

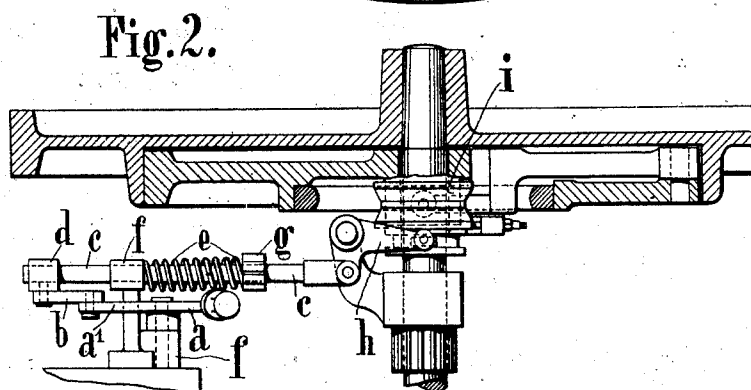
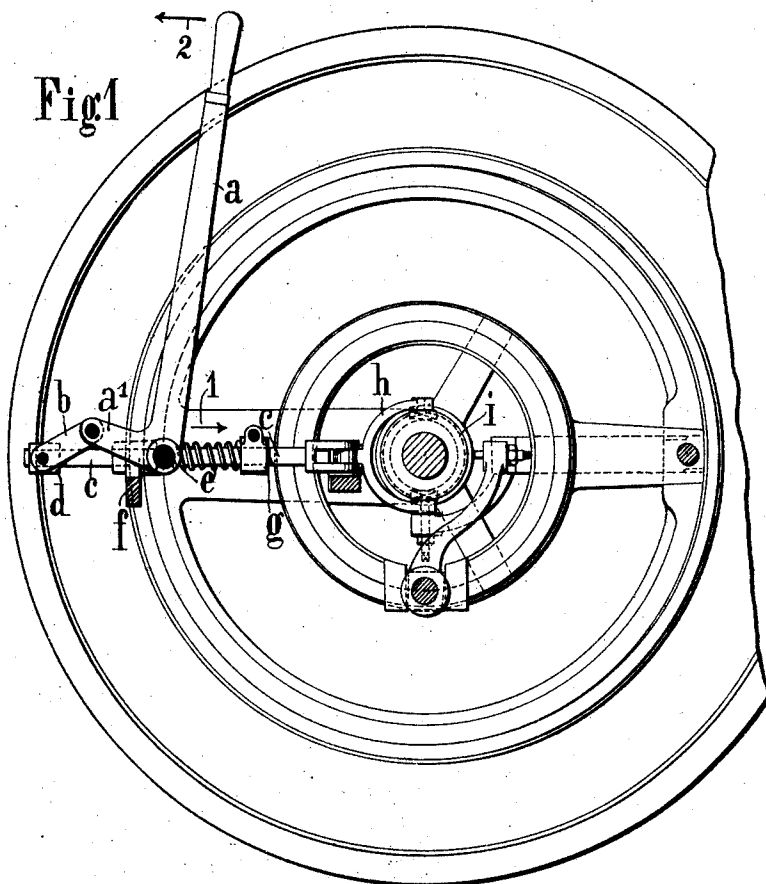
No. 879,005.

PATENTED FEB. 11, 1908.

M. ROCKSTROH.
CLUTCH OPERATING DEVICE.

APPLICATION FILED NOV. 14, 1906.

2 SHEETS—SHEET 1.



Witnesses,
[Signature]
Robert Everett,

Inventor,
Max Rockstroh.
By *James L. Norris.*
[Signature]

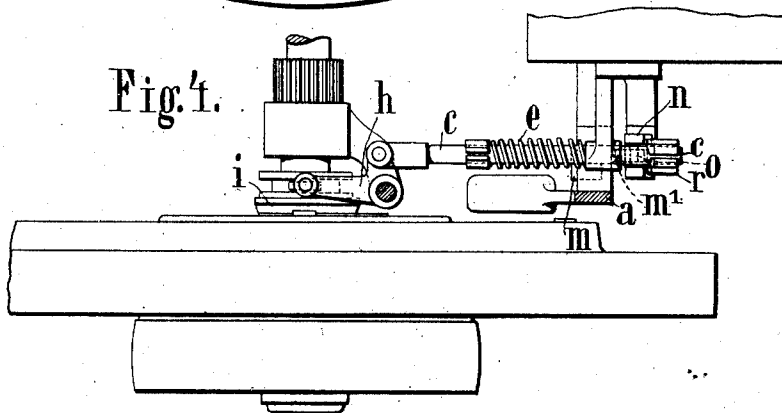
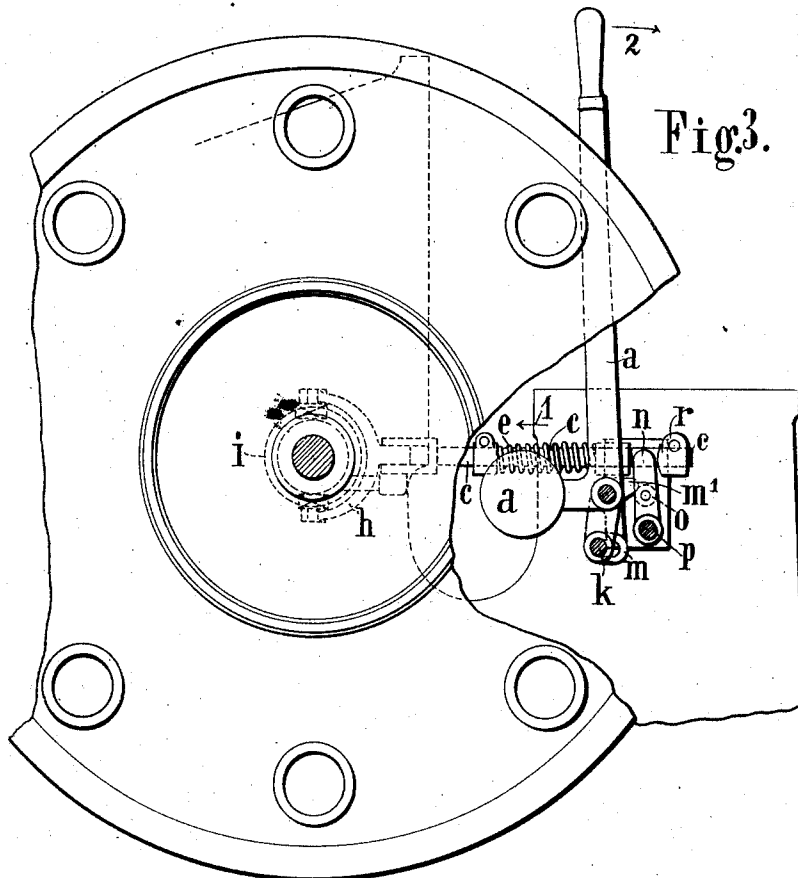
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2 SHEETS—SHEET 2.



Witnesses.
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UNITED STATES PATENT OFFICE.

MAX ROCKSTROH, OF KLEIN-SEDLITZ, NEAR PIRNA, GERMANY.

CLUTCH-OPERATING DEVICE.

No. 879,005.

Specification of Letters Patent.

Patented Feb. 11, 1908.

Application filed November 14, 1906. Serial No. 343,428.

To all whom it may concern:

Be it known that I, MAX ROCKSTROH, director, subject of the Kingdom of Saxony, residing at Klein-Sedlitz, near Pirna, Saxony, Germany, have invented certain new and useful Improvements in Clutch-Operating Devices, of which the following is a specification.

In printing, stamping, and die presses of usual construction, the disengagement of the friction clutch has heretofore been effected by means of a spring which has been maintained in compression by means of a detent and is suddenly released by the disengagement thereof, either by hand or automatically, that is to say, by the pressure of the workman's hand against a protecting rod. The detent, however, is apt to become worn and consequently, especially when the disengaging is automatically effected the satisfactory operation of the mechanism cannot long be relied on.

This invention has for its object to substitute for the detent device hitherto usual, an automatic clamp based on the principle of unstable equilibrium, that is to say, a clamp the parts of which, when the apparatus is put into engagement, support each other in an unstable position in such a manner that, upon the exertion thereon of but slight external pressure, whether by hand or automatically, the unstable equilibrium is at once upset and the disengagement effected. The unclutching of the press may be effected either positively or by spring action; or it may be effected by a combination of both methods.

Figures 1 and 2 of the accompanying drawings illustrate respectively in elevation and in section one constructional form of apparatus in accordance with this invention, comprising a bent lever, one arm of which is formed as a handle *a* while its other arm *a'* has a pivotal connection with a pressure lever *b* with which it forms a toggle. The lever *b* engages with a cross-head *d* mounted upon the clutch-operating rod *c*, around which there is a coiled spring *e*, one end of which bears against a small block *f*, while its other end is in contact with an adjustable ring *g* on the rod *c*. The spring *e* tends to put the mechanism out of engagement, that is to say, it tends to move the operating rod *c* in the direction of the arrow 1.

When it is desired to put the mechanism into engagement the handle *a* is moved in the

direction of the arrow 2 by which means the two members *a'* and *b* of the Stanhope lever are extended, that is to say, they are caused to assume a position of unstable equilibrium wherein they automatically lock each other. In this position of the parts the rod *c* is carried to the left and the spring *e* is put in compression, while the forked lever *h* which is pivotally connected with the operating rod *c* brings the clutch member *i* into the position of engagement. The disengagement of the mechanism is effected as already stated, by actuating the lever *a* in the opposite direction, either by hand or automatically, as by its striking against a safety device. This reacts upon the two parts which form the Stanhope lever in such manner as to cause them to leave their extended position. A very small movement of the Stanhope lever will suffice to effect this, as the spring *e*, as soon as the condition of unstable equilibrium is disturbed, will at once effect the further bending of the Stanhope lever and thus move the operating rod to the right so as to bring about the disengagement of the mechanism. The handle *a* and the arm *a'* of the toggle, instead of being formed integrally, may be made in separate pieces, the arrangement being, for instance, such that a pair of stops on the handle *a* cause the part *a'* to assume first an extended and then again a bent position.

Figs. 3 and 4 illustrate respectively in front elevation and in plan a modified form of apparatus in accordance with this invention. In this case the hand lever *a* (Fig. 3) has the form of a two-armed counter-weighted lever, the lower arm of which carries a pin *k* which engages with a slot formed in a lever *m* that is mounted to oscillate about the same axis as the lever *a* and is moved therewith by the pin. To the upper end of the lever *m* there is attached a projecting cam *m'* which rests against a roller on a forked lever *n* and presses it aside, thereby causing the lever *n* to turn on its fulcrum *p*. The movement of the lever *n* is transmitted directly to the operating rod *c* by the end of the lever coming in contact with the adjustable ring *r*. The tendency of the spring *l* is the same as in the construction first described, that is to say it tends to move the operating rod in the direction of the arrow 1.

The clutch mechanism is put into engagement in the following manner. When the

handle *a* is moved in the direction of the arrow 2 the lever *m* is carried along with it, its cam *m'* forcing the roller *o* together with the forked lever *n* out of the positions shown; with the result that the rod *c*, the forked lever *h* and the clutch member *i* all assume the position of engagement. The automatic locking in unstable equilibrium is effected by the resting of the roller *o* against the highest point of the curved face of the cam *m'* from which it cannot be removed without exterior pressure. The disengagement of the mechanism is effected in a manner similar to that of the apparatus previously described, that is to say, by actuating the lever either by hand or automatically, so that the roller *o* is caused to slip off from the curved face of the cam *m'* whereupon the spring *l* will effect the complete disengagement. In this form of construction the handle *a* and the cam *m'* may be formed integrally.

Having thus declared the nature of my said invention and in what manner it is to be performed I declare that what I claim is:—

1. A clutch-operating device comprising a rod for shifting one member of a clutch to and from clutching engagement with the other member of the clutch, an expansible spring for shifting said rod in a direction to separate the clutch members, and a rod-shifting means for moving the rod in a direction to cause the clutching engagement of the clutch members and adapted when actuated to shift the rod and compress the

spring and assume a position of unstable equilibrium and while in such condition maintaining the spring under compression.

2. A clutch operating device comprising a clutch-operating rod, a handle pivoted at its lower end and having an angular extension, a lever arm pivoted at one end to said angular extension and at its other end connected to said rod, an abutment carried by the rod, a bearing for the rod, and a spring surrounding the rod and interposed between the abutment and the bearing.

3. A clutching device comprising a clutch operating rod, a toggle connected therewith for shifting the rod in one direction to move the clutch to operative position, a shifting mechanism when moved in one direction adapted to shift the toggle to a position of unstable equilibrium, thereby moving the rod, whereby the clutch is brought into operative position, and means for shifting the rod in the opposite direction when said shifting mechanism is started to move in the opposite direction, said toggle when moved to a position of unstable equilibrium locking said means until the shifting mechanism starts to move in the opposite direction.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

MAX ROCKSTROH.

Witnesses:

ULYSSES J. BYWATER,
PAUL ARRAS.