(No Model.)

W. L. KLING.

DEVICE FOR CONVERTING MOTION.

No. 337,962. Patented Mar. 16, 1886.

Fig. 1.

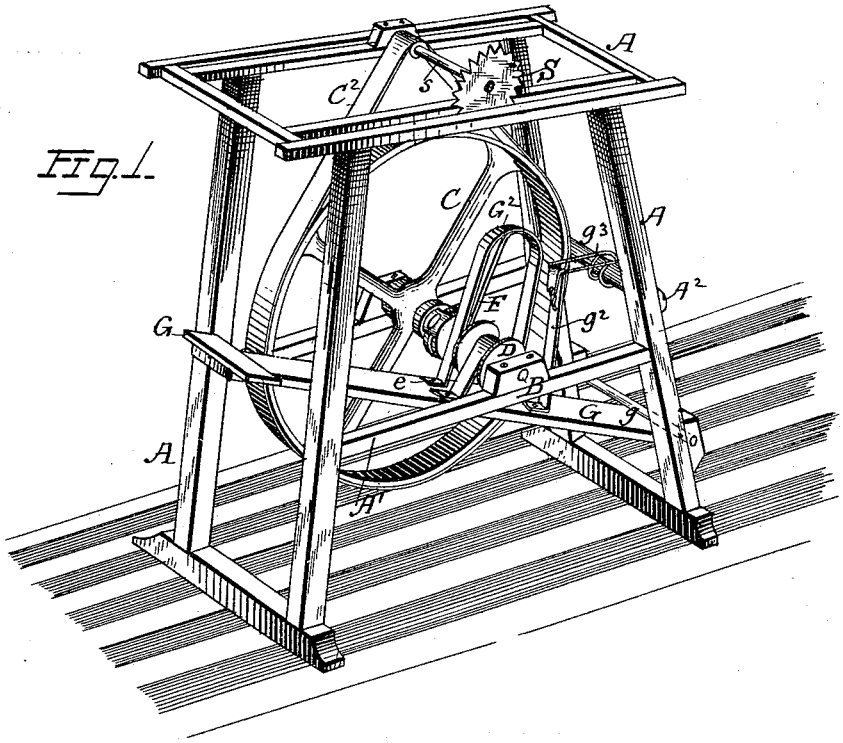


Fig. 2.

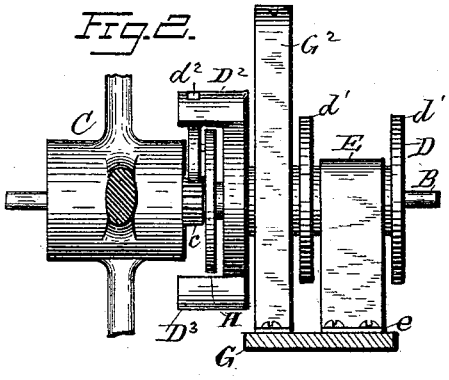


Fig. 3.

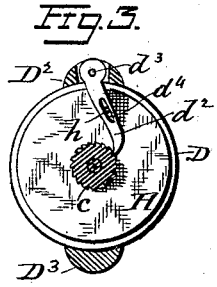
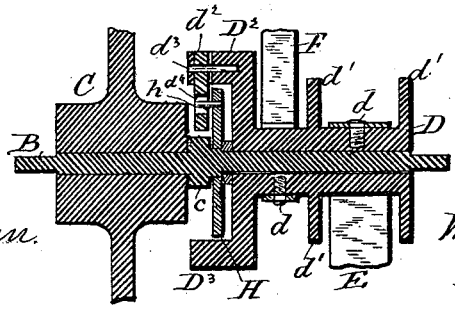


Fig. 4.



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UNITED STATES PATENT OFFICE.

WILLIAM L. KLING, OF ST. CLOUD, MINNESOTA.

DEVICE FOR CONVERTING MOTION.

SPECIFICATION forming part of Letters Patent No. 337,962, dated March 16, 1886.

Application filed August 22, 1885. Serial No. 175,109. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM L. KLING, a citizen of the United States, residing at St. Cloud, in the county of Stearns and State of Minnesota, have invented certain new and useful Improvements in Machines for Converting Motion, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to improvements in machines for converting reciprocating into rotary motion; and it consists in the combination and arrangement of a treadle with spools, straps, a pawl and ratchet, and other connections hereinafter described, and specifically set forth in claims, and also illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of the machine. Fig. 2 is a side view of the operating parts connected with the main shaft of the machine. Fig. 3 is a transverse vertical section of the shaft, showing the ratchet and pawl. Fig. 4 is a longitudinal section of the main shaft and parts mounted thereon.

Similar letters refer to similar parts throughout the several views.

The machine is represented as used to drive a circular saw, but it may be used to drive a lathe, boring-machine, corn-sheller, churn, grindstone, velocipede, and other machines. In the present instance it is carried by a frame, A, formed of four uprights united at the top and bottom by cross bars and sills.

Upon the cross-bars A′ is mounted in suitable bearings, *a*, the main shaft B of the machine. Upon one end of the shaft is secured a fly-wheel, C, having cast and formed upon one end of its hub a small ratchet-wheel, *c*. Upon the opposite end of the shaft B is loosely mounted a sleeve, D, to which is secured at *d* one end of the machine-driving strap E and of the strap F, used to give a back movement to the sleeve D and its pawl. This sleeve is provided with collars *d′*, to prevent the straps from leaving the location allotted to them upon the sleeve while being coiled thereon. The opposite end of the strap E is secured at *e* upon the treadle G, through which foot-power is given to the machine.

To connect the opposite end of the strap F with the treadle, there is secured upon the latter a bar, G^2, bent in the form of an inverted **U**, the branches of which straddle the shaft and rest upon the treadle, while to the under side of the bent portion or arch of said bar is secured the upper end of said strap F. The straps E and F are coiled upon the sleeve D in opposite directions, so that while one of them is wound the other is unwound. The inner end of the sleeve D is provided with two radial arms having projections D^2 and D^3 parallel with the axis of said sleeve. The projection D^2 is radially slotted to receive the outer end of the pawl d^2, and a pin, d^3, passing loosely through said outer end and into the projection D^2, retains the pawl connected with the latter.

To cause the inner end of the pawl to promptly engage with the teeth upon the ratchet-wheel without the help of a spring upon the said pawl while pressure is brought down upon the treadle, and also to cause the pawl to pass silently over the teeth of the ratchet-wheel without touching them while said pawl is going back for a new hold, there is mounted loosely upon the shaft B, between the ratchet-wheel and the inner end of the sleeve, a disk, H, from the outer face of which projects a small pin, *h*, that is made to fit slot d^4 in the pawl. By this construction, while the operator rapidly presses upon the treadle the strap E revolves the sleeve forward, and with it its projections D^2, carrying the heel of the pawl forward, while inertia detains the disk H and causes the point of the pawl to engage with the teeth of the ratchet-wheel and revolve it and with it the fly-wheel C. Under the inverse motion of the treadle—that is, while it is going up—the strap F revolves the sleeve in the opposite direction, and with it its projection D^2, carrying the heel of the pawl rearward, while inertia or the slight adhesion of the disk H to the shaft, or previously acquired momentum, causes the pawl to be rocked upon its middle pin, *h*, and its point to be disengaged and kept elevated away from the periphery of the ratchet-wheel. The projection D^3 simply acts as a balance-weight for the projection D^2. One end of the treadle is pivoted to a transverse rod, *g*, retained in bearings upon two of the uprights of the frame; and to bring

and retain said treadle to an elevated position it is connected, by means of a strap, g^2, with the looped middle portion of a wire spring, g^3, that has its ends coiled around and secured to a horizontal brace, A^2, secured to the standards above the pivot-rods g of the treadle. The fly-wheel is connected in this instance by a belt, C^2, with a small pulley upon the shaft s, carrying a circular saw, S, to rotate the latter at a high speed.

Having now fully described my invention, I claim—

1. The combination of a treadle, the bar G^2, extending upward therefrom, the sleeve D, having two straps coiled around it in opposite directions and provided with projections D^2 and D^3, a pawl pivoted thereto, and a ratchet-wheel connected with a driving-wheel, substantially as and for the purpose described.

2. The combination of the main shaft B, its sleeve having projections, as D^2, a pawl pivoted thereto at one end and having a slot, d^4, about the middle of its length, with the disk H, mounted loosely upon the main shaft and having a pin entering the slot of the pawl, and a ratchet-wheel secured upon the shaft, substantially as and for the purpose described.

3. The combination of a treadle, the bar G^2, extending upward therefrom, the sleeve D, having two straps coiled around it and provided with projections, as D^2, a pawl pivoted thereto, a disk, H, connected with said pawl, and a ratchet-wheel upon the main shaft with the strap g^2 and spring g^3, substantially as and for the purpose described.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM L. KLING.

Witnesses:
ANDREW C. ROBERTSON,
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