May 31, 1938. C. R. VICK 2,118,955

POWER TRANSLATING MECHANISM

Filed March 14, 1935

Fig. 1.

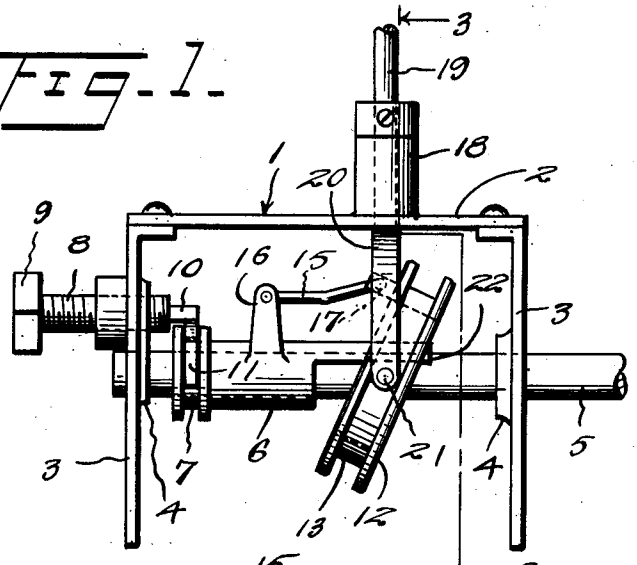


Fig. 2.

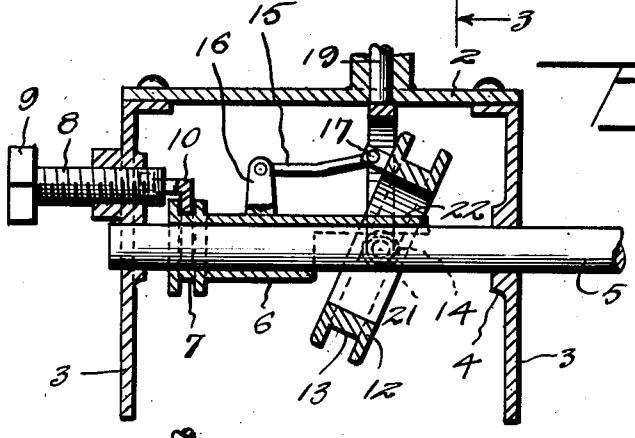
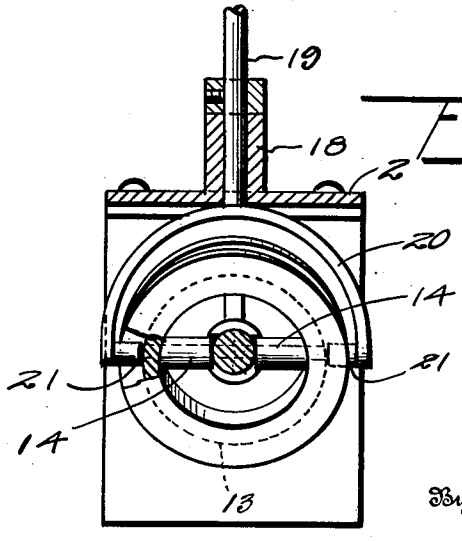


Fig. 3.



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POWER TRANSLATING MECHANISM

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2 Claims. (Cl. 74—70)

This invention relates to the class of power translating mechanisms and pertains particularly to an improved mechanism for translating a continuous rotary motion to oscillatory motion.

The primary object of the present invention is to provide an improved form of mechanical movement whereby continuous rotary motion may be smoothly translated into oscillatory movement and whereby the degree of oscillatory movement may be finely regulated without interfering with the rotating driving elements.

Another object of the invention is to provide a novel power translating mechanism of the character above set forth which has a minimum of moving parts and which is of such a character that it may be housed in an oil bath and changes made in the parts for altering the degree of oscillation, from the exterior of the housing.

The invention will be best understood from a consideration of the following detailed description taken in connection with the accompanying drawing forming part of this specification, with the understanding, however, that the invention is not confined to any strict conformity with the showing of the drawing but may be changed or modified so long as such changes or modifications mark no material departure from the salient features of the invention as expressed in the appended claims.

Figure 1 is a view in side elevation of the mechanism embodying the present invention.

Figure 2 is a view in longitudinal section through the structure, as illustrated in Figure 1.

Figure 3 is a vertical transverse section taken on the line 3—3 of Figure 1.

In the illustration of the present invention, the same has been shown per se, that is, without connection with a driving means or any specific mechanism to be driven by the oscillating element through which the power from the driving mechanism is transferred. The present invention is applicable to many types of machines, such as windmills, washing machines, pump jacks, or any other machine where it is desirable to operate an oscillating element from a continuously driven rotary element.

Referring more particularly to the drawing wherein like numerals of reference designate corresponding parts throughout the views, the mechanism is illustrated mounted upon a carrying bracket or frame, which is indicated as a whole by the numeral 1, and which may represent portions of the walls of a housing or merely a supporting unit by which the mechanism may be attached to any support convenient to the machine in association with which it is to be used. The structure 1, which will be referred to generally as a frame, comprises a horizontal portion 2 and parallel end portions 3 which may be either vertically or horizontally disposed according to the position in which the top part 2 of the frame is mounted.

The ends or walls 3 of the frame are formed to provide or are provided with bearings 4 through which extends a shaft 5, one end of which extends beyond the frame structure 1 for connection with a suitable driving mechanism, not shown. The rotatably mounted shaft 5 has slidably mounted thereon the sleeve 6 which at one end carries the peripherially grooved collar 7. The wall 3, adjacent the collar 7, has a screw 8 threaded therethrough which carries the head 9 upon its outer end and at its inner end is swivelly coupled with the arm portion 10 forming a lateral extension of a fork 11 which engages in the grooved collar 7. By rotating the threaded screw 9 so as to effect its longitudinal movement, the sleeve 6 is caused to slide upon the shaft 5.

Encircling the shaft 5 is a wheel 12, the periphery of which is provided with the groove 13. The shaft 5 carries the alined radially extending spokes 14 which are pivotally coupled with the wheel 12 so that the latter is maintained with the shaft extending through its axial center but is permitted oscillatory movement relative to the shaft so that the plane in which it lies may be altered from a position at right angles to the shaft 5 to an acute oblique position relative to the shaft. This alteration in the position of the grooved wheel 12 is effected through the medium of the link 15 which couples an ear 16 carried by the sleeve 6, with an ear 17 carried by the wheel 12.

Extending through the bearing 18, carried by the portion 2 of the frame 1, is a shaft 19 which constitutes the driven shaft of the mechanism and this connects with the large fork 20 which partially encircles the periphery of the grooved wheel 12 and which carries the inwardly directed fingers 21, which slidably engage in the groove 13. These fingers may be in the form of rollers suitably rotatably mounted on the ends of the fork 20 so that the friction created through their contact with the wheel 20 will be reduced to a minimum when the parts are moving.

From the foregoing it will be readily apparent that with the mechanism herein described, adjustment of the parts may be smoothly made from a point where the shaft 5 may rotate without moving the driven shaft 19, to a point where

the driven shaft may be caused to alternately turn through substantially a half revolution.

It will be observed that a portion of the sleeve 6 is extended a substantial distance beyond the spokes 14 of the wheel 12, as indicated by the numeral 22. This serves to prevent the wheel 12 from coming into contact with the rotating shaft 5 when the wheel is oscillated to the extreme oblique position relative to the shaft 5. When in this position the opposite side of the wheel will contact with the sleeve 6 at the inner end of the extended portion thereof.

From the foregoing it will be readily apparent that the degree of oscillation of the driven shaft 19 may be accurately controlled and changes made therein while the mechanism is in motion, merely by altering the position of the screw 8 so as to effect the sliding movement of the sleeve 6 on the driving shaft 5.

Having thus described the invention, what is claimed is:—

1. A power translating mechanism, comprising a drive shaft, a driven shaft in angular relation therewith, a wheel having the drive shaft passing through its axial center, a pivot pin passing transversely through the drive shaft and connected at its ends with opposite sides of the wheel whereby oscillation of the wheel on the shaft is permitted, the wheel having a circumferential peripheral groove, a fork connected with said driven shaft and receiving said wheel between its ends, members carried by the ends of the fork disposed in said groove of the wheel permitting the rotation of the wheel in the fork, a sleeve mounted upon the drive shaft and having longitudinal movement thereon and having an integral semi-cylindrical end extension extending across and engaging the pivot pin whereby the pin effects rotation of the sleeve with the drive shaft, a circumferentially grooved collar integral with the other end of the sleeve, a post formed integral with the sleeve and projecting radially therefrom, a relatively long link pivotally coupling the outer end of said post with the wheel adjacent the periphery of the latter whereby oscillation of the wheel may be effected to the point of bringing the periphery thereof in contact with said sleeve, a shifing fork engaged in the groove of said collar, and means free of connection with the drive shaft but movable in a path extending longitudinally thereof for effecting the shifting of the last mentioned fork and the oscillation of the wheel.

2. A power translating mechanism comprising, in combination, a drive shaft, a wobble plate mounted on said shaft for angular adjustment relative thereto, a driven shaft perpendicular to said drive shaft and constructed to be oscillated by said wobble plate, and means for adjusting the angularity of said wobble plate comprising a member rotatable with and slidable longitudinally of the drive shaft, a link connected to said member and to said wobble plate adjacent the periphery thereof for pushing the wobble plate to a position of maximum angularity, said link lying substantially parallel to the drive shaft and at an angle to the axis of the wobble plate when the wobble plate is at its position of maximum angular adjustment whereby a minimum force is required to hold said wobble plate in its adjusted position, and means eccentric of the drive shaft for adjusting said member longitudinally of the drive shaft.

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