

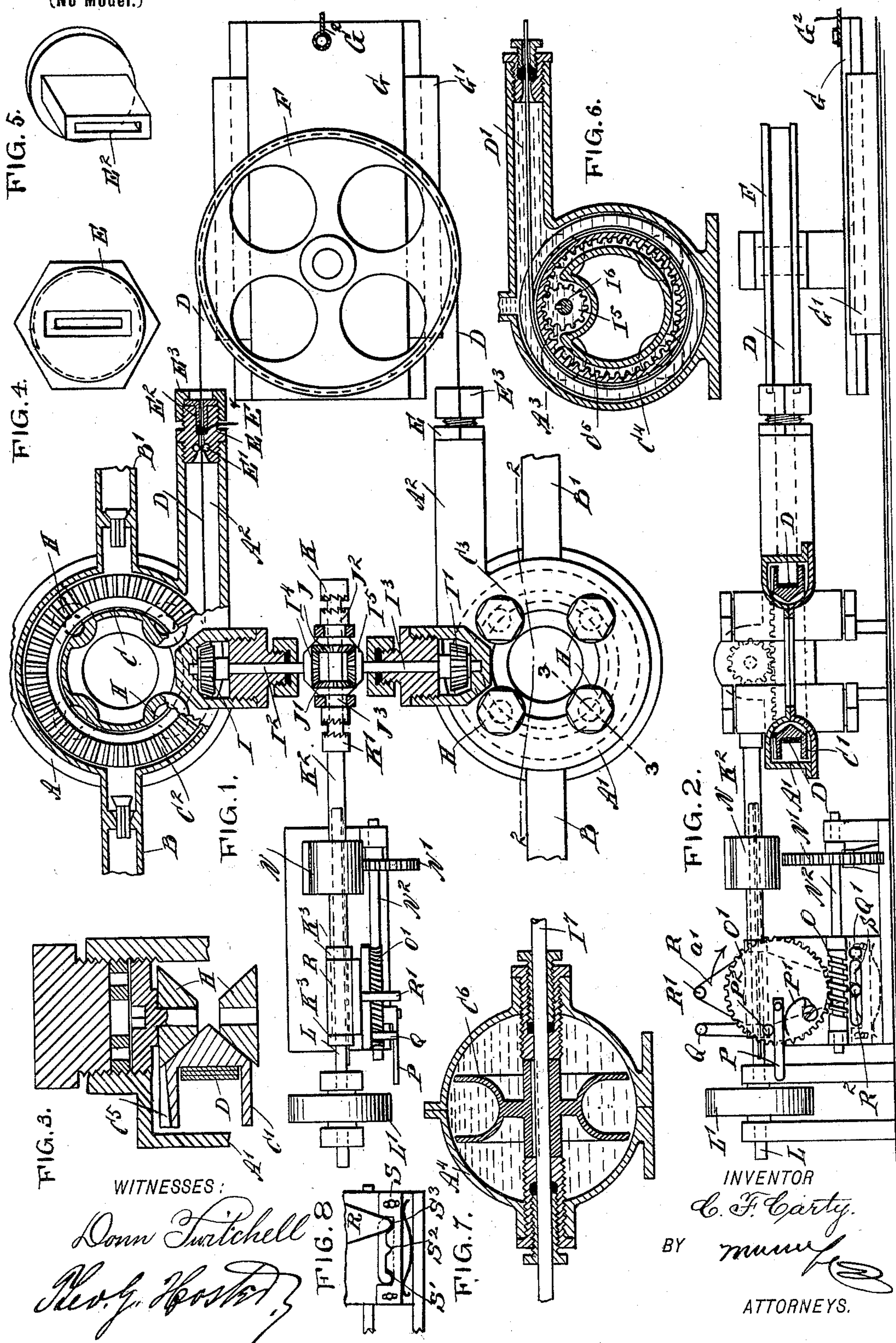
No. 610,798.

Patented Sept. 13, 1898.

C. F. CARTY.
HYDRAULIC PUMP.

(Application filed May 1, 1897.)

(No Model.)



UNITED STATES PATENT OFFICE.

CHARLES FABRICUS CARTY, OF WASHINGTON, NORTH CAROLINA.

HYDRAULIC PUMP.

SPECIFICATION forming part of Letters Patent No. 610,798, dated September 13, 1898.

Application filed May 1, 1897. Serial No. 634,665. (No model.)

To all whom it may concern:

Be it known that I, CHARLES FABRICUS CARTY, of Washington, in the county of Beaufort and State of North Carolina, have invented a new and Improved Hydraulic Pump, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved hydraulic pump which is simple and durable in construction, very effective in operation, and arranged to cause the ram to move at a uniform and, if desired, a high rate of speed.

The invention consists of certain parts and details and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a sectional plan view of the improvement. Fig. 2 is a side elevation of the same with parts in section on the line 2 2 of Fig. 1. Fig. 3 is an enlarged cross-section of part of the improvement on the line 3 3 of Fig. 1, showing the mounting for the reel. Fig. 4 is an enlarged face view of one of the stuffing-boxes. Fig. 5 is a perspective view of the gland for the stuffing-box. Fig. 6 is a sectional side elevation of a modified form of the improvement. Fig. 7 is a transverse section of another modified form of the improvement, and Fig. 8 is a detail view of the spring-pressed catch for the shifting-arm.

The improved hydraulic pump, as illustrated in Figs. 1 and 2, is provided with two vessels or casings A A', each having a valved suction-pipe B and a valved discharge-pipe B', connected with a ram or like device to actuate the same when water is forced through the pipe B'.

In the vessels A A' are mounted to revolve the reels C and C', respectively, on which are fastened the ends of a band, ribbon, or wire D, extending through suitable stuffing-boxes E, arranged in the ends of tubes A², extending from the casings or vessels A A', as plainly illustrated in Fig. 1. The band D after leaving the stuffing-boxes passes over a pulley F of a diameter corresponding to the distance between the centers of the stuffing-boxes, so

that the band readily passes through the said stuffing-boxes on its movement to wind and unwind on the reels C and C'. The pulley F is journaled on a slide G, held adjustably in a suitable guideway G' and connected by a rope G³ with a weight to pull the pulley tight against the band D.

Each of the stuffing-boxes E is preferably provided near its inner flaring mouth with friction-rollers E' and in its outer end with a gland E², forced against a packing E⁴ by a suitable cap E³, screwing on the outer end of the stuffing-box. By this arrangement the friction of the traveling band D is reduced to a minimum. At the same time the band is properly packed to prevent the escape of water from the casings A and A'.

Each of the reels C or C' is preferably mounted on friction-rollers H, as shown in Figs. 1 and 3, the said friction-rollers being supported in the casings, and access is had thereto from the top of the casings, as indicated in the said Fig. 3. The reels C and C' are provided at their top flanges with beveled gear-wheels C² and C³, respectively, in mesh with beveled pinions I and I', respectively, secured on the outer ends of shafts I² and I³, respectively, mounted to turn in suitable bearings attached to the casings, with the outer ends of the shafts I² I³ provided with beveled gear-wheels I⁴ and I⁵, respectively, in mesh at opposite sides with the beveled gear-wheels J and J', secured on clutches J² and J³, respectively, mounted to turn in suitable bearings and adapted to be engaged alternately by clutches K and K', respectively, secured on a shaft K², preferably made tubular and fitted to slide on and turn with a shaft L, provided with a pulley L', connected by belt with other machinery for imparting a rotary motion to the said shaft L.

Now it is evident that when the shaft L is rotated it rotates the shaft K², and when the clutch K of the same is in engagement with the clutch J² the shafts I² and I³ are then rotated simultaneously in such a manner that the rotary motion transmitted to the reels C and C' is such that the band D winds up on the reel C' and unwinds from the reel C. Now when the shaft K² is shifted to the right to move the clutch K out of engagement with the clutch J² and the clutch K' moves in en-

gagement with the clutch J^3 a reverse motion is then given to the shafts I^2 I^3 and the reels C C' to wind up the band D on the reel C . Now when the band D unwinds from a reel
 5 in one of the casings A or A' a suction is produced thereby in the said casing to draw water through the pipe B into the casing, and when the band winds up on a reel in the casing the space taken up by the band within
 10 the casing displaces the water, which is forced through the pipe B' to the ram to actuate the same. Now as the two reels operate simultaneously, the one winding up the band and the other unwinding the same, it is evident
 15 that one casing fills with water while the water in the other is displaced, and vice versa.

In order to shift the shaft K^2 automatically at about the time the band is nearly unwound from the corresponding reel and wound up
 20 on the other, I provide the device shown in Figs. 1 and 2. On the shaft K^2 is secured a one-toothed wheel N , adapted to engage and turn a gear-wheel N' , secured on a shaft N^2 , carrying a worm O in mesh with a worm-
 25 wheel O' , mounted on a shaft turning in suitable bearings, said worm-wheel being provided with an arm P , fulcrumed on one face of the said worm-wheel and pressed on by a spring P' against a stop-pin P^2 on the face of
 30 the said worm-wheel. The arm P is adapted to successively engage fixed pins Q and Q' , so as to be held temporarily stationary, while the worm-wheel O revolves in the direction of the arrow a' until the free end of the arm
 35 finally leaves the fixed pin Q or Q' and strikes a pin R' or R^2 , respectively, secured on an arm R , held between two collars K^3 on the shaft K^2 . It is understood that the arm P compresses the spring P' while resting against
 40 the pin Q or Q' , and when the free end of the arm passes the pin the spring P' suddenly forces the arm against the corresponding pin R' or R^2 to shift the arm R either to the right or to the left to move the clutches K and K'
 45 in or out of engagement with their corresponding clutches J^2 and J^3 on the gear-wheels J J' . A spring-pressed catch S is provided for locking the shifting-arm R either in a neutral position, as shown in Fig. 2, or in either of
 50 its end positions at the time the clutches K or K' engage the corresponding clutches J^2 J^3 , respectively. The spring-pressed catch is for this purpose provided with three notches S' S^2 S^3 for engagement with the lower end of
 55 the arm R , as indicated in Fig. 8.

In the device illustrated in Fig. 6 the reel C^4 , contained in the casing A^3 and connected with the wire D' , is provided with an internal gear-wheel C^5 in mesh with a gear-wheel
 60 I^5 , secured on a shaft I^6 , connected with suitable machinery for imparting a forward-and-backward rotary motion to the shaft I^6 to rotate the reel C^4 to wind or unwind the wire D' .

65 In the arrangement shown in Fig. 7 the reel C^6 , contained in the casing A^4 , is fastened to the shaft I^7 , journaled in suitable

bearings in the casing and connected with suitable means for imparting a rotary forward-and-backward motion to the shaft to
 70 wind up and unwind the band, cord, wire, or like device on or from the said reel, for the purpose above described.

I do not limit myself to the particular construction of the machine as shown and described, as it is evident that the same can be
 75 greatly varied without deviating from the spirit of my invention.

Having thus fully described my invention, I claim as new and desire to secure by Letters
 80 Patent—

1. A hydraulic pump comprising a pair of casings each having a suction-pipe and a discharge, reels mounted to turn in the casings, stuffing-boxes held on the casings, a band,
 85 wire or the like passing through said stuffing-boxes and connected at its ends with the said reels, so that on rotating the reels, one winds up the band while the other unwinds the same, and a pulley adjustably mounted outside the
 90 casing and over which passes the band on its passage from one casing to the other, the diameter of the said pulley corresponding to the distance between the centers of the stuffing-boxes, substantially as shown and described. 95

2. A hydraulic pump, comprising a pair of casings each having a suction-pipe and a discharge, a tube extending from each casing and provided in its end with a stuffing-box, a reel
 100 mounted to turn in each casing a band wire or the like passing through the said stuffing-boxes and connected at its ends with the said reels, so that on rotating the latter one winds up the band while the other unwinds the same, and a pulley outside the said casings and over
 105 which passes the band after leaving the stuffing-boxes, the diameter of the said pulley corresponding to the distance between the centers of the stuffing-boxes, substantially as shown and described. 110

3. A hydraulic pump, comprising a pair of casings each having a suction-pipe and a discharge, reels mounted to turn in said casings and provided at their top with beveled gear-wheels, a band wire or the like connected at
 115 its ends with the said reels so that on rotating the latter one winds up the band while the other unwinds the same, shafts mounted to turn in suitable bearings and provided at their outer ends with beveled pinions in mesh
 120 with the beveled gear-wheels on top of the reels, means connected with the inner ends of said shafts for driving the same simultaneously, and a reversing mechanism for the driving means, substantially as shown and
 125 described.

4. A hydraulic pump, provided with a reversing mechanism for the driving means, comprising a shaft adapted to be turned and to slide, a shifting-arm for shifting the shaft
 130 longitudinally and provided with pins, a wheel driven from the said shaft and carrying a spring-pressed arm normally resting on pins on the said wheel, the said spring-pressed

arm being adapted to engage the pins on the said shifting-arm, and fixed pins adapted to be temporarily engaged by the said spring-pressed arm, substantially as shown and described.

5 5. A hydraulic pump comprising a pair of casings each having a suction-pipe and a discharge, friction-rollers conical in shape and journaled in each of said casings, reels arranged in the casings and each having its inner edge beveled to engage the said friction-rollers and turn thereon, a band wire or the like connected at its ends with the said reels so that on rotating the latter, one winds up the band while the other unwinds the same, and driving means for rotating the reels simultaneously, substantially as set forth.

15 6. A hydraulic pump, comprising a casing having a suction-pipe and a discharge, a reel mounted to turn in said casing and provided on one of its flanges with a gear-wheel, a band wire or the like adapted to pass into the said casing and wind upon and unwind from the said reel, a shaft mounted to turn in suitable bearings and provided with a pinion in mesh with the gear-wheel on the flange of the reel, means for driving the said shaft, and a reversing mechanism for the driving means, substantially as shown and described.

25 7. A hydraulic pump provided with a casing having a suction-pipe and a discharge-pipe, friction-rollers conical in shape and

journaled in the said casing in pairs, a reel in the said casing having its inner edge beveled to engage the said friction-rollers and turn thereon, and a band, wire or the like adapted to pass into the casing and wind upon and unwind from the said reel, substantially as shown and described.

35 8. A hydraulic pump, comprising a pair of casings, each having a suction-pipe and a discharge, a tube extending from each casing and provided in its ends with a stuffing-box, a reel mounted to turn in each casing, a band, wire or the like passing through the said stuffing-boxes and connected at its ends with the said reels, so that on rotating the latter one winds up the band while the other unwinds the same, a pulley over which the band passes after leaving the stuffing-boxes, the diameter of the said pulley corresponding to the distance between the centers of the stuffing-boxes, the said reels being each provided with a beveled gear-wheel, shafts mounted to turn in suitable bearings and provided with beveled pinions in mesh with the beveled gear-wheels on the reels, means for driving the said shafts simultaneously, and a reversing mechanism for the driving means, substantially as set forth.

50 55
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Witnesses:

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