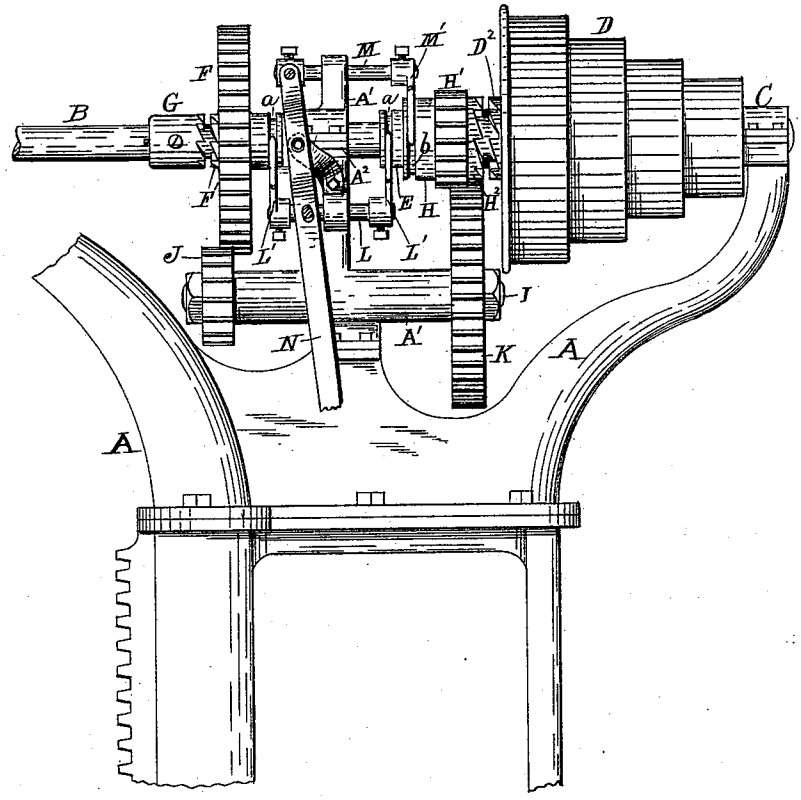
(No Model.) 2 Sheets—Sheet 1.

S. LETIECQ.

POWER SHIPPING MECHANISM.

No. 447,334. Patented Mar. 3, 1891.

Fig. 1.



Witnesses;

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FIG. 2.

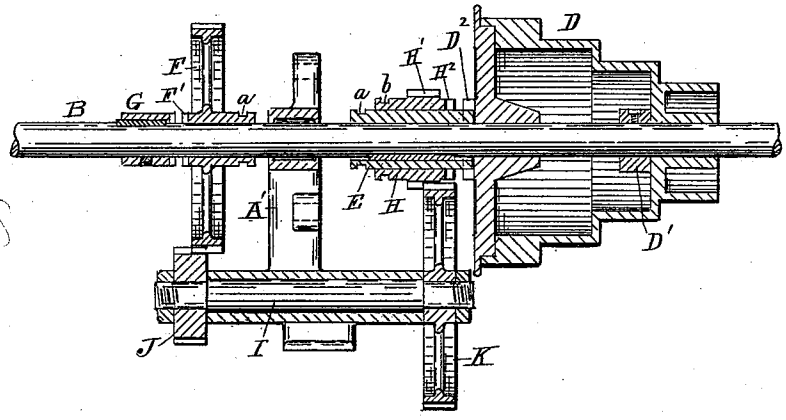
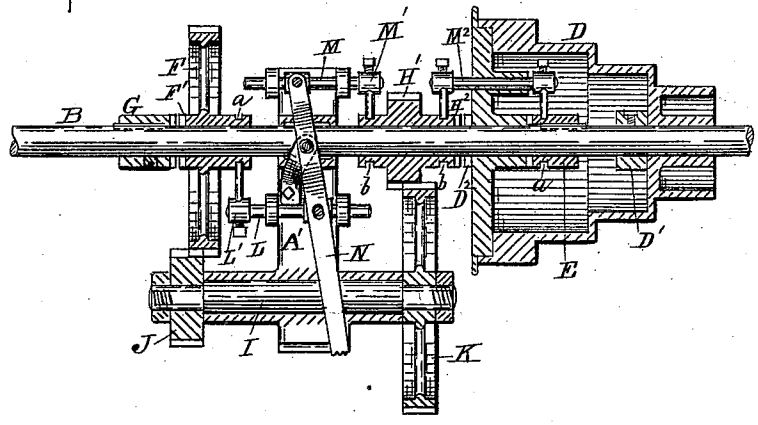


FIG. 3.



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UNITED STATES PATENT OFFICE.

SINAÏ LETIECQ, OF WORCESTER, MASSACHUSETTS.

POWER-SHIPPING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 447,334, dated March 3, 1891.

Application filed November 28, 1890. Serial No. 372,812. (No model.)

To all whom it may concern:

Be it known that I, SINAÏ LETIECQ, of the city and county of Worcester, and State of Massachusetts, have invented certain new and useful Improvements in Power-Shipping Mechanism; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, forming a part of this specification, and in which—

Figure 1 represents a side view of so much of the upper part of a drilling-machine as is necessary to illustrate my invention; Fig. 2 is a central vertical longitudinal section thereof independent of the shipper and main supporting-frame; and Fig. 3 is a modification in the construction hereinafter more fully described.

My invention relates more particularly to shipping mechanism for drilling-machines; but I do not limit myself thereto, as it is equally applicable to other machines having "back-gearing" and in which it is desirable to change the speed from a low to a high speed, or vice versa.

Said invention consists in certain improvements in the construction and arrangement of the various parts which constitute said shipping mechanism, as will be hereinafter more fully set forth.

In order that others may better understand the nature and purpose of my said improvements, I will now proceed to describe the same more in detail.

In the drawings, the parts marked A represent the upper main supporting-frame of the machine, which in practice is provided with suitable bearings, as usual, for the shaft B to turn in, one of said bearings C being shown in Fig. 1. To said main frame is secured the frame A′, which supports the intermediate gears and shipping device, said frame A′ also having a bearing A^2 for the shaft B to turn in. Upon said shaft B are mounted the cone-pulley D, sleeve E, gear F, and collar G, which are constructed and arranged as follows: The cone-pulley D is fitted to turn loose on shaft B, is provided with an internal collar D′, secured to the shaft for holding said pulley from inward longitudinal motion, and with a toothed hub D^2, adapted to engage with the sleeve E. Said sleeve E is splined to shaft B and fitted to slide longitudinally, being also provided with a toothed end next to the cone-pulley, adapted to engage with the aforesaid toothed hub on the pulley to form a clutch between the two. The gear F is fitted to turn loose on shaft B and to slide longitudinally between the bearing A′ and collar G. It is also provided with a toothed hub F′ next to said collar, adapted to engage with the latter, which in turn is correspondingly toothed and secured rigidly on shaft B. A sleeve H, having a pinion H′ thereon, is fitted to turn as well as slide longitudinally on the sleeve E, previously alluded to, and is provided with a toothed end H^2 next to the cone-pulley, (similar to said sleeve E,) adapted to engage with the toothed hub D^2 on said cone-pulley, said hub D^2 being of sufficient size to engage with the toothed ends of both the sleeves E and H, as is indicated in Fig. 2 of the drawings.

Upon the ends of the short horizontal shaft I, which turns in frame A′, are secured the pinion J and gear K. Pinion J engages with the loose gear F on shaft B and gear K with the loose pinion H′ on sleeve H, in turn fitted over sleeve E, as previously stated. An intermediate gear-connection is thus made between the gear F, which engages with the fixed clutch-collar G on shaft B, and the clutch-sleeve H, which engages with the cone-pulley. The sleeve E and gear F are connected by means of a horizontal rod L, fitted to slide in frame A′, and forks L′ L′, which are secured to the ends thereof and fit in annular grooves *a a* in said sleeve E and the hub of gear F. A similar slide-rod M on frame A′, having a fork M′ on one end, engages with the sleeve H, upon which is mounted the pinion H′, said fork fitting in an annular groove *b* in the end of said sleeve. To the opposite end of rod M from its fork is pivoted the upper end of the shipper N, which is also pivoted to rod L at the left of its bearing in frame A′ and to the frame A′ between said pivots.

By the foregoing construction and arrangement it is obvious that when the lower end of the shipper N is moved toward the left the

gear F is moved with it and clutched to the fixed collar G on shaft B, while the sleeve H and its pinion H′ are moved to the right and clutched to the hub of the cone-pulley D. At the same time sleeve E, being moved to the left with gear F, is unclutched from said cone-pulley, thereby communicating the power from the shaft through the train of intermediate gears to the pulley, and at the same time unshipping said pulley from direct connection with the shaft, consequently obtaining a low speed through said intermediate gearing.

To communicate the speed of shaft B direct to the cone-pulley, and thus obtain the higher rate of speed, the lower end of the shipper is moved toward the right, said operation causing the gear F to be disconnected from the fixed clutch-collar G, the sleeve H disconnected from the cone-pulley, and the sleeve E connected with said cone-pulley, as will readily be seen by reference to Fig. 1 of the drawings.

In said drawings the various parts are shown in the positions that they occupy when the cone-pulley is connected direct with the shaft B through the sleeve E and disconnected from the back-gearing.

In Fig. 3 a similar construction to that hereinbefore described is shown, the clutch-collar G being secured to shaft B and sleeves E and H^2 fitted to slide and to engage with the hub of the cone-pulley, as in the former instance, the difference being principally in the arrangement of said sleeves, the sleeve E being in this instance arranged on the shaft within the cone-pulley and adapted to engage with the inner end of its hub instead of outside of said cone-pulley and the sleeve H, on which is mounted the pinion H′, being arranged on the shaft instead of over the sleeve E, connection being made between the two sleeves by a horizontal forked rod M^2, fitted to slide in the cone-pulley instead of connecting the forked rod L with the sleeve E, as in the former instance, and to accommodate this construction both ends of the cone-pulley hub D^2 are toothed, as is shown in said Fig. 3. Otherwise the construction and arrangement are substantially the same as in the first two figures described, and the principle of operation is substantially the same in both cases, as will readily be seen.

I am aware that other mechanisms of a similar nature, but differing in construction from my invention, have been patented, and I therefore limit my said invention to the specific construction herein set forth, and pointed out in my claims.

What I claim is—

1. In power-shipping mechanism, the combination of shaft B and cone-pulley D, fitted to turn and held against longitudinal motion thereon, also having a toothed hub D^2 at its inner end, with the grooved and toothed sleeve E, splined to said shaft B and fitted to slide longitudinally thereon, the grooved and toothed loose sleeve H, having the pinion H′ thereon and adapted to be engaged with the toothed hub of the cone-pulley, the toothed collar G, rigidly secured to shaft B, the gear F, loose on said shaft B and having a toothed hub adapted to engage with the toothed end of rigid collar G, pinion J, engaging with gear F, gear K, engaging with pinion H′, shaft I, fitted to turn in frame A′, and to which said pinion J and gear K are secured, and the shipper device consisting of the forked rod L, engaging with the sleeve E and gear F, forked rod M, engaging with sleeve H, and shipper N, pivoted at its upper end to the outer end of rod M and to the rod L, substantially as and for the purpose set forth.

2. In power-shipping mechanism, the combination of shaft B and cone-pulley D, fitted to turn and held against longitudinal motion thereon, also having a toothed hub at its inner end with the loose grooved and toothed sleeve H, having the pinion H′ mounted thereon and adapted to engage with the toothed hub of said cone-pulley, loose gear F, having a grooved and toothed hub and adapted to engage with the toothed end of collar G, said collar G, secured to shaft B, pinion J and gear K, adapted to engage with gear F and pinion H′, respectively, shaft I, fitted to turn in frame A′, and to which said pinion and gear J K are secured, forked rod L, fitted to slide in said frame A′ and engaging with gear F and sleeve H, and shipper N, pivoted at its upper end and to said rod L, substantially as and for the purpose set forth.

3. In power-shipping mechanism, the combination of shaft B, toothed collar G, secured thereto, loose grooved and toothed gear F, adapted to engage with said toothed collar, pinion J, engaging with gear F and secured to shaft I, said shaft fitted to turn in a stationary bearing, gear K, secured to shaft I and engaging with pinion H′ on loose sleeve H, said sleeve provided with an annular groove and toothed at one end, also adapted to engage with the toothed hub of cone-pulley D, and said cone-pulley having a toothed hub at its inner end also fitted to turn on shaft B, as well as held against longitudinal motion thereon, substantially as set forth.

4. In power-shipping mechanism, the combination of shaft B and cone-pulley D, fitted to turn and held against longitudinal motion thereon, also having a toothed hub at its inner end, with the grooved and toothed sleeve E, splined to shaft B, fitted to slide thereon and adapted to engage with the toothed hub of the cone-pulley, grooved and toothed sleeve H, fitted to turn and to slide over the sleeve E, also having the pinion H′ thereon and adapted to engage with the toothed hub of the cone-pulley independent of sleeve E, and means for operating said sleeves, substantially as and for the purpose set forth.

5. In power-shipping mechanism, the combination of grooved and toothed sleeve E,

splined to shaft B and fitted to slide longitudinally thereon, grooved and toothed sleeve H, fitted to turn and to slide on sleeve E, also having the pinion H′ thereon, and gear F, fitted to turn and slide on shaft B, also having its hub grooved and toothed, with the forked shipper-rod M, engaging with sleeve H and the upper end of shipper N, forked shipper-rod L, engaging with sleeve E, gear F, and shipper N, said shipper N, and frame A′, in which rods L and M are fitted to slide, substantially as and for the purpose set forth.

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Witnesses:
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W. B. NOURSE.