A. C. BURKE.

Device for Converting Motion.

No. 217,858. Patented July 29. 1879.

Fig. 1.

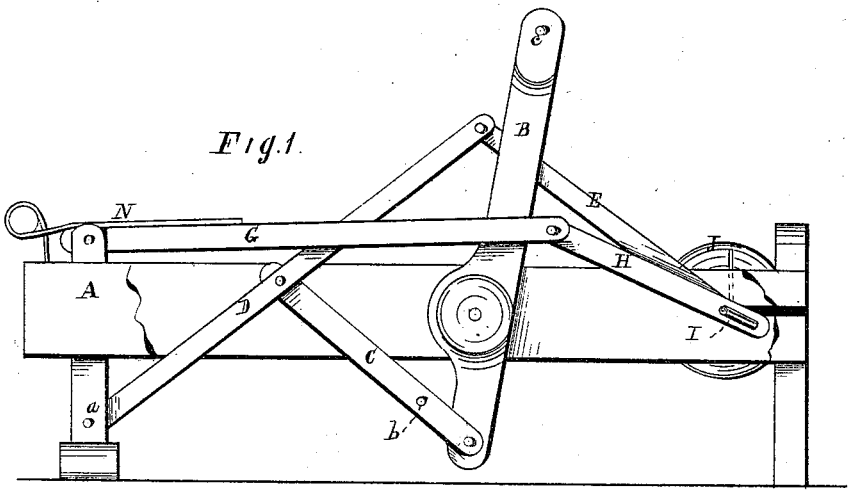


Fig. 2.

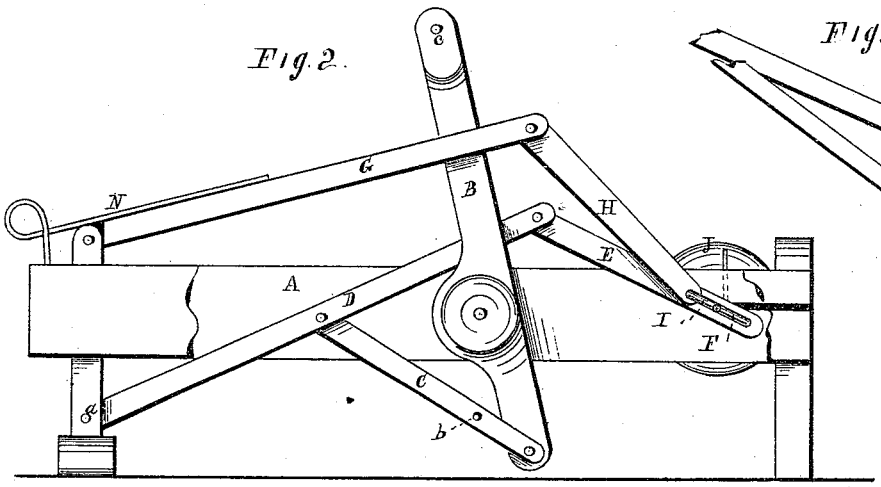


Fig. 4.

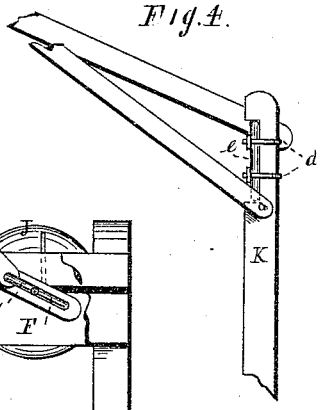
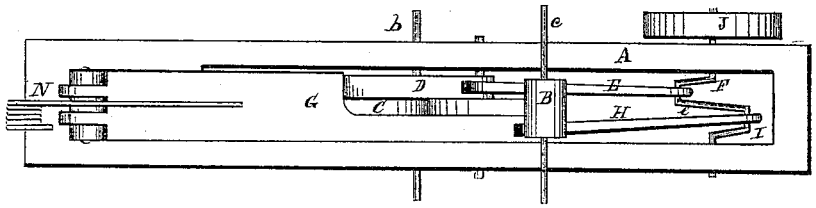


Fig. 3.



Witnesses.

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UNITED STATES PATENT OFFICE.

ASHBEL C. BURKE, OF PORTAGE, OHIO.

IMPROVEMENT IN DEVICES FOR CONVERTING MOTION.

Specification forming part of Letters Patent No. **217,858**, dated July 29, 1879; application filed June 9, 1879.

To all whom it may concern:

Be it known that I, ASHBEL C. BURKE, of Portage, in the county of Ottawa and State of Ohio, have invented new and useful Improvements in Devices for Converting Motion, of which the following is a description, reference being had to the accompanying drawings, making a part of this specification, in which—

Figures 1 and 2 are side elevations of the machine in different positions. Fig. 3 is a plan view. Fig. 4 is a detached section.

Like letters of reference refer to like parts in the several views shown.

The nature of this invention relates to devices for converting motion used in driving light machinery, and for operating a crosscut-saw for sawing wood, logs, &c. Said device for converting motion consists in a frame having arranged therein an upright vibratory lever, to which is attached an arm by means of a link for operating a crank to which the said arm is connected by a pitman, the initial power being applied to the lever by the hands and feet of a person using the machine. To the crank is also attached one end of a horizontal vibratory arm by means of a pitman, which arm, by sustaining the weight of the person operating the machine, acts as an additional power for turning the crank.

A more full description of the machine and the operation of the same will be found as follows: Between the sides of a rectangular oblong frame, A, is pivoted a lever, B. One side of the frame is represented as broken away that the lever and other parts of the machine may be seen. To the lower end of said lever is attached one end of a link, C, whereby it is connected to an arm, D, having its lower end pivoted in the end of the frame at *a*. To the upper end of the arm D is attached a pitman, E, by which the arm is connected to a crank, F, Fig. 3, of a double crank having its bearings in the sides of the frame. G is an arm hinged in the top of the end of the frame. To the upper end of said arm is attached a pitman, H, whereby it is connected to the crank I of the double crank alluded to, substantially as shown in Fig. 3.

Transversely in the link C is inserted a rod, *b*, the ends of which extend beyond the sides of the frame, as seen in Fig. 3; also, through the head of the lever B is inserted a rod, *c*, forming a handle, the purpose of which will presently be shown.

The effective operation of this device for converting motion is as follows: The operator sits astride the arm G, placing his feet upon the rod or foot-rest *b*, at the same time grasping in either hand the rod or handle *c* of the lever. When in this position he pulls upon the lever B, and with his feet pushes against the foot-rest *b*. The effort thus exerted partially lifts his body from the arm G, and at the same time changes the position of the lever from that shown in Fig. 1 to that shown in Fig. 2, thereby causing the crank F to make a half of a revolution, bringing the crank I a little past a dead-center and elevating the arm G from its position shown in Fig. 1 to that shown in Fig. 2. At this moment the operator releases his pull upon the lever and the thrust of his feet from the foot-rest, and sits with his whole weight upon the now-elevated arm G. The weight of the person thus applied to the arm depresses it to the position shown in Fig. 1, thereby throwing out the pitman H, which, by its connection with the crank I, gives said crank a half-revolution, thereby making a complete revolution of the cranks, and also of the pulley J.

While the arm G is being depressed by the weight of the operator from the position shown in Fig. 2 to that seen in Fig. 1, the arm D is rising to the position shown in Fig. 1, bringing the crank F a little past a dead-center, so that when the operator again pulls upon the lever B with his hands and pushes thereon with his feet, the crank, being past a dead-center, readily moves to the force exerted upon it for continuing its revolution. By thus pulling and pushing upon the lever B, giving a half-turn to the crank F, and continuing the revolution of the crank by the weight of the operator applied to the arm G, a continuous and uninterrupted revolution of the crank is effected, and also of the pulley J, from which motion may be transferred by a belt for driving any light machine or machinery requiring a power to operate it.

The motion obtained as above described is rotative; but a reciprocative one can be had

for working a crosscut-saw, or for other uses requiring a reciprocating movement, by the following device: K, Fig. 4, is a hanger having in the upper end a notch or recess equal in length to the stroke of the crank or of the central bar, *e*, Fig. 3, connecting the two cranks. To said bar the hanger is secured by placing the bar in the notch, as shown in Fig. 4, and making it fast therein by strap-bolts *d*. In said Fig. 4 the cranks are represented as in a vertical position, which, as a consequence, places the hanger also in a vertical position, so that the lower end will depend below the cranks.

It will be obvious that on vibrating the cranks, instead of rotating them, (by means of the lever B, which is used alone for operating a saw, &c.,) a vibratory movement will be given to the hanger—that is to say, the cranks are vibrated instead of being rotated, thereby vibrating the hanger, to the lower end of which is to be attached the saw or other article to be operated by a reciprocating movement, the distance of which movement will be longer or shorter as the attachment of the saw to the hanger is more or less distant from the cranks, or according to the vibratory strokes given to the cranks by the operator, as the nature of the work may require.

The spring N, attached to the arm G, forms no part of the machine. It is placed there only to represent the weight of the person operating the said arm.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In devices for converting motion for driving machinery, &c., the vibratory lever B, pivoted in a frame, and having attached to the lower end thereof an arm, D, by means of a link, and the upper end of said arm connected by a pitman to a double crank for operating said crank conjointly with an arm, G, one end of which is pivoted in the top of the frame, and the opposite end thereof connected to the double crank by a pitman, constructed and arranged to operate in the manner as described, and for the purpose specified.

2. The hanger K and screw-straps whereby said hanger is secured to the cranks, in combination with the said cranks, substantially as described, and for the purpose set forth.

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