

No. 835,409.

PATENTED NOV. 6, 1906.

G. DILLON.
FURNACE.

APPLICATION FILED DEC. 20, 1905.

2 SHEETS—SHEET 1.

Fig. 1.

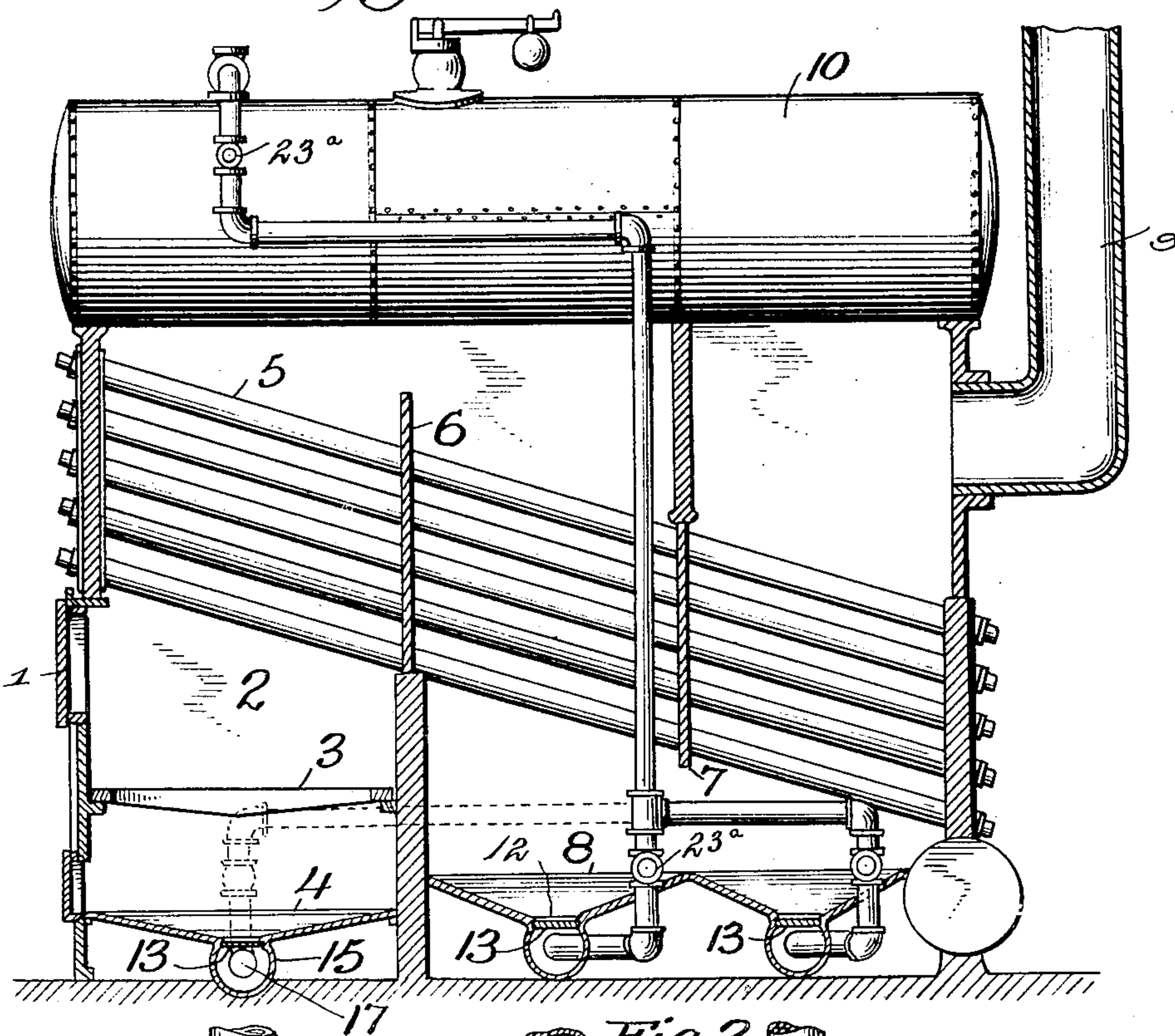
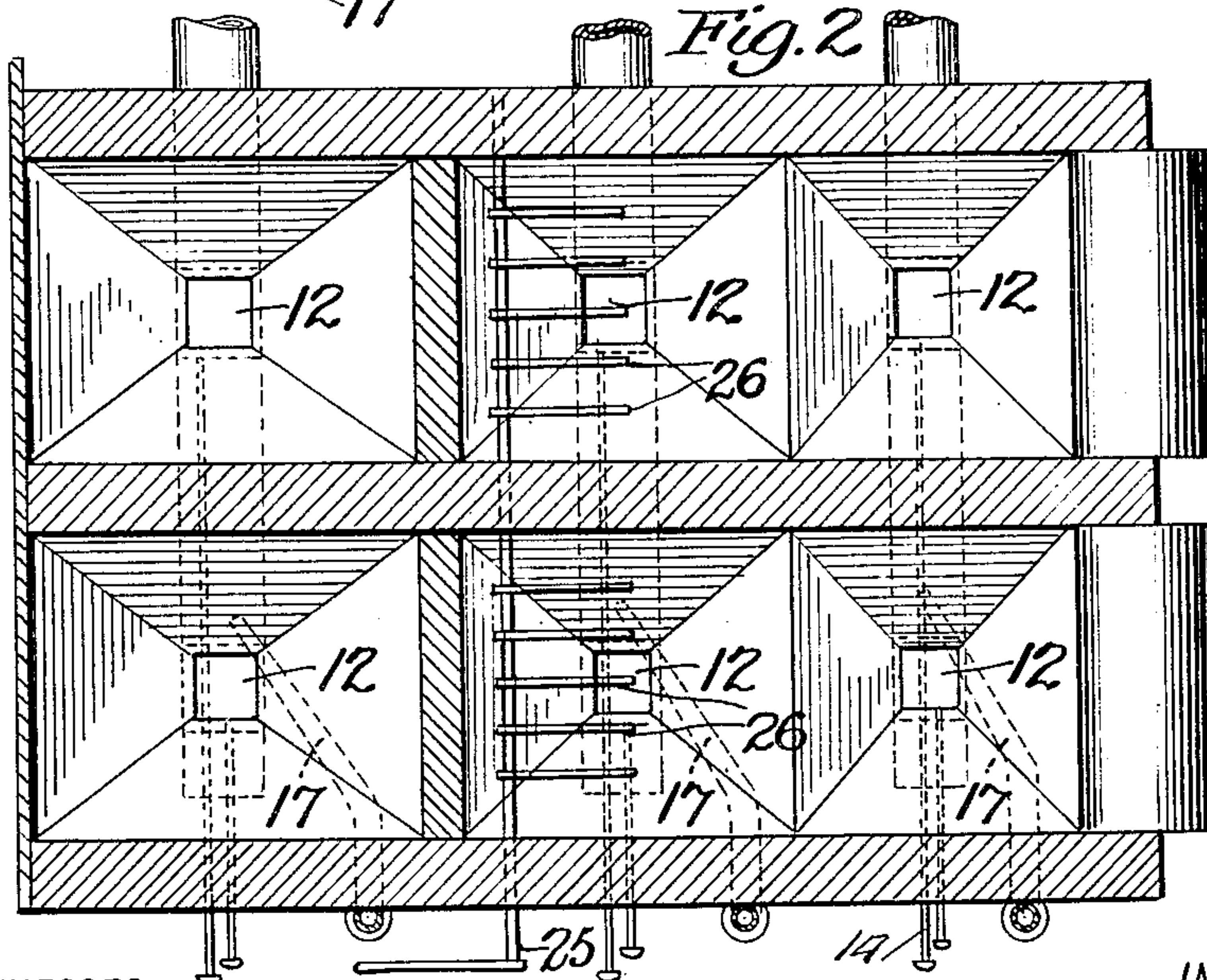


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

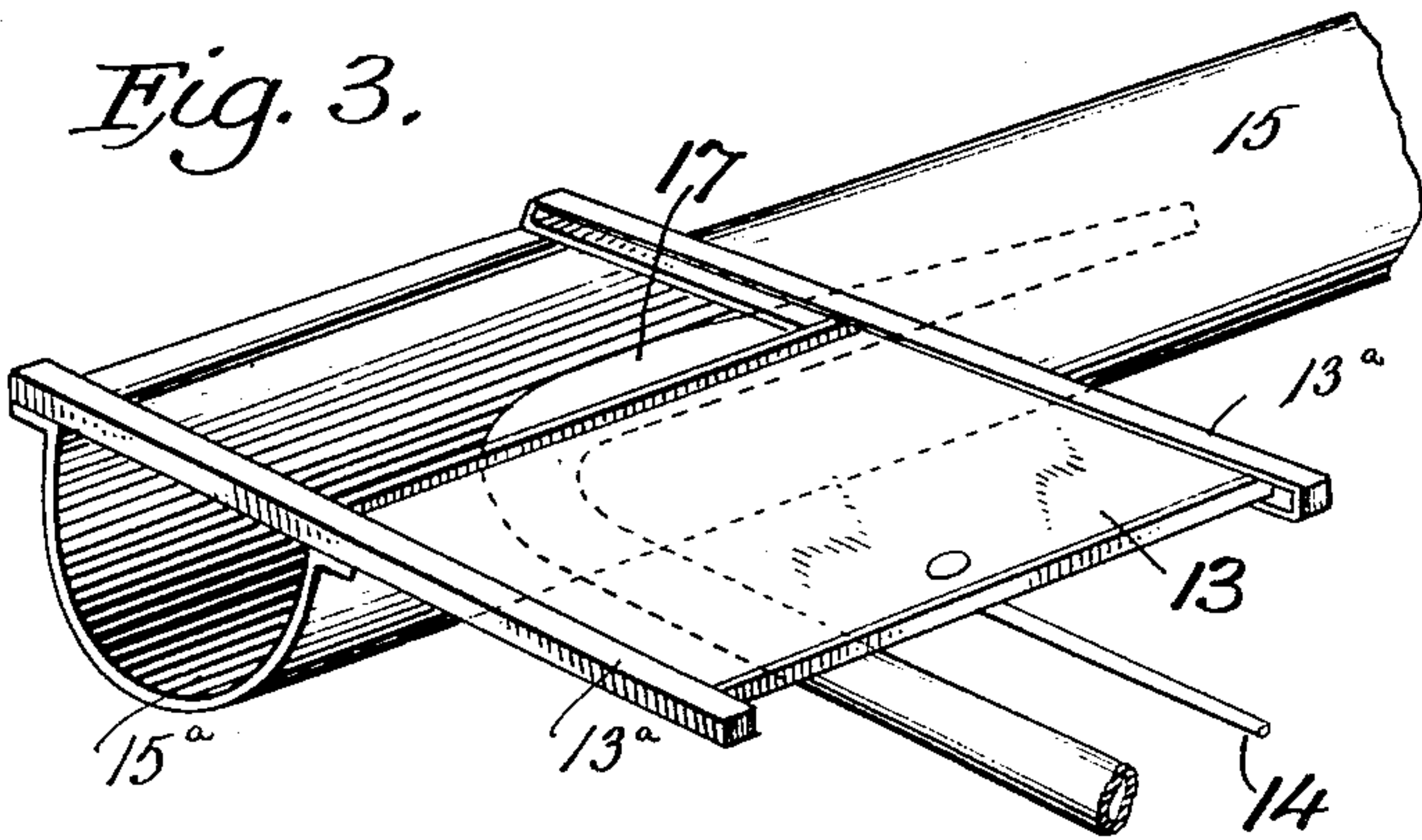


Fig. 4.

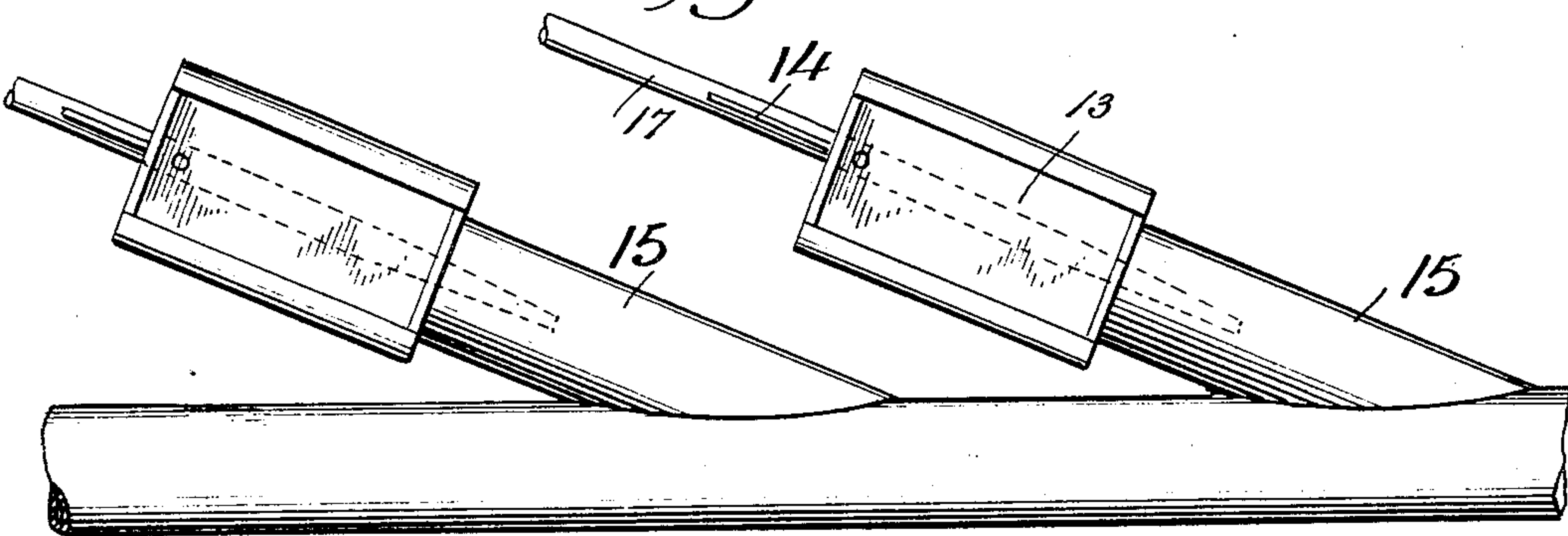


Fig. 5.

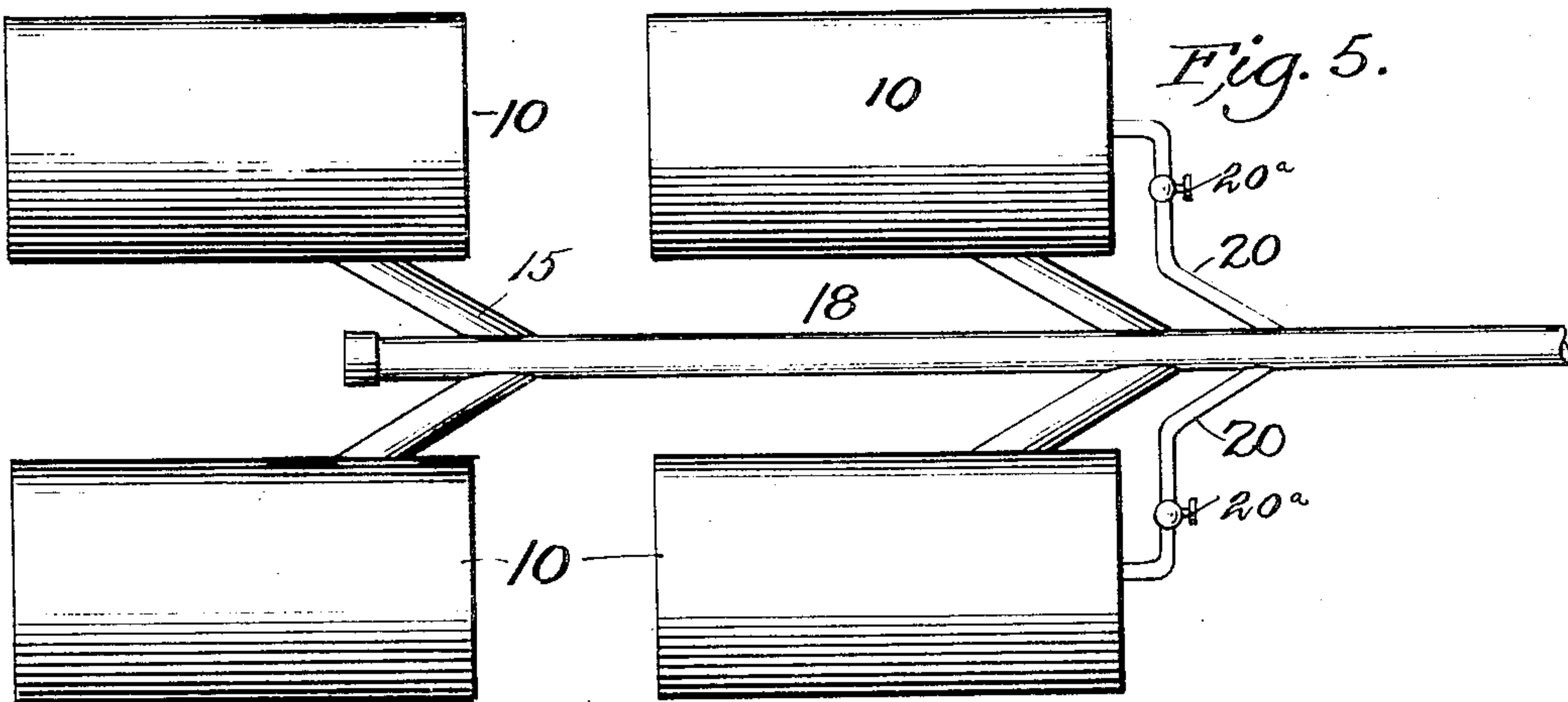


Fig. 6.

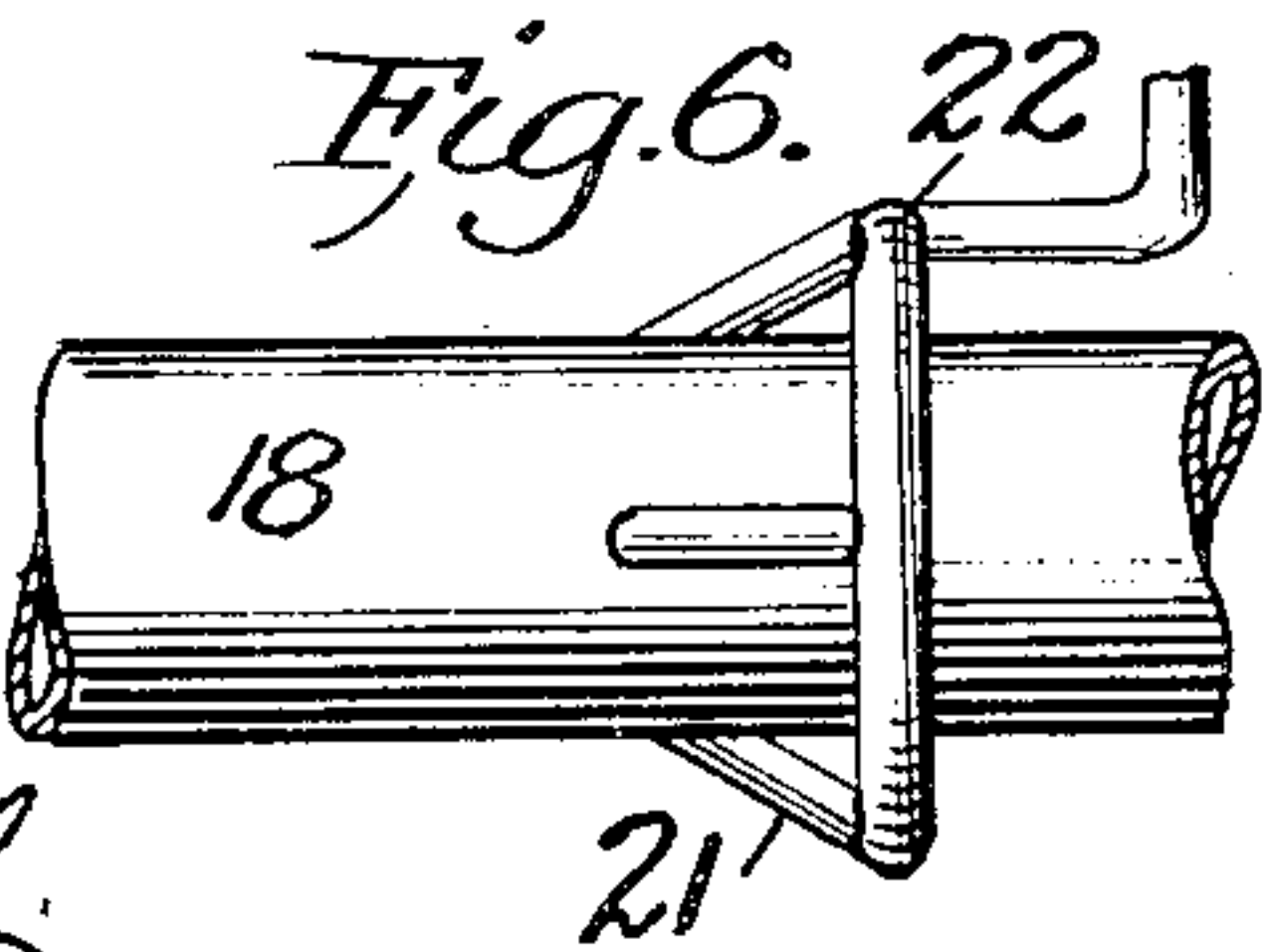
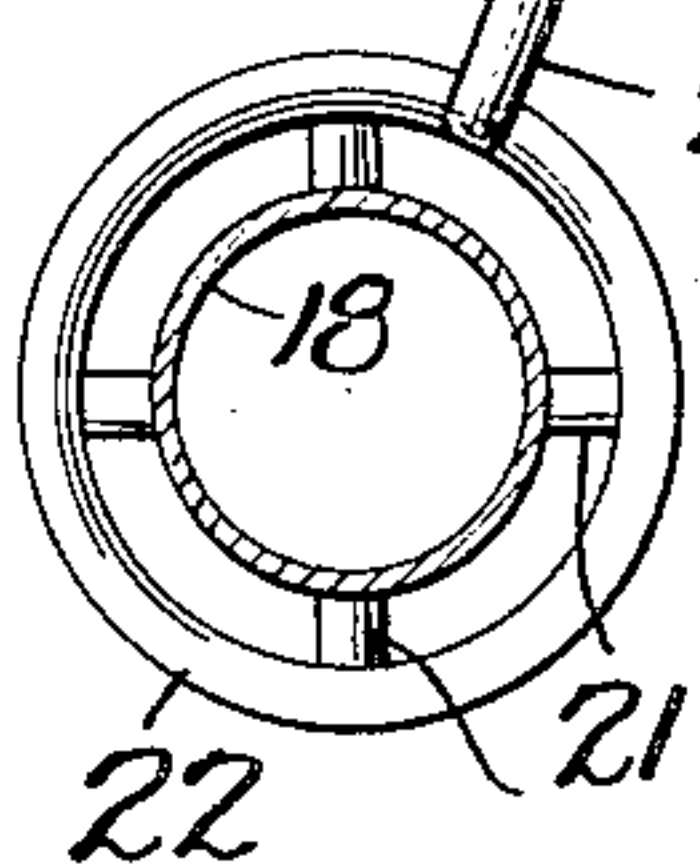


Fig. 7.



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FURNACE.

No. 835,409.

Specification of Letters Patent.

Patented Nov. 6, 1906.

Application filed December 20, 1905. Serial No. 292,849.

To all whom it may concern:

Be it known that I, GEORGE DILLON, a citizen of the United States, residing at Greenpoint, Brooklyn, in the county of Kings and State of New York, have invented new and useful Improvements in Furnaces, of which the following is a specification.

This invention relates generally to furnaces, and particularly to a device for removing soot, cinders, and other deposits from the bed of a furnace.

It is well known to those skilled in the art to which this invention relates that the back connections of furnaces employing either natural or artificial draft quickly become clogged with soot, which seriously interferes with the draft and otherwise retards the proper working of the furnace. Heretofore it has been customary to remove the soot from the back connections of a furnace by opening a suitable door and inserting a rake or scraping device by means of which the soot is drawn out of the furnace. This operation is often difficult when a number of furnaces are placed closely together. Furthermore, it consumes considerable time, not only while the fireman is withdrawing the soot, but also while such soot is being carried away from the furnace in a wheelbarrow or the like.

In carrying out my invention I connect with the bed of a furnace a suitable suction device, which can be put in operation after a quantity of soot or other deposit has collected on the bed of the furnace and is in need of removal. Where a number of furnaces are closely arranged with respect to each other, I provide a common discharge-pipe with which the suction device of each furnace communicates, so that the deposit or soot from a large number of furnaces may be simultaneously removed and conducted to any suitable point outside the furnace-room.

In order that my invention may be more clearly understood, it will be particularly described with reference to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a vertical section, partly in elevation, through a furnace equipped with a cleaning device constructed in accordance with the present invention. Fig. 2 is a horizontal section through the furnace adjacent to the lower portion thereof. Fig. 3 is a perspective view showing one of the suction devices. Fig. 4 is a plan view showing a plu-

rality of suction devices communicating with a common discharge-pipe. Fig. 5 is a plan view indicating four furnaces, each having a discharge or a suction device communicating with a common discharge-pipe. Fig. 6 is a detail view in side elevation, showing a convenient means of maintaining a draft in the common discharge-pipe. Fig. 7 is a transverse section through the construction illustrated in Fig. 6.

While I have illustrated in the drawings one particular kind of furnace in connection with which my invention is adapted to be employed, I desire it to be understood that my invention can be used in connection with any desired style of furnace.

Referring to Fig. 1, the reference-numeral 1 indicates the furnace-door, through which fuel is inserted. 2 indicates the fire-box; 3, the grate; 4, the bed of the fire-box; 5, the boiler-tubes; 6 and 7, the oppositely-extending baffle-plates; 8, the bed of the back connections; 9, the flue, and 10 the boiler. All these parts may be of any suitable form and construction.

As previously intimated, my invention consists in the employment of a suitable suction device for withdrawing soot, cinders, or other deposits from the bed of the furnace. In using the word "bed" in the following claims I desire to be understood as meaning any portion of the furnace where soot, cinders, or other deposits collect—such, for example, as the lower portion of the furnace beneath the fire-box or the lower portion of the furnace beneath the boiler-tubes in what is commonly known as the "back connections" of the furnace.

The bed of the furnace, either beneath the fire-box or in the back connections is formed so that it slopes downward toward a centrally-depressed portion, in which is formed an opening 12, which is intended to be closed normally by means of a sliding door 13, movable in grooved guides 13^a and operated by a handle 14. Communicating with the opening 12 is a pipe 15, into which extends a steam-injector 17. The pipe 15 is cut away to form a receiving-trough 15^a, located below the opening 12 and supporting the guides 13^a, and may lead to any suitable point outside the furnace, and where a number of furnaces are arranged close together each of the pipes 15 may enter into a common discharge-pipe 18, in which a force-draft

may be maintained by means of steam-injectors 20, provided with controlling-valves 20^a and arranged to discharge steam in an inclined direction into the pipe 18. If desired, the inclined steam-injectors 21 (shown in Fig. 6) may communicate with an annular steam-pipe 22, with which communicates a steam-supply pipe 23, having one or more controlling-valves 23^a. An arrangement of steam-injectors such as shown in Fig. 6 is convenient, in that it does not place any obstruction in the common discharge-pipe 18 against which the soot might impinge. A construction such as shown in Fig. 6 may be employed in each of the pipes 15, if so desired, instead of using a single steam-injector 17, which projects into the center of the pipe, as shown.

While I have shown in Figs. 1 and 2 a furnace having a plurality of-suction devices in its bed, it will be apparent that a greater or lesser number of such devices may be employed, if desired.

From the foregoing description it will be apparent that one or more furnaces can be quickly freed of soot or other objectionable deposits which cannot be readily conveyed to any desired point away from the furnace-room.

As shown in Fig. 2, a cross bar or rack may be journaled in the walls of the ash-pit and be provided with rake arms or fingers 26. At its outer end the shaft may be also provided with an operating-handle, and in case of soot and ashes becoming clogged over the opening 12 or in the beds 8 by agitating this shaft 25 and its arms the deposit may be loosened and more readily carried off by the means above described.

Having thus described the invention, what is claimed as new is—

1. A furnace having a soot-collecting bed inclined from all sides to a depressed outlet, a discharge-pipe disposed below the bed and communicating therewith through said outlet, guides mounted upon said discharge-pipe, a door slidably mounted in said guides and controlling the outlet, said door being provided with an operating device extending to the exterior of the furnace, and a blast-

conductor connecting with said discharge-pipe.

2. A furnace having a soot-collecting bed inclined from all sides to a depressed outlet, a discharge-pipe cut away to form a trough arranged below the outlet, guides mounted upon said trough, a door controlling the outlet and mounted for sliding movement in said guides transversely of the trough, said door being provided with an operating device extending to the exterior of the furnace, and a blast-pipe arranged to discharge into said discharge-pipe.

3. A furnace having a bed provided with sloping walls leading to an outlet, a discharge-pipe disposed below the bed and cut away to form a trough located below the outlet, guides supported upon said trough, a sliding door mounted in said guides and controlling the outlet, means for operating the door from the exterior of the furnace, and a blast-conductor extending into the discharge-pipe.

4. A furnace-cleaning system comprising a plurality of furnaces, each having a bed provided with a discharge-opening, a main discharge-pipe common to all of said furnaces, auxiliary discharge-pipes leading from the respective beds of the furnaces to said main discharge-pipe, doors controlling the discharge-openings, and blast-pipes from the several furnaces arranged to discharge a plurality of jets into the main discharge-pipe.

5. A steam-boiler furnace having a soot-collecting bed inclined from all sides to a depressed outlet, a discharge-pipe cut away to form a trough arranged below the outlet, a sliding door for normally closing the outlet, said door being provided with an operating device extending to the exterior of the furnace, and a blast-pipe arranged to discharge a jet of steam from the boiler into the discharge-pipe to create a vacuum therein, said pipe being provided with a controlling-valve.

In testimony whereof I have affixed my signature in presence of two witnesses.

GEORGE DILLON.

Witnesses:

JOHN J. MOONEY,
HERMAN SCHLIEMANN.