

A. H. GIBSON.

PULSATOR.

APPLICATION FILED SEPT. 25, 1908.

915,950.

Patented Mar. 23, 1909.

Fig. 2.

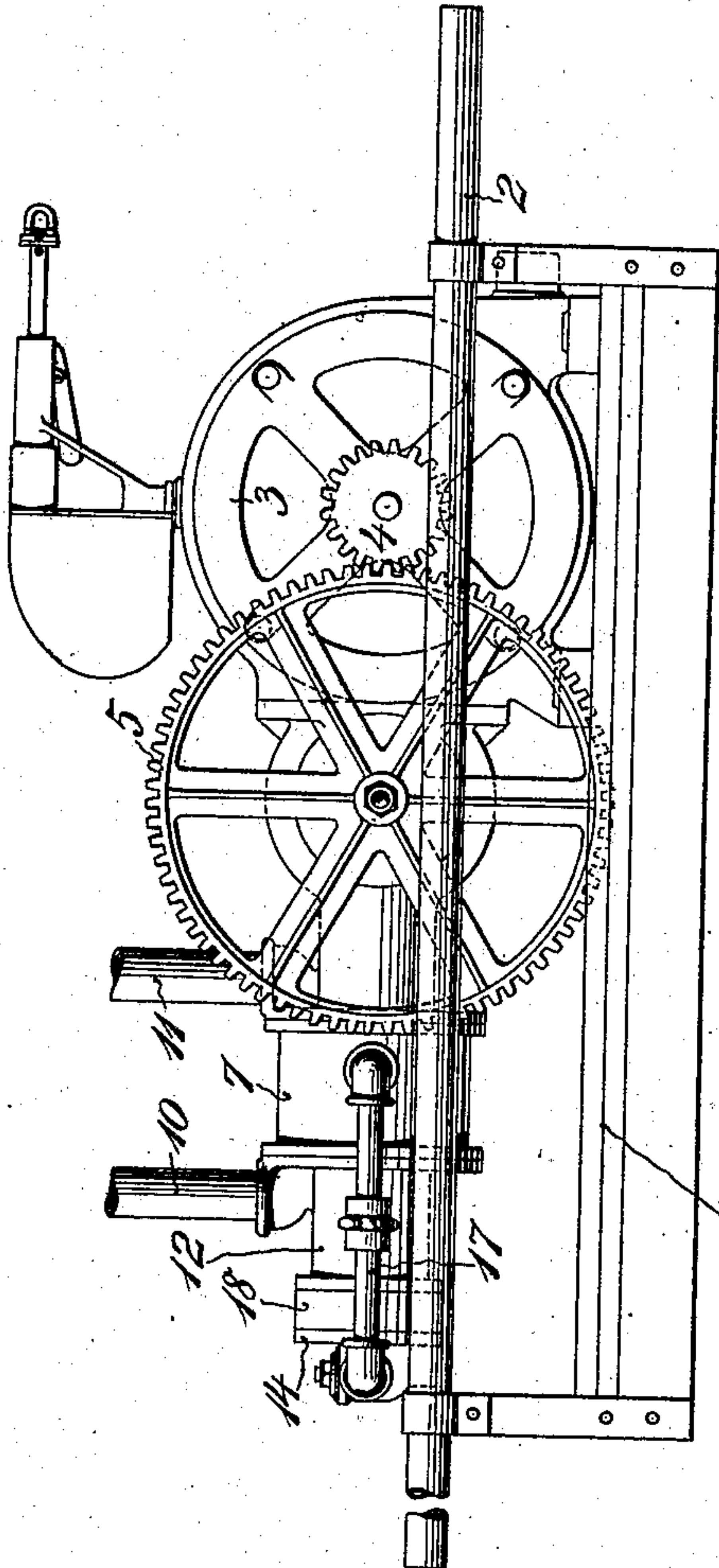


Fig. 3.

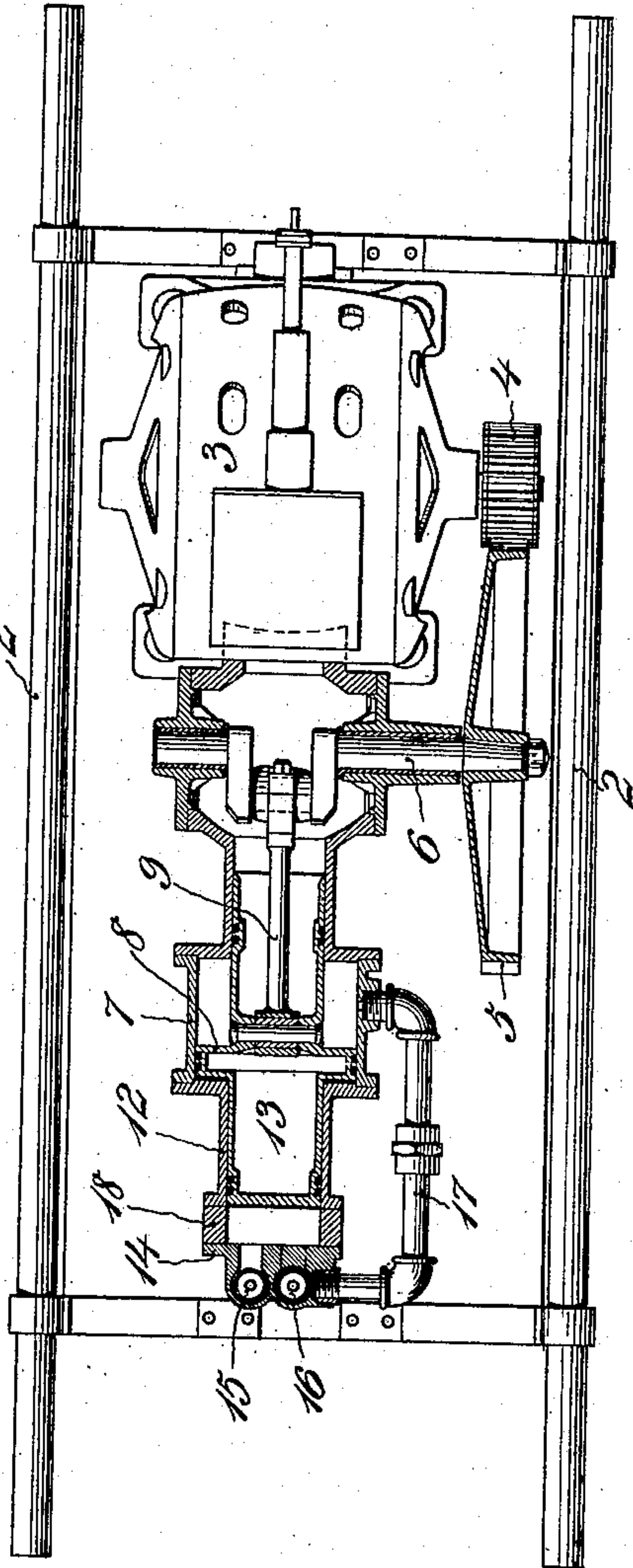
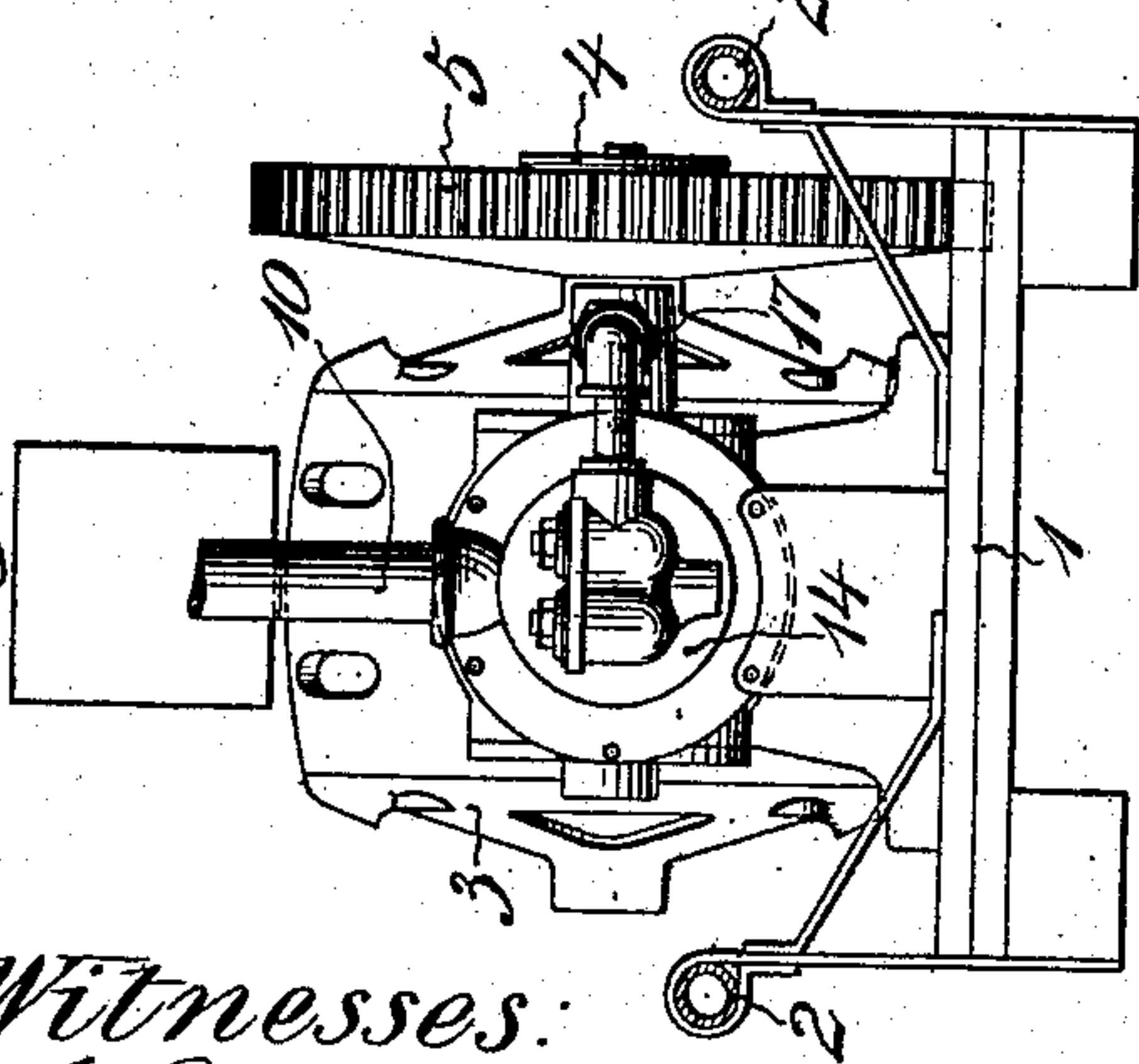


Fig. 1.



Witnesses:
M. G. Gibson
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UNITED STATES PATENT OFFICE.

ARTHUR H. GIBSON, OF EASTON, PENNSYLVANIA, ASSIGNOR TO INGERSOLL-RAND COMPANY,
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PULSATOR.

No. 915,950.

Specification of Letters Patent.

Patented March 23, 1909.

Application filed September 25, 1908. Serial No. 454,829.

To all whom it may concern:

Be it known that I, ARTHUR H. GIBSON, a subject of the King of Great Britain, and resident of Easton, in the county of Northampton and State of Pennsylvania, have invented a new and useful Improvement in Pulsators, of which the following is a specification.

This invention relates to improvements in fluid pulsators and has for its object to provide novel means for rendering the pulsator pump ineffective after the pressure has been raised to a predetermined degree in the pulsator system, said means consisting of a clearance space for the pump so that when the fluid pressure in the pulsator system has been raised to a predetermined degree, the power required to operate the pump is given back so that the energy consumed by the pump in compressing the fluid into the clearance space is given back to the pump on its backward movement thus preventing the wasting of the fluid and of the power consumed in operating the pump after the pressure in the system has reached a predetermined degree as has heretofore been common.

A practical embodiment of my invention is represented in the accompanying drawings, in which the invention is shown as applied to one of many different types of fluid pulsators.

Figure 1 represents in end elevation a portable electric motor driven pulsator with fluid pressure raising pump attached, Fig. 2 is a side view of the same, and Fig. 3 is a top plan view partially in horizontal central section.

The portable platform is denoted by 1 and its carrying handles by 2. The electric motor 3 is mounted on the platform and its driving pinion 4 engages the gear 5 of the crank shaft 6 of the pulsator.

The pulsator cylinder is denoted by 7 and its double acting piston by 8, which piston is connected to the crank shaft 6 by the pitman rod 9. Tubes 10 and 11 connect the opposite ends of the pulsator cylinder 7 with any desired tool, not shown herein.

The pump cylinder is denoted by 12 and its piston 13 forms a forward extension of the pulsator piston 8.

The head 14 of the pump is provided with an inlet valve 15 and a discharge valve 16. Communication is established from the discharge valve 16 to the interior of the pulsator cylinder 7 through a pipe 17.

A clearance ring 18 is interposed between the end of the pump cylinder 12 and its head 14, thereby forming a clearance space beyond the forward limit of movement of the pump piston 13. This piston space is of sufficient capacity to permit the fluid to be compressed therein up to the predetermined degree of pressure in the pulsator system so that when the pump has raised the pressure in the system up to said predetermined degree, the pump will be rendered ineffective until the pressure in the pulsator system falls below said predetermined degree because of leakage or from any other reasons. By providing this clearance space, after the pressure in the pulsator system has been raised to the desired degree, the fluid compressed within the clearance space by the forward movement of the pump piston will again expand as the pump piston moves rearwardly thus giving back the power consumed in compressing the same.

The inlet valve 15 will remain closed because the pressure thereon from within the pump will be equal to or greater than the pressure from the exterior according to the position of the pump piston. Also, the discharge valve 16 will remain closed owing to the pressure in the pulsator system thereon being greater than or equal to the pump pressure, according to the position of the pump piston.

A very simple way of increasing and diminishing the capacity of the clearance space to suit different degrees of working pressure required in the pulsator is provided by inserting clearance rings 18 of varying widths.

The provision of a clearance space for the pulsator pump also eliminates the necessity of wasting the fluid and power, as has heretofore been common, where safety valves or other regulating means open to the exterior have been employed.

While I have shown this invention in connection with a portable electric motor driven pulsator of a certain type, it is to be understood that this invention may be equally well applied in connection with the pumps of pulsators of any type; hence I do not wish to limit myself to the exact construction herein set forth, but

What I claim is:—

1. The combination with a fluid pulsator, of a pump for raising the pressure of the fluid in the pulsator, the said pump having

a clearance space for rendering the pump ineffective after the pressure in the pulsator has been raised to a predetermined degree.

2. The combination with a fluid pulsator, of a pump for raising the pressure of the fluid in the pulsator and a motor for operating the pulsator and pump, the said pump having a clearance space for rendering the pump ineffective after the pressure in the pulsator has been raised to a predetermined degree.

3. The combination with a fluid pulsator, of a pump for raising the pressure of the fluid in the pulsator, an inlet valve through which fluid is admitted to the pump and a discharge valve through which fluid is forced from the pump at pressure into the pulsator, the said pump having a clearance space for rendering the inlet and discharge valves ineffective after the pressure in the pulsator has been raised to a predetermined degree.

4. The combination with a fluid pulsator, of a pump for raising the pressure of the fluid in the pulsator, an inlet valve through which fluid is admitted to the pump, a discharge valve through which fluid is forced from the pump at pressure into the pulsator, and a motor for operating the pulsator and pump, the said pump having a clearance space for rendering the inlet and discharge valves ineffective after the pressure in the pulsator has been raised to a predetermined degree.

5. The combination with a fluid pulsator, of a pump for raising the pressure of the fluid in the pulsator, the pump cylinder having a clearance space beyond the forward limit of movement of the pump piston for rendering the pump ineffective after the

pressure in the pulsator has been raised to a predetermined degree.

6. The combination with a fluid pulsator, of a pump for raising the pressure of the fluid in the pulsator, and a motor for operating the pulsator and pump, the pump cylinder having a clearance space beyond the forward limit of movement of the pump piston for rendering the pump ineffective after the pressure in the pulsator has been raised to a predetermined degree.

7. The combination with a fluid pulsator, of a pump for raising the pressure of the fluid in the pulsator, the pump cylinder being provided with a clearance ring forming a clearance space beyond the forward limit of movement of the pump piston for rendering the pump ineffective after the pressure in the pulsator has been raised to a predetermined degree.

8. The combination with a fluid pulsator, of a pump for raising the pressure of the fluid in the pulsator and a motor for operating the pulsator and pump, the pump cylinder being provided with a clearance ring forming a clearance space beyond the forward limit of movement of the pump piston for rendering the pump ineffective after the pressure in the pulsator has been raised to a predetermined degree.

In testimony, that I claim the foregoing as my invention, I have signed my name in presence of two witnesses, this eighteenth day of September, 1908.

ARTHUR H. GIBSON.

Witnesses:

WARD RAYMOND,
JOHN MILLER.