(No Model.)

W. K. CROFFORD.

MANUAL POWER MACHINE.

No. 537,917. Patented Apr. 23, 1895.

Fig. 1.

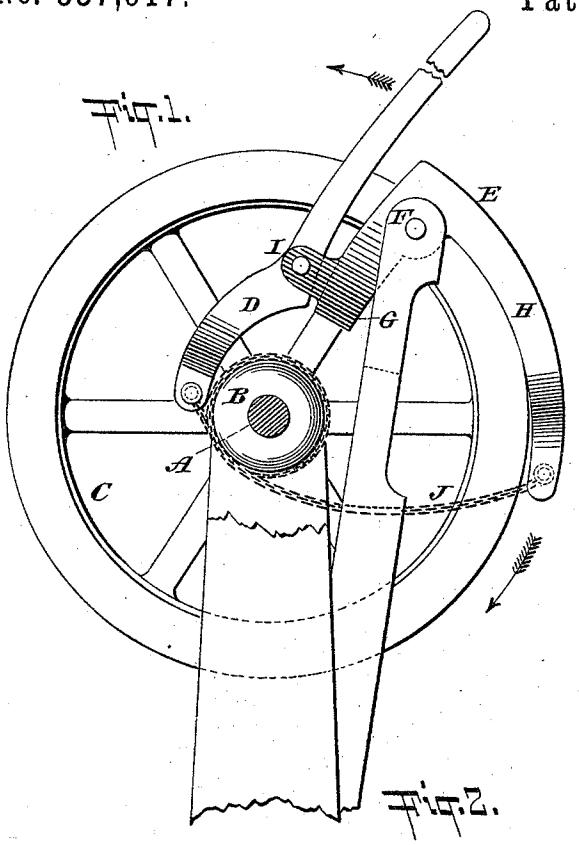


Fig. 3.

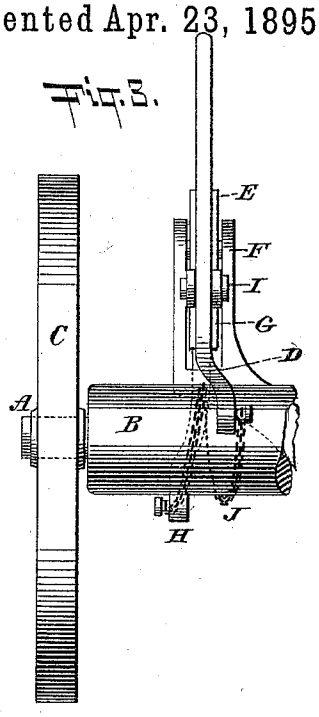
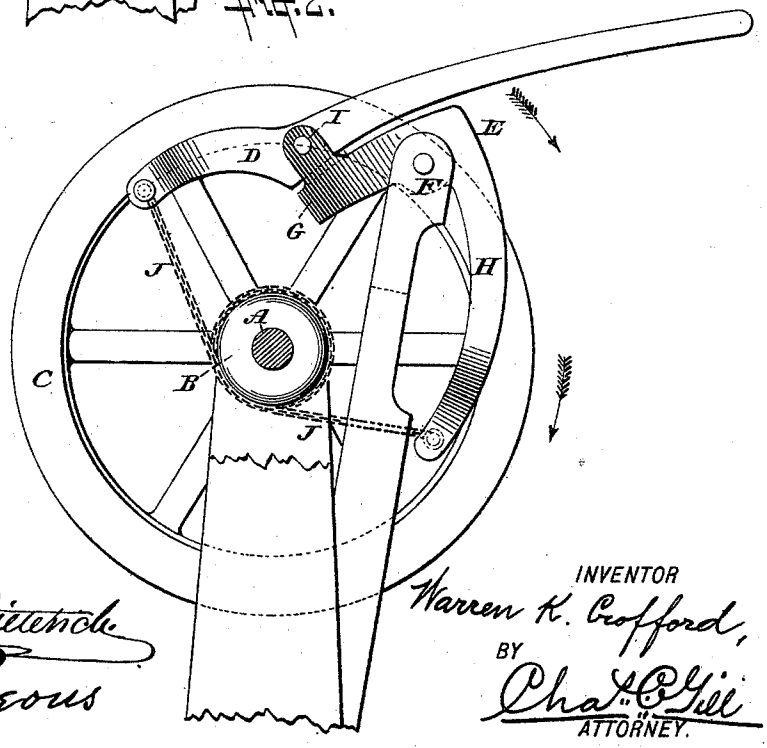


Fig. 2.



WITNESSES:

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WARREN K. CROFFORD, OF NEW YORK, N. Y., ASSIGNOR OF ONE-HALF TO WILLIAM BARDSLEY, OF KEARNEY, NEW JERSEY.

MANUAL-POWER MACHINE.

SPECIFICATION forming part of Letters Patent No. 537,917, dated April 23, 1895.

Application filed November 2, 1892. Serial No. 450,775. (No model.)

To all whom it may concern:

Be it known that I, WARREN K. CROFFORD, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Manual-Power Machines, of which the following is a specification.

The invention relates to improvements in manual power machines, and consists of connected and pivotally mounted levers adapted to be actuated by hand or foot and forming arms passing to opposite sides of the shaft to be driven, and a chain or belt spirally wound completely around said shaft and secured at its ends to the said arms, the said levers operating both as an automatic take up and means for rotating the shaft; as hereinafter more fully described and claimed. The relation of the pivotally mounted levers is such that their arms holding the flexible connection may approach and separate from each other under the control of the actuating lever, and when in use may swing toward the opposite sides of the shaft to be driven. The flexible connection, preferably a chain, will be spirally wound completely around the driving shaft or a drum thereon, and pass thence to said levers.

Referring to the accompanying drawings, Figure 1 is an end view, partly in section, of a manual power machine embodying the invention. Fig. 2 is a similar view of same but showing the levers in a different position; and Fig. 3 is a side elevation partly broken away of same.

Fig. 1 illustrates the position of the levers and chain before pressure is exerted against the main actuating lever to cause the auxiliary lever to take up the slack in the chain and set the drum and shaft in motion, and Fig. 2 shows the relative position of the levers and chain while the drum and shaft are rotating.

In the drawings A designates the shaft, upon which, by preference, the drum B and balance wheel C are secured. The shaft A will be mounted in suitable bearings in a well known manner.

The features constituting the present invention consist of the means for rotating the shaft A and thus through the shaft transmitting motion to the mechanism it is desired to operate; and in the embodiment of the invention illustrated D denotes the main actuating lever, which for convenience I will designate as the first lever, and E an auxiliary lever which for convenience I will designate as the second lever and which is mounted on a bearing F and has arms G H, the former of which I will designate as the carrier arm as it affords a pivotal bearing I for the lever D and carries that lever, while the arm H, I will designate as a follower arm as it receives the follower end of the operating chain or belt J which is spirally wound around the drum B and has its other end secured to the lever D, which end I will designate as the pulling end as it is the end on which the lever D pulls for the purpose of rotating the shaft or drum around which the chain or belt passes.

It will be observed that the bearing I for the lever D is intermediate the drum B and the bearing F for the lever E, and that upon the first depression of the outer end or handle of the lever D the effect will be to cause a separation of the lower ends of the levers, thus causing the arm H to take up the slack in the chain or belt J, while the continued depression of said lever D will tighten the chain or belt on and rotate the drum B in a positive and reliable manner. The subsequent elevating of the outer end or handle of the main lever D permits the lower ends of the levers to approach each other and the instant slacking of the chain or belt on the drum B, thus allowing the shaft A to continue its rotation without interruption. With every depression of the lever D the slack in the chain or belt J is taken up by the lever E and the chain or belt tightened on the drum so as to rotate the latter and its shaft and connecting mechanism, and with every elevation of the lever D the chain or belt is loosened on the drum and the levers reset for the succeeding operation of drawing the chain or belt taut and applying power to the drum.

The degree of pressure exerted by the chain

or belt J on the drum B may be regulated by the relative positions of the bearing points F, I, and hence the devices are adapted for use in connection with the varied classes of machines capable of operation by manual power.

As may be seen on reference to Fig. 3 the lower ends of the levers D, E, are deflected outward in opposite directions in order that the chain may form a spiral around the drum B and its parts not bind upon or overlap each other.

The invention is one of particular efficiency and reliability, and its parts are set in motion from a single point both to take up the slack in the chain and rotate the drum. A very slight depression of the lever D moves the lower ends of the levers sufficiently apart to draw the chain taut and the further depression of said lever binds the chain firmly on the drum and effects the rotation of the shaft. After the chain has traveled its length with the drum, a very slight elevation of the lever D moves the lower ends of the levers toward each other and instantly loosens the chain from the drum, so that the latter will not be retarded while the said lever is moved upward to its initial position, shown in Fig. 1, preparatory to its further depression and action on the drum.

The lever D is illustrated as a hand lever and as such it will be used in many instances, but it is obvious that it may be converted into a foot lever or be connected with a foot treadle without departing from the spirit of my invention.

I do not confine the invention in its broader scope to the form of the levers shown, since they may vary in their outlines and position without altering the result accomplished or departing from the invention.

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

1. The combination, with a first lever, a second lever, and a drum, of a chain attached to the first lever, thence passed around the drum, and then attached to one arm of the second lever, the first lever being pivoted upon and exerting part of its force against the other arm of the second lever, substantially as set forth.

2. The combination, with a lever, a chain having one of its ends secured to one end of said lever, a hand lever pivoted on the opposite end of said first mentioned lever and having its handle end projecting beyond the pivot of the first named lever, and having said chain secured to its opposite end, and a shaft around which said chain is wound, substantially as described.

Signed at New York, in the county of New York and State of New York, this 31st day of October, A. D. 1892.

WARREN K. CROFFORD.

Witnesses:
CHAS. C. GILL,
ED. D. MILLER.