

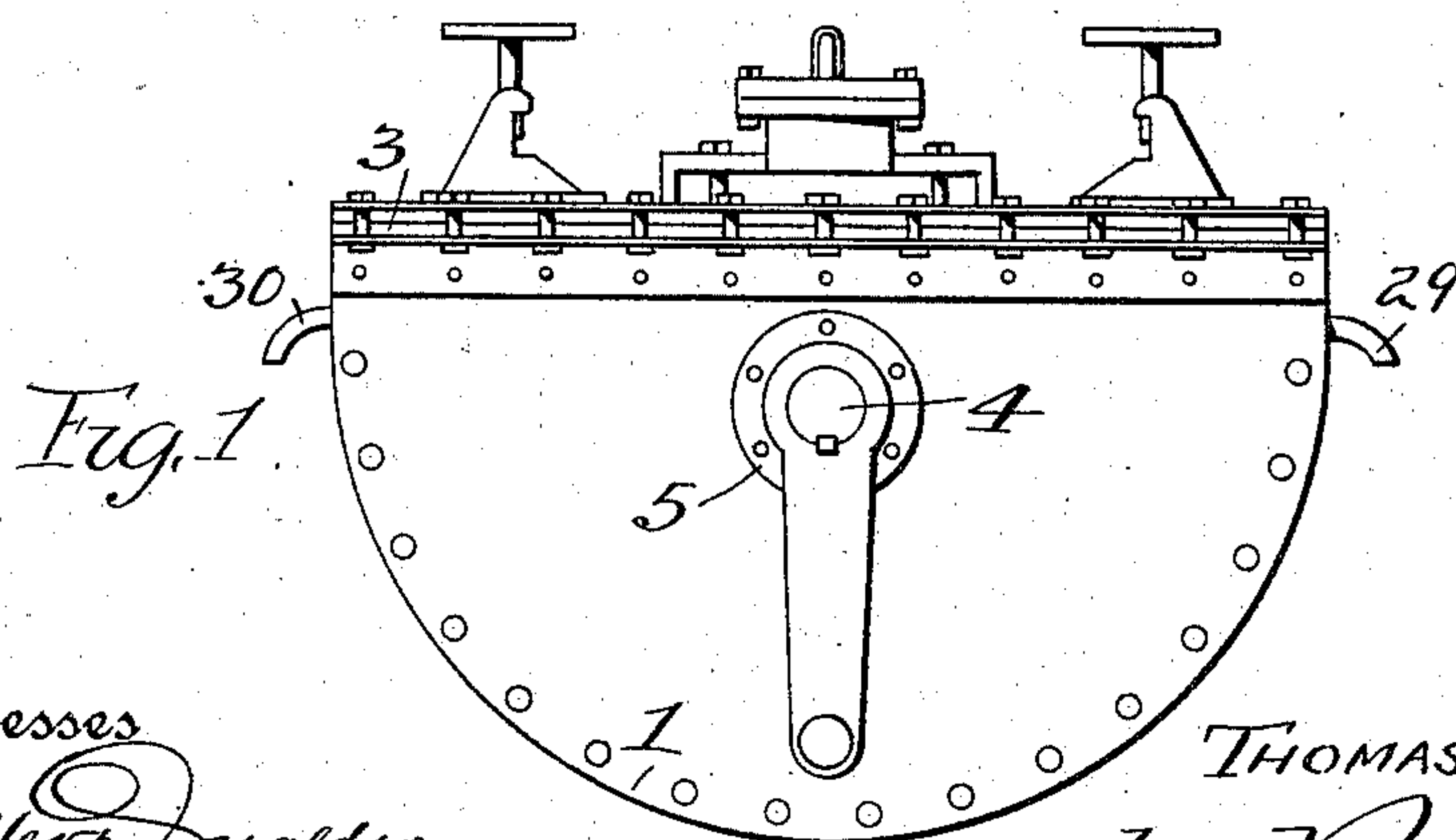
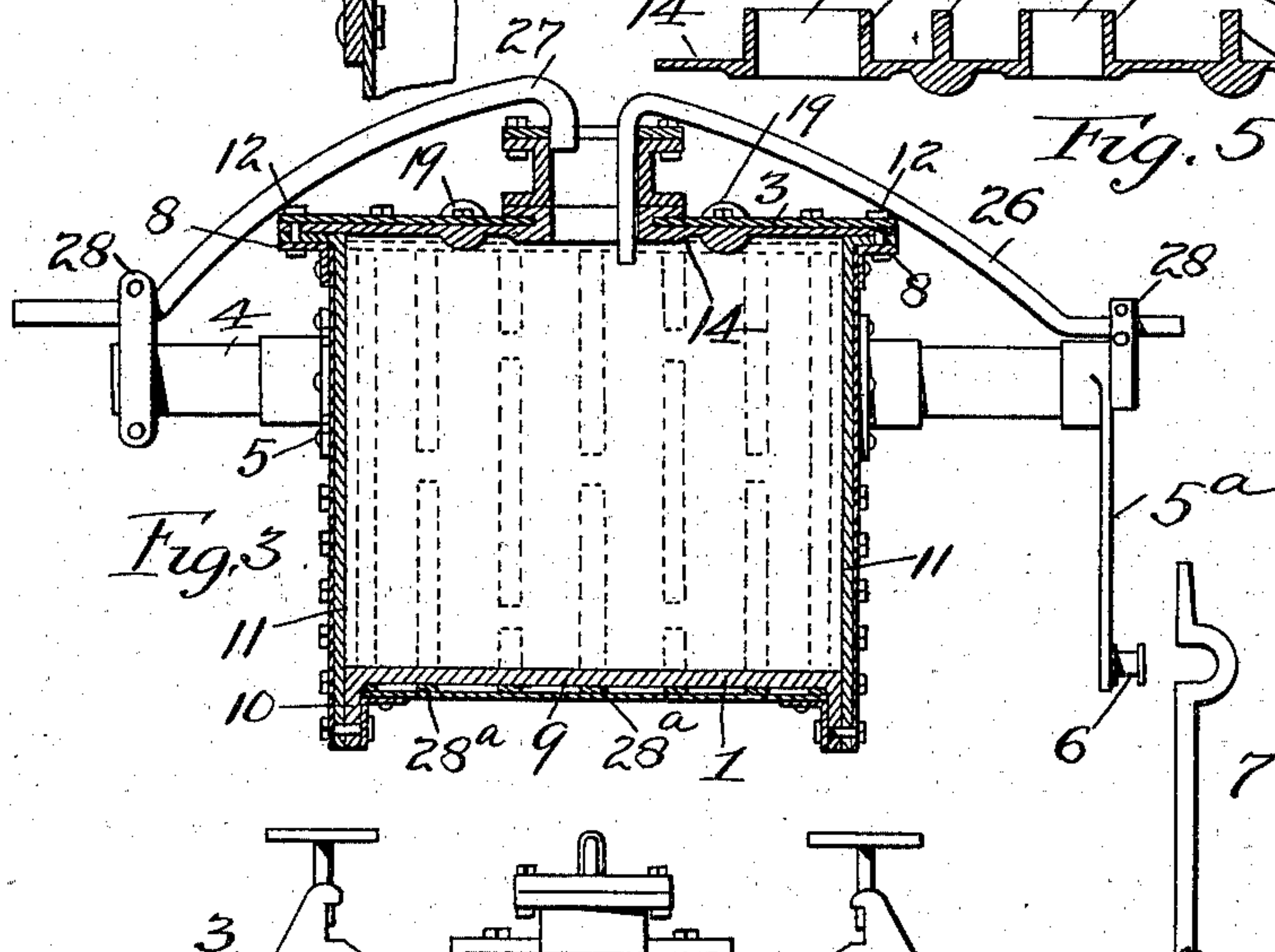
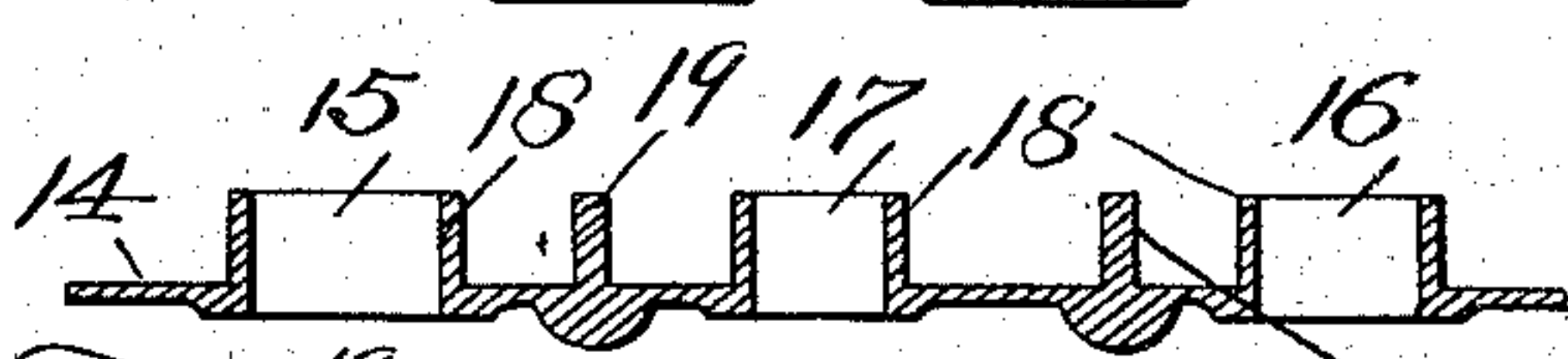
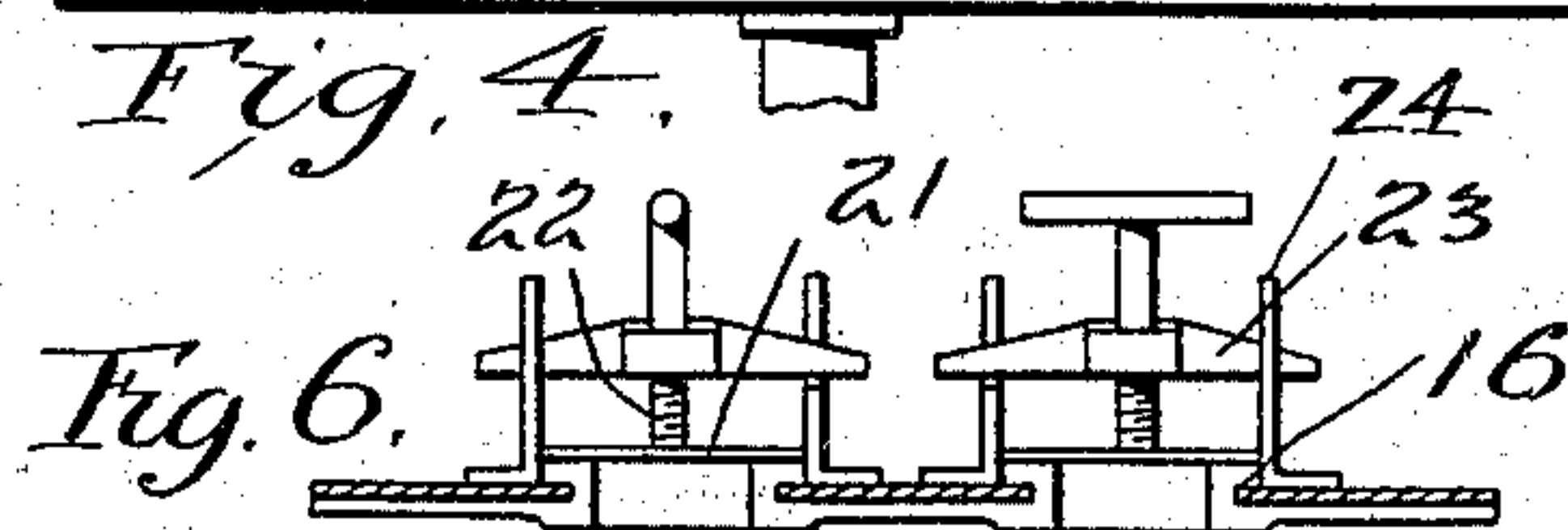
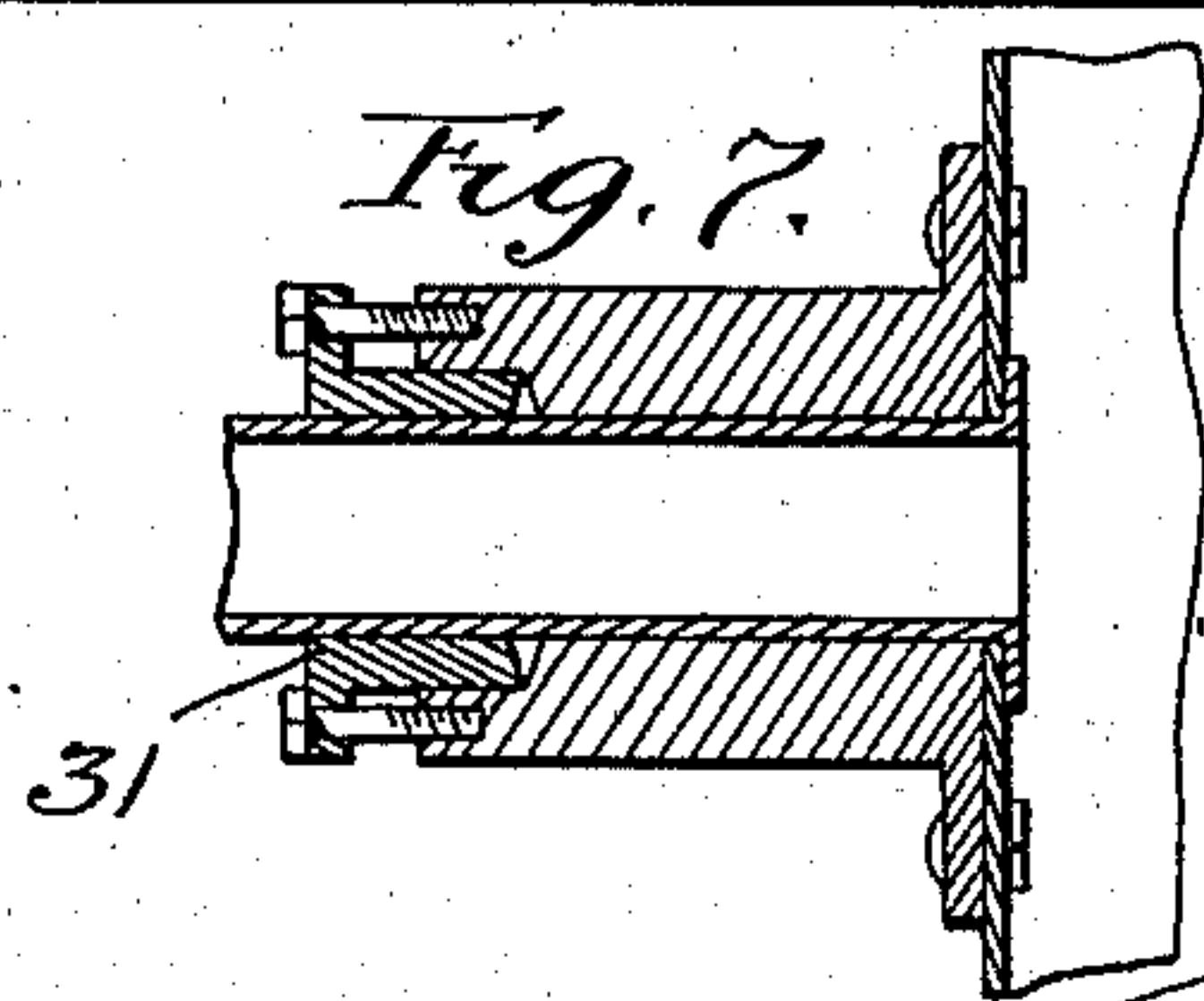
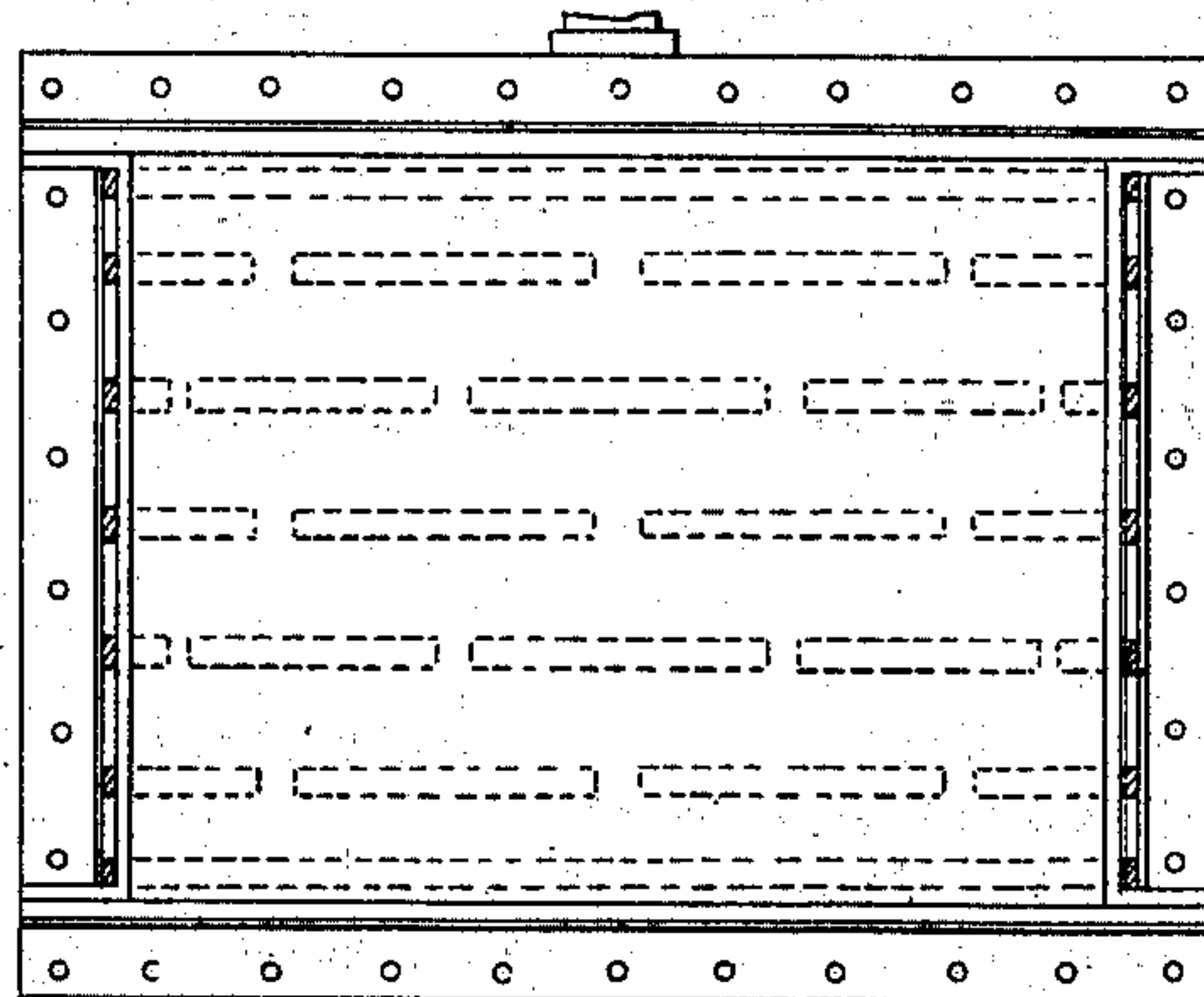
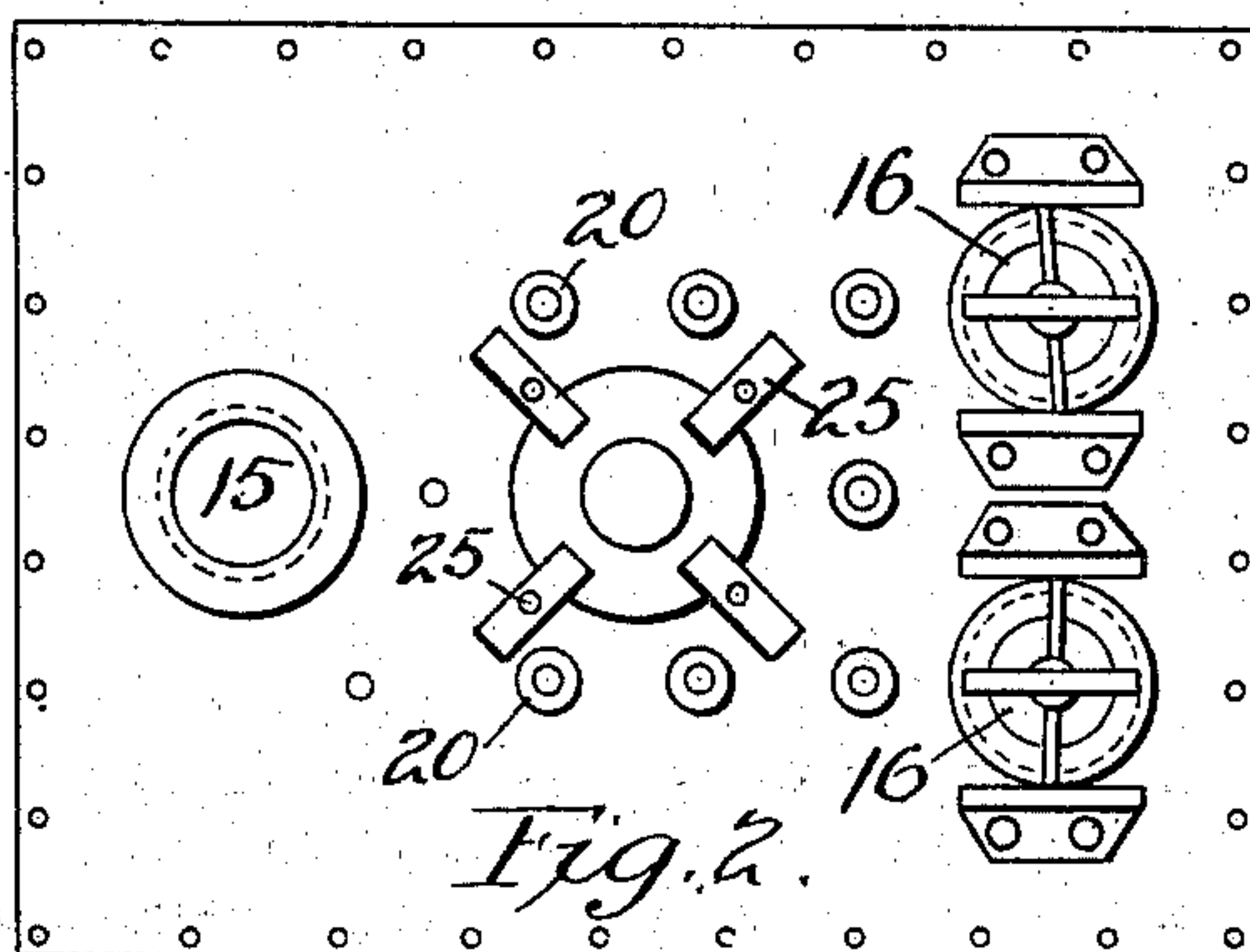
No. 709,004.

Patented Sept. 16, 1902.

T. EDWARDS.  
GENERATOR FOR CHLORIN GAS.

(Application filed Sept. 28, 1901.)

(No Model.)



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# UNITED STATES PATENT OFFICE.

THOMAS EDWARDS, OF SEBASTOPOL, BALLARAT, VICTORIA, AUSTRALIA.

## GENERATOR FOR CHLORIN GAS.

SPECIFICATION forming part of Letters Patent No. 709,004, dated September 16, 1902.

Application filed September 28, 1901. Serial No. 76,867. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS EDWARDS, a subject of the King of Great Britain, and a resident of Sebastopol, Ballarat, State of Victoria, Australia, have invented certain new and useful Improvements in Generators for Chlorin Gas, of which the following is a specification.

It is the object of my invention to provide a generator for chlorin gas capable of withstanding great pressures and in which the gas may be continuously and uniformly generated and may attain a high degree of pressure.

In nearly all cases where chlorin gas is generated in large quantities the chemicals used have to be stirred to keep them from caking or packing in the generator. This has hitherto been done when necessary by hand to facilitate the operation of producing the gas. In breaking up the caked chemicals a rush of gas is the result, which makes the flow of gas intermittent, while the operation of breaking the cakes is a most disagreeable occupation and is always avoided by the workmen where possible, while the cleaning out of the spent charge is even worse. To prevent this, I have constructed a mechanical generator which oscillates on its trunnions, the said trunnions resting on supports, and the motion thus given to the chemical contents keeps the charge from caking, and consequently there is a more constant flow of gas. I have sought to provide a simple construction which will comprise a strong iron shell or casing and a lead lining therefor. I have had in view also to provide such a generator as will allow the operation of charging or cleaning out to be readily performed and also to make provision for the cooling of the generator.

In the accompanying drawings, Figure 1 is a side view of the generator. Fig. 2 is a plan view of the cover. Fig. 3 is a central vertical sectional view. Fig. 4 is a plan view with the cover removed. Fig. 5 is a sectional view of the lead lining before it is attached to the cover. Fig. 6 is a view of the cover, showing the clean-out openings in section. Fig. 7 is a detail sectional view of a modification, showing the manner of introducing the acid through the hollow trunnion.

The generator is, as shown in Fig. 1, of substantially semicylindrical shape, having

a rounded bottom 1 and a flat cover 3. It is provided with journals 4, the flanges of which are bolted to the sides of the iron casing at 5. These journals are intended to rest in suitable bearings, and thus support the generator in such a manner that it may be rocked or oscillated on said journals, for which purpose one of the journals is provided with an arm 5<sup>a</sup>, having a pin or roller 6 to be engaged by the hooked end of any suitable operating rod or pitman 7. By this arrangement the generator may be rocked and the contents thus kept constantly in motion and agitated, so that the different portions of the manganese will be exposed to the acid and the generation of gas will go on continuously and substantially uniformly until the materials become exhausted.

It will be noticed from Fig. 3 that the generator is composed of side, bottom, and cover plates of iron or other suitable material bolted together, angle-iron pieces 8 being preferably used at the joints between the plates. The iron casing is provided with lead lining pieces or plates, the bottom lining-plate 9 having flanges 10, which, together with the lower edges of the side lining-plates 11, fit between the parts of the outer shell and are all bolted together. The side lining-plates at their upper edges have horizontal flanges fitting between the parts of the outer shell and are likewise bolted thereto by the same bolts 12 which secure the parts of the shell together.

The lead lining 14 for the inner side of the cover-plate 13 is of special formation and is shown detached in Fig. 5 and in the form in which it is made ready for attachment to the cover-plate, as will be described hereinafter. This cover-plate is provided with a plurality of openings. One of these (marked 15) is a charging-opening. This is arranged near one edge of the cover and about midway between the side edges. At the opposite end of the cover two clean-out openings 16 are provided, these being on opposite sides of and equidistant from the center line of the cover. A fourth opening 17 is provided centrally of the cover through which the acid is introduced and through which also the chlorin gas escapes. Each of these openings, as well as the inner side of the cover, must be properly lined with lead, and for this pur-



pose the lead lining, Fig. 5, is provided with a series of collars 18, extending up therefrom to project through the openings in the cover. The projecting ends of these collars are then  
 5 upset upon the outer side of the cover, thus forming washers of lead completely surrounding and protecting the edges of the openings. The lead lining also has stems or integral rivets 19, which project up through  
 10 openings 20 in the cover, and these are headed down upon the outside of the cover-plate, thus securely holding the lining thereto at all necessary points. The charge and clean-out openings are closed by plates 21, clamped  
 15 down tightly upon the lead seats of the lead washers by screws 22 passing through cross-pieces 23, which are supported in the brackets 24, secured to the upper surface of the cover.

The cover of the generator at its center is  
 20 surmounted by a dome, the lower flange of which is seated upon the outer flange of the centrally-arranged lead washer. This dome is held in place by dogs 25, secured to the cover and engaging the flange of the dome.  
 25 Through the top of this dome the inlet-pipe 26 for the acid extends, and the outlet-pipe 27 for the gas leads off from the top of the dome. Both of these pipes extend to the journals and are clamped in brackets 28,  
 30 which rock with the generator. These pipes thus maintain their position in relation to the generator in all the positions the latter may assume.

The bottom lining is slightly separated from  
 35 the bottom shell of the generator by ribs 28<sup>a</sup>, which are interrupted at intervals by cross grooves or cuts. By this construction water may circulate to different parts of the bottom of the generator to keep the same cool, said  
 40 water being let in and discharged through the pipes 29 30, respectively.

By the generator as above described it will be seen that the contents can be kept constantly in a state of movement or agitation  
 45 to expose different parts for the production of the gas. When it is desired to clean out the generator, it can be swung so that the contents can be discharged through the clean-

out openings. There being two of these, it will be possible to reach the different sides 50 or corners of the generator to loosen any of the material which may adhere to the walls. In this cleaning operation also the charging-hole may be opened, so that light may enter to facilitate the work. By having the gas- 55 pipe lead off from a dome surmounting the generator instead of from the generating-chamber directly no particles of the materials used in the generation of the gas will pass off from the generator, as might be the case were 60 the discharge effected from the generating-chamber proper.

In Fig. 7 I have shown an arrangement by which the acid may be introduced through the trunnion of the generator, the acid-pipe 65 being shown as extending longitudinally through said trunnion, a suitable stuffing-box and gland being provided at 31 to make a tight joint.

I claim as my invention— 70

1. In combination, the casing, the cover having openings, a lead lining having washers extending around the edges of the openings, a dome over one of the openings seated upon the lead washer, and a clamped cover 75 on the washer of the other opening, substantially as described.

2. In combination, the casing having a cover with an opening, a lead lining having integral rivets headed on the outside of the cover, 80 and washers extending around the edge of the opening, substantially as described.

3. A generator for chlorin gas and the like of semicylindrical form having a flat top, journals near said flat top projecting laterally 85 and upon which the generator may rock, a dome surmounting the said flat top, a gas-pipe leading therefrom and a covered opening in the flat top to one side of the dome, substantially as described. 90

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

THOMAS EDWARDS.

Witnesses:

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 F. L. MIDDLETON.