

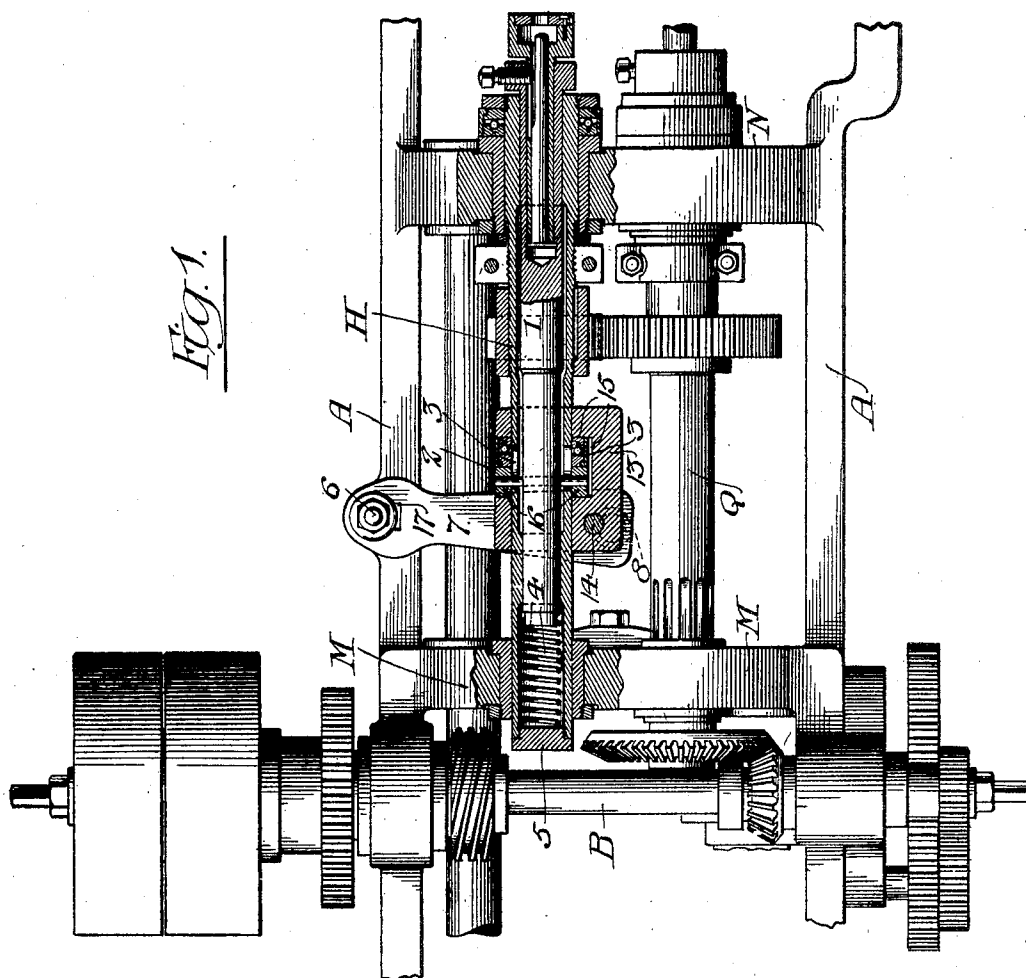
No. 827,661.

PATENTED JULY 31, 1906.

W. B. PEARSON & C. E. ROBERTS.
MECHANISM FOR TRANSMITTING MOVEMENT.

APPLICATION FILED OCT. 18, 1904. RENEWED FEB. 12, 1906.

2 SHEETS—SHEET 1.



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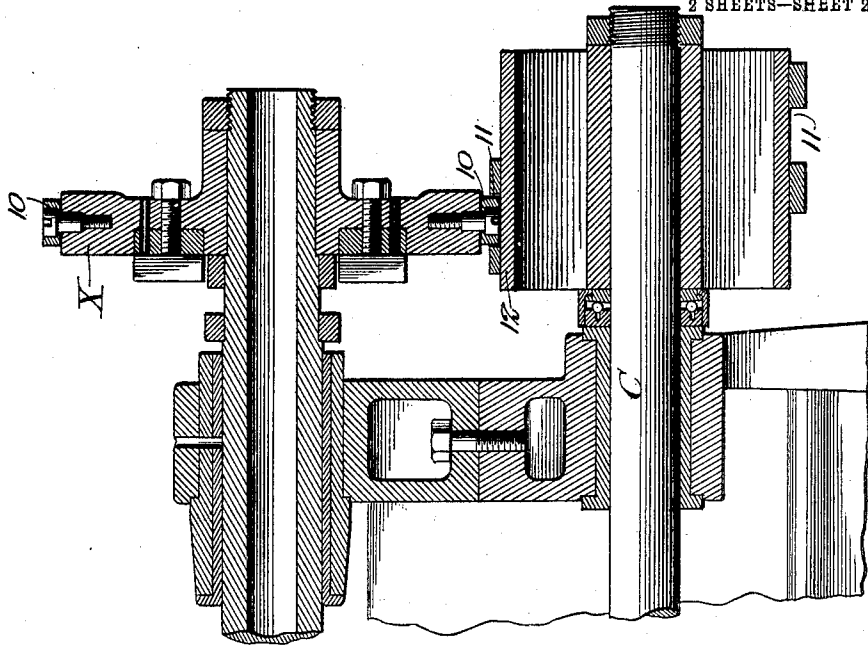
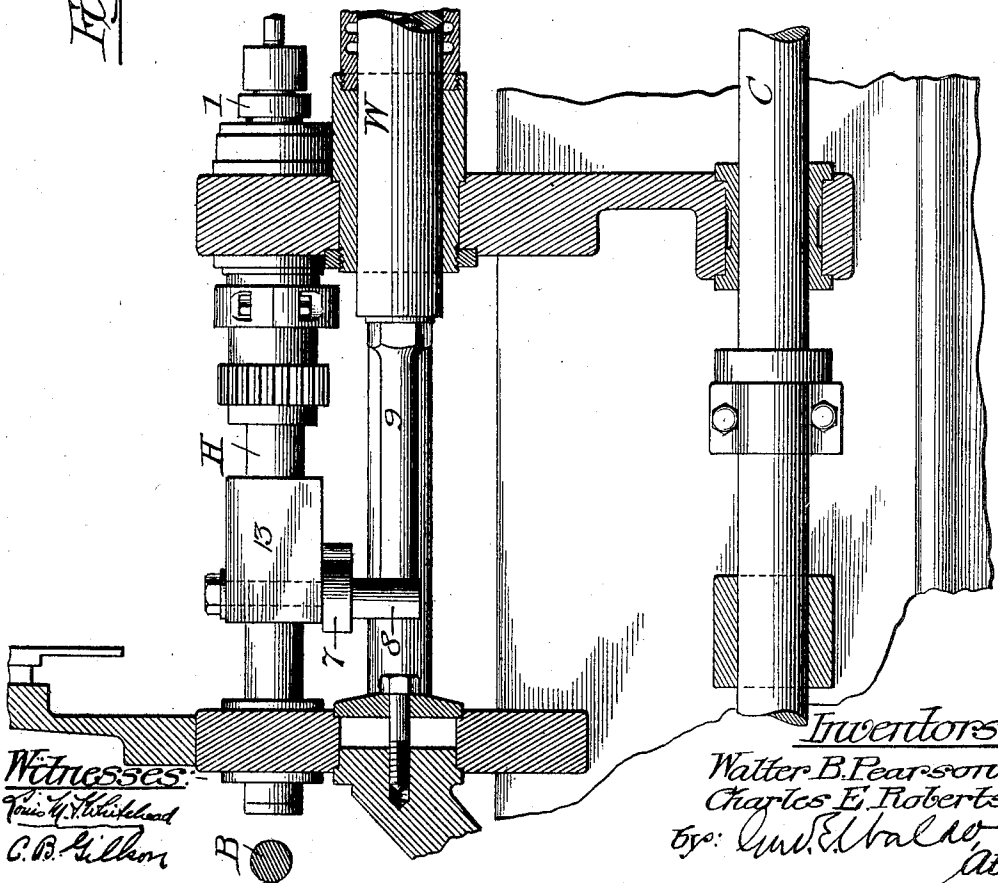


Fig. 1.



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UNITED STATES PATENT OFFICE.

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MECHANISM FOR TRANSMITTING MOVEMENT.

No. 827,661.

Specification of Letters Patent.

Patented July 31, 1906.

Original application filed May 9, 1902, Serial No. 106,620. Divided and this application filed October 18, 1904. Renewed February 12, 1906. Serial No. 300,627.

To all whom it may concern:

Be it known that we, WALTER B. PEARSON, a resident of Detroit, Wayne county, Michigan, and CHARLES E. ROBERTS, a resident of Oak Park, Cook county, Illinois, citizens of the United States, have invented certain new and useful Improvements in Mechanism for Transmitting Movement, of which the following is a specification.

This invention relates to means or mechanism for transmitting movement from a reciprocating member to a movably-supported member.

This application is filed as a division of an application heretofore filed by us in the United States Patent Office on the 9th day of May, 1902, and numbered serially 106,620, in which a mechanical movement of our invention is shown and described as applied to the pointing and cupping tool-spindle of a machine for making metal screws for the purpose of imparting longitudinal movement to said spindle relatively to a cooperating blank-carrying head in the same direction, but at a slightly slower speed, but is not therein separately claimed.

A primary object of the invention is to provide means controlled by the movement of a reciprocating member for imparting movement to a movably-supported member relatively to said reciprocating member and at a different rate of speed—as, for example, for imparting longitudinal movement to a spindle fitted to and longitudinally movable in suitable bearings relatively to a reciprocating shaft.

To this end our invention consists of the various features, combinations of features, and details of construction hereinafter described and claimed.

In the accompanying drawings, in which a transmitting mechanism of our invention is fully illustrated, Figure 1 is a partial plan section of the screw-machine which forms the subject-matter of our main application, Serial No. 106,620, showing a mechanism for transmitting movement applied to the pointing tool-spindle of said machine; and Fig. 2 is a partial longitudinal sectional elevation thereof.

In the drawings a, transmitting mechanism of our invention is shown as applied to the

pointing and cupping tool-spindle of a machine for making metal screws fully shown and described in application for United States Letters Patent, Serial No. 106,620, filed May 9, 1902, of which the present application is a division and to which reference is made as to features herein shown, but not fully described.

Referring now to the drawings, A designates the bed of the screw-machine, revolubly mounted in suitable bearings, in transverse bridges M and N of which is a spindle H. The spindle H is hollow, and fitted to and longitudinally movable in suitable bearings on the interior thereof is an auxiliary spindle 1. Rotation is imparted to said auxiliary spindle from the spindle H by means of a pin 2, secured in said spindle 1, which engages slots 3, formed longitudinally in the spindle H, thus providing for desired longitudinal movement of said auxiliary spindle 1. A spring 4, inserted between the rear end of said auxiliary spindle 1, and a plug 5, threaded into the rear end of the spindle H, maintains said auxiliary spindle normally at the forward limit of its movement relatively to the spindle H, defined by a suitable stop consisting, as shown, of the pin 2, contacting with the front ends of the slots 3.

Pivoted at one end to a stud 6 on the machine-frame is a lever 7, secured in the outer end of which is a stud 8, which projects downwardly into the path of travel of a rod or plunger 9, which, as shown, is secured in the end of a shaft W, to which reciprocating movement is imparted by means of projections 10 on a head X, secured to said shaft, which engage a peripheral cam-groove 11 on a drum 12, secured to rotate with a shaft C.

Fitted to and longitudinally movable on the exterior of the spindle H is a housing 13, which is pivotally connected to the lever 7 at a distance from its free end by means of a stud or pin 14. As shown, said stud or pin 14 engages said lever 7 between the stud 8 and its point of attachment to the stud 6 and at a distance from said stud 8 approximately equal to one-tenth ($\frac{1}{10}$) of the distance between said studs 6 and 8. The relation is such, also, that the plunger 9 will come into contact with the stud 8 on the lever 7 when at a distance of from three-fourths of an inch

to one inch from the limit of its movement in the direction of said stud 8.

Formed in the housing 13 is a recess or opening 15, the sides of which embrace a ring or collar 16, secured to the auxiliary spindle 1. As shown, the ring or collar 16 is secured to the auxiliary spindle 1 by means of the pin 2, which connects said auxiliary spindle to the spindle H. As shown, also an anti-friction-bearing is provided in said housing 13 on the front side of said ring or collar 16, which will receive the thrust due to forcing said housing rearwardly against the force of the spring 4, applied to the auxiliary spindle 1. With this construction it is obvious that the plunger 9 will impart movement to the housing 13 and to the auxiliary spindle 1 in the direction of movement of said plunger, but that the travel of said housing and of said auxiliary spindle will be less than the travel of said plunger by an amount which may be controlled as desired by properly varying the distance between the stud 8 and the pin 14 relatively to the operative length of the lever 7. With the described relation, the housing 13 being connected to the lever 7 at a distance from the stud 8 equal to one-tenth ($\frac{1}{10}$) of the operative length of said lever 7, the travel of said housing 13 and of the auxiliary spindle 1 will be one-tenth less than the total travel of said plunger after it comes into contact with the stud 8. A differential movement will thus be imparted to the plunger-shaft W and parts carried thereby toward the auxiliary spindle 1 and parts carried thereby. Said differential movement will, however, be very slight relatively to the actual travel of said shaft and spindle after the plunger 9 contacts with the stud 8 and being uniform will be relatively very slow as compared with the actual rate of movement of said shaft and auxiliary spindle.

The spring 4 is at all times under tension and is of such strength that it will maintain the auxiliary spindle 1 normally at the forward limit of its movement, but will be slightly compressed by the action of the plunger 9. It is thus obvious that as soon as the plunger 9 is retracted the spring 4 will return said auxiliary spindle 1 to its normal position relatively to the spindle H.

To provide for desired pivotal movement of the lever 7, a slot 17 is formed therein, through which the stud 6 extends. This is rendered necessary on account of securing the stud 14 in fixed longitudinal adjustment in the lever 7 and the housing 13.

In the application shown rotation is imparted to the spindle H and cam-shaft C by means of suitable connection with a power-shaft B. As regards the present invention, however, the specific form of driving connection is immaterial and can readily be supplied by any skilled mechanic. Reference is made, however, to the main application, Se-

rial No. 106,620, in which specific means for this purpose are fully shown and described.

We claim as our invention—

1. The combination with a reciprocating member and a movably-supported member, of means for imparting movement to said movably-supported member, said means comprising a pivoted lever disconnected from said reciprocating member which projects into the path of travel thereof and connection between said lever and said movably-supported member.

2. The combination with a reciprocating member and a movably-supported member, of means for imparting movement to said movably-supported member, said means comprising a pivoted lever disconnected from said reciprocating member which projects into the path of travel thereof and connection between said lever and said movably-supported member, the point of connection of said movably-supported member to said lever and the point of contact of said reciprocating member with said lever being at different distances from the pivotal point of said lever.

3. The combination with a reciprocating member and a movably-supported member, of means for imparting movement to said movably-supported member, said means comprising a pivoted lever disconnected from said reciprocating member which projects into the path of travel thereof and connection between said lever and said movably-supported member, the point of connection of said movably-supported member to said lever being between the pivotal point of said lever and the point of contact of said reciprocating member therewith.

4. The combination with a reciprocating member and a revoluble member, fitted to and longitudinally movable in suitable bearings, of means for imparting movement to said revoluble member in one direction, said means comprising a pivoted lever disconnected from said reciprocating member which projects into the path of travel thereof, a collar on said revoluble member, a housing provided with a recess the sides of which embrace said collar and connection between said lever and said housing.

5. The combination with a reciprocating member and a revoluble member, fitted to and longitudinally movable in suitable bearings, of means for imparting movement to said revoluble member in one direction, said means comprising a pivoted lever which projects into the path of travel of said reciprocating member, a collar on said revoluble member, a housing provided with a recess the sides of which embrace said collar and connection between said lever and said housing, the point of connection of said housing to said lever and the point of contact of said reciprocating member with said lever being at dif-

ferent distances from the pivotal point of said lever.

6. The combination with a reciprocating member and a revoluble member, fitted to and longitudinally movable in suitable bearings, of means for imparting movement to said revoluble member in one direction, said means comprising a pivoted lever which projects into the path of travel of said reciprocating member, a collar on said revoluble member, a housing provided with a recess the sides of which embrace said collar and connection between said lever and said housing, the point of connection of said housing to said lever being between the pivotal point of said lever and the point of contact of said reciprocating member therewith.

7. The combination with a reciprocating member, of a hollow spindle, an auxiliary spindle fitted to and longitudinally movable in bearings in said hollow spindle, a pivoted lever which projects into the path of travel of said reciprocating member and connection between said pivoted lever and said auxiliary spindle.

8. The combination with a reciprocating member, of a hollow spindle, an auxiliary spindle fitted to and longitudinally movable in bearings in said spindle, a spring applied to said auxiliary spindle, a stop which limits the movement of said auxiliary spindle under the influence of said spring, a pivoted lever which projects into the path of travel of said reciprocating lever and connection between said lever and said auxiliary spindle.

9. The combination with a reciprocating member, of a hollow spindle, an auxiliary spindle fitted to and longitudinally movable in bearings in said hollow spindle, a pin secured in said auxiliary spindle which engages a slot in said hollow spindle, a spring applied to said auxiliary spindle, a pivoted lever which projects into the path of travel of said reciprocating member and connection between said pivoted lever and said auxiliary spindle.

10. The combination with a reciprocating member, of a hollow spindle, an auxiliary spindle fitted to and longitudinally movable in bearings in said hollow spindle, a ring on said hollow spindle, a pin secured in said ring and in said auxiliary spindle which engages a slot in said hollow spindle, a spring applied to said auxiliary spindle, a housing on said hollow spindle provided with a recess the sides of which embrace the ring pinned to said auxiliary spindle, a pivoted lever which projects into the path of travel of said reciprocating member and connection between said lever and said housing.

11. The combination with a reciprocating member, of a hollow spindle, an auxiliary spindle fitted to and longitudinally movable

in bearings in said hollow spindle, a ring on said hollow spindle, a pin secured in said ring and in said auxiliary spindle which engages a slot in said hollow spindle, a spring applied to said auxiliary spindle, a housing on said hollow spindle provided with a recess the sides of which embrace the ring pinned to said auxiliary spindle, a pivoted lever which projects into the path of travel of said reciprocating member and pivotal connection between said lever and said housing, the relation being such that the point of pivotal connection of said housing to said lever and the point of contact of said reciprocating member with said lever will be at different distances from the pivotal point of said lever.

12. The combination with a reciprocating member, of a hollow spindle, an auxiliary spindle fitted to and longitudinally movable in bearings in said hollow spindle, a ring on said hollow spindle, a pin secured in said ring and in said auxiliary spindle which engages a slot in said hollow spindle, a spring applied to said auxiliary spindle, a housing on said hollow spindle provided with a recess the sides of which embrace the ring secured to said auxiliary spindle, a pivoted lever which projects into the path of travel of said reciprocating member and connection between said lever and said housing, the point of attachment of said housing to said lever being between the pivotal point of said lever and the point of contact of said reciprocating member therewith.

13. The combination of a reciprocating member, a movably-supported member, and an intermediate member operated upon by said reciprocating member in one direction, connections between said intermediate member and said movably-supported member arranged to transmit to said movably-supported member a part only of the movement given to said intermediate member.

14. The combination of a reciprocating member, a movably-supported member, an intermediate member operated upon by said reciprocating member, and connections between said intermediate member and said movably-supported member, and means for giving to said intermediate member a movement in two directions for the purpose of transmitting a diminished amount of motion from the reciprocating member to the movably-supported member.

In testimony that we claim the foregoing as our invention we affix our signatures, in presence of two subscribing witnesses, this 6th day of October, A. D. 1904.

WALTER B. PEARSON.
CHARLES E. ROBERTS.

Witnesses:

E. M. KLATCHER.
K. A. COSTELLO.