

(No Model.)

J. PATTEN.

STARTING AND STOPPING MECHANISM FOR MACHINERY.

No. 469,713.

Patented Mar. 1, 1892.

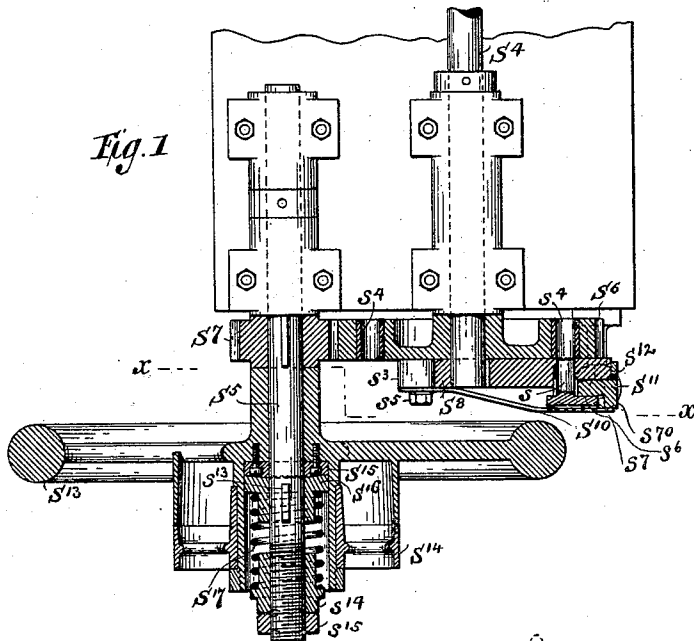


Fig. 1

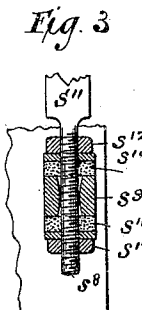
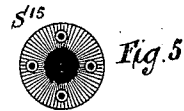


Fig. 3

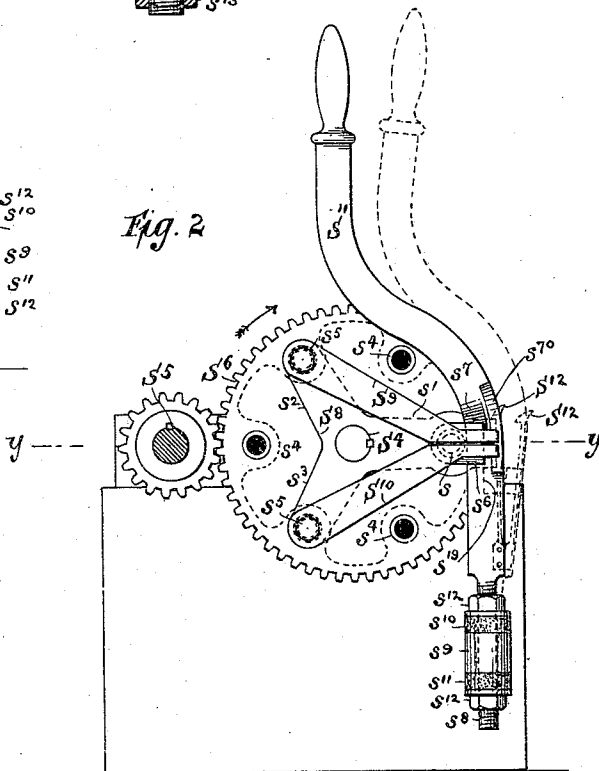


Fig. 2

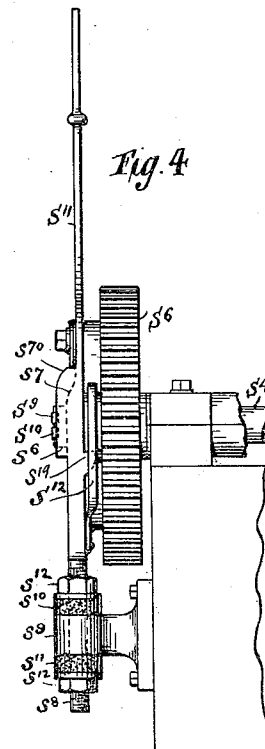


Fig. 4

Witnesses
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UNITED STATES PATENT OFFICE.

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STARTING AND STOPPING MECHANISM FOR MACHINERY.

SPECIFICATION forming part of Letters Patent No. 469,713, dated March 1, 1892.

Application filed February 25, 1891. Serial No. 382,752. (No model.)

To all whom it may concern:

Be it known that I, JOHN PATTEN, of New York, in the county and State of New York, have invented a certain new and useful Improvement in Starting and Stopping Mechanism for Machinery, of which the following is a specification.

I will describe mechanism embodying my improvement, and then point out the novel features in the claims.

In the accompanying drawings, Figure 1 is a partial plan and partial horizontal section of mechanism embodying my improvement. Fig. 2 is a sectional end elevation of the same, taken as indicated by the dotted line $x\ x$, Fig. 1. Fig. 3 is a vertical section taken parallel with Fig. 2 and showing the manner of supporting a lever which appears in said figure. Fig. 4 is a side view of the parts shown in Fig. 1. Fig. 5 is a face view of one of two parts by which motion is transmitted from a driving-pulley. Fig. 6 is an edge view of the same.

Similar letters of reference designate corresponding parts in all the figures.

S^4 is a shaft which transmits motion to the parts of a machine. S^5 is a driving-shaft which transmits motion to said shaft S^4 by means of a gear-wheel S^6 , arranged on the shaft S^4 , and a pinion S^7 , affixed to the shaft S^5 . The gear-wheel S^6 is loosely mounted on the shaft S^4 . On the shaft S^4 is secured a piece S^8 , having three arms s' s^2 s^3 . These arms are not permanently connected with the wheel S^6 , but may be connected therewith at any time by means of a pin s , which is carried by said arms and passes through one of them at such a distance from the center of the shaft S^4 as to be capable of entering one of a number of holes s^4 with which the wheel S^6 is provided. It will be seen, therefore, that the piece S^8 may be locked in different positions to the wheel S^6 . The advantage of having a number of holes s^4 in the wheel S^6 is that the piece S^8 may be engaged with the wheel after turning but a fraction of a revolution instead of having always to turn round to one part of the wheel before engagement therewith. Preferably the holes s^4 are lined with steel bushings. To the arms s^2 s^3 of the piece S^8 springs S^9 S^{10} are at one end secured in any suitable manner—

as, for instance, by screws s^5 . The other ends of the springs S^9 S^{10} act upon the pin s to force it into engagement with the wheel S^6 . The pin s has an extended head or flange s^6 , against which the ends of the springs S^9 S^{10} normally bear. It will be seen that the extremities of the springs are prolonged, so as to extend considerably beyond the head of the pin. A lever S^{11} , which is fulcrumed on the base portion of the machine, will normally occupy such position as that the head or flange s^6 of the pin s will overlap it. This lever, it will be seen, is curved for a distance to be approximately concentric to the shaft S^4 , and the portion so curved is provided with two forwardly-extending inclines s^7 s^{70} . Whenever the rotation of the piece S^8 will bring the head or flange s^6 of the pin s into proximity to the curved portion of the lever S^{11} , this head or flange will ride along the incline s^7 and the extremities of the springs S^9 S^{10} will ride along the incline s^{70} . When this occurs, the incline s^7 will effect the disengagement of the pin s from the wheel S^6 , and the incline s^{70} , owing to the fact that it has a somewhat greater projection than the incline s^7 , will move forward the extremities of the springs S^9 S^{10} , so as to prevent them from acting upon the head of the pin s . The advantage of thus acting upon the springs as well as upon the head of the pin arises from the fact that thus the springs will be prevented from by any possibility pressing the pin inward to any degree before they should actuate the pin. As soon as the pin s is thus disengaged from the wheel S^6 the latter will cease to impart movement to the piece S^8 and consequently to the shaft S^4 . Because of this the operation of the machine comprising the shaft S^4 will cease, although the driving-shaft S^5 will continue to rotate.

In order to prevent the piece S^8 from moving backward after the disengagement of its pin s from the wheel S^6 , I preferably combine with the lever S^{11} a detent S^{12} for engaging with the arm s' of said piece S^8 . I have shown this detent as consisting of a strip of spring metal attached to the lever and constructed to hook over the end of the arm s' . The construction of this detent may be best understood by reference to Fig. 4. To arrest the continued movement of the piece S^8 , I prefer-

ably provide the lever S^{11} with a projection s^{19} , with which the outer extremity of the arm s' of said piece S^8 will contact whenever the lever S^{11} is moved inward. The lever S^{11} will preferably be so fulcrumed as that it will normally be in position to effect the disengagement of the pin s of the piece S^8 from the wheel S^6 . I have shown the lever as provided with a screw-threaded lower end s^8 , which is passed through a bracket s^9 , fastened to the base portion of the machine-frame. The hole in this bracket through which the end s^8 of the lever passes is made flaring from the center toward each end to enable the lever to rock in it toward and from the shaft S^4 . Above the bracket is a ring or washer of soft rubber s^{10} , and there is a similar ring s^{11} below the bracket. Washers are applied to the top of the ring s^{10} and bottom of the ring s^{11} . Nuts s^{12} are applied to the screw-threaded end s^8 of the lever to bear against these washers. It is intended that the nuts shall hold the rings s^{10} s^{11} closely against the bracket s^9 . As the lever cannot be oscillated without compressing some portions of the rings s^{10} s^{11} , these rings constitute springs, which tend to maintain the lever with its end s^8 in an upright position. When its end occupies an upright position, the lever operates to disengage the pin s from the wheel S^6 and cause the hook of the detent S^{12} and the projection s^{19} of the lever S^{11} to engage with the outer extremity of the arm s' of the piece S^8 . When the arm s' contacts with the projection s^{19} , the rings s^{10} s^{11} will yield and prevent any violent shock. It is intended that the operator shall continually hold the lever S^{11} in a position which will prevent it from operating upon the arm s' . The shaft S^4 may make several rotations during each operation of the machine. At the termination of each operation of the machine he allows the lever to oscillate into its normal position, so that it will effect the disengagement of the pin s from the wheel S^6 , and he may do this at any time if it is desired to sooner terminate the operation of the machine.

On the driving-shaft S^5 is a fly-wheel S^{13} . A belt-pulley S^{14} is formed integral with or affixed to this fly-wheel.

S^{15} is a ring which surrounds the shaft S^5 and is fastened by screws or otherwise to the hub on the fly-wheel S^{13} and driving-pulley S^{14} .

S^{16} is another ring surrounding the shaft S^5 . It is connected to the shaft to rotate therewith by means of a key s^{13} ; but it is free to move longitudinally toward and away from the ring S^{15} . A spring S^{17} surrounds the shaft S^5 between the ring S^{16} and a nut s^{14} forces and holds the ring S^{16} against the ring S^{15} , but allows said ring S^{16} to move in the reverse direction when necessary. The tension of the spring S^{17} may be varied by adjusting the nut s^{14} and a nut s^{15} upon a screw-thread which is formed upon the outer end portion of the shaft S^5 .

The fly-wheel S^{13} and driving-pulley S^{14} are

not intended to have any movement in the direction of the length of the shaft S^5 , and, as here shown, are prevented from moving away from the outer end of the shaft by having their hubs bear against the hub of the gear-wheel of the pinion S^7 . A rotary motion will be transmitted from the driving-pulley through the ring S^{15} to the ring S^{16} and thence to the shaft S^5 . Owing to the yielding connection of the ring S^{16} with the shaft S^5 , this ring can move toward the outer end of the shaft sufficiently to allow the driving-pulley S^{14} to rotate without imparting any rotary movement to the shaft S^5 in the event of the machine becoming blocked or stopped. Thus I provide for obviating breakage which might otherwise ensue upon the blocking or accidental stopping of the machine.

Preferably the opposite faces of the rings S^{15} S^{16} are inclined and serrated or toothed. When this is done, the teeth will have a V-shaped cross-section.

The mechanism whereby motion is transmitted to the various parts of the machine and the stop mechanism for arresting the movements of said parts is peculiarly applicable to a shoe-lasting machine, for which on June 28, 1890, (Serial No. 357,080,) I filed an application for Letters Patent, but is also applicable generally to other machines.

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

1. The combination of a shaft, a gear-wheel loosely mounted on said shaft and provided in one side with a number of holes, a triangular piece affixed to said shaft, springs attached at one end to two of the arms, and a pin carried by the other end of said springs and passing through the third arm and adapted to engage with one of the holes of said gear-wheel, substantially as specified.

2. The combination of a shaft, a gear-wheel loosely mounted on said shaft and provided in one side with a number of holes, a piece affixed to said shaft, and springs attached at one end to said piece and at the other end provided with a pin which passes through said piece and is adapted to engage with one of the holes of the gear-wheel, substantially as specified.

3. The combination of a shaft, a gear-wheel loosely mounted on said shaft and provided in one side with a number of holes, a piece affixed to said shaft, a spring attached at one end to said piece, a pin carried by said spring and passing through the piece and constructed to engage with said gear-wheel, a projection upon said piece, an extended head on the pin, and a lever having a cam-surface for acting on the head of the pin to withdraw the pin from the gear-wheel and having also a detent for preventing movement of said piece, substantially as specified.

4. The combination of a shaft, a gear-wheel loosely mounted on said shaft and provided in one side with a number of holes, a piece affixed to said shaft, a spring attached at one

end to said piece, a pin carried by said spring and passing through said piece and constructed to engage with said gear-wheel, a projection upon said piece, an extended head on the pin, and a lever having a cam-surface for acting on the head of the pin to withdraw the pin from the gear-wheel and having also a projection for preventing movement of the said piece, substantially as specified.

5. The combination of a shaft, a gear-wheel loosely mounted on said shaft and provided in one side with a number of holes, a piece affixed to said shaft, a spring attached at one end to said piece, a pin carried by said spring and passing through the piece and constructed to engage with said gear-wheel, a projection upon said piece, an extended head on the pin, a lever having a cam-surface for acting on the head of the pin to withdraw the pin from the gear-wheel and having a means for engaging with the said piece, and a spring for permitting a longitudinal movement of the lever, substantially as specified.

6. The combination of a shaft, a gear-wheel loosely mounted on said shaft and provided in one side with a number of holes, a piece affixed to said shaft, a spring attached at one end to said piece, a pin carried by said spring and passing through the piece and constructed to engage with said gear-wheel, a projection upon said piece, an extended head on the pin, a lever having a cam-surface for acting on the head of the pin to withdraw the pin from the gear-wheel and having a means for engaging with the said piece, a bracket s^9 , having a hole flaring toward its ends for receiving the end of the lever, springs s^{10} s^{11} , and nuts s^{12} , substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN PATTEN.

Witnesses:

JNO. T. MADDOX,
S. O. EDMONDS.