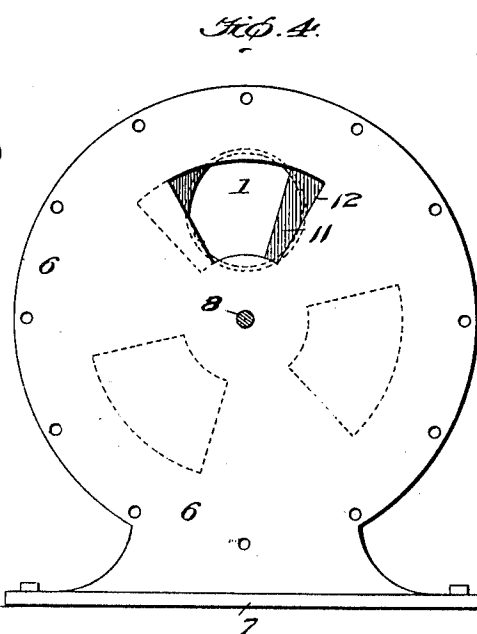
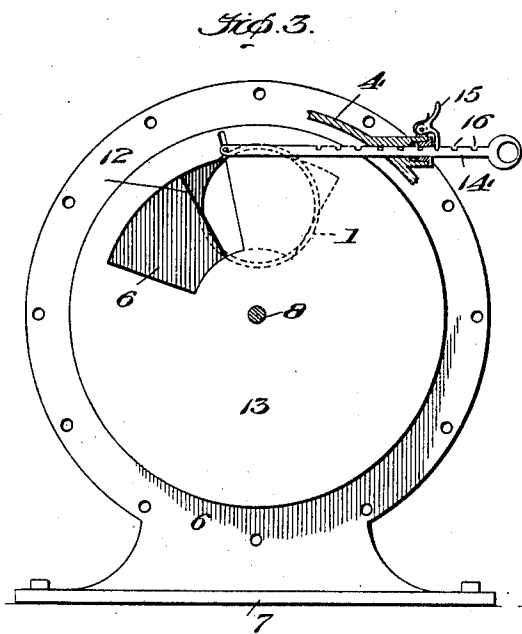
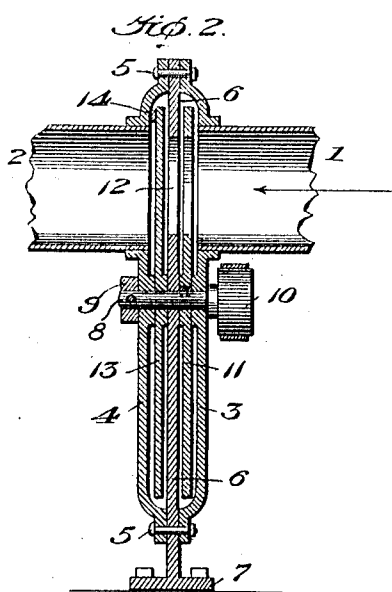
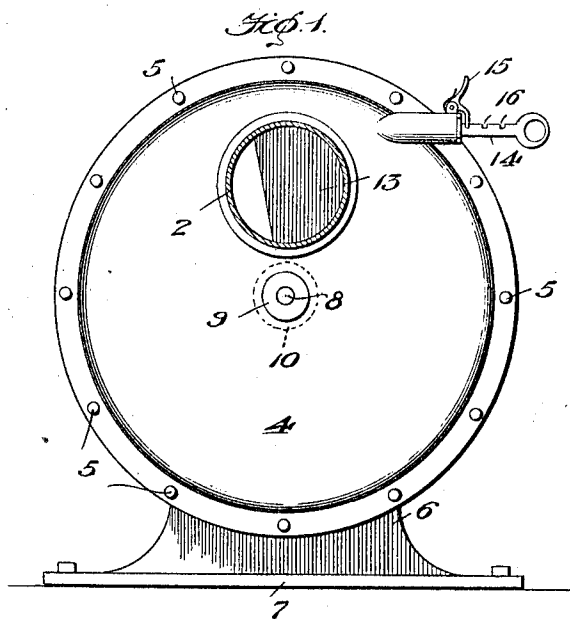


C. C. GLIDDEN.
 FLUID PULSATING APPARATUS.
 APPLICATION FILED FEB. 20, 1909.

969,782.

Patented Sept. 13, 1910.



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Witnesses

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FLUID PULSATING APPARATUS.

969,782.

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To all whom it may concern:

Be it known that I, CHARLES C. GLIDDEN, a citizen of the United States, residing at Birmingham, in the county of Jefferson and State of Alabama, have invented new and useful Improvements in Fluid Pulsating Apparatus, of which the following is a specification.

My invention relates to an improvement in an apparatus for producing pulsations in blasts of air, steam or any fluid, and comprises essentially an apertured diaphragm interposed in a pipe line and provided with a cooperating rotatable valve and a damper.

My invention also comprises the details of construction and arrangement of parts hereinafter more particularly described and claimed, reference being had to the accompanying drawings forming a part hereof, and in which:—

Figure 1 is an end elevation of the pulsator casing. Fig. 2 is a vertical transverse section through the casing. Fig. 3 shows the casing with the side removed to show the rotatable valve. Fig. 4 is a similar view with the valve removed showing the diaphragm.

Similar reference numerals refer to similar parts throughout the drawings.

My improved pulsating apparatus is interposed in a pipe line consisting of the inlet pipe 1 and the outlet pipe 2, both of which have their adjacent ends inserted and secured in opposite port openings in the dished plates 3 and 4, respectively. These plates are connected by bolts 5 to the diaphragm 6 which has an opening in line with the pipes 1 and 2. The diaphragm is formed integral with or connected to a suitable base 7 which may be connected to any desired support. The plates 3 and 4 are dished sufficiently to provide annular chambers on each side of the diaphragm 6. Through the center of the diaphragm a shaft 8 passes, being suitably mounted in bosses in the plates 3 and 4 and having keyed to one end a nut 9 and to the other end a pulley 10 by means of which it is rotated.

In the chamber formed between the plate 3 and the diaphragm 6, I interpose a rotatable disk valve 11 which is fixed on the shaft 8 by means of the key 17 and provided with one or more openings, as seen in Fig. 3, which are so positioned as to register with the port 12 in the diaphragm, and

when in register with the same to thereby open and establish communication between the pipes 1 and 2 for the intermittent or pulsatory flow of fluid therethrough.

In the chamber formed between the plate 4 and the diaphragm 6 I interpose a damper 13 having an opening therein also positioned so as to register with the opening 12 in the diaphragm. By adjusting the damper 13, which is seated loosely on the shaft 8, the extent to which the port 12 is open for the passage of air, steam or other fluid is regulated. To set the damper, I provide an adjusting rod 14 which passes out of the casing through a suitably packed opening in the side of the plate 4 and is provided with a dog 15 which engages a suitable rack 16 and serves to hold the damper in any desired or adjusted position.

In operation, the power being applied by belt or otherwise to the pulley 10, the disk valve 11 will be rotated and the ports therein successively brought into register with the port 12 in the diaphragm. When the ports are in register the air or fluid flows through the diaphragm to the outlet pipe 2 and when they are out of register the flow of fluid is cut off. As a result a pulsatory flow of the fluid is effectively obtained, the number of the fluctuations per minute being governed by the speed of rotation of the valve and the volume of fluid in each pulsation being regulated and governed by the adjusted position of the damper.

This apparatus is of general use in any case where it is desired to utilize an interrupted or pulsatory blast of air, steam or fluid of any character, but is more particularly adapted for use in connection with pneumatic separating apparatus for separating materials of different specific gravities.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. In an apparatus for pulsating fluid, a casing interposed in a pipe line, a diaphragm partition dividing said casing into intake and outlet chambers and having an aperture in alinement with and of substantially the same diameter as said pipe line, a rotatable disk valve pivoted centrally of said casing which moves over said diaphragm as a seat and has one or more ports of substantially equal area with said aperture which register with and intermittently

open and close said aperture in said diaphragm, and an adjustable damper to vary the cross-sectional area of the aperture in the diaphragm, substantially as described.

5 2. In an apparatus for producing a pulsatory flow of fluid, a pipe line, a casing interposed in said pipe line and comprising two dished plates to which the adjacent ends of the sections of the pipe line are

10 eccentrically joined, a diaphragm which divides said casing transversely and has an aperture in alinement with the pipe sections and of substantially the same diameter as the pipe line, a shaft journaled in said casing,

15 an annular disk valve keyed to said shaft and positioned on the intake side of the casing and having a plurality of ports of like diameter with the said aperture with which they register successively, a damper

20 valve adjustably supported by said shaft and interposed in the outlet side of the casing, a rod to adjust said damper valve which projects without said casing, means to pack said rod, and means to hold said

25 rod in any desired position, substantially as described.

3. In an apparatus for producing a pulsatory flow of fluid, a pipe line, a casing interposed in said line, a transverse partition dividing said casing into intake and outlet 30 chambers and having a single port in alinement with and of like diameter to the oppositely positioned openings in said casing for said pipe line, a rotatable valve mounted in the intake side which moves over said 35 partition as its seat and intermittently and fully uncovers the port therein which establishes communication between the chambers of said casing, means to rotate said valve, and an adjustable regulating valve 40 disposed in the outlet chamber and adapted to adjust the effective extent to which the port in said partition is opened by said valve for the passage of fluid between said chambers, substantially as described. 45

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

CHARLES C. GLIDDEN.

Witnesses:

NORVIL WELSH,
ANNIE L. PEACE.