

May 9, 1933.

W. KEYWOOD

1,908,429

WATER MOTOR

Filed Feb. 1, 1932

2 Sheets-Sheet 1

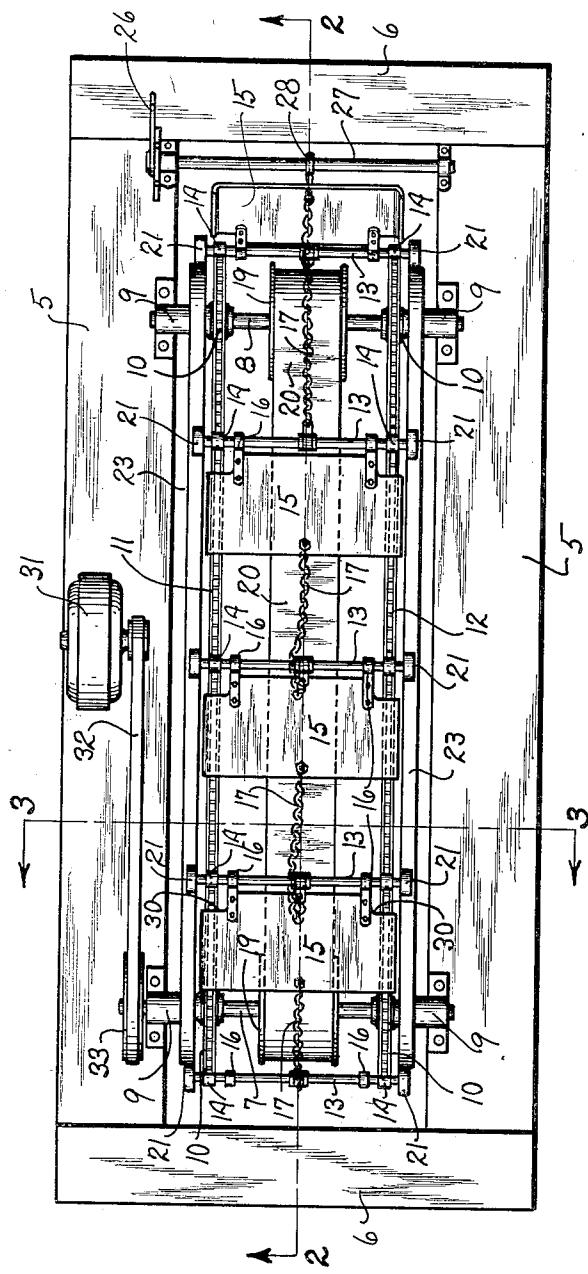


Fig. 1

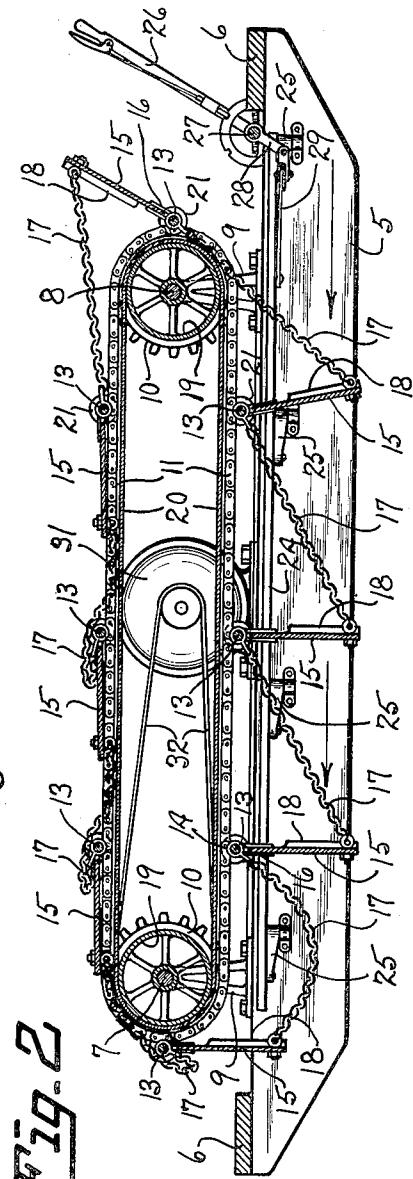


Fig. 2

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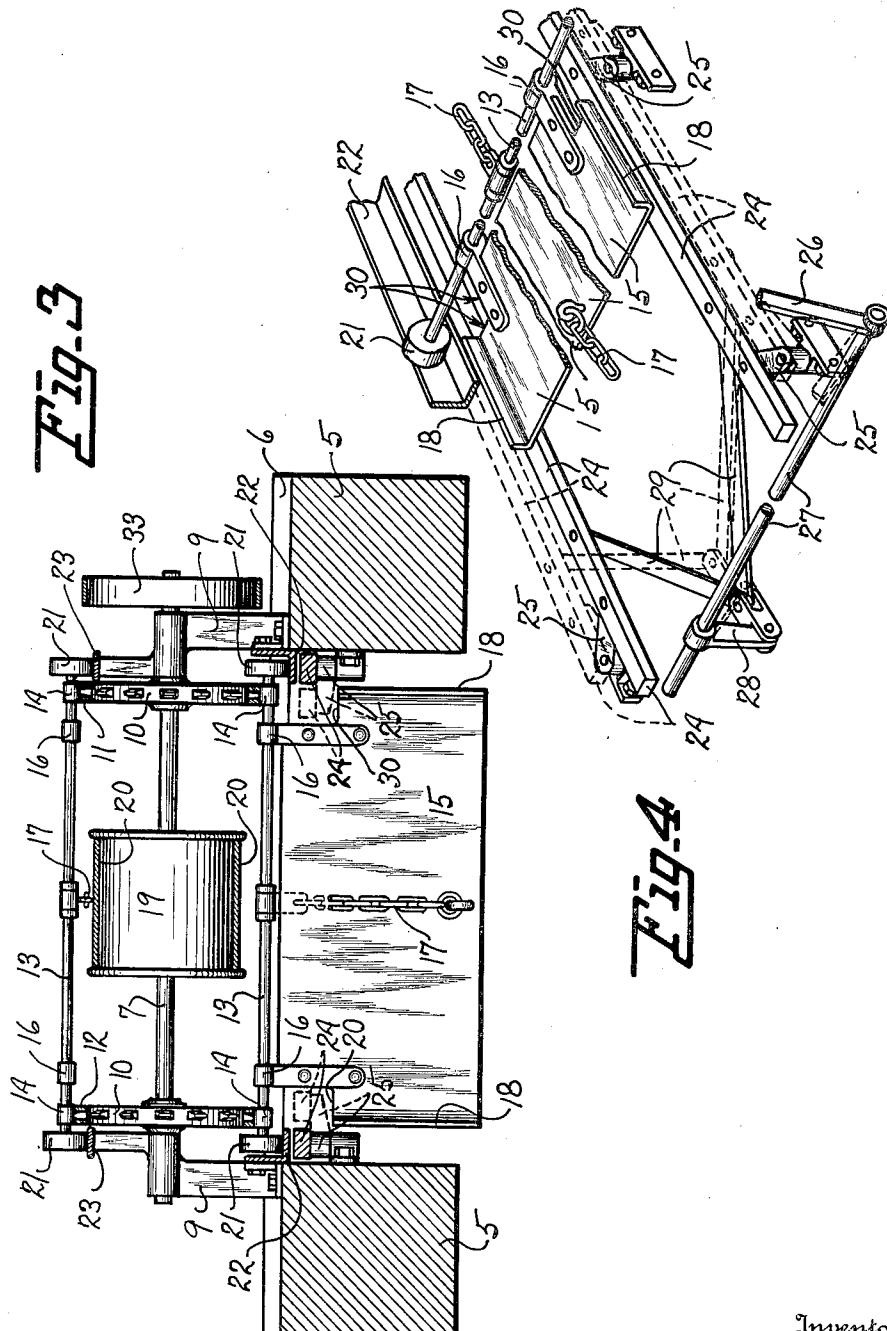
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## WATER MOTOR

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2 Sheets-Sheet 2



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## UNITED STATES PATENT OFFICE

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## WATER MOTOR

Application filed February 1, 1932. Serial No. 590,120.

This invention relates to water motors and is an improvement over my prior patent of the same title issued April 6, 1927 and numbered 1,625,896. Certain objects of my present invention are to provide means for bracing the water vanes against the force of the stream or current together with means for preventing the braces from sagging. Further objects are to provide improved means 10 for starting and stopping the device.

With the above and other objects in view which will appear as the description proceeds, the invention consists of the novel construction, adaptation, combination and 15 arrangement of parts hereinafter described and claimed. These objects are accomplished by devices illustrated in the accompanying drawings; wherein: Figure 1 is a top plan view of my improved water motor; Fig. 2 is a view in longitudinal section taken substantially on a broken line 2—2 of Fig. 1; Fig. 3 is a view in transverse vertical section taken on a broken line 3—3 of Fig. 1; and Fig. 4 is a view in perspective of the 20 improved starting and stopping mechanism and associated parts.

Referring to the drawings throughout which like reference numerals indicate like parts, the numeral 5 designates a pair of 25 longitudinal float members that are retained in parallel spaced apart relation by transverse end braces 6 thus forming a rectangular float or scow having a large opening or central channel for the operation of the motor mechanism hereinafter described.

The mechanism comprises a pair of shafts 7 and 8 that are journaled transversely of the scow and adjacent each end thereof in standards or raised bearings 9. A sprocket 40 wheel 10 is fixed on each end of said shafts and endless chains 11 and 12 are carried by said sprockets longitudinally of the scow. A plurality of rods 13 are secured to said endless chains at 14 transversely thereof and 45 in spaced apart relation. A vane or blade 15 is hingedly fixed to each of said rods at 16. Chain braces 17 have one of their ends fixed to said rods and their other end centrally fixed to the outer end of each vane. Said chains are adapted to retain the vanes

in a vertically suspended position when they are engaged, during their working stroke, by the water while flowing in the direction indicated by the arrows in Fig. 2. Said vanes are provided with side flanges 18 and as they are carried by the endless chains 11 and 12 up and over the end sprockets 10 fixed to the shaft 7 they pivotally drop down and lie on said endless chains, with their side flanges overlapping same, during their non-working stroke.

One important feature of my present invention resides in the provision of the chain braces 17 together with means for preventing said braces from sagging down during the non-working stroke of the water motor. Said means comprises a pair of drums 19 each of which is mounted on the end shafts 7 and 8 respectively. An endless belt 20 is carried by said drums and the chain braces lie upon said belt during the non-working stroke of the vanes 15 as most clearly shown in Fig. 2 of the drawings. Rollers 21 are mounted on the ends of the rods 13 and said rollers ride on lower angle iron tracks 22 fixed to the lower ends of the standards 9 during the working stroke movement of the vanes and said rollers ride on upper tracks 23 fixed to the upper extended ends of the standards 9 during the non-working stroke movement of said vanes.

A very important feature of my present invention resides in the provision of an improved starting and stopping means which is shown in detail in Fig. 4 of the drawings. Said means comprises a pair of longitudinal bars 24 pivotally linked to the float members 5 on each side of the device by short lever arms 25. A hand lever 26 is fixed to an end of a shaft 27 mounted in bearings and transversely disposed on one end of the scow or float. A depending crank arm 28 fixed to said shaft is pivotally connected to the ends of a pair of divergent link rods 29 whose other ends are pivoted to the side bars 24 respectively. By moving the hand lever forward and backward the side bars are shifted from the dotted to the full line position shown in Fig. 4 and vice versa. The inner corners of the vanes 15 are cut away at 30,

as most clearly shown in Fig. 3, and when the side bars 24 are shifted to the full line position shown in Fig. 4 or to the dotted position shown in Fig. 3 the side bars enter the cut 5 away portions of said vanes and the edges of said cut away portions engage said bars thus pivotally raising the vanes out of engagement by the water whereby the effective stroke of the device is stopped. By moving 10 said longitudinal bars 24 outwardly the blades will, of course, drop down to be engaged by the water whose current or force will again set the device in operation.

It will be understood that my water motor 15 is used for generating power and while the power derived from its operation may be utilized in various ways and for a variety of purposes, I have shown an electric generator at 31 whose shaft may be connected by a 20 belt 32 with a pulley 33 fixed on an end of the shaft 7, and the power may be used for generating electric current by said generator as will be understood.

Having thus described my invention, it 25 being understood that minor changes in its construction and arrangement may be resorted to without departing from the scope and spirit of the invention, what I claim and desire to secure by Letters Patent of the 30 United States of America is:—

1. In a water motor of the character described consisting of a plurality of vanes carried by endless chains riding on sprocket wheels fixed to opposing shafts and said 35 vanes adapted to lie flat on said chains during their non-working stroke and to assume a vertically suspended position during their working stroke when engaged by running water, the combination of chain braces 40 adapted to retain the vanes in vertical position against the force of running water, and means for preventing said chain braces from sagging down during the non-working stroke of the vanes, said means comprising 45 a pair of drums respectively mounted on the aforesaid end shafts, and an endless belt carried by said drums arranged to support and carry the chain braces during the non-working stroke of the vanes.

50 2. A starting and stopping means for water vanes, said means comprising a float, a pair of longitudinal bars pivotally linked to the float for lateral movement into and out of engagement with the upper edges of 55 the vanes during their vertically suspended working stroke, a transverse shaft, a hand lever fixed to the shaft, a depending crank arm on the shaft, and a pair of divergent link rods pivotally connected to the crank 60 arm and to the longitudinal bars whereby said bars are moved into and out of engagement with the vanes.

In testimony whereof I affix my signature.  
WILLIAM KEYWOOD.