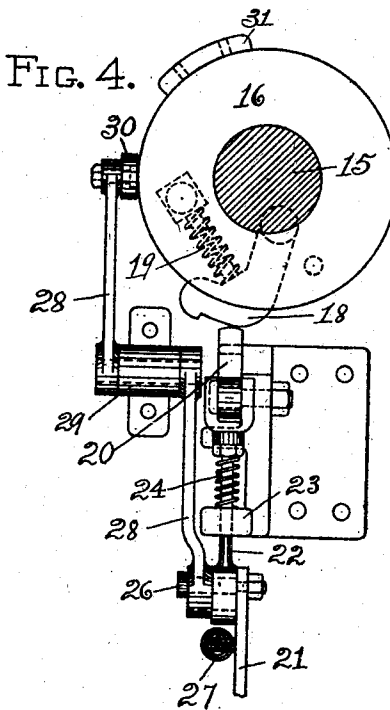
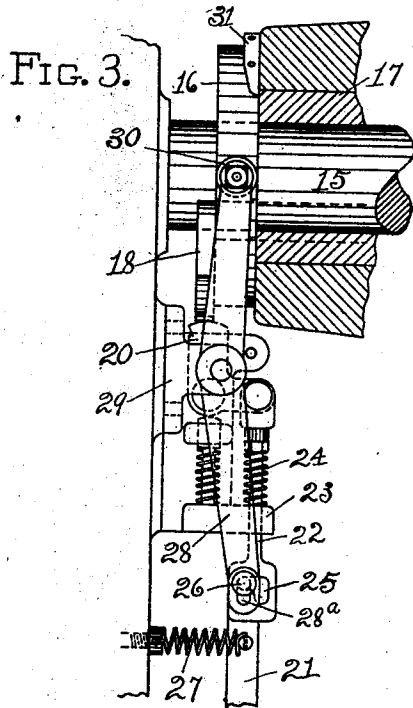
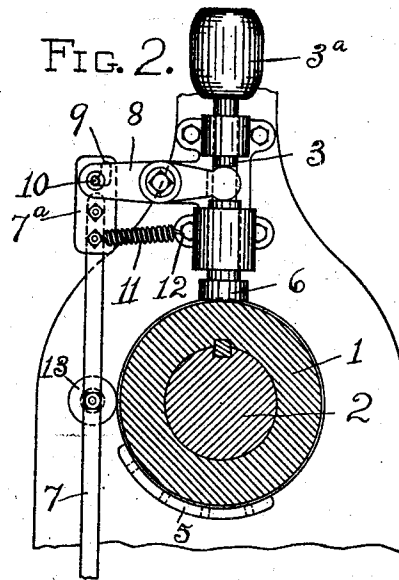
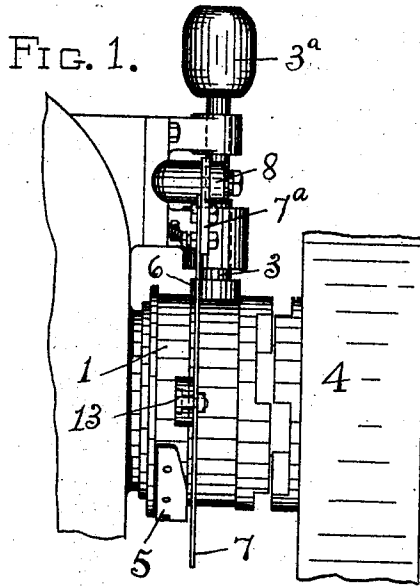


No. 823,496.

PATENTED JUNE 12, 1906.

L. J. HINDE.
CLUTCH RELEASE MEANS.
APPLICATION FILED OCT. 20, 1905.

2 SHEETS—SHEET 1.



WITNESSES.

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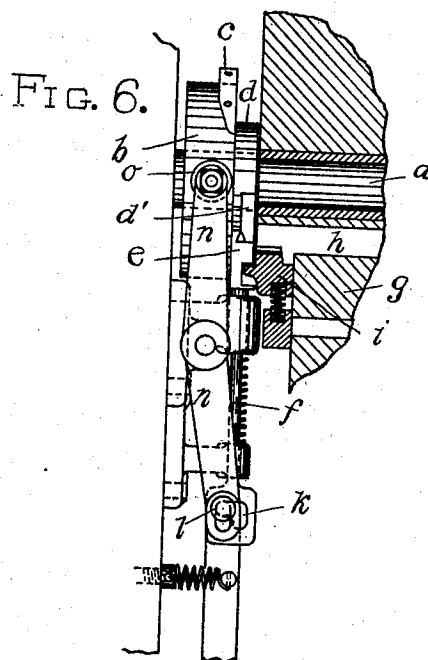
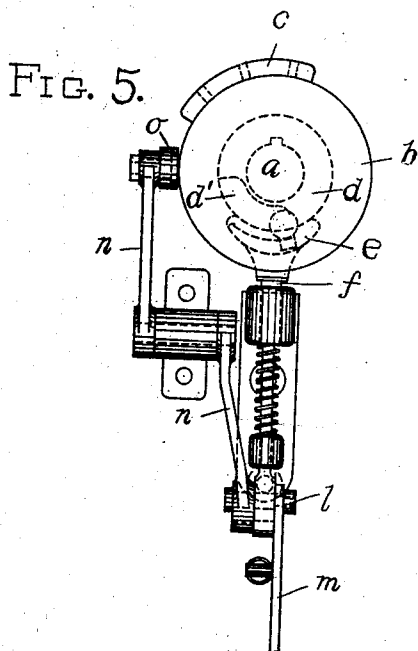
Louis J. Hinde,
By Owen & Owen,
His attorneys.

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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

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CLUTCH-RELEASE MEANS.

No. 823,496.

Specification of Letters Patent.

Patented June 12, 1906.

Application filed October 20, 1905. Serial No. 283,691.

To all whom it may concern:

Be it known that I, LOUIS J. HINDE, a citizen of the United States, and a resident of Toledo, in the county of Lucas and State of Ohio, have invented certain new and useful Improvements in Clutch-Release Means; 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, reference being had to the accompanying drawings, and to the figures and letters of reference marked thereon, which form a part of this specification.

My invention relates to the class of clutches employed on power-presses or other machines in which it is desired to intermittently impart a single revolution to a shaft from a continuously-revolving element at the will of the operator. The engagement of clutches of this class is more commonly effected by the use of a foot-treadle having connection with and adapted when depressed to cause a release of the means normally locking the clutch mechanism in inoperative position. With this and similar means of operating the clutch, however, difficulty has arisen due to the fact that a continued depression of the treadle or other operating means permits a continued engagement of the clutch and consequent revolving of the clutch-shaft during the period of such depression, thereby increasing the possibility of accident to the operator, who might place his hand within the operative parts of the press or machine for the purpose of removing the work operated on without first releasing the clutch-operating means.

The object of my invention is the provision, in combination with clutches of the class described, of simple and efficient means whereby a positive and automatic release of the clutch mechanism is effected at each revolution of the shaft and a second revolution thereof rendered impossible without the operator first releasing the pressure of his foot from the treadle and again depressing the same for such purpose, thus adding to the safety of the operator and preventing damage to the work operated on by reason of a second stroke of the operating mechanism

due to a continued depression of the treadle.

While the mechanism comprising my invention can be adapted for use in connection with the several styles of clutches now used on power-presses and the like, I have illustrated its association with only three forms of clutches, the operation and arrangement of which association is fully described in the following specification and shown in the accompanying drawings, in which—

Figures 1 and 2 are front and side elevations of the safety mechanism comprising my invention associated with a weight-controlled sliding sleeve-clutch; and Figs. 3 and 4 and 5 and 6 are similar views, respectively, of two constructions of such mechanism modified to meet the requirements of the two styles of clutches with which it is associated.

Referring to Figs. 1 and 2 of the drawings, 1 represents a sliding clutch-collar, which is feathered to the shaft 2 and adapted when released by a raising of the weight-actuated plunger 3 to be moved into engagement with the notched hub of the drive-pulley 4, which is mounted to turn loosely on said shaft, thus causing the shaft to revolve with the pulley. A release of the clutch-collar from engagement with the pulley-hub is effected at the end of a single revolution thereof (should the operating-treadle be released) by reason of the tapered edge of the plate 5 on said collar coacting with the releasing-roll 6, carried by the plunger 3 and causing an inward or disengaging movement of the clutch-collar and permitting the releasing-roll to drop within a peripheral groove or recess in the collar, whereby the clutch is normally retained in inoperative position. The releasing movement of the plunger 3 is effected through the medium of a treadle or trip-rod 7 and connected lever 8, which latter has one end in loose connection with the plunger to impart a reciprocal movement thereto from an oscillation of the lever. The means comprising my invention for causing a positive and automatic release of the clutch at the end of each revolution of the shaft, whether the pressure of the foot be released from the treadle or not consists in providing a cam-slot 9 in the upper end of the treadle-rod 7, in which the pivotal pin 10, which projects from the face of

the lever 8 adjacent to its outer end, is adapted to have an angularly-sliding movement. The cam-slot 9 may either be formed in an enlarged flattened portion of the rod 7 or in a plate 7^a, secured to its upper end, as shown in the drawings, and extends inwardly and upwardly therein in substantially the form of a right angle, thus forming horizontal and vertical communicating slots. A contraction-spring 11, which has one end secured to the treadle-rod adjacent to its upper end and its other end fixed to the press-frame, as at 12, is employed to normally retain the upper end of the treadle-rod drawn in toward the fulcrum of the lever 8, so that the pin 10 is disposed within the outer extremity of the horizontal portion of the cam-slot 9, which position is maintained during a lowering of the rod as the treadle is depressed. Mounted on the treadle-rod is a roller 13, which is positioned in the path of movement of and adapted to have contact with the plate 5 when the clutch-collar is in engaged position, whereby an outward movement is imparted to the upper end of the treadle-rod at each revolution of the clutch-collar. As the treadle-rod is thrown out the vertical portion of the cam-slot 9 is brought in alinement with the pin 10, thus permitting an oscillation of the lever 8 and a lowering of the plunger 3, which, actuated by the weight 3^a, drops into position for the releasing-roll thereon to come in contact with the tapered edge of the plate 5 at the end of a revolution of the shaft for the purpose of effecting a release of the clutch. It will thus be seen that the operator is prevented from engaging the clutch mechanism twice in succession without first removing his foot from the treadle.

In Figs 3 and 4 is shown what is termed a "rocker-arm clutch," in which 15 represents a shaft, 16 a collar keyed to revolve with said shaft, 17 the hub of a drive-pulley which is loosely mounted on said shaft, and 18 a rocker-arm the spindle of which seats in a groove provided longitudinally in the surface of the shaft 15 within the hub of the pulley and has one side of the portion thereof projecting within the pulley-hub milled, so that when turned in one position the pulley will be free to turn loosely on the shaft 15 and when turned in another position a registering groove in the hub will be engaged thereby and rotation imparted to the shaft from the drive-pulley. The spindle of the rocker-arm is actuated to turn to engage the hub of the pulley by means of an expansion-spring 19, the thrust of which is exerted against the rocker-arm 18 in the proper direction. A bell-crank lever or latch member 20 is mounted below the collar 16 in position to have the end of its vertical arm engage a lip on the

rocker-arm 18. The horizontal arm of the latch member 20 connects with a treadle or trip-rod 21 through the medium of a plunger 22, which passes through an opening in the bracket 23 and is encircled by a compression-spring 24, having its lower end bearing against the bracket 23 to normally retain the rod elevated and the latch 20 in engagement with the rocker-arm. In the association of my invention with this form of clutch the lower end of the plunger 22 is broadened out and flattened and provided with a cam-slot 25, which extends outwardly and downwardly in substantially the form of a right angle and through which the pin or bolt 26, pivotally connecting the treadle-rod 21 and plunger 22, loosely extends to permit its movement therein. A contraction-spring 27 connects the upper end of the treadle-rod and press-frame for the purpose of normally retaining the pin or bolt 26, abutting the inner terminal of the horizontal or outwardly-extending portion of the cam-slot 25. 28 represents a bent lever having its fulcrum in a bracket 29, secured to the press-frame and provided at its lower end with a vertical slot 28^a to receive the pin or bolt 26 and its upper end equipped with a roll 30, which is positioned to have contact with the tapered edge of a plate 31, mounted on the periphery of the collar 16 at a point intermediate of the beginning and ending of a revolution thereof. As the lever 28 is oscillated, due to the contact of the roll 30 thereon with the plate 31, the pin or bolt 26 and upper end of the treadle-rod 21 are forced outwardly against the tension of the spring 27 until the pin or bolt is brought in alinement with the vertical or downwardly-extending portion of the cam-slot 25, thereby permitting the plunger 22, which was depressed to cause an engagement of the clutch, to be raised by the action of the spring 24 and the latch 20 to engage the rocker-arm 18 to throw the clutch out of engagement.

In Figs. 5 and 6 is shown another style of clutch with which the same form of releasing mechanism comprising my invention, as that shown in Figs. 3 and 4, may be associated. In this clutch *a* represents the shaft; *b*, a fixed collar on said shaft having a contact-plate *c* secured to its periphery and formed with an annularly-reduced portion *d* disposed to receive the thrust of a shoe *e*, carried at the upper end of a spring-pressed plunger *f*. *g* is the hub of a drive-pulley loosely mounted on said shaft; *h*, a key mounted in the hub *g* and adapted when released to engage an alining notch *d'*, provided in one side of the reduced portion of the collar *b*, whereby rotation is imparted to the collar and shaft from the drive-pulley. *i* is a spring-pressed block adapted to normally en-

gage a lip on the key *h* to retain it out of engagement with the collar and having a lip formed thereon to project within a notch or cut-away portion in the shoe *e*, whereby a release of the block *i* from engagement with the key *h* is effected when the shoe is depressed. At the end of a revolution of the shaft the key *h* is released from engagement with the collar *b* by reason of its extended end coming in sliding contact with a tapered raceway on the contiguous face of the shoe *e*, (providing such shoe was previously permitted to return to its normal position by a release of the treadle,) thus forcing the key back in position to be again locked against movement by the block *i*. *k* represents a cam-slot in the lower end of the plunger, through which slot the pin or bolt *l*, connecting the treadle-rod *m* and plunger *f*, extends. *n* is the bent lever which connects at its lower end to the pin or bolt *l* and has its upper end provided with a roll *o* for contact with the plate *c*, by which it is oscillated at each revolution of the collar *b* to effect a return of the plunger and shoe to their normal position should the foot-treadle remain depressed.

It will thus be apparent from the foregoing that with slight changes in the construction and arrangement of the parts of my invention the same may be fitted and made to conform to the construction of the various forms of release or stop clutches employed for use on power-presses, shears, and other machines in which a single revolution is desired to be imparted to a shaft from a continuously-revolving element at the will of the operator without departing from the spirit of such invention or sacrificing any of the advantages thereof.

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

1. The combination with the releasing means of a clutch, of a member movable to effect a movement of said releasing means, means for normally retaining said member in one position of movement, a trip-rod having a relative angularly-movable pivotal connection with said member whereby a relative movement of the trip-rod in one direction when depressed permits a relative movement of the member in a different direction and an engagement of the stop means, and means for imparting the relative movement to the trip-rod at a predetermined point in a revolution of the clutch-shaft.

2. The combination with a normally engaged clutch, of the releasing member therefor and the trip-rod, one of which is formed with a cam-slot and the other a pivot operating in said slot whereby to permit a relative angular movement of said two parts when

the clutch is in released position and a return of the releasing member to normal position, and means for causing such relative movements of said parts when the clutch-shaft has reached a predetermined point in its revolution.

3. The combination with the releasing means of a clutch, of a member connected to said releasing means and having a substantially right-angled slot therein, a trip-rod normally retained in one position and pivotally connected to said member with its pivot movable in said slot whereby a relative movement of the trip-rod in one direction when depressed permits a relative movement of the member in another direction to effect a release of the clutch, and means for causing a movement of the trip-rod relative to said member at a predetermined point in the revolution of the clutch when engaged.

4. The combination with a clutch mechanism, and the normally engaged stop means therefor, of a trip-rod, a member connecting said trip-rod and stop means and having relative angularly-movable pivotal connection with said trip-rod whereby a relative movement of the trip-rod in one direction when depressed permits a relative movement of the member in another direction and an engagement of the stop means, a protuberance revolving with a portion of the clutch mechanism, and means movable by said protuberance at a predetermined point in its movement for causing a movement of the trip-rod relative to said member.

5. The combination with the releasing means of a clutch, of a member connected to said releasing means and having a cam-slot therein, a trip-rod normally retained in one position and pivotally connected to said member with its pivot movable in said cam-slot, and means for causing a movement of the trip-rod relative to said member whereby said member is permitted to have a movement independent of the trip-rod to cause a positive release of the clutch.

6. The combination with a clutch mechanism, and the means thereof movable to effect a release or engagement of the clutch, of a trip-rod having relative angularly-movable pivotal connection with said means whereby a lateral movement thereof when depressed permits a movement of said means for causing a release or disengagement of the clutch mechanism, a revolving member, and a lever movable by contact with said revolving member at a predetermined point in its revolution to cause a lateral movement of the trip-rod.

7. The combination with the element of a clutch movable to effect a release or engagement thereof, of a member movable to cause

a movement of said element and having an outwardly and downwardly extending cam-slot in a portion thereof, a trip-rod, a lever having a vertically-disposed slot, a pin passing through an aperture in the trip-rod and the slots in said member and lever, means for normally retaining the pin in one portion of the cam-slot in said member, and means for imparting an oscillatory movement to the lever at a predetermined point in the revolution of the clutch when in operation whereby

the pin is moved within the cam-slot to permit a movement of said member and element for releasing the clutch.

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

LOUIS J. HINDE.

Witnesses:

J. EDWARD OWENS,
C. W. OWEN.