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INTERCHANGEABLE HAND AND MOTIVE POWER MECHANISM.

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NO MODEL.

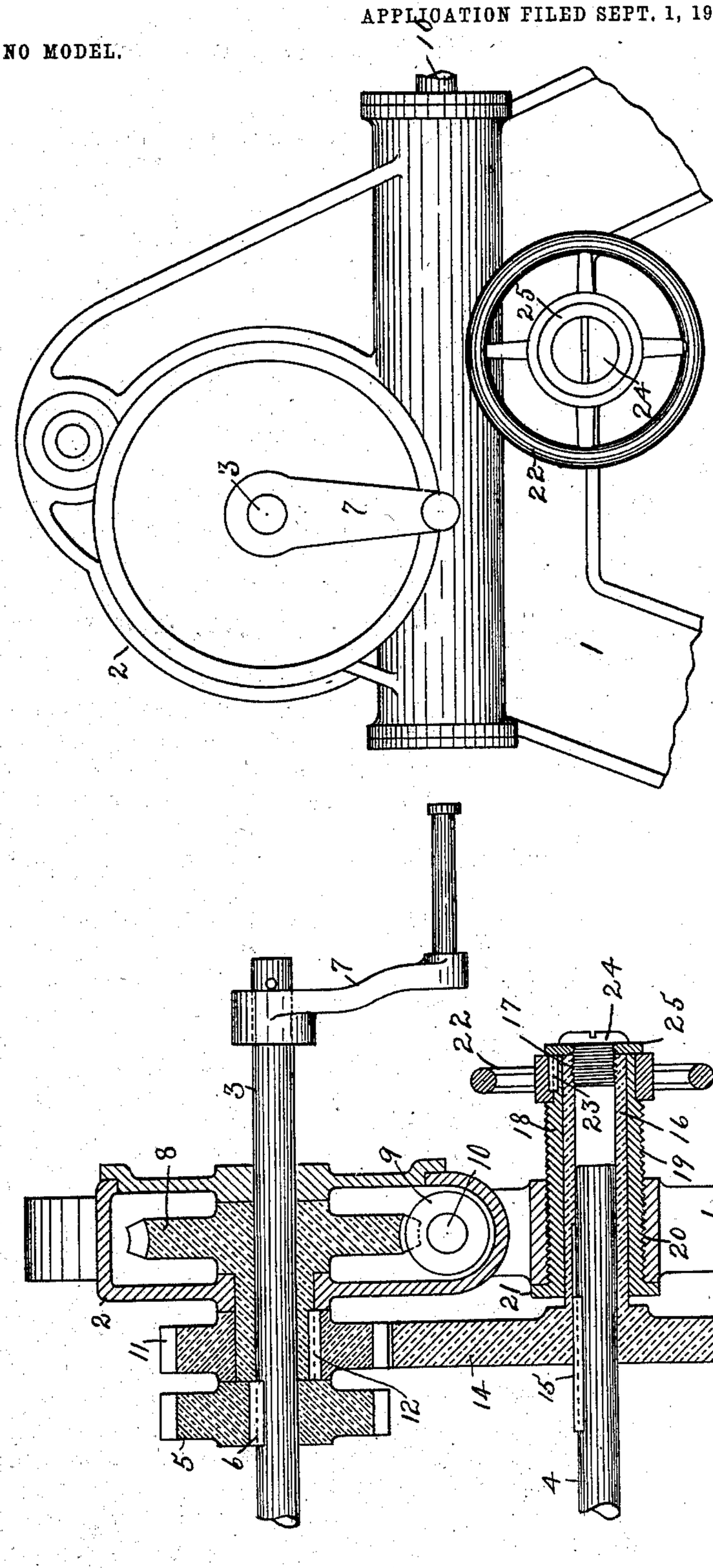

Fig. 1.

Fig. 2.

Fig. 3.

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UNITED STATES PATENT OFFICE.

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INTERCHANGEABLE HAND AND MOTIVE POWER MECHANISM.

SPECIFICATION forming part of Letters Patent No. 749,278, dated January 12, 1904.

Application filed September 1, 1903. Serial No. 171,533. (No model.)

To all whom it may concern:

Be it known that we, CHARLES E. ELLICOTT and JOHN B. NORRIS, citizens of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Interchangeable Hand and Motive Power Mechanism, of which the following is a specification.

This invention relates to improvements in interchangeable hand and motive power mechanism.

The object of the invention is to provide a device that can be readily changed from hand to electric, steam, or other motive power, or vice versa, for driving a shaft from which power is transmitted to any desirable point.

Other features of the invention will be fully set forth in the description of the accompanying drawings, in which—

Figure 1 is a vertical longitudinal section of the crank-shaft and main shaft and the operative parts mounted thereon. Fig. 2 is an end view of same, showing part of the frame in which the crank-shaft and main shaft are journaled; and Fig. 3 is a detailed view of the outer end of the main shaft, showing a modification of the means for moving the gear-wheel longitudinally on the main shaft.

Referring to the accompanying drawings, forming part of this application, 1 designates a frame having a housing 2 integral therewith, 3 the crank-shaft, and 4 the main shaft. The crank-shaft 3 is journaled in the housing 2 and is provided with a gear-wheel 5, keyed thereto at 6, and a crank 7 on the outer end for revolving the said shaft.

Loosely mounted on the shaft 3 within the housing 2 is a worm-wheel 8, which meshes with the worm 9 on the shaft 10, which latter is driven by steam, electricity, or other motive power. One end of the hub of the worm-wheel 8 projects through the housing 2 and is provided with a gear-wheel 11, keyed thereto at 12.

The main shaft 4 is journaled in the frame 1 and is provided with a gear-wheel 14, keyed thereto at 15, but is adapted to be moved a limited distance longitudinally on the said shaft 4, so that it may be brought into mesh with either of the gear-wheels 5 or 11. This gear-wheel 14 is provided with an integral sleeve 16, screw-threaded on its inner surface at 17. The sleeve 16 fits into a bushing 18, which latter is provided with screw-threads 19 on its outer surface to fit the screw-threads 20 in the frame 1. The bushing 18 is provided with a shoulder 21 on one end, which limits the movement of the said bushing in one direction, and the opposite end is provided with a hand-wheel 22, keyed thereto at 23, by means of which the said bushing 18 is turned to move it longitudinally on the shaft 4. A screw 24 fits into the threaded end 17 of the sleeve 16, and a washer 25 is fitted between the end of the sleeve 16 and the head of the screw 24.

When it is desired to work the device as a hand-power machine, the wheel 22 is turned to the right, causing the bushing 18 to be forced to the left on the shaft 4, and as the shoulder 21 comes into contact with the gear-wheel 14 the latter will be moved along said shaft until it meshes with the gear-wheel 5 on the shaft 3, which latter is revolved by the crank 7. When the crank 7 is turned, the parts being in the position just described, the shaft 13 will be revolved and power may be transmitted therefrom to any desired point. When it is desired to work the device by steam, electricity, or other power except hand, the wheel 22 is turned in the opposite direction from that just described, and as the wheel 22 and bushing 18 come in contact with the washer 25 on the end of the sleeve 16 the gear-wheel 14 will be moved to the right until it comes into mesh with the gear-wheel 11 on the hub of the worm-wheel 8, as shown in Fig. 1. When in this position, the shaft 4 will be driven by power from the shaft 10 through the medium of the worm-wheel 8, gear-wheel 11, and gear-wheel 14.

In Fig. 3 we have shown a modification of the means for moving the gear-wheel 26 along the main shaft 27. The said gear-wheel 26 is keyed to the shaft 27 and adapted to be moved a limited distance longitudinally on said shaft and is provided with a sleeve 28, having a flange 29 on its outer end. The shaft 27 is screw-threaded on its outer end and is provided with a hand-wheel 30, having a threaded aperture 31 and adapted to be screwed upon the end

of the shaft 27. The said wheel 30 is provided with a number of fingers 32, secured thereto by screws 33. These fingers 32 extend over the flange 29 on the sleeve 28. The outer end of the shaft 27 is provided with a screw 34 and a washer 35. When the wheel 30 is turned to the right on the shaft 27, the gear-wheel 26 will be forced to the left on the said shaft, and when the wheel 30 is turned to the left the said gear-wheel 26 will be moved to the right on the shaft, owing to the fingers 32.

Having thus described our invention, what we claim is—

1. The combination of the crank-shaft; a gear-wheel keyed to said crank-shaft; a worm-wheel loosely mounted on said crank-shaft and having a gear-wheel keyed to the hub thereof; means for driving said worm-wheel; the main shaft; a gear-wheel keyed to the main shaft and adapted to be moved a limited distance longitudinally thereon; and means for moving the gear-wheel on the main shaft in or out of mesh with either the gear-wheel on the crank-shaft or the gear-wheel on the hub of the worm-wheel.

2. The combination of the crank-shaft; a gear-wheel keyed to said crank-shaft; a worm-wheel loosely mounted on said crank-shaft and having a gear-wheel keyed to the hub thereof; means for driving said worm-wheel; the main shaft; a gear-wheel keyed to the main shaft and adapted to be moved a limited distance longitudinally thereon and having an integral sleeve; and means on said sleeve for moving the gear-wheel on the main shaft in or out of mesh with either the gear-wheel on the crank-shaft or the gear-wheel on the hub of the worm-wheel.

3. The combination of the crank-shaft; a gear-wheel keyed to said crank-shaft; a worm-wheel loosely mounted on said crank-shaft and having a gear-wheel keyed to the hub thereof; means for driving the worm-wheel; the main shaft; a frame in which said shaft is journaled; a gear-wheel keyed to the main shaft and adapted to be moved a limited distance longitudinally thereon, and having an integral sleeve projecting through the said frame; a bushing surrounding said sleeve and screw-threaded in the frame, said bushing having a flange on one end and a hand-wheel keyed to the opposite end, whereby when the said wheel is turned in one direction the bushing will force the gear-wheel on the main shaft to mesh with the gear-wheel on the crank-shaft, and when turned in the opposite direction will force the gear-wheel on the main shaft to mesh with the gear-wheel on the hub of the worm-wheel, substantially as and for the purpose described.

4. The combination of a shaft having a fixed and a loose gear thereon, means for driving said shaft, means for driving the loose gear, a second shaft having a gear thereon adapted to mesh with either of said gears of the first-mentioned shaft, and means for moving said gear into mesh with either said fixed or loose gear.

In testimony whereof we affix our signatures in the presence of two witnesses.

CHARLES E. ELLICOTT.
JOHN B. NORRIS.

Witnesses:
CHAPIN A. FERGUSON,
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