(No Model.)

A. A. BESEMER.

WATER MOTOR.

No. 418,304. Patented Dec. 31, 1889.

Fig 1

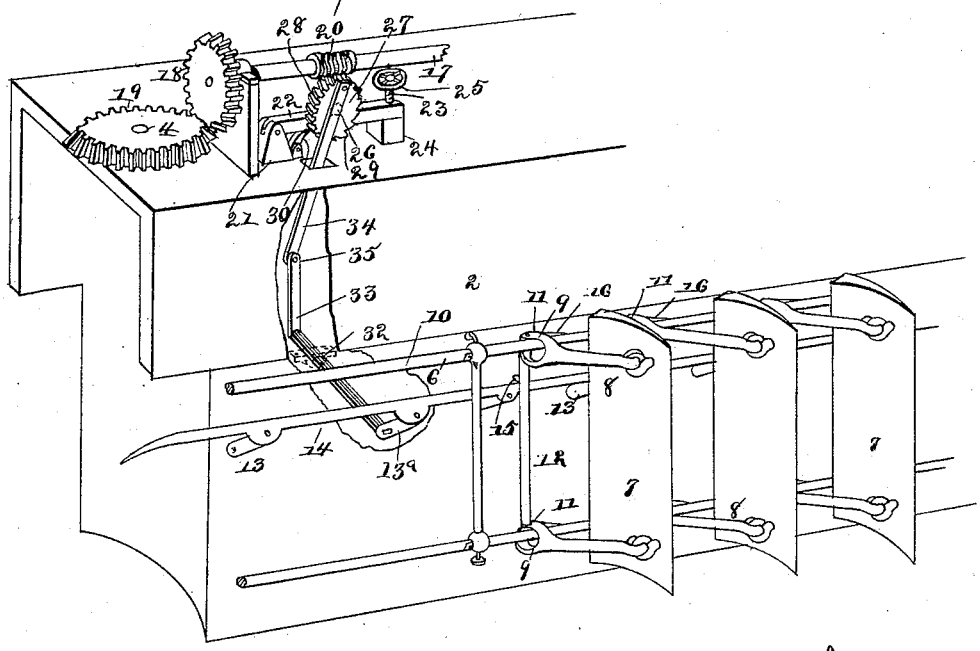


Fig 2

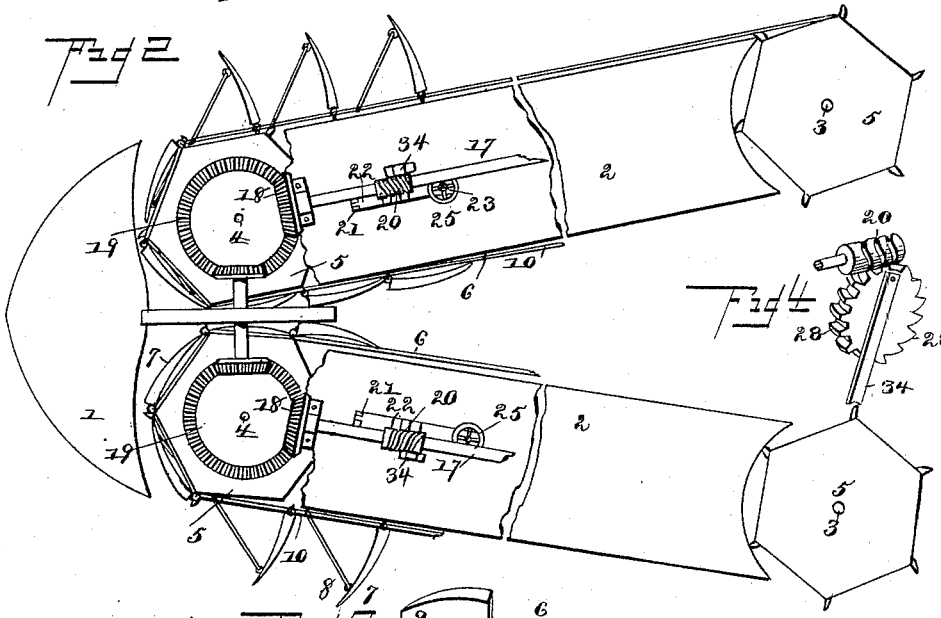
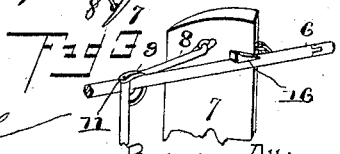


Fig 4

Fig 3



Witnesses

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UNITED STATES PATENT OFFICE.

ANDREW A. BESEMER, OF TECUMSEH, MICHIGAN, ASSIGNOR OF ONE-HALF TO CHARLES E. WILLIAMSON, OF SAME PLACE.

WATER-MOTOR.

SPECIFICATION forming part of Letters Patent No. 418,304, dated December 31, 1889.

Application filed July 2, 1889. Serial No. 316,288. (No model.)

To all whom it may concern:

Be it known that I, ANDREW A. BESEMER, a citizen of the United States, residing at Tecumseh, in the county of Lenawee and State of Michigan, have invented a new and useful Water-Motor, of which the following is a specification.

This invention relates to that class of water-motors which are adapted to be operated by the current in rivers and streams; and it is an improvement on the device for which Letters Patent of the United States, No. 402,055, were issued to me on the 23d day of April, 1889.

My present improvement has special reference to an improved mechanism for stopping the motor by throwing the buckets out of line or out of gear; and it consists in the improved construction and arrangement of details, which will be hereinafter fully described, and particularly pointed out in the claims.

In the drawings hereto annexed, Figure 1 is a perspective view of a portion of a motor embodying my improvements. Fig. 2 is a plan view. Figs. 3 and 4 are detail views of parts of the invention.

Like numerals of reference indicate like parts in all the figures.

1 designates the head-pier, which is pointed at its upstream end.

2 2 are the diverging side piers, which lead downstream, as shown.

3 and 4 are the vertical shafts, journaled, respectively, at the upper and lower ends of the piers 2.

5 5 are the sprocket-wheels mounted upon said shafts, and 6 6 represent the chains running over said sprocket-wheels and having the hinged buckets 7.

Suitably connected to the front sides of the buckets or wings 7, near the upper and lower ends of the same, are the arms 8, the front ends of which are provided with eyes or apertures 9, encircling the horizontal rods or side bars 10 of the chain-links, to which the buckets are connected. The ends of the arms 8 are provided with brackets 11, which are connected by means of vertical rods 12.

13 13 represent a series of arms or cranks connected pivotally to the outer sides of the piers 2, and connected pivotally to the outer ends of said arms or cranks is a longitudinal bar 14. The latter is normally arranged directly below but out of contact with lugs or studs 15, extending laterally in an inward direction from the vertical rods 12, connecting the arms 8. It will thus be seen that when the arms or cranks 13 are tilted, so as to elevate the longitudinal bar 14, the latter will strike against the lugs 15, thereby simultaneously elevating the outer ends of all of the rods 8. It will be observed that the eyes or apertures at the outer ends of said rods are to be of sufficient size to admit of such movement of the rods or arms. The horizontal rods or side bars of the chain-links are provided with beveled lugs or catches 16, which form stops that serve to engage the apertured ends of the arms 8 when the buckets are in operative position, substantially at right angles to the chain-links. It will be observed that by elevating the outer ends of the arms 8 they are raised above and permitted to slide past the beveled catches 16, thus causing the said buckets to fold down against the chain-links and out of position for operation.

17 17 designate counter-shafts suitably journaled upon the upper sides of the piers 2, and having pinions 18, meshing with the spur-wheels 19 at the upper ends of the shafts 4. Motion is to be transmitted in any suitable well-known manner from the said counter-shafts to the machinery which is to be driven. Each of the counter-shafts 17 is provided with a worm 20.

21 designates blocks mounted upon the piers adjacent to the counter-shafts 17. Hinged to the upper ends of said blocks are the boxes or bearings 22, having at their outer ends vertical set-screws 23, the lower ends of which bear against blocks 24 and the upper ends of which have hand-wheels 25, by means of which they may be manipulated. Journaled in the boxes 22 are shafts 26, having wheels or disks 27, which are provided for about one-half of their peripheries with worm-gear 28 and for the other half with ratchets 29. A pawl 30, pivotally connected to the block 21, serves to engage the ratchet 29.

One of the arms or cranks which support the longitudinal bar 14, and which is designated by 13^a, is mounted at the outer end of a shaft 32, which is journaled transversely in the pier, and the inner end of which has an arm or crank 33. The outer end of said crank 33 is connected by a pitman 34 with a wrist-pin 35, extending from the face of the wheel or disk 27.

The operation of my invention is as follows: Normally when the machine is in operation the wheel or disk 27 is out of engagement with the worm 20 upon the shaft 17. When it is desired to stop the motor, the set-screw 23 is manipulated by the hand-wheel 25 in such a manner as to raise the free end of the box 22 until that portion of the periphery of wheel 27 which is provided with a worm-gear comes into contact with the worm 20. The wheel or disk 27 will thus be caused to rotate, thus operating the crank-shaft 32, elevating the longitudinal bar 14, and throwing the arms 8 out of engagement with the beveled studs or catches 16. The buckets are thus caused to fold down flat against the chain-links, thus presenting but little resistance to the action of the water, and enabling the motor to be conveniently stopped by the application of a brake, which may be of any suitable construction, and which has not been shown in the drawings. When it shall be desired to start the motor, this may be done by simply releasing the brake. The buckets will then in passing around the sprocket-wheels at the lower ends of the piers assume their normal position.

I have herein described the preferred construction of the mechanism for stopping my improved water-motor; but I desire it to be understood that I reserve the privilege of making any modifications and alterations which may be resorted to without departing from the spirit of my invention.

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

1. In a current-motor, the combination of an endless chain, the buckets hinged to the same, the arms connected to said buckets and having eyes or apertures encircling the horizontal rods or side bars of the chain-links, beveled stops or catches upon said side bars, and mechanism for lifting the said apertured rods out of engagement with said catches, substantially as set forth.

2. In a current-motor, the combination of an endless chain, the buckets carried on the same, the arms connected to said buckets and having eyes or apertures encircling the horizontal rods or side bars of the chain-links, beveled stops or catches upon said side bars, vertical rods connecting the outer ends of the apertured arms and having laterally-extending lugs, a horizontal longitudinal bar mounted upon a series of cranks or pivoted rods and adapted to bear against the under sides of said lugs, and mechanism for operating said horizontal bar, substantially as set forth.

3. In a current-motor, the combination of an endless chain, the buckets carried on the same, the arms connected to said buckets and having eyes or apertures encircling the horizontal rods or side bars of the chain-links, beveled stops or catches upon the said side bars, vertical rods connecting the outer ends of the apertured arms and having laterally-entending lugs, a horizontal longitudinal bar mounted upon a series of cranks or pivoted rods and adapted to bear against the under sides of said lugs, counter-shafts geared to the vertical chain-carrying shafts, disks mounted in vertically-adjustable bearings and having their peripheries provided with worm-gearing to engage worms upon said counter-shafts, and ratchets to engage suitably-arranged pivoted pawls, and pitmen connecting said wheels or disks with cranks upon the inner ends of rock-shafts, the outer ends of which carry each one of the supporting-cranks of the longitudinal bars that operate the arms connected to the buckets, substantially as and for the purpose set forth.

4. In a current-motor, the combination of the endless chain, the buckets carried on the same, the arms connected to said buckets and having eyes or apertures encircling the horizontal rods or side bars of the chain-links, beveled stops or catches upon said side bars, vertical rods connecting the outer ends of the apertured arms and having laterally-extending lugs, a horizontal longitudinal bar mounted upon a series of cranks or pivoted rods, and mechanism adapted to connect one of said cranks or pivoted rods with a counter-shaft geared to one of the vertical chain-carrying shafts, so as to receive motion temporarily from said counter-shaft, substantially as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

ANDREW A. BESEMER.

Witnesses:
CHARLES BURRIDGE,
WALTER C. BURRIDGE.