

No. 618,850.

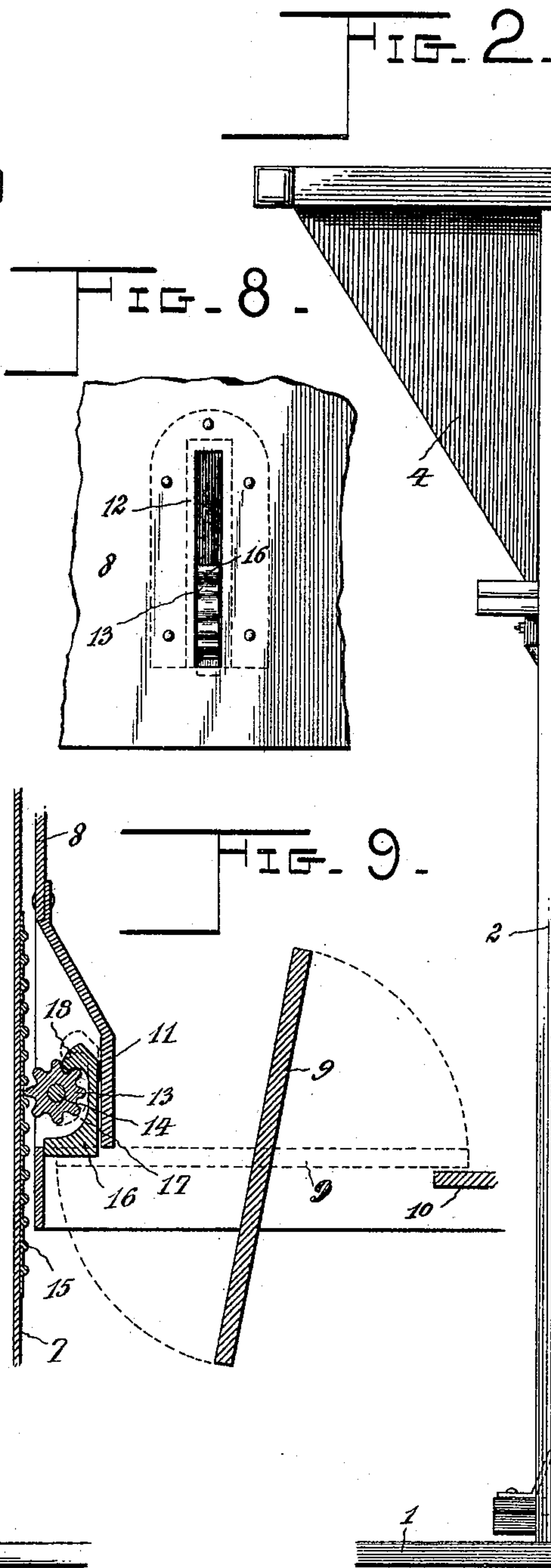
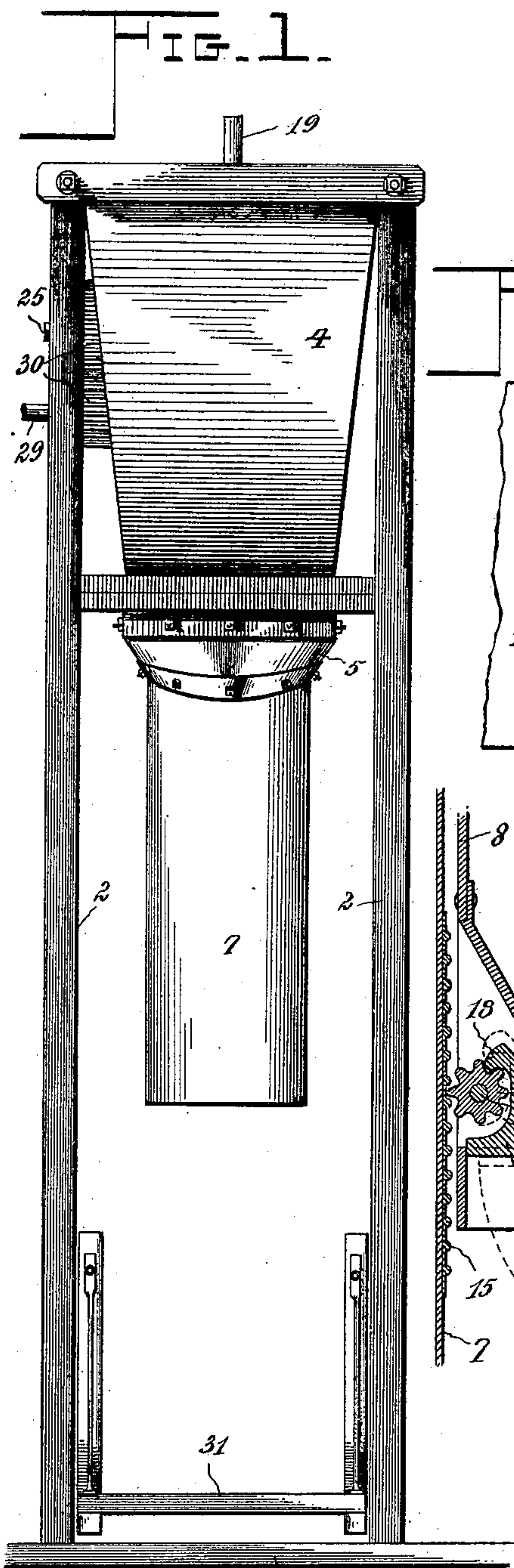
Patented Feb. 7, 1899.

C. B. DONALDSON.  
FLOUR PACKING MACHINE.

(Application filed Mar. 30, 1898.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses

*John F. Leffert*  
*V. B. Hillyard.*

*Charles B. Donaldson* Inventor

By *his* Attorneys,

*C. A. Snow & Co.*

No. 618,850.

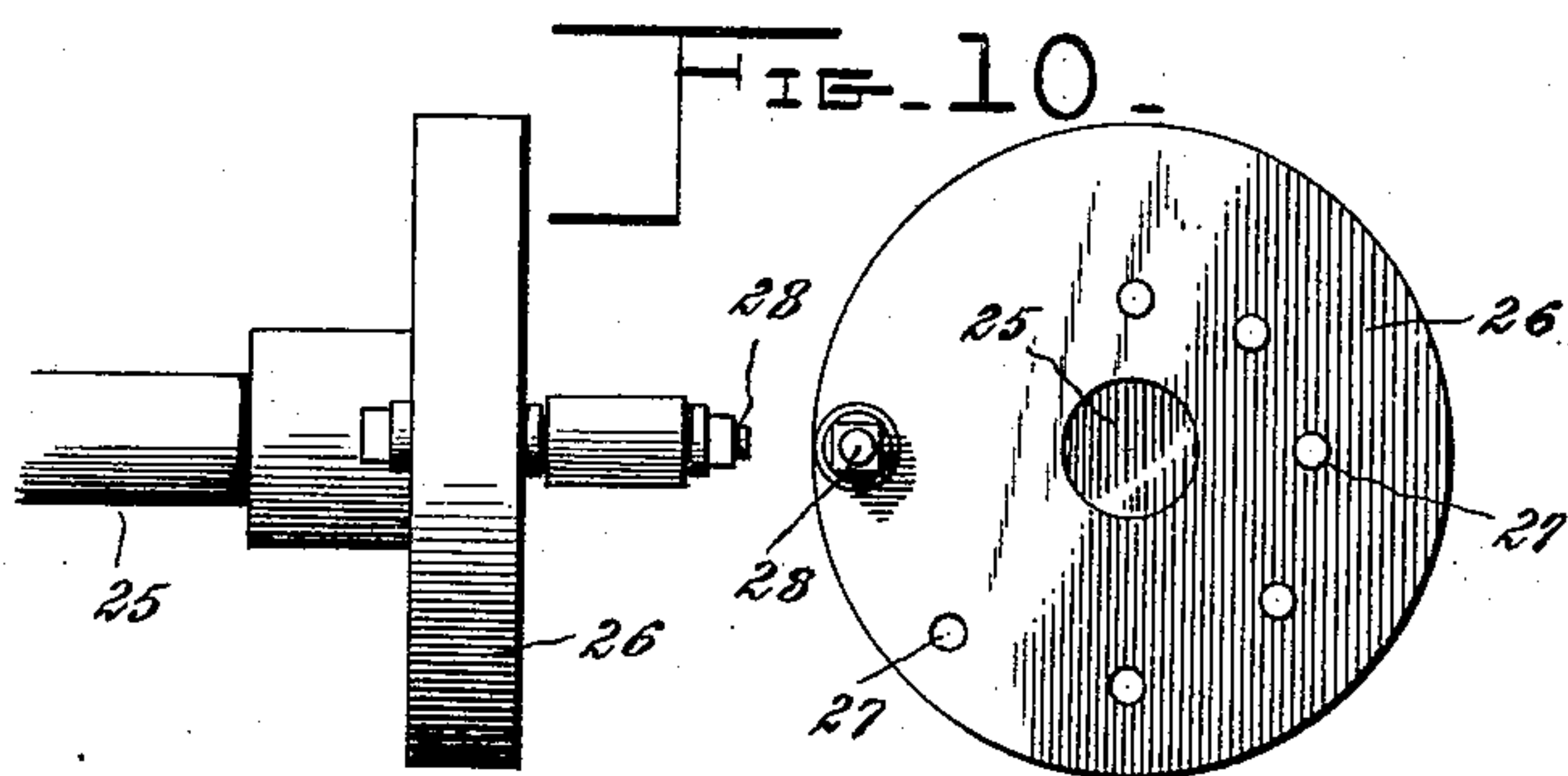
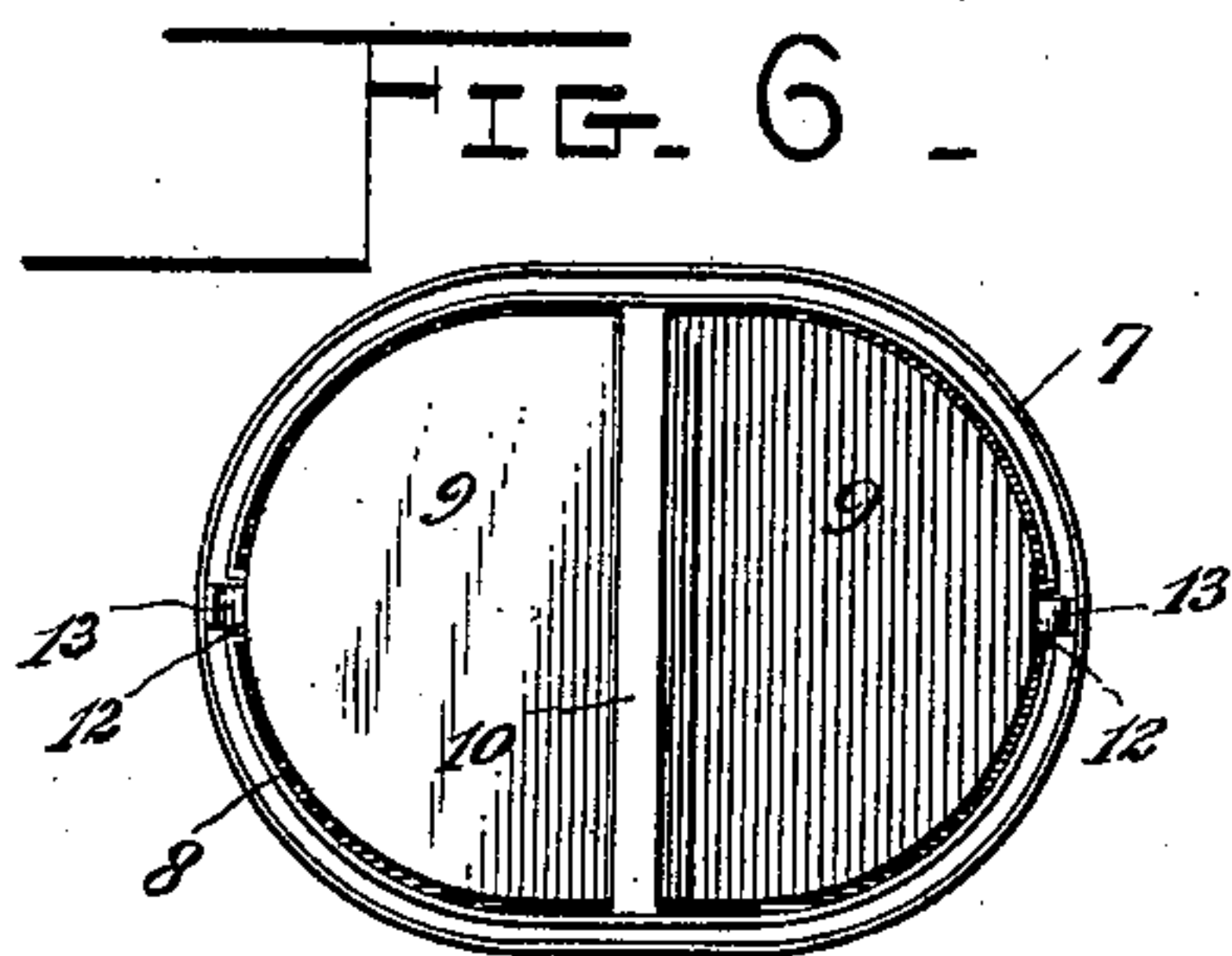
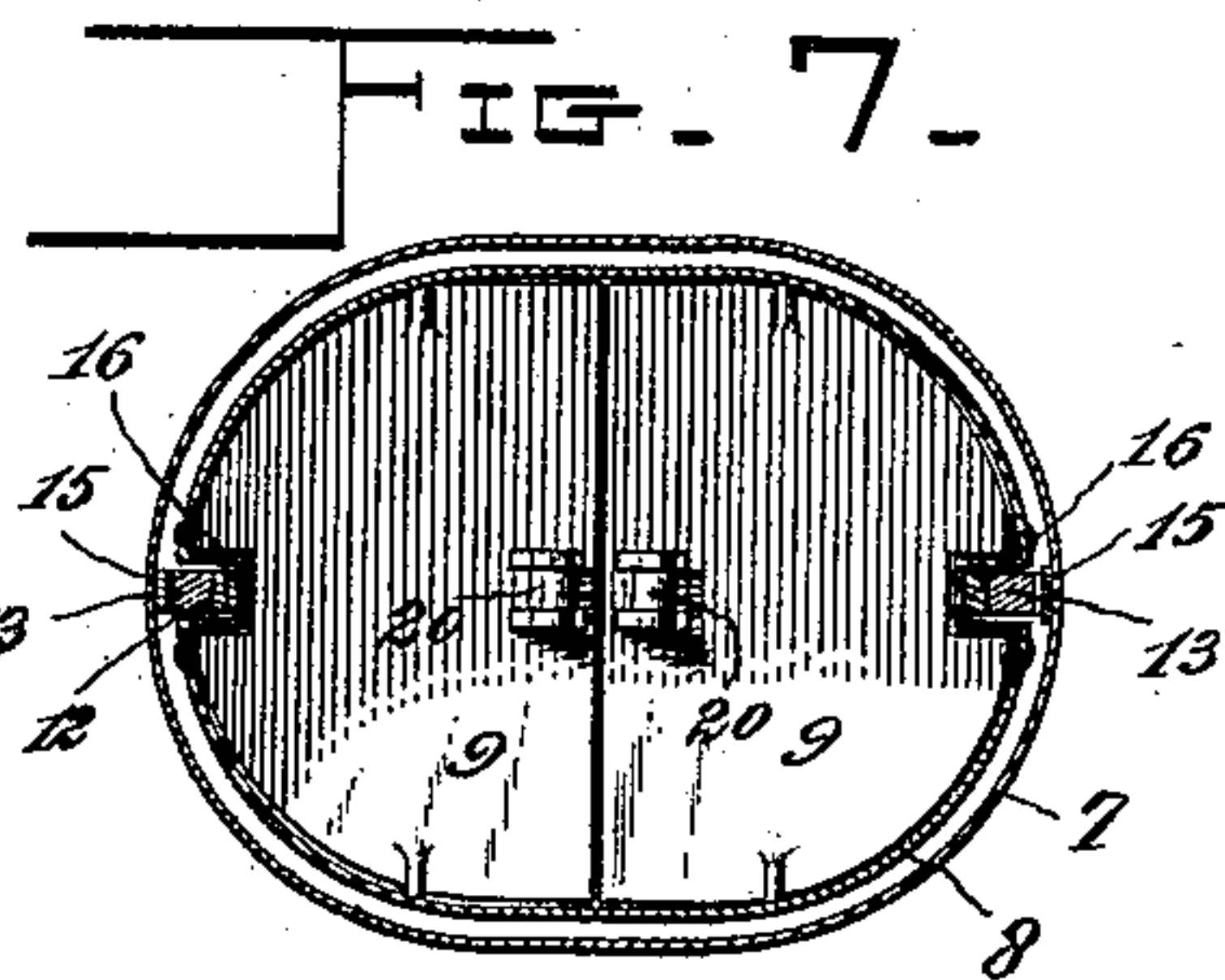
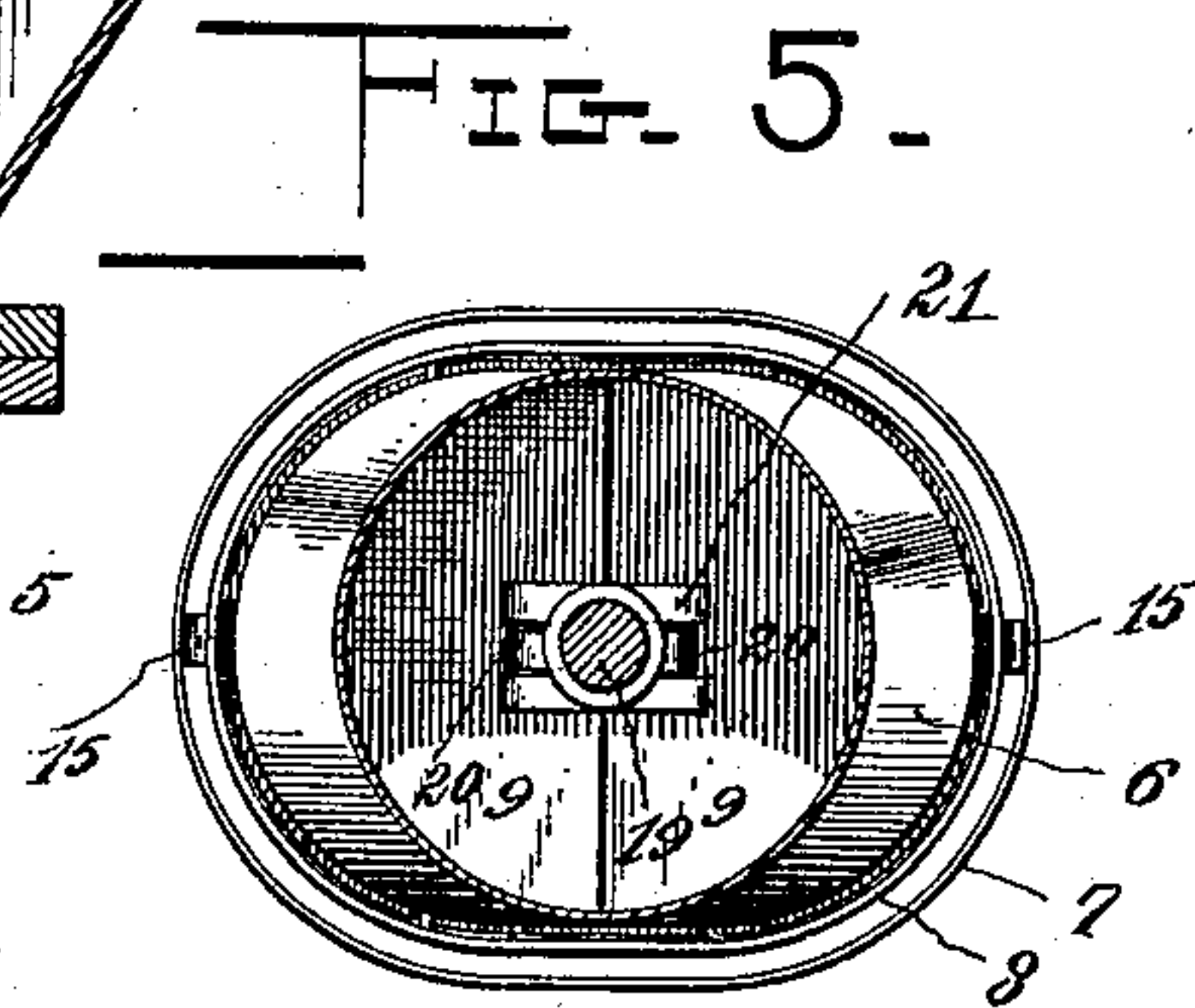
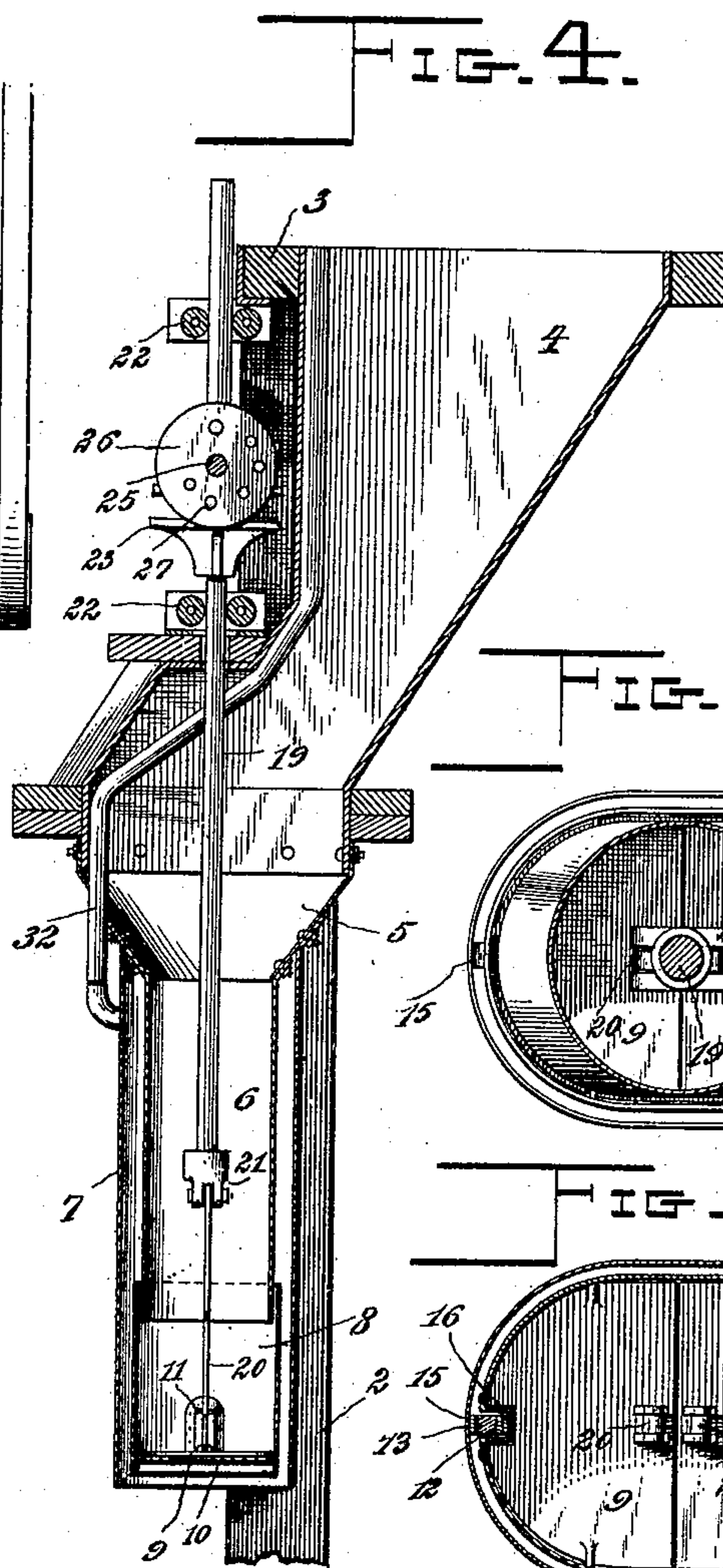
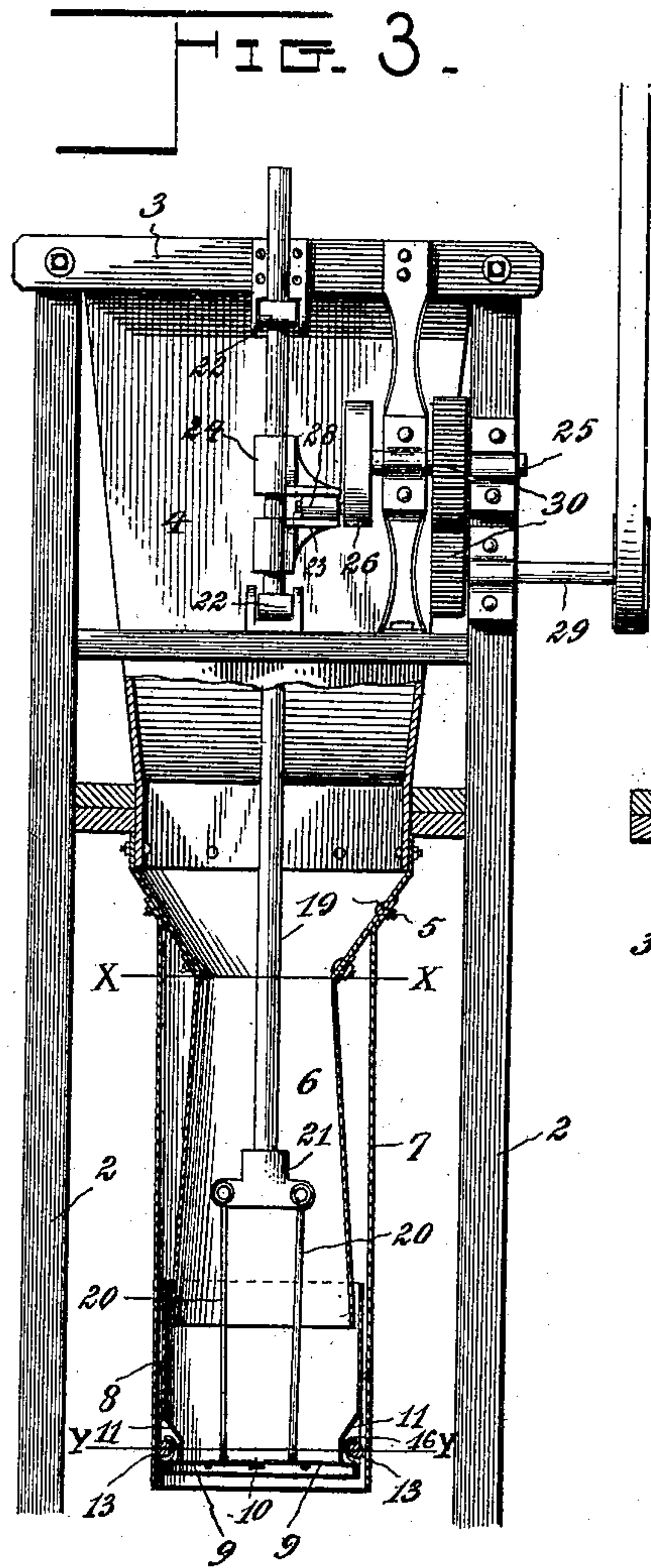
Patented Feb. 7, 1899.

C. B. DONALDSON.  
FLOUR PACKING MACHINE.

(Application filed Mar. 30, 1898.)

(No Model.)

2 Sheets—Sheet 2.



Witnesses

John F. Seufferwiel  
U. B. Hillyard.

Charles B. Donaldson Inventor

By His Attorneys,

Chas. Snow & Co.



# UNITED STATES PATENT OFFICE.

CHARLES B. DONALDSON, OF WILMINGTON, OHIO.

## FLOUR-PACKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 618,850, dated February 7, 1899.

Application filed March 30, 1898. Serial No. 675,748. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES B. DONALDSON, a citizen of the United States, residing at Wilmington, in the county of Clinton and State of Ohio, have invented a new and useful Flour-Packing Machine, of which the following is a specification.

This invention relates to machinery for packing flour, ground cereals, and like products, the purposes being to prevent the flying of dust when the machine is in operation, to secure a positive and quick feed of the flour or article being packed, and to devise a packer which will perform the work in a rapid, effective, and satisfactory manner.

For a full understanding of the merits and advantages of the invention reference is to be had to the accompanying drawings and the following description.

The improvement is susceptible of various changes in the form, proportion, and the minor details of construction without departing from the principle or sacrificing any of the advantages thereof, and to a full disclosure of the invention an adaptation thereof is shown in the accompanying drawings, in which—

Figure 1 is a rear view of a packing apparatus embodying the essential features of this invention. Fig. 2 is a side view thereof. Fig. 3 is a vertical section of the upper portion of the mechanism. Fig. 4 is a vertical section taken upon a plane at right angles to Fig. 3. Fig. 5 is a transverse section on the line X X of Fig. 3. Fig. 6 is an end view of the packer-tube. Fig. 7 is a plan section on the line Y Y of Fig. 3. Fig. 8 is a detail view of the lower portion of the reciprocating tubular section. Fig. 9 is a detail view of a side portion of the reciprocating tubular section, showing the means for holding it elevated. Fig. 10 is a detail view of the disk to which the wrist-pin is adjustably connected.

Corresponding and like parts are referred to in the following description and indicated in the several views of the drawings by the same reference characters.

The framework for supporting the operating parts comprises a base 1, uprights 2, and a cross-piece 3, the latter connecting the upper ends of the parts 2. A hopper 4 is applied to the upper portion of the framework and receives the flour to be packed from a bin, in which it is stored, in any convenient

way. A tube connects with the lower end of the hopper and comprises an upper flaring portion 5 and a lower tapering portion 6, the two parts 5 and 6 being of circular outline at their juncture. The part 5 flares upwardly from its juncture with the part 6, so as to receive the flour or like article from the hopper, and the part 6 gradually flares downwardly toward its delivery end from its juncture with the part 5. The delivery end of the part 6 is of elliptical shape, the sides gradually assuming this outline from the lower end of the part 5 toward the bottom edge of the part 6. While the part 6 gradually flares at its lower end, it at the same time departs from the circular outline of its outer end, and as a result of this formation flour or like commodity is prevented from banking or choking in the part 6 of the packer-tube.

A tubular section or shell 7 surrounds the lower portion of the packer-tube and connects at its upper end with the lower portion of the flaring part 5. This tube or shell 7 projects below the delivery end of the packer-tube a considerable distance and is intended to enter the barrel, sack, or package into which the flour is to be packed. A tubular section 8 is located intermediate of the tubular sections 6 and 7 and is movably related thereto and carries the blades or wings 9, which unitedly constitute the presser or plunger head. This tubular section 8 receives a reciprocating movement and has direct connection with the actuating mechanism, by means of which the flour is tamped into the sack or package into which it is designed to be packed.

The wings or blades 9 are journaled or pivoted intermediate of their edges to the lower portion of the tubular section 8 and are adapted to assume a vertical and parallel relation, so as to provide a passage for the flour or like commodity from the tube into the package. A central bar or stop 10 is applied to the lower portion of the tubular section 8 and limits the downward movement of the upper edge portion of the wings or blades 9 when the latter assume a horizontal position. This stop or bar 10 is arranged in the path of the upper edges of the blades 9 and overlaps and engages with the latter when in a horizontal position. Other stops 11 are applied to the sides of the tubular section 8 at diametrically



opposite points and engage with and limit the upward movement of the lower edges of the wings or blades 9 when turned into a horizontal position. The lower edges of the stops 11 are in a slightly higher plane than the top side of the bar or stop 10, thereby insuring the blades or wings reaching a horizontal position when swung from a vertical direction.

Slots 12 are formed in the lower edge portions of the part 8 and are protected by the stops 11, which are in the form of housings and inclose the slots 12 at their top and sides and which are bolted, riveted, or secured in a substantial manner to the parts of the tubular section 8 bordering upon the slots 12. Pinions 13 are mounted upon pins 14, secured at their ends in the sides of the parts 11, and their outer toothed portions project beyond the sides of the tubular section 8, so as to engage with the teeth of rack-bars 15, secured to the inner sides of the shell 7, directly opposite the slots 12 of the part 8. A dog 16 is slidably mounted in each of the housings 11 and is confined between the inner walls of said housings and the inner sides of the pinions. The side of the dog 16 facing the pinion 13 is recessed, as shown at 17, the end portions of the recess being adapted to engage with the upper and lower portions, respectively, of the pinions, so as to limit the vertical movements of the dogs. The end walls of the recess 17 curve so as to admit of the teeth of the pinion riding thereon. The upper end of each dog is formed with a nose 18, which is adapted to enter the space between contiguous teeth of the pinions, so as to prevent rotation thereof in one direction, thereby providing for holding the tubular section 8 in an elevated position until released by disengaging the dogs 16 from their respective pinions. The lower ends of the dogs project a short distance below the housings or stops 11, so as to be struck by the lower edges of the wings or blades 9 when turning into a horizontal position, thereby releasing the plunger and permitting its descent after the barrel, sack, or package has received a charge which it is required to compress or tamp.

The tubular section 8 and the wings or blades 9, pivoted thereto, constitute a plunger or presser, which is caused to reciprocate vertically by means of a plunger-rod 19, having connection with the blades by means of links 20, which are pivoted at their lower ends to the upper or inner edge portions thereof and have pivotal connection at their upper ends to a head 21, fitted to the lower end of the said plunger-rod. The plunger-rod is directed in its vertical movement by upper and lower pairs of rollers 22, applied to cross-bars of the frame. Cross-heads 23 have adjustable connection with the plunger-rod 19 and have their inner portions spaced apart. Each of the cross-heads is centrally formed with a socket 24, provided with a binding-screw, by means of which it is clamped to the plunger-

rod. A shaft 25 is provided at its inner end with a disk or plate 26, having a series of openings 27, in any one of which is fitted a wrist-pin 28, which is disposed to operate in the space formed between the cross-heads 23. The wrist-pin carries an antifriction-roller, which reduces the friction between the wrist-pin and the cross-heads to the smallest amount possible. The openings 27 are arranged at different distances from the center of the disk or plate 26, thereby enabling the wrist-pin to be moved to a greater or less distance from the center or axis of the disk, so as to regulate the throw or movement of the plunger. A shaft 29 is driven from any suitable source of power and is connected with the shaft 25 by means of gearing 30.

A platform 31 is mounted so as to have a vertical movement with reference to the frame and is intended to support the barrel, sack, or other package provided to receive the flour or other article to be packed. This platform is mounted so as to descend according to the bulk or quantity of flour received and packed into the barrel or sack.

A pipe 32 connects the upper portion of the outer shell 7 with the upper portion of the flour-bin and carries off the dust resulting from packing the flour, thereby preventing the escape thereof into the surrounding air. This pipe also obviates the formation of a vacuum, which would materially detract from the successful operation of the packer.

In the practical operation of the machine the package to receive the flour or other commodity is placed upon the platform 31 and receives the lower end portion of the shell or outer tube 7. When the plunger is at the limit of its upward stroke, the wings or blades 9 occupy a vertical and parallel relation, thereby admitting of the uninterrupted flow of the flour or other article into the package. After the package has received a charge and the plunger-rod begins to descend the wings or blades are closed, thereby shutting off all further flow of flour into the package and at the same time providing a presser or plunger head. Just prior to the blades or wings reaching a horizontal position their lower edges will come in contact with the lower ends of the dog 16 and move the latter upward and out of engagement with the teeth of the pinions 13, thereby releasing the plunger or presser, which latter descends upon the further downward movement of the plunger-rod, thereby compressing the charge received in the package. After the plunger or presser has moved to the limit of its downward stroke and the plunger-rod begins to ascend the blades or wings are opened, and when opened to their fullest extent a continued upward movement of the plunger-rod causes the tubular section 8 and the blades to move upward. When the plunger reaches the limit of its upward stroke and the plunger-rod again begins to move downward, the tubular section 8 is locked by reason of the dog



16 engaging with the teeth of the pinions 13 in the manner set forth. While the plunger is ascending, the teeth of the pinion ride upon the upper curved wall of the recess 17 and permit of the free movement of the plunger; but after the latter has reached the predetermined elevation it is locked by the nose portion of the dogs engaging with teeth of the pinions 13. While the plunger is moving upward the flour has free passage to the package, thereby supplying the same with a charge simultaneously with the return of the plunger to a starting-point preparatory to again descending and compressing the charge received into the package.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

1. In apparatus for packing flour and the like, the combination with inner and outer tubular sections, the inner section flaring outwardly and downwardly and the outer section projecting below the inner section, of a tubular section intermediate of the inner and outer tubular sections and provided with a presser-head which is adapted to open and close, and actuating mechanism for the said intermediate tubular section, substantially as set forth.

2. In apparatus for packing flour and the like, the combination with inner and outer tubular sections, the outer section projecting below the inner section and the latter composed of an upper flaring portion and a lower flaring part, of a tubular section intermediate of the inner and outer tubular sections, blades or wings pivoted intermediate of their edges to the lower portion of the intermediate tubular section, means for limiting the movement of the blades when turned into a horizontal position, and actuating mechanism having direct connection with the wings for opening and closing them and reciprocating said wings and the tubular sections to which they are attached, substantially as set forth.

3. In apparatus for packing flour and the like, the combination with a packing-tube and a tubular section embracing the lower portion of the packing-tube, of blades or wings pivoted intermediate of their edges to the lower portion of the tubular section, a central and side stops for engaging with the edge portions of the blades and holding them in a horizontal position, a plunger-rod, and links connecting the plunger-rod with the upper inner edge portions of the blades, substantially as set forth.

4. In apparatus for packing flour and the like, the combination with a packing-tube adapted to receive the flour or like commodity from a bin and provided at its lower end with packing mechanism, and a shell or casing inclosing the packing-tube and the packing mechanism and having a space formed between it and the packing-tube which is closed at its upper end, of a pipe connecting the upper portion of the space formed between the packing-tube and shell with the upper

portion of the bin, substantially as and for the purpose set forth.

5. In apparatus for packing flour and the like, the combination with a shell, a tubular section, blades or wings having pivotal connection with the said tubular section so as to open and close, and actuating mechanism applied directly to the pivoted wings or blades, of a lock mechanism between the tubular section and shell to secure the tubular section at an elevated position and adapted to be released by the blades or wings coming in contact therewith when assuming a horizontal position, substantially as set forth.

6. In apparatus for packing flour and the like, the combination with a plunger comprising a pivoted blade or wing, and actuating mechanism applied directly to the wing of the plunger, of a rack-bar, a pinion applied to the plunger and intermeshing with the rack-bar, and a dog adapted to engage with the pinion to prevent rotation thereof in one direction so as to secure the plunger in an elevated position and adapted to be struck by the aforesaid wing when turned into an active position to release the plunger, substantially as set forth.

7. In a packing apparatus, the combination with a plunger comprising a pivoted wing or blade, and actuating mechanism applied directly to the said wing, of a rack-bar, a pinion applied to the plunger and meshing with the rack-bar, a housing protecting the pinion and forming a stop to engage with a portion of the wing and limit the movement thereof when turned into an active position, and a dog protected by the said housing and projecting beyond the same a short distance to be struck by the wing, whereby it is disengaged from the pinion, thereby releasing the plunger, substantially as set forth.

8. In a packing apparatus, the combination with a tubular section having slots or openings in its sides, and wings or blades pivoted to said section and having the actuating mechanism applied directly thereto, of rack-bars located exterior to the said section and opposite the slots therein, housings applied to the inner sides of the tubular section and inclosing the slots thereof at their tops and sides and adapted to form stops to limit the movement of the aforesaid wings, pinions journaled within the housings and meshing with the rack-bars, and dogs slidably mounted within the housings and having their lower ends projecting below the same a short distance to be struck by the aforesaid wings when turned into a horizontal position, thereby releasing the plunger, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

CHARLES B. DONALDSON.

Witnesses:

J. CAL DAVIS,  
JOSEPH NOON.