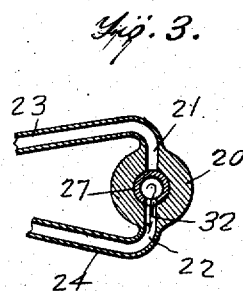
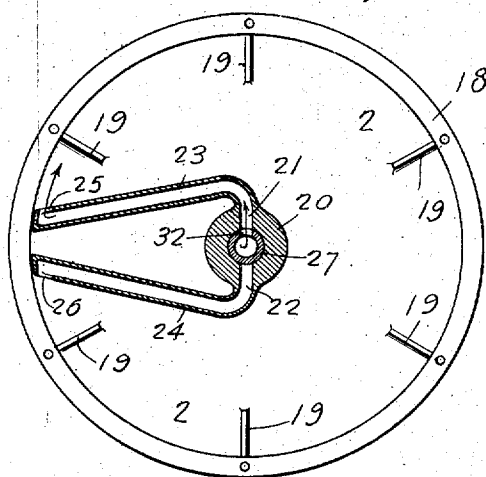
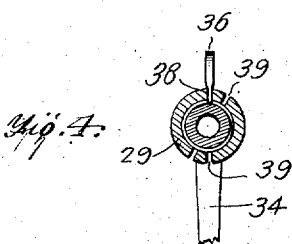
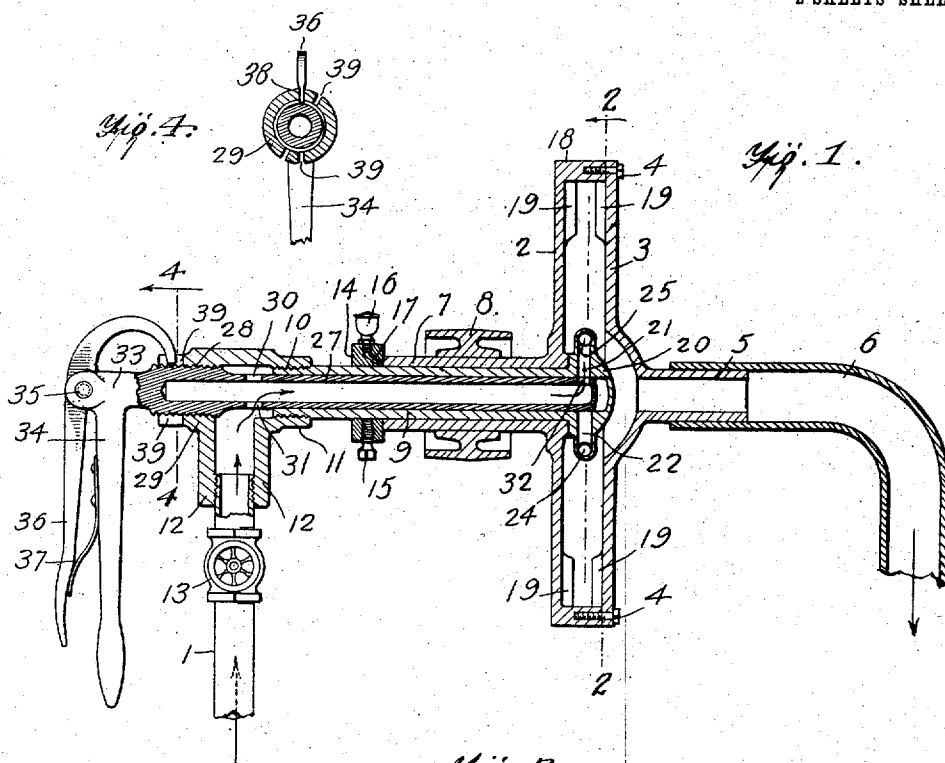


J. N. & J. H. JOHNSON.
MOTOR WHEEL.
APPLICATION FILED FEB. 2, 1912.

1,045,150.

Patented Nov. 26, 1912.

2 SHEETS—SHEET 1.



WITNESSES

L. H. Schmidt.
M. A. Bond.

INVENTORS
JAMES N. JOHNSON
JOHN H. JOHNSON
BY

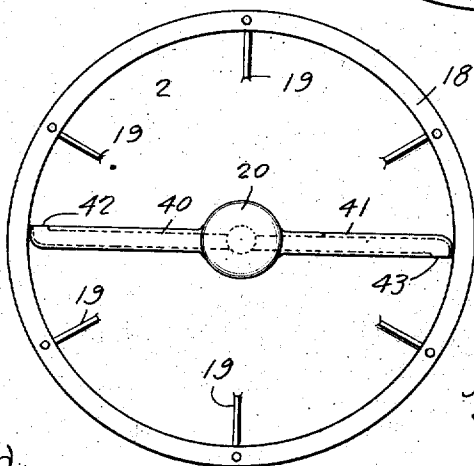
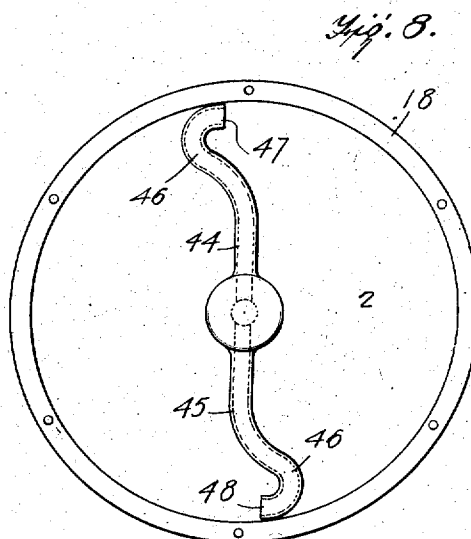
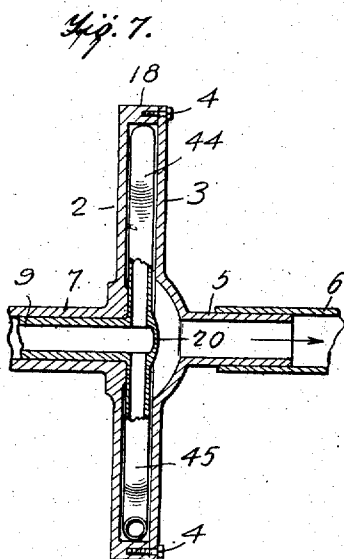
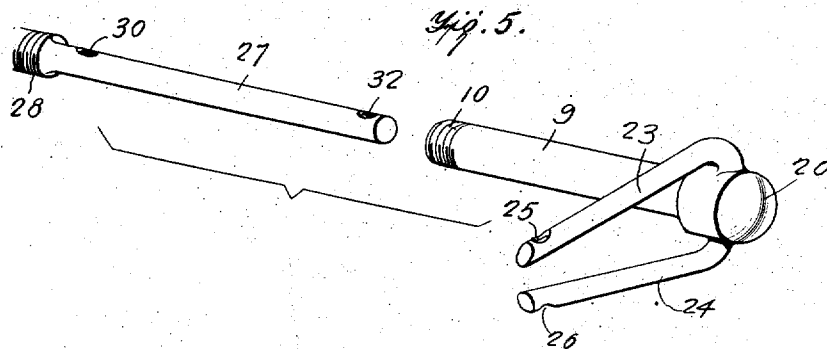
E. H. Bond
ATTORNEY

J. N. & J. H. JOHNSON.
MOTOR WHEEL.
APPLICATION FILED FEB. 2, 1912.

1,045,150.

Patented Nov. 26, 1912.

2 SHEETS—SHEET 2.



WITNESSES

L. H. Schmidt.
m. A. Bond.

INVENTORS
JAMES N. JOHNSON
JOHN H. JOHNSON
BY
E. M. Bond
ATTORNEY

UNITED STATES PATENT OFFICE.

JAMES N. JOHNSON AND JOHN H. JOHNSON, OF FLOMATON, ALABAMA.

MOTOR-WHEEL.

1,045,150.

Specification of Letters Patent.

Patented Nov. 26, 1912.

Application filed February 2, 1912. Serial No. 674,917.

To all whom it may concern:

Be it known that we, JAMES N. JOHNSON and JOHN H. JOHNSON, citizens of the United States of America, and residents of Flomaton, in the county of Escambia and State of Alabama, have invented certain new and useful Improvements in Motor-Wheels, of which the following is a specification.

This invention relates to certain new and useful improvements in motor wheels of that class in which the wheel is mounted to revolve on a non-revoluble hollow shaft and arranged to take steam through the center of the wheel upon one side and to exhaust it axially upon the opposite side.

The present invention has for its objects among others to provide a simple and inexpensive motor wheel adapted to be driven by any expansive fluid under pressure, being readily reversible and capable of embodiment as either a single or a compound motor.

We aim further at improvements in the details of construction whereby cheapness of manufacture is assured, with capability of ready assemblage and adjustment of the parts as well as surety against the waste of steam or motive fluid.

Other objects and advantages of the invention will hereinafter appear and the novel features thereof will be particularly pointed out in the appended claims.

The present invention is capable of embodiment in various forms and in the present instance we have shown those which we at the present time consider preferable. It is to be understood, however, that the invention is not to be restricted to such forms, nor to the details of construction, proportion of parts, etc., as the same is subject to variations, modifications and changes without departing from the spirit of the invention or sacrificing any of its advantages. We, therefore, reserve the right to make such changes, variations and modifications as come properly within the scope of the protection prayed. The invention as embodied in such preferred forms is clearly illustrated in the accompanying drawings, which, with the numerals of reference marked thereon, form a part of this specification, and in which—

Figure 1 is a substantially central section through our improved wheel. Fig. 2

is a section on the line 2—2 of Fig. 1, looking in the direction of the arrows. Fig. 3 is a sectional detail showing the throttle valve in reverse position to what it is shown in Fig. 2. Fig. 4 is a cross section on the line 4—4 of Fig. 1 looking in the direction of the arrow. Fig. 5 is a perspective detail of the throttle valve and the hollow shaft removed from the other parts and shown separated. Fig. 6 is an elevation of a wheel of modified form. Fig. 7 is a substantially central section through Fig. 8 with parts broken away and portions shown in elevation. Fig. 8 is a view similar to Fig. 6 showing still a further modification of wheel. In Figs. 6 and 8, the head of the casing is removed.

Like numerals of reference indicate like parts throughout the different views.

In practice the wheel may be supported in any preferred way, for instance, it may be mounted upon a pipe 1, as shown in Fig. 1, which may be a pipe connected with and designed to receive steam from a steam boiler or any other suitable source of motive fluid. It is evident, however, that it may be supported in any other manner, as upon a suitable base or support which may be attached to or form a part of any suitable fixed means whereby the wheel may be supported in the desired position with relation to the other parts. The manner of supporting, however, is one that may be varied and changed to suit the circumstances and, therefore, the invention in its other respects is in no wise restricted to this or any other particular means of mounting of the wheel.

In the present instance, the wheel in its most simplified form comprises a casing 2 having a detachable head 3 secured in place by screws or any other suitable means 4, which head, in this instance, is shown as provided with an extension or nipple 5 for connection with the exhaust pipe 6 which, as will be evident, may be revolvably mounted upon said nipple or extension 5, so that it may be turned up or down or in any other desired direction.

The casing 2 has the extension 7 upon which is fast a belt pulley 8. Within the tubular extension 7 is disposed a hollow shaft 9 which is screw-threaded at one end,

as seen at 10, and is screwed into the nipple 11 of the T 12 into which the pipe 1 is secured. This pipe 1 is provided with a suitable valve 13 whereby the control of the motive fluid may be regulated or shut off when desired.

14 is a block or the like upon the hollow shaft, retained in position by a screw or the like 15 and carrying an oil cup 16 from which oil is conducted to the inclined passage 17 to the bearing 7.

The casing 2 has the peripheral flange 18 into which the screws 4 are engaged, as seen best in Fig. 1, and upon the inner face of this casing are the vanes 19 arranged radially and extending inward a greater or less distance from the said flange. These vanes are arranged at opposite edges of the flange, as seen clearly in Fig. 1.

The inner end of the hollow shaft 9 is provided with an enlargement 20, as seen in Figs. 1, 2 and 3, and from the bore of this shaft extend in opposite directions passages 21 and 22 which communicate with the feed pipes 23 and 24 respectively. These pipes may be integral with or secured to the hollow shaft in any suitable manner and, as seen in Figs. 2 and 3, these feed pipes extend both in the same direction practically outward from the enlargement 20, each taking a substantially right-angled bend from the passages 21 and 22, their free ends extending in close proximity to the inner periphery of the casing and provided with outlets 25 and 26 respectively which are disposed at a right angle to their length and arranged to discharge in opposite directions. These feed pipes are designed to revolve between the vanes, as will be evident from Figs. 1 and 2.

27 is the throttle valve. It is exteriorly threaded, as seen at 28, to engage the threaded portion 29 of the T 12, as seen in Fig. 1. It is rotatable within the hollow shaft 9 in order to control the flow of motive fluid to the interior of the wheel from the pipe 1. It is provided with two ports 30 and 31 diametrically disposed to each other, as seen in Fig. 1, at the outer end, and at the inner end it is provided with a port 32, as seen clearly in Figs. 1, 2 and 3. This port 32 is in alinement with the ports or passages 21 or 22 of the enlargement 20 of the hollow shaft, as seen in said Figs. 1, 2 and 3; and designed to discharge the motive fluid through said valve into one or the other of the feed pipes 23 or 24, dependent upon the position of the throttle valve.

The throttle valve has an extension 33 rigid with which is the operating lever 34 by means of which the throttle may be revolved in its bearing. Pivotaly mounted on this extension 33, as at 35, is a lever 36 between the free end of which and the lever

34 is a spring 37, the other end of the lever 36 being bent at an angle and its extreme end 38 forming a pawl or the like adapted to engage in one or the other of the openings 39 in the outer end of the portion 29 of the T 12, as will be readily understood upon reference to Figs. 1 and 4.

By entire removal of the throttle valve 27, which may be readily done by unscrewing, and removing the head 3, the wheel may be taken from its shaft so as to examine the interior thereof or to repair or replace any parts that may be necessary.

The mode of operation will be readily understood from the foregoing description when taken in connection with the annexed drawings, and, briefly stated, is as follows: The hollow shaft 9 being supported in any suitable manner and receiving the motive fluid through the pipe 1, with the throttle in the position in which it is seen in Fig. 1, the fluid entering through the pipe 1 takes the course indicated by the arrows, passing through the port 31 and along the hollow throttle, out through the port 32 into the passage 21 and through the feed pipe 23 and out its passage 25, the motive fluid acting as follows: The wheel becomes full of dead steam, the live steam rushing in drives the dead steam against the rim of the wheel, compressing it by forcing it through between the vanes and the walls of the wheel all at the same time and gradually pushing the dead steam out at the exhaust. The vanes do not retard the flow of the motive fluid in running as the vanes run by the steam or motive fluid instead of through the same as heretofore. By this form of construction, we obtain great speed and power under less pressure and the wheel runs smooth and practically noiseless. By disengaging the end 38 of the pawl 36 from its notch in the member 29 and giving the throttle valve a half revolution until the port 32 at the inner end of the throttle valve is brought into its downward position so as to be thrown into communication with the passage 22, the motive fluid entering the throttle valve through the pipe 1 passes through the throttle valve and out into the passage 22, as indicated by the arrow in Fig. 3, and thence along the feed pipe 24 and out the exit passage 26, thus turning the wheel in the opposite direction. When it is desired to shut off the flow to the wheel, the throttle valve may be turned into a position intermediate the two positions seen in Figs. 2 and 3 respectively when there is no escape for the fluid from the throttle valve into either of the passages 21 or 22.

In Fig. 6 we have shown a slightly modified form in which the two feed pipes 40 and 41 extend in diametrically opposite directions from the hollow shaft with their

outer ends arranged in close proximity to the inner periphery of the flange 18 and provided with the outlet ports 42 and 43 extending in opposite directions. The mode of operation is substantially the same as in the form just before described and shown in Figs. 1, 2 and 3.

In Figs. 7 and 8 we have shown a further modification in which the vanes are dispensed with and the feed pipes 44 and 45 extend in substantially diametrically opposite directions and have their ends curved, as seen at 46, the free ends extending in opposite directions with their outlets 47 and 48 extending so as to deliver the motive fluid in opposite directions within the casing.

The throttle is not shown in Figs. 6 and 7. Reversal of the position of the throttle valve by the throttle valve lever, in the forms shown in Figs. 1 to 5, admits the motive fluid through the other ports in the opposite direction and, consequently, reverse rotation is given to the wheel.

It will be noticed that the hollow shaft has a comparatively small hub portion and that the feed pipes extending therefrom so as to occupy but a small portion of the space within the casing, as seen in Figs. 1, 2, 6 and 8, and thus minimum obstruction is offered.

In order to convey away the exhaust, it is only necessary to make a larger pipe than the exhaust nozzle 5 and let the exhaust nozzle revolve within the same, whereby the exhaust may be carried off to any desired position, either up or down or horizontal.

It will be noted that by arranging the feed pipes on both sides of the hollow shaft that we equalize the friction and better balance the wheel.

What is claimed as new is:—

1. In a motor wheel, a non-rotatable hollow shaft having radial openings, a casing revoluble on said shaft, feed pipes extending from said radial openings into said casing, a throttle valve revolubly mounted within said shaft and having an opening for cooperation with either of the openings of said shaft, said hollow shaft having an enlargement at its inner end and the adjacent wall of the casing having a coincident enlargement, and an extension leading therefrom for connection with an exhaust.

2. In a motor wheel, a non-revoluble hollow shaft having radial openings, a casing revoluble thereon, feed pipes extending from said radial openings, a throttle valve revolubly mounted within said shaft and having an opening for cooperation with either of the openings thereof, said casing having a removable head with exhaust nozzle and vanes within the casing at the periphery thereof, spaced apart and contracting the

passage at the periphery of the casing, said vanes extending from opposite heads of the casing toward each other.

3. In a motor wheel, a non-revoluble hollow shaft having radial openings, a casing revoluble thereon, feed pipes extending from said radial openings, a throttle valve revolubly mounted within said shaft and having an opening for cooperation with either of the openings thereof, said casing having a removable head with exhaust nozzle and vanes within the casing at the periphery thereof, spaced apart and contracting the passage at the periphery of the casing, said vanes extending from opposite heads of the casing toward each other and disposed radially.

4. In a motor wheel, a non-revoluble hollow shaft, a wheel revoluble thereon and having vanes extending radially from opposite sides of the wheel, feed pipes on said shaft and upon opposite sides of which said vanes are movable, and a hollow throttle valve revolubly mounted in said shaft, said vanes having a passageway between them to straddle the feed pipes in the rotation of the wheel.

5. In a motor wheel, a non-revoluble hollow shaft, a wheel revoluble thereon and having vanes extending radially from opposite sides of the wheel and spaced from each other, feed pipes on said shaft, and a hollow throttle valve revolubly mounted in said shaft, said vanes having a passageway between them to straddle the feed pipes in the rotation of the wheel, said wheel having a removable head carrying exhaust nozzle.

6. In a motor wheel, a non-revoluble hollow shaft having an enlargement with radial opening, feed pipes leading from said openings, a wheel revoluble on said shaft and having a comparatively small enlargement at the end, an extension leading therefrom for connection with an exhaust, a throttle valve rotatable within the hollow shaft and having an opening for cooperation with either of the openings of said shaft, said wheel having a removable head by which said extension is carried.

7. In a motor wheel, a non-revoluble hollow shaft, a throttle valve revoluble within the same, a wheel having an extension receiving the hollow shaft, a pulley on said extension, and feed pipes extending from the shaft, within the wheel and arranged to deliver motive fluid in opposite directions, said feed pipes and their support within the wheel occupying but a small portion of the space thereof.

8. In a motor wheel, a non-revoluble hollow shaft, a throttle valve revoluble within the same, a wheel having an extension receiving the hollow shaft, a pulley on said

extension, feed pipes extending from the shaft within the wheel and arranged to deliver motive fluid in opposite directions, a collar on said shaft, and an oil cup mounted on said collar with a passage for delivering oil between said shaft and extension of the wheel.

Signed by us at Flomaton Ala. this 31st day of Jan. 1912.

JAMES N. JOHNSON.
JOHN H. JOHNSON.

Witnesses:

J. P. REYNOLDS,
SAM. N. JACKSON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."