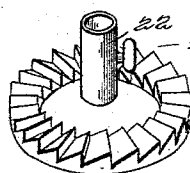
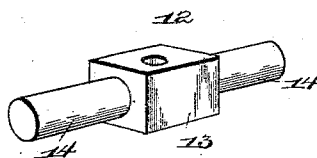
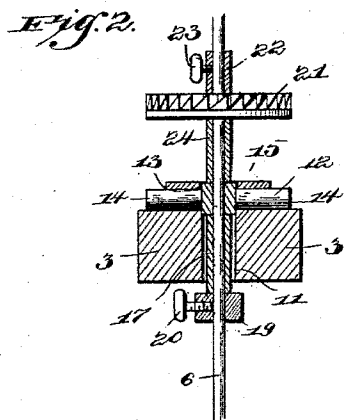
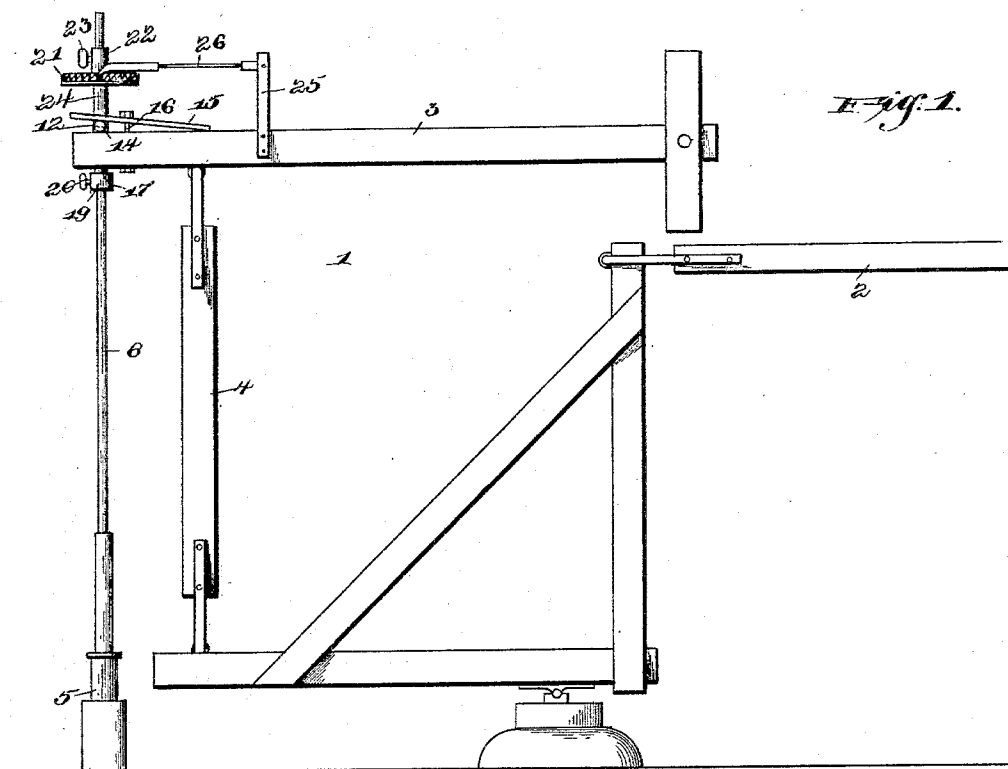


J. J. BRAZILL.
PUMP ROD TURNING MECHANISM.

Patented July 14, 1896.



Inventor

Witnesses
W. Doyle
W. Doyle

By *his* Attorneys, *John J. Brazill.*
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UNITED STATES PATENT OFFICE.

JOHN J. BRAZILL, OF HATTON, OHIO.

PUMP-ROD-TURNING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 563,736, dated July 14, 1896.

Application filed September 19, 1894. Serial No. 523,472. (No model.)

To all whom it may concern:

Be it known that I, JOHN J. BRAZILL, a citizen of the United States, residing at Hatton, in the county of Wood and State of Ohio, have invented a new and useful Pump-Rod-Turning Mechanism, of which the following is a specification.

My invention relates to mechanism for turning pump-rods used in oil and other wells; and it has for its object to provide simple, inexpensive, and efficient means for the purpose named, such means being adapted for use in connection with any ordinary pump-rod-operating mechanism.

Further objects and advantages of the invention will appear in the following description, and the novel features of the invention will be particularly pointed out in the appended claims.

In the drawings, Figure 1 is a side view of a pump-operating mechanism, showing the turning apparatus embodying my invention applied thereto. Fig. 2 is a detail sectional view showing the connection of the apparatus to the beam. Fig. 3 is a detail view of the cross-head. Fig. 4 is a similar view of the ratchet.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

1 designates a pumping-jack of any preferred construction; 2, the surface-rods; 3, the beam; 4, the pitman for connecting the jack to the beam; 5, the well-tubing, and 6 the pumping-rod.

The pumping-rod passes through a slot 11 in the end of the beam, a cross-head 12 being secured to the rod to receive the pressure of the beam. This cross-head consists of a collar 13, through which the rod passes, and lateral arms 14, which bear upon the upper surface of the beam, a bearing-plate 15 being secured to the beam, by means of bolts 16, to bear upon the upper surface of the cross-head, whereby motion may be communicated from the beam to the rod during the upward movement of the former. Bearing at its upper end against the under surface of this cross-head is a bushing or sleeve 17, which embraces the rod at the portion which extends through the slot in the beam, and in contact with the lower end of the said bushing or sleeve is a

securing-collar 19, locked in place by means of a set-screw 20.

Arranged on the rod above the cross-head is a ratchet-wheel 21, having a hub or sleeve 22, which is locked in place by means of a set-screw 23, and interposed between the ratchet-wheel and the upper side of the cross-head is a spacing-sleeve 24. Attached to the beam or other object is a standard 25, and pivoted thereto is the pawl 26, arranged at its free end in operative relation with the teeth of the ratchet-wheel, whereby as the beam ascends and descends the pawl imparts a step-by-step rotary motion to the ratchet-wheel, and hence to the rod. Such motion is imparted by reason of the fact that the vertical linear movement of the rod alters the distance between the ratchet-wheel and the pivot of the pawl, and hence alters the angle of inclination of the pawl.

Furthermore, the fact that the pawl is pivoted and is connected to the beam between the fulcrum of the latter and its connection with the pump-rod causes the pivotal point of the pawl to move through an arc of less length than the linear movement of the pump-rod and draws the pivotal point of the pawl from the line of movement of the pump-rod, and hence from the center of the ratchet-wheel, as the beam ascends from a horizontal plane.

The adjustable collar 19 is arranged below and contiguous to the plane of the lower side of the beam, and hence during the downward movement of the beam if the plate 15 is not of sufficient strength to impart the downward movement to the pump-rod the lower side of the beam will come in contact with the collar, the plate, however, serving to prevent hammering of the beam against the collar and against the arms of the cross-head.

The tubular bushing or sleeve 17 receives the wear of the beam and prevents wearing the pump-rod, such bushing or sleeve being replaceable at a small cost.

The rounded arms of the cross-head form a suitable pivotal connection between the pump-rod and the beam and at the same time permit free longitudinal movement of the beam with relation to the arms, such movement being due to the fact that the pump-rod travels in a straight vertical line, while

any given point of the beam moves in the arc of a circle.

As hereinbefore explained, the plate 15 is designed to communicate the downward movement of the beam 3 to the cross-head, and hence to the pump-rod, but the pressure of said plate upon the upper sides of the arms of the cross-head is not sufficient to prevent the above-mentioned sliding movement of the arms upon the beam. In Fig. 1 of the drawings the beam is shown in a horizontal position, and hence the arms of the cross-head are at the limit of their inward movement between the beam and the bearing-plate, or at their nearest point of approach to the fulcrum of the beam, and any movement of the beam above or below said horizontal position will cause the arms of the cross-head to move outward or toward the extremity of the beam. This movement may be accomplished without disconnecting or disarranging the parts of the apparatus, and motion is communicated from the beam to the cross-head either directly or through the bearing-plate in any relative positions of the cross-head and beam; also in case of excessive bending of the bearing-plate during the downward movement of the beam motion may be communicated from the beam to the rod by contact of the beam with the collar 19, as above mentioned.

It will be understood that in practice various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

Having described my invention, I claim—

1. The combination with a pump-rod, and an oscillating beam bifurcated to receive the rod, of a cross-head fitted for sliding adjustment upon the pump-rod and having lateral arms to bear upon the upper side of the beam, a tubular bushing or sleeve fitted upon the rod below the cross-head and within the bifurcation of the beam and bearing at its upper end against the cross-head, a collar adjustably secured upon the pump-rod in contact with the lower end of said bushing or sleeve and slightly below the plane of the lower side of the beam, means to prevent upward movement of the cross-head upon the rod, a plate secured to the beam and bearing at its free end upon the upper sides of the arms of the cross-head, a ratchet-wheel fixed to the pump-rod, and a pawl carried by the beam and engaging the ratchet-wheel, substantially as specified.

2. The combination with a pump-rod, and

an oscillating beam bifurcated to receive the rod, of a cross-head fixed to the pump-rod and provided with lateral rounded arms bearing upon the upper smooth surface of the beam and adapted to slide thereon as the beam oscillates around its fulcrum as a center, a collar adjustably secured to the pump-rod below and adjacent to the lower surface of the beam and in the path thereof, a ratchet-wheel fixed to the pump-rod above the beam, and a pawl carried by the beam and engaging the ratchet-wheel, substantially as specified.

3. The combination with a rigid pump-rod arranged to reciprocate in a straight line, and an oscillating beam bifurcated at its vertically-movable end to receive the pump-rod, of a cross-head secured to the pump-rod and having lateral cross-sectionally-rounded arms bearing upon the upper surface of the beam and adapted to have a rocking and sliding contact therewith, a bearing-plate secured to and carried by the beam and bearing against the upper sides of the arms of the cross-head to communicate downward motion from the beam to the cross-head, a ratchet-wheel fixed to the pump-rod, and a pawl carried by the beam and engaging the ratchet-wheel, substantially as specified.

4. The combination with a pump-rod and an oscillating beam bifurcated to receive the rod, of a cross-head having lateral arms arranged in contact with the upper surface of the beam, a fixed collar secured to the rod, below the lower side of the beam, a bushing or sleeve interposed between the collar and the cross-head and extending through the bifurcation of the beam, a ratchet-wheel secured to the rod above the cross-head, a spacing-sleeve interposed between the said wheel and the cross-head, a bearing-plate secured to the beam and arranged in contact with the upper sides of the arms of the cross-head, a standard secured to and carried by the beam, and a pawl pivoted to the standard to swing in a vertical plane and arranged at its free end in engagement with the teeth of said ratchet-wheel, substantially as specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JOHN J. BRAZILL.

Witnesses:

JOHN WININGER,
JAMES H. MOFFETT.