

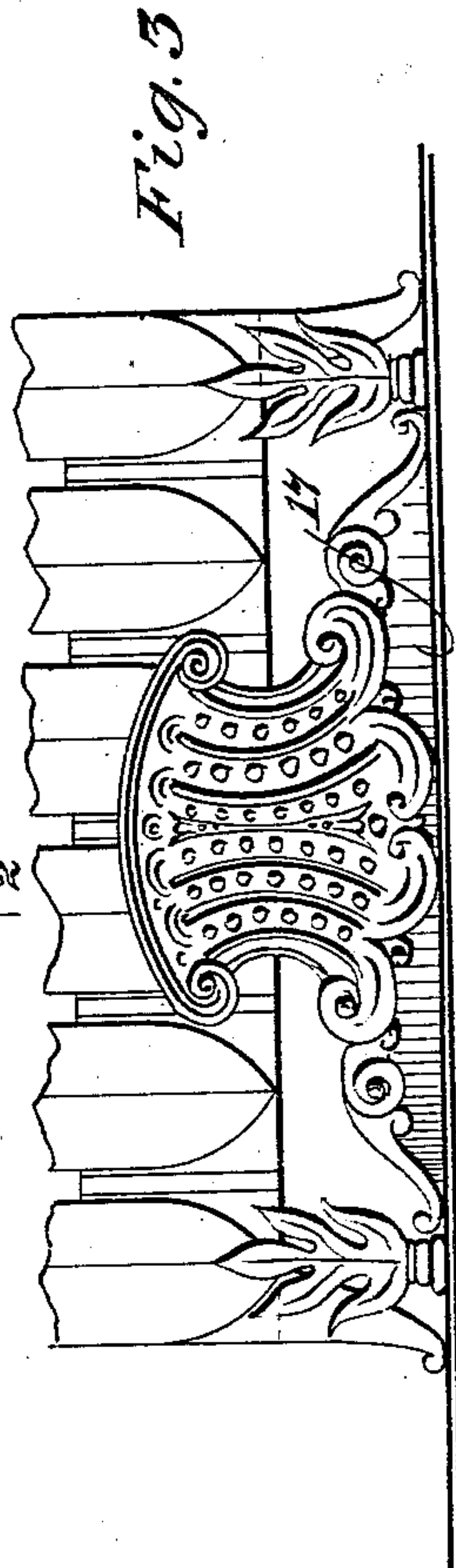
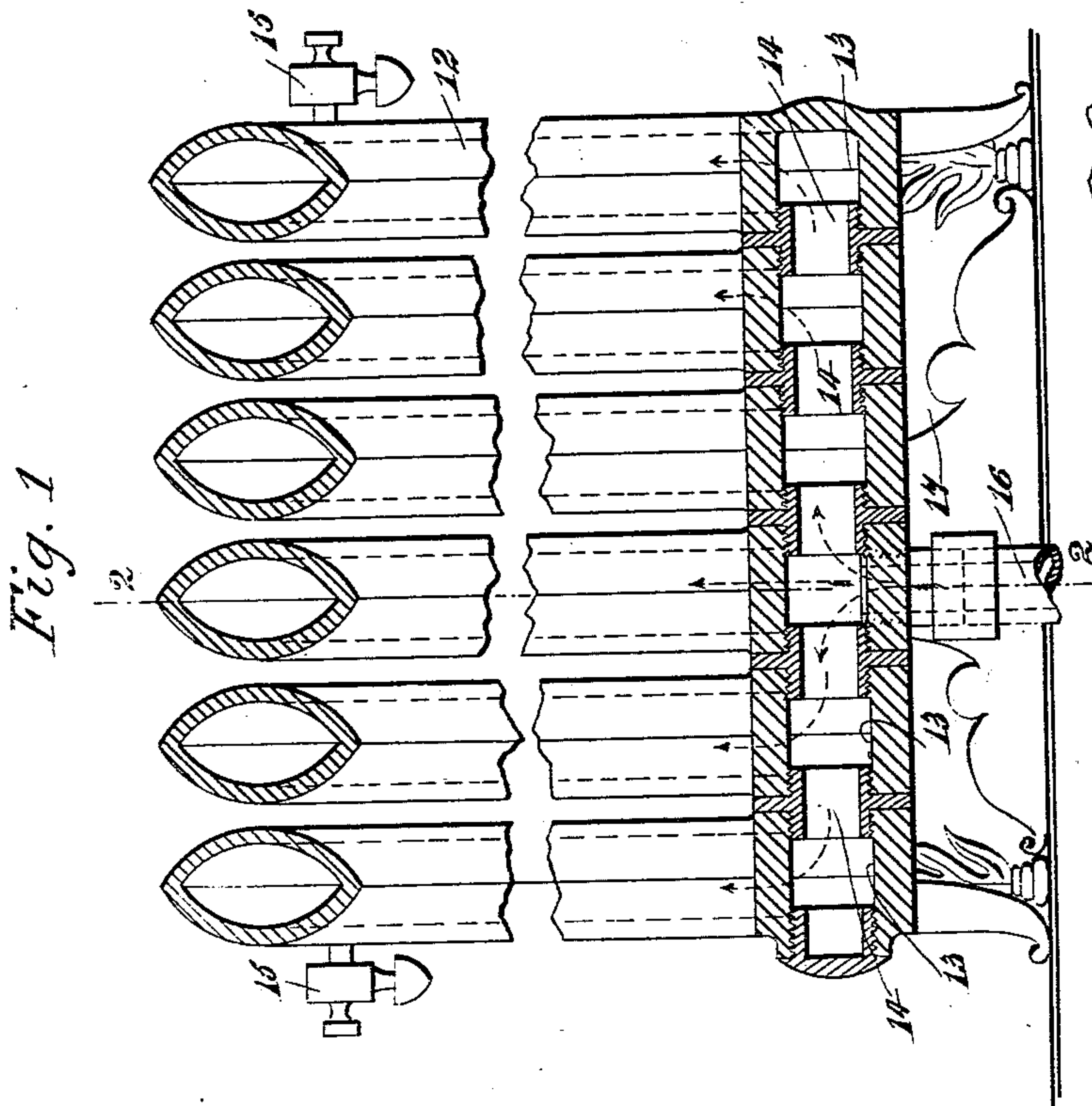
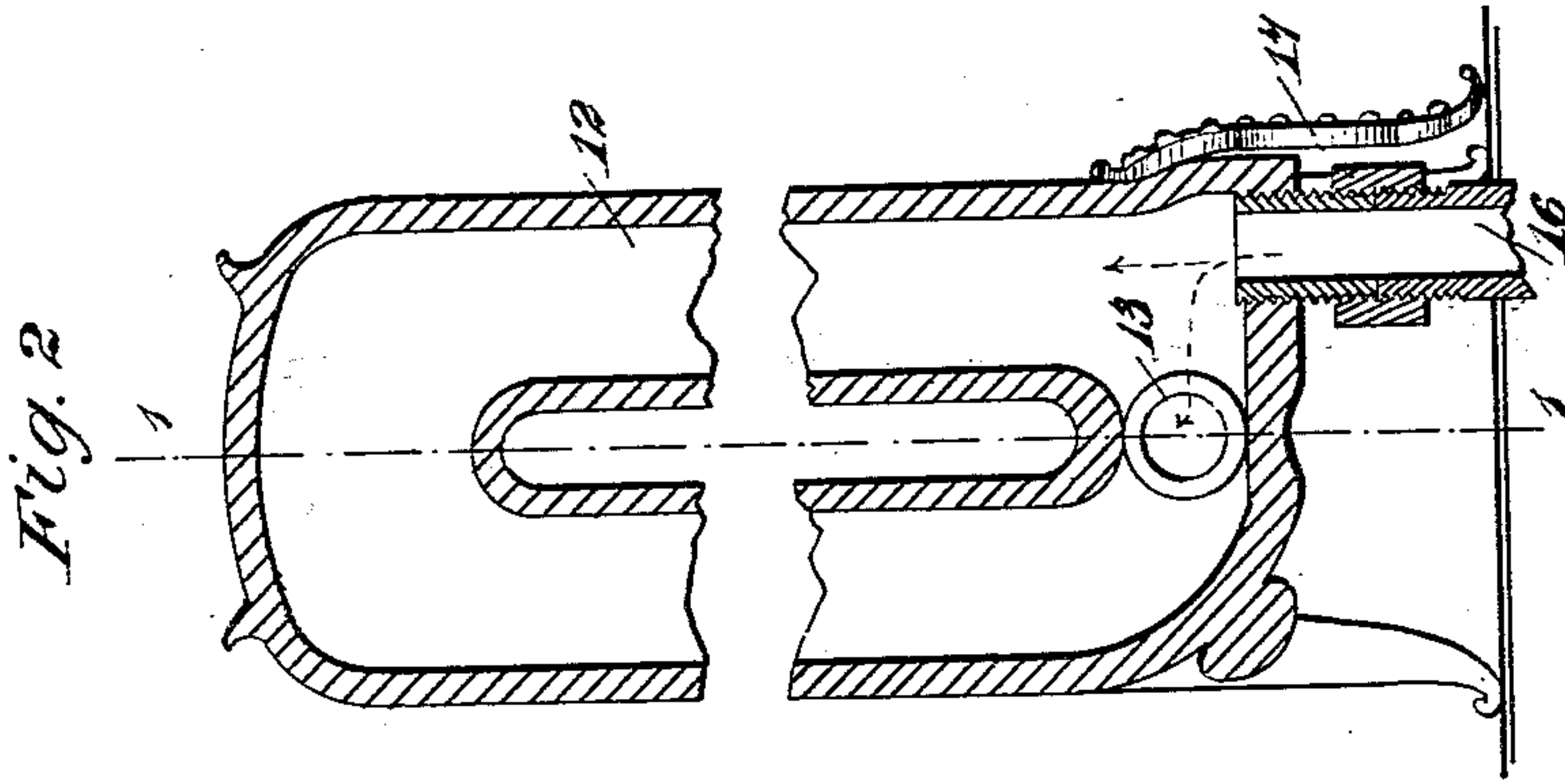
(No Model.)

3 Sheets—Sheet 1.

A. EICHHORN.  
RADIATOR.

No. 560,090.

Patented May 12, 1896.



WITNESSES:

J. B. Walker.

Isaac B. Owens.

INVENTOR

A. Eichhorn

BY

Munn & Co

ATTORNEYS.

(No Model.)

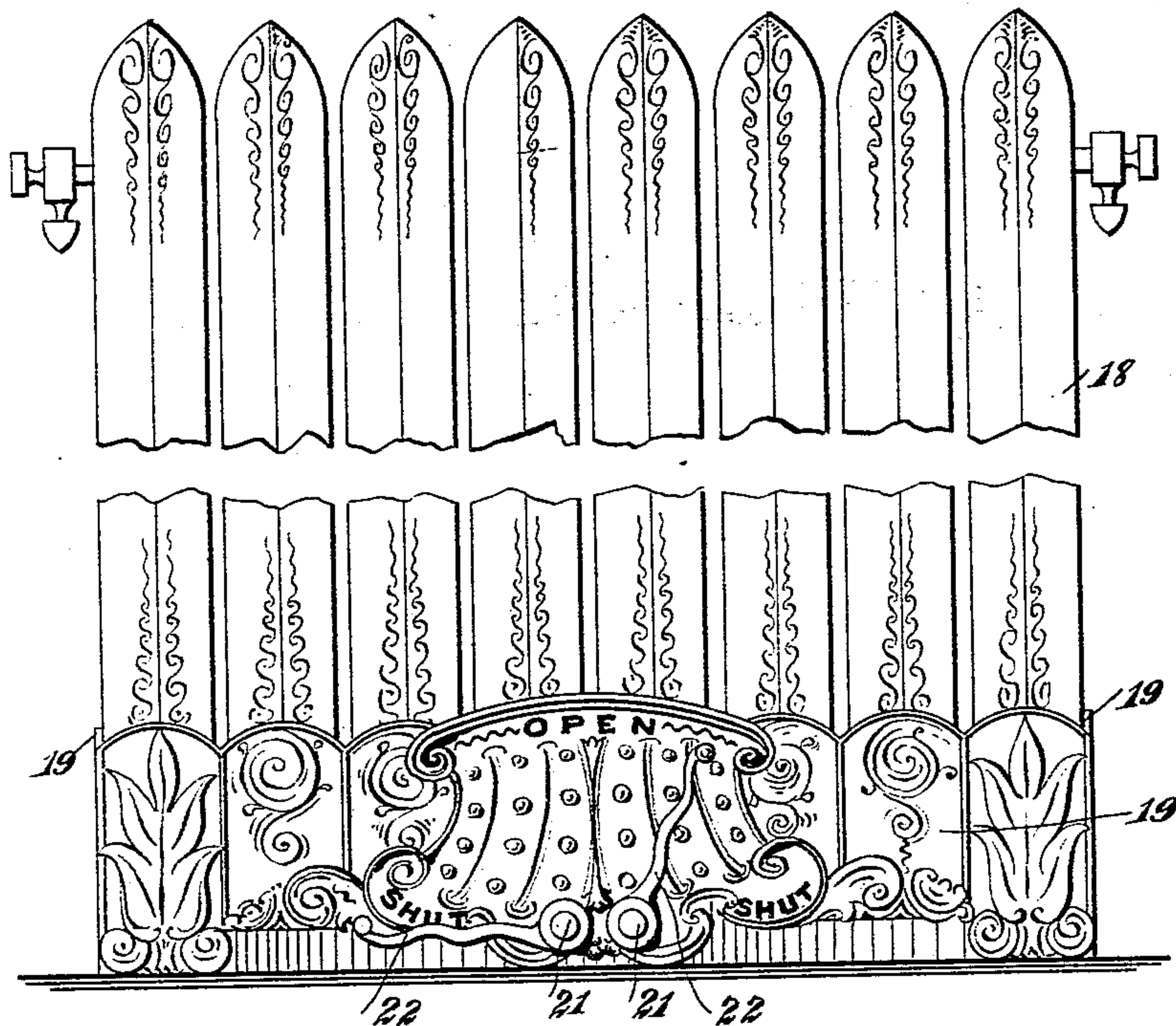
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A. EICHHORN.  
RADIATOR.

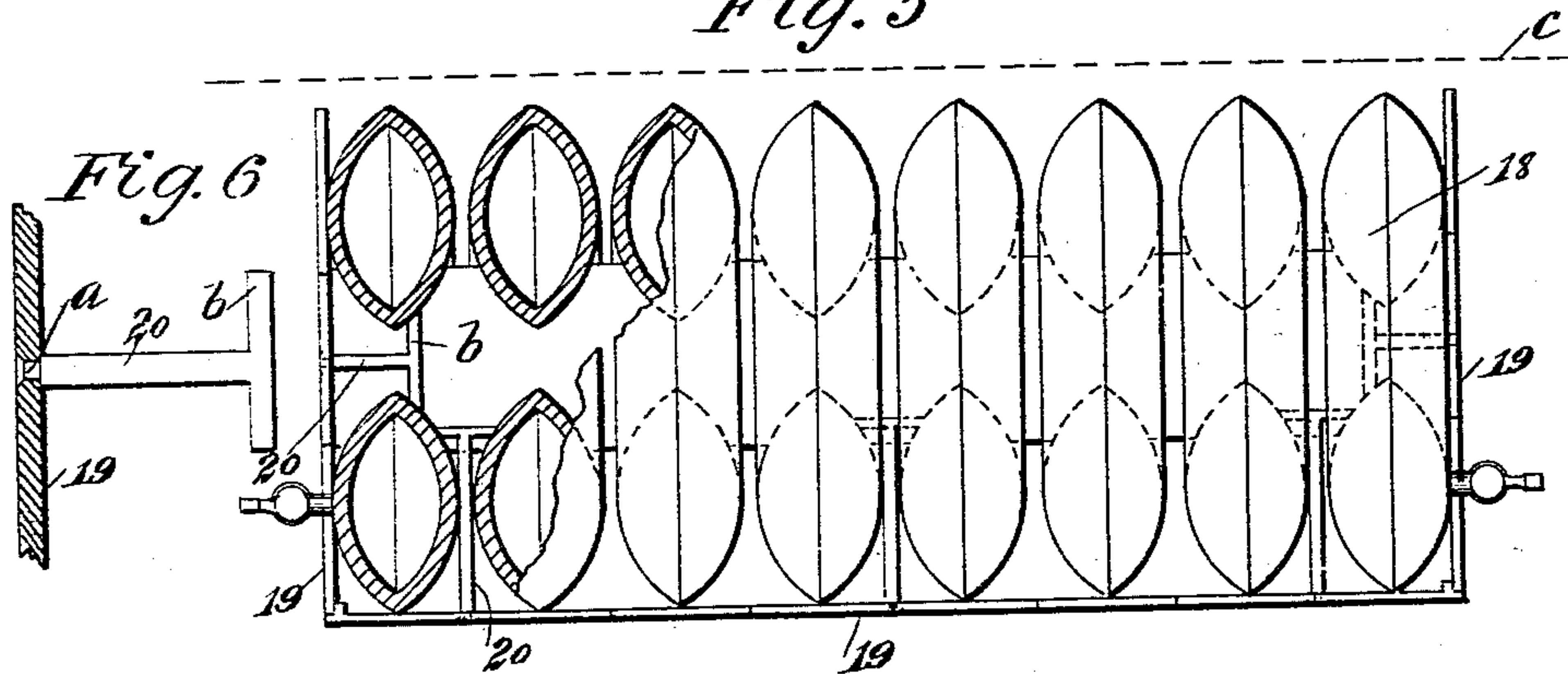
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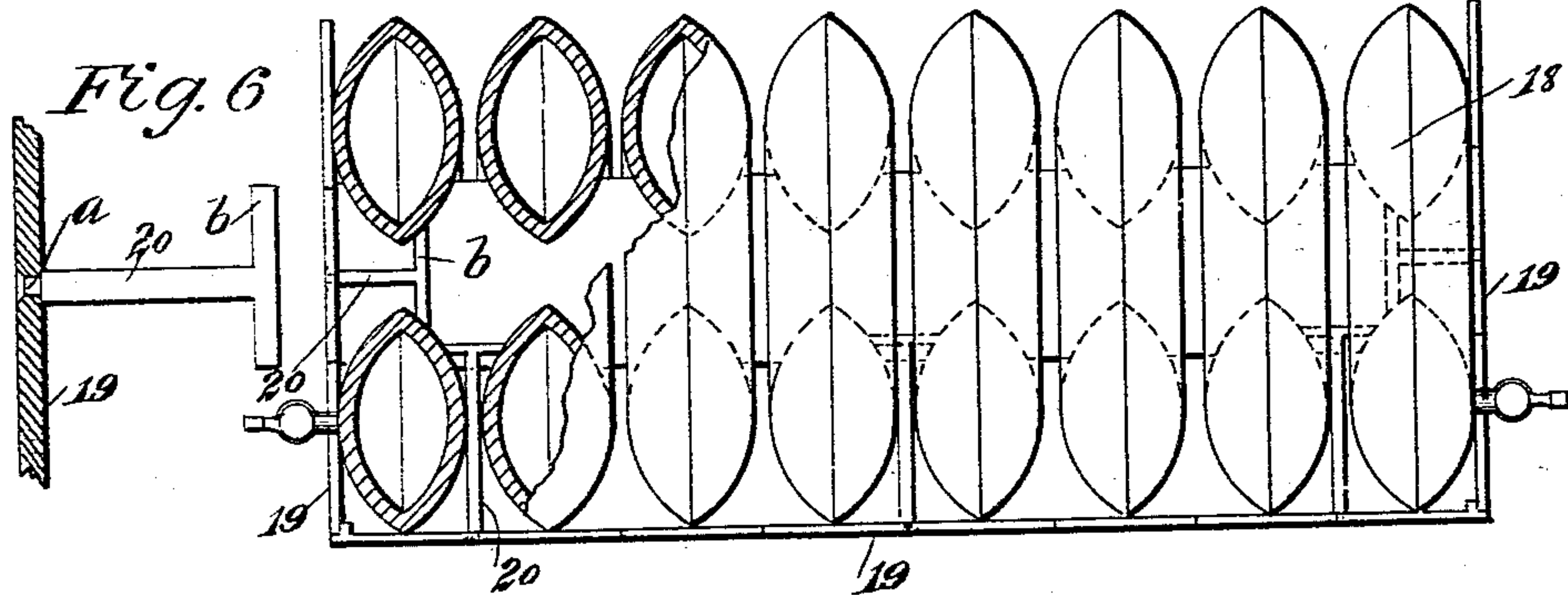
*Fig. 4*



*Fig. 5*



*Fig. 6*



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3 Sheets—Sheet 3.

A. EICHHORN.  
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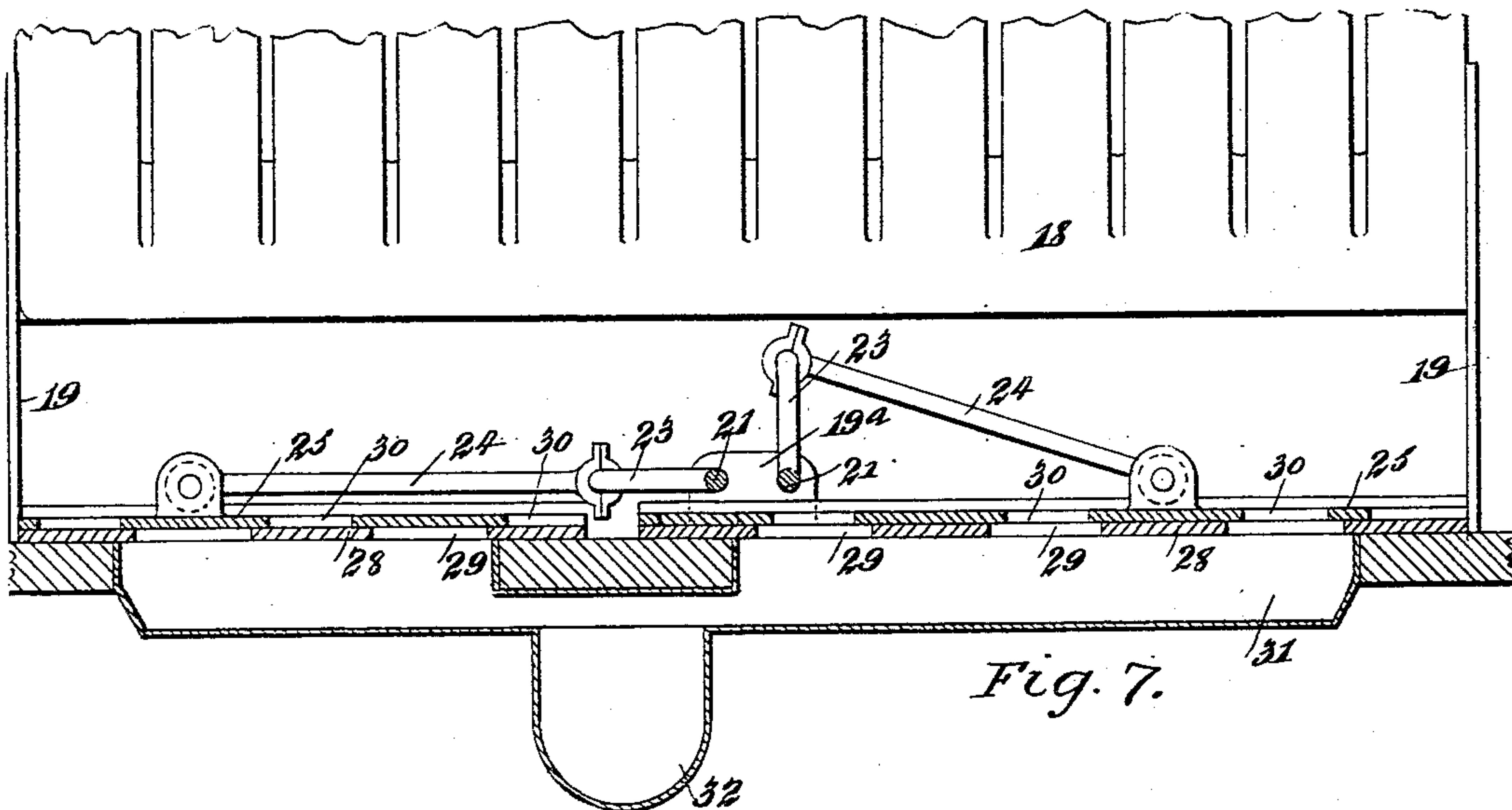


Fig. 7.

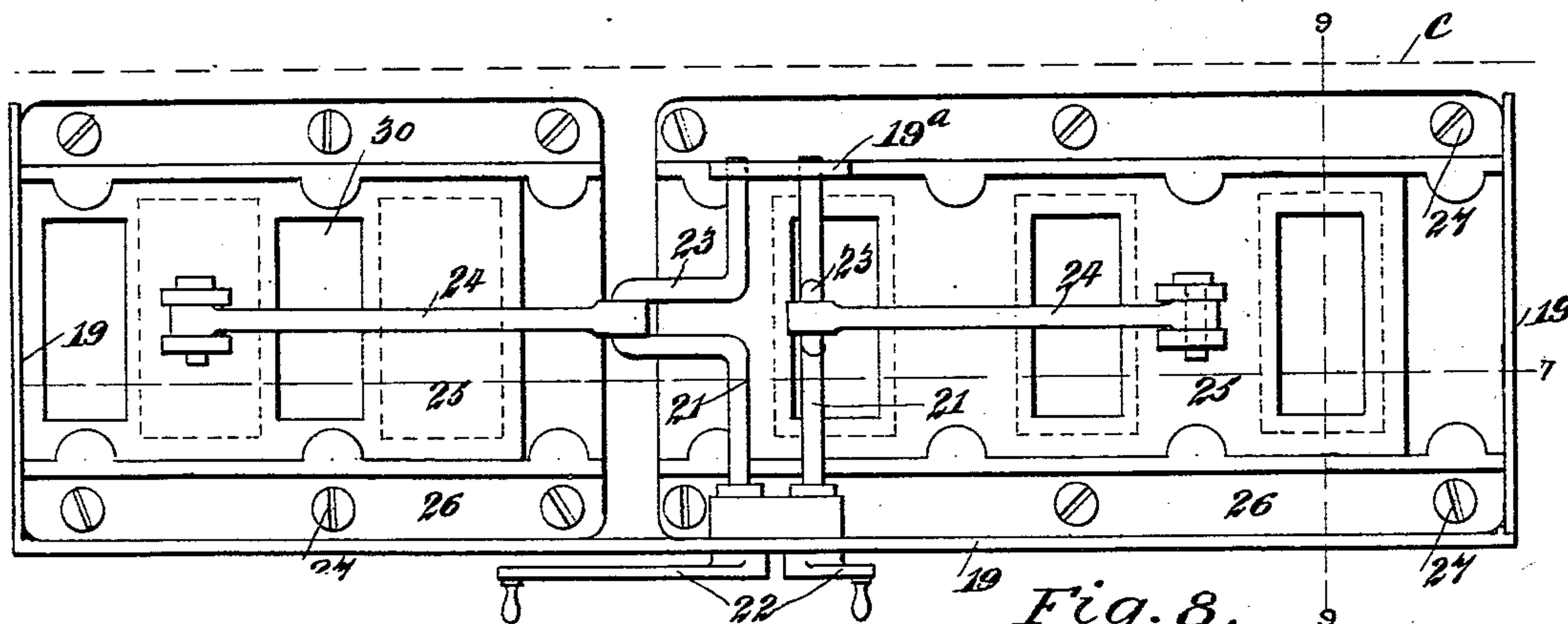


Fig. 8.

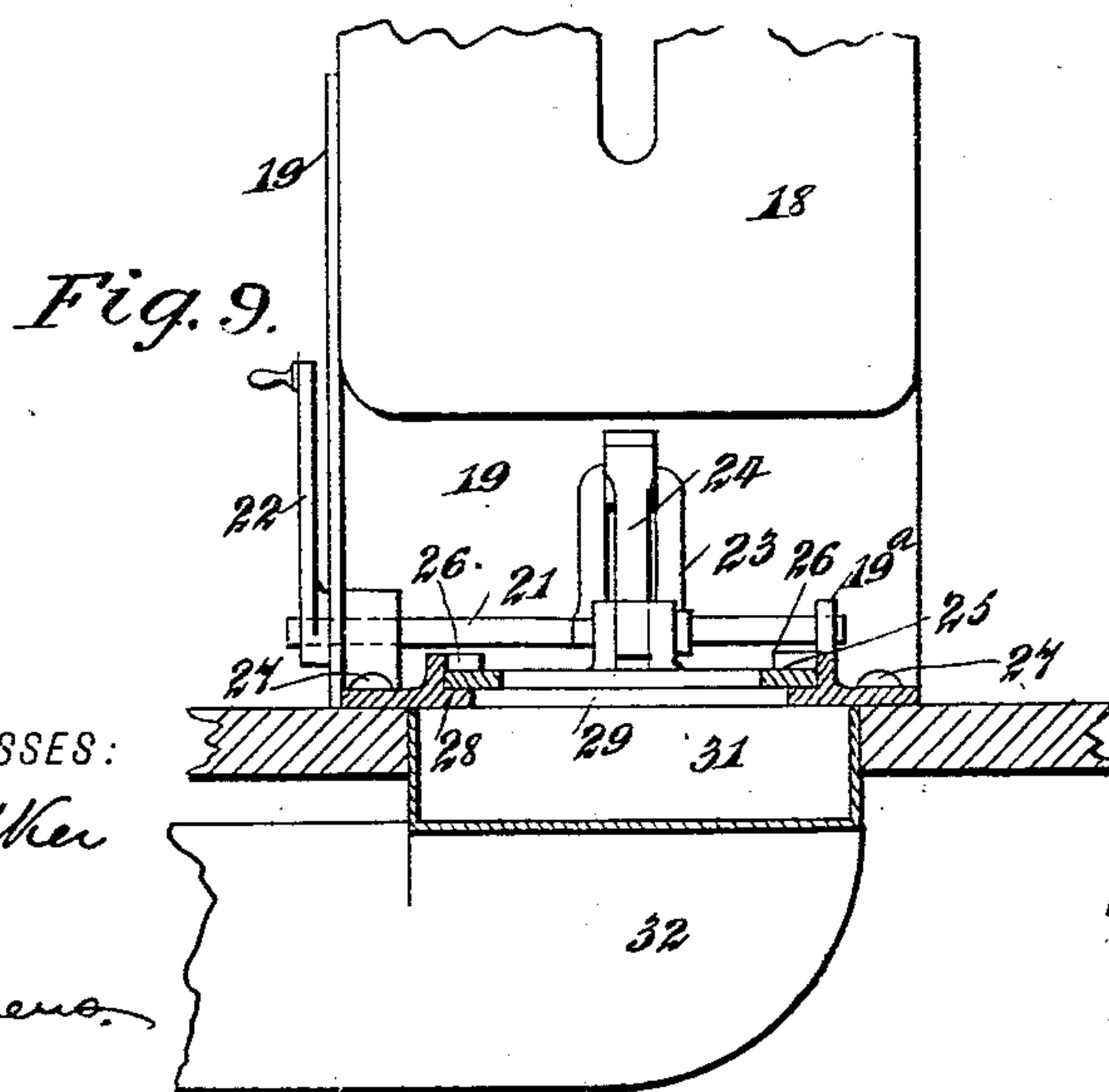


Fig. 9.

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# UNITED STATES PATENT OFFICE.

AUGUSTUS EICHHORN, OF ORANGE, NEW JERSEY.

## RADIATOR.

SPECIFICATION forming part of Letters Patent No. 560,090, dated May 12, 1896.

Application filed October 15, 1895. Serial No. 565,698. (No model.)

*To all whom it may concern:*

Be it known that I, AUGUSTUS EICHHORN, of Orange, in the county of Essex and State of New Jersey, have invented a new and Improved Radiator, of which the following is a full, clear, and exact description.

The object of this invention is to provide a superior steam-heater and to combine therewith improved air-heating mechanism. These ends I attain by certain peculiar features of construction by which the radiator is formed and by register devices which are located under the radiator and control the inlet of fresh air to the space below the radiator.

The invention will be fully described hereinafter and finally embodied in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a sectional elevation of the steam-radiator, the section being taken on the line 1 1 of Fig. 2. Fig. 2 is a section on the line 2 2 of Fig. 1. Fig. 3 is a fragmentary elevation of the front of the radiator shown in Fig. 1. Fig. 4 is a broken elevation of a radiator having my improved hot-air apparatus applied. Fig. 5 is a plan view, partly in section, of the construction shown in Fig. 4. Fig. 6 is a detail and partly sectional view illustrating the devices for holding the plates shown in Figs. 4 and 5 in place. Fig. 7 is a longitudinal section on the line 7 7 of Fig. 8 and showing the register for controlling the cold air, said view also showing the relation of the register to the radiator. Fig. 8 is a plan view of the register, and Fig. 9 is a sectional view of the same on the line 9 9 of Fig. 8.

Referring to Figs. 1, 2, and 3, the numeral 12 indicates steam-radiator loops or coils of the usual construction, having tubulated lower portions 13, connected with each other by means of the usual thimbles 14, whereby the sections or loops 12 are made to communicate with each other at their lower ends. Each end section or loop is provided with an air-egress valve 15 of the usual or any preferred construction. Entering one of the loops 12 at its lower portion and between the transverse ends of its tubulated part is the

steam-supply pipe 16, which is located at the forward portion of the radiator, as best shown in Fig. 2, and which communicates directly with the transversely-elongated space formed by the tubulated portions 13 of the radiator-sections.

It will be observed that the steam-supply pipe 16 is eccentrically located with relation to the radiator-sections and that the section which is directly above the steam-supply pipe serves as a division between the two sections at the left in Fig. 1 and the three at the right in said figure, so that the radiator has practically two compartments of unequal capacity, the radiator-section directly above the pipe 16 being a neutral element. By means of such a construction steam may be introduced into all of the sections and permitted to heat the same, so that they will effect that radiation necessary to the operation of the radiator. As the steam is condensed, a slight inward incline at the lower portion of the sections will permit the water of condensation to return and to pass out of the radiator by means of the steam-supply pipe 16, which exit of the water of condensation will be simultaneously with the inlet of steam.

As the steam is introduced into the radiator-sections the air-egress valves 15 should be opened to permit the escape of the cold air. If, however, both or either of these valves 15 are closed, the steam will be excluded by the presence of the air from the particular compartment of the radiator which is commanded by the said valves. For example, the valve 15 at the right of Fig. 1 may be closed, and the steam on entering the radiator will pass only into the compartment controlled by the left-hand valve 15.

In order to preserve the symmetric and beautiful appearance of the radiator, which appearance would be destroyed by the eccentric and prominent position of the feed-pipe 16, I provide the plate 17, which plate may be of any suitable form, its essentiality being the capacity to hide the pipe 16 and appear as centrally located with relation to the sections of the radiator.

Referring to Figs. 4, 5, 6, 7, 8, and 9, which illustrate the improved register forming part of my invention, the radiator 18 may be of



any construction adapted for either steam or hot water, and is provided at its front side and ends with plates 19, said plates being three in number and having straight lower edges which rest upon the floor and form a straight edge, against which the carpet of the apartment may be secured. The plates 19 extend upwardly from the floor to a point above the lower edges of the radiator-sections and are held in place by means of locking-arms 20, each of which comprises a main portion having a headed stud *a*, rotatably mounted in the respective plates, and a cross-arm *b*, which is adapted to be passed into the vertical spaces between the sections of the radiator and then turned horizontally, so that it will be locked in place, as best shown in Fig. 5. The plates 19 are preferably suitably ornamented, and the front plate has the word "Open" formed at its upper central portion and the word "Shut" twice formed at the lower portion of the plate and respectively on each side of the word "Open." It will be observed that the rear of the radiator has no plate, and the absence of this plate is compensated for by the presence of the wall, which serves the place of a plate and which is indicated by the dotted line *c* in Figs. 5 and 8.

Revolubly mounted in the front plate 19 and in the lip 19<sup>a</sup> of a hereinafter-described part and directly below the point having the word "Open" are two shafts 21, which are independent of each other and provided with crank-arms 22, whereby they may be operated, the said crank-arms being located forward of the front plate 19 and being so related to the words thereon that when the arms are moved vertically they will indicate the word "Open" and when moved horizontally they will indicate the word "Shut." Each shaft 21 has a crank 23 formed thereon, with which the links 24 are respectively connected, and these links 24 respectively extend outwardly on each side of the shafts 21 and are pivoted to the slide-plates 25, carried in the respective guideways 26, said guideways being aligned longitudinally with the radiator and being secured to the floor by means of the screws 27 or any suitable devices.

Secured to the floor and directly below the slide-plates 25 are the register-plates 28, said plates being integral with the guides 26 and being one for each of the slide-plates and having openings 29 formed therein, which openings register with openings 30 formed in the slide-plates. The plates 25 and 28 are so juxtaposed that when the crank-arms 22 are moved to a horizontal position the openings 29 and 30 will be out of registry and when the arms are moved to a vertical position the

said openings will be in registry, as shown at the left in Figs. 7 and 8.

Located in the floor and beneath the plates 28 is a casing 31, which is common to each division of the register and which communicates with a cold-air-feed pipe or conduit 32, the same proceeding from any suitable source of air. It will thus be seen that by manipulating the crank-arms 22 either or both of the register-sections may be opened or closed and that as said register is opened the air from the conduit 32 will pass into the space beneath the radiator, which is inclosed by the plates 19. From this point the air will pass upwardly through the sections of the radiator and into the apartment in which the radiator is arranged. When the register is closed, this ingress of air is prevented.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A radiator consisting of a series of sections connected to each other at their base, the upper ends of the sections being out of communication with each other, an inlet-pipe communicating with the lower end of one section and directly below the main portion thereof whereby the radiator is divided into two sections, and a valve controlling the air-exit in each section, substantially as described.

2. A heating apparatus, comprising a radiator having sections spaced apart and having supporting-legs by which the radiator is raised above the surface on which it is designed to rest, a series of plates capable of resting on said surface and of extending upwardly above the lower edge of the radiator, fastening devices for holding the plates, the same consisting of rods rotatably connected to the plates and having cross-arms capable of removably locking with the sections and within the spaces thereof, and register mechanism located below the radiator and inclosed by the plates, said mechanism controlling an air-inlet orifice, substantially as described.

3. In a heating apparatus, a radiator, a series of inclosing plates rested on the surface on which the radiator is supported and extending upwardly to the sides of the radiator, a stationary perforated register-plate having an upwardly-extending lug, a shaft journaled in the lug and in one of the inclosing plates, and a connection between the movable register-plate and the shaft, substantially as described.

AUGUSTUS EICHHORN.

Witnesses:

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JNO. M. RITTER.