

J. A. BROWN.
 MECHANISM FOR TRANSMITTING POWER FOR PUMPING PURPOSES.
 APPLICATION FILED DEC. 8, 1908.

1,025,049.

Patented Apr. 30, 1912.

2 SHEETS—SHEET 1.

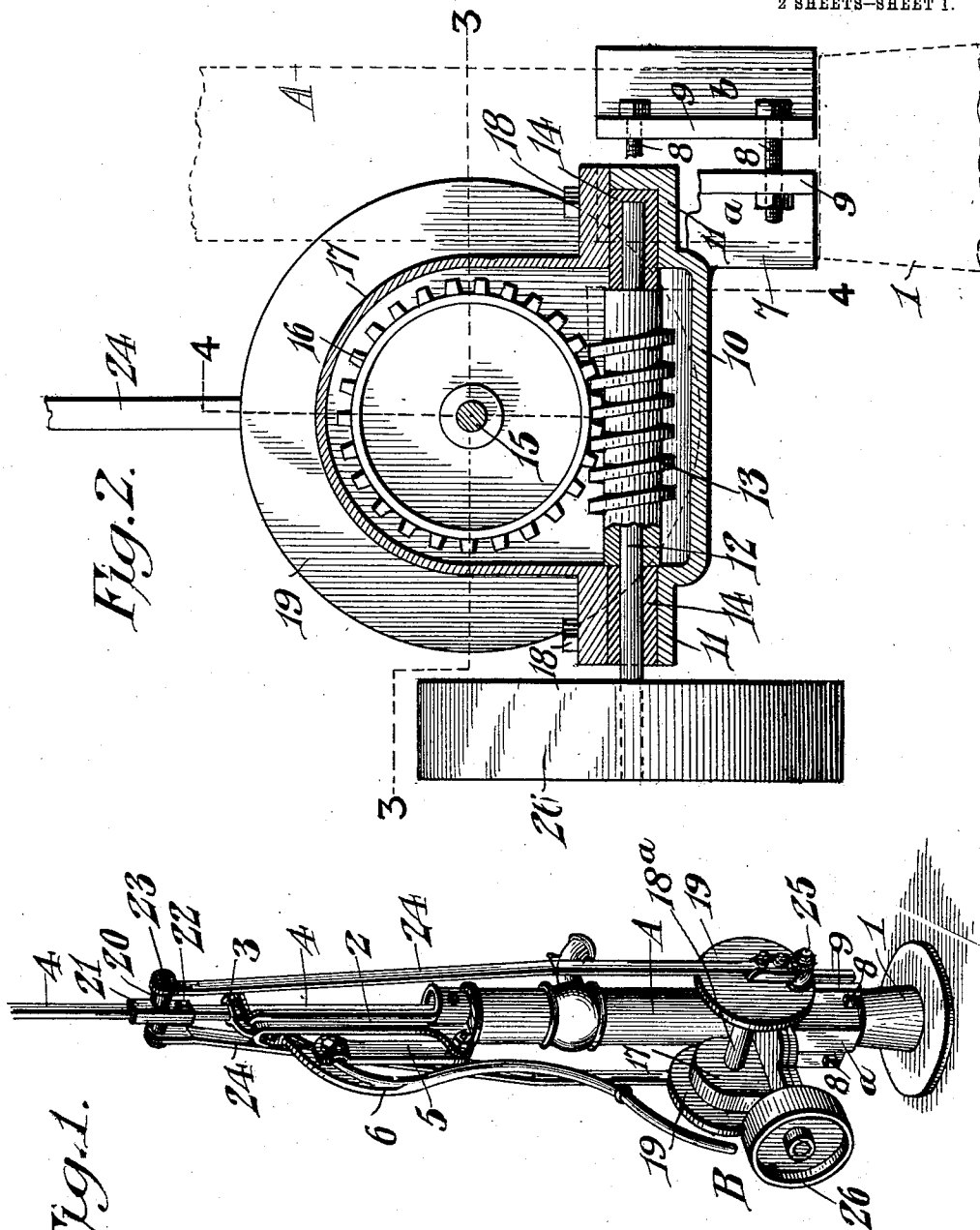


Fig. 1.
 Witnesses
James E. McLaughlin
C. Bradway.

James A. Brown, Inventor
 By *E. G. Siggers*
 Attorney

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Fig. 4.

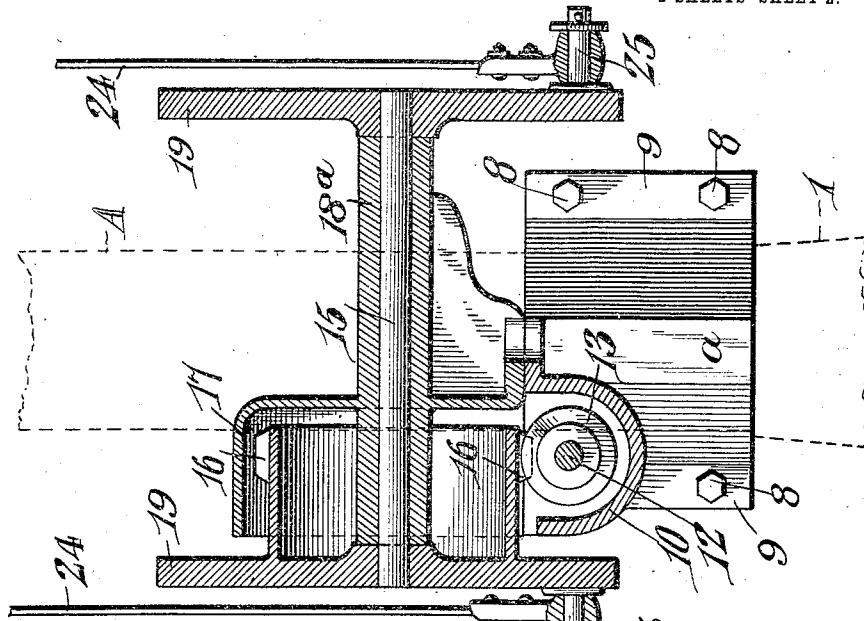
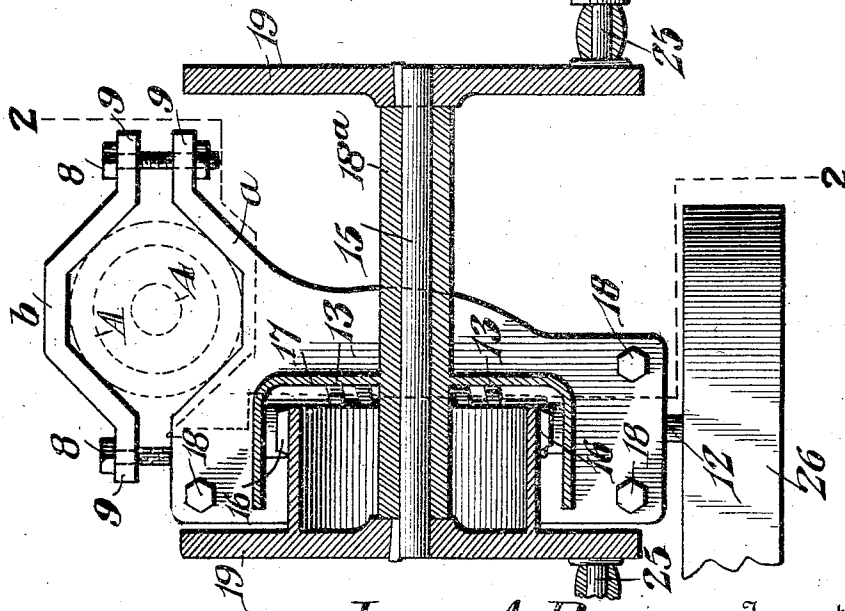


Fig. 3.



James A. Brown, Inventor

By

E. G. Singer

Attorney

Witnesses

Jas. F. McLaughlin

C. Bradley

UNITED STATES PATENT OFFICE.

JAMES A. BROWN, OF CEDAR RAPIDS, IOWA, ASSIGNOR OF ONE-HALF TO IOWA WIND-MILL & PUMP CO., OF CEDAR RAPIDS, IOWA.

MECHANISM FOR TRANSMITTING POWER FOR PUMPING PURPOSES.

1,025,049.

Specification of Letters Patent.

Patented Apr. 30, 1912.

Application filed December 8, 1908. Serial No. 466,505.

To all whom it may concern:

Be it known that I, JAMES A. BROWN, citizen of the United States, residing at Cedar Rapids, in the county of Linn and State of Iowa, have invented certain new and useful Improvements in Mechanism for Transmitting Power for Pumping Purposes, of which the following is a specification.

This invention relates to pumps of that type adapted to be operated either manually or by motive power, and it relates more particularly to an attachment in the nature of a transmission gear adapted to be applied to an ordinary hand pump whereby the piston rod thereof may be operated by a motor.

The invention has for one of its objects to improve and simplify the construction and operation of power transmitting mechanisms of this character so as to be comparatively simple and inexpensive to manufacture, reliable and efficient in use, and so designed as to be readily applied to pumps already in use.

Another object of the invention is the provision of a power-transmitting mechanism which is mounted on the pump barrel adjacent the base thereof and including a crank shaft operatively connected with the piston rod of the pump and driven by a worm gear.

With these objects in view and others, as will appear as the description proceeds, the invention comprises the various novel features of construction and arrangement of parts which will be more fully described hereinafter and set forth with particularity in the claims appended hereto.

In the accompanying drawings, which illustrate one embodiment of the invention, Figure 1 is a perspective view of a pump equipped with the improved power transmitting attachment. Fig. 2 is an enlarged vertical section on line 2-2, Fig. 3. Fig. 3 is a horizontal section on line 3-3, Fig. 2. Fig. 4 is a vertical section on line 4-4, Fig. 2.

Similar reference characters are employed to designate corresponding parts throughout the views.

Referring to the drawings, A designates the standard or barrel of the pump, which is supported by the usual base or socket piece 1 in upright position, and on the up-

per end thereof is a guide bracket 2 having a bearing 3 in which the piston rod 4 reciprocates, and on the bracket is a link 5 supporting the handle or lever 6 for manually operating the pump, the handle being preferably detached from the piston rod when the power transmitting mechanism is in use. The pump thus shown and described is of ordinary construction and the attachment is so designed as to be readily applied thereto without changing the design or altering the construction of the pump. The attachment designated generally by B is mounted wholly on the pump whereby the latter constitutes a support and the parts thereof are compactly arranged and substantially constructed. The attachment is applied and removed as a unit from the pump.

A sleeve 7 composed of two parts *a* and *b* embraces the barrel of the pump and is secured thereto by bolts 8 passing through opposed flanges 9 on the two parts of the sleeve. The part *a* of the sleeve has a horizontally-extending bracket 10 which is offset from the center of the sleeve and is formed with spaced bearings 11 in which rotates a horizontal shaft 12 that is equipped with a worm 13 disposed between the bearings, the latter having linings of babbitt or the like. This shaft is disposed approximately in tangential relation to the barrel of the pump, and mounted above the same is a transversely-extending horizontal shaft 15 that carries a gear which meshes with the thread of the worm or screw 13 to be driven by the latter. Disposed around the gear wheel 16 is a casing or hood 17 secured by bolts 18 to the bearings of the bracket 10, the said hood cooperating with the bracket to form a housing for the worm gearing. The hood or casing 17 has a tubular member 18^a which forms the bearing for the shaft 15, the shaft projecting out of the bearing at both ends for receiving crank disks 19 which are equidistantly spaced from a plane passing centrally through the pump in a direction parallel with the worm shaft, as will be evident from Fig. 3. The gear 16 is carried by one of the disks 19 and is in the form of a hollow drum having teeth extending around its periphery, said drum projecting into the casing or hood 17 which is open at one side for receiving it.

For attaching the crank disks with the pump rod 4, a cross head 20 is secured to the latter which has a sleeve 21 through which the pump rod extends, and passing through the sleeve and pump rod is a detachable pin 22 which is removed when the pump is to be operated by hand. When the pin is removed, the pump rod may be reciprocated loosely through the sleeve, the latter then acting as a guide. Projecting from opposite sides of the sleeve are trunnions 23 to which the upper ends of the connecting rods 24 are fastened. The pump handle 6 connects with the piston rod at a point between the bearing 3 of the bracket 2 and the base of the latter, while the cross head is connected with the piston rod at a point above the bracket. The lower ends of the connecting rods 24, which extend downwardly along opposite sides of the pump, are attached to crank pins 25 which extend outwardly from the outer faces of the crank disks 19, said crank pins being arranged in alinement so that the connecting rods will reciprocate in unison.

Power is applied to the worm shaft in any suitable manner, as for instance, by a belt and pulley device connected with an electric or other motor, and for this purpose, the worm shaft extends through the outer bearing and is equipped with a pulley 26. When the pump is to be operated by the motor, the handle is preferably detached and the cross head connected with the pump rod. As the pulley is rotated by the application of power, the worm turns the gear 16 on the crank shaft, which, in turn, imparts longitudinal movement to the connecting rods 24 in opposite directions for reciprocating the pump rod. It will thus be seen that the pump can be readily changed for operation either manually or by motive power.

By connecting the cross head of the rods or pitmen 24 to the pump rod above the connection of the handle 6 to the pump rod, both friction and side strain is reduced through a reduction of the ratio between the length of the stroke and the length of the pitmen, besides the added convenience in being able to operate the pump by power without removing the handle which is used for hand pumping. By mounting the power transmitting mechanism as a whole upon the pump barrel, and making the two a unit, it overcomes any tendency of the pump to shunt the strain put upon it by the power transmitting mechanism. There is also an advantage in setting and adjusting the pitmen. The spacing of the crank disks equi-distantly from a vertical line passing centrally through the pump barrel (Figs. 3 and 4) equalizes the strain upon the crank pins and pitmen and between the crank pins and cross head, and prevents any

side strain upon the pump barrel and the working parts.

The object in placing the shaft 12 tangential to the pump barrel is primarily to locate it at right angles with the crank shaft 15, for it is necessary to arrange a working position for the worm gearing at one side of the center, as the crank shaft is mounted upon the pump barrel with the latter centrally of the said shaft.

The attachment constituting this invention is applicable to any ordinary pump with which, when connected, it becomes a unitary part thereof.

From the foregoing description, taken in connection with the accompanying drawings, the advantages of the construction and of the operation will be readily apparent to those skilled in the art to which the invention appertains, and while I have described the principle of operation of the invention, together with the apparatus which I now consider to be the best embodiment thereof, I desire to have it understood that the apparatus shown is merely illustrative, and that such changes may be made when desired as are within the scope of the claims appended hereto.

Having thus described the invention, what I claim as new, and desire to secure by Letters Patent, is:—

1. A power-transmitting attachment for pumps comprising a sleeve composed of detachable parts adapted to embrace the barrel of the pump, one part having a laterally-extending bracket, bearings on the bracket, a worm shaft mounted in the bearings, a worm on the shaft disposed between the bearings, a hood or casing supported on the bracket, a gear arranged in the said casing and meshing with the said worm, a second shaft supporting the gear and arranged at right angles to the first shaft, crank disks mounted on the ends of the second shaft, one of the said disks forming a connection between the gear and the second shaft, crank pins on the disks arranged in alinement, pitmen connected with the crank pins, and a cross head hingedly connected with both pitmen and also connected to the piston rod of the pump.

2. A power-transmitting attachment for pumps comprising a bracket having a sleeve at its inner end for embracing the barrel of the pump and provided with bearings, a worm shaft mounted in the bearings, a worm on the shaft, a casing mounted upon the bracket over the worm shaft and open at one side, said casing containing a tubular bearing extending transversely over the worm shaft, a crank shaft mounted in the tubular bearing with its ends projecting beyond each side of the pump barrel and provided with a gear meshing with the worm, crank disks fastened to the ends of the

crank shaft, one of the disks being disposed at and partially closing the open side of the casing and supporting the said gear, pitmen connected with the crank disks, and a crosshead connected with the pitmen and adapted to be connected with the piston of the pump.

3. A power-transmitting attachment for pumps comprising a two-part sleeve for embracing the barrel of the pump, one part of the sleeve being formed integral with a horizontally extending bracket which is offset from the center of the sleeve and is provided with bearings, a hood or casing mounted on the bracket, a worm shaft mounted in the bearings of the bracket and extending in a tangential relation to the pump barrel, a worm mounted on the shaft,

a gear meshing with the worm, said casing containing a bearing extending transversely to and above the worm shaft, a crank shaft mounted in the bearing of the casing with its ends projecting therefrom at opposite sides of the pump barrel, crank disks fastened to the ends of the crank shaft, said crank disks being disposed on opposite sides of the worm shaft, pitmen connected with the crank disks, and a cross head connected with the pitmen and adapted to be connected to the piston of the pump.

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

JAMES A. BROWN.

Witnesses:

R. S. TOOGOOD,
F. O. MEKATA.