C. L. PAGE.

PUMP.

APPLICATION FILED MAY 3, 1912.

1,069,717.

Patented Aug. 12, 1913.

2 SHEETS—SHEET 1.

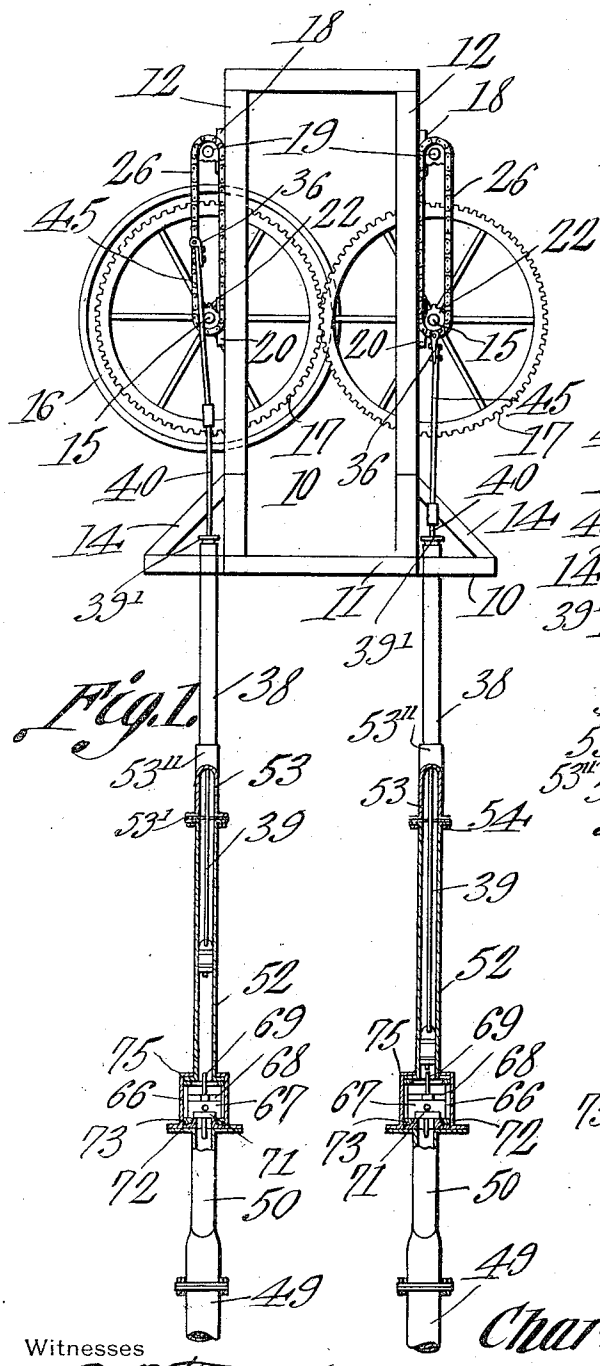


Fig. 1.

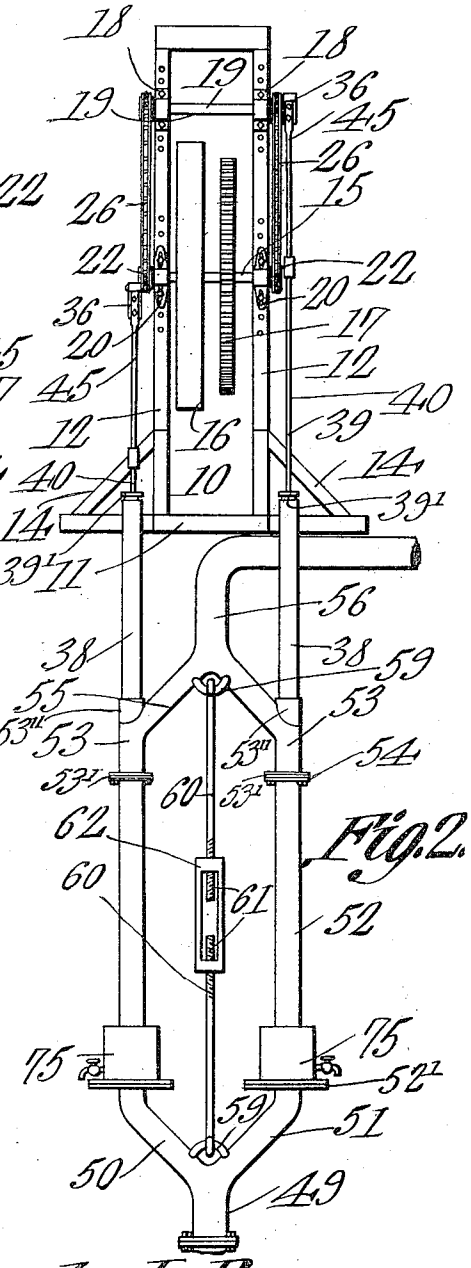


Fig. 2.

Witnesses

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2 SHEETS—SHEET 2.

Fig. 3.

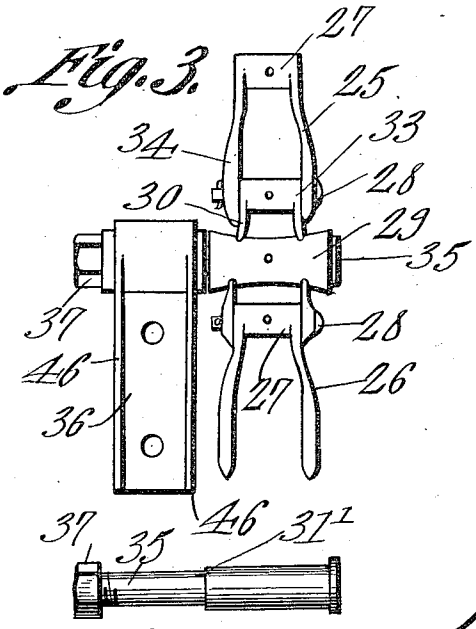


Fig. 4.

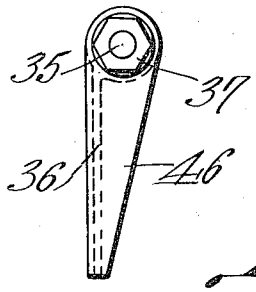


Fig. 9.

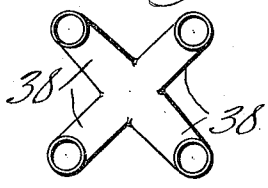


Fig. 3a

Fig. 5.

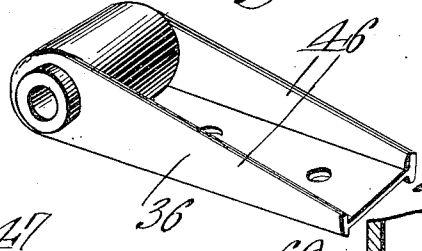


Fig. 7.

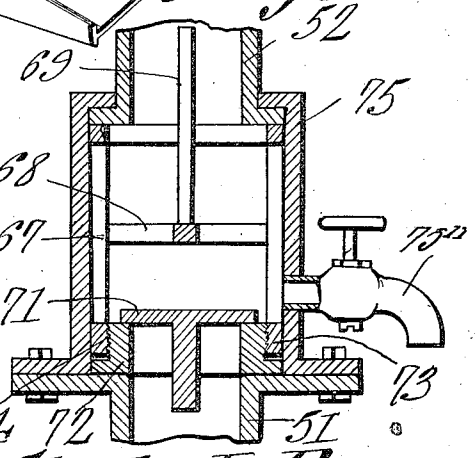


Fig. 6.

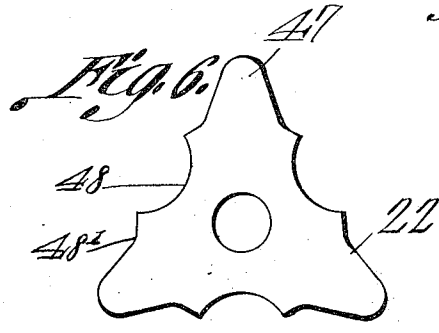
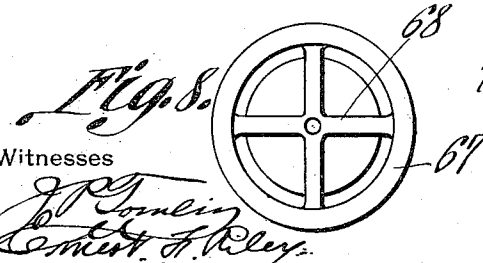


Fig. 8.



Witnesses

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UNITED STATES PATENT OFFICE.

CHARLES L. PAGE, OF PHOENIX, ARIZONA.

PUMP.

1,069,717. Specification of Letters Patent. Patented Aug. 12, 1913.

Application filed May 3, 1912. Serial No. 694,876.

To all whom it may concern:

Be it known that I, CHARLES L. PAGE, a citizen of the United States, residing at Phoenix, in the county of Maricopa and State of Arizona, have invented a new and useful Pump, of which the following is a specification.

This invention relates to an improvement in pump operating mechanisms.

The primary object of the invention is to provide a mechanism for driving a multiplicity of pump plungers.

A further object of the invention is to provide a piston actuating mechanism in which the strokes of the pistons, with respect to one another may be varied.

A still further object of the invention is to provide a water intake and outlet, the members which constitute the inlet and outlet being adjustable with respect to each other.

A still further object of the invention is to provide a valve structure in which the valve seat is adjustable, the adjustable valve seat affording means for retaining the cage against movement within its housing.

A still further object of the invention is to provide a valve, which when the piston of the pump is lowered will contact with the valve of said piston, to permit the water above the piston to be drained from its cylinder.

A further object of the invention is to provide a driving mechanism in which a direct drive is secured, the lift from the center of the driving shaft being but slight.

In the drawings:—Figure 1 is a front elevation. Fig. 2 is a side elevation. Fig. 3 is a detail view showing a portion of one of the drive chains and the connection for the piston actuating links. Fig. 3ª is a detail view of the bolt which is rotatably supported by a sleeve which is carried by the drive chain. Fig. 4 is an elevation of the socket which receives said links. Fig. 5 is a perspective view of said socket. Fig. 6 is a detail view of one of the sprockets about which the drive chain passes. Fig. 7 is a detail view of the valve member. Fig. 8 is a plan view of said valve. Fig. 9 is a detail view showing the connection when four casings are connected to a common outlet.

In the drawings, 10 designates a supporting frame which consists of the longitudinal beams 11 and the vertical standards 12, the beams 11 being connected to the standards by trusses 14. A shaft 15 is supported in journal boxes 20 by the vertical standards 12, a drive pulley 16 being keyed to said shaft and disposed between the standards. Each pair of standards 12 support a shaft 15 and mounted upon each of said shafts is a gear 17, said gears being in mesh. A bearing 18 is supported adjacent the terminal of each of the standards, said bearing being adjustably arranged on said standards, the standards being formed with apertures which receive the bolts which hold the bearings on the standards. The bearings 20 are formed with slots, through which pass the securing devices, the securing devices extending through apertures formed in the standards, the bearings thus being vertically adjustable on the standards, this adjustment of the bearings adjacent the terminals of the standards, and the bearings intermediate the ends of the standards being provided to take up slack in the chains, it being noted that the bearings may be adjusted on said standards, and links placed in the chain in order to give the rods which are actuated by the chains, a longer stroke. Arranged on these two sets of shafts are sprockets 22 shown in detail in Fig. 6 of the drawings, the chains 24 connecting the sprockets of the upper shaft with the sprockets of the lower shaft. The links of these chains are of a peculiar configuration, being formed with the bowed arms 26, the bowed arms of one link embracing the transversely disposed portions 27 of an adjacent link, the connecting pin 28 passing through said arm and the portions 27 of the link. A sleeve 29 is supported by each of said chains, said sleeve being connected to the arms 30, the sleeve either being formed integral with said arm or bolted to the same, the reduced extension 33 of the sleeve being embraced by the arms 26 of one of the links. The sleeve 29 supports a shaft 35 on which is mounted a socket member 36, the shaft 35 being reduced in thickness to form the shoulder 31′, the terminal of the shaft 35 remote from the sleeve, receiving a nut 37, the socket member 36 being supported to move with the shaft 35. It will be noted that the shaft may be fixed with respect to the supporting sleeve, and that in lieu of the shaft, said sleeve may be provided with a trunnion which will support the socket member, the socket member being disposed to rotate on the shaft.

In the form shown in the drawings, it will be noted that as the chain is rotated, the socket member 36 may be maintained in parallel with the uprights 12.

In the drawings two sets of cylinders are provided, each of the four chains being equipped with a rod actuating mechanism, the casings 38 receiving said rods and directing their movements within the casings disposed below the same. A rod 39 is disposed for vertical movement within each of the casings 38, said rods 39 being connected by means of a flat flexible rod or link 40, which is bolted to the socket member 36, the upstanding edges 46 of the socket member embracing the upper terminal of the rod. It will thus be noted that as the shafts 15 are rotated by the meshing gears 17, one of the shafts 15 being driven by the drive pulley 16, that the chains will rotate about the sprockets 22, reciprocating the rods 39 within the casing.

The sprockets 22 are formed with teeth 47 the spaces between the sprockets being formed with the concavities 48 and 48′ (Fig. 6). It will thus be noted that the sprockets will engage between the arms 26 of the chains, the transversely disposed portion of the links resting in the concavities 48′ and the sleeve 29 when passing over the sprocket resting in the concavity 48 as the chain passes over the sprockets. Water is fed into the cylinders through the intake 49, which is provided with the branches 50 and 51. These branches are connected to the unions 75, the unions 75 receiving the lower terminals of the pump casings 52. The sections 52 are coupled in any suitable manner with the vertically inclined portions 55 of the outlets 56. These portions 55 are provided with the vertically disposed tubular portions 53″ which are screw threaded to receive the terminals of the casings 38, any suitable connection being interposed between said tubes and the vertical extensions of the Y-outlet 56 being connected by any suitable couplings, the upper terminals of the casings 38 being provided with stuffing boxes 39′ through which the rods 39 pass. At the point where the vertically extending portions 53 of the outlet are connected to the casing 52, a gasket 53′ is disposed, said gasket serving to center the rods 39 within the cylinders.

Attention is called to the fact that the water outlet is in the form of a Y and the water inlet which is of a similar configuration is separate from the casing. It will thus be noted that when it is desired to repair the pistons, or repack the same, the pistons may be raised above the couplings 54 and by detaching the coupling 52′ then raising the union the casing 52 and said union may be removed. It will be noted that the pistons may then be lowered and conveniently repacked. The sections 50 and 56 are each provided with loops or securing devices 59 to each of which is secured a rod 60, the terminals 61 of said rod being received by a turn buckle 62. It will thus be noted that a water pipe outlet and inlet are adjustable with respect to each other, the turn buckle 62 providing means for securely holding the sections which form the outlet and inlet, in position. The valve 66 shown in detail in Fig. 7, consists of the cage 67, the spider 68 which extends transversely and is disposed interiorly and centrally of the casing supporting the standards 69, which when the pump piston is lowered will open the valve in said piston allowing the water above the piston, to pass into the union 75, the same being drained off through the faucet 75″. The valve 71 seats on the adjustable member 72, this annular member 72 is formed with the reduced screw threaded extension 73 which extends within the cage 66 being received by the screw threaded portions 74 of said cage. It will be noted by this construction that when the valve is assembled within the union 75, the annular member 72 may be adjusted with respect to the cage to hold the same against movement in the union or connection 75.

While the drawings show but two sets of cylinders, it will be noted that any number may be employed, attention being called to the fact that when four cylinders are used, the main outlet is provided with four branch pipes connected to the same.

The many advantages of a pumping mechanism of this character will be clearly apparent as it will be noted that by adjusting the socket members on the chains, the relative stroke of the pistons may be varied and that by lengthening or shortening the chains, the stroke of the pistons with respect to each other may be varied. It will also be noted that by the peculiar arrangement of the pump cylinders, the manner in which the same are supported between the Y's which form the inlets and outlets at any of the cylinders may be conveniently removed for the purpose of repacking the pistons or repairing either the valves in the pistons or the valves in the unions. It will also be noted that by providing the unions of the character shown in the drawings, that a large valve may be positioned at the base of the cylinder which would be impossible were the cylinder connected directly with the inlet. Attention is called to the fact that the construction may also provide means for draining the water above the pistons. It will also be noted that the sections which form the water inlet and outlets are so connected that they will not readily become displaced and that said sections are adjustable with respect to each other.

What is claimed is:

1. A pump operating mechanism including shafts disposed in pairs, meshing gears carried by one shaft of each pair, the shafts of each pair being arranged in superposed relation, sprockets mounted on each shaft, two chains, one pressing over said sprockets of each pair of shafts, a sprocket member supported by each chain and disposed to move with respect to said chains, and a connection between said sprocket members and the rods of the pumps.

2. A pump operating mechanism including a supporting structure, two pairs of shafts supported by said structure in superposed relation, two chains, one to each pair of said shafts, a link carried member interposed between the links of each chain and having a pivotal connection with said links, said member comprising a sleeve whose axis is parallel to the axes of the links, a shaft supported by said sleeve, a socket member rotatably mounted upon said shaft, said socket member having a connection with the rod of the pump.

3. A pump operating mechanism, including shafts disposed in pairs, the four shafts of each pair being arranged in superposed relation, a sprocket mounted on each shaft, two chains passing over each pair of sprockets, a sleeve link supported by each chain, a cylindrical stud having an enlarged portion rotatably mounted in each sleeve, and a sleeve having a rod connecting portion mounted rigid upon the reduced end of the stud.

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

CHARLES L. PAGE.

Witnesses:
SELINA WILLSON,
J. E. SIMPSON.

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