A. J. COLLAR.

FISH SCREEN.

APPLICATION FILED OCT. 21, 1912.

1,076,483. Patented Oct. 21, 1913.

Fig. 1.

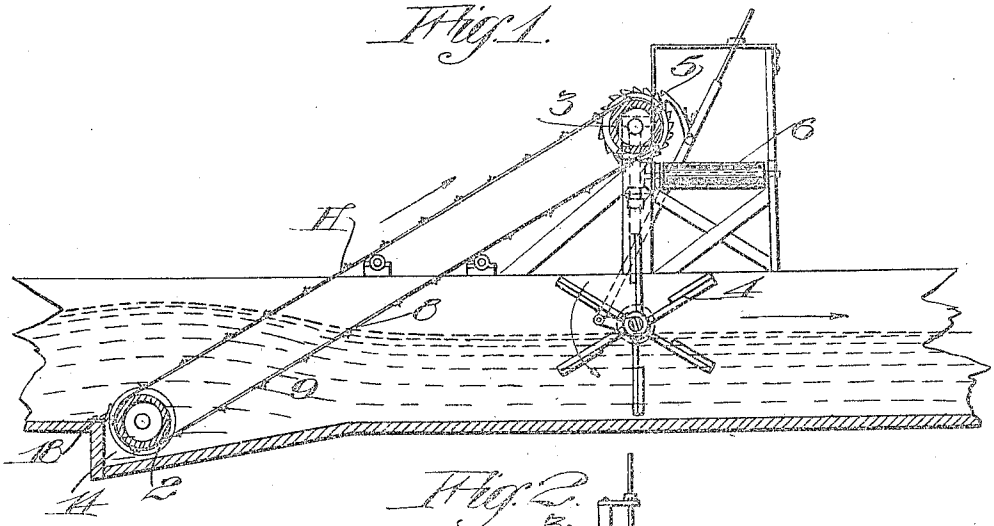
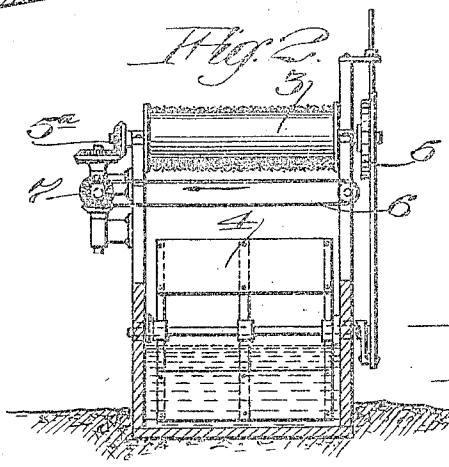


Fig. 2.



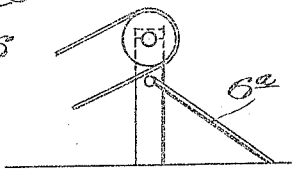


Fig. 3.

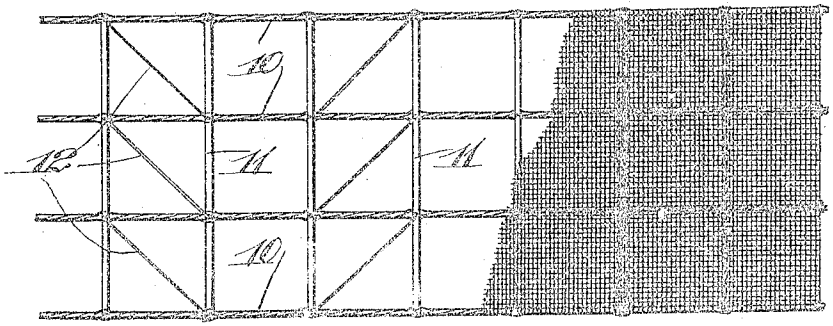


Fig. 4.

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FISH-SCREEN.

1,076,483. Specification of Letters Patent. Patented Oct. 21, 1913.

Application filed October 21, 1912. Serial No. 726,388.

To all whom it may concern:

Be it known that I, ADONIRAM J. COLLAR, a citizen of the United States, residing at Yreka, in the county of Siskiyou and State of California, have invented new and useful Improvements in Fish-Screens, of which the following is a specification.

This invention relates to fish screens and in particular to that kind used in artificial waterways.

The object of this invention is to provide a simple, substantial and reliable fish screen which may be placed in a ditch or flume, for the purpose of preventing small fish and like animal life which lives in the head waters from entering these artificial waterways, where they would eventually meet sure destruction.

Another object of the invention is to provide a screen which will automatically clear itself of any material, such as moss or other floating debris, which would have a tendency to clog it and obstruct the passage or flow of water, and yet form an effectual barrier or screen to prevent the passage of fish.

It also consists of certain other novel constructions, combinations and arrangements of parts, all of which will be hereinafter more fully described in the following specifications and drawings, in which—

Figure 1 is a side elevation in section, showing the application of the invention. Fig. 2 is a cross section of same. Fig. 3 is a detail view showing a modification in construction. Fig. 4 is a plan view showing the construction of the reinforcing for larger screen belts.

Where water is taken from natural headwaters or streams through artificial ditches or flumes to be used for different purposes, such as irrigation, placer-mining, milling, and power purposes, it often happens that small fish living in such streams are carried into these artificial waterways, and if some means is not employed to prevent their passing into these waterways, it can easily be seen that they will eventually meet a sure destruction. With the object in view of preventing useless destruction of this kind, I have constructed a simple, reliable and substantial fish screen in which A indicates an endless screen belt mounted upon flanged drums 2 and 3, appropriately journaled in the sides of the flume or any other suitable frame work, and which are so positioned with relation to each other that the screen will assume a suitable angle with relation to the flowing stream, as shown in Fig. 1.

For the purpose of continuously presenting a cleaned screen surface which will cause no obstruction to the flowing stream, I have provided a current wheel 4 of suitable diameter in such a position on the flume that the rotary motion of the current wheel shaft may be transmitted to the upper of the screen carrying drums 3, and turn this, thus causing the belt to travel or move at a certain speed with relation to the revolution of the current wheel. This is effected by an intermittent movement of the belt, effected by a crank upon the current wheel 4, a slidably guided rod connected therewith, having a pawl 5 pivoted to it, and a ratchet wheel fixed to the drum 3 and engaged by the pawl to advance it and the belt at each revolution of the wheel. The debris carried up by the endless inclined screen may be deposited upon a transverse conveyer 6 which is driven by gears, as 5^a and 7,—or if found desirable the floating debris taken from the flume and carried up by the endless belt, may be delivered off the upper end of the belt upon an incline 6^a and returned into the flume beyond the current wheel 4 as shown in Fig. 3. The advantage of the intermittent movement of the belt is that if small fish are brought along the flume and picked up by the belt, the stoppage in the movement of the belt, and its incline, will enable the fish in their struggles, to regain the water in the flume and escape.

In small flumes from 2 to to 3 feet in width, any ordinary wire screen, as door screen, may be used, as this is strong enough and may be easily and cheaply replaced when necessary.

In Fig. 4 I have shown a reinforcing to go under the screen, which is only used in larger flumes. This consists of a suitable number of endless steel cables 10, spaced a suitable distance apart by cross rods or bars 11, riveted or otherwise secured to the cables. The screen is secured to this reinforcing by small pieces of wire, which are pulled through the screen and twisted at the ends. These are cut off about one-eighth ($\frac{1}{8}$) of an inch above the surface and have proved of great assistance in carrying rubbish over. When desired or necessary, small brace wires 12 may be placed diagonally across the steel cables. This will help to stiffen

the belt and keep it true on the pulleys. In some cases it has proven of great advantage to cut the screen material in strips about one (1) foot in width, which are laid across the belt and secured by wiring. This method is preferable where heavy screen material is used, for the reason that the screen sections are bent more or less in passing over the drums, and when secured as here described, would not need to straighten out in passing on the straight stretch from drum to drum, as all strain and weight is taken up by the cables.

The lower drum 2 may be let into a recess 14 in the flume so as not to deflect or disturb the current flow in the flume. On the up stream side of the drum may be placed a flexible narrow strip 18 of any suitable material. This is secured to the bottom of the flume, and keeps fish from getting down under the drum and yet will swing up and let any little stick or other material which may happen to stick into the screen pass up by. It is obvious that similar strips not here shown may be placed on the sides of the screen to serve the same purpose.

The apparatus is simple in construction, prompt and reliable in action, and takes no more space than other screens.

The material and finish of the several parts of the apparatus are such as experience and judgment of the manufacturer may dictate.

I wish it understood that various changes in form, proportions and minor details of construction may be resorted to within the scope of the appended claim, and that I do not wish to limit myself to the specific design and construction here shown.

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

A fish screen attachment for flumes and the like, including a flume, transversely journaled flanged drums located, one beneath the surface of the flowing water, and the other above the flume and in advance of the first named drum, an endless belt fitted to said drums, means by which the drift material elevated by the belt may be transferred to the flume beyond the belt, and means to produce an intermittent movement of the belt, said means including a current wheel journaled in the flume beneath the upper belt drum, and having a crank in its shaft, a slidably guided connecting rod having a pawl pivoted to its upper end, and a ratchet wheel upon the upper drum shaft, with which the pawl engages at each reciprocation of the rod.

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

ADONIRAM J. COLLAR.

Witnesses:
C. J. LUTTRELL,
G. F. HELLMUTH.