No. 712,659. Patented Nov. 4, 1902.

C. E. DONNATIN & C. V. GREENAMYER.

MEANS FOR CONNECTING MOTORS TO MACHINES.

(Application filed Apr. 28, 1902.)

(No Model.) 2 Sheets—Sheet 1.

Fig. I.

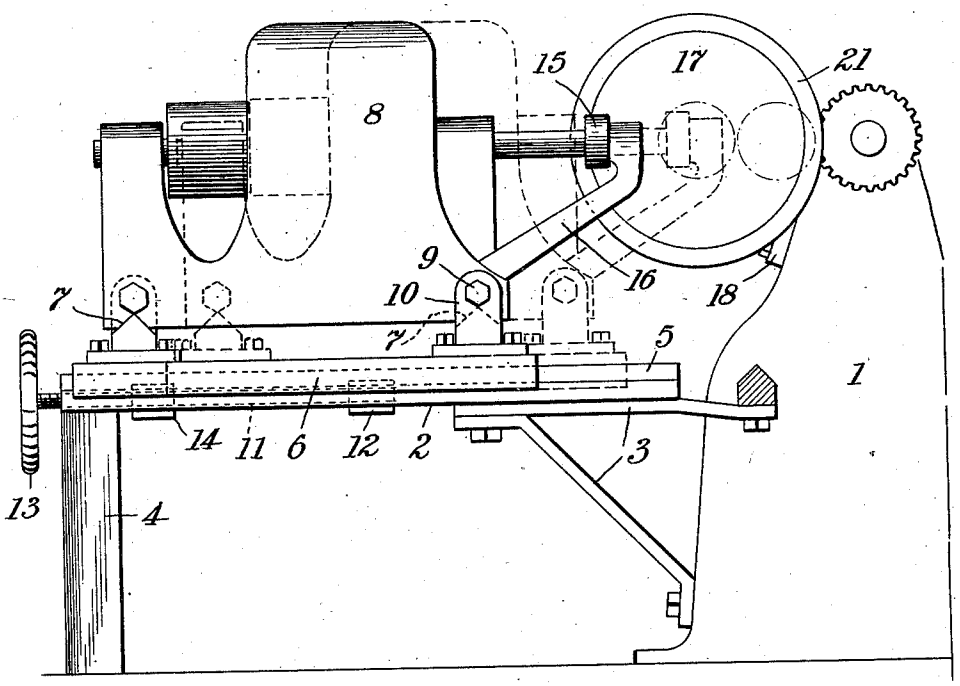


Fig. II.

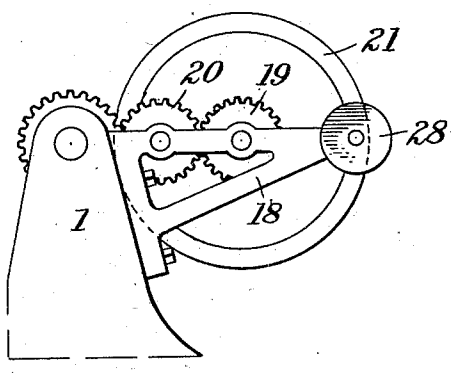
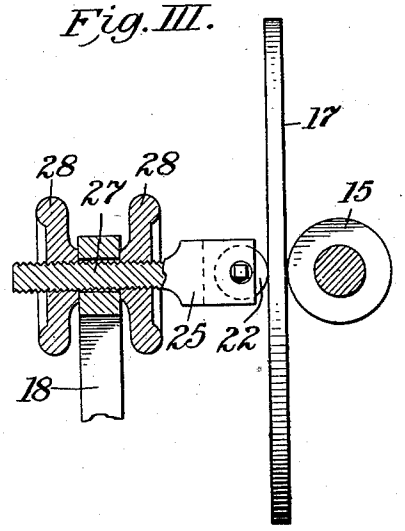


Fig. III.



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Fig. V.

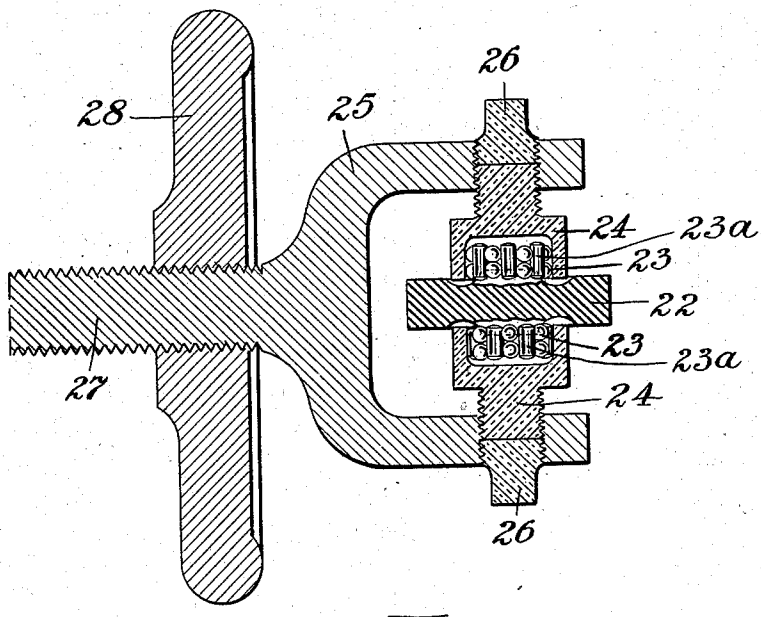
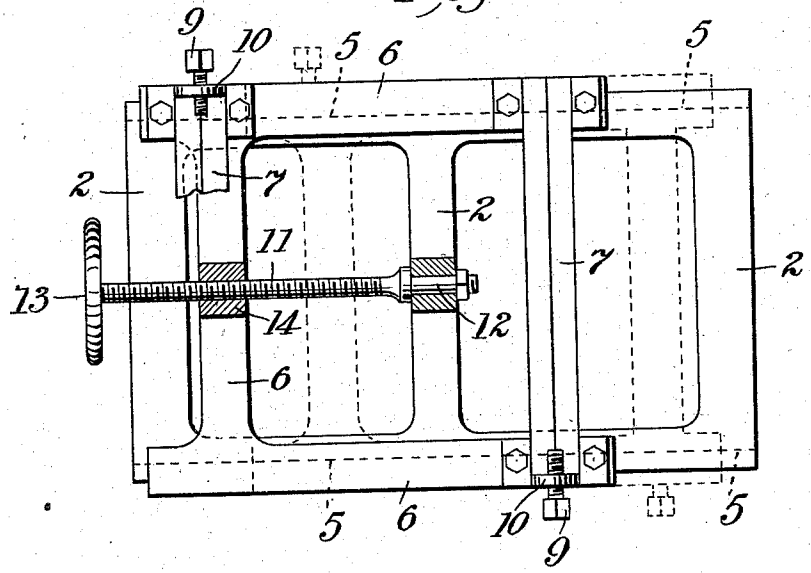


Fig. IV.



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UNITED STATES PATENT OFFICE.

CHARLES E. DONNATIN AND CLARENCE V. GREENAMYER, OF LOS ANGELES, CALIFORNIA, ASSIGNORS TO WILLIAM HYMAN HOLABIRD, OF LOS ANGELES, CALIFORNIA.

MEANS FOR CONNECTING MOTORS TO MACHINES.

SPECIFICATION forming part of Letters Patent No. 712,659, dated November 4, 1902.

Application filed April 28, 1902. Serial No. 105,106. (No model.)

To all whom it may concern:

Be it known that we, CHARLES E. DONNATIN and CLARENCE V. GREENAMYER, residing at Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Means for Connecting Motors to Machines, of which the following is a specification.

Our invention relates to mechanism whereby a motor may be connected and adjusted to a machine, such as lathe or other machine tool, and has for its objects to dispense with belts, counter-shafts, and belt-shifters by furnishing means whereby the motor may be directly connected to the machine and movable bodily with respect thereto to give various rates of speed to the machine without changing the speed of rotation of the motor, and also affording means to change the direction of rotation of the machine.

Another object is to provide means whereby the connection between the motor and the machine may be frictional and to provide means for securing the requisite amount of friction.

Another object is to provide a means for supporting that portion of the machine which receives the frictional contact.

Other objects—such as simplicity of construction, ease of adjustment, and reliability of operation—are attained, which will be set forth in the following description.

Figure I is a view showing our invention applied to a lathe, only a portion of the lathe being shown. Fig. II is a view showing certain details of the driving mechanism of the lathe. Fig. III is a detail showing a mechanism for counteracting the effect of strains applied to certain moving portions of the lathe-gearing. Fig. IV is a plan view of the adjusting mechanism, partially shown in section. Fig. V is a sectional detail of portions of the mechanism shown in Fig. III.

1 represents a portion of the bed of a lathe.

2 is a stationary frame rigidly attached to the lathe-bed by a bracket 3.

4 is a support for the outer end of the frame 2.

The frame 2 is provided with grooved ways 5. Mounted to slide along the ways 5 is a movable frame 6. The movable frame 6 is provided with V-rails, forming ways 7, which lie at right angles to the line of movement of the movable frame 2. A motor 8 may be mounted upon the ways 7. The motor 8 may be adjustably held on the ways 7 by screws 9, which pass through lugs 10, projecting from the movable frame.

11 is a screw, which may be swiveled at 12 to the stationary frame 2.

13 is a hand-wheel for the screw 11.

14 is a nut carried by the movable frame 6 and in engagement with the screw 11.

15 is a friction-wheel carried by the shaft of the motor 8, and 16 is an arm for supporting the shaft and friction-wheel.

17 is a friction-disk revolubly mounted on a bracket 18 and connected to the lathe-head by gears 19 and 20. The disk acts as a fly-wheel to the machine and helps to maintain an even rate of speed in the machine. The disk 17 carries a steel rim 21.

22 is an antifriction-roll mounted on antifriction-bearings, comprising a series of balls 23, preferably in pairs, and each pair of balls is separated by a roller 23^a. By this construction a strong bearing is secured, and the sliding friction which would occur if the rollers or balls were placed against each other is avoided. This method of construction also secures a bearing capable of relieving the large amount of friction which results from the pressure between the roll 22 and the disk 17 and from the high speed of the roll 22.

The balls 23 and rollers 23^a are supported in adjustable cups 24. The cups 24 are screwed to a yoke 25.

26 represents locking-nuts.

The yoke 25 has a threaded shank 27, which passes loosely through the bracket 18.

28 represents threaded hand-nuts for holding the shank and yoke in position.

The yoke 25 is positioned so that the roll 22 may bear against the steel rim 21.

The motor may be adjusted upon the ways 7 by means of the screws 9, so that the friction-wheel 15 may bear with any desired pressure against the disk 17. When the mo-

tor runs, the disk 17 is rotated through the medium of the wheel 15, and by turning the screw 11 the frame 6 may be moved on the ways 5 to carry the motor and its friction-wheel 15 along the face of the disk 17 to secure the proper positioning of the wheel 15 on the disk 17 to secure the desired speed or to reverse the movement of the disk. Fig. I shows in full lines the motor and wheel 15 in position to rotate the disk 17 at a relatively low speed, while the dotted lines indicate a position the motor may have to impart a relatively higher speed to the disk 17. The roll 22 revolves against the steel rim 21 and holds the disk 17 true to its plane of movement and opposes the pressure of the wheel 15 against the opposite face of the disk, which tends to throw the disk out of its true line of movement away from wheel 15 and losing the required friction.

While this invention has been shown and described as connected to a lathe, it is evident that it may be applied to other forms of machines as well. Likewise other motors than electric may be employed. The friction-disk 17 could be carried directly on the shaft of the machine or it could be connected to the machine by other gearing. Obviously many other changes may be made in the particular construction herein shown and described without departing from the spirit of our invention as defined in the claims.

What we claim, and desire to secure by Letters Patent of the United States, is—

1. A machine, driving means connected to said machine, a motor frictionally connected to said driving means, and means to move said motor in independent, diverging, straight paths relative to said driving means.

2. A machine, a revoluble flat disk having a plane bearing-face, for operating said machine, a motor frictionally connected to the plane bearing-face of said disk, and means to adjust said motor relatively to said disk.

3. A machine, a revoluble disk for operating said machine, a motor frictionally connected to said disk, and means to move said motor in diverging, straight paths relatively to said disk.

4. A machine, a frame in fixed relation thereto, driving means connected to said machine, a motor mounted on said frame, means to move said motor longitudinally and transversely of said frame, and a frictional connection between said motor and said driving means.

5. A machine, a frame in fixed relation thereto, a revoluble disk carried by said machine, a motor slidably mounted on said frame, means to move said motor longitudinally and transversely of said frame, said motor being frictionally connected to said disk.

6. A machine, a frame in fixed relation thereto, a movable frame mounted on said fixed frame, a motor carried by said movable frame, a revoluble disk on said machine, said motor being frictionally connected to said disk, and means to move said movable frame.

7. A machine, a frame in fixed relation thereto, a motor mounted above said fixed frame and movable along and across said fixed frame, a revoluble disk on said machine, said motor being frictionally connected to said disk, and means to move said motor bodily.

8. A machine, a frame in fixed relation thereto, a movable frame mounted on said fixed frame, a motor mounted on said movable frame, means to move said motor on said movable frame, means to move said movable frame, a revoluble disk on said machine, said motor being frictionally connected to said revoluble disk.

9. A machine, a frame in fixed relation thereto, a movable frame mounted on said fixed frame, ways on said movable frame, a motor on said ways, means to move said motor along said ways, means to move said movable frame, a revoluble disk on said machine, said motor being frictionally connected to said disk.

10. A machine, a frame in fixed relation thereto, ways on said frame, a movable frame mounted on said ways, means to move said movable frame along said ways, ways on said movable frame, a motor on said last-named ways and movable thereon, a revoluble disk on said machine, said motor being frictionally connected to said disk.

11. A machine, a frame in fixed relation thereto, a screw swiveled to said frame, a movable frame mounted on said fixed frame, a nut on said movable frame engaging said screw, a motor mounted on said movable frame, a revoluble disk on said machine, said motor being frictionally connected to said disk.

12. A machine, a frame in fixed relation thereto, a movable frame slidably mounted on said fixed frame, a motor mounted on said movable frame, adjusting-screws carried by said movable frame and bearing against said motor, means to move said movable frame, and a revoluble disk on said machine, said motor being frictionally connected to said disk.

13. A machine, a revoluble flat disk thereon, a motor, a friction-wheel carried thereby which bears against one face of said disk, means to move said motor and said friction-wheel relatively to said disk, and a bearing against the opposite face of said disk substantially opposite said friction-wheel.

14. A machine, a revoluble flat disk thereon, a motor, a friction-wheel carried thereby which bears against one face of said disk, a bearing substantially opposite said friction-wheel and supporting said disk, and means to move said motor and said friction-wheel bodily with respect to said disk.

15. A machine, a revoluble flat disk thereon, a motor, a friction-wheel carried thereby

and bearing against one face of said disk, an antifriction device substantially opposite said friction-wheel and bearing against the opposite face of said disk, and means to adjust said antifriction device relatively to said disk.

16. A machine, a revoluble flat disk thereon, a motor, a friction-wheel carried thereby and bearing against one face of said disk, an antifriction device substantially opposite said friction-wheel and bearing against the opposite face of said disk, means to adjust said antifriction device relatively to said disk, and means to move said motor and friction-wheel bodily.

17. A machine, a revoluble disk thereon, a friction-wheel bearing against one face of said disk, an antifriction device bearing against said disk on the opposite face, and means to adjust said antifriction device longitudinally and transversely of relatively to said disk.

18. A machine, a revoluble disk thereon, a rim secured to the periphery of said disk, a motor, a friction-wheel carried thereby and bearing against one face of said disk or rim, an antifriction device bearing against said rim on the opposite face, means to adjust said antifriction device relatively to said rim, and means to move said motor and friction-wheel bodily.

19. A machine, a revoluble disk thereon, a motor, a friction-wheel carried thereby and bearing against one face of said disk, a roll mounted on antifriction-bearings substantially opposite said friction-wheel and bearing against the opposite face of said disk, and means to adjust said roll relatively to said disk.

20. A machine, a revoluble disk thereon, a motor, a friction-wheel carried thereby and bearing against one face of said disk, a roll mounted on a combination ball-and-roller bearing substantially opposite said friction-wheel and bearing against the opposite face of said disk, means to adjust said roll relatively to said disk, and means to move said motor and friction-wheel bodily.

21. A machine, a revoluble disk thereon, a motor, a friction-wheel carried thereby and bearing against one face of said disk, a yoke, an antifriction device mounted in said yoke and bearing against the face of said disk opposite said friction-wheel, and means to adjust said yoke toward and away from said disk.

22. A machine, a revoluble disk thereon, a motor, a friction-wheel carried thereby and bearing against one face of said disk, a yoke, an antifriction device mounted in said yoke and bearing against the face of said disk opposite said friction-wheel, means to adjust said yoke toward and away from said disk, and means to move said motor and friction-wheel bodily.

23. A machine, a bracket thereon, a disk mounted on said bracket, said disk being geared to said machine, a yoke mounted on said bracket, an antifriction-roll carried thereby and bearing against one face of said disk, a motor, a friction-wheel carried thereby and bearing against the other face of said disk, and means to move said motor and friction-wheel bodily.

24. A machine, a bracket thereon, a disk mounted on said bracket, said disk being geared to said machine, a yoke adjustably mounted on said bracket, an antifriction-roll carried thereby and bearing against one face of said disk, a motor, a friction-wheel carried thereby and bearing against the other face of said disk, and means to move said motor and friction-wheel bodily.

25. A machine, a bracket thereon, a disk mounted on said bracket and geared with said machine, a yoke having a threaded shank which passes through said frame, hand-wheels mounted on the threaded shank and adapted to bear against opposite sides of said brackets and adjustably hold said yoke, an antifriction-roll carried by said yoke and bearing against one face of said disk, a motor, and a friction-wheel carried thereby and bearing against the other face of said disk.

26. A machine, a bracket thereon, a disk mounted on said bracket and geared with said machine, a yoke having a threaded shank which passes through said frame, hand-wheels mounted on the threaded shank and adapted to bear against opposite sides of said bracket and adjustably hold said yoke, an antifriction-roll carried by said yoke and bearing against one face of said disk, a motor, a friction-wheel carried thereby and bearing against the other face of said disk, and means to move said motor and friction-wheel bodily.

In testimony whereof we have signed our names to this specification, in the presence of two subscribing witnesses, at Los Angeles, in the county of Los Angeles and State of California, this 22d day of April, 1902.

CHARLES E. DONNATIN.
CLARENCE V. GREENAMYER.

Witnesses:
G. T. HACKLEY,
F. M. TOWNSEND.