Nov. 1, 1932. N. W. DORMAN 1,885,420

ADJUSTABLE TRIPPING DEVICE

Filed March 5, 1931

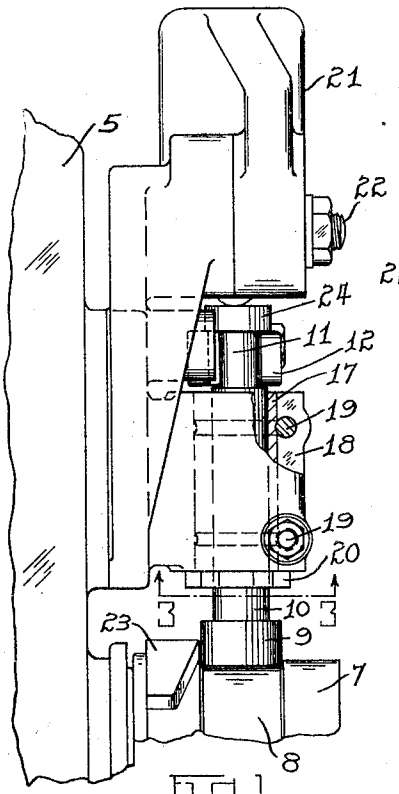


Fig. 1.

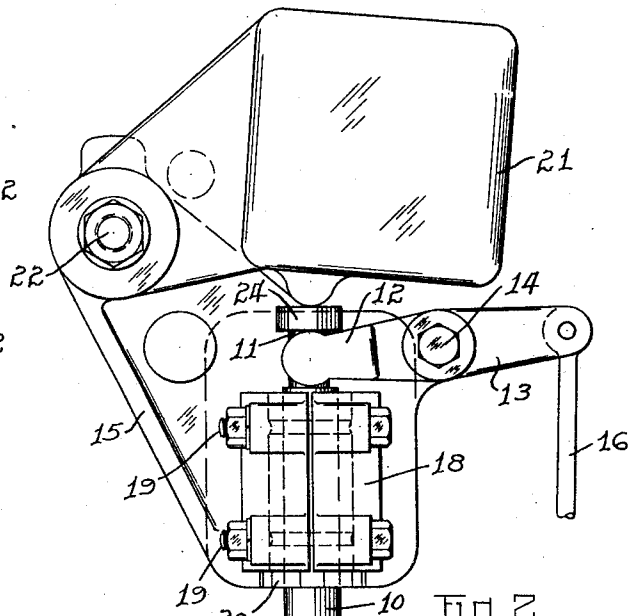
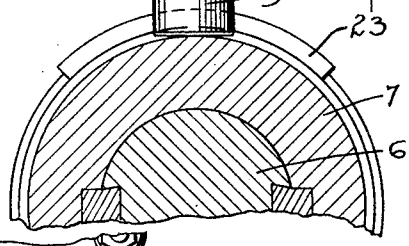


Fig. 2



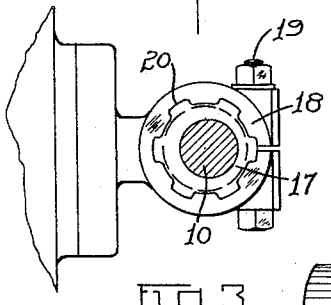


Fig. 3.

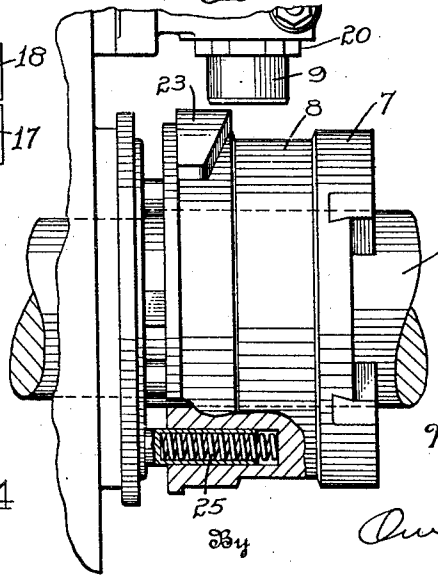


Fig. 4

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UNITED STATES PATENT OFFICE

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ADJUSTABLE TRIPPING DEVICE

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This invention relates to an adjustable tripping device adapted to be used in automatically shifting a rotating member axially at a predetermined point in its operation, as for example, in automatically disengaging the clutch on a power press so that the slide may be at rest during the insertion of the next piece to be worked upon.

In power presses, the tripping device usually comprises a vertically disposed plunger carrying a roller which is adapted to ride in a peripheral channel formed in the shiftable clutch member. This plunger is raised by means of a trip lever to permit the clutch to operate and start the rotation of the cam or crank shaft. When the plunger is released it drops back into position to cause the clutch to be disconnected at the completion of the usual cycle of operation.

The object of the present invention is to simplify and otherwise improve the means by which the tripping device is adjusted so that the clutch will be disconnected at the proper time. It permits a more precise adjustment than is possible with constructions heretofore used and the adjustment may also be made in less time.

The invention will be more particularly described in connection with the accompanying drawing, in which—

Figure 1 is a partial front elevation of a power press with the invention mounted thereon.

Figure 2 is a side elevation of the invention, the crank shaft and shiftable clutch member being partially shown in section.

Figure 3 is a section taken on the line 3—3 of Figure 1.

Figure 4 shows the clutch when released by the trip.

As illustrated in the drawing, the invention is associated with a power press having a frame 5 and a crank shaft 6, on which is splined a shiftable clutch member 7 adapted to be moved by springs 25 into clutching engagement with a companion member loose on the shaft 6. The shiftable clutch member 7 has a peripheral channel 8 adapted to receive a shifting member 9 which is usually in the form of a roller carried at the lower end of a vertically reciprocable plunger 10. This plunger near its upper end is formed with a neck 11, which is received between the arms 12 of a bifurcated trip lever 13 fulcrumed at 14 on a bracket 15 secured to the frame of the press. The outer end of the trip lever 13 is usually connected by a rod 16 to a pedal by means of which the trip is actuated.

Heretofore it has been customary to form the neck 11 with flat faces so that it is non-rotatably held between the arms 12 and to mount the roller 9 eccentrically on the plunger 10 so that the trip device may be adjusted by a rotational adjustment of the plunger. With such a construction, in order to effect the adjustment, it is necessary to remove the trip lever 13 and the number of positions of adjustment is, of course, limited by the number of flat faces on the neck 11. According to the present invention, however, the adjustment may be effected with any degree of precision and in doing so it is not necessary to remove the trip lever 13.

In carrying out my invention the roller 9 is mounted co-axially on the plunger 10 and the latter is mounted in an eccentric bushing 17 which is rotatably adjustable in a split bearing 18 secured to the frame of the machine. The bushing 17 is clamped in adjusted position by means of bolts 19 which extend transversely across the split bearing. Whenever bolts 19 are loosened, the bushing 17 may be adjusted circumferentially through any angle by the application of a proper tool to the head 20 formed at the lower end of the bushing. The bolts engage circumferential grooves in the bushing, thus preventing the latter from dropping downwardly when the bolts are loosened. In my construction, the neck 11 is cylindrical and there is sufficient clearance between the neck and the arms 12 to permit the bodily adjustment of the plunger laterally as far as is permitted by the eccentricity of the bushing 17 and the head 24 is wide enough to be always engaged by the arms 12.

The plunger 10 is normally held down by a weight 21 pivoted at 22 to the bracket 15 and resting by gravity on the upper end of the plunger. By an actuation of the trip

lever 13, the plunger may be raised to permit the clutch to be moved into operative position by the springs 25 and as the clutch rotates with the crank shaft through the usual cycle, the roller 9 comes in contact with a cam 23 secured to the clutch member 7. This disengages the clutch at the completion of the cycle according to the adjustment of the bushing 17.

From the foregoing description it will be understood that the trip device may be adjusted with the greatest precision merely by turning the bushing 17 within the bearing 18 and without touching the trip lever 13. While I have shown and described in detail the preferred embodiment of the invention, it is apparent that the same may be considerably modified without any material departure from the scope of the appended claim.

What I claim is:

The combination with a rotatable clutch member, of a plunger normally engageable with said clutch member to throw the latter out of engagement after each operation, a split bearing having an eccentric bushing in which the plunger is mounted, said bushing having a head at its lower end for adjusting it circumferentially, transverse bolts intersecting said bearing and adapted to clamp the same on said bushing, said bushing having circumferential grooves engaged by said bolts to prevent longitudinal movement of the bushing while it is adjusted, said plunger having a reduced cylindrical portion terminating in a head, and a trip lever having arms straddling said reduced portion and engageable with said head to shift the plunger longitudinally out of engagement with the clutch member, there being sufficient clearance between said arms and said reduced portion to permit the bodily adjustment of the plunger by the rotation of said bushing without moving said lever.

In testimony whereof I heve hereunto signed my name to this specification.

NEAL W. DORMAN.