

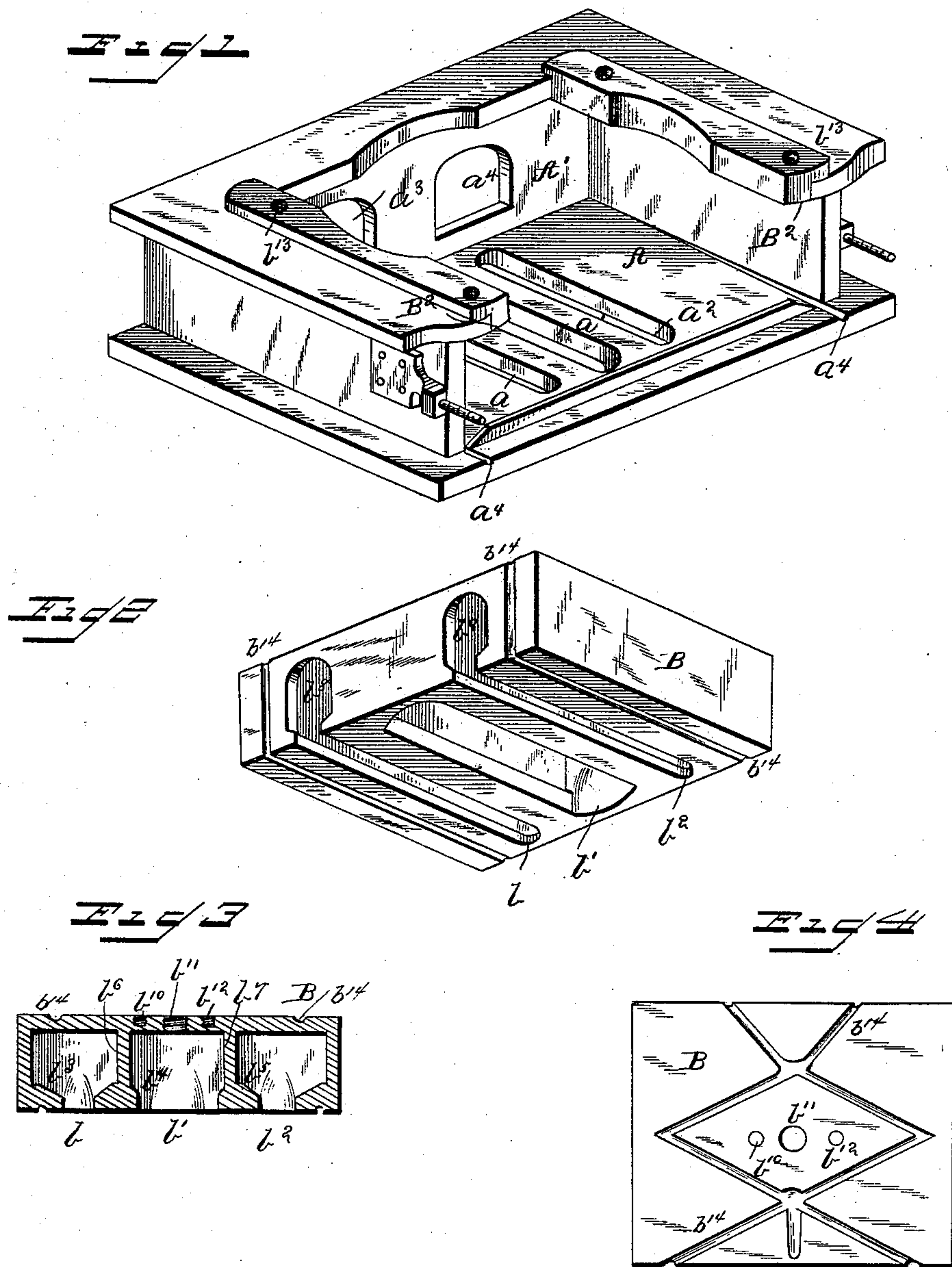
(No Model.)

4 Sheets—Sheet 1.

G. W. CISCO.
BALANCED SLIDE VALVE.

No. 389,737.

Patented Sept. 18, 1888.



WITNESSES

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(No Model.)

4 Sheets—Sheet 2.

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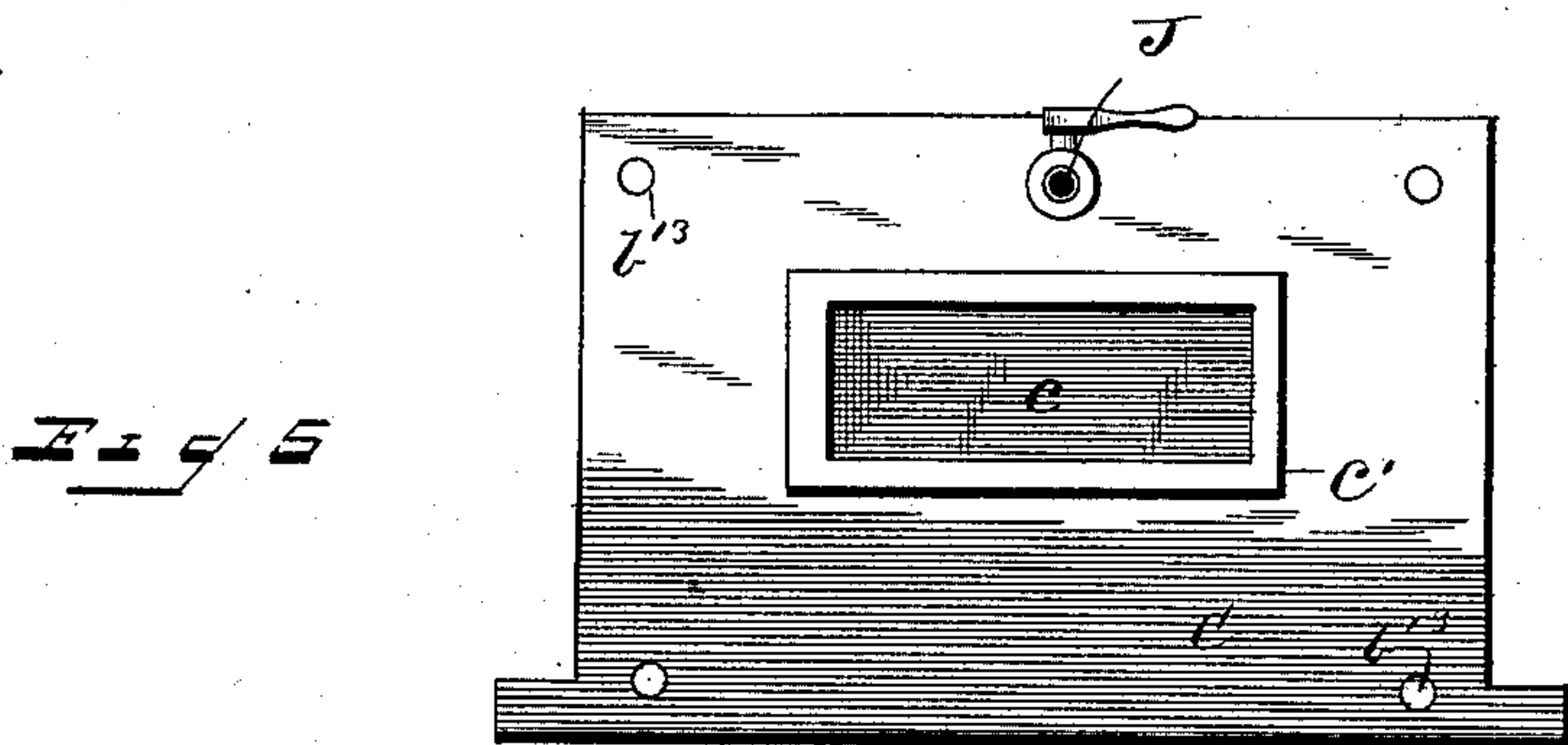


Fig 6

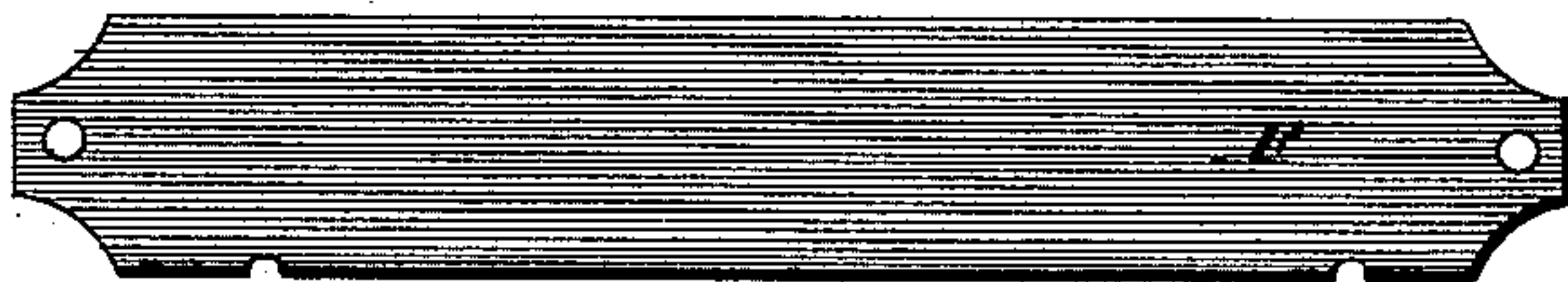


Fig 7

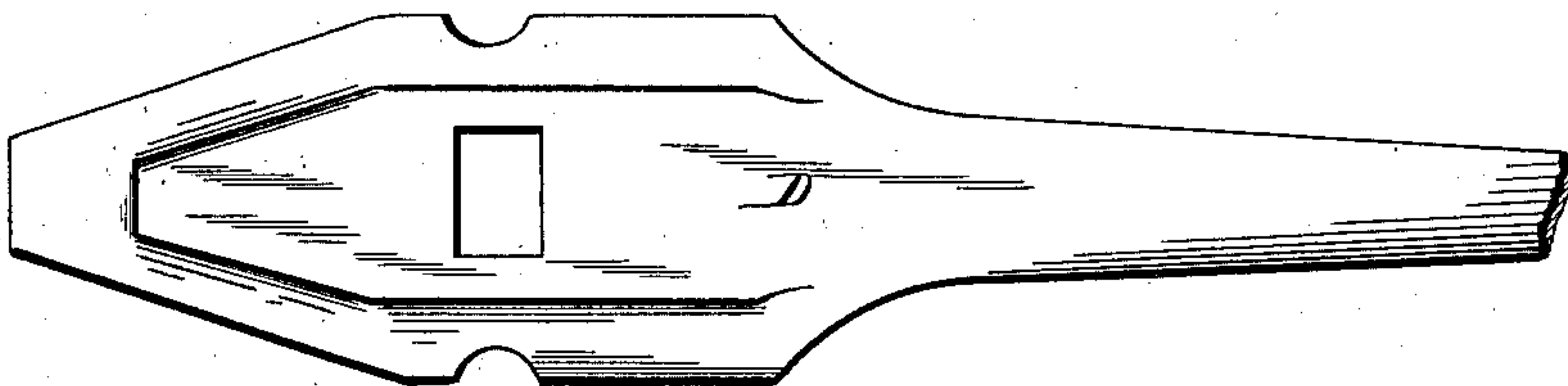
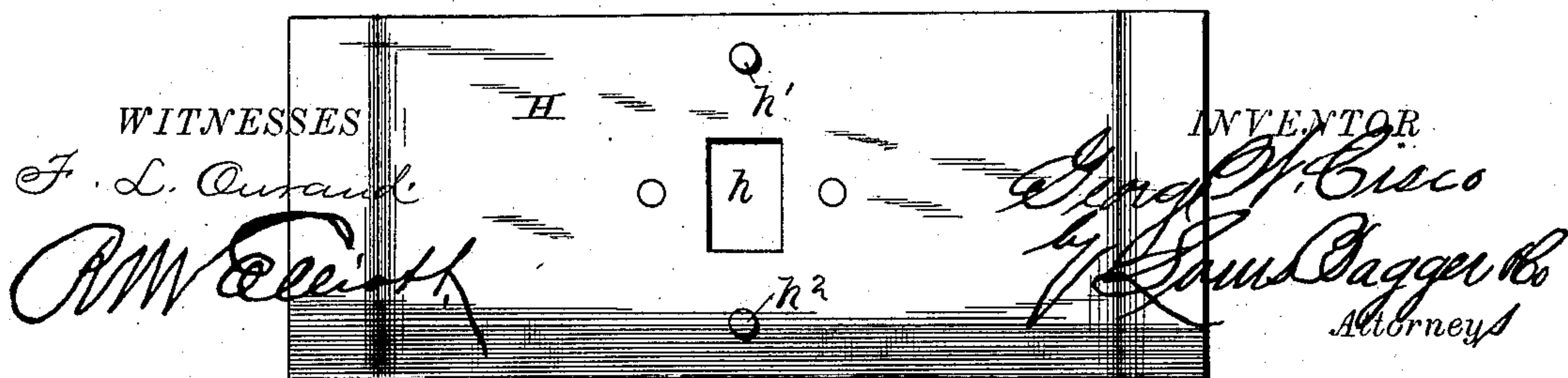


Fig 8



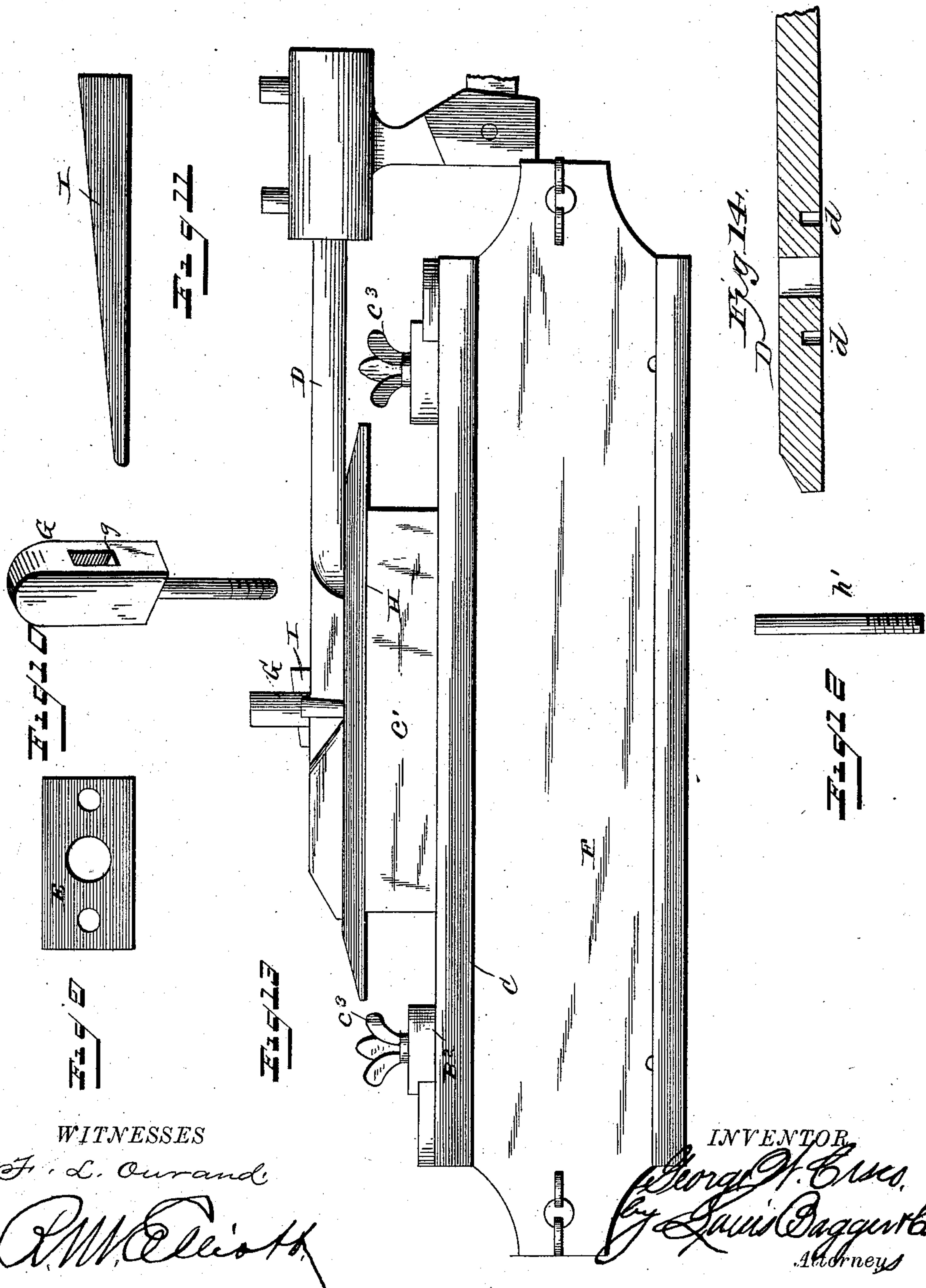
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WITNESSES

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(No Model.)

4 Sheets—Sheet 4.

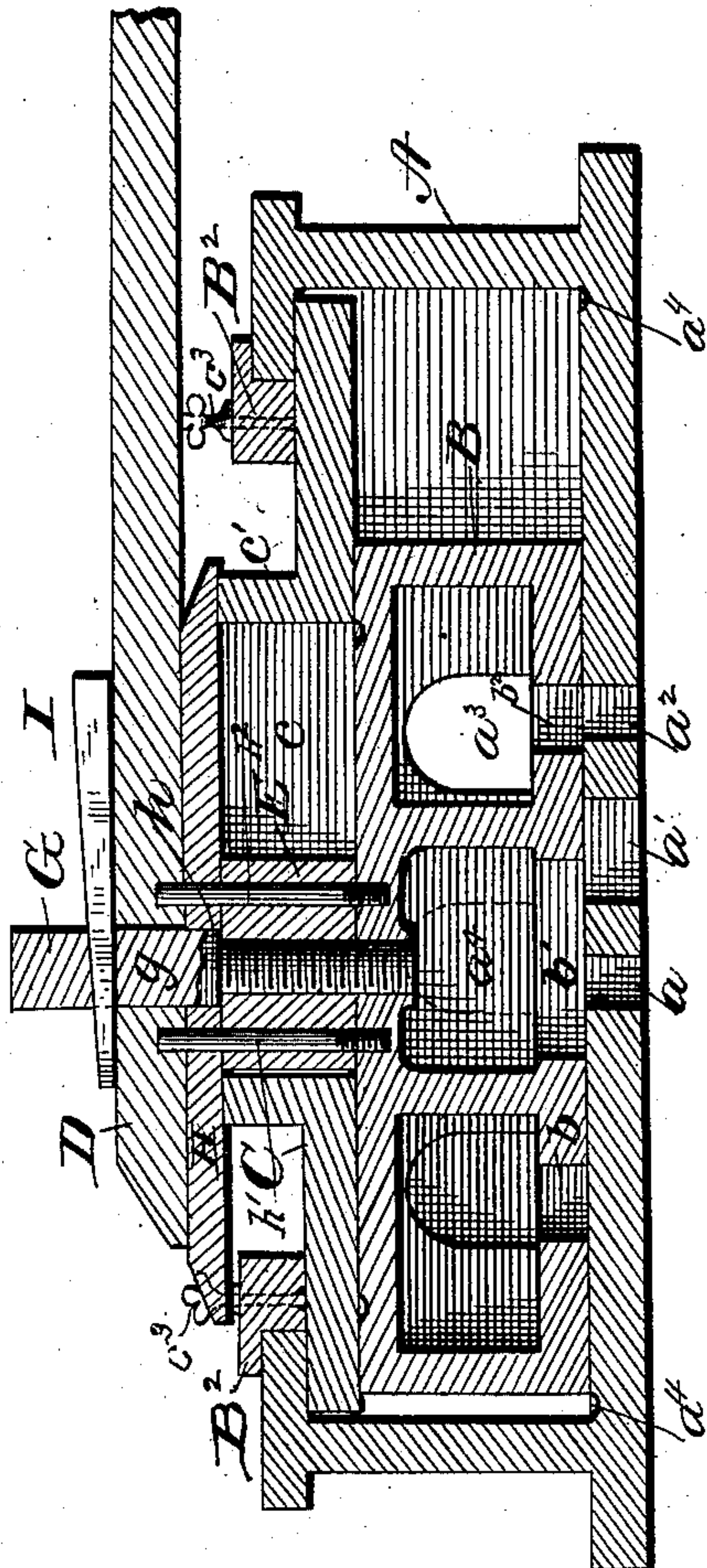
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Fig. 25.



WITNESSES

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UNITED STATES PATENT OFFICE.

GEORGE WASHINGTON CISCO, OF MONTVALE, NEW JERSEY.

BALANCED SLIDE-VALVE.

SPECIFICATION forming part of Letters Patent No. 389,737, dated September 18, 1888.

Application filed April 2, 1888. Serial No. 269,288. (No model.)

To all whom it may concern:

Be it known that I, GEORGE WASHINGTON CISCO, a citizen of the United States, and a resident of Montvale, in the county of Bergen and State of New Jersey, have invented certain new and useful Improvements in Balanced Slide-Valves; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to slide-valves, and more particularly to that class of slide-valves employed on railway-locomotives.

The object is to produce a slide-valve which shall be so constructed that the friction and consequent wear of the parts while working will be greatly reduced, if not entirely overcome; furthermore, to produce a slide-valve in which steam leakage will be obviated, thus rendering frequent packing of the stuffing-boxes unnecessary; furthermore, to produce a slide-valve in which but a very small proportion of the steam-power will be lost from condensation of the steam; and, finally, to produce a slide-valve which shall be simple of construction, efficient and durable in use, and comparatively inexpensive of production.

Heretofore slide-valves as constructed have been defective in that the steam, entering from the top of the chest, presses on the valve and tends to grind it upon its seat, and thus create a large amount of friction, also in rushing from one port to another to lift the valve from its seat, causing it to press the valve-stem against the stuffing-box, resulting in uneven wear. Furthermore, the large amount of space in the steam-chest tends to facilitate the rapid condensation of steam, a very troublesome feature and one that is a source of constant annoyance to engineers.

It is the object of the present invention to overcome the objections by doing away with all of the space in the steam-chest not actually employed by the valve and in constructing a steam-chest in which only the amount of steam requisite to drive the engine will be admitted; furthermore, to supply means for the escape of the condensed steam at all times without the necessity of the engineer having to attend to it.

With these objects in view the invention consists in the combination, with the cylinder, of a valve-chest seated thereon, and having suitable openings formed in the bottom to allow the steam to enter the cylinder, and an opening for the escape of the exhaust-steam; furthermore, in the combination, with the said valve-chest, of a sliding valve designed to fit within and move upon the bottom of the valve-chest, and having openings corresponding to those in the valve-seat, whereby upon each stroke of the piston the valve will be made to open and close the parts alternately, and thus supply the steam to the cylinder at proper intervals; furthermore, in the combination, with the said valve-chest, of a bonnet or plate secured thereto and designed to hold the slide-valve in position within the said chest; furthermore, in the combination, with the slide-valve, of a valve-stem connected therewith and extending to and connecting with the crank-levers operated by the piston, whereby the said valve may be made to perform the function for which it is designed; and, finally, in the various novel details of construction whereby its objects are attained.

In the accompanying drawings, forming part of this specification, like letters of reference indicate corresponding parts wherever they occur.

Figure 1 is a perspective view of the valve-chest with the top and one side removed, showing the arrangement of the ports. Fig. 2 is a perspective view of the slide-valve, also showing the arrangement of the ports. Fig. 3 is a vertical sectional view of the valve, showing the openings for the bolts used in securing the valve-stem in position. Fig. 4 is a top plan view of the same, showing the grooves for supplying oil to the valve-seat. Fig. 5 is a top plan view of the bonnet or plate for holding the valve in place. Fig. 6 is a side elevation of one of the sides of the valve-chest. Fig. 7 is a side elevation of the valve-stem. Figs. 8, 9, 10, 11, and 12 are detail views of various parts of the apparatus, which will be described as they occur in the specification. Fig. 13 is a side elevation showing the apparatus put together. Fig. 14 is a sectional detail view of the end of the head of the valve-stem, and Fig. 15 is a vertical sectional view of the device with the parts assembled.