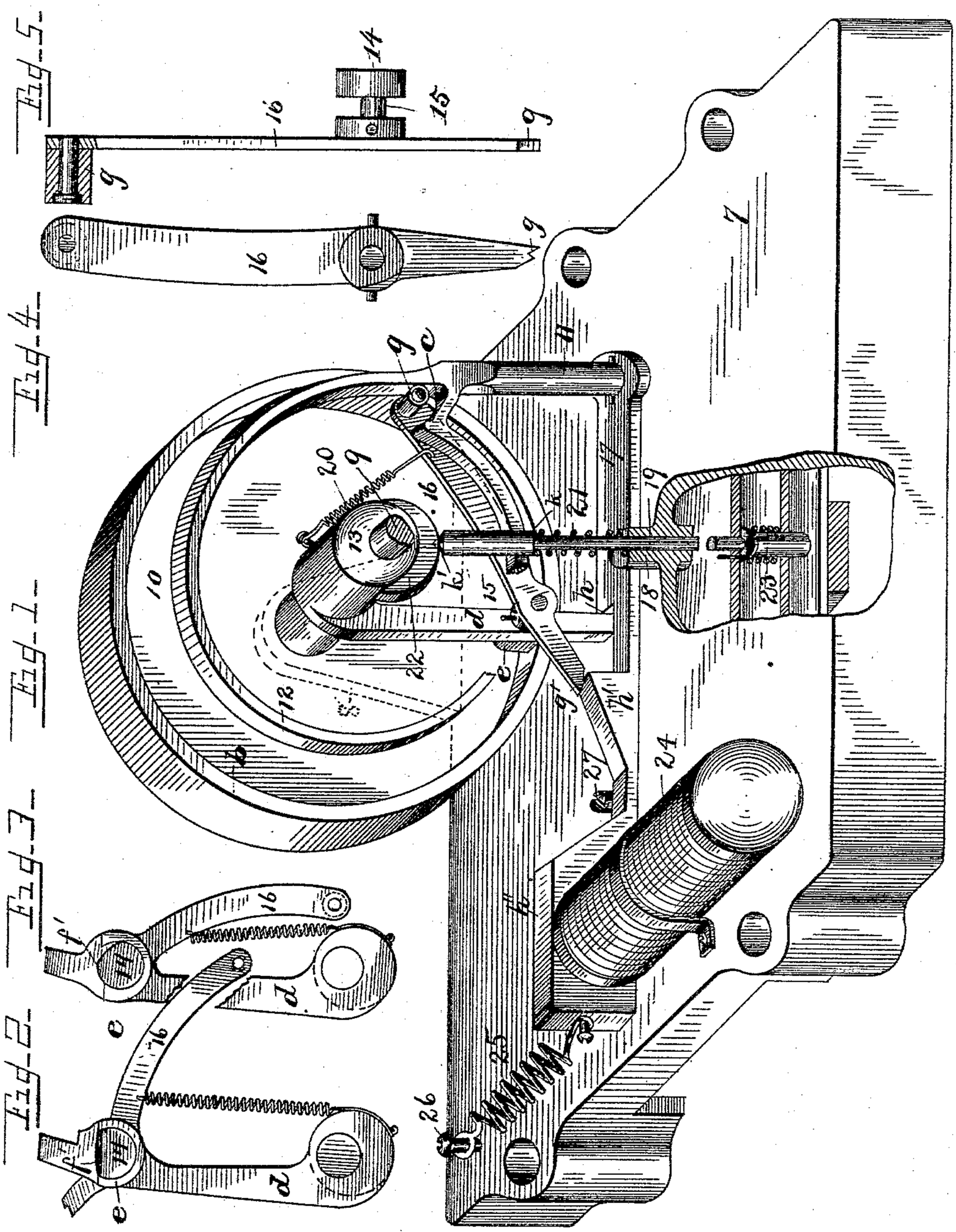
(No Model.)

G. A. GOODSON.

CLUTCH MECHANISM.

No. 414,402. Patented Nov. 5, 1889.



Witnesses.

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CLUTCH MECHANISM.

SPECIFICATION forming part of Letters Patent No. 414,402, dated November 5, 1889.

Application filed October 25, 1888. Renewed September 23, 1889. Serial No. 324,708. (No model.)

To all whom it may concern:

Be it known that I, GEORGE A. GOODSON, a citizen of the Dominion of Canada, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Clutch Mechanisms; 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.

My invention relates to mechanism for clutching and unclutching devices for producing straight-line reciprocating movement with a constantly-running shaft. It is in this instance shown as adapted for use in a matrix-making machine, and constitutes a very material portion of an improved apparatus for depressing the type-dies to make an impression in the matrix material, whereby said dies are depressed by a steady pressure and with great force.

The present form in which I have embodied my invention is illustrated in the accompanying drawings, and said invention is fully described in the following description and claims.

In the drawings, Figure 1 is a perspective view of my improved mechanism for depressing the type-dies, some parts being broken away. Figs. 2, 3, 4, and 5 are details of the same detached.

My improved die-depressing apparatus is mounted upon the bed-plate of a matrix-making machine provided with a character-board or index-plate of any preferred form and die-carriage connected by a die-alignment bar, whereby a die is brought over a central hole in the die-carriage seat by placing the pointer of the alignment-bar upon a character of the index-plate corresponding to said die. The electric circuit for operating the die-depressing apparatus is controlled by the said pointer of the alignment-bar; hence it will be seen that a movement of the pointer places a die in the proper position to be depressed, and also operates the depressing apparatus, thereby making an impression in the matrix material.

On the bed-plate of the matrix-making machine is mounted the cap-plate 7, upon which, in suitable standards 8, rigidly secured to the same, is mounted in suitable bearings a constantly-running shaft 9, coupled to any suitable source of power. (Not shown.) On the end of the shaft is rigidly secured a fly-wheel 10, provided with a friction-flange *b*.

To a suitable standard 11, fixed in the cap-plate 7, to the rear and to one side of the common center, is rigidly secured a cam track or guide 12, encircling the shaft 9. This cam is approximately annular and has the axis of the shaft 9 as its center, but is provided with an outwardly-projecting notch or offset *c*.

On the shaft 9 is loosely mounted an eccentric or cam 13, provided with an extended arm or cam-lever *d*. This eccentric or cam is located on the shaft 9 adjacent to the wheel 10, and the lever *d* is provided on its outer face at a point corresponding to the end of the radius of the wheel 10 with a small cylindrical cam-case *e*, which has a segment cut away and its intersected edges formed to the curve line of the friction-flange *b*. This case *e* rides inside of the flange *b* in proximity to but not bearing against the same.

Within the case *e* is an eccentric-cam 14, which is pivotally secured by pivot-pin 15 in the cam-lever *d*, and is itself provided with an operating-lever 16, rigidly secured to the outer end of the pivot-pin 15. The cam 14 has a part of its periphery reduced or cut away, corresponding to the cut-away part of the case and formed to the curved line of the friction-flange. Hence when the cam 14 is in its normal or unlocked position the flange *b* on wheel 10 will revolve freely past the cam and its case; but whenever the cam is turned within its case its eccentric or unreduced surface *f'* protrudes through the opening in the periphery of the case *e* and engages with the flange *b* by frictional contact.

It is obvious that instead of the construction shown I may employ an eccentric or other shaped cam in place of the cam 14 with the same results.

The lever 16 co-operates with the cam-lever guide 12 to effect this frictional contact. One arm of this lever 16 is slightly longer than the distance from the pivot-pin 15 to the inner surface of the annular part of the guide 12 and is provided at its extremity with a

frictional collar *g*. Its other arm projects downward and outward from the pivot-pin 15 and is provided with a backwardly-inclined and notched extremity or foot *g'*. Directly below the lever-arm of this lever 16 on the plate 7 is a combined stop and trip 17, which at its rear end is pivotally secured to the standard 11, and which is cut away in the direction of its breadth, forming the shoulder *h*, and is thickened up on its top surface at its outer and free end and near its central part, forming the inclined tripping-block *h'* and the armature *h''*. A spiral spring 20 is attached at one end to the eccentric-cam 13 and at the other to the upper arm of the lever 16. When in its normal position the lever 16 lies in the position with the friction-roller *g* lying in the notch *c* and the foot *g'* resting on the block *h'*, and cam 14 is held out of engagement with the friction-flange *b*, and the cam 13 does not turn with the shaft 9. The shoulder *h* also engages the lower end of the lever *d* and stops it at a fixed point. By switching the tripping-lever 17 on its pivot the foot *g'* and the lever are released from their stops, the spiral spring draws the upper end of the lever toward the eccentric with sufficient force to cause the cam 14 and flange *b* to engage with slight pressure, and the eccentric 13 thus starts to revolve with the shaft, and the friction-roller starts out of the notch *c* on the cam-guide 12. The instant the roller *g* strikes the true circle of the cam-guide the lever is forced higher, and the cam 14 is rigidly locked to the flange *b*, and the eccentric 13 completes the revolution with the shaft until the foot *g'* strikes the stop-block *h'*, and the lower end of the lever *d* catches on the shoulder *h* and instantly unlocks the cam from the flange, the roller *g* falling back into its normal position in the notch *c*.

In a suitable seat 18 in the bed-plate 7, directly over the common center *a*, is mounted the pressure-pin or punch-rod 19, which is provided with a shoulder *k* and the convex head *k'*. A spiral spring 21 encircles the pin 19 between the top of the seat 18 and the shoulder *k* and serves to retract the pin after the impression has been made.

On the convex head *k'* as a bearing is mounted a crescent-shaped saddle 22, against the upper surface of which bears the eccentric 13. The lower end of the pin 19 is directly in line with the common center; hence whenever the eccentric 13 is locked to the shaft the pin 19 is forced down, and, as by the same act which locks the eccentric to the shaft a type-die 23 has been brought to the common center, the pin strikes the head of the die and forces it into the matrix material. The depth of impression may be varied by varying either the thickness of the saddle 22, the eccentricity of the cam 13, or the length of the rod 19.

The swinging of the trip-lever 17 is effected by an electro-magnet 24 on a circuit closed by the act of spelling out the word on the index-plate, and it is restored to its normal position on opening the circuit by the retraction-spring 25, fixed at one end to the free end of said lever and at the other to the post 26 on the cap-plate 7. A stop 27 serves to limit the outward movement of this tripping-lever.

The type-die 23 is of the usual or any preferred form, and is held between the top and bottom plates or disks of the die-carriage in any preferred manner.

The general effect of the construction described is to force the die into the matrix material by steady pressure instead of by a stroke. It avoids the jar incident to a hammer, is more rapid and more reliable, and produces a better impression.

While I have illustrated my improved clutching mechanism in connection with a matrix-making machine, it is obvious that it may be employed in many other machines and for many other purposes.

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

1. The combination, with a die-depressing rod, of a constantly-running shaft, a cam loosely mounted on said shaft and adapted to depress said rod, and a clutch to lock said cam to said shaft, substantially as described.

2. The combination, with a die-depressing rod, of a constantly-running shaft, a friction-flange rigidly secured to said shaft, a cam loosely mounted on said shaft and adapted to depress said rod, and a friction-clutch adapted to lock said cam to said flange, substantially as described.

3. The combination, with a die-depressing rod, a constantly-running shaft, an eccentric-cam mounted on said shaft, adapted to depress said rod, and a rocking bearing-piece located on said rod and fitting said cam, substantially as described.

4. In combination with a constantly-running shaft, a wheel-like device rigidly secured to said shaft and provided with a friction-flange, a cam loosely mounted on said shaft and provided with a lever-arm adjacent to said flange, and a friction device on said arm adapted to engage said flange, substantially as described.

5. In combination with a constantly-running shaft, a wheel-like device rigidly secured to said shaft and provided with a friction-flange, a cam loosely mounted on said shaft and provided with a lever adjacent to said flange, a rocking friction device mounted in said lever, an arm secured to said friction device, a spring connecting said arm with the said cam, adapted to move the friction device into engagement with the friction-flange, a releasing-trip for said friction device, and a projection from the friction device adapted to engage said releasing-trip, substantially as described.

6. In combination with a constantly-running shaft, a wheel-like device rigidly secured to said shaft and provided with a friction-

flange, a cam loosely mounted on said shaft and provided with a lever adjacent to said flange, a rocking friction device mounted in said lever, an arm secured to said friction device, a cam-shaped guide engaging the free end of said arm and adapted to force said friction device into engagement with said friction-flange, a releasing-trip for said friction device, and a projection from the friction device adapted to engage said releasing-trip, substantially as described.

7. The combination, with a constantly-running shaft, of a cam loosely mounted on said shaft, a lever projecting from said cam, a clutch mounted on said lever for locking the cam to the shaft, a releasing-arm connected with said clutch, and a trip provided with a projection for engaging said arm and a stop-seat for engaging said cam-lever.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE A. GOODSON.

Witnesses:
JAS. F. WILLIAMSON,
C. WRIGHT DAVISON.