

Nov. 3, 1942.

E. G. RIX

2,300,595

IMPRESSION DEVICE

Filed Aug. 31, 1939

4 Sheets-Sheet 1

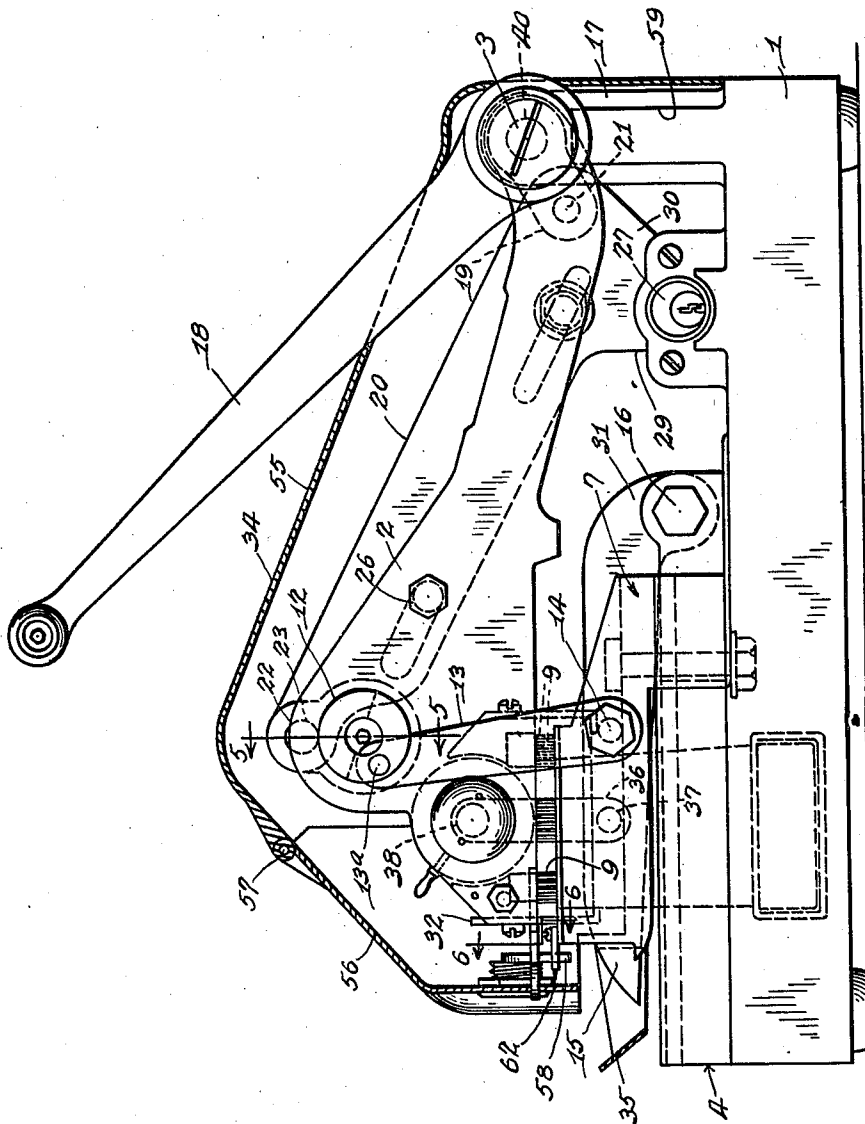


Fig. 1

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4 Sheets-Sheet 2

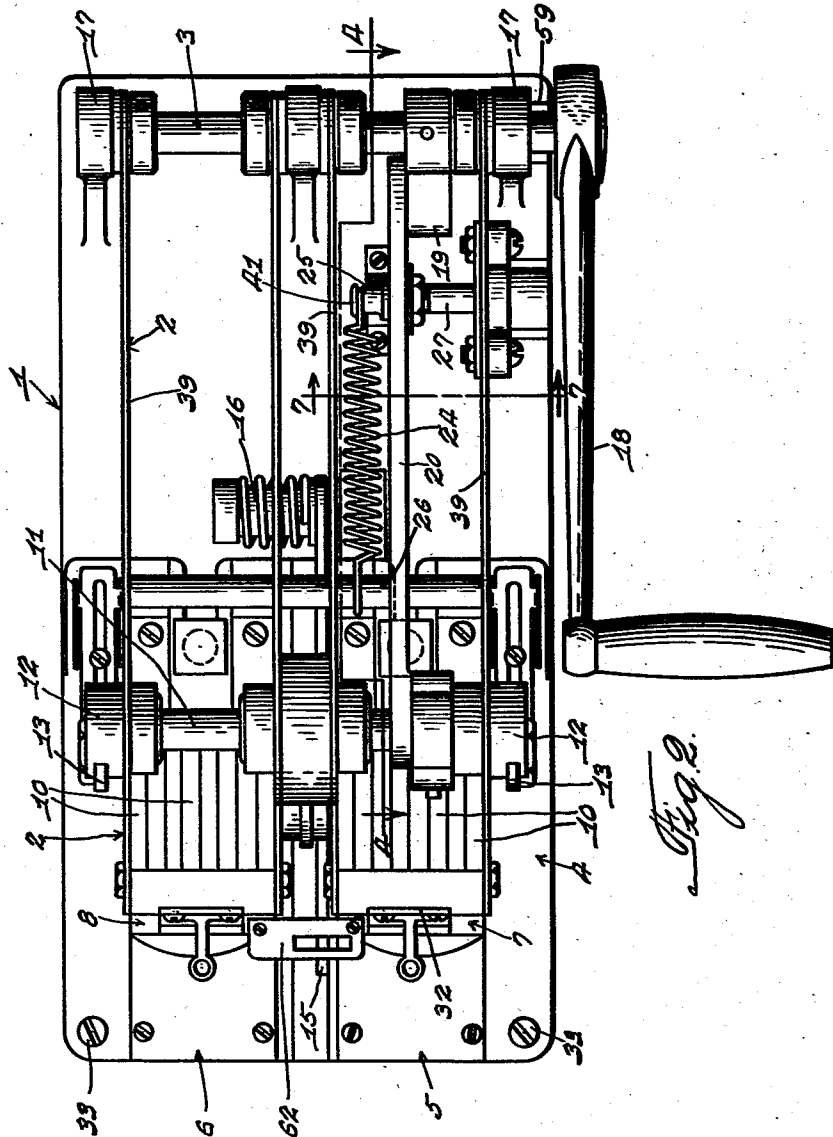


Fig. 2.

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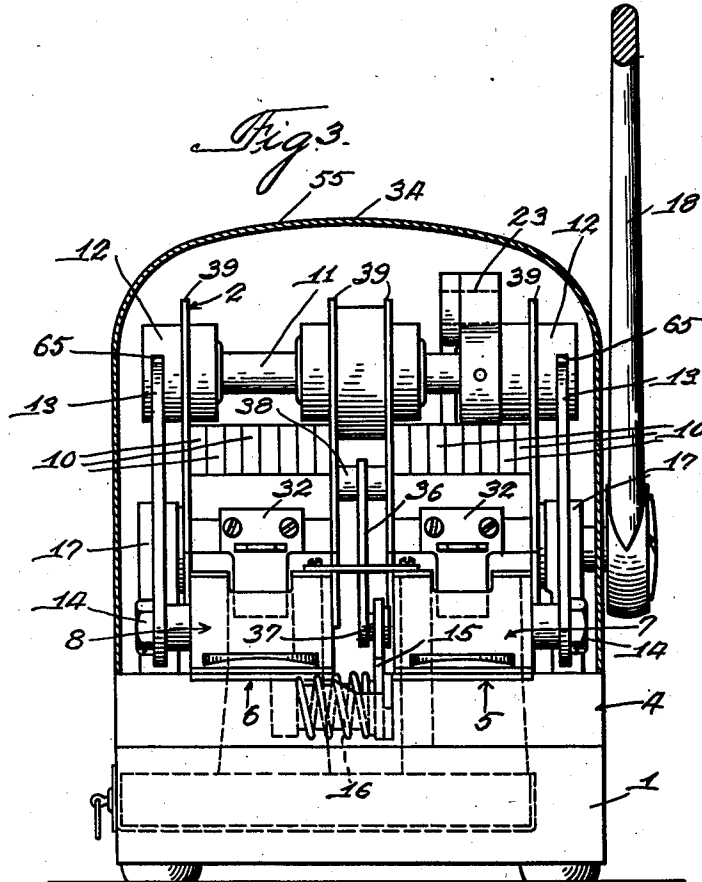
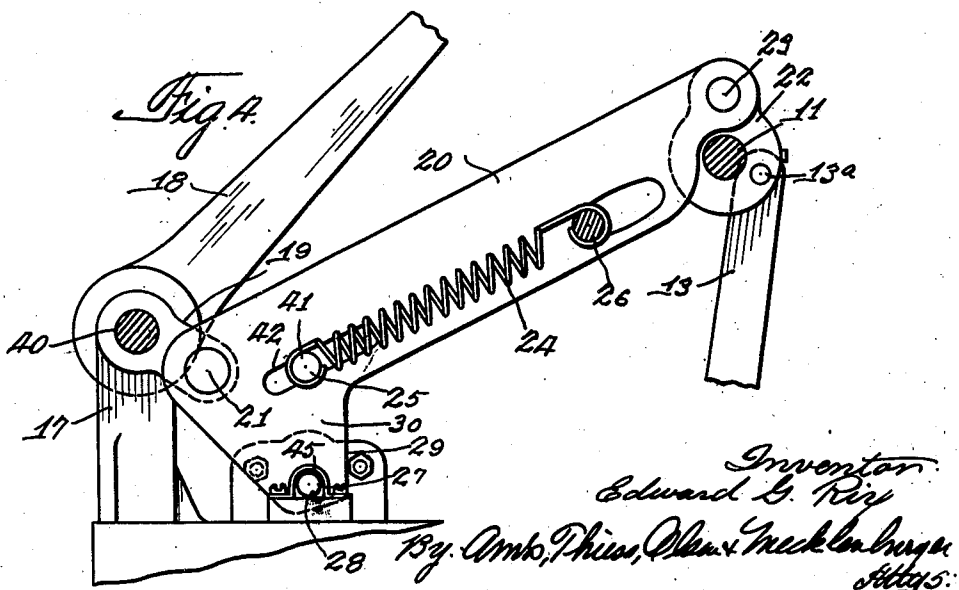
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IMPRESSION DEVICE

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4 Sheets-Sheet 3



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IMPRESSION DEVICE

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4 Sheets-Sheet 4

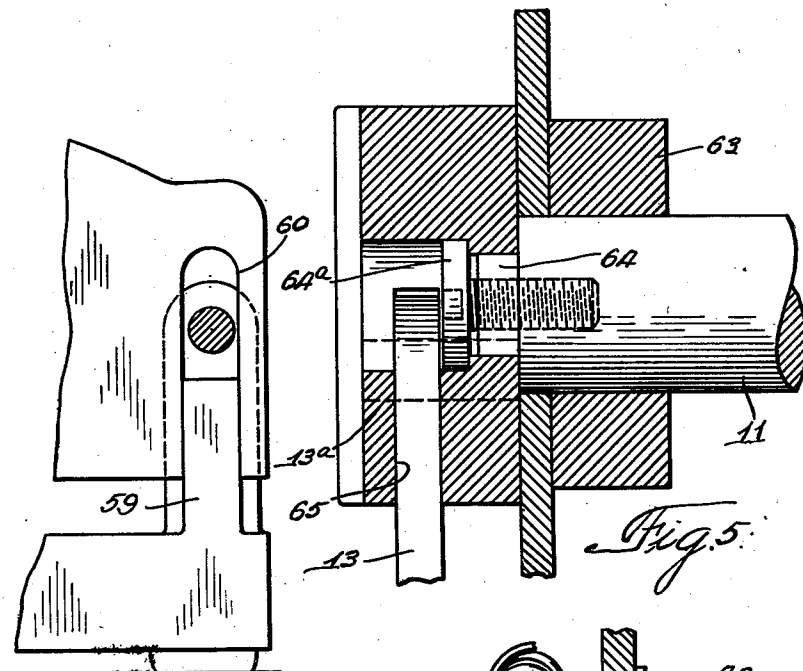


Fig. 5

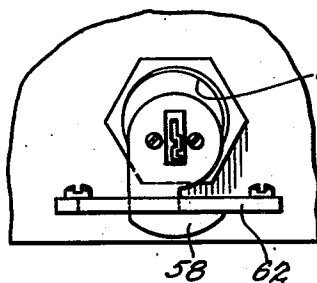


Fig. 6

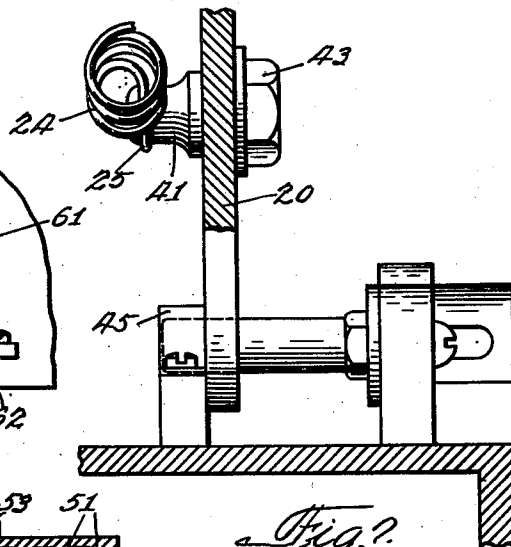


Fig. 7

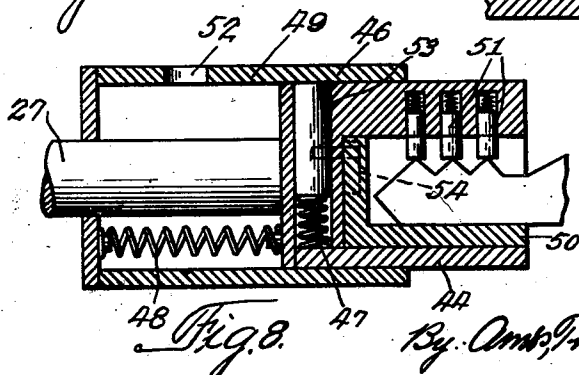


Fig. 8

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UNITED STATES PATENT OFFICE

2,300,595

IMPRESSION DEVICE

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Application August 31, 1939, Serial No. 292,893

11 Claims. (Cl. 164—111)

My invention relates to impression machines.

One of the objects of my invention is to provide an improved impression machine in which the impression movement is accomplished by means of a downward and forward movement of an operating lever pivoted adjacent the rear end thereof.

A further object of my invention is to provide an improved impression machine in which the impression movement is accomplished by means of a link extending between a rock arm on the movable head and another rock arm mounted adjacent the rear of the machine.

A further object is to provide an impression machine having a link connecting two rock arms for effecting the impression movement in which the jaws may be locked in an extreme position by means engageable with the link.

A further object is to provide an impression machine in which the impression movement is accomplished by means of a link connecting two rock arms and in which the return movement of the impression head is accomplished by a coil torsion spring extending longitudinally of the link.

A further object of my invention is to provide an impression machine in which a movable impression head is mounted to swing on the rock shaft on which the operating handle is mounted.

A further object is to provide an impression machine in which the cover has a vertically sliding engagement with the base at its rear and in which the front end of the casing is provided with a lock for securing it to the base.

A further object is to provide an impression machine in which a plunger type lock is provided for locking the impression head in an extreme position.

Numerous objects and advantages of the invention will be apparent from the description and claims.

In the drawings,

Figure 1 is a side elevational view of an impression machine, parts being broken away;

Fig. 2 is a plan view of the machine with the cover removed;

Fig. 3 is a front elevational view with the cover broken away;

Fig. 4 is a detail view of part of the actuating mechanism;

Fig. 5 is a section substantially on the line 5—5 of Fig. 1;

Fig. 6 is an enlarged view showing the cover latch;

Fig. 7 is a section on the line 7—7 of Fig. 2;

Fig. 8 is an axial sectional view of the key-controlled plunger for locking the machine; and Fig. 9 is a detail, elevational view of parts of the cover and base.

Referring to the drawings in detail, the construction shown comprises a base 1, a perforator head or frame 2 oscillatably mounted thereon at 3, a die shoe 4 secured to the base, a pair of die plates 5 and 6 secured to the die shoe, a pair of spaced punch holders 7 and 8 mounted above the die plates 5 and 6, respectively, two sets of punches 9 (one set for each punch holder), means for operating selected punches comprising two sets of coaxial, rotatably adjustable punch-selecting and actuating rings 10 mounted on the perforator head or frame 2, a crank shaft 11 rockably mounted on said frame 2 with its axis parallel to the axis of the rings 10, a pair of cranks 12 (one secured to each end of said crankshaft 11), a pair of links 13, each having one end pivotally connected at 13a with one of said cranks 12 and its other end connected to a fixed pivot member 14, a shearing blade 15 pivoted at 16 for automatically severing the stub from the receipt at the time of the punching operation, a rock shaft 3 rockably mounted in standards 17 at the rear of the base, on which rock shaft 3 the perforator head 2 is oscillatably mounted, an actuating lever 18 for rocking the rock shaft, a rock arm 19 fast to the rock shaft, a link 20 pivoted at its rear end 21 to the rock arm 19, and a rock arm 22 secured to the crankshaft 11 on the perforator head to which the front end of the actuating link 20 is pivotally secured at 23.

In order to return the perforator head 2 after its perforating movement, a coil tension spring 24 is provided (Figs. 2 and 4) having one end adjustably secured at 25 to the actuating link and its other end secured to a pin 26 on the perforator head 2. In order to lock the perforator head in either open or closed position, a key-controlled plunger 27 is provided which, in the open position of the perforator head, is in registration with a hole 28 in the operating link 20 and which, in the lowered position of the perforator head, can be pushed inwardly in front of the front edge 29 of the abutment 30 of the actuating link.

Any suitable key-controlled lock may be provided by means of which the locking plunger 27 can be pushed inwardly for locking position and left in locking position when the key is disengaged.

Before describing the construction in further detail, I will briefly outline the operation.

In use, if the operating link 20 is locked, the key is inserted to release the lock pin or plunger 27 from locking engagement with the operating link 20. The sheet to be perforated is placed in position in the opening underneath the punches. The operating lever 18 is moved downwardly and forwardly, rocking the crank arm 19. This pulls the operating link 20 rearwardly, rocking the crank arm 22. This will cause downward movement of the axis of the crankshaft 11, since the axis of this crank disc will move about the axis of the pin 13a, which pin 13a is anchored to the punch holders 8 and 9 by means of the links 13 and pivot pins 14. This downward movement of the crankshaft 11 carries with it the perforator head and causes the perforating and shearing operations. After the sheet has been perforated and sheared, the handle 18 is released and the perforating head and cutter are returned to their original position by the action of the coil tension spring 24 which pulls the link 20 forwardly to the position shown in Fig. 4, in which the pin 26 engages the rearward end of the slot in the actuating link. The movement of the actuating link and hence of the perforating head is limited in both directions by the pin 26 engaging the respective ends of the slot in the operating arm.

Referring to the construction more in detail, the shearing knife 15 is pivotally mounted at 16 on a rearward extension 31 of the die shoe 4, and the punch holders 7 and 8 are rigidly secured to the die shoe so that the subassembly of die shoe, dies, punch holders, punches, and knife may be readily removed as a unit, simply by removing the front lifter plates 32 from the perforator head, disconnecting the links 5 from the punch holders 7 and 8 and removing the screws 33, which secure the die shoe to the base. In order to prevent possible injury to the operator from the front end of the knife 15 when the cover 34 is removed, a housing 35 is provided which extends over the front end of the knife 15 and is mounted on the punch holders 7 and 8.

The knife 15 is operated by means of a link 36 pivotally secured at 37 to the knife and having its upper end pivotally secured to the shaft 38 on which the arbors for the punch-controlling rings 10 are mounted.

The rotatable punch-selecting and operating rings 10, the arbors on which they are mounted, the lifter plates for the punches, and the lifter hooks 32 for these lifter plates may be of any usual or suitable construction commonly used in this type of apparatus and these parts are not described in detail, as no claim for novelty is made with respect to these per se.

The oscillatable frame or head 20 comprises four identical plates 39 which are secured together to form a rigid framework, one set of rings 10 with its arbor being mounted between one pair of plates 39 and the other set of rings with its arbor being mounted between another set of plates 39. The pivot shaft 40 on which the frame is oscillatably mounted extends through the rear ends of all four of these plates 39 and is rockably mounted in suitable brackets 17 extending upwardly from the base 1.

The tension of the spring 24 may be adjusted by means of the stud 41 to which the end of the spring is secured. This stud is adjustably mounted in a slot 42 in the operating link 20 and is held in adjustable position by means of a nut

43 threaded onto the shank of the stud which extends through the slot 42.

The mechanism for locking the actuating link 20 in either extreme position is shown in detail in Figs. 4, 7 and 8. This construction comprises a plunger 44 slidably but not rotatably mounted in a cylindrical casing and having a lock pin extension 27 for engagement either with the hole 28 in the operating link or with the front edge 29 of the abutment 30 of the operating link. A suitable U-shaped keeper 45 may be provided for the end of the lock pin 27 when in locking position. The plunger may be held with the lock pin in locking position by means of a spring-pressed pin 46 slidably mounted in a hole 47 in the end of the spring-pressed plunger 44. The plunger 44 is moved to retracted position by means of springs 48 acting between the end of the casing 49 and the plunger 44. In order to unlock the pins from locking engagement with the hole in the casing, any suitable lock mechanism is provided, that shown being a conventional type comprising a key-controlled cylinder 50 rotatably mounted in the plunger 44 and having tumblers 51 controlled by the key for preventing rotation of the key cylinder until the tumblers are properly positioned by means of the key. This tumbler controlling cylinder may have any suitable connection with the spring-pressed pin 46 for withdrawing the latter from engagement with the hole 52 in the casing when the tumbler-controlling cylinder is rotated, such as a pin 53 secured to the spring-pressed pin 46 having an end portion entering a cam groove 54 in the end of the tumbler-controlling cylinder 50. It will be seen that when the plunger 44 is pushed inwardly to move the lock pin 27 into locking engagement with the actuating link 20, the latch pin 46 will snap up into the hole 52 in the casing. The key can then be withdrawn, leaving the link 20 in locked position. As previously pointed out, this locked position may be either one of the extreme positions of the operating link 20. To release the lock, the key is inserted to clear the locking tumblers 51, after which the barrel 50 may be rotated by means of the key to withdraw the pin 46 from latching engagement with the casing 49 whereupon the springs 48 will force the plunger outwardly to release the lock pin 27 from engagement with the actuating link 20.

The cover 34 comprises a main cover portion 55 and a front cover portion 56 for the ring 10, hinged at 57 on the main cover portion 55.

A key-controlled latch 58 (Figs. 1 and 6) mounted on the lower edge of the hinged cover portion not only serves to latch the hinged cover 56 in position but also serves to hold the entire cover 34 in position on the base 1. This latching of the cover on the base is effective by reason of the vertical sliding engagement of the main cover portion 55 with a vertical guide rib 59 (Figs. 1, 2, and 9) on one of the pillars 17. The cover 34 is recessed or slotted as indicated at 60 to fit nicely over this guide portion 59 of the pillar so that the cover is guided in a vertical direction in placing it on the base. When the hinged cover portion 56 is latched down, it is impossible to remove the cover because of the engagement of the guide 59 in the vertical slot 60 in the cover. The key-controlled latch may be of any suitable construction. As shown in Fig. 4, it comprises a hook-like latch 58 carried by the rotatable key-controlled barrel 61, this hook being movable into and out of latching engagement with an aper-

tured plate 62 mounted on the punch carriers 7 and 8.

The construction by which the link 13 and crank arm 12 are secured to the crankshaft 11 is shown in Fig. 5. As here shown, the crankshaft 11 is rotatable in a bearing member 63 secured to one of the frame plates 39 and has a squared extension 64 fitting in a squared opening in the crank disc 12. The crank disc is held in position on the crankshaft by means of a screw 64a, the head of which is located in a cylindrical pocket in the crank disc and the shank of which is threaded into the crankshaft 11. The head of this screw bears on a shoulder portion of the crank disc. The link 13 is secured to the crank disc by means of the pin 13a. The link 13 extends through a slot 65 in the crank disc so that its upper end is positioned to lie in the path of the head of the screw 64a, thus preventing it from becoming unscrewed.

In the claims, where the word "impression" is used, it is to be understood as broad enough to include perforating, mutilating, embossing, and printing.

Further modifications will be apparent to those skilled in the art and it is desired, therefore, that the invention be limited only by the prior art and the scope of the appended claims.

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

1. An impression device comprising a base, a fixed jaw carried by said base adjacent the front thereof, a movable jaw cooperating with said fixed jaw pivotally mounted adjacent the rear of said base, a bell crank pivotally mounted on said movable jaw, a pair of links on opposite sides of said movable jaw, each pivotally connected at its upper end with an arm of said bell crank and having a fixed pivotal connection at its lower end, said pivotal connections being rearwardly of the front end of the movable jaw, a second link pivotally connected at its front end to another arm of said bell crank intermediate said first arms, and a second bell crank mounted adjacent the rear of said base, one arm of said second bell crank being pivotally connected with the rear end of said second link, the other arm of said second bell crank being an operating lever having a handle portion movable downwardly and forwardly to effect the impression movement of said movable jaw.

2. An impression device comprising a base, a fixed jaw carried by said base adjacent the front thereof, a movable jaw cooperating with said fixed jaw pivotally mounted adjacent the rear of said base, a bell crank pivotally mounted on said movable jaw, a link pivotally connected at its upper end with one arm of said bell crank and having a fixed pivotal point at its lower end, a second link pivotally connected at its front end to the other arm of said bell crank, a second bell crank mounted adjacent the rear of said base, one arm of said second bell crank being pivotally connected with the rear end of said second link, the other arm of said second bell crank being an operating lever having a handle portion movable downwardly and forwardly to effect the impression movement of said movable jaw, said second link having a slot therein, and a stop pin extending through said slot and engageable with the end of the slot to limit the movement of the movable jaw, said stop pin being mounted on said movable jaw.

3. An impression device comprising a base, a fixed jaw carried by said base adjacent the front

thereof, a movable jaw cooperating with said fixed jaw pivotally mounted adjacent the rear of said base, a bell crank mounted on said movable jaw, a link pivotally connected at its upper end with one arm of said bell crank and having a fixed pivotal point at its lower end, a second link pivotally connected at its front end to the other arm of said bell crank, a second bell crank mounted adjacent the rear of said base, one arm of said second bell crank being pivotally connected with the rear end of said second link, the other arm of said second bell crank being an operating lever having a handle portion movable downwardly and forwardly to effect the impression movement of said movable jaw, said second link having a slot therein, a stop pin extending through said slot and engageable with the end of the slot to limit the movement of the movable jaw and a coil tension spring extending longitudinally of said second link and having one end connected to said second link and its other end connected to said stop pin for effecting the return movement of said movable jaw, said stop pin being mounted on said movable jaw.

4. In a perforating machine of the type comprising a base, a fixed jaw carried by said base adjacent the front edge thereof, a movable jaw cooperating with said fixed jaw pivotally mounted adjacent the rear of said base, and rotatable punch-controlling rings carried by said movable jaw adjacent the front thereof, a cover for said movable jaw having a rectilinear sliding engagement with said base adjacent the rear of said base, said cover having a hinge portion adjacent the front thereof movable to cover or expose said rings, and means for locking said hinge portion of the cover to the base, said vertically slidable engagement of the cover with the base serving to prevent lifting of the cover when the hinge portion of the cover is locked to the base.

5. In a perforating machine of the type comprising a base, a fixed jaw carried by said base adjacent the front edge thereof, and a movable jaw cooperating with said fixed jaw pivotally mounted adjacent the rear of said base, a cover for said movable jaw having a rectilinear sliding engagement with said base adjacent the rear of said base, said cover having a hinge portion adjacent the front thereof, and means for locking said hinge portion of the cover to the base, said vertically slidable engagement of the cover with the base serving to prevent lifting of the cover when the hinge portion of the cover is locked to the base.

6. An impression device comprising a base, a fixed jaw carried by said base adjacent the front thereof, a movable jaw cooperating with said fixed jaw pivotally mounted adjacent the rear of said base comprising a pair of spaced rock plates lying substantially in vertical planes, and a plurality of punch controlling rings mounted on and between said plates, a bell crank mounted on and between said plates, a link pivotally connected at its upper end with one arm of said bell crank and having a fixed pivotal connection at its lower end, said pivotal connections being rearwardly of the front end of the movable jaw, a second link pivotally connected at its front end to the other arm of said bell crank, and a rock crank pivotally mounted adjacent the rear of said base and pivotally connected with the rear end of said second link, said second link having a substantial portion lying between said spaced plates.

7. An impression device comprising a base, a

fixed jaw carried by said base adjacent the front thereof, a movable jaw cooperating with said fixed jaw pivotally mounted adjacent the rear of said base comprising a pair of spaced rock plates lying substantially in vertical planes, and a plurality of punch controlling rings mounted on and between said plates, a bell crank mounted on and between said plates, a link pivotally connected at its upper end with one arm of said bell crank and having a fixed pivotal connection at its lower end, said pivotal connections being rearwardly of the front end of the movable jaw, a second link pivotally connected at its front end to the other arm of said bell crank, a rock crank pivotally mounted adjacent the rear of said base and pivotally connected with the rear end of said second link, said second link having a substantial portion lying between said spaced plates, and means for locking said movable jaw in open position comprising an axially movable lock pin movable transversely with respect to the plane of movement of said second link and engageable with said second link.

8. An impression device comprising a base, a fixed jaw carried by said base adjacent the front thereof, a movable jaw cooperating with said fixed jaw pivotally mounted adjacent the rear of said base comprising a pair of spaced rock plates lying substantially in vertical planes, and a plurality of punch controlling rings mounted on and between said plates, a bell crank mounted on and between said plates, a link pivotally connected at its upper end with one arm of said bell crank and having a fixed pivotal connection at its lower end, said pivotal connections being rearwardly of the front end of the movable jaw, a second link pivotally connected at its front end to the other arm of said bell crank, a rock crank pivotally mounted adjacent the rear of said base and pivotally connected with the rear end of said second link, said second link having a substantial portion lying between said spaced plates, and means for locking said movable jaw in closed position comprising an axially movable lock pin movable transversely with respect to the plane of movement of said second link and engageable with said second link.

9. An impression device comprising a base, a fixed jaw carried by said base adjacent the front thereof, a movable jaw cooperating with said fixed jaw pivotally mounted adjacent the rear of said base comprising a pair of spaced rock plates lying substantially in vertical planes, and a plurality of punch controlling rings mounted on and between said plates, a bell crank mounted on and between said plates, a link pivotally connected at its upper end with one arm of said bell crank and having a fixed pivotal connection at its lower end, said pivotal connections being rearwardly of the front end of the movable jaw, a second link pivotally connected at its front end

to the other arm of said bell crank, a rock crank pivotally mounted adjacent the rear of said base and pivotally connected with the rear end of said second link, said second link having a substantial portion lying between said spaced plates, and means for locking said movable jaw in either open or closed positions comprising an axially movable lock pin movable transversely with respect to the plane of movement of said second link and engageable with said second link.

10. An impression device comprising a base, a fixed jaw carried by said base adjacent the front thereof, a movable jaw cooperating with said fixed jaw pivotally mounted adjacent the rear of said base comprising a pair of spaced rock plates lying substantially in vertical planes, and a plurality of punch controlling rings mounted on and between said plates, a bell crank mounted on and between said plates, a link pivotally connected at its upper end with one arm of said bell crank and having a fixed pivotal connection at its lower end, said pivotal connections being rearwardly of the front end of the movable jaw, a second link pivotally connected at its front end to the other arm of said bell crank, a rock crank pivotally mounted adjacent the rear of said base and pivotally connected with the rear end of said second link, said second link having a substantial portion lying between said spaced plates, and means for locking said movable jaw in one extreme position comprising an axially movable lock pin movable transversely with respect to the plane of movement of said second link and engageable with said second link.

11. An impression device comprising a base, a fixed jaw carried by said base adjacent the front thereof, a movable jaw cooperating with said fixed jaw pivotally mounted adjacent the rear of said base comprising a pair of spaced rock plates of sheet material lying in vertical planes, and a plurality of punch controlling rings mounted on and between said plates, a bell crank mounted on said movable jaw, a link pivotally connected at its upper end with one arm of said bell crank and having a fixed pivotal point at its lower end, a second link pivotally connected at its front end to the other arm of said bell crank, a rock crank pivotally mounted adjacent the rear of said base and pivotally connected with the rear end of said second link, said second link having a substantial portion lying between said spaced plates, and means for locking said movable jaw in one extreme position comprising an axially movable lock pin movable transversely with respect to the plane of movement of said second link and engageable with said second link, said second link having a lock portion below the lower edges of said spaced plates engaged by said lock pin.

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