

(No Model.)

2 Sheets—Sheet 1.

E. Z. HERMANSADER & W. H. BLANDY.

STEAM TRAP.

No. 578,873.

Patented Mar. 16, 1897.

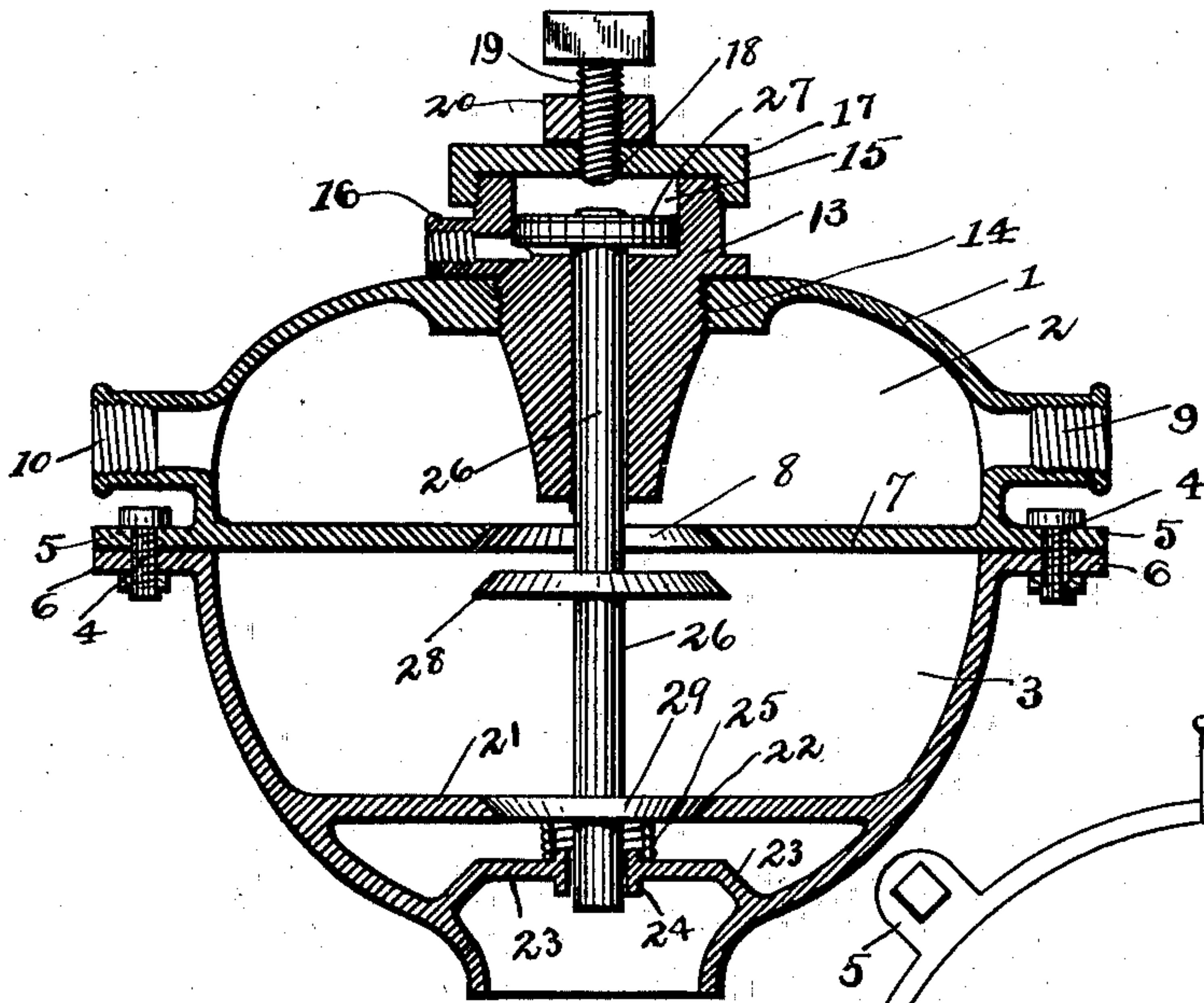


Fig. 1

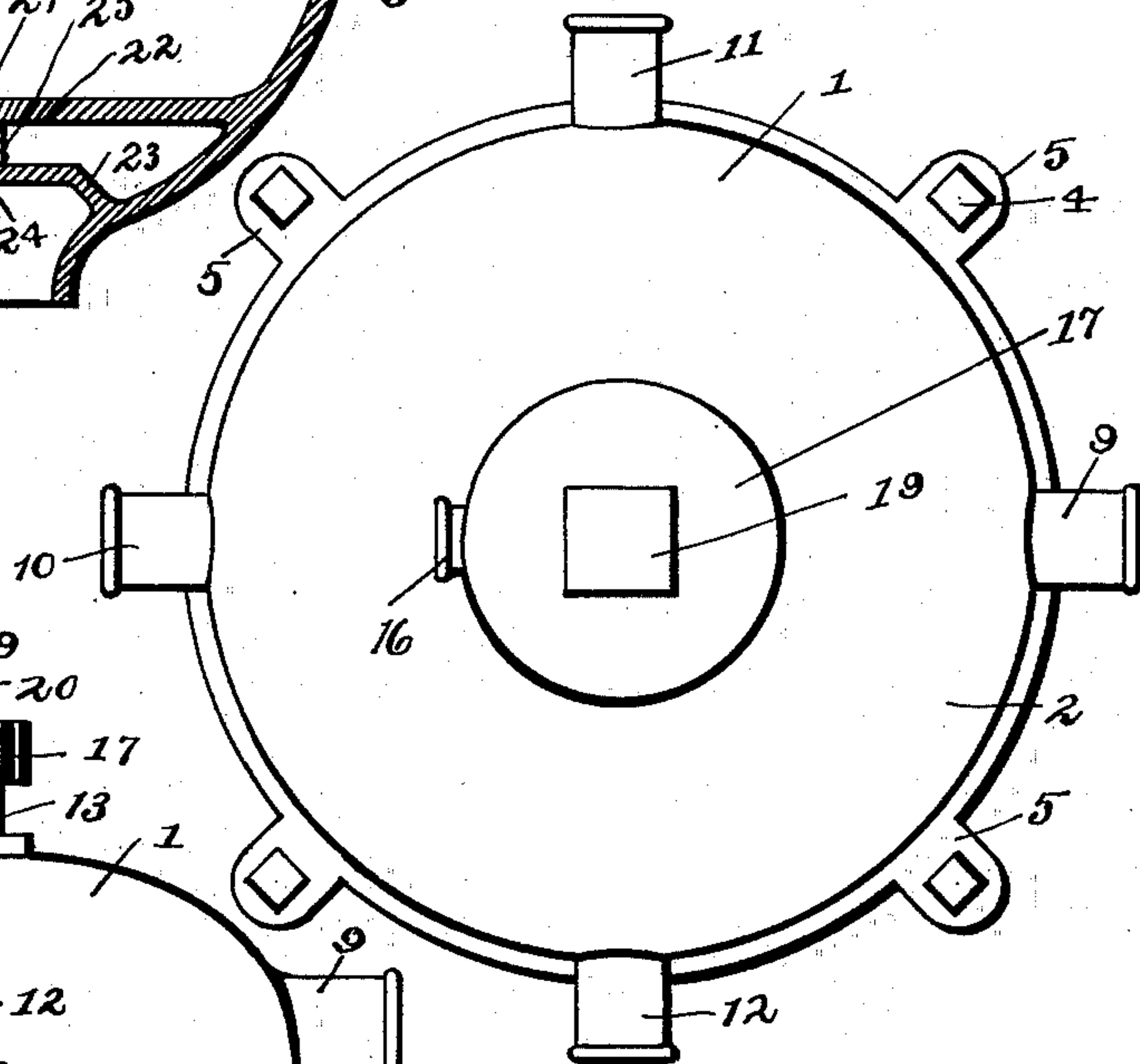


Fig. 2

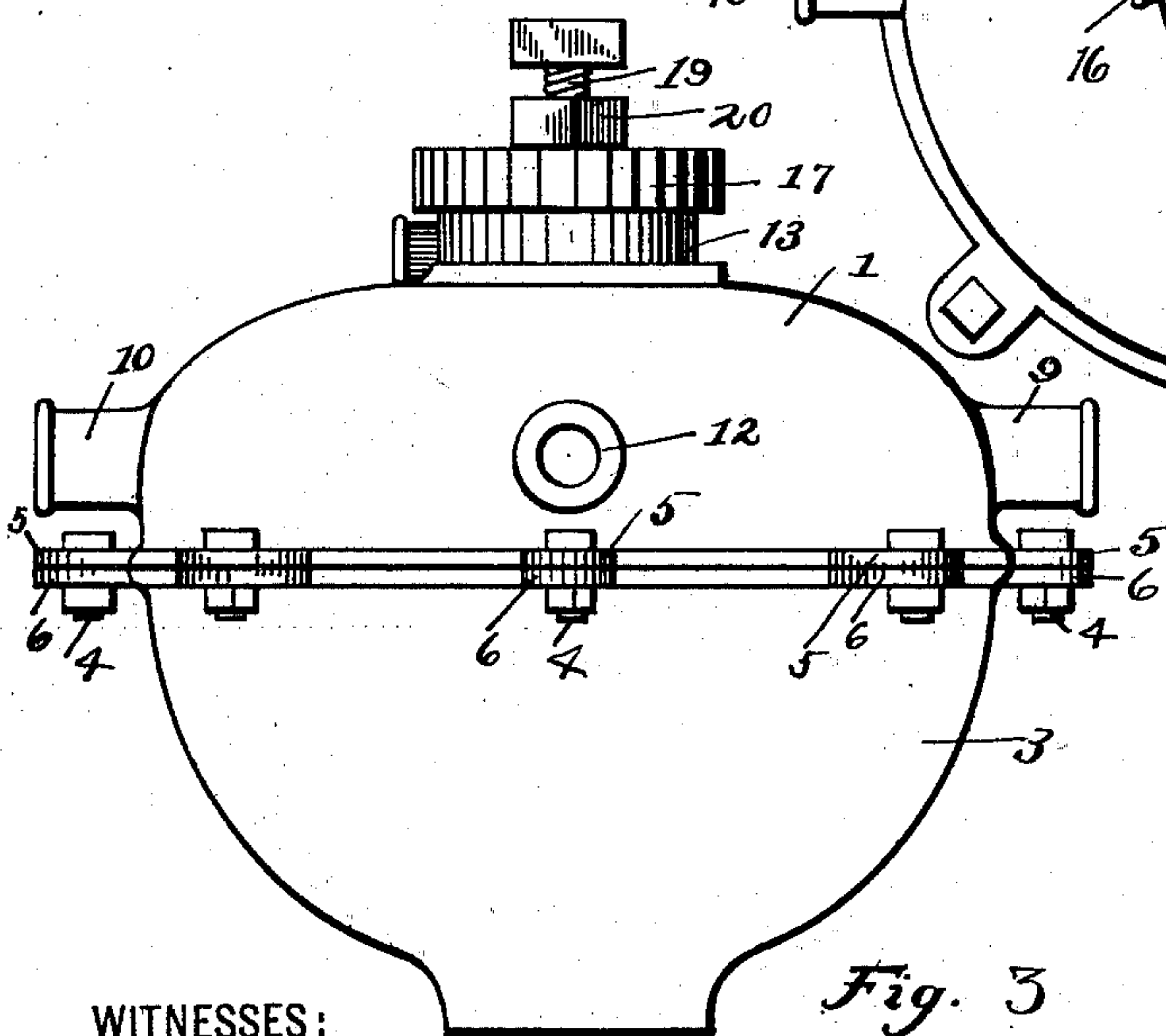


Fig. 3

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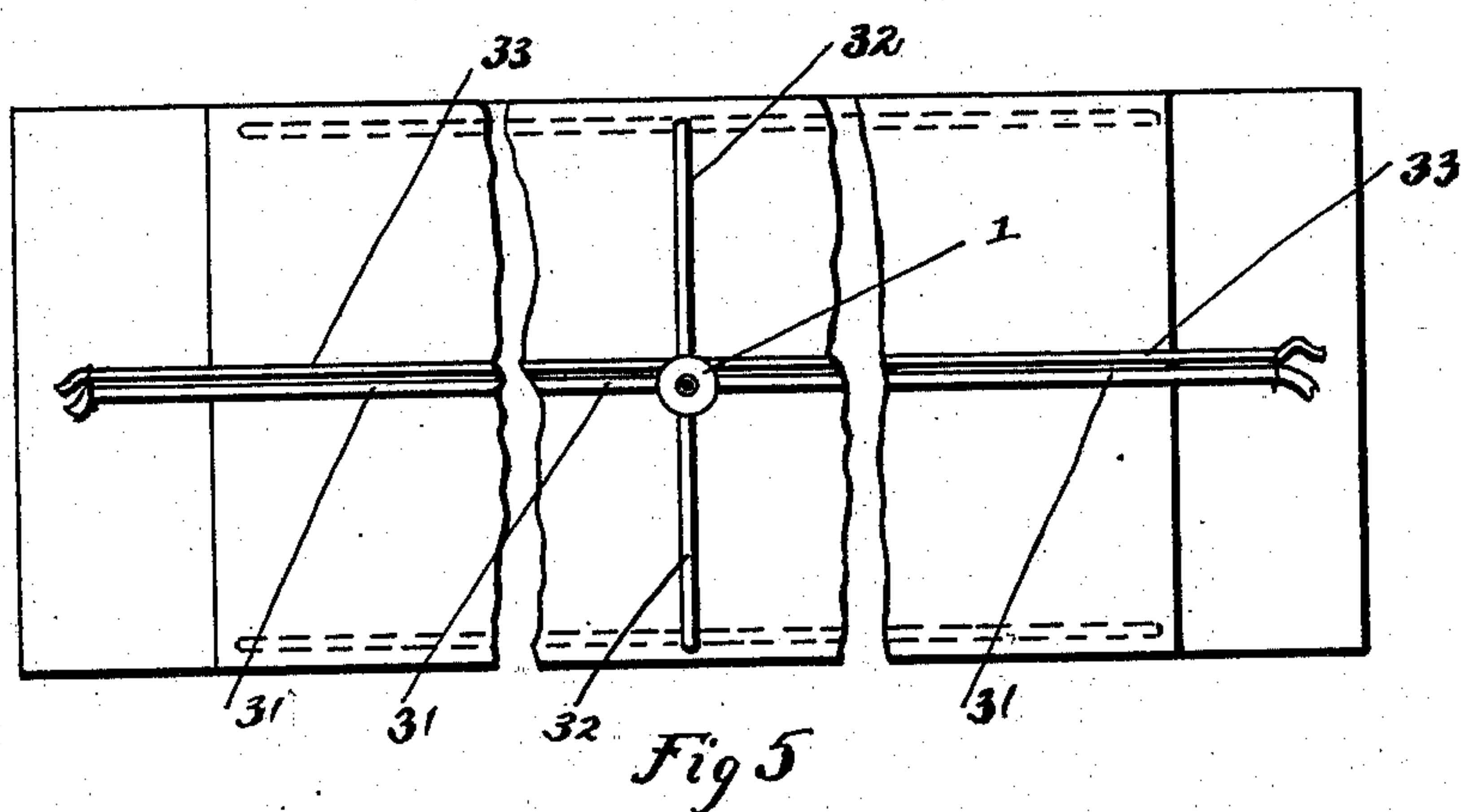
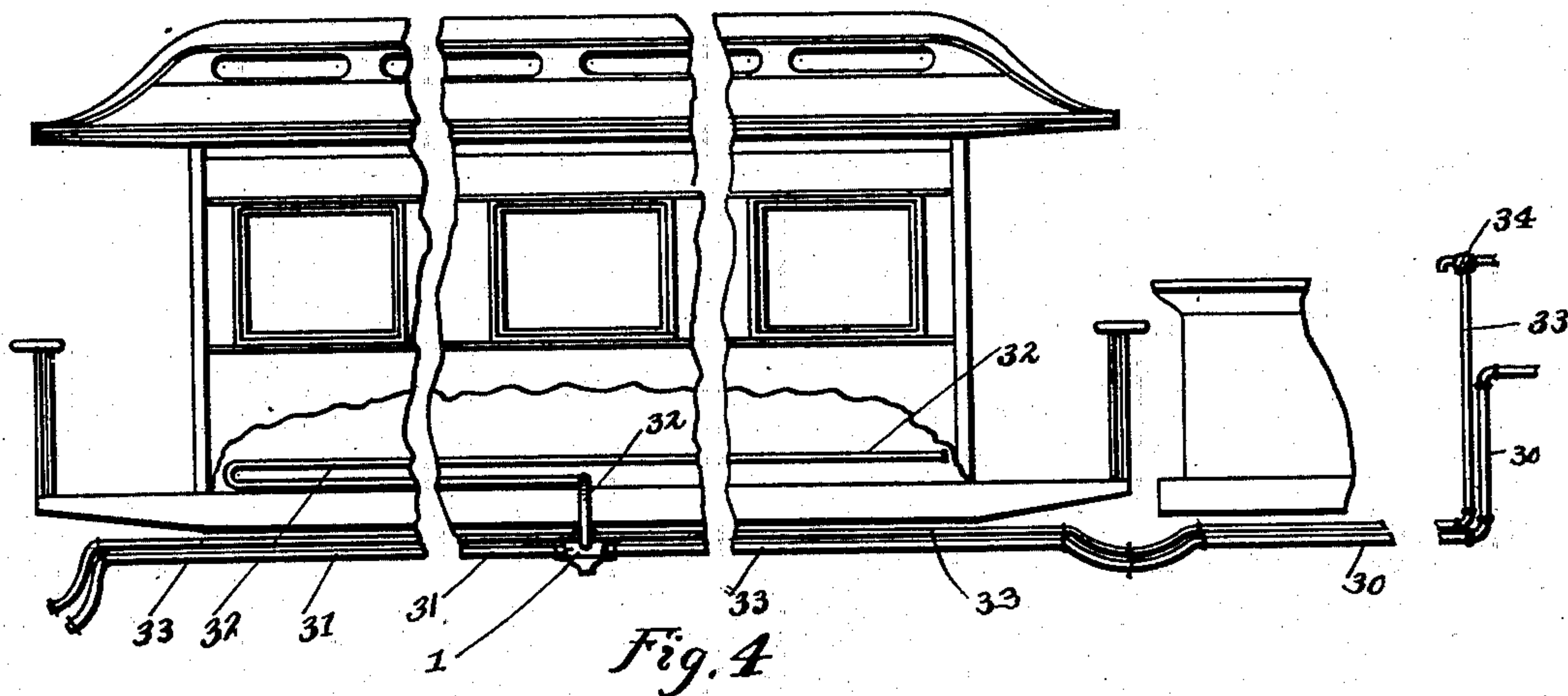
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Witnesses
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UNITED STATES PATENT OFFICE.

EDWARD Z. HERMANSADER AND WILLIAM H. BLANDY, OF COLUMBUS,
OHIO.

STEAM-TRAP.

SPECIFICATION forming part of Letters Patent No. 578,873, dated March 16, 1897.

Application filed March 27, 1896. Serial No. 585,090. (No model.)

To all whom it may concern:

Be it known that we, EDWARD Z. HERMANSADER and WILLIAM H. BLANDY, citizens of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented a certain new and useful Improvement in Steam-Traps, of which the following is a specification.

Our invention relates to the improvement of automatic steam-traps, and has particular relation to the construction and arrangement of a trap of this class for use in connection with steam heating apparatus for cars.

The objects of our invention are to provide a simple, reliable, and effective mechanism of this class wherein the condensation from the steam employed in heating cars may be readily and effectively discharged from the pipes without retarding the passage of steam therethrough and without the necessity of employing a vacuum or other pump; to so construct and arrange said mechanism as to admit of the discharging operation being conducted by the engineer of a train, and to produce other improvements in details of construction and arrangement of parts which will be more specifically pointed out hereinafter. These objects we accomplish in the manner illustrated in the accompanying drawings, in which—

Figure 1 represents a central vertical section of our improved trap. Fig. 2 is a plan view of the same. Fig. 3 is a side elevation. Fig. 4 is a view, partly in elevation and partly in section, of a car having our improved trap thereon, and Fig. 6 is an under side view of said car.

Similar numerals refer to similar parts throughout the several views.

In the construction of our improved trap we employ a casing or body 1, which preferably consists, as indicated in the drawings, of upper and lower shell portions 2 and 3, which are detachably united by means of bolts 4, which pass through and connect projecting lips or flanges 5 and 6, formed on the adjoining edges of the two shells or sections. The upper section 2 of the body 1 has formed therewith a horizontal bottom disk 7, which serves, as a partition between the upper and lower sections. The central portion of this

disk is provided with a valve-opening 8, which preferably has inclined or beveled sides, as shown. Projecting from the upper section 2, at equidistant points from each other, are four pipe-necks, which for the purposes of illustration we have numbered as 9 and 10 and 11 and 12.

13 represents a detachable head the tubular and downwardly-extending portion of which projects within the upper portion of the body 1 and has a threaded engagement with an opening 14 in the upper side thereof. The upper portion of this head 13 is, as indicated at 15, in the form of a cup, from the lower portion of which leads outward a pipe-neck 16. Upon the top of this cup-shaped projection 15 is a detachable cap 17, through which is formed a screw-hole 18, the latter being adapted to receive a vertical set-screw 19. This set-screw also carries a lock-nut 20, which is adapted to bear upon the upper side of the cap.

In the construction of the lower shell or section 3 we employ in the lower portion thereof a horizontal partition plate or disk 21, through which is formed a valve-opening 22. Beneath the central portion of the opening 22 is supported, by means of radially-arranged arms 23, a guide-collar 24, and upon said guide-collar bears a short coiled spring 25.

26 represents a vertically-sliding valve rod or stem, the latter carrying on its upper end a head or piston 27, which is adapted to fit and work within the cup 15.

28 represents a beveled valve-disk which is carried on said stem 26 near the center of its length and which is adapted to fit within and close the opening 8 of the plate 7. 29 represents a similar valve-disk which is carried on the lower portion of the stem 26 and adapted to close the opening 22 of the plate 21. This valve-disk 29 is adapted to receive when it is down or in a closed position a slight lifting pressure from the spring 25. The relative positions of the piston-head and valve-disks are such that when said piston-head is in the lower portion of the cup 15 the valve 28 is below the opening 8 and the valve 29 is seated in the opening 22, as indicated in Fig. 1 of the drawings.

The trap-body constructed as above de-

scribed is, as indicated more clearly in Figs. 4 and 5 of the drawings, located and supported beneath the central portion of a car, one being employed beneath each car of the train. Into the neck 9 leads a steam-supply pipe 30, the latter running from the boiler or other steam source in the locomotive. From the neck 10, which is opposite the neck 9, leads outward in the direction of the length of the train a supply-pipe 31, which communicates with the neck 9 of the trap-body, which is beneath the next car. In this manner the steam connection is carried throughout the train to the last trap-body, suitable couplings being employed between the cars. From the necks 11 and 12 extend laterally in opposite directions steam heating-pipes 32, said steam heating-pipes rising within the car and being doubled or coiled back and forth therein, as may be deemed necessary or desirable. With the neck 16 is adapted to be connected an air-pipe 33, which leads beneath the cars from the locomotive and is connected with the usual air-brake supply. Within the cab of the engine this air-pipe 33 is provided with a three-way valve 34 of the ordinary construction.

The condensed steam or water which ordinarily collects within the steam heating-pipes of a train and which, as is well known, operates to prevent the proper radiation of heat therefrom may by the use of our device run downward through the pipes 32 into the casing-body 1. The valves of the latter being normally in the positions indicated in Fig. 1 of the drawings it is evident that this condensation will accumulate within the lower portion of the trap and that the steam-pressure within said trap will serve to sufficiently depress the valves 28 and 29 to result in opening the former and closing the latter. It being desired to discharge the accumulated water from the trap the valve 28 may be closed and the valve 29 opened by the engineer so manipulating the three-way valve 34 as to direct the volume of air through the pipe 33 and thus beneath the piston 27. The air-pressure thus imparted to the under side of said piston-head must result in the latter rising within the cup 15 and in a consequent upward movement of the rod or stem 26, which will result in opening the valve 29 and closing the valve 28. The raising of the valve 29 must necessarily result in the accumulation of water therein running downward and passing out through the open lower end of the trap. During this operation it is obvious that the steam which enters through the neck 9 will be prevented from passing downward and outward with the water and that the passage of said steam through the upper portion of the trap-body will in no wise be effected during the operation of discharging the condensation.

From the operation above described it is evident that the valves 28 and 29 of all the

steam-traps will be raised simultaneously. The traps having thus been drained, the three-way valve 34 is so turned as to result in cutting off communication with the source of air supply and admitting of the air which has been employed in raising the valve exhausting itself.

By this construction and operation it is obvious that the necessity of employing a vacuum-pump or other similar means for relieving the steam heating-pipes of the condensation is entirely obviated and that simple, reliable, and effective means are provided for the discharge of this condensation without in any manner interfering with the proper operation of the heating apparatus.

In order to prevent too great a strain or contact between the valve 28 and its seat in the plate 7, the set-screw 19 may be so regulated as to result in the upper side of the piston-head 27 coming into contact with the lower end of said set-screw when the valve 28 has been raised the desired distance. This set-screw may, however, be omitted in cases where it is undesirable or unnecessary.

The tension of the spring 25 is such as to retain the valve 29 in a slightly-opened position when there is no steam-pressure on the upper sides of the valves, thus insuring a discharge of the condensation when the cars are at rest and the steam unemployed.

Having now fully described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In a steam-trap the combination with the trap-casing having an upper and lower compartment, a valve-opening between said compartments and a similar valve-opening in the bottom of said casing and pipe-necks leading outward from said upper compartment, one of said necks communicating with a source of steam-supply, of an air-chamber 15 arranged adjacent to said casing, an air-inlet in the lower portion thereof, a valve stem or rod 26 working through said air-chamber and in said trap-casing, a piston-head 27 on the upper end of said stem and valves 28 and 29 carried on said stem, said valves adapted to be operated as and for the purpose set forth.

2. In a steam-trap the combination with a trap-casing having a partition 7 and bottom plate 21, a valve-opening 8 in said partition and a similar opening 22 in said bottom plate, pipe-necks extending from the upper portion of said trap, of an air-operated valve stem or rod within said trap, valves 28 and 29 carried on said rod and a spring-support beneath said lower valve 29 and adapted to normally hold the latter in a slightly-open position, substantially as and for the purpose specified.

EDWARD Z. HERMANSADER.
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In presence of—

G. A. GASKELL,
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