

No. 666,388.

W. H. McFADDEN.
CAISSON.

Patented Jan. 22, 1901.

Application filed Oct. 26, 1900.

(No Model.)

2 Sheets—Sheet 1.

FIG. 1.

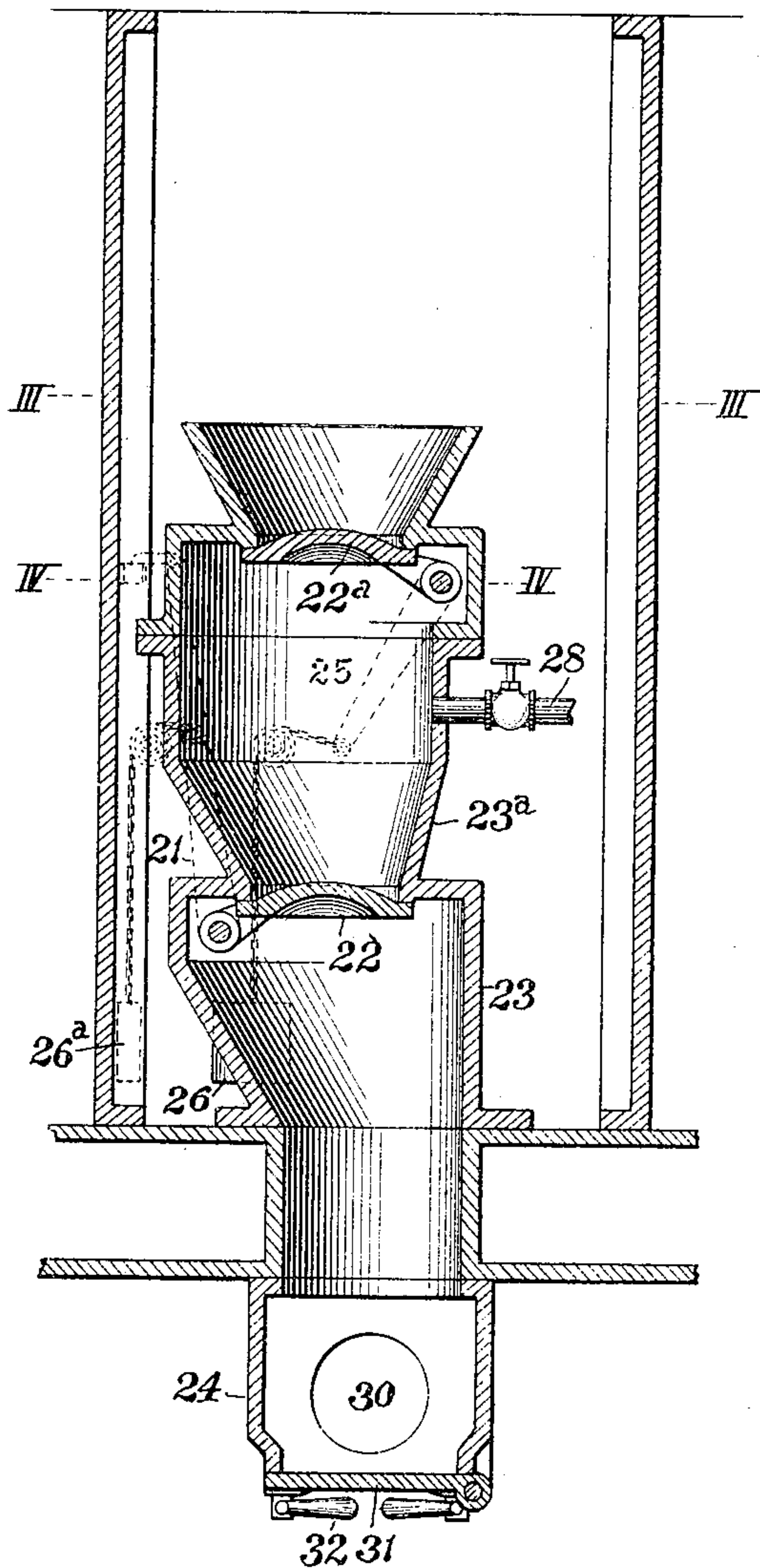
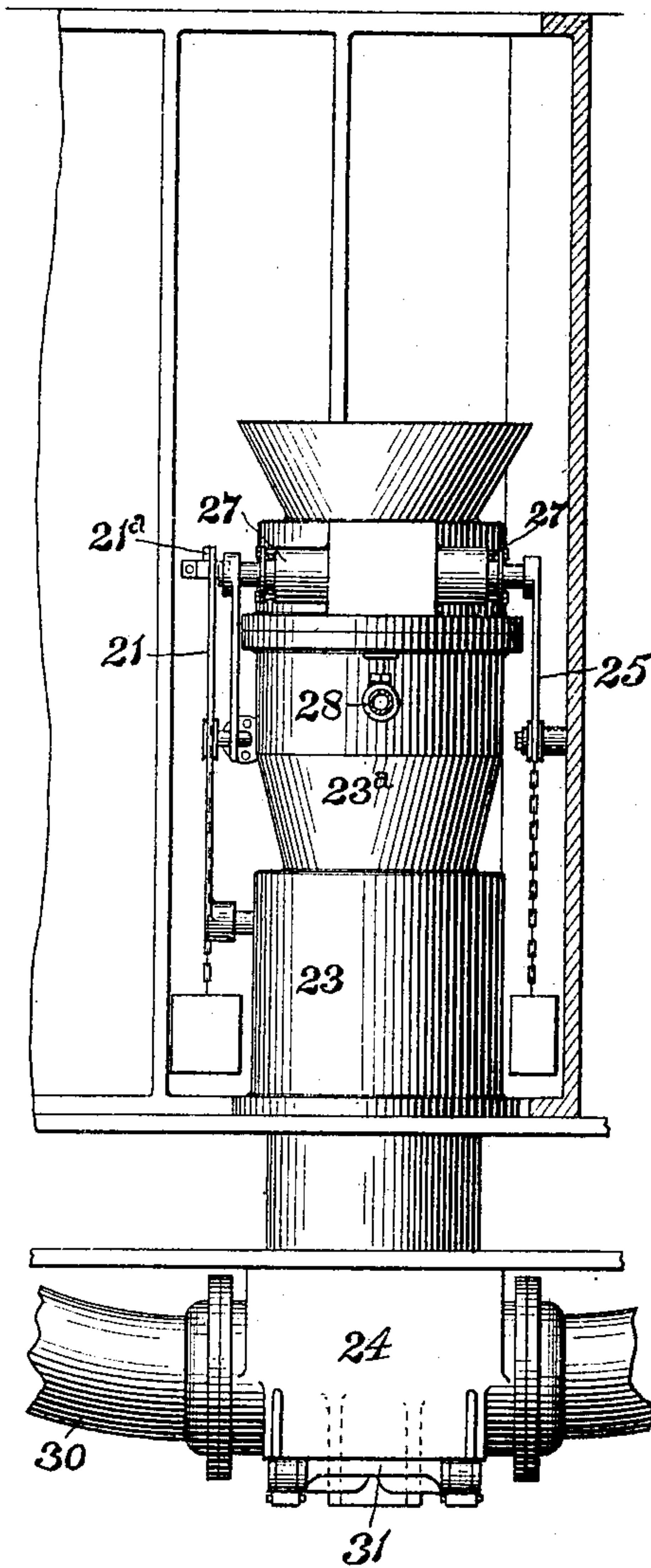


FIG. 2.



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FIG.3.

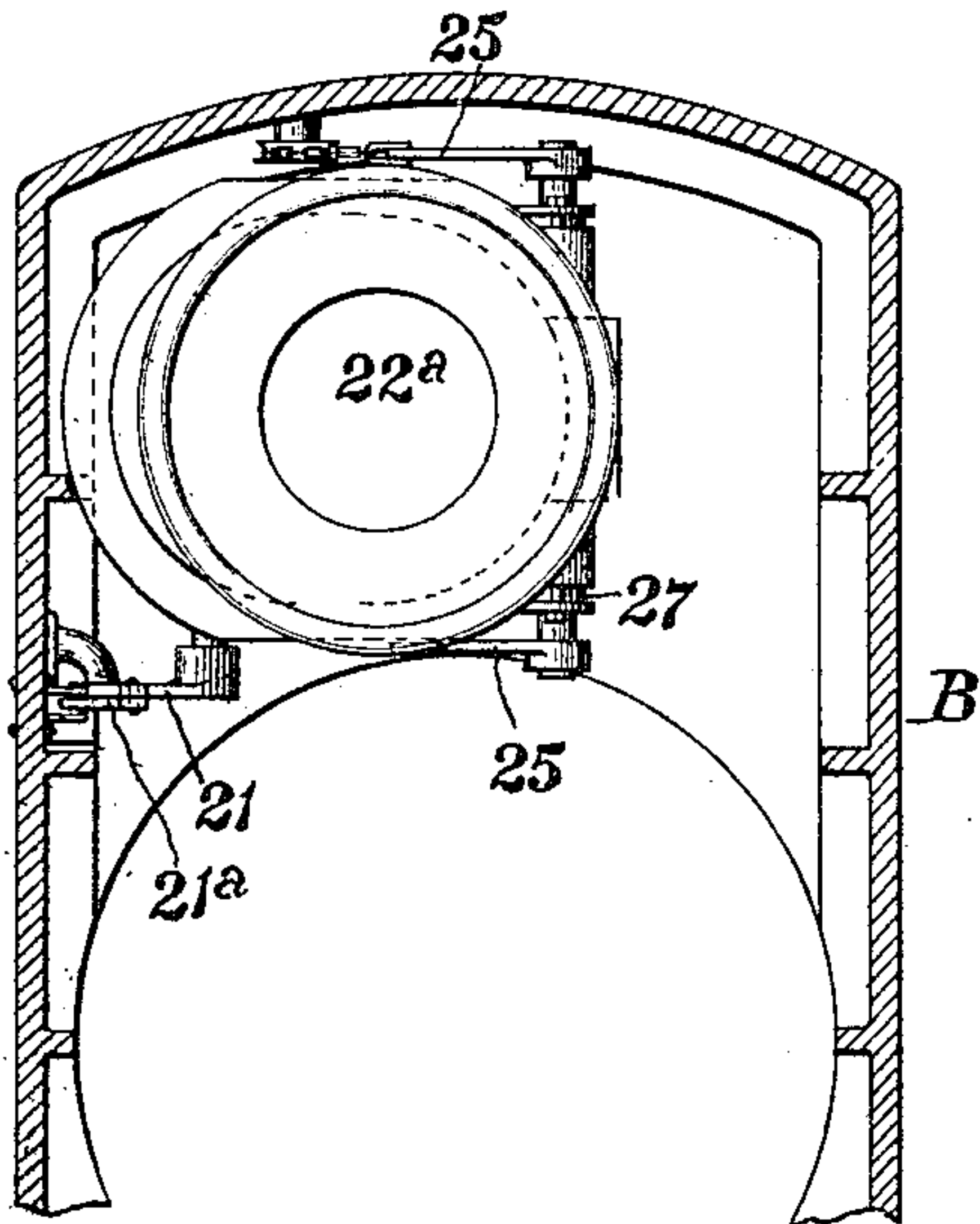


FIG.4.

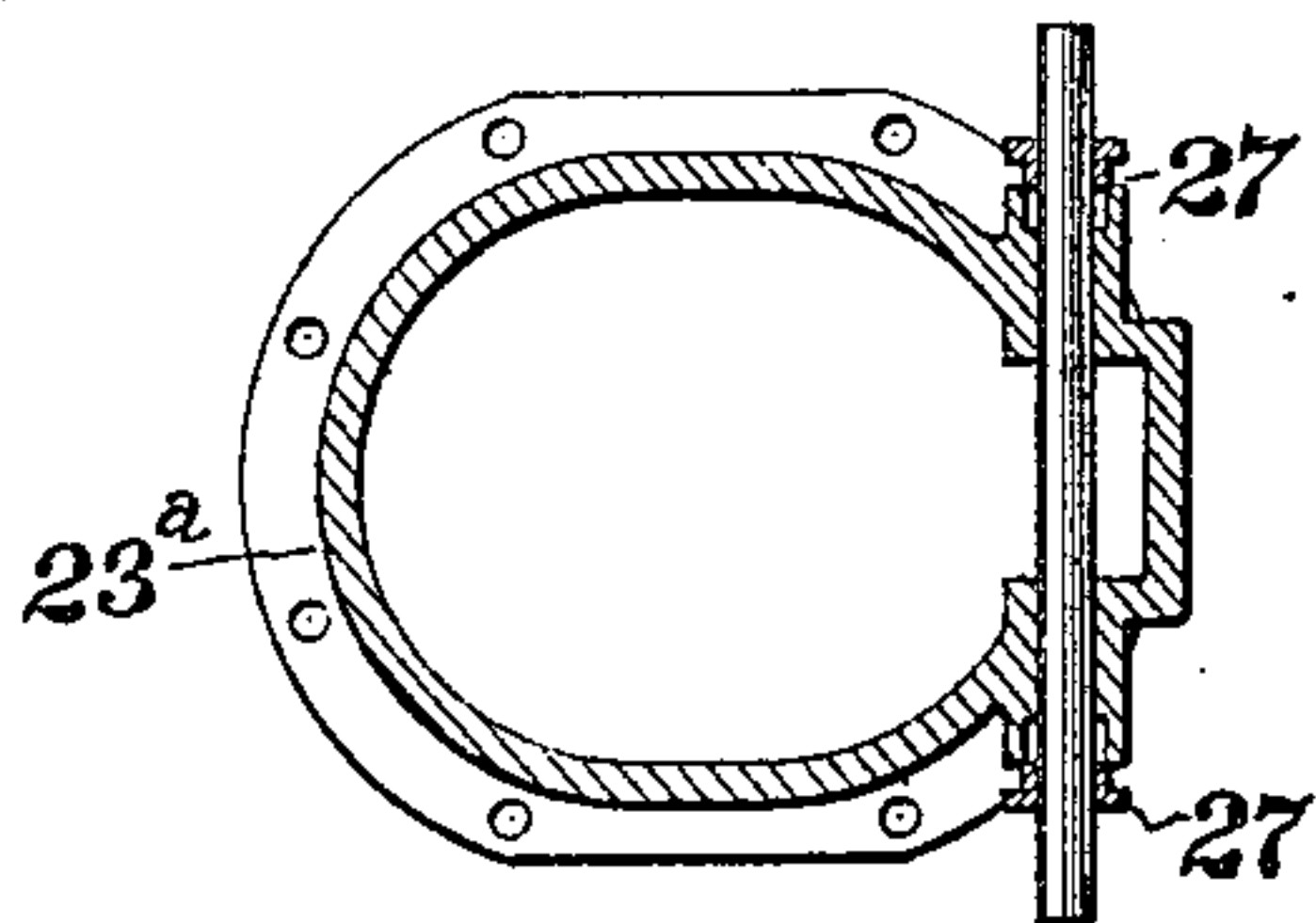
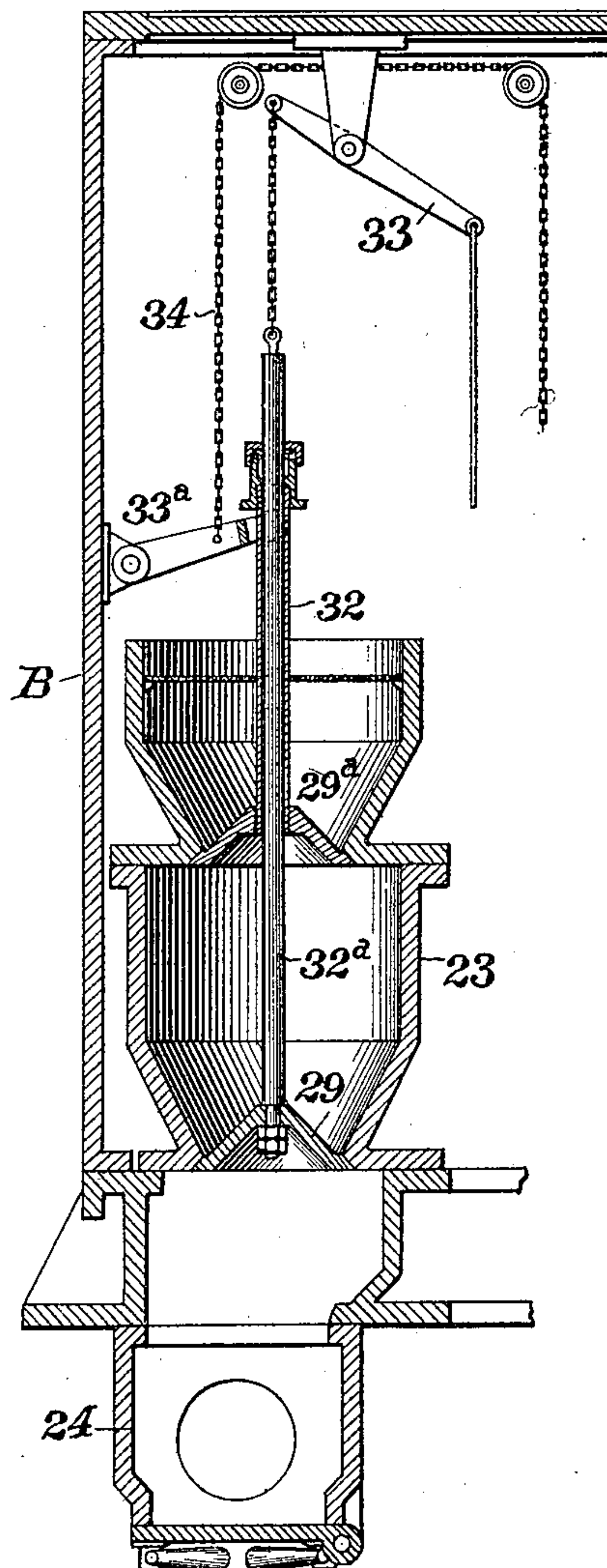


FIG.5.



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UNITED STATES PATENT OFFICE.

WILLIAM H. McFADDEN, OF PITTSBURG, PENNSYLVANIA.

CAISSON.

SPECIFICATION forming part of Letters Patent No. 666,388, dated January 22, 1901.

Application filed October 26, 1900. Serial No. 34,480. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. McFADDEN, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented or discovered certain new and useful Improvements in Caissons, of which improvements the following is a specification.

The invention described herein relates to certain improvements in caissons, the improvements being especially applicable to the construction of caisson forming the subject-matter of Letters Patent No. 656,850, granted to me August 28, 1900; and the invention has for its object a construction of the discharge-box in the air-chamber and an arrangement of closing-bells, whereby any escape of air while discharging material from the air-chamber is entirely prevented.

The invention is hereinafter more fully described and claimed.

In the accompanying drawings, forming a part of this specification, Figure 1 is a sectional elevation of a portion of the air-chamber of the caisson, the discharge-hoppers, &c., being also shown in section. Fig. 2 shows the air-chamber in section and the discharge-hopper in elevation. Figs. 3 and 4 are sectional plan views, the planes of section being indicated, respectively, by the lines III III and IV IV, Fig. 1; and Fig. 5 is a view similar to Fig. 1, illustrating a modification of my improvement.

As described in the Letters Patent referred to, the discharge-box 23 extends through the bottom of the air-chamber B to a receiving-chamber 24, secured to the under side of the air-chamber. This receiving-box forms a part or enlargement of the pipe 30, through which a current of water is maintained under sufficient head or pressure to carry away the material and also to prevent any escape of air from the air-chamber when the box 22 is opened.

Ordinarily the water under pressure in the box 24 and pipe 30 will form an effective seal as against the escape of air from the air-chamber; but in order to avoid any liability of the escape of air should the pump which maintains the pressure in pipe 30 stop for any cause while the discharge-box is open additional or supplementary sealing means should be em-

ployed. To this end a hopper 23^a is formed on or secured to the top of the box 23 and the lower end of said hopper is closed by a swinging door 22. This door is so arranged as in its opening movement to swing down into the box 23, and is shifted to closed position by a lever 21, secured to one end of the pivotal shaft of the door 22. This door is held in closed position by a hook 21^a, engaging a loop on the wall of the air-chamber or by any other suitable means. The upper end of the hopper 23^a is closed by a swinging door 22^a, arranged to swing down into the hopper in its opening movement. A lever or arm 25 is secured to the pivotal shaft of the door, and to this arm is connected a weight 26, whereby the door 22^a is shifted to and held in closed position. This weight is made sufficiently heavy to hold the door closed even against the air-pressure in the caisson. The material to be removed from the caisson is thrown into the mouth of the hopper and, its weight added to the pressure of the air on the door 22^a will cause the door to swing down, permitting the material to drop into the hopper 23^a. When the door 22^a has been returned to closed position by the weight 26, the lever 21 is unlocked, permitting the door 22 to swing down, the material dropping into the receiving-box 24. After the material is discharged into box 24 the door 22 is returned to closed position by the weight 26^a, connected to the lever 21. This arrangement of double doors will prevent any material loss of pressure in the caisson even if the current in pipe 30 is not maintained at a pressure equal to that of the air in the caisson.

The pivotal shafts for the door should be surrounded with stuffing-boxes 27 where they pass through the walls of the box and hopper to prevent escape of air from the caisson.

If desired, a valved pipe 28, connected to the water-supply, may be employed for cleaning the hopper.

As shown in Fig. 5, vertically-movable bells 29 and 29^a may be employed in lieu of the swinging doors to close the box and hopper. The bell 29^a is secured to the lower end of a tube 32, through which passes a rod 32^a, having the bell 29 secured to its lower end. The bell 29 is held in closed position by a weight connected to one end of a lever 33, which has its opposite end connected to the rod 32^a.

The bell 29^a is held closed by a weight attached to a chain 34, which passes over guide-pulleys and is connected to a lever 33^a. This lever is pivotally secured at one end to the
5 wall of the air-chamber, while its opposite end is connected to the tube 32.

I claim herein as my invention—

1. In a caisson the combination of an air-chamber, a discharge-box, two doors arranged
10 at opposite ends of the discharge-box and automatic means for closing and holding the doors closed against the pressure of air in said chamber, substantially as set forth.

2. In a caisson the combination of an air-

chamber, a discharge-box, doors pivotally
15 mounted at opposite ends of the discharge-box so as to open in the direction of the discharge of material from the air-chamber, automatic means for closing and holding the
doors closed against the pressure of air in said
20 chamber and a lock for holding the lower door in closed position, substantially as set forth.

In testimony whereof I have hereunto set my hand.

WILLIAM H. McFADDEN.

Witnesses:

DARWIN S. WOLCOTT,
F. E. GAITHER.