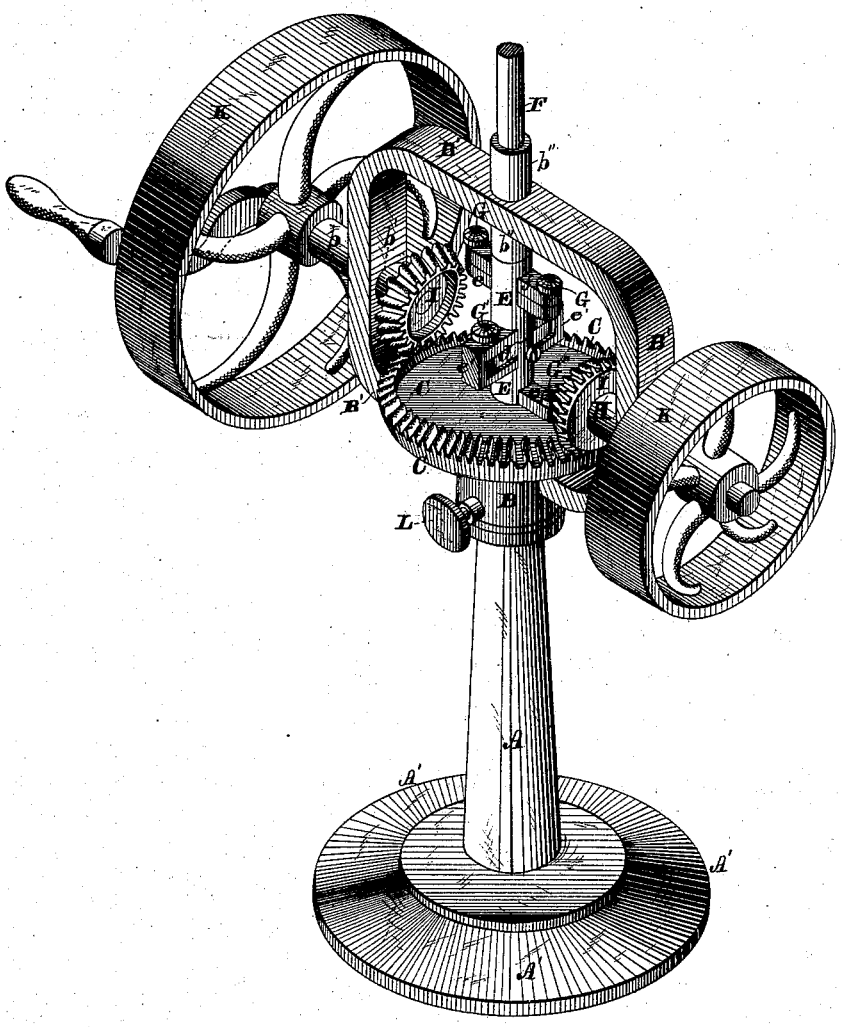
2 Sheets—Sheet 1.

J. S. ADAMS.

Mechanism for Transmitting Motion.

No. 205,331. **Patented June 25, 1878.**

Fig. 1.



WITNESSES:

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2 Sheets—Sheet 2.

J. S. ADAMS.

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Fig. 2.

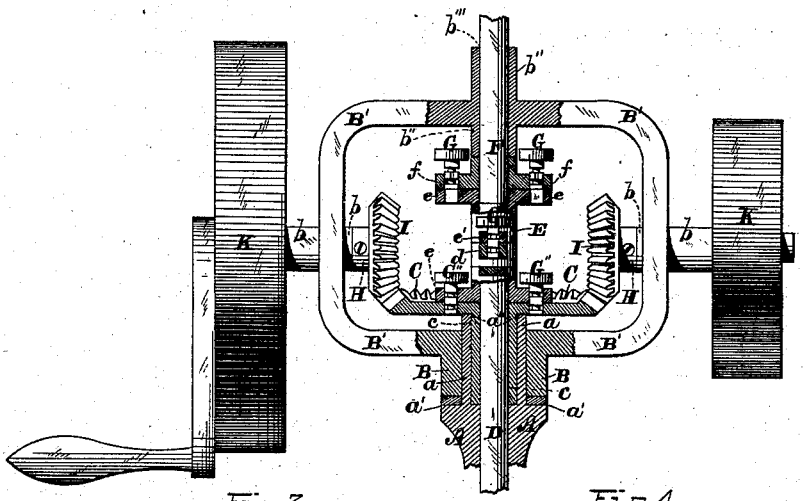


Fig. 3.

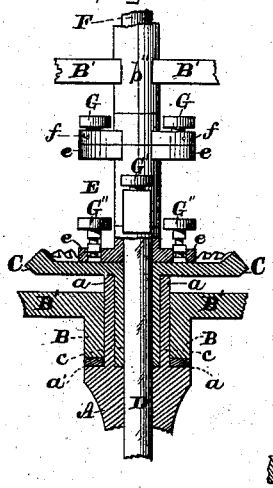


Fig. 4.

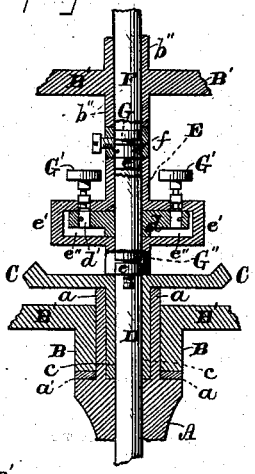
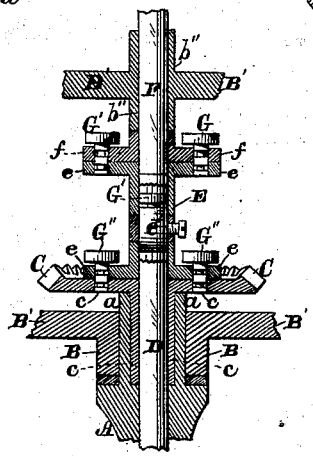


Fig. 5.



WITNESSES:

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UNITED STATES PATENT OFFICE.

JOHN S. ADAMS, OF ELGIN, ILLINOIS.

IMPROVEMENT IN MECHANISMS FOR TRANSMITTING MOTION.

Specification forming part of Letters Patent No. **205,331**, dated June 25, 1878; application filed April 19, 1878.

To all whom it may concern:

Be it known that I, JOHN S. ADAMS, of Elgin, in the county of Kane, and in the State of Illinois, have invented certain new and useful Improvements in Mechanism for Transmitting the Power of a Vertical Rotary Shaft to Pumps, Horizontal Shafts, &c.; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a perspective view of my improved mechanism as arranged for use in connection with a pump which is operated by means of a vertical rotary shaft. Fig. 2 is a vertical central section upon a line passing through the axis of the horizontal shafts, and shows the windmill-shaft disconnected from the operative mechanism. Fig. 3 is a like view of said driving-shaft and its immediate connections, and shows the former connected to or with the pump-shaft. Fig. 4 is a vertical central section of said parts, and shows said windmill-shaft disconnected from said pump-shaft and connected with the horizontally-rotating gear-wheel; and Fig. 5 is a like view of the same, with said windmill-shaft connected with and in position to actuate all of the operative mechanism.

Letters of like name and kind refer to like parts in each of the figures.

The design of my invention is to enable the power of a vertical rotating shaft to be easily transmitted to horizontal or vertical shafts for the purpose of operating pumps or other kinds of mechanism, and, further, to enable said driving-shaft to be easily and quickly connected with or disconnected from any of the driven mechanism; to which end it consists, principally, in the means employed for connecting the windmill-shaft to the pump-shaft, substantially as and for the purpose hereinafter specified.

It consists, further, in the means employed for connecting the windmill-shaft to the gearing, substantially as and for the purpose hereinafter shown.

It consists, further, in the means employed for connecting the windmill-shaft to the operating-sleeve, substantially as and for the purpose hereinafter set forth.

It consists, further, in the means employed for rendering the horizontal driving-shafts adjustable upon radial lines, substantially as and for the purpose hereinafter shown and described.

It consists, finally, in the mechanism as a whole, its several parts being constructed and combined to operate in the manner and for the purpose hereinafter specified.

My invention is especially designed for use in connection with a windmill having a vertical rotating shaft, and will be described as such; but it is equally applicable in all cases where the power of such shaft is to be transmitted, whether a windmill or other motor is employed.

In the annexed drawings, A represents a hollow standard, which at its lower end rests upon and is supported by a suitable base, A′, and from thence extends upward to any suitable height, and at its upper end is provided with a straight cylindrical neck, *a*, that at its lower end terminates in a horizontal shoulder, *a′*. Resting upon and supported by the neck *a* is a sleeve, B, which fits loosely over the same, and at its lower end bears upon the shoulder *a′*.

From opposite sides, at the upper end of the sleeve B, a bar, B′, extends horizontally outward, thence upward, and then horizontally inward, in the form shown in Figs. 1 and 2, and at or near the center of each of its vertical sides is provided with a boss, *b*, that has a horizontal axial opening, *b′*, which is arranged axially upon a line with the opposite opening *b′*. A third boss or sleeve, *b″*, is provided at the center of the upper portion of said bar B′, and has its axial opening *b‴* upon a line with the axis of the standard A. Within the neck *a* of the standard A is journaled a sleeve or hub, *c*, that forms part of and extends downward from a bevel-gear wheel, C, which wheel is contained within the space inclosed by the frame-bar B′, just above the sleeve B. The lower end of said hub *c* rests upon and is supported by a shoulder, *a″*, that is formed within the interior of said neck.

Extending upward through the standard A and gear-wheel C is a pump-shaft, D, which loosely fills the opening in the latter, and at its upper end fits loosely into a sleeve, E, that,

as seen in Figs. 1 and 3, is provided at each end with a horizontal cross-bar, *e*, and at its center has a yoke, *e'*, which is provided with a horizontal radial slot, *e''*, said cross-bars and yoke being preferably arranged radially at right angles to each other.

Upon the shaft D, within the yoke-slot *e''*, is secured a bar, *d*, which has nearly the length and vertical dimensions of said slot, sufficient space being left between their contiguous sides to enable said bar to revolve freely within said slot as said shaft D is rotated.

The boss *b''* at the upper side of the frame B' and the upper portion of the sleeve E receive the lower end of a windmill-shaft, F, upon the end of which, between said boss and the upper end of said sleeve, is secured a cross-bar, *f*, that corresponds in horizontal dimensions to the like features of the upper cross-bar *e* of said sleeve, and may be connected therewith by means of two pins, G, one of which passes downward through coinciding openings in each end of said cross-bars.

Two pins, G', similar to those employed for connecting together the cross-bars *e* and *f*, are inserted through the upper side of the yoke *e'* into corresponding openings *d'* in the cross-bar *d* whenever it is desired to connect said yoke and cross-bar together, while other like pins, G'', pass downward through the ends of the lower cross-bar *e* of said sleeve E, and have their lower ends contained within corresponding openings *c'* in the gear-wheel C.

Within each boss *b* is journaled a short shaft, H, which upon its inner end is provided with a bevel-pinion, I, that meshes with and receives motion from the gear-wheel C, while upon its outer end each shaft is provided with a belt-wheel or pulley, K, as shown.

The device is now complete, and is used as follows, the band-wheels being employed for driving any desired kind of machinery: When it is desired to use the pump alone, the sleeve E is disconnected from the gear-wheel C by withdrawing or raising the coupling-pins G'', so as to enable said sleeve to rotate without imparting motion to said gear-wheel, as shown in Fig. 3.

When it is desired to operate machinery by means of the band-wheels, without using the pump, the coupling-pins G'' are pressed downward into engagement with the gear-wheel C, and the pins G' withdrawn from engagement with the cross-bar *d*, as seen in Fig. 4, when the movement of the windmill-rod F will cause said gear-wheel, the pinions, and said band-wheels to rotate without movement of the pump-shaft.

When none of the mechanism is needed in motion, the coupling-pins G are withdrawn from engagement with the upper cross-bar *e* of the sleeve E, as shown in Fig. 2, so as to permit the windmill-shaft F to have independent movement.

To drive both pump and machinery, it will, of course, be necessary that the shafts D and F and gear-wheel C should be connected with the sleeve E, as seen in Fig. 5.

Should there be no wind and it be necessary to operate the pump, the same may be accomplished by disconnecting the windmill-shaft F from the sleeve E, and then turning one of the shafts H by means of a crank attached to its outer end, or by a crank-handle attached to its band-wheel K.

The swivel-bearing of the frame E E' upon the standard A enables said frame to be turned until the shafts H occupy any desired radial position, and belts from the pulleys K can be run to machinery located anywhere in the vicinity. When adjusted to place, said frame may be secured by means of a set-screw, L, passing inward through the sleeve B, and at its inner end bears against the neck *a*.

The peripheral velocity of the band-wheels may be increased or diminished with relation to the velocity of the windmill-shaft by changes in the diameters of said pulleys, or by varying the relative proportions of the gear-wheel and pinions.

It will be seen that cranks, cams, or other equivalent devices may be employed for transmitting the motion of the shafts H to machinery to be operated, instead of the band-wheels K.

Having thus fully set forth the nature and merits of my invention, what I claim as new is—

1. As a means for transmitting the power of a vertical driving-shaft to a pump, the pump-shaft D, provided with the cross-bar *d*, the sleeve E, having the slotted yoke *e*, the coupling-pins G', engaging with said yoke and cross-bar, and the shaft F, connected with the upper end of said shaft, said parts being combined to operate in the manner and for the purpose substantially as specified.

2. As a means for transmitting the power of a vertical driving-shaft to mechanism which is operated by belts or other like means, the gear-wheel C, journaled within or upon a suitable support, the sleeve E, provided at its lower end with the cross-bar *e*, the coupling-pins G'', passing through said cross-bars into said gear-wheel, the horizontally-journaled shafts H, the pinions I, and the pulleys K, said parts being combined with each other and with the shaft F, in the manner and for the purpose substantially as shown.

3. As a means for connecting the shaft F to or with the operating-sleeve E, the cross-bar *f*, attached to said shaft, the cross-bar *e*, provided upon the upper end of said sleeve, and the coupling-pins G, passing through and connecting said parts, the same being combined to operate substantially in the manner as set forth.

4. As a means for rendering the operative mechanism radially adjustable with relation to the shaft, the frame B B', swiveled upon the upper end of the hollow standard A, and locked in place by means of the set-screw L, said parts being constructed and combined in

the manner and for the purpose substantially as shown and described.

5. The hereinbefore-described mechanism, in which the standard A, provided with the neck *a*, the frame B B′, having the bosses *b* and *b′*, the gear-wheel C, provided with the hub *c*, the pump-shaft D, having at its upper end the cross-bar *d*, the sleeve E, provided with the cross-bars *e* and slotted yoke *e′*, the shaft F, having the cross-bar *f*, the coupling-pins G, G′, and G″, the horizontal shafts H, the pinions I, the pulleys K, and the set-screw L, are constructed as shown and combined with each other, a windmill or other motor shaft, and a pump-shaft, substantially as and for the purpose specified.

In testimony that I claim the foregoing I have hereunto set my hand this 15th day of April, 1878.

JOHN S. ADAMS.

Witnesses:
L. A. PREZINGER,
J. H. WELLS.