

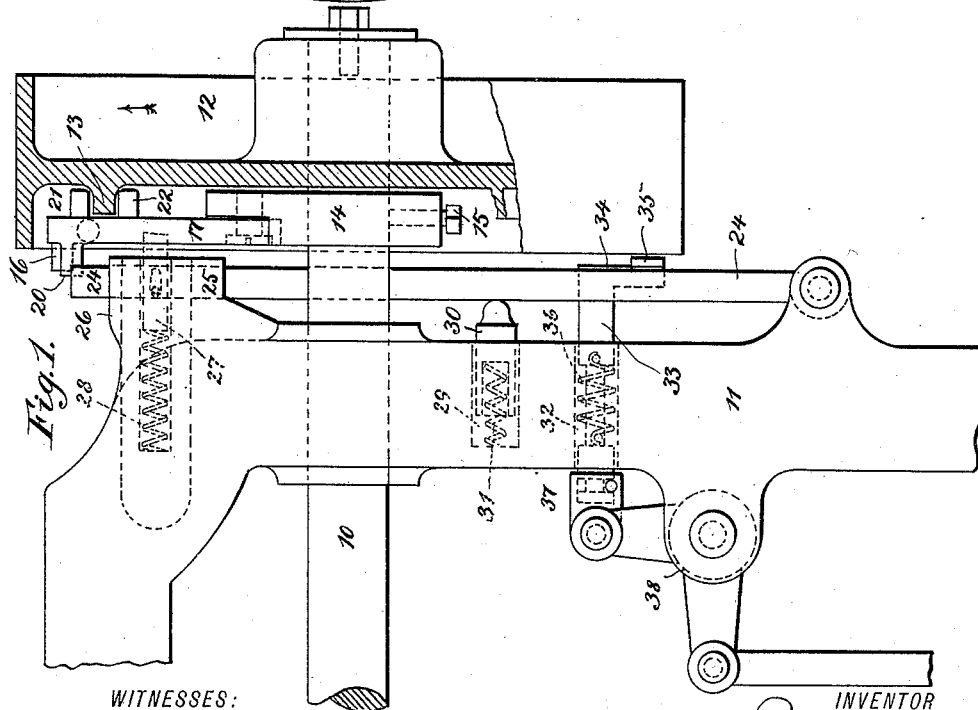
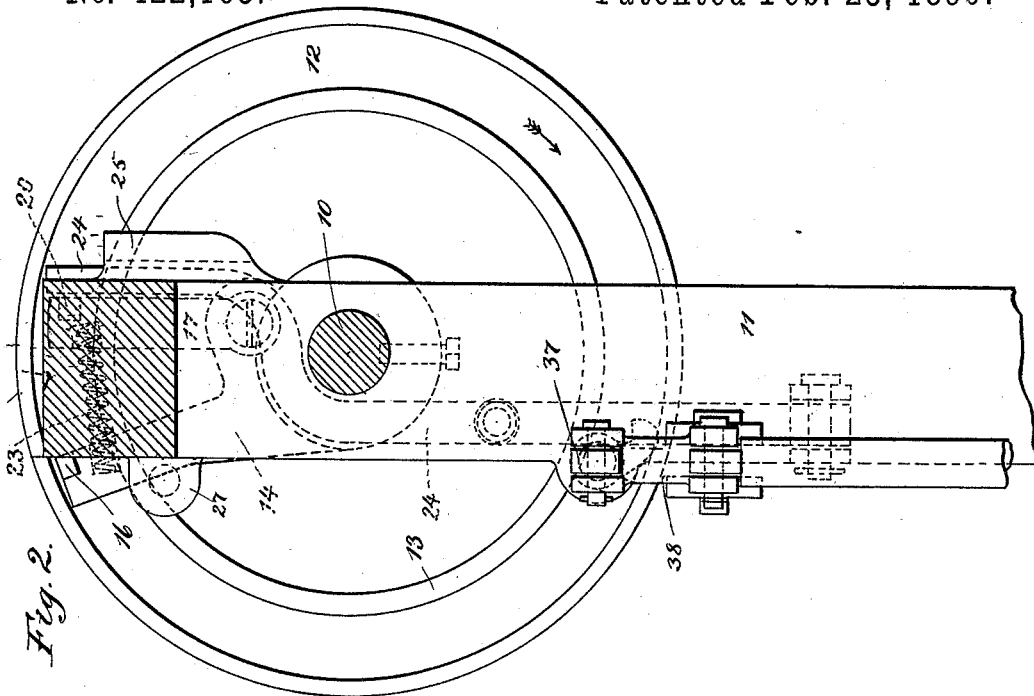
(No Model.)

2 Sheets—Sheet 1.

J. N. SEVERANCE.
DEVICE FOR TRANSMITTING MOTION.

No. 422,163.

Patented Feb. 25, 1890.



WITNESSES:

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C. Sedgwick

INVENTOR

J. N. Severance
BY Munn & Co.

ATTORNEY

(No Model.)

2 Sheets—Sheet 2.

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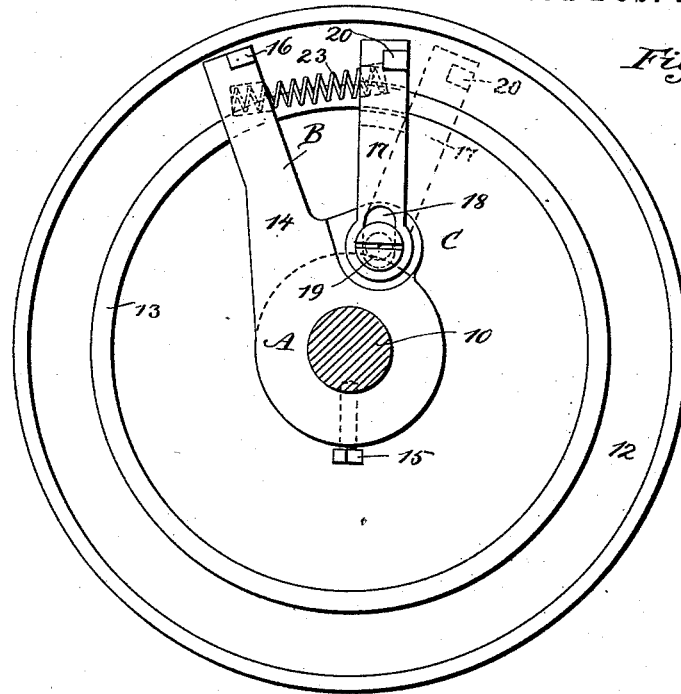


Fig. 3.

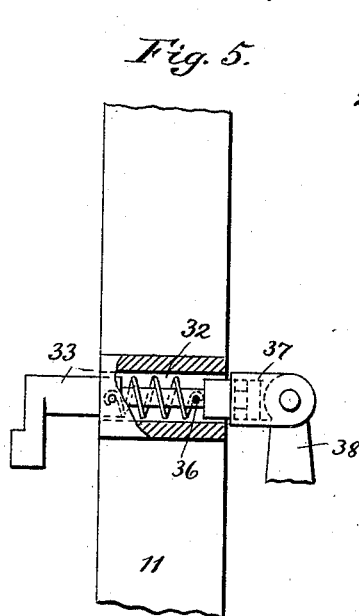


Fig. 5.

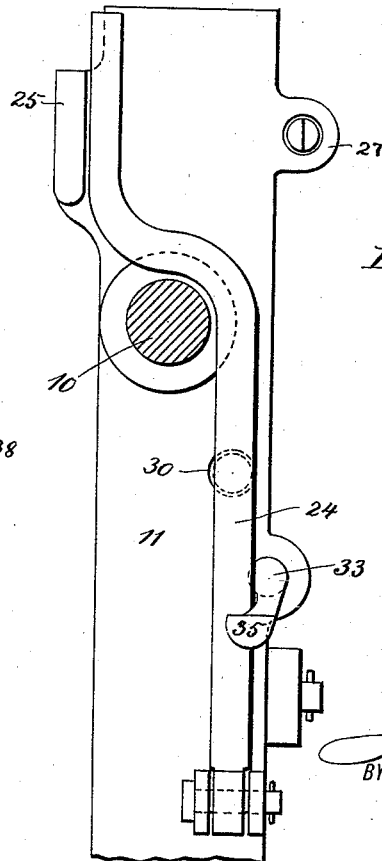
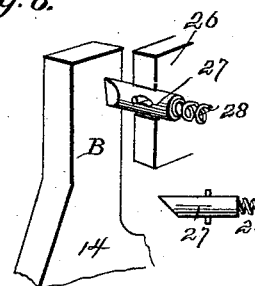


Fig. 4.

Fig. 6.



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UNITED STATES PATENT OFFICE.

JOHN N. SEVERANCE, OF BOSTON, MASSACHUSETTS.

DEVICE FOR TRANSMITTING MOTION.

SPECIFICATION forming part of Letters Patent No. 422,163, dated February 25, 1890.

Application filed May 18, 1889. Serial No. 311,313. (No model.)

To all whom it may concern:

Be it known that I, JOHN N. SEVERANCE, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and Improved Device for Transmitting Motion to and Stopping the Movement of Shafts, of which the following is a full, clear, and exact description.

My invention relates to devices for transmitting motion to rotary shafts, and for stopping the same positively in a given position, automatically at each revolution, when necessary or when desired by the operator.

In the drawings the device is illustrated as applied to a power-press, upon which it proves very useful, as it not only will stop the press with the punch up, but will also render it impossible for the drive-shaft to make more than one revolution at a time whether the treadle is held down or raised up by the foot of the operator; and though the pulley should become engaged with the shaft for lack of lubrication, or from any other cause, still, when the device is applied, it is impossible for the shaft to revolve, since, when the shaft is automatically stopped, it is made permanent for the time being with the frame of the machine; consequently the belt must slip upon the face of the pulley, causing no injury to the workmen, the machine, or the work.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter more fully set forth, and pointed out in the claims.

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

Figure 1 is a side elevation of a portion of the frame of the machine, the pulley being in section. Fig. 2 is a rear elevation of the pulley, a section through the shaft, and a partial section through the frame. Fig. 3 is a rear elevation of the pulley and a section of the shaft, taken close to the pulley. Fig. 4 is a front elevation of the frame in which the drive-shaft is journaled, showing the shifting-lever in side elevation also. Fig. 5 is a detail section illustrating the swivel-connection of the draw-lever with the treadle-levers, and Fig.

6 is a detail perspective view of the clutch-carrier and spring-bolt.

In carrying out the invention the drive-shaft 10 is journaled in any approved manner in the frame 11, and upon the said drive-shaft a drive-pulley 12 is mounted to revolve, provided upon its inner face with an annular rib 13, concentric with the flange thereon, which rib forms a portion of the web of the pulley. Upon the drive-shaft 10, immediately at the rear of the pulley and in front of the inner face thereof, a clutch-carrier 14 is rigidly secured to the said shaft, as best illustrated in Fig. 3. The carrier comprises, preferably, a cylindrical lower section or body A, bored to receive the shaft and secured thereto by a set-screw 15 or equivalent fastening device.

From the body an arm B is made to radiate, provided at its upper end with a lug or projection 16, extending inward at a right angle thereto, and at one side of the said arm B of the clutch-carrier a preferably cylindrical projection C is formed upon the body, upon which projection a clutch-arm 17 is secured, the attachment being effected by producing a slot 18 in the lower extremity of the clutch-arm and passing a screw 19 through the said slot into the cylindrical projection of the clutch-carrier, as is also illustrated in Fig. 3. The screw is not carried to such a close contact with the clutch-arm as to prevent the said arm from having lateral movement. The clutch-arm 17 is provided near its upper extremity with a lug 20, extending at a right angle horizontally outward from its inner face, the said lug 20 being nearer the shaft than the lug 16 upon the carrier-arm.

Upon the forward or outer face of the clutch-arm 17 two semicircular spaced integral jaws 21 and 22 are formed, as shown in Fig. 1, which jaws are arranged, respectively, at each side of the pulley-rib 13, and when the clutch-arm is in its normal position (indicated in dotted lines in Fig. 3) the said jaws closely contact with the rib 13, and thereby connect the pulley and the shaft. When thus connected, the two revolve together. The clutch-arm is held in this normal position through the medium of a strong spring 23, seated at its ends in recesses formed in the opposed faces of the carrier-arm and clutch-arm.

Upon the outer face of the machine-frame 11 the lower end of a shifting-lever 24 is pivoted in such manner that it may be moved to and from the inner face of the pulley. The lower portion of the shifting-lever 24 is straight, and extends parallel upward with one side of the frame 11, is curved over the shaft 10, and carried perpendicularly upward parallel with the opposite side of the said frame above the shaft, as shown in Fig. 4. The lateral movement of the shifting-lever is limited in one direction by an offset 25, forming a projection on the frame at or near its top, the said lever contacting with the inner face of the said offset, as illustrated in Figs. 1 and 4.

In an extension 26 of the upper portion of the frame a bolt 27 is held to horizontally slide, which bolt is normally projected beyond the front or outer end of the extension through the medium of an attached spring 28, as shown in Fig. 1.

Below the shaft 10 a horizontal cavity or bore 29 is produced in the frame 11, in which cavity a horizontal block 30 is held to slide, the outer end of which block is normally forced against the inner face of the shifting-lever 24 by means of a spring 31, as best illustrated in Fig. 1, and beneath the bore 29 in the frame a second horizontal bore 32 is produced, extending through from front to rear. In this bore an angled lever 33 is held to slide, the body of the lever, which passes through the bore, being straight, and the outer end is carried perpendicularly downward, as shown at 34 in Fig. 1, and then at a right angle to the perpendicular section outward, as illustrated at 35, the lower extremity of the horizontal section 35 being adapted to contact with the outer face of the shifting-lever 24. Within the bore 32 a spring 36 is coiled around the reduced portion of the body of the lever 33, one end of the spring being secured to the said lever and the other to the wall of the bore, the spring acting to normally cause the outer extremity of the lever to contact with the shifting-lever. The rear end of the lever 33 is swiveled in a socket 37, which socket is pivotally connected to a bell-crank lever 38, fulcrumed upon the inner side of the frame, which bell-crank lever is connected in any suitable manner with a treadle. (Not shown.)

In operation, the drive-shaft 10 having made one revolution and stopped, and it being desired to cause the shaft to revolve again, the operator presses upon the treadle connected with the bell-crank lever 38, whereupon the lever 33, sliding in the frame, is drawn to the rear, and the arm 35 at its outer extremity, contacting with the outer face of the shifting-lever 24, draws the said lever inward against the tension of the spring 31 acting upon the block 30. When the shifting-lever is thus drawn inward, it is carried out of contact with the lug 20 upon the clutch-arm, with which lug it has been in engagement, the result of the engagement being to force the clutch-arm in the direction of the carrier-

arm 14, thereby releasing the clutch-jaws from the rib of the wheel. As soon as the shifting-lever is disengaged from the clutch-arm the spring 23, immediately acting forces the clutch-arm to its normal position, (illustrated in dotted lines in Fig. 3,) in which position the jaws 21 and 22 are brought into frictional contact with the outer and inner face of the rib 13. Thus the shaft and pulley are connected and the two revolve together. As the pulley revolves and the clutch and carrier are carried beneath the shaft, the lug 20 of the clutch-arm passes over the outer extremity of the treadle-lever 33; but the lug 16 of the carrier-arm contacts with the said outer extremity of the lever 33 and forces the same backward against the tension of the spring 36, thus releasing the shifting-lever 24, which is simultaneously carried inward in the direction of the inner face of the pulley by the spring-actuated block 30. The upper end of the shifting-lever is now in the line of travel of the lug 20 upon the clutch-arm, and as soon as the said lug 20 contacts with the upper end of the shifting-lever, as shown in Fig. 1, the lever is thrown back against the wall of the offset 25, and the said clutch-arm is forced in the direction of the carrier-arm 14, contracting the spring 23, which movement of the clutch-arm disengages its jaws from the rib 13 of the pulley, permitting the pulley to revolve freely upon the shaft and virtually connecting the shaft with the frame, thereby causing the former to stand perfectly still. The shaft will remain in this position and the pulley will continue to revolve until the shifting-lever is again drawn inward by the movement of the treadle connected therewith.

In constructing the device as above described I obtain a combined power-transmitter and stop-motion of great strength and durability applicable to all kinds of machinery requiring alternate periods of motion and of rest, either of long or of short duration. The machine to which it is applied cannot start or be started without pressing the treadle connected with the lever 33, thus insuring the operator against all possibility of accident. The manipulation of the lever and the starting of the machine are simultaneous, as the clutch seizes the pulley at whatever part of its revolution it may happen to be when the clutch is released, thereby saving a great deal of time. As the pulley revolves the carrier-arm is enabled to readily pass the spring-bolt 27; but as soon as the clutch-arm is released from the pulley the said bolt contacts with the rear edge of the carrier-arm, effectually preventing it from dropping downward or moving in the direction of the bolt.

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

1. The combination, with a rotary shaft and a pulley loosely mounted thereon provided

with an annular rib upon one face, of a clutch-carrier fast to the shaft, comprising a body, an arm radiating from the said body, a clutch-arm loosely secured to the carrier, a spring
5 connecting the clutch-arm and the carrier-arm, jaws secured to one face of the clutch-arm, capable of engaging the rib of the pulley, a lug projected from the opposite face of the clutch-arm, and a shifting-lever adapted
10 for engagement with the lug of the clutch-arm, substantially as shown and described, whereby when the spring connecting the clutch-arm and carrier-arm acts the jaws of the clutch-arm will clamp the rib of the pulley, and when the said clutch-arm is engaged
15 by the shifting-lever the jaws will release the said rib, as and for the purpose specified.

2. The combination, with a rotary shaft, a pulley loosely mounted upon the said shaft
20 provided with an annular rib upon one face, and a clutch-carrier secured to the said shaft in front of the ribbed face of the pulley, comprising a body portion and an arm projected therefrom, of a clutch-arm attached to the
25 carrier and having lateral movement, a spring connecting the clutch-arm and carrier-arm, jaws produced upon the outer face of the clutch-arm, capable of clamping the rib of the pulley, a lug formed upon the opposite face
30 of the clutch-arm, a lever capable of lateral movement, adapted for contact with the lug of the clutch-arm, and a spring-actuated draw rod or lever capable of contact with the outer face of the shifting-lever, substantially as
35 shown and described.

3. The combination, with a frame, a rotary shaft journaled in the said frame, a pulley loosely mounted upon the said shaft, provided with an annular rib upon one face, and
40 a clutch-carrier rigidly secured to the shaft in front of the ribbed face of the pulley, comprising a body and an arm projected therefrom provided with a lug upon its inner face, of a clutch-arm having lateral movement, at-
45 tached to the carrier, a spring connecting the carrier-arm and the clutch-arm, a lug pro-

jected from the inner face of the clutch-arm, and jaws produced upon the opposite face of the said arm, capable of clamping the rib of the pulley, a shifting-lever fulcrumed at one
50 end to the frame, having lateral movement and adapted to engage with the lug of the clutch-arm, a spring-actuated draw rod or lever horizontally mounted in the frame, having its outer angled extremity engaging with
55 the shifting-lever, and a spring-actuated block mounted in the frame and also engaging with the shifting-lever, all combined for operation substantially as shown and described.

4. The combination, with a frame, a rotary
60 shaft journaled in the said frame, a pulley loosely mounted upon the said shaft, provided with an annular rib upon one face, and a clutch-carrier rigidly secured to the shaft in front of the ribbed face of the pulley, com-
65 prising a body and an arm projected therefrom provided with a lug upon its inner face, of a clutch-arm having lateral movement, attached to the carrier, a spring connecting the carrier-arm and clutch-arm, a lug projected
70 from the inner face of the clutch-arm, and jaws produced upon the opposite face of the said arm, capable of clamping the rib of the pulley, a shifting-lever fulcrumed at one end to the frame, having lateral movement and
75 adapted to engage with the lug of the clutch-arm, a spring-actuated draw rod or lever horizontally mounted in the frame, having an outer angled extremity engaging with the shifting-lever, a spring-actuated block mount-
80 ed in the frame and also engaging with the shifting-lever, an offset produced upon the frame, forming a seat for the upper end of the shifting-lever, and a spring-actuated horizontal bolt projected from the upper end of
85 the frame in the path of the carrier-arm, substantially as shown and described.

JOHN N. SEVERANCE.

Witnesses:

W. J. MILLER,
R. S. BARROW.