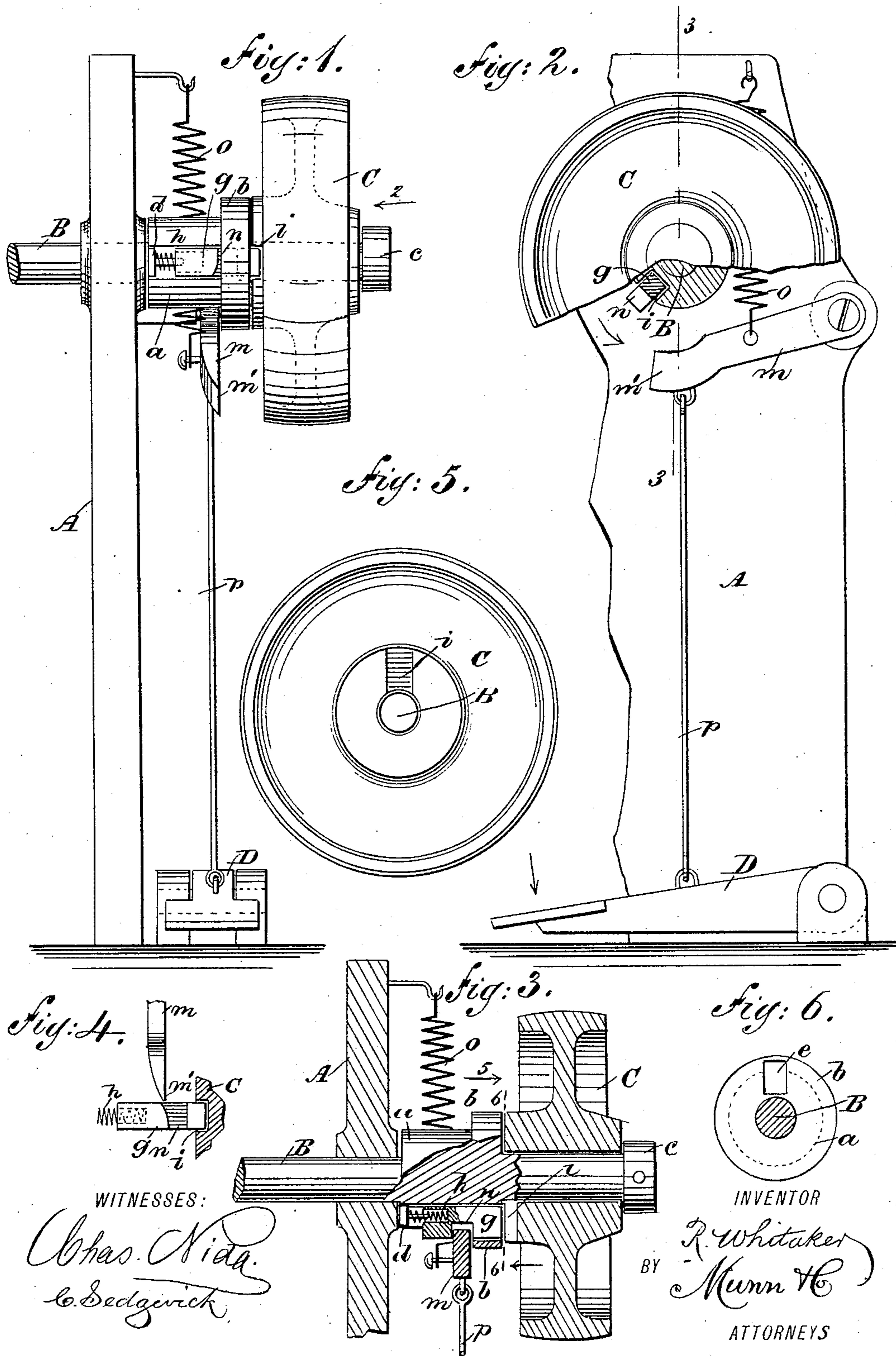


(No Model.)

R. WHITAKER.
STOP MOTION DEVICE.

No. 471,044.

Patented Mar. 15, 1892.



UNITED STATES PATENT OFFICE.

RICHARD WHITAKER, OF NEW BRUNSWICK, NEW JERSEY, ASSIGNOR TO
THE EMPIRE MACHINE AND TOOL COMPANY, OF SAME PLACE.

STOP-MOTION DEVICE.

SPECIFICATION forming part of Letters Patent No. 471,044, dated March 15, 1892.

Application filed July 31, 1891. Serial No. 401,261. (No model.)

To all whom it may concern:

Be it known that I, RICHARD WHITAKER, of New Brunswick, in the county of Middlesex and State of New Jersey, have invented a new and useful Stop-Motion Device, of which the following is a full, clear, and exact description.

This invention relates to an improved device to arrest motion in machines, and more particularly to stop the rotative movement of a driving-shaft in crank-presses or like machines, the object being to provide a device of the character indicated that will be simple in construction, and which will afford means to arrest motion in a machine quickly and start the same instantly when required.

To this end my invention consists in the peculiar construction and combination of parts, as is hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a front view of the improvement applied to the driving-shaft of a machine, a part of the frame and a balance-wheel being also shown. Fig. 2 is a side view, broken, of the parts shown in Fig. 1 in the direction of arrow 2 in said Fig. 1. Fig. 3 is a vertical section taken on the line 3 3 in Fig. 2. Fig. 4 is an enlarged detail view of a feature of the improvement. Fig. 5 is a side view detached of a balance-wheel that is part of the mechanism, taken opposite the arrow 5 in Fig. 3; and Fig. 6 is a transverse section of the driving-shaft detached, taken on the line 6 6 in Fig. 3 opposite an adjacent arrow.

In the drawings, A represents one side of a machine-frame, and B the driving-shaft therefor, which is to receive intermitting rotary motion and transmit it to other parts of the machine (not shown) that may convert rotary into reciprocatory motion, such as a crank-press or similar device.

On the portion of the shaft B that projects from the side of the frame-piece A, a hub *a* is formed or affixed, which is given a proper relative diameter and length to permit the connection therewith of other working parts, and at a suitable distance from the frame a radial collar *b* is produced on the hub, the

driving-shaft extending beyond said collar sufficiently to receive the balance-wheel C, that is thereon loosely mounted and secured from displacement by a removable thimble *c*, that is attached to the end portion of the shaft which projects beyond the wheel.

A longitudinal channel is cut in the hub *a*, which extends toward and through the collar *b*, producing a rectangular slot *e* in the latter, as shown in Fig. 6. Within the channel mentioned a locking-bolt *g* is located, having one end portion projected within the slot *e*, which by its loose contact on all sides of the bolt prevents the latter from lateral displacement while end movement of the same is permitted. A spiral spring *h* is provided which enters a longitudinal perforation formed in the bolt *g* at the end nearest to the loose abutment-piece *d*, arranged in the channel of the hub, one end of said spring being seated on the bolt-body within the hole that receives the spring, its other end having contact with the abutment-piece, so that the expansive force of the spring will normally project the bolt *g* through and beyond the collar *b* and cause the abutment-piece to loosely bear upon the side wall of the frame-piece A, the spring being retained in position by a pin-bolt that is projected from the piece *d* and is encircled by said spring. The balance-wheel C has a recess *i* formed in the face of its hub that is adjacent to the collar of the hub *a*, which recess is of proper depth and dimensions to allow the end of the bolt *g* to enter it and lock the wheel to the shaft B, when the bolt is free to slide through the collar.

At a proper point on the side of the frame-piece A the rear end of a wedge-bar *m* is pivoted, as shown in Fig. 2, said bar having its front end portion tapered laterally to afford a wedge-shaped terminal *m'*. A transverse groove *n* is cut in the face and body of the locking-bolt *g*, that is exposed above the peripheral surface of the hub *a*, which groove has its end wall sloped from the front side of the bolt rearwardly, so as to receive the point of the wedge end *m'* on the bar *m*. The upper surface of the wedge-shaped terminal *m'* is curved to adapt it to fit upon the periphery of the hub *a* when these parts are brought together. The wedge-bar *m* is normally held

in contact with the hub *a* by a spring *o*, that is connected at its ends with the frame-piece A and the bar named, so that a revolution of the driving-shaft in the direction of a curved arrow shown in Fig. 2 will cause the point of the wedge end *m'* to enter the groove *n* and draw the bolt away from the recess *i* in the balance-wheel C. Preferably there is a treadle D employed to operate the wedge-bar *m*, a rod *p*, which is loosely secured by its ends to these parts, affording means to connect them and enable an operator to vibrate the wedge-bar downwardly by foot-pressure on the treadle.

In service, when it is desired to cause the driving-shaft B to be interlocked with the balance-wheel C, which is also a driving-pulley, whereon a belt may be placed to transmit motion from a source of power, (not shown,) it is only necessary to press the treadle D. This will cause the locking-bolt *g* to be released from the wedge-bar *m* and allow said bolt to be projected toward the hub of the balance-wheel C, with which it will interlock when the wheel has made a part of a revolution, the removal of foot-pressure causing a retraction of the locking-bolt, as has been before explained. The wedging action of the bar *m*, when it is free to enter the groove *n*, produces frictional resistance at the point of contact between the collar *b* and the straight side of the wedge-shaped terminal of said bar, and also between the abutment-piece *d* and the frame of the machine, which will cause an immediate cessation of rotary motion in the driving-shaft B, which is of special advantage in different machines to which this stop-motion device is applicable.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with a shaft provided with a fixed hub having a transverse groove and a loose pulley on said shaft, of a spring-pressed locking-bolt in the groove of the hub

of the shaft and provided with a transverse groove, a pivoted and spring-pressed bar having a wedge-shaped end adapted to enter the groove of the locking-bolt, and a treadle connected with the said bar, substantially as herein shown and described.

2. The combination, with a frame, a rotating shaft, and a loose pulley on said shaft, of a spring-pressed locking-bolt, an abutment loosely held to the shaft and adapted to engage the pulley and frame, respectively, and a bar engaging the bolt to disengage it from the pulley, substantially as described.

3. The combination, with a frame, a driving-shaft mounted in the frame, and a loose pulley on the shaft, of a longitudinally-locking bolt carried by the shaft and adapted to engage the pulley, an abutment also carried by the shaft, a spring between the bolt and abutment, and a spring-pressed wedge-shaped bar adapted to engage the locking-bolt and disengage it from the pulley, substantially as described.

4. The combination, with a frame, a rotatable driving-shaft thereon having a hub and a collar that are longitudinally grooved and slotted in alignment, a locking-bolt in the groove, a spiral spring located longitudinally in the bolt that normally projects the bolt through the collar, and an abutment-piece engaged by the spring that will frictionally bear upon the frame, of a wheel or pulley loosely secured on the driving-shaft with its hub adjacent to the shaft-collar and recessed in said hub to receive the locking-bolt, a pivoted wedge-bar having its free end tapered to enter a transverse groove in the locking-bolt, a supporting-spring for the wedge-bar, and a treadle loosely connected to said wedge-bar, substantially as described.

RICHARD WHITAKER.

Witnesses:

JOHN McLAUGHLIN,
HOWARD SILLCOCKS.