

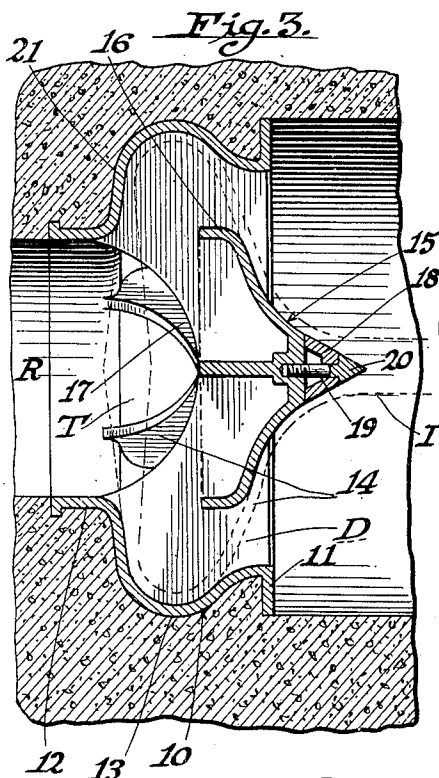
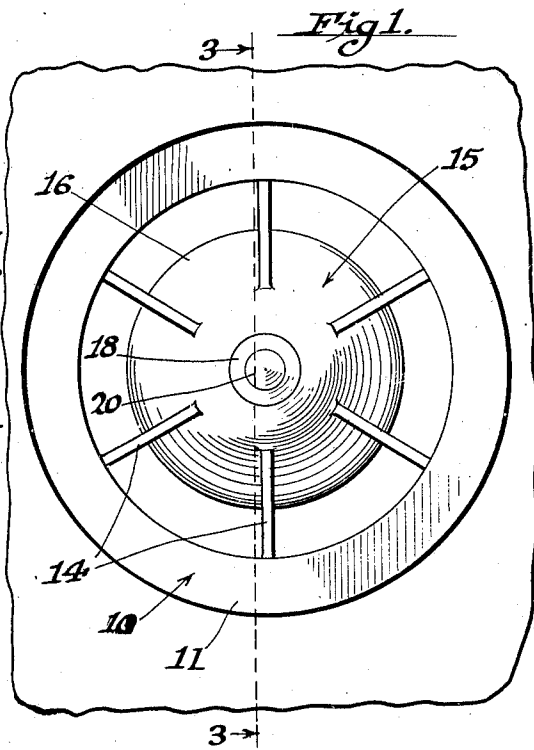
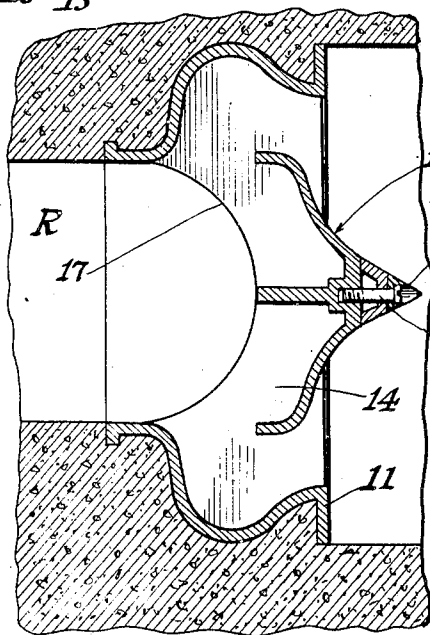
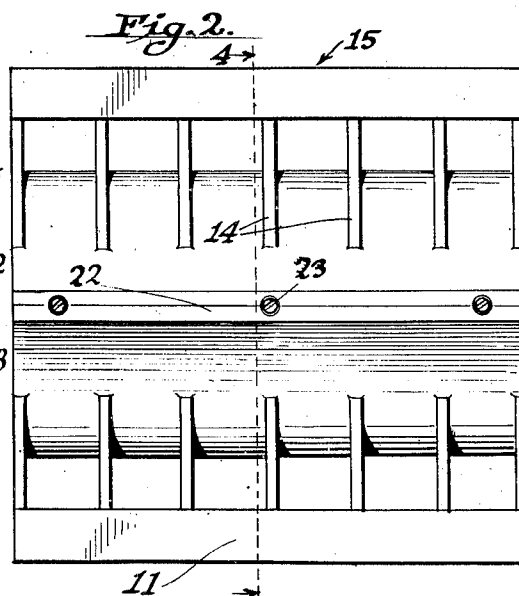
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F. GFELLER

KINETIC ENERGY ABSORBER

Filed Nov. 20, 1924



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UNITED STATES PATENT OFFICE.

FREDERICK GFELLER, OF ALHAMBRA, CALIFORNIA, ASSIGNOR TO THE PELTON WATER WHEEL CO., OF SAN FRANCISCO, CALIFORNIA, A CORPORATION OF CALIFORNIA.

KINETIC-ENERGY ABSORBER.

Application filed November 20, 1924. Serial No. 751,133.

To all whom it may concern:

Be it known that I, FREDERICK GFELLER, a citizen of the United States, residing at Alhambra, in the county of Los Angeles and State of California, have invented new and useful Improvements in Kinetic-Energy Absorbers, of which the following is a specification.

This invention relates to improvements in kinetic energy absorbers or velocity reducers for fluid streams. The invention is especially adapted for use in connection with jets employed for driving water wheels in hydro-electric power plants.

An object of the invention is to provide a device adapted to be placed in front of a jet at a position back of the water wheel, which will reduce the velocity of the jet and deliver the water of the jet into the tail race at a reduced velocity. The device essentially consists of a dividing or spreading member adapted to divide the initial stream or jet, and a converging member which is adapted to receive, divert and direct the divided streams toward each other at a point back of the point of division of the initial stream.

Several devices have been heretofore employed for accomplishing the above mentioned purpose, but these devices, while dividing the initial stream, cause the divided streams to be directed toward each other at a point forwardly of the point of division of the initial stream so that water tends to pile up upon the device and hinder its efficiency.

With the foregoing and other objects in view which will be made manifest in the following detailed description and pointed out in the appended claims, reference is had to the accompanying drawings for an illustrative embodiment of the invention, wherein:

Figure 1 is a front elevation of one form of the invention;

Fig. 2 is a front elevation of another form of the invention;

Fig. 3 is a section which may be considered as being taken on the line 3—3 of Fig. 1; and

Fig. 4 is a section taken substantially on the line 4—4 of Fig. 2.

Referring to the accompanying drawings

wherein similar reference characters designate similar parts throughout, the improved device consists of a body 10 provided with a front flange 11 and a reduced rear portion 12. The side walls of the body are bulged out, as indicated at 13. Extending inwardly from the body 10 which constitutes the converging member of the device there is provided a plurality of ribs 14, which support a central member 15 having curved forward surfaces. The member 15 constitutes the dividing or spreading member of the device and has its rear edges straightened, as indicated at 16. The forward edges of the ribs 14 are preferably approximately flush with the flange 11 and the rear edges of the ribs 14 are preferably semi-circular in outline, as indicated at 17. The forward portion of the dividing member 15, as indicated at 18, is separate from the body of the dividing member 15 and is secured thereto by means of a bolt 19 which may have a sharpened head 20.

The operation of the device is as follows: The jet of water constituting the initial fluid stream, indicated at I, strikes the forward portion of the dividing member 15 and is divided into a plurality of streams indicated by the dotted line D upon Fig. 3. The bowed portion 13 of the converging member 10 receives the divided streams D and directs them toward each other, as indicated by the dotted lines T upon Fig. 3. As a result, the particles of water of each of the divided streams are directed in substantially opposite directions and upon striking each other have their velocity greatly reduced. When the water of the divided streams has its velocity reduced in this manner, it is allowed to flow away through the tail race R, which is of a considerably greater diameter than the diameter of the initial stream I. Obviously, the in-turned portions, indicated at 21 upon Fig. 3, may be at an angle substantially perpendicular to the direction of the initial stream I. In the preferred form of construction, these portions 21 are slightly inclined away from the dividing member 15, so that the divided streams D are directed toward each other and in a direction toward the tail race R, so that, although the water of the divided stream D has its velocity greatly re-

duced, the water has sufficient velocity to cause the water to readily flow into the tail race R. The exact inclination of the portions 21 may be varied under various conditions.

As shown in Fig. 1, the dividing member 15 is circular in form and the converging member 10 is circular in form and disposed about the dividing member. The ribs 14 which hold the dividing member within the converging member are in this form radial. The device disclosed in Fig. 1 is adapted to be used in reducing the velocity of a single jet. In the device, as disclosed in Fig. 2, the dividing member 15 is elongated in form and the converging member 10 is disposed thereabout and is also elongated in form. The ribs 14 are parallel and serve to support the dividing member centrally of the converging member.

The device disclosed in Fig. 2 may be employed with one or more jets, which jets may be arranged in horizontal alignment or in vertical alignment. If the jets are vertically disposed, the device, as disclosed in Fig. 2, will be positioned so that the dividing member has its forward dividing edge arranged vertically and the ribs 14 will be disposed horizontally.

The renewable forward portion 18 of the device disclosed in Fig. 1 is conical in form and the head 20 of the bolt 19 forms the apex of the cone. These members are adapted to be renewed or replaced upon becoming worn. In the device disclosed in Fig. 2, the forward portion 18 has a strip 22 providing the dividing edge of the dividing member and this strip together with the portion 18 are secured to the body of the dividing member 15 by means of bolts or screws 23. The ribs 14 provide a guide for the water, as it passes from the dividing member 15 into the converging member 10.

The improved device enables the initial stream I to be divided and causes the divided streams to be opposed at a point back of the point of the division of the initial stream so that there is no tendency for water to pile up and be struck by the initial stream or jet I.

It will be understood that various changes in the detail of construction may be made without departing from the spirit or scope of the invention as defined by the appended claims.

I claim:

1. A kinetic energy absorber for absorbing the kinetic energy of a fluid stream comprising means for dividing the stream, and means for causing the divided streams to be directed toward each other behind the point of division of the initial stream.

2. A kinetic energy absorber for reducing the velocity of fluid streams comprising a

dividing member adapted to divide the initial stream, and a converging member associated with said dividing member adapted to direct the divided streams toward each other at a point behind the point of division of the initial stream.

3. A kinetic energy absorber for reducing the velocity of fluid streams comprising a dividing member adapted to divide the initial stream, and a converging member associated with said dividing member adapted to collect, divert and direct the divided streams toward each other at a point behind the point of division of the initial stream.

4. A kinetic energy absorber for reducing the velocity of fluid streams comprising a dividing member adapted to divide the initial stream, and a converging member associated with said dividing member adapted to collect, divert and direct the divided streams toward each other at a point behind the point of division of the initial stream, said dividing member being provided with a renewable foremost dividing member.

5. A kinetic energy absorber for reducing the velocity of fluid streams comprising a dividing member, a converging member, and ribs securing said members together, said dividing member being adapted to divide an impinging stream, and said converging member being adapted to direct the divided streams toward each other and rearwardly from the dividing member.

6. A kinetic energy absorber for reducing the velocity of fluid streams comprising a dividing member, a converging member, and ribs securing said members together, said dividing member being adapted to divide an impinging stream, and said converging member being adapted to direct the divided streams toward each other and rearwardly from the dividing member, said dividing member being provided with a renewable foremost dividing portion.

7. A kinetic energy absorber for reducing the velocity of fluid streams comprising a dividing member, a converging member, and ribs securing said members together, said dividing member being adapted to divide an impinging stream, and said converging member being adapted to direct the divided streams toward each other behind the point of division of the impinging stream.

8. A kinetic energy absorber for reducing the velocity of fluid streams comprising a dividing member, a converging member, and ribs securing said members together, said dividing member being adapted to divide an impinging stream, and said converging member being adapted to direct the divided streams toward each other behind of and away from the point of division of the impinging stream.

9. A kinetic energy absorber for reducing the velocity of fluid streams comprising

means for dividing the initial stream, and means for collecting the divided streams and directing them rearwardly from the dividing means.

- ⁵ 10. A kinetic energy absorber for reducing the velocity of fluid streams comprising a dividing member adapted to divide the

initial stream, and a member associated with the dividing member adapted to collect and direct the divided streams rearwardly from the dividing member. 10

In testimony whereof I have signed my name to this specification.

FREDERICK GFELLER.