

(No Model.)

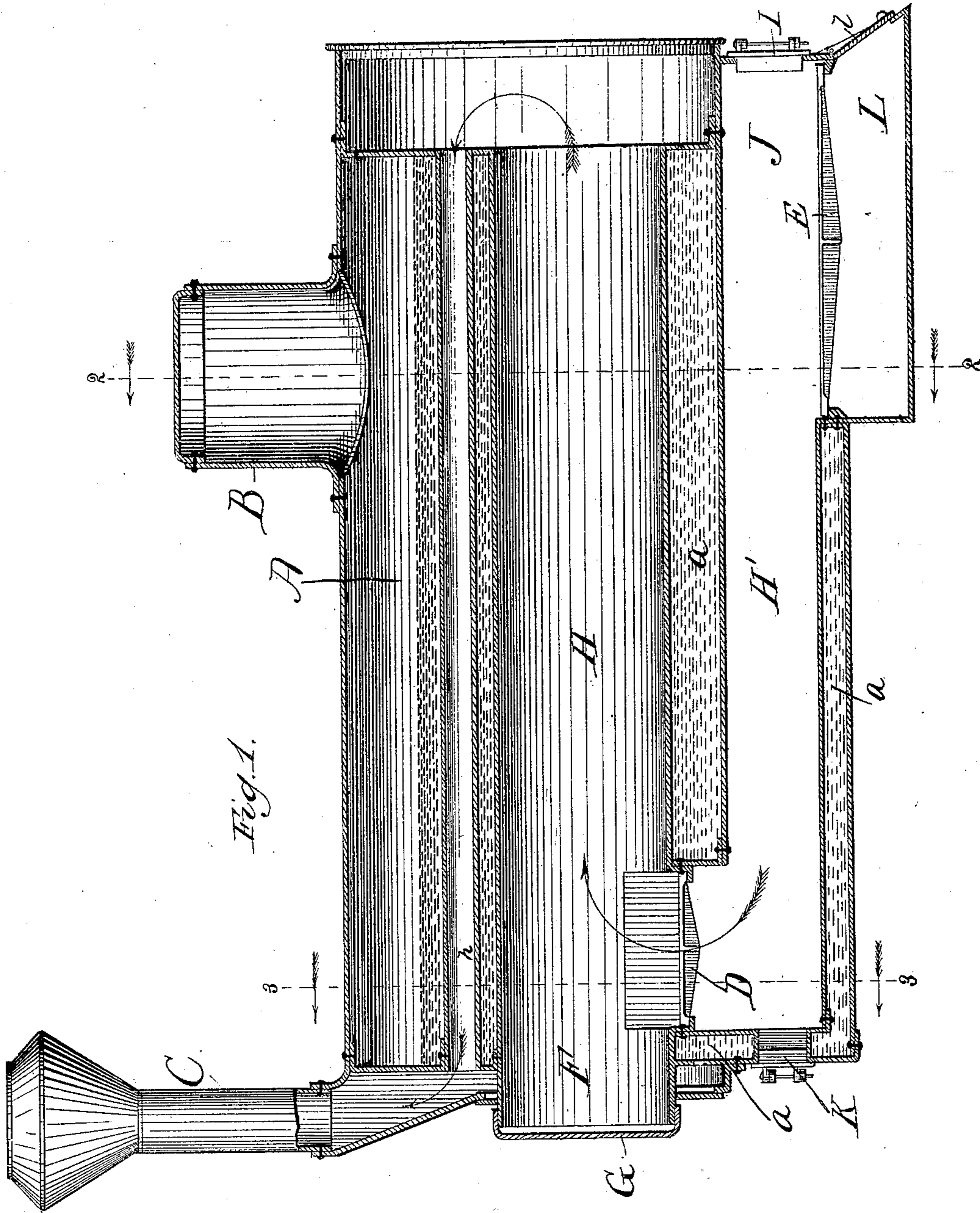
2 Sheets—Sheet 1.

M. RUMELY.

COMBINED STRAW AND COAL OR WOOD BURNING ENGINE.

No. 297,170.

Patented Apr. 22, 1884.



Witnesses:  
C. C. Gaylord.  
J. Everett Brown

Inventor:  
Meinrad Rumely.  
per Munday, Everts & Adcock  
his Attorneys:

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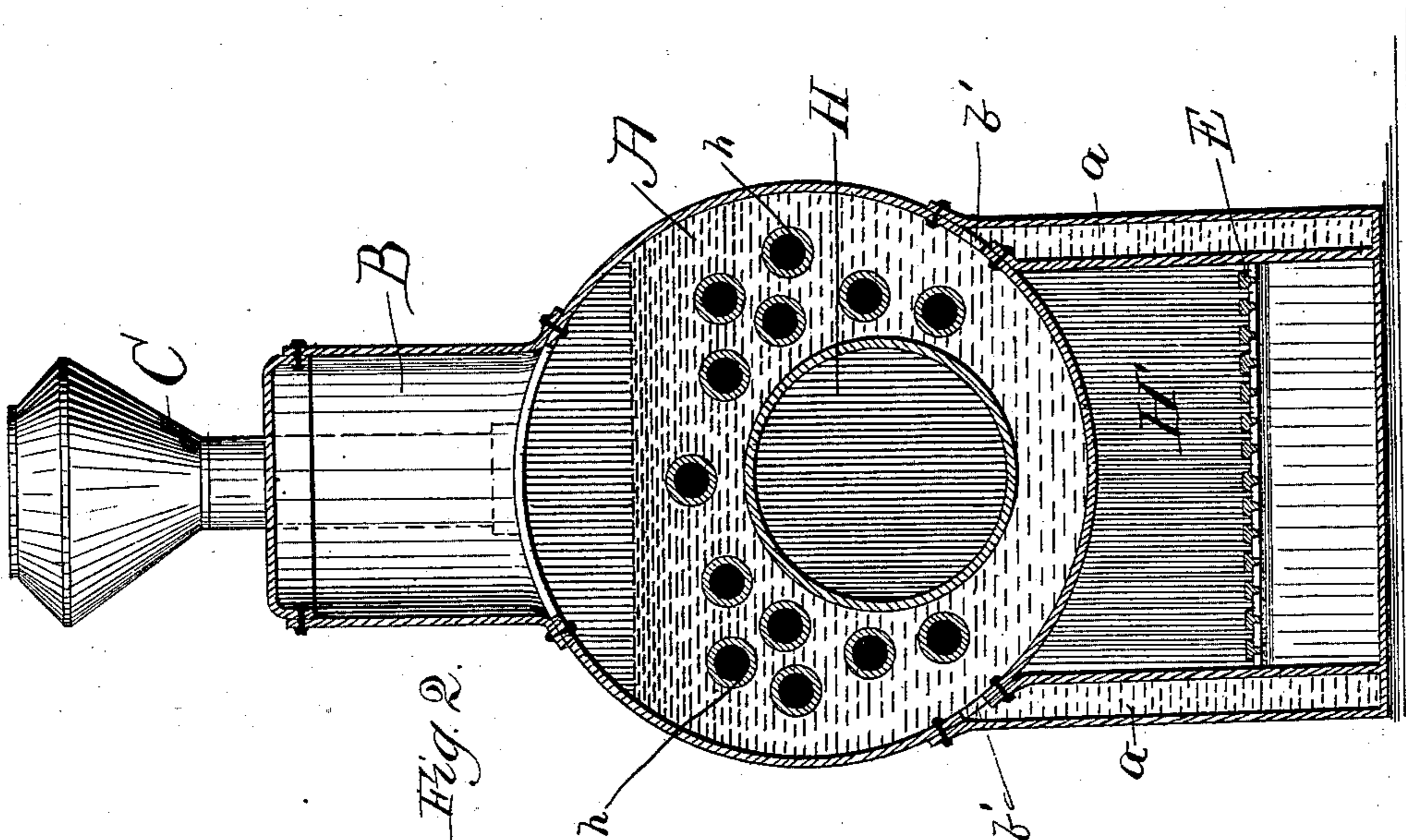
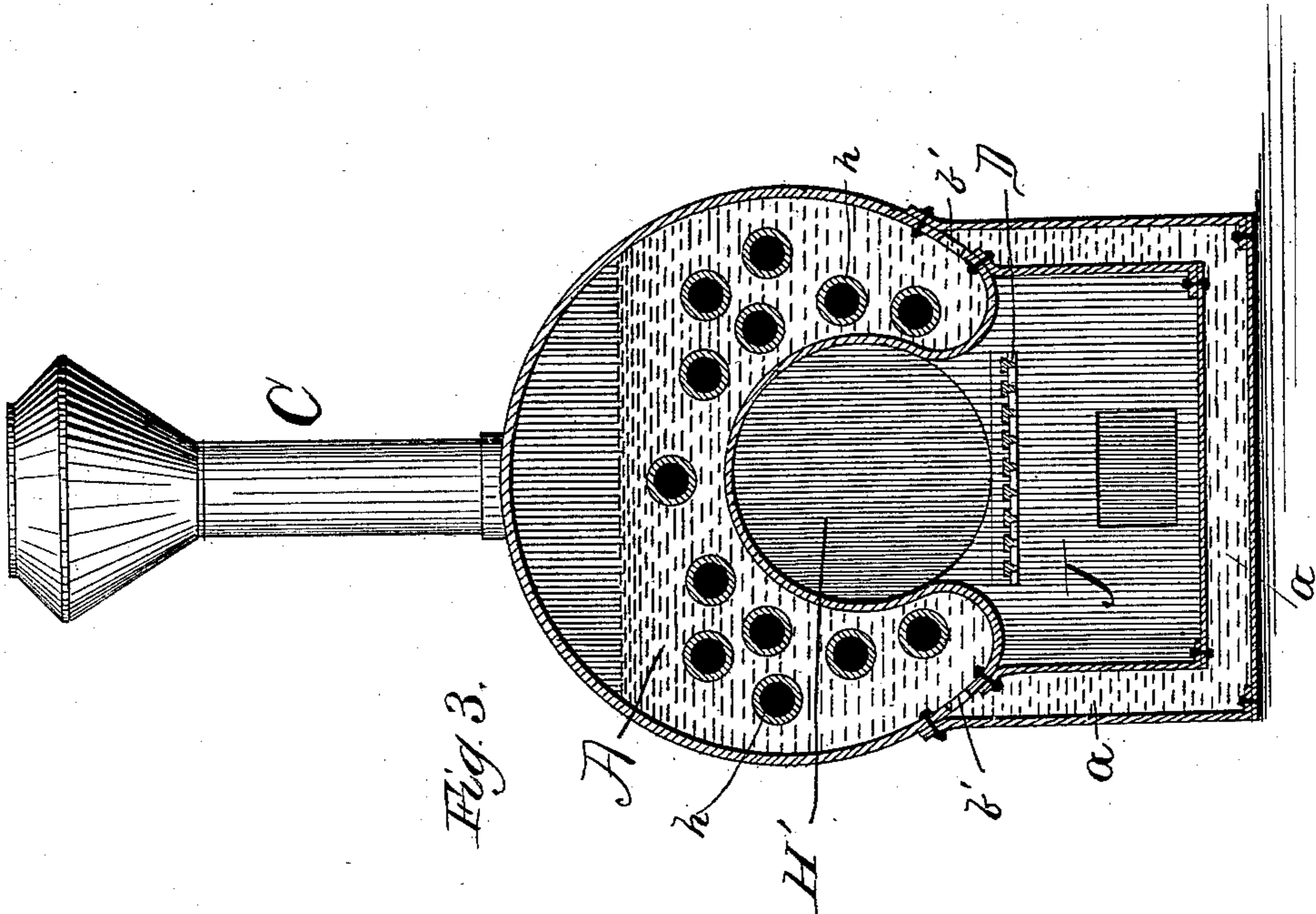
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# UNITED STATES PATENT OFFICE.

MEINRAD RUMELY, OF LA PORTE, INDIANA.

## COMBINED STRAW AND COAL OR WOOD BURNING ENGINE.

SPECIFICATION forming part of Letters Patent No. 297,170, dated April 22, 1884.

Application filed June 16, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, MEINRAD RUMELY, a citizen of the United States, residing in La Porte, in the county of La Porte and State of Indiana, have invented a new and useful Improvement in Combined Straw and Coal or Wood Burning Engines, of which the following is a specification.

In portable or traction steam-engines used for operating thrashing-machines it is desirable in many localities to burn the straw for fuel in the engine as it comes from the thrashing-machine; but while the traction-engine is upon the road or being moved from farm to farm it is of course impracticable to use straw for fuel, and wood or coal must be burned, and some farmers will desire their straw burned, while others will not. Though it is frequently therefore desirable to do so, coal and straw cannot, however, both be economically burned in the same engine or in the same combination of grates and flues, owing to the very different natures of the two fuels.

The object of the present invention is to provide a practical combined straw and wood or coal burning engine suitable for use in steam-thrashers; and my invention consists in combining, with a suitable coal or wood burning grate and its flues, a straw-burning grate at the opposite end of the boiler, and having its main flue connecting through the coal-grate with its main flue.

The invention also consists in making the fire-box of boiler-plate iron and surrounding it on all sides with water-compartments, so that the fire-box is completely surrounded with water on all sides—top, front, bottom, and sides. In this way both water and steam room are gained, and the heating-surface of the fire-box is materially increased, and a considerable saving in fuel and labor of firing is consequently effected also. This construction of the fire-box likewise does away with the ash-pan and the danger of the front warping and cracking from the heat.

The invention also consists in the novel construction, combinations, and arrangement of devices, as herein shown or described.

In the accompanying drawings, which form a part of this specification, and in which similar letters of reference indicate like parts, Figure 1 is a central longitudinal section of a

steam-boiler embodying my invention, and Figs. 2 and 3 are cross-sections on lines 2 2 and 3 3, respectively, of Fig. 1.

In the drawings, A represents the boiler, B the dome, and C the smoke-stack.

D is the coal or wood burning grate, and E is the straw-burning grate, arranged below the former and at the opposite end of the boiler.

H is the main flue from the coal or wood burning grate, and *h h* are the return-flues leading to the smoke-stack.

The fire-box F is surrounded with water-compartments *a a* on all sides.

G is the door through which the fuel (wood or coal) is fed.

H' is the main flue, leading from the straw-burning grate and connecting through the coal-burning grate and fire-box with the main flue H, and thence through the return-flues *h* with the smoke-stack.

I is the door through which the straw is supplied to the fire-box J. Water-compartments connecting with the boiler through openings *b' b'* surround the flue H' and fire-box J on its sides. The extremity of the straw-flue H' constitutes by this arrangement the ash pan or pit for the coal or wood burning grate.

K is the door for cleaning out the ashes.

L is the ash-pan for the straw-burning grate, and *l* is the door thereof for cleaning out the ashes and regulating the draft.

By combining with the coal-burning grate and fire-box a straw-burning grate and fire-box arranged in this way beneath the former and at the opposite end of the boiler, and surrounding the whole with water-compartments, the extent of the heating-surface is very much increased for the straw-burning grate, as well as the length of the flues, and a very effective engine or boiler is produced for burning straw, while its compactness and simplicity is such that its size and weight is little, if any, increased over that of an ordinary coal or wood burning engine, the coal-ash pan being dispensed with. The water lining for the fire-box F on its front, bottom, top, and sides also materially increases the heating-surface at the place where it is most effective, and does away with the necessity of fire-brick or other lining, as well as the danger of the front cracking or warping from the heat.

In operation it will be observed that either

kind of fuel may be burned without making any change in or removal of parts of the apparatus, it being ready and adapted to burn either coal or straw, the only difference being that one is fed in at one end and the other at the opposite end. Coal, straw, or wood can, however, be successfully used at either end of boiler and fire-box and can be fed at either fire-box, if desired.

10. What I claim is—

1. The combination, with a steam-boiler, of a coal or wood burning grate, fire-box, and flues, and a straw-burning grate and fire-box arranged beneath the former and at the opposite end of the boiler, and having a main flue connecting through the coal or wood burning grate and fire-box with their flues, said fire-boxes and main flue being lined with water-compartments connecting with the boiler, substantially as specified.

2. In a combined straw and coal or wood burning engine, the combination of the boiler with a coal or wood burning grate, D, fire-box F, and flues H and h, said fire-box F being arranged at one end of the boiler and surrounded with water-compartments *a a a*, connected with the boiler, a straw-burning grate, E, and fire-box J, arranged beneath said coal-grate D and at the opposite end of the boiler, and having a main flue, H', connecting through said grate D and fire-box F with main flue H, said fire-box J being lined on its sides with water-compartments, and flue H being surrounded with water-compartments *a*, connected with the boiler, substantially as specified.

MEINRAD RUMELY.

Witnesses:

ADOLPH MAYER,

JOHN HANNA.