W. L. DAYTON.

BALANCING PUMP JACK.

APPLICATION FILED FEB. 27, 1917.

1,293,608.

Patented Feb. 4, 1919.

Fig. 2.

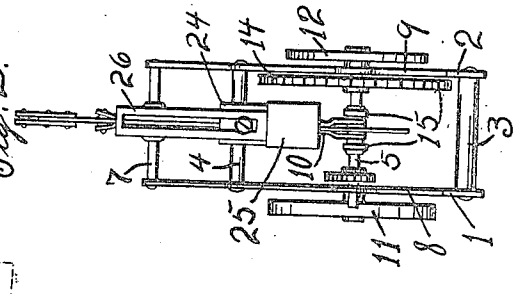


Fig. 1.

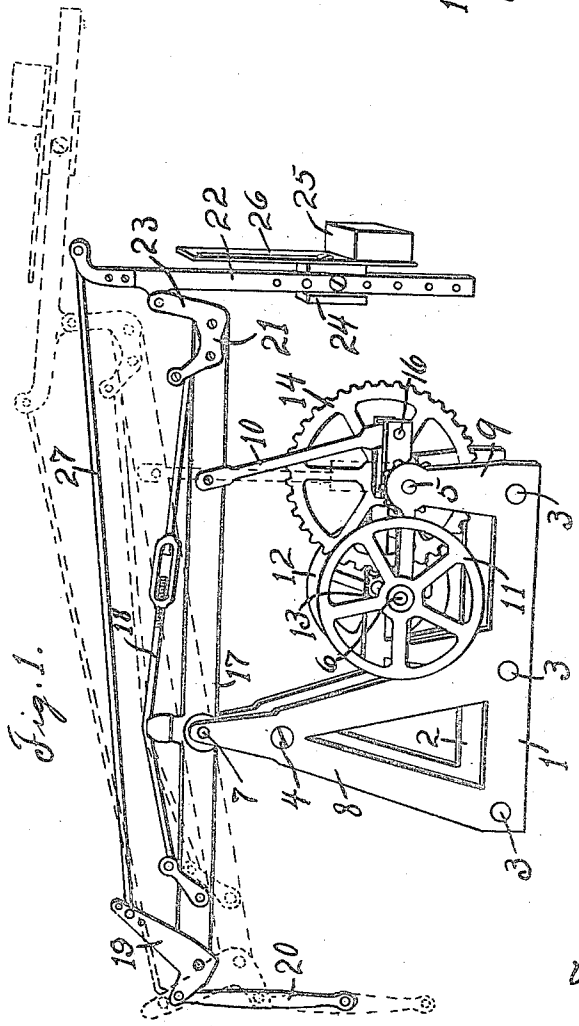
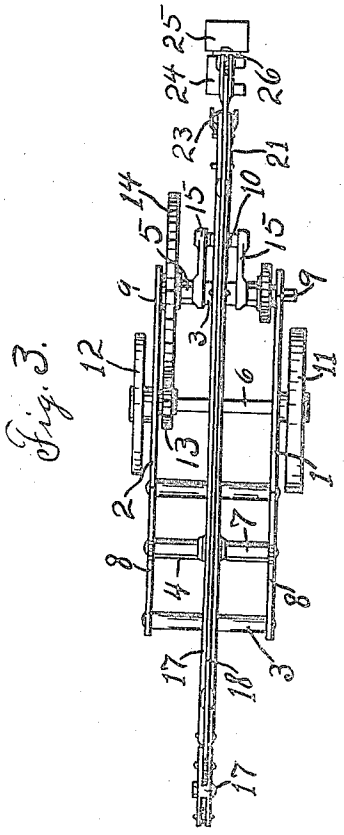


Fig. 3.



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BALANCING PUMP-JACK.

1,293,608. Specification of Letters Patent. Patented Feb. 4, 1919.

Application filed February 27, 1917. Serial No. 151,164.

To all whom it may concern:

Be it known that I, WILLIAM L. DAYTON, a citizen of the United States, residing at Fort Worth, in the county of Tarrant and State of Texas, have invented certain new and useful Improvements in Balancing Pump-Jacks, of which the following is a specification.

My invention relates to pump jacks and more particularly to means for increasing the power of the pump jacks, and the object is to provide simple devices for aiding the driving mechanism. It is well known that in pumping water the sucker rod is pulling the load of water on the upstroke and water is being discharged and at the end of the upstroke, the foot valve catches the load and holds the same until the limit of the downward stroke of the sucker rod. The object of this invention is to provide a shifting weight which will balance the sucker rod during the down stroke and then be shifted to a different position for balancing the load on the upstroke and the advantage of the improvement is that it will prevent jerking motion on the driving mechanism both on the upstroke and on the down stroke. Other objects and advantages will be fully explained in the following description and the invention will be more particularly pointed out in the claims.

Reference is had to the accompanying drawings which form a part of this application.

Figure 1 is a side elevation of the pump jack. Fig. 2 is a rear elevation of the same. Fig. 3 is a plan view.

Similar characters of reference are used to indicate the same parts throughout the several views.

The pump jack is provided with a frame in two parts 1 and 2 which are connected by suitable cross-bars 3 and 4 and by the shafts 5, 6, and 7. The frame pieces 1 and 2 include uprights 8 and 9. The shaft 5 is the crank shaft for actuating the pitman rod 10 and the shaft 6 is the power shaft. A balance wheel 11 is mounted on the shaft 6 and a power pulley 12 is mounted on shaft 6 and may be driven by any suitable power. A pinion 13 is rigid with the shaft 6 and drives a cog wheel 14 which is rigid with the crank-shaft 5 for driving this shaft. The shaft 5 has crank arms 15 and a connecting shaft 16 to which the pitman 10 is connected. The pitman rod 10 is pivotally connected to a walking beam 17, which is braced by a rod 18. The walking beam or lever 17 is fulcrumed on the shaft 7 and is actuated by the pitman rod 10. A bell crank lever 19 is fulcrumed on the front end of the lever or walking beam 17 and a sucker rod connection 20 is pivotally connected to the lever 19. A brace connection 21 is rigidly attached to the rear end of the walking beam 17. A weight lever 22 is fulcrumed on the upright arm 23 of the brace connection 21. Two weights 24 and 25 are provided for weighting the lever 22 and the weight 24 is adjustably attached to the lever 22 and the weight 25 is adjustably attached to the weight 24, the weight 25 having a slotted shank 26 for adjusting the weight 25 on weight 24. The levers 22 and 19 are connected pivotally to a link bar 27.

In operation, the weights 24 and 25 will be shifted or swung to the dotted outline position. The weights are shifted to the dotted outline position immediately on the starting of the upstroke of the sucker rod and remain there until the water is discharged, and while in the dotted outline position, the weights serve to balance the load of water. On the downstroke, the weights immediately come to the full line position and balance the sucker rod, and prevent jerking on the operating mechanism. When the weights are in the dotted outline position, they aid the power mechanism and prevent jerking on the machinery. The weights keep the operating parts, including the sucker rod, in balance all the time and decrease the amount of power required for pumping purposes.

What I claim, is,—

1. A pump jack comprising a frame, a walking beam fulcrumed on said frame, a power wheel operatively connected to said frame and said walking beam for actuating said beam, a weighted lever fulcrumed on one end of said walking beam, and a power transmitting lever fulcrumed on the other end of said beam and operatively connected to said weighted lever.

2. A pump jack comprising a frame, a walking beam fulcrumed on said frame, means for actuating said walking beam, a weight lever fulcrumed on one end of said beam, a weight carried thereby, and a power transmitting lever fulcrumed on the other end of said frame and operatively connected to said weight lever.

3. A pump jack comprising a frame, a walking beam fulcrumed on said frame, means for actuating said beam, a power transmitting connection on one end of said frame, and a weighted lever fulcrumed on the other end of said beam and operatively connected to said power transmitting connection, the weight of said lever being automatically utilized by the operation of said power transmitting connection to aid the pumping operation.

4. A pump jack comprising a frame, a walking beam fulcrumed on said frame, means for actuating said beam, a power transmitting connection on one end of said beam, a lever fulcrumed on the other end of said beam, a weight carried thereby, and an operative connection of said lever with said power transmitting connection, said weight being automatically utilized by said power transmitting connection and said lever to aid the pumping operation.

5. A pump jack comprising a frame, a walking beam fulcrumed on said frame, means for actuating said beam, a power transmitting connection on one end of said beam, an adjustable weight, and a lever fulcrumed on the other end of said walking beam and operatively connected to said power transmitting connection, said weight being shifted to different positions by said lever when actuated by said power transmitting connection to aid the pumping operation.

In testimony whereof, I set my hand, this 27th day of January, 1917.

WILLIAM L. DAYTON.