R. B. & J. C. CHAPMAN.

Reversing-Mechanism.

No. 160,877. Patented March 16, 1875.

FIG. 1.

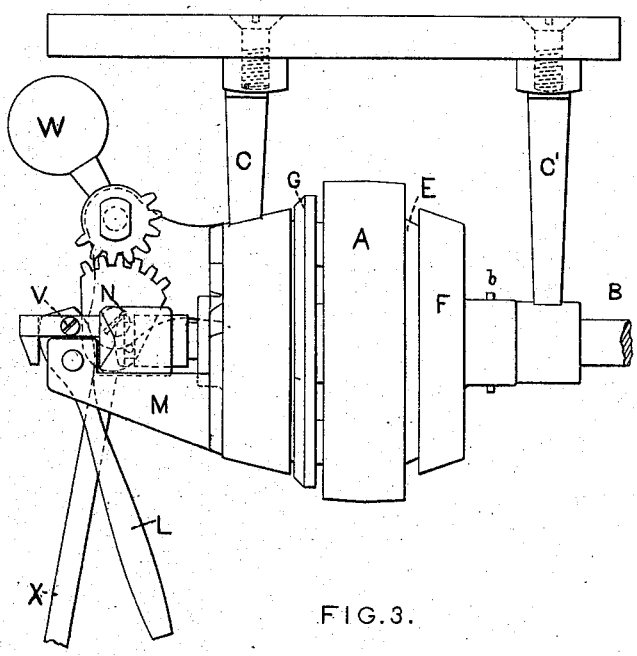


FIG. 2.

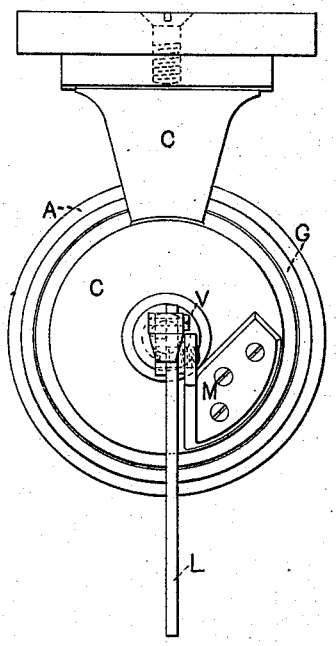


FIG. 3.

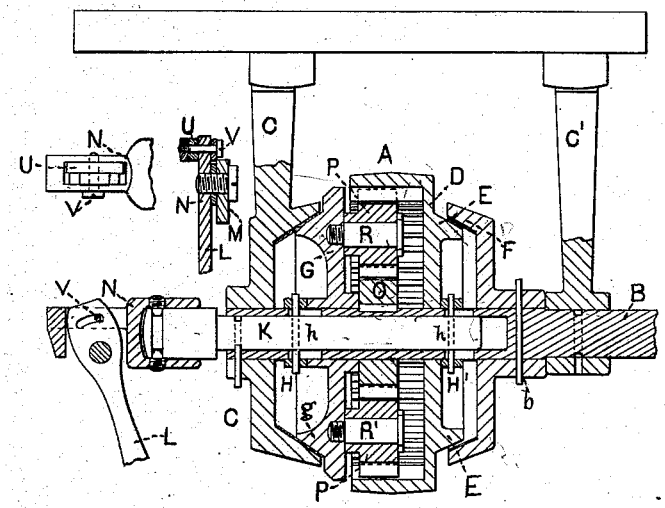
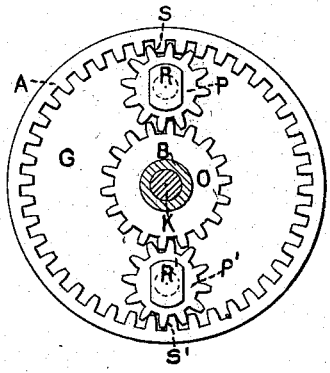


FIG. 4.



WITNESSES.

Charles St. Leonard.

Wm. Hutchinson.

Rufus B. Chapman
John C. Chapman
By Boyd Eliot attys for
INVENTORS

THE GRAPHIC CO. PHOTO-LITH. 39 & 41 PARK PLACE, N.Y.

UNITED STATES PATENT OFFICE.

RUFUS B. CHAPMAN, OF CAMBRIDGEPORT, MASSACHUSETTS, AND JOHN C. CHAPMAN, OF PASSAIC, NEW JERSEY.

IMPROVEMENT IN REVERSING-MECHANISMS.

Specification forming part of Letters Patent No. **160,877**, dated March 16, 1875; application filed November 10, 1874.

To all whom it may concern:

Be it known that we, RUFUS B. CHAPMAN, of Cambridgeport, in the county of Middlesex and State of Massachusetts, and JOHN C. CHAPMAN, of Passaic, New Jersey, have invented certain Improvements in Reversing-Mechanism, of which the following is a specification:

This invention has for its object the reversing of machinery in motion, as of planers, screw-cutting engines, hoisting-machines, &c.; and the invention consists in using a single driving-pulley, rotating always in the same direction, in combination with two friction-disks, one fastened to revolve with the shaft and the other independent of the shaft but fastened to a bracket, and with intermediate mechanism arranged in such a manner as that, by shifting the driving pulley alternately from contact of one disk to the other, the shaft is instantly reversed, while the driving-pulley continues to rotate.

Figure 1 represents an exterior view or side elevation of the mechanism, as applied to a shaft supported in its hangers. Fig. 2 is an end view of the same, taken from the left hand of Fig. 1. Fig. 3 is a section through the line of the shaft. Fig. 4 is a plan of the gear used within the driving-pulley.

At A is shown the driving-pulley, upon which only one driving-belt need be run, and it is mounted to run loosely on the shaft B, which is supported in the hangers C and C′. Said pulley, instead of being cast with arms in the ordinary form, is provided with a web on one side, as at D, to support the pulley on the shaft, and upon the outer side or face of said web a bevel-flange is formed, as at E, which forms one of the frictional faces, to engage with a reversed corresponding frictional face on a disk, as at F, which is fastened upon the shaft B as by a pin, shown at *b*, through the hub of said disk and through the shaft. Upon the opposite or open side of the driving-pulley there is mounted upon the shaft another disk, as at G, similar in size and form to the web side of the pulley, and it is provided with a friction-flange, as at *g*, on its outer face, so as to engage with a corresponding friction-flange which is fastened to or cast upon the bracket or hanger C. This disk G is provided with a hub, so as to run loosely on the shaft B, and it and the driving-pulley are both held in position on the shaft by the two collars around the shaft, as at H H′, which clamp the hubs of the pulley and disk G between them, and they are held from spreading apart by the pins *h h* passing through them into a shipping-rod, K, which extends from one end of the shaft through a hole extending longitudinally in its center far enough to hold the inner collar. Slots are made in the shaft to allow the pins *h h* to carry the collars H H′ to and fro so as to shift the pulley and the friction-flanges to and fro to come in contact with the disk F on the shaft, or the stationary disk on the hanger at C. Said shipping-rod is operated in any convenient manner, as by a hand-lever, as at L, which may be attached to a bracket, as at M, and extends through a slot in a T-head, as at N, which engages with the rod which revolves with the shaft. But it is evident if one of the friction-disks be made stationary, some provision must be made for allowing the driving-pulley to move always in the same direction for reversing the shaft. This is accomplished by the intermediate gear, as at O and P P′, which may be either toothed wheels, as here shown, or frictional wheels of any suitable form. Upon the shaft B the central wheel, as at O, is fastened as by a key or in other suitable manner, and into it gear the pinions P and P′, (one will answer the purpose, but two are better in order to balance the action,) and these are mounted upon axes or studs, as at R R′, which are fastened into the disk G, and which, of course, become stationary whenever the disk G is in contact with the fixed disk on the hanger C, and thereby the said axes become fulcrums by which the driving-pulley, which is provided with internal teeth, gearing into the pinions P and P′, as at S S′, gives motion to the pinion O, and thence to the shaft, but in a reversed direction to the motion of the pulley. By such an arrangement it is evident that when the pulley is in contact with the disk fastened upon the shaft it will revolve the shaft with it, and when it is shifted to the opposite position, so that the disk G is in contact with the stationary

disk on the hanger, then the shaft will receive a reversed motion, and when placed between the two the shaft will remain at rest. It is also evident that the shifting-rod must be held firmly when shifted, to keep the friction-surfaces in action, and to accomplish this a plate of some elastic material, as at U, is placed in the slot in the T-head alongside of the flat end of the shipping-lever, and which may be pressed therein by a screw-bolt, as at V, so that a sufficient degree of friction will be produced to hold the shipping-lever in whatever position it is placed, and thereby keep the shipping-rod in proper working position. Another method is to have a weighted lever, as at W, provided with a segmental rack that engages with the T-head on the outer end of the shipping-rod, or it may engage with a lever, as at X, attached as the hand-lever, as at L, is attached, and to said lever a bunting-bar may be attached and provided with stops as in the ordinary shipping-mechanism of planers or to the check-cords or chains of a hoisting-machine. When the weighted lever is tilted over either to the right or left, it will hold the disks in contact until reversed.

We therefore claim—

1. The combination of a single driving-pulley with two frictional disks, one fastened to the shaft and the other independent of it and fixed or stationary, and intermediate mechanism for reversing the motion, substantially as described.

2. The combination, with a driving-pulley mounted between two frictional disks, as described, of a shipping-rod concentric with the shaft, as and for the purposes set forth.

3. In combination with the disk G and driving-pulley, as described, one or more pinions between the pulley and the shaft, as and for the purposes set forth.

4. In combination with the shipping-rod K and its T-head, the friction-plate U of elastic material, and the binding-screw V, as and for the purposes set forth.

RUFUS B. CHAPMAN.
JOHN C. CHAPMAN.

Witnesses to R. B. CHAPMAN'S signature:
F. P. HALE,
F. C. HALE.

Witnesses to JOHN C. CHAPMAN'S signature:
BOYD ELIOT,
CHARLES NEER.