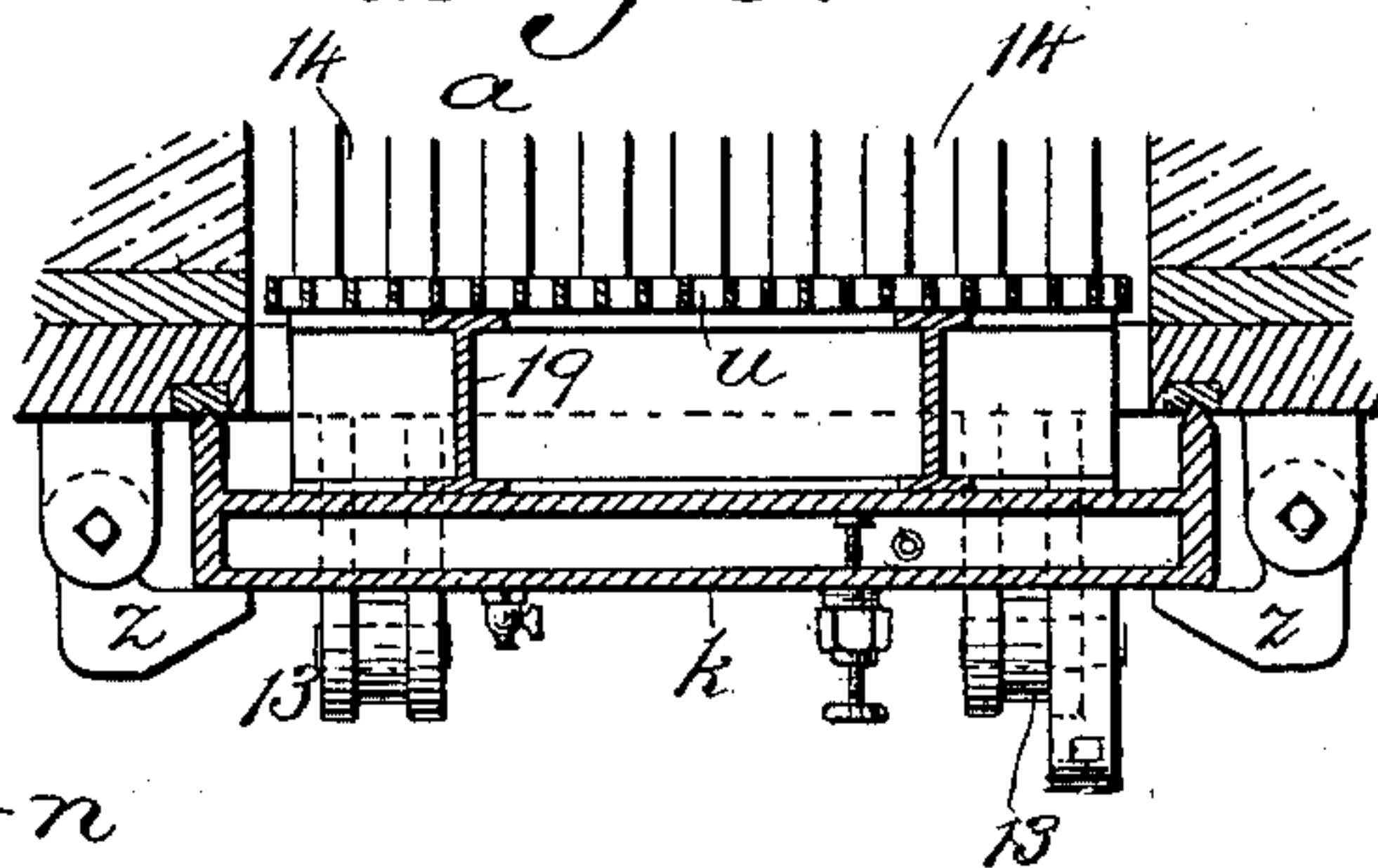


Fig. 1.

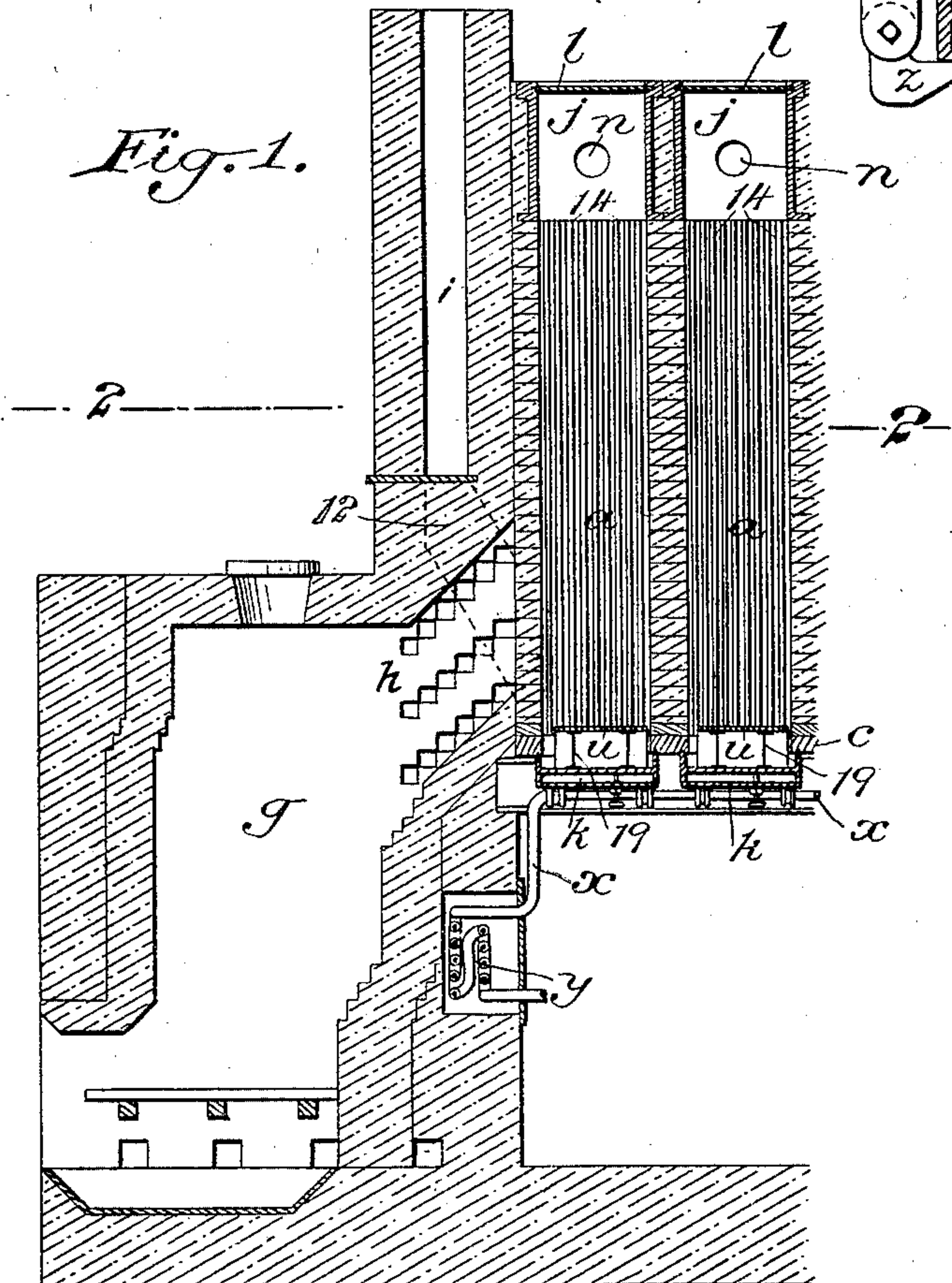
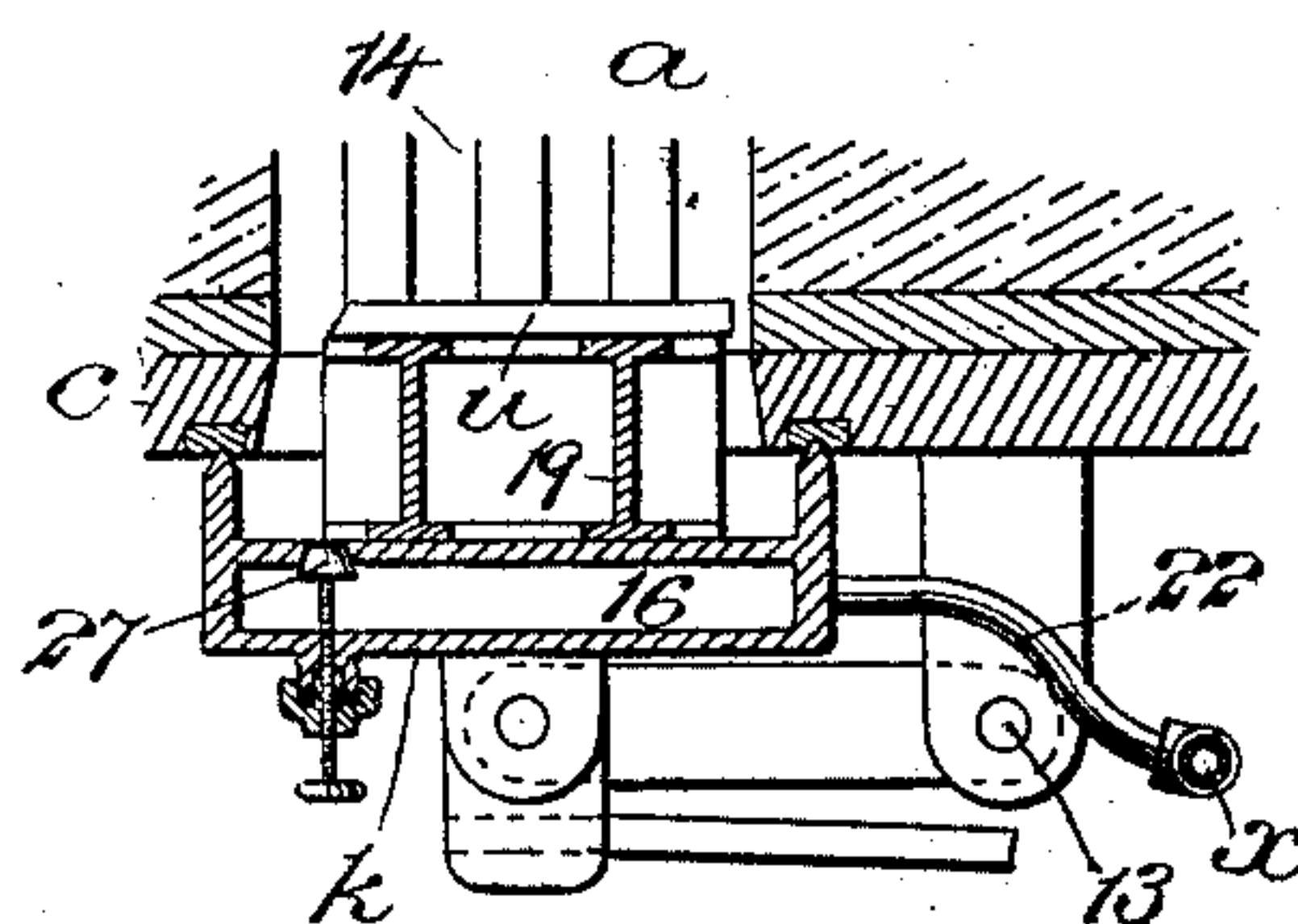


Fig. 4.



Witnesses:
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UNITED STATES PATENT OFFICE.

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PROCESS OF MANUFACTURING ILLUMINATING-GAS.

SPECIFICATION forming part of Letters Patent No. 707,783, dated August 26, 1902.

Application filed June 13, 1901. Serial No. 64,365. (No specimens.)

To all whom it may concern:

Be it known that I, CHARLES W. ISBELL, a citizen of the United States, and a resident of the borough of Manhattan, in the city and State of New York, have invented a new and useful Improvement Relating to the Manufacture of Illuminating-Gas, of which the following is a specification.

The object of this invention is to facilitate the discharge from the retorts employed in the manufacture of illuminating-gas from bituminous coal of the residual coke resulting from such manufacture. It is well known that in such manufacture the coal in changing to coke expands and tends to so tighten itself against the sides of the retort as to require the exertion of considerable force for its removal. For the purpose of loosening the coke from the retort after all or as much as desirable of the gas suitable for illumination has been obtained therefrom the said invention consists in the introduction into the retort, especially along the sides thereof, of steam, preferably superheated, for the purpose of producing the decomposition or combustion and conversion into gas of portions of the coke close to the sides of the retort, and thereby loosening the body or greater portion thereof.

This invention is applicable with especial advantage to upright gas-retorts, in which the expansion of the charge is productive of greater difficulty of discharge, but from which when the charge is loosened, as above mentioned, the coke may drop out by gravitation on the opening of the retort at the bottom.

Figure 1 represents a vertical section of an apparatus embodying several upright retorts for carrying out my invention; Fig. 2, a horizontal section of the same in the line 2 2 of Fig. 1. Figs. 3 and 4 represent vertical sections at right angles to each other of the lower part of a retort and the means for supplying steam thereto.

a a designate the retorts, having their interior surfaces grooved to form channels 14, running directly from bottom to top. These grooved retorts may be of any suitable horizontal sectional form and so far as their exteriors are considered may be of any suitable construction and set in any manner, but are herein represented as built of fire-brick into

the same structure with their heating-chamber *b* of masonry, which is supported on a floor-plate *c* and is in communication with an external heating-furnace *g* through a flue *h* and with a chimney *i* through flues 12, as shown in Figs. 1 and 2. The said retorts are represented as each provided with an iron head or mouthpiece *j* and with an iron bottom *k*, the said head being fitted with a sliding lid *l*, which is opened for charging, and the said bottom being, for the purpose of discharging, hinged, as shown at 13, to the floor-plate *c*. When closed, the hinged bottom or discharging-lid *k* is secured by swinging hooks *z*, pivoted to the floor-plate. On the inner face of said bottom or lid there is carried, by supports 19, a grate *u*, upon which the charge rests some distance above the bottom or lid. The said bottom or lid is also made hollow to form a steam-chamber 16, from which, by the opening of a valve 27 after all or as much as desirable of the gas has been eliminated from the coal in the retorts, leaving only a residue of coke, and while said residue is at an incandescent heat, I introduce steam into the retort for the purpose of loosening said residue. To provide for this introduction of steam into the chambers 16, a fixed pipe *x* runs under the floor-plate *c*, and from this pipe flexible branch pipes 22 run one to the chamber 16 of each lid *k*. The said pipe *x* is represented in Fig. 1 as receiving steam through a superheating-coil *y*, which is arranged in a small heating-chamber in the rear wall of the furnace to be heated by the heat of the furnace. The channels 14 in these retorts are of such width and depth that when the retort is charged with the coal ordinarily used for the manufacture of coal-gas the said coal will not fill the said channels, but even when it expands, as it naturally does in the process, it will leave the said channels partly unobstructed, so that the steam introduced into the retort for the purpose of my invention will find a ready upward passage through said channels to the outlets *n*, provided in the retort-head *j* and will produce such decomposition or combustion of the coke in the said channels and in the contiguous parts of the retort, close to the sides thereof, as to quickly so loosen the residue that on the opening of the lids *k* it may

fall out by gravitation or be easily expelled by pushing it down from the top.

The apparatus hereinabove described for carrying out my invention is the subject-matter of my application, Serial No. 72,781, filed August 21, 1901, for United States Letters Patent.

What I claim as my invention is—

In the process of manufacturing illuminating-gas from bituminous coal, the loosening of the residual incandescent coke remaining in the generating-retort after the expulsion of said gas to the extent desired, by the introduction into said retort around the said

coke of a sufficient quantity of steam to produce the decomposition or combustion and conversion into gas of that portion of said coke contiguous to the sides of the retort, substantially as herein described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 5th day of June, 1901.

CHAS. W. ISBELL.

Witnesses:

FREDK. HAYNES,
LIDA M. EGBERT.