

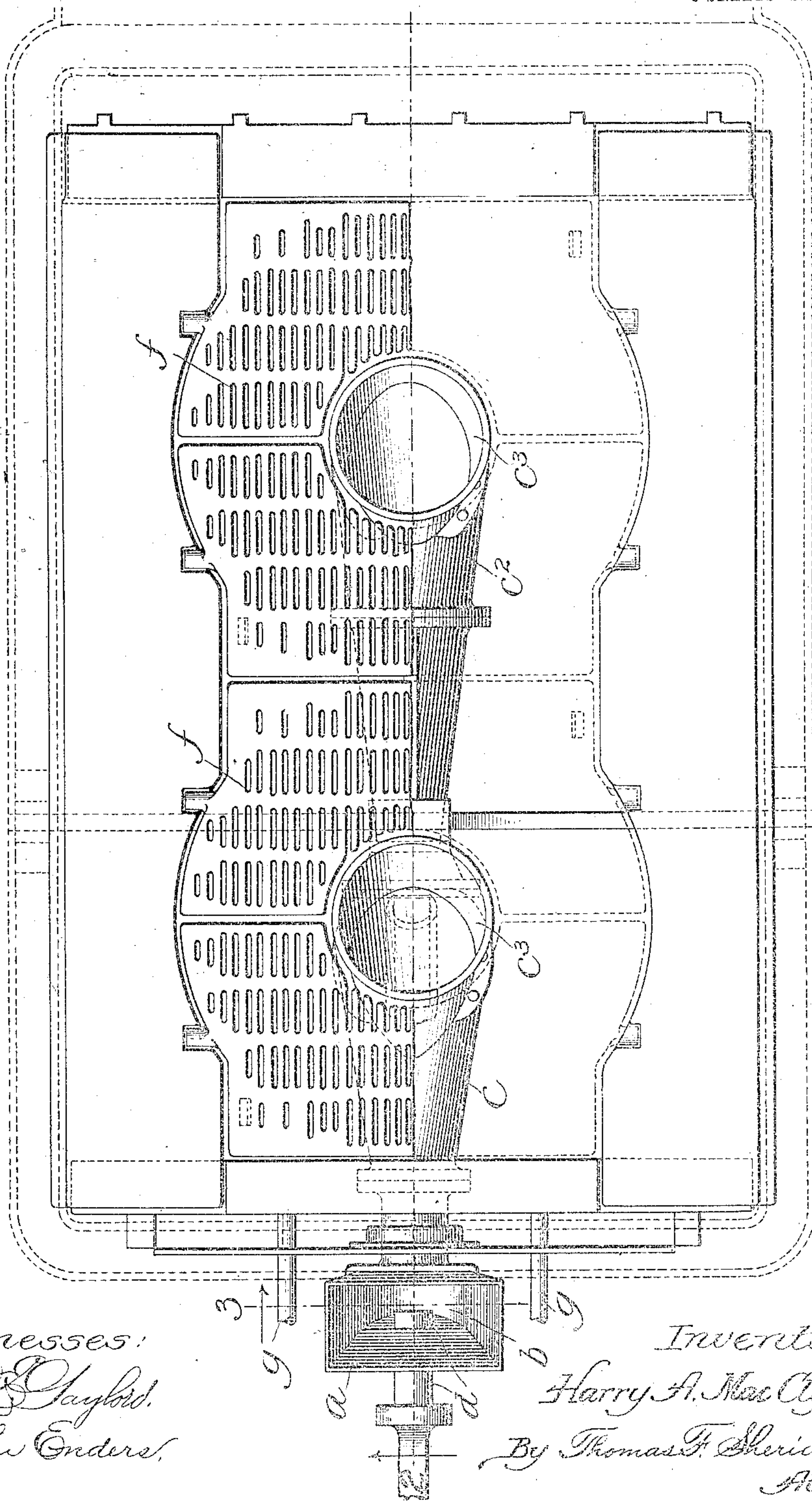
No. 855,581.

PATENTED JUNE 4, 1907.

H. A. MACCLYMENT.
STOKER FOR FURNACES.
APPLICATION FILED DEC. 29, 1905.

5 SHEETS—SHEET 1.

Fig. 1.



Witnesses:
Edw. Payford.
John Enders.

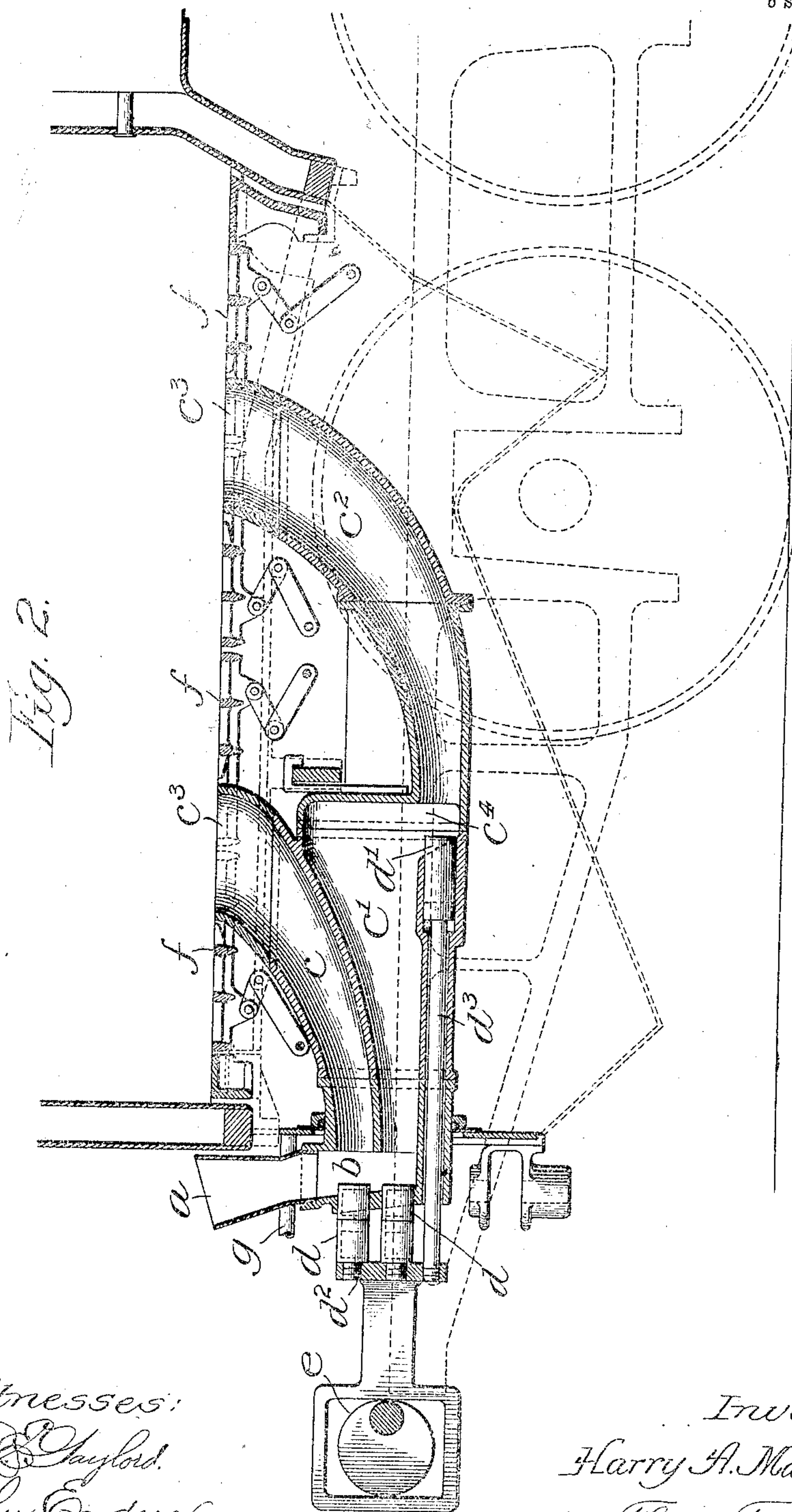
Inventor:
Harry A. MacClyment.
By *Thomas F. Sheridan,*
Attorney.

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6 SHEETS—SHEET 2.



Witnesses:
E. B. Gaylord.
John Enders.

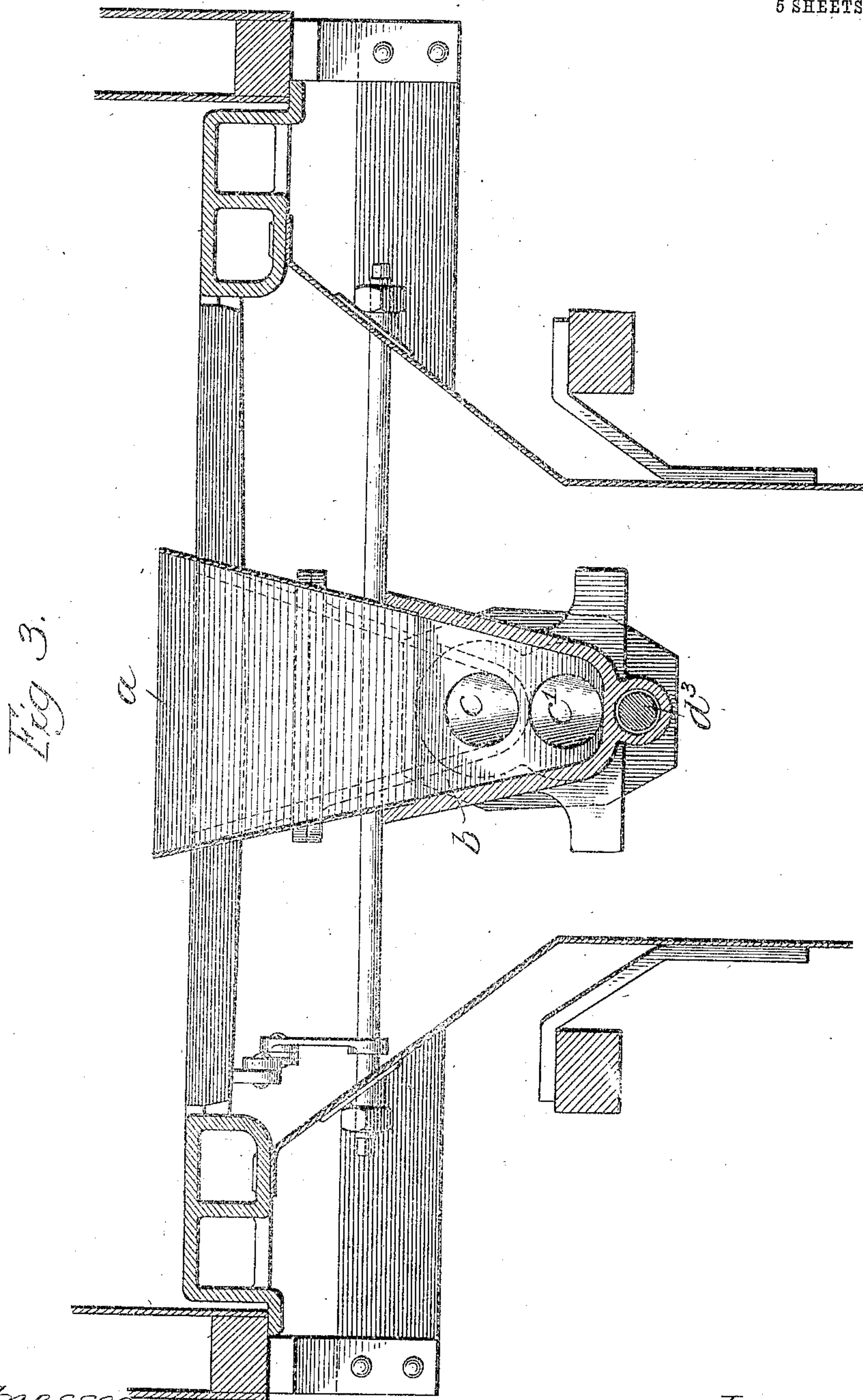
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5 SHEETS—SHEET 3.



Witnesses:
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John Enders.

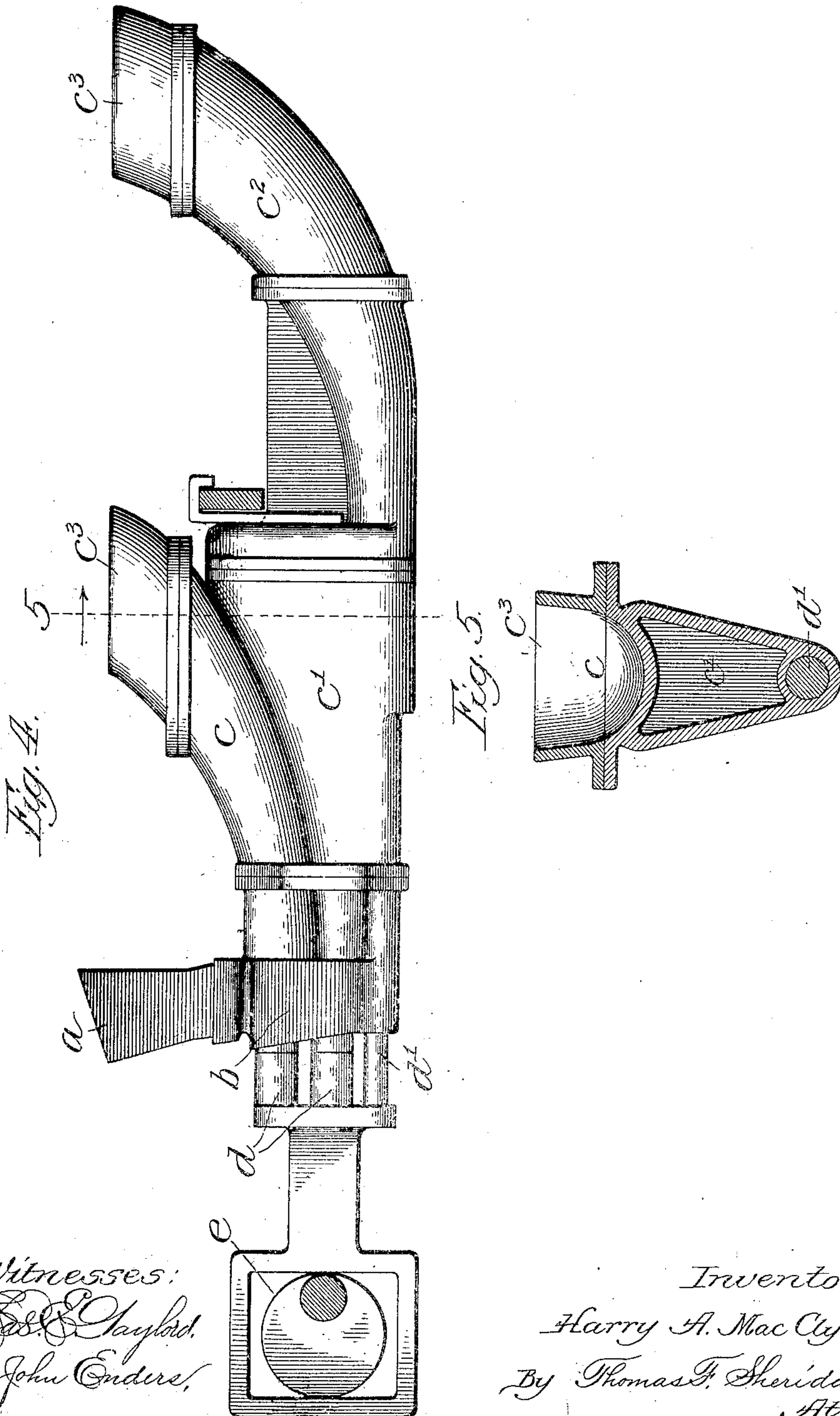
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5 SHEETS—SHEET 4.



Witnesses:
E. L. Claybird,
John Enders,

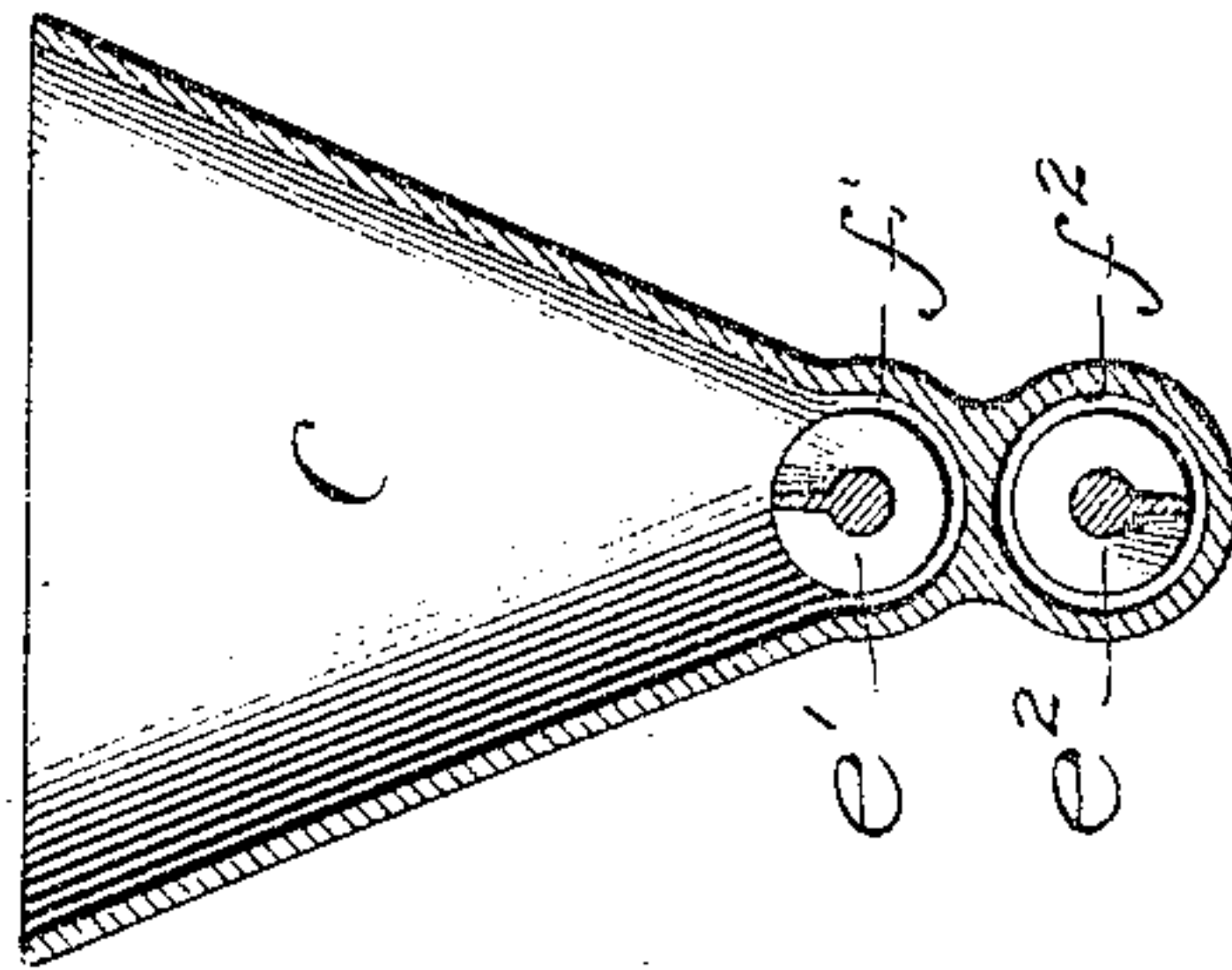
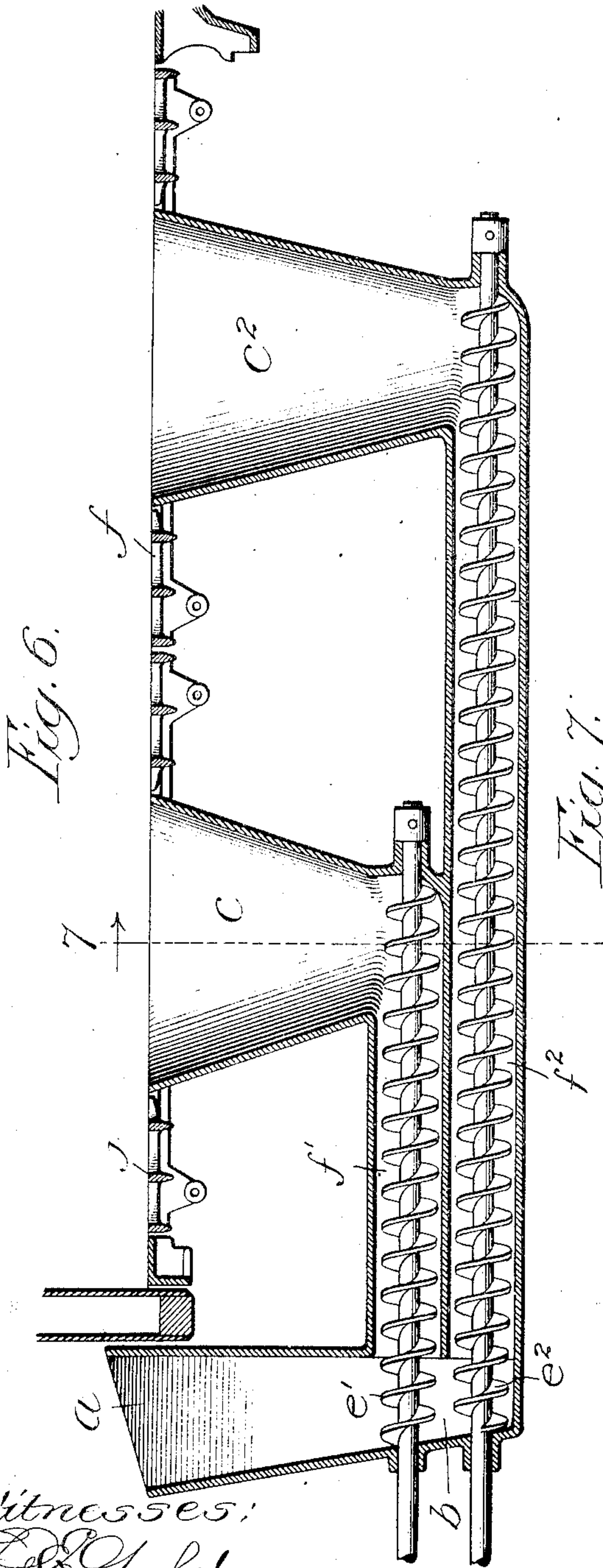
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5 SHEETS—SHEET 5.



Witnesses:
E. S. Gaylord.
John Enders.

Inventor:
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UNITED STATES PATENT OFFICE.

HARRY A. MACCLYMENT, OF BURLINGTON, IOWA.

STOKER FOR FURNACES.

No. 855,581.

Specification of Letters Patent.

Patented June 4, 1907.

Application filed December 29, 1905. Serial No. 293,774.

To all whom it may concern:

Be it known that I, HARRY A. MACCLYMENT, a citizen of the United States, residing at Burlington, in the county of Des Moines and State of Iowa, have invented certain new and useful Improvements in Stokers for Furnaces, of which the following is a specification.

My invention relates to stokers, and has for its object to produce a mechanical stoker which shall feed the fuel to a large grate area and distribute the fuel evenly on the grate.

In the accompanying drawings—Figure 1 is a plan view of a furnace grate, showing my invention applied thereto. Fig. 2 is a longitudinal section on the line 2 of Fig. 1. Fig. 3 is a transverse section on the line 3 of Fig. 1. Fig. 4 is an elevation of my improved stoker. Fig. 5 is a section on the line 5 of Fig. 4. Fig. 6 is a longitudinal sectional view of a modified form of my invention. Fig. 7 is a section through Fig. 6 on the line 7.

My improved stoker is applicable to any form of furnace, but in the drawings I have shown it as in connection with the furnace of a locomotive boiler. It is to be understood, however, that it may equally well be attached to stationary or marine boilers, or to any furnace in which it is desirable to supply fuel to grates of large area.

In the following description I shall refer only to the parts on the drawings, which I regard as new, since the construction of the locomotive shown is of the ordinary kind and well understood.

In the drawings *a* represents a hopper through which fuel usually in the shape of finely divided coal is supplied to a receptacle or main fuel supply *b*. Leading from this receptacle is a magazine *c* terminating at its end opposite the fuel supply in an opening *c'* in the grate *f*, as clearly shown in Fig. 1. Below this magazine and opening similarly into the main fuel supply is a receptacle *c'*, which I designate the auxiliary fuel chamber. This auxiliary fuel chamber is provided at its end opposite the main fuel supply with an opening *c''* leading to a second magazine *c''* similar to that first described,—this second magazine also terminating at its upper end in an opening *c''* in the grate. It will be observed that these magazines are made flaring so that their upper ends are larger than their lower ends, for the purpose of assisting the fuel in its passage—as is well understood in this art. As shown in Fig. 2, the main fuel supply *b*

has at its rear wall openings through which plungers *d* operate. These plungers are connected to a plunger head *d'* which may be operated in any desired manner. I have shown an eccentric *e*, but it will be readily understood any suitable operating means may be substituted therefor. The upper plunger *d* serves to force the fuel from the main fuel supply into the magazine *c* and the lower plunger *d* serves to force the fuel from the main supply into the auxiliary chamber *c'*. The fuel in the magazine *c* as the plungers operate is gradually carried upward to the grate through the opening therein, where it is burned—as is well understood. The fuel in the auxiliary fuel chamber *c'* is forced forward gradually by the lower plunger *d* until it reaches the opening *c''* whence it falls into the magazine *c''*. Connected also with the plunger head *d'* by a long plunger arm *d''* is an auxiliary plunger *d''*, and this plunger *d''* contacts with the fuel at the opening *c'* and forces it into the magazine *c''*, thence to the grate. It will be readily understood that by providing the auxiliary chamber *c'* and causing the fuel to be fed first thereinto and thence into the magazine *c''*, I am enabled to transfer the fuel for a considerable distance from its source of supply, which would be practically impossible were the fuel delivered directly from the main supply into the magazine *c''*. In such case, it would be necessary to elongate the magazine so as to connect it directly to the main supply, and it would be found practically impossible to force the fuel through so long a course by one of the small plungers *d*.

Referring to Fig. 7 I have shown a modification of my invention which utilizes the screw conveyer *e'* for forcing the fuel through the chamber *f'* to the magazine *c* and the screw conveyer *e''* to force the fuel through the much longer conveyer *f''* to the magazine *c''*.

By reference to Fig. 1, it will be observed that the openings in the grate are circular or approximately so. The fuel, therefore, coming through these openings is distributed entirely around the opening and is spread evenly over the live grate area.

Though I have shown but two magazines, it will be readily understood that more may be provided if desired with the necessary auxiliary fuel chambers and plungers. By the use of a plurality of magazines and the operating means for feeding the fuel, which

I have described, I am enabled to feed fuel to the grate surfaces of larger area than has hitherto been possible.

I am aware that prior to my invention it has been proposed to transfer fuel from a source of supply to a grate by means of plungers, but so far as I am aware it has not been possible hitherto to use more than one plunger or to distribute the fuel to more than one point in the grate. I have shown and described the device containing the auxiliary fuel chamber and the multiple plungers as the best form of my invention. My invention, however, in its broad aspect is not limited to this construction. For example, I may, if so desired, omit the auxiliary fuel chamber and convey the fuel directly from the source of supply to the multiple grate openings by means of the screw conveyers shown in Fig. 6. In this figure *a* represents the hopper, *b* the main fuel receptacle and *e'* *e''* represent screw conveyers conveying the coal through passageways *f'* *f''*, respectively, to the magazines *c* *c''*. By using the screw conveyers the fuel may be transferred directly from the main supply to the most distant magazine without the use of an intermediate fuel chamber, but the feed in some respects is not so satisfactory as the plunger feed. It will be understood that in the modification of my invention shown in Fig. 6 the parts *a*, *b*, *c* and *c''* correspond to the similar parts shown in the other figures.

The advantages of my construction are sufficiently obvious without further description.

It will be understood that I desire to cover

in claims such variations from the construction which I have shown and described as may properly fall within the spirit and scope of my invention.

I claim:

1. In combination with a furnace having a grate, a fuel supplying means, magazines leading therefrom to isolated parts of the grate, and means outside such magazines for forcing fuel in equal quantities through the different magazines.

2. A furnace having a grate provided with a plurality of openings, a source of fuel supply, a magazine directly connecting one of the openings with the fuel supply, a magazine connected to another opening, an auxiliary fuel chamber between this last magazine and the fuel supply, and means for moving fuel from the supply to the grate.

3. In combination with a furnace, a source of fuel supply, an auxiliary storage chamber, a tube leading from such source to the auxiliary storage chamber, means outside such tube for forcing fuel into the auxiliary storage chamber, and means for conveying the fuel thence to the furnace grate.

4. In combination with a furnace, a source of fuel supply, an auxiliary storage chamber, a tube leading from such source to the auxiliary storage chamber, means outside such tube for forcing fuel into the auxiliary storage chamber, a second tube leading therefrom to the furnace grate, and means outside the second tube for forcing fuel to the grate.

HARRY A. MACCLYMENT.

Witnesses:

A. U. WINKLER,
J. A. CARNEY.