J. E. ENGLESSON.

ENERGY ABSORBER.

APPLICATION FILED JUNE 27, 1912.

1,090,100. Patented Mar. 10, 1914.

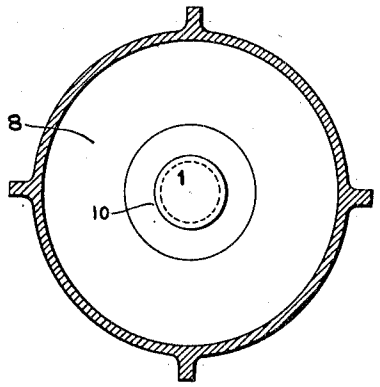


FIG. 2.

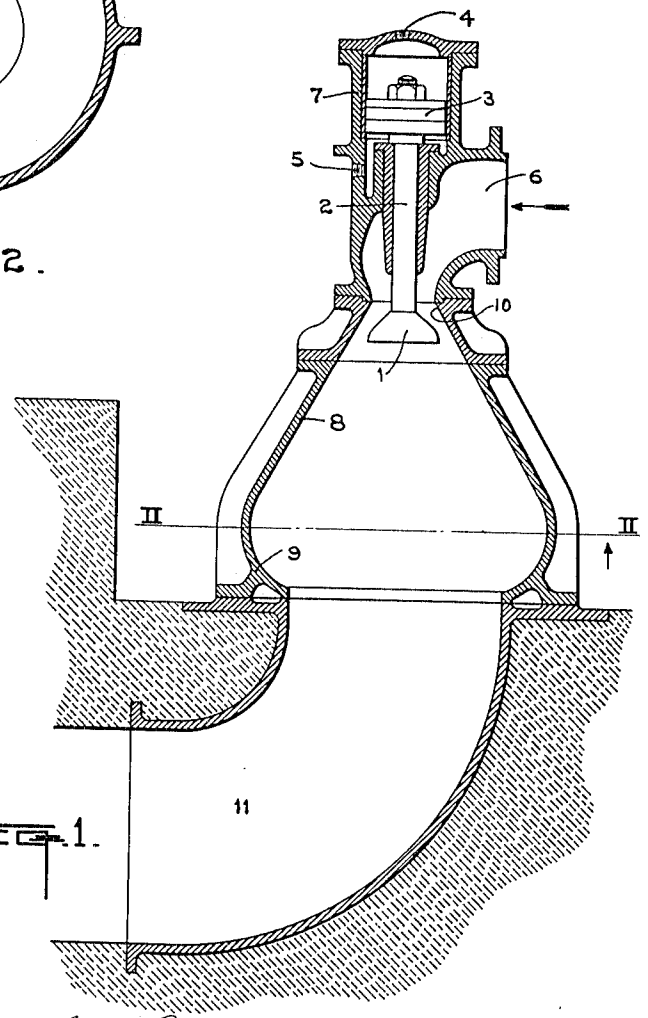


FIG. 1.

WITNESSES-

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ENERGY-ABSORBER.

1,090,100. Specification of Letters Patent. Patented Mar. 10, 1914.

Application filed June 27, 1912. Serial No. 706,309.

To all whom it may concern:

Be it known that I, JOHN ELOV ENGLESSON, a subject of the King of Sweden, residing at Karlskrona, Sweden, have invented a certain new and useful Improvement in Energy-Absorbers, of which the following is a specification.

This invention relates to improvements in the construction of devices adapted to absorb the energy of a jet of fluid, such as water, which is delivered with considerable velocity from a nozzle or other valve device.

The object of the invention is to provide a device which will effectively absorb the energy of a jet of fluid delivered with considerable velocity from a valve device, without permitting undesirable wearing away of the absorbing or arresting medium.

A clear conception of an embodiment of the invention may be had by referring to the drawing accompanying and forming a part of this specification in which like reference characters designate the same parts in the different views.

Figure 1 is a central vertical section through an energy absorber and valve device. Fig. 2 is a transverse horizontal section through the energy absorber, the section being taken along the line II—II of Fig. 1 looking in the direction of the arrow.

The energy absorber as disclosed consists essentially of a hollow conical casing 8 having an apex portion 10 at one end thereof and a reëntrant portion 9 at the opposite end thereof. The inlet 6 connects with an opening through the apex portion 10. The free discharge 11 connects with an opening through the reëntrant portion 9 at the base of the casing 8. The valve 1 is co-axial with the conical casing 8 and is adapted to control the inlet passage through the inlet portion 10 at the apex of the conical casing 8.

The valve actuating cylinder 7 is divided into upper and lower piston chambers by the piston 3. The piston 3 is fixed to the upper end of the valve stem 2, the lower end of which carries the valve 1. Ports 4, 5 are adapted to admit and exhaust fluid to and from the upper and lower piston chambers respectively thereby providing means for positioning or adjusting the valve 1.

During the normal operation of the device, fluid under pressure is admitted to the inlet 6 from which it passes through the apex portion 10 of the conical casing 8. If the valve 1 is positioned away from the walls of the casing 8, as shown in Fig. 1, an annular passage connecting the inlet 6 with the interior of the casing 8 is formed. Fluid under pressure from the inlet 6 may then pass in the form of an annular jet, through the valve 1 and along the diverging interior surface of the walls of the casing 8. The jet after leaving the valve opening takes the form of a film as it travels along the inner diverging surface of the walls of the casing 8. When the film of water reaches the reëntrant portion 9 of the casing 8, it is deflected inwardly toward the axis of the casing 8. If the fluid after leaving the portion 9 has sufficient velocity to carry it beyond the axis of the casing 8, it strikes the fluid which is discharged from the portion 9 at a point opposite from its own leaving point, thereby automatically arresting its velocity. After the energy of the fluid has been thus absorbed, the fluid drops by gravity into the discharge 11.

The valve 1 may be adjusted toward the diverging walls of the casing 8 to throttle the passage between the valve 1 and casing 8, by admitting fluid under pressure through the port 5 to the lower piston chamber. Any pressure which may have been previously established in the upper piston chamber is relieved through the port 4. The formation of the upper surface of the valve 1, and the wall surface at the apex of the casing 8 adjacent the valve, is such that the fluid passing through the valve opening is guided in the direction of the diverging casing walls no matter what the position of the valve 1 may be. The fluid during its passage along the diverging walls of the casing 8 is gradually forced to flow along the reëntrant portion 9 of the casing 8, thereby absorbing considerable energy by causing a change in the direction of flow of the fluid. The adjustment of the valve 1 away from the diverging walls of the casing 8 is accomplished by relieving the pressure in the lower piston chamber through the port 5.

The form of the invention disclosed is particularly adapted for use in hydraulic installations although the invention is applicable wherever it is desired to absorb the energy of a jet of fluid leaving a valve device at considerable velocity. It will be understood that it is not essential to have the diverging walls conical in form as

shown, it being necessary only to have the walls diverging at a point directly adjacent the valve 1 on the discharge side thereof.

It should be generally understood that it is not desired to limit the invention to the exact details herein shown and described for various modifications will appear to a person skilled in the art.

It is claimed and desired to secure by Letters Patent,—

1. In an energy absorber, a hollow conical casing, and a valve near the apex of said casing adjustable toward and from the walls of said casing to form an annular port between the valve and casing, the base portion of the walls of said casing remote from said valve being reëntrant, and said casing having a free discharge at said base portion.

2. In an energy absorber, a hollow casing having walls diverging from one end thereof, a free discharge remote from said end of said casing, and a valve near said end of said casing adjustable toward and from said walls to form a port between said valve and casing, a portion of the walls of said casing remote from said valve being reëntrant.

3. In an energy absorber, a hollow conical casing, and a valve near the apex of said casing and movable toward said apex to throttle the passage between said valve and casing, the base portion of the walls of said casing remote from said valve being reentrant, and said casing having a free discharge at said base portion.

4. In an energy absorber, a hollow casing having walls diverging from one end thereof, a free discharge remote from said end of said casing, and a valve near said end of said casing and adjustable toward said end to throttle the passage between said valve and casing, a portion of the walls of said casing remote from said valve being reëntrant.

5. In an energy absorber, a hollow casing forming a chamber free from obstruction and having the walls diverging from one end thereof, a free discharge remote from said end of said casing, and a valve at said end of said casing and adjustable toward said end to throttle the passage between said valve and casing, a portion of the walls of said casing remote from said valve being reëntrant.

In testimony whereof, the signature of the inventor is affixed hereto in the presence of two witnesses.

J. ELOV ENGLESSON.

Witnesses:
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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."