E. E. WINKLEY.

STOP MECHANISM.

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1,163,799.

Patented Dec. 14, 1915.

2 SHEETS—SHEET 1.

Fig. 1.

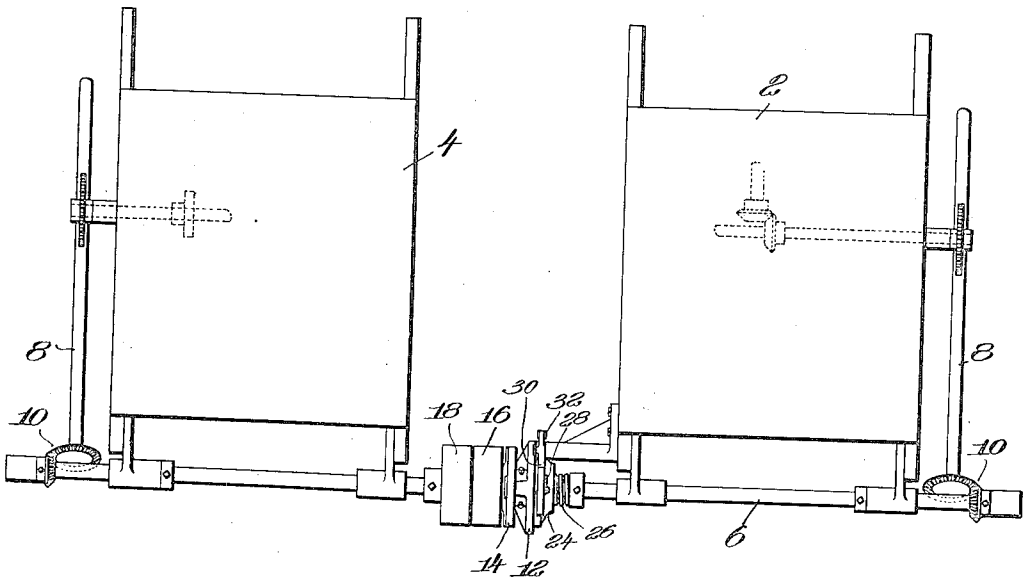
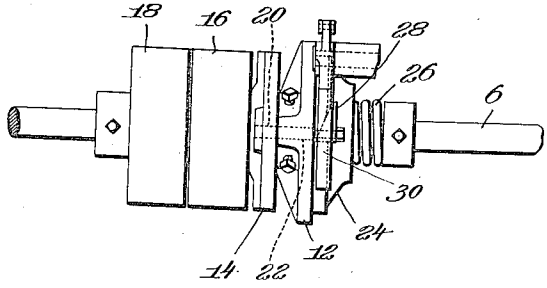


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

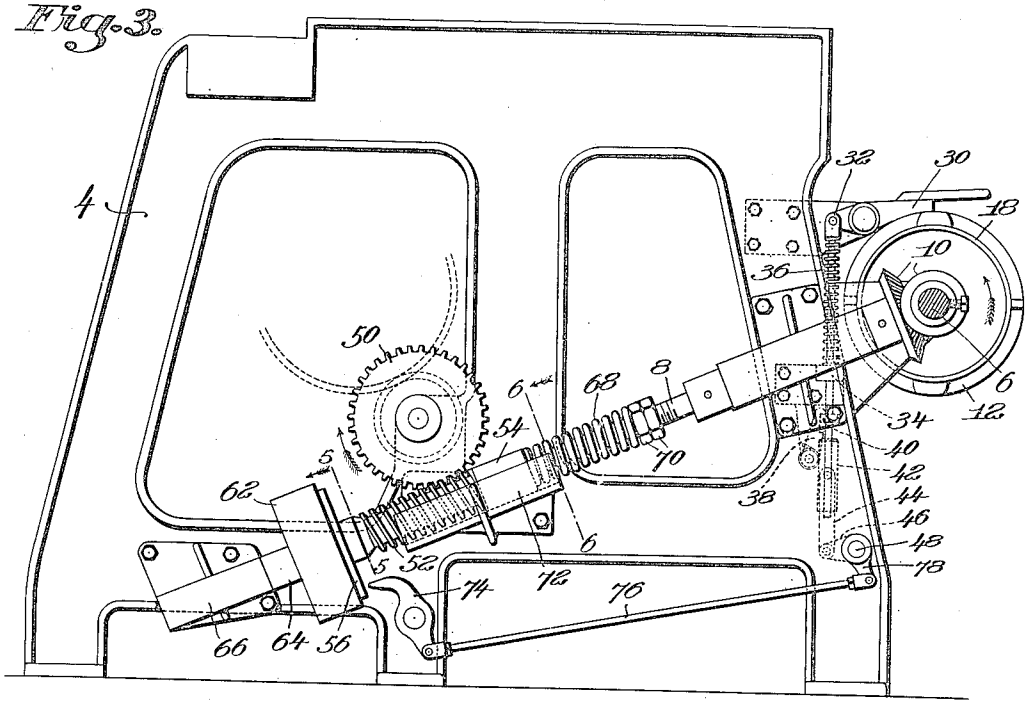


Fig. 6.

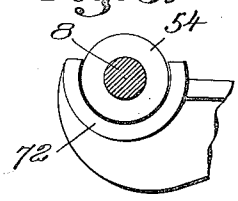
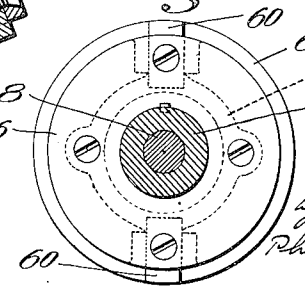


Fig. 4.

Fig. 5.



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STOP MECHANISM.

1,163,799. Specification of Letters Patent. Patented Dec. 14, 1915.

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To all whom it may concern:

Be it known that I, ERASTUS E. WINKLEY, a citizen of the United States, residing at Lynn, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Stop Mechanism; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The invention relates to stop mechanisms, and more particularly to mechanisms which throw out the driving mechanism of a machine or mechanism in case it becomes clogged or jammed, or for any other reason unusual resistance is offered to the movement of the driven parts.

The object of the invention is to provide novel and improved mechanism by which the driving mechanism may be thrown out without danger of getting the machine or mechanism out of time with the driving shaft or other driving member, or out of time with other machines or mechanisms which may be driven from the same shaft or driving member.

To this end the invention consists in the features of construction and combinations of parts hereinafter described and referred to in the claims.

The features of the invention will be readily understood from an inspection of the accompanying drawings and the following detailed description of the mechanism illustrated therein.

In the drawings, Figure 1 is a diagrammatic view illustrating the manner of applying the invention to a mechanism for driving two machines; Fig. 2 is a plan view of the driving clutch for actuating the main driving shaft; Fig. 3 is a side elevation showing a mechanism for throwing out the driving clutch embodying the invention in its preferred form; Fig. 4 is a vertical sectional view through the axis of the driving shaft; Fig. 5 is a sectional view on line 5—5, Fig. 3, looking toward the left; and Fig. 6 is a detail sectional view on line 6—6, Fig. 3, looking toward the left.

In the drawings the invention is illustrated as embodied in a mechanism for driving two machines, indicated at 2 and 4 in Fig. 1. Each machine is driven from a main driving shaft 6 through a driving shaft 8 connected with the main shaft through bevel gears 10. The driving mechanism for actuating the shaft 6 comprises a clutch, one member 12 of which is secured to the shaft, and the other member 14 of which is secured to a driving pulley 16 loosely mounted on the shaft. A loose pulley 18 is mounted on the shaft at the side of the driving pulley 16, on to which the belt may be shifted when the machine is not in operation. The clutch member 14 is provided with two holes 20 adapted to be engaged by the clutch pins 22 which pass through holes in the clutch member 12 and are secured in a disk 24. The disk 24 is forced in a direction to engage the pins with the holes in the clutch member 14 by a spring 26. The disk 24 is provided with wedge blocks 28 adapted to be engaged by an inclined cam surface on the end of a clutch controlling lever 30. The rear end of the clutch controlling lever is connected to a rod 32 arranged to slide vertically through a bearing 34, and forced in a direction to carry the end of the lever into the path of the wedge blocks 28 by a spring 36. When the clutch controlling lever is raised into the position indicated in Fig. 3 it is out of the path of the wedge blocks 28, and the clutch pins engage the holes in the clutch member 14 so that the shaft 6 is continuously driven. The lever is normally held in this position against the tension of the spring 36 by a latch 38 arranged to engage a collar 40 on the rod 32. When the latch 38 is disengaged from the collar, the clutch controlling lever is moved into the path of the wedge blocks 28, so that the clutch pins are withdrawn to throw out the driving mechanism for the shaft 6. The latch may be thus disengaged from the collar 40 by a sleeve 42 mounted to slide on the rod 32, and connected by a link 44 with an arm 46 secured to a rock shaft 48.

In accordance with the present invention the driving mechanism is thrown out by the relative movement between the parts of couplings through which the machines are driven, and which are constructed to yield under an overload, and to restore the corresponding machine and driving connections to their initial relation when the overload is removed. The preferred form of coupling for connecting each machine with its driving shaft 8 is shown in Figs. 3 to 6. As here shown, the movable parts of each machine are geared to a worm wheel 50 which

is engaged and driven by a worm 52 formed on a sleeve 54 surrounding the shaft 8. The worm is connected with the shaft by a sliding connection so that it turns with the shaft and may be moved longitudinally thereon. As shown, the sliding connection comprises a flanged head 56 keyed to the worm sleeve 54, and carrying a disk 58 on which two longitudinal bars or ribs 60 are formed. The bars 60 fit within longitudinal slots formed in a cylindrical head 62, which is secured to the shaft 8 and is provided with a hub 64 engaging a bearing 66. The worm sleeve is held against longitudinal movement on the shaft 8 by a spring 68 interposed between the end of the sleeve and tension adjusting nuts 70 on the shaft. The worm sleeve is supported in engagement with the worm wheel by a semicylindrical bearing 72.

So long as each machine is operating properly, the worm sleeve 54 and the parts of the coupling connecting the sleeve with the driving shaft 8 are retained in normal position by the spring 68. If either machine becomes jammed, or for any other reason causes an overload upon the driving connections sufficient to overcome the tension of the spring 68, the rotation of the worm wheel 50 will cease, and as the shaft 8 continues to rotate, the worm sleeve 54 will move toward the right in Fig. 4 against the tension of the spring, the bars 60 sliding in the slots in the head 62, and maintaining the connection between the shaft and machine. The movement of the worm sleeve 54 and the attached head 56 toward the right brings the flange of the head 56 into engagement with one end of a lever 74, the other end of which is connected by a link 76 with an arm 78 on the clutch controlling rock shaft 48. The continued movement of the worm sleeve rocks the lever, and thus raises the sleeve 42 on the rod 32, and disengages the latch 38, so that the driving clutch is thrown out as above described. When the overload on the driving connections is removed, either by the disengagement of the clutch or by the proper attention to the machine or mechanism, the jamming or improper operation of which caused the throwing out of the driving mechanism, the spring 68 returns the worm sleeve 54 to normal position, thus turning the worm wheel 50 on the shaft 8 to restore these parts and the mechanism connected therewith to their former or initial relation. While the rotation of the shaft 8 with relation to the worm wheel 50, after the rotation of the worm wheel has stopped, will throw the shaft and the other machine or machines which are geared to the shaft 6 out of time, the return of the parts of the coupling to normal position will restore the parts to their former or initial relation, so that the machine and the connecting parts will be in proper time when the driving mechanism is again thrown into operation.

While it is preferred to employ the specific construction shown and described, it will be understood that this construction is not essential to the broader features of the invention, and may be varied or modified without departing therefrom.

Having explained the nature and object of the invention, and specifically described one form of mechanism in which it may be embodied, what is claimed is:—

1. A stop mechanism, having, in combination, a driving member, a mechanism driven therefrom, a coupling connecting the member and mechanism the parts of which are constructed to yield relatively under an overload and to restore the driving member and mechanism to initial relation when the overload is removed, actuating mechanism for the driving member, and means for throwing out the actuating mechanism by the relative movements of the parts of the coupling.

2. A stop mechanism, having, in combination, a driving member, a mechanism driven therefrom, a permanent coupling between the member and mechanism the parts of which are constructed to yield relatively under an overload, mechanism for actuating the driving member, and means for throwing out the actuating mechanism by the relative movement of the parts of the coupling.

3. A stop mechanism, having, in combination, a driving member, a worm having a permanent sliding connection with the member, a worm wheel engaged by the worm, a spring for resisting the end thrust on the worm, mechanism for actuating the driving member, and devices operated by the endwise movement of the worm for throwing out the actuating mechanism.

4. A stop mechanism, having, in combination, a driving member, a plurality of mechanisms driven therefrom, a permanent coupling between each mechanism and the driving member the parts of which are constructed to yield under an overload, actuating mechanism for the driving member, and means operated by the relative movement of the parts of any coupling for throwing out the actuating mechanism.

5. A stop mechanism, having, in combination, a driving member, a plurality of mechanisms driven therefrom, connections between the driving member and each mechanism including a coupling the parts of which are constructed to yield relatively under an overload and to restore the driving member and corresponding driven mechanism to initial relation when the overload is removed, actuating mechanism for the driving member, and means oper-

ated by the relative movement of the parts of any coupling for throwing out the actuating mechanism.

6. A stop mechanism, having, in combination, a driving shaft, a worm sleeve surrounding the shaft, a head on the worm sleeve provided with one or more longitudinal bars, a head secured to the shaft provided with longitudinal slots engaging the bars, a spring engaging the end of the worm sleeve, a worm wheel engaged by the worm, mechanism for actuating the shaft, and devices operated by the longitudinal movement of the worm for throwing out the actuating mechanism.

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