No. 699,396. Patented May 6, 1902.

F. KOZE.

HYDRAULIC MOTOR.

(Application filed Sept. 20, 1901.)

(No Model.) 2 Sheets—Sheet 1.

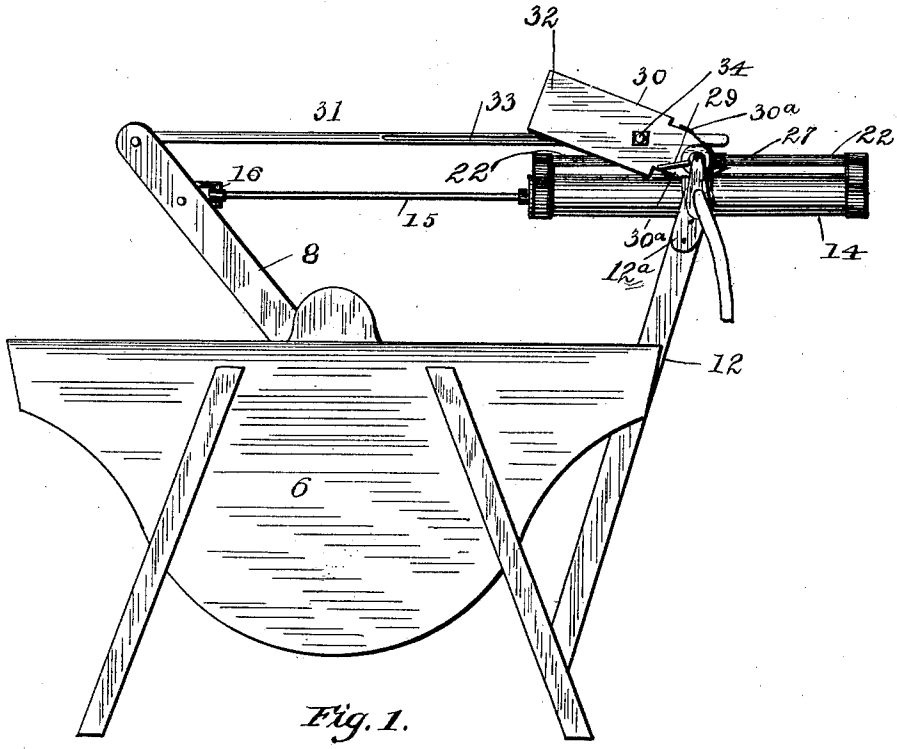


Fig. 1.

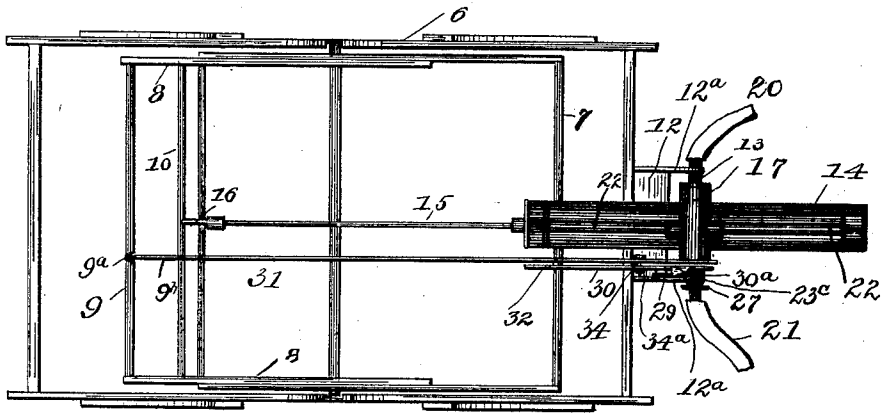


Fig. 2.

WITNESSES:

F. A. Barron.

O. E. Murray.

INVENTOR

Frank Koze

BY

Milo B. Stevens & Co.

ATTORNEYS.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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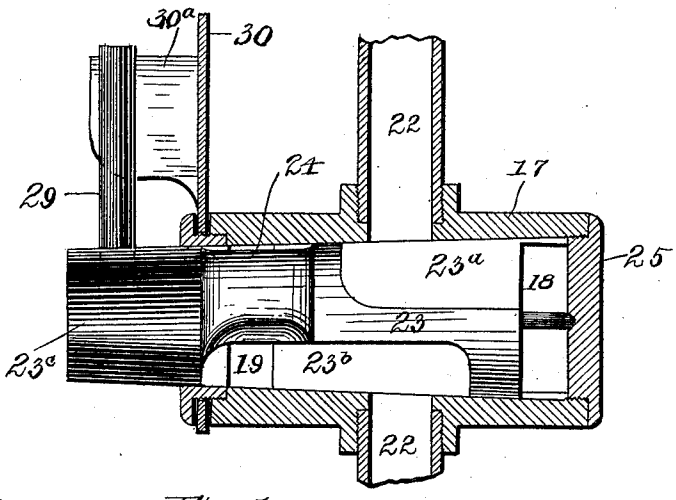


Fig. 3.

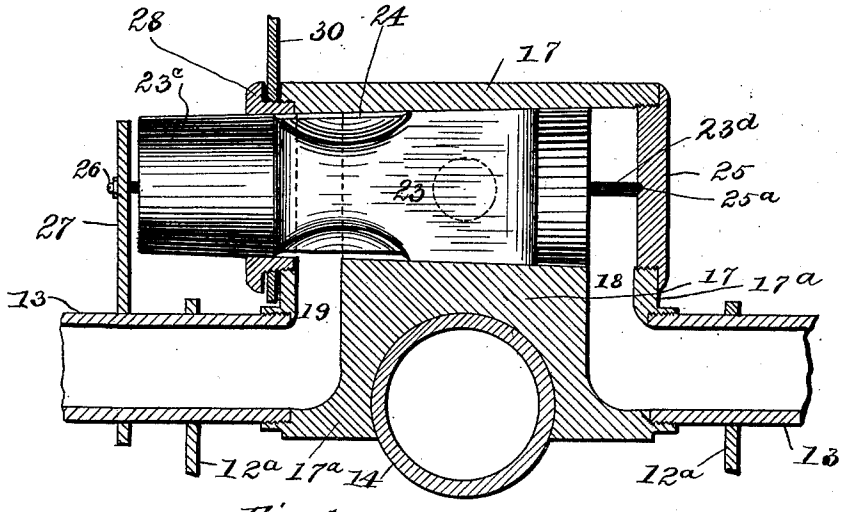


Fig. 4.

WITNESSES:

F. A. Barrow.

O. E. Murray.

INVENTOR

Frank Koze

BY

Milo B. Stevens & Co.

ATTORNEYS.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

FRANK KOZE, OF LORAIN, OHIO.

HYDRAULIC MOTOR.

SPECIFICATION forming part of Letters Patent No. 699,396, dated May 6, 1902.

Application filed September 20, 1901. Serial No. 75,715. (No model.)

To all whom it may concern:

Be it known that I, FRANK KOZE, a citizen of the United States, residing at Lorain, in the county of Lorain and State of Ohio, have invented certain new and useful Improvements in Hydraulic Motors; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to hydraulic motors. The particular object of the invention is to provide a hydraulic motor adapted to operate a washing-machine of the swinging or rocking type by utilizing the pressure from a city water-main or elsewhere.

A further object is the construction of a water-motor, particularly for the purpose specified, which will be automatic in its operation and which will not interfere with the ordinary manipulation of the washing-machine incident to inserting the clothes therein or removing the same therefrom.

The motor herein specified can be readily attached to existing machines with but little alteration of the construction thereof.

In the accompanying drawings, Figure 1 is a side elevation of a washing-machine provided with the motor. Fig. 2 is a plan view thereof. Fig. 3 is a horizontal section of the valve in detail. Fig. 4 is a vertical section through the valve and cylinder transversely.

Referring particularly to the drawings, the tub of the washing-machine is indicated at 6, provided with a swinging rubber 7, operated by a handle consisting of uprights 8, connected by revoluble cross-bars 9 and 10. The motor is of the oscillating-cylinder type and is supported upon a standard 12, secured to the frame of the machine. To the upper end of this standard are secured by screws or otherwise the trunnion-plates 12^a, between which the cylinder is supported upon trunnions 13. The cylinder is indicated at 14 containing a piston, as is usual, connected to a piston-rod 15, the outer end of which is screw-threaded to enter a suitable bore in the neck of a yoke 16, the ends of which are bolted or otherwise secured to the lower cross-bar 10. The valve-casing 17 is saddled upon the cylinder, and the legs 17^a are provided with an induction-passage 18 and an eduction-passage 19. The trunnions are tubular and communicate with these passages, so that the water is supplied and exhausted through the trunnions. The trunnion communicating with the induction-passage is provided with a hose 20, which may be attached to a faucet, and the other trunnion with a similar hose 21, conveniently leading to a waste pipe or drain. The valve-chamber communicates with the pipes 22, leading to each end of the cylinder, and the flow of water therethrough is governed by the rocking valve 23. This valve is provided with an induction-port 23^a and an eduction-port 23^b, adapted to alternately establish communication between the induction and eduction passages and the pipes 22. Said ports are located in diametrically opposite sides of the valve and extend toward opposite ends of the valve, so as to communicate, respectively, with the induction and eduction passages, which open into opposite ends of the valve-chamber. The circumferential extent of the ports is less than half that of the valve. In order to balance the valve, it is provided at the end adjacent the eduction-passage with a circumferential groove 24, around and in which the water may pass and balance the pressure which would otherwise tend to cause the valve to key or stick.

To insure a smooth and easy oscillation of the valve, it is centered between a cap-plate 25, which closes one end of the valve-chamber, and an adjustable pivot-screw 26, the point of which enters a bearing formed in the end of the valve-stem 23^c. The inner end of the valve has a projecting pivot 23^d, the point of which enters a conical bearing-recess 25^a in the cap-plate. The screw-pivot 26 passes through a screw-threaded perforation in a plate 27, which is supported upon one of the trunnions.

The valve-stem passes through a bushing 28 in the outer end of the valve-chamber and is provided with a trip arm or lever 29, by which the valve is rocked by means of a rocking trip-plate 30, loosely supported by the bushing 28. This trip-plate has projecting

arms 30ª, which when the plate is rocked strike the lever 29 and throw the valve. The trip-plate is weighted at its outer end, as indicated at 32, so that after having been brought beyond the perpendicular it falls quickly by its own weight, carrying the valve with it.

The trip-plate is actuated by a rod 31, which is connected at one end to the cross-bar 9 and is provided at the other end with an elongated slot 33, through which passes a pin 34, projecting from the trip-plate. This pin is conveniently a bolt screwed into a perforation in the trip-plate, provided with a retaining-nut 34ª. The reciprocation of the handle of the washing-machine rocks the valve when the pin reaches the ends of the slot, at which times the trip-plate is lifted and the lever thrown. Owing to the length of the slot this action takes place at or about the end of each stroke. The length of the stroke may be adjusted by the adjustable connection between the tripping-rod 31 and the cross-bar 9, conveniently provided by means of a bolt 9ª passing through the cross-bar 9 and through one of a series of perforations 9ᵇ in the tripping-rod.

To avoid a dead-center, which would result if the tripping-plate should fall to or below the horizontal, the outer edge of the tripping-plate stands out far enough to strike the trunnion, as indicated at 30ª, before reaching the horizontal.

The connection between the motor and the handle of the rubber is such that it does not interfere with the lifting of the rubber from the tub to handle the clothes therein.

It is thought that from the above description the operation of the apparatus will be understood.

What I claim is—

In a hydraulic motor, the combination with an oscillating cylinder and valve-chest supported upon tubular trunnions forming inlet and outlet passages, said cylinder having a piston and its rod and inlet and outlet ports, of a rocking valve having a lever projecting from the stem thereof, a trip-plate to throw the valve, and operative connections between the piston-rod and the trip-plate comprising a slotted rod, a pin on the plate projecting into the slot, and an oscillating lever to which the piston-rod and slotted rod are pivotally connected.

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

FRANK KOZE.

Witnesses:
JOHN A. BOMMHARDT,
LOTTIE NEWBURN.