No. 834,438. PATENTED OCT. 30, 1906.

D. M. WRIGHT.

POWER TRANSMISSION MECHANISM.

APPLICATION FILED APR. 9, 1906.

Fig. 1.

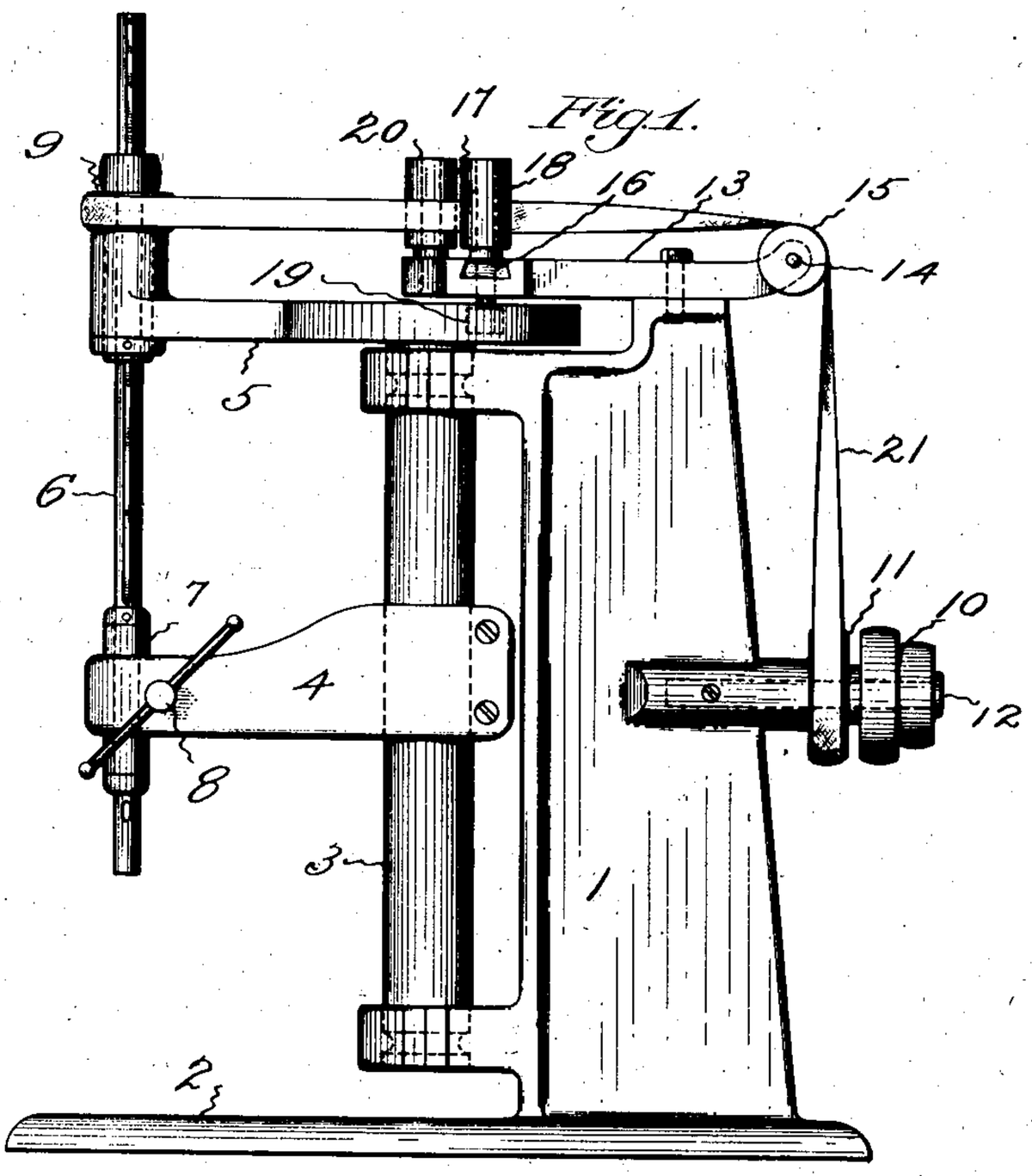


Fig. 2.

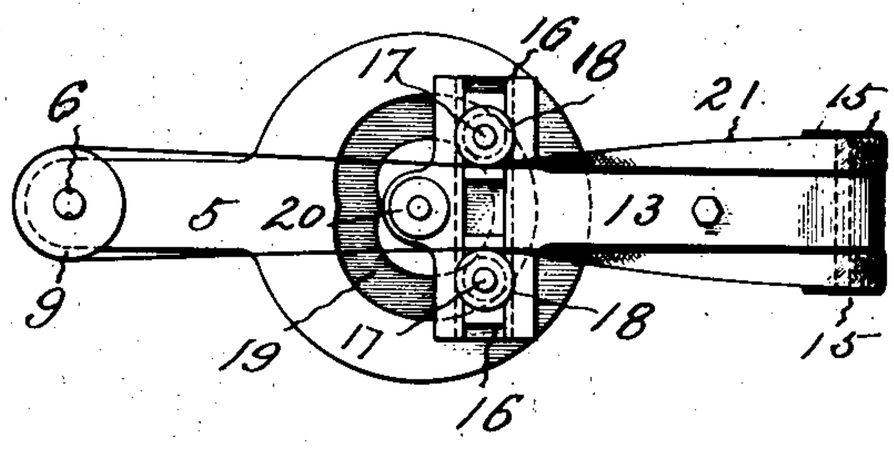
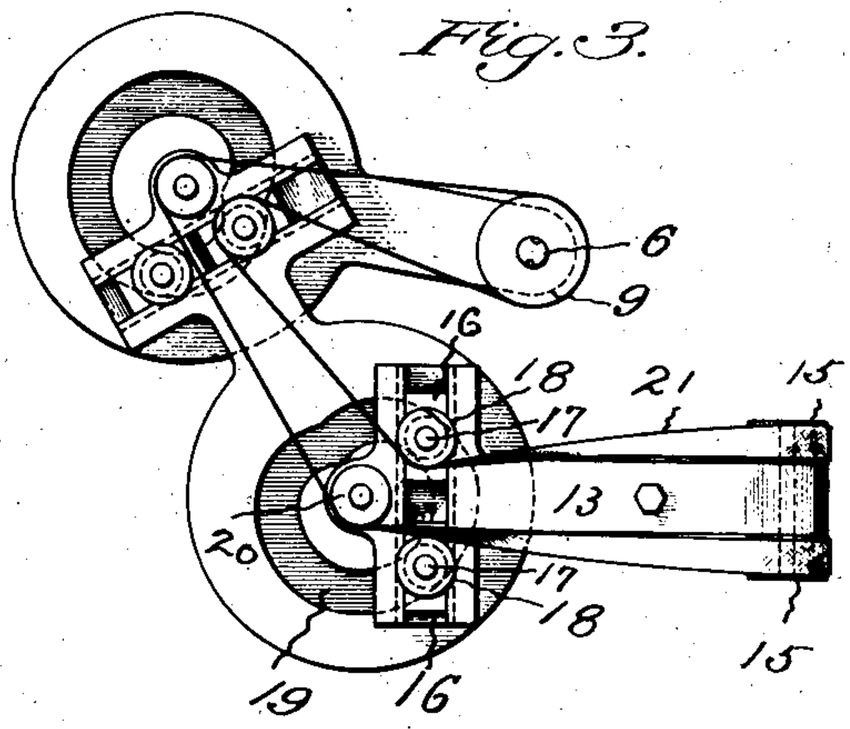


Fig. 3.



Witnesses.

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POWER-TRANSMISSION MECHANISM.

No. 834,438. Specification of Letters Patent. Patented Oct. 30, 1906.

Application filed April 9, 1906. Serial No. 310,666.

To all whom it may concern:

Be it known that I, DANIEL M. WRIGHT, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented a new and useful Power-Transmission Mechanism, of which the following is a specification.

This invention relates to a mechanism for transmitting power to a rotatory tool-spindle that is held by an oscillatory support.

The object of the invention is to provide a simple and efficient mechanism of this character which is so constructed that the movement of the spindle into various positions automatically regulates the tension of the driving-belt.

This invention is particularly applicable for driving the spindle of a radial drill, and it is illustrated and described with reference to such a drill, although it is applicable to other machines having a swinging rotatory spindle—such, for instance, as a routing-machine.

Figure 1 shows a side elevation of a radial drill provided with a power-transmitting mechanism which embodies this invention. Fig. 2 shows a top view of the transmission mechanism. Fig. 3 shows a top view of the mechanism, illustrating an extended use of the same.

The frame 1 of the machine shown extends upwardly from a bed 2 and supports a rotatory column 3. Clamped to the column in such manner that it may be raised or lowered when desired is the spindle-supporting arm 4, and secured to the upper end of the column is a spindle-pulley-supporting arm 5.

The spindle 6 is held by the sleeve 7, carried by the spindle-supporting arm, and is raised and lowered by turning the handle 8 in the usual manner. The spindle-pulley 9 is keyed to the spindle as customary, so that its rotation rotates the spindle without interfering with the vertical movement of the spindle.

When the column is turned, the spindle-supporting arm and the pulley-supporting arm turn with it and carry the spindle about the axis of the column.

The driving-pulley 10, which may be a cone having one, two, or more stops, is connected with a transmission-pulley 11, these pulleys being mounted on an arbor 12, that is supported at the back of the frame.

Fastened to the top of the frame is a head 13. On an arbor 14, supported at the rear end of the head, are guide-pulleys 15, and movable in a dovetail groove near the front of the head are slides 16, which carry vertical arbors 17. These arbors above the head support tightening-pulleys 18 and below the head they project into a cam-groove 19 in an enlarged portion of the pulley-supporting arm, which is fastened to and turns with the column. Mounted on the front end of the head is an idler-pulley 20.

A single endless belt 21 extends around the transmission-pulley over the guide-pulleys, between the tightening-pulleys, outside of the idler-pulley, and around the spindle-pulley. When the spindle is swung in either direction about the axis of the column, the cam-groove in the enlarged portion of the spindle-pulley-supporting arm, acting on the tightening-pulley arbors, moves the slides and causes the tightening-pulleys to move so as to take up the slack and hold the belt tight in all positions of the spindle.

If it is desired, as shown in Fig. 3, this mechanism may be extended by duplicating the pulley-supporting arms with the cam-grooves and the slides carrying the tightening-pulleys, which are moved in and out by the cam-grooves when the arms are turned on their axes.

When there is but a single mechanism, as shown in Fig. 2, the spindle may be swung about the axis of the column the larger part of a circle, and when the parts are duplicated, as shown in Fig. 3, the spindle can be swung about the axis of the column and also in and out, so that it can be moved to various positions radially with relation to the axis of the column.

A machine having a power-transmitting mechanism which embodies this invention can be driven by a single belt, the tension of which is automatically kept always the same. This results in much saving of time and labor, as no adjusting of the pulleys is required, and it also reduces the friction to such an extent that large drills may be run at high speed.

This invention is not limited to the details of construction shown, as many other means could be supplied for automatically moving the tightening-pulleys without departing from the spirit of the invention.

The invention claimed is—

1. A mechanism for transmitting power having a frame, a transmission-pulley stationarily mounted on the frame, an arm pivoted on the frame, a spindle-pulley mounted on the outer end of the arm, an endless belt extending around both the transmission-pulley and the spindle-pulley, means engaged with and moved by the inner end of the arm, and pulleys mounted on the means moved by the inner end of the arm in such manner as to move relatively with the spindle-pulley and always keep the belt tight, substantially as specified.

2. A mechanism for transmitting power having a transmission-pulley, a swinging spindle-pulley, an endless belt extending around the transmission-pulley and the spindle-pulley, and a pair of tightening-pulleys moved by the movement of the spindle-pulley for automatically controlling the tension of the belt, substantially as specified.

3. A mechanism for transmitting power having a transmission-pulley, a swinging spindle-pulley, an endless belt extending around the transmission-pulley and the spindle-pulley, and a pair of tightening-pulleys outside of the belt and moved by the movement of the spindle-pulley for automatically controlling the tension of the belt, substantially as specified.

4. A power-transmitting mechanism having a transmission-pulley, a spindle-pulley, an endless belt extending around the transmission-pulley and the spindle-pulley, an idler-pulley inside of the belt, and a pair of tightening-pulleys outside of the belt and moved by the movement of the spindle-pulley for automatically controlling the tension of the belt, substantially as specified.

5. A power-transmitting mechanism having a transmission-pulley, a swinging spindle-pulley, guide-pulleys, an endless belt extending around the transmission-pulley, over the guide-pulleys and around the spindle-pulley, an idler-pulley inside of the belt, and a pair of tightening-pulleys outside of the belt and moved by the movement of the spindle-pulley for automatically controlling the tension of the belt, substantially as specified.

6. A power-transmitting mechanism having a transmission-pulley, a swinging spindle-pulley, an endless belt extending around the transmission-pulley and the spindle-pulley, slides moved by the movement of the spindle-pulley, and tightening-pulleys carried by the slides for automatically controlling the tension of the belt, substantially as specified.

7. A power-transmitting mechanism having a transmission-pulley, a swinging spindle-pulley, an endless belt extending around the transmission-pulley and the spindle-pulley, a cam moved by the movement of the spindle-pulley, slides moved by the cam, and tightening-pulleys adjacent to the belt carried by the slides, substantially as specified.

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