

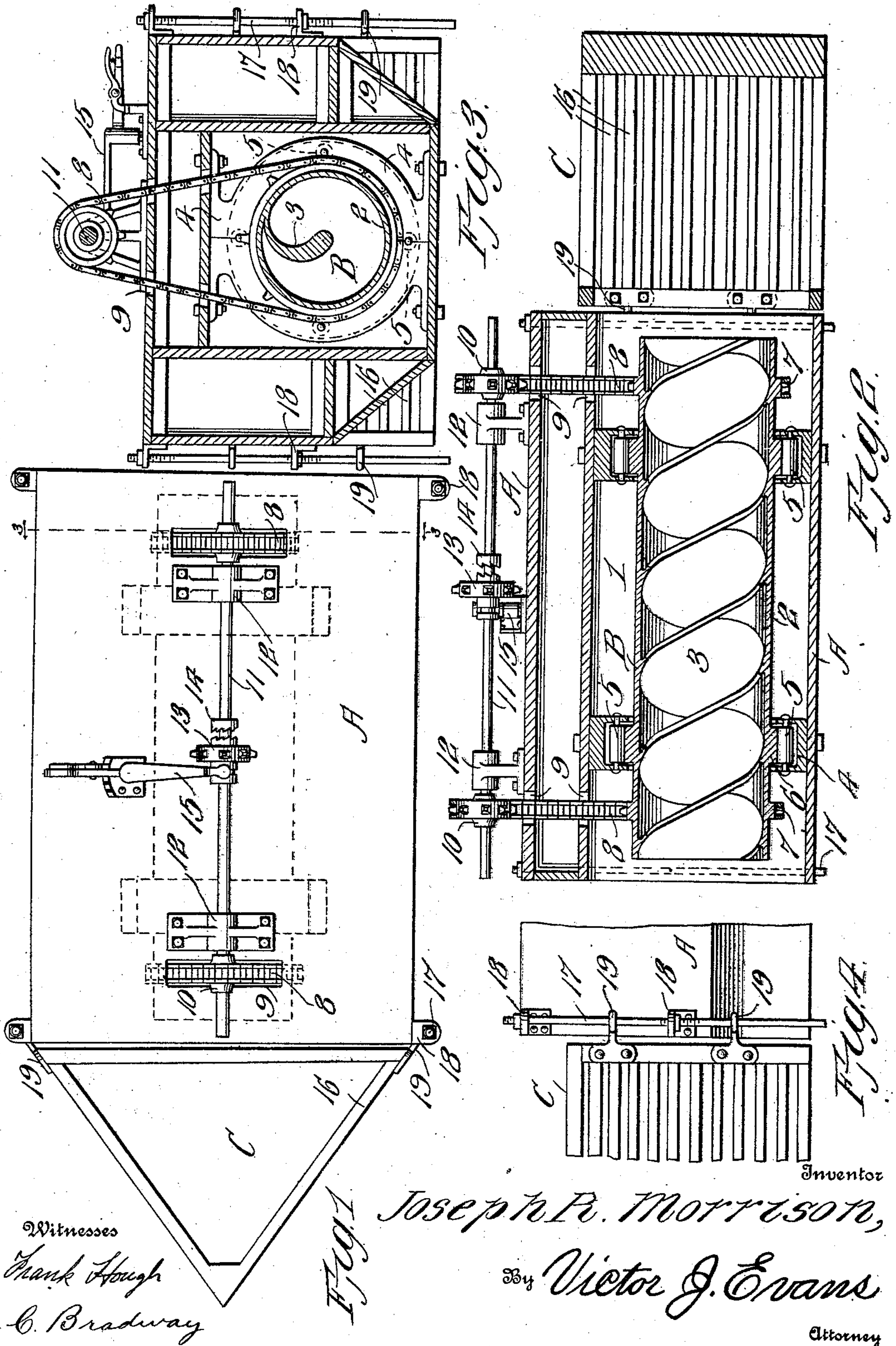
J. R. MORRISON.

MOTOR.

APPLICATION FILED OCT. 6, 1908.

928,782.

Patented July 20, 1909.





# UNITED STATES PATENT OFFICE.

JOSEPH R. MORRISON, OF KENNEWICK, WASHINGTON.

## MOTOR.

No. 928,782.

Specification of Letters Patent.

Patented July 20, 1909.

Application filed October 6, 1908. Serial No. 456,445.

*To all whom it may concern:*

Be it known that I, JOSEPH R. MORRISON, a citizen of the United States, residing at Kennewick, in the county of Benton and State of Washington, have invented new and useful Improvements in Motors, of which the following is a specification.

This invention relates to a motor of the spiral or screw type adapted to be actuated by a flowing fluid impinging upon the spiral or screw, the motor being placed in a water course, flume or natural stream of water.

The invention has for one or its objects to improve and simplify the construction and operation of devices of this character so as to be comparatively simple and inexpensive to manufacture, reliable and efficient in use, and composed of comparatively few parts.

Another object of the invention is the provision of a current motor including a rotatable cylinder open from end to end and having a spiral or screw arranged therein for providing a plurality of impact surfaces whereby the flow of water through the cylinder causes rotation of the latter, the cylinder being mounted in a frame of novel construction, and adapted to rotate a shaft from which power can be taken for any suitable purpose.

With these objects in view and others, as will appear as the description proceeds, the invention comprises the various novel features of construction and arrangement of parts which will be more fully described hereinafter and set forth with particularity in the claims appended hereto.

In the accompanying drawing, which illustrates one embodiment of the invention, Figure 1 is a plan view of the motor. Fig. 2 is a central longitudinal section thereof. Fig. 3 is a section on line 3—3, Fig. 1. Fig. 4 is a fragmentary side elevation showing the manner of connecting the ice and drift protector with the frame of the motor.

Similar reference characters are employed to designate corresponding parts throughout the views.

Referring to the drawing, A designates the frame or body of the device which may be of any suitable construction and size and provided with a chamber 1 open from end to end for containing the rotatable element B of the motor. The element B consists of the cylinder 2 which is open at both ends and provided with a spiral or screw 3 of any desired pitch to present a large impact area

for causing rotation of the cylinder by the flow of water therethrough. The thrust on the cylinder is taken up by a plurality of bearings consisting of annular channel-shaped races 4 rigidly secured in the chamber 1 of the frame and having a plurality of spaced rollers 5 on which rides annular flanges 6 formed externally on the cylinder, the flanges engaging in the races to prevent longitudinal movement of the cylinder in the frame A.

On the cylinder 2 are formed sprocket teeth 7 around which pass sprocket chains 8 which extend upwardly through openings 9 in the frame and pass around sprocket wheels 10 on the power-distributing shaft 11 supported in bearings 12 on the top of the frame. Power can be taken from this shaft in any suitable manner, as for instance, by a sprocket wheel 13 capable of being clutched to the shaft 11 by engagement with a toothed collar 14 on the shaft, the sprocket wheel 13 being clutched and unclutched by a lever 15 fulcrumed on the frame.

In order to prevent damage to the rotatable element of the motor by ice and drift material, a protector designated generally by C is arranged over the inlet end of the frame. This protector may be constructed in the form of a triangular frame having side horizontal slats 16 spaced apart to permit the water to pass between them and force the ice or drift matter to the sides. On the corners of the frame are rods 17 fixed in bearings 18 and the protector is connected by eyes 19 which are so designed as to permit the protector to rise and fall with change in the water level.

From the foregoing description, taken in connection with the accompanying drawing, the advantages of the construction and of the method of operation will be readily apparent to those skilled in the art to which the invention appertains, and while I have described the principle of operation of the invention, together with the device which I now consider to be the best embodiment thereof, I desire to have it understood that the device shown is merely illustrative, and that such changes may be made when desired as are within the scope of the appended claims.

Having thus described the invention, what I claim is:—

1. A motor comprising a frame provided with a chamber open at both ends, a cylinder



mounted therein and provided with a spiral  
extending from one end thereof to the other,  
annular bearing flanges, annular channel-  
shaped bearings fixed in the chamber and  
5 into which the flanges extend, a shaft mount-  
ed on the frame, and driving connections  
between the cylinder and shaft.

2. A motor comprising a frame having a  
chamber open at both ends, vertical rods  
10 secured at the ends of the frames, an ice  
and drift protector arranged over the end of  
the chamber into which water flows, means  
for attaching the protector to the rods at the  
inlet end of the frame for permitting the  
15 protector to rise and fall with the changes  
in the water level, a cylinder rotatably

mounted in the chamber and open at both  
ends, a spiral in the cylinder and rigidly  
secured thereto, annular external flanges on  
the cylinder, channel-shaped annular bear- 20  
ings fixed on the frame and embracing the  
flanges, anti-friction devices arranged in the  
bearings, sprocket teeth extending around  
the cylinder, a driving shaft having a  
sprocket wheel, and a sprocket chain passing 25  
around said teeth and wheel.

In testimony whereof I affix my signature  
in presence of two witnesses.

JOSEPH R. MORRISON.

Witnesses:

FRED G. DRYDEN,  
ARTHUR A. PIPER.