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S. WAKSTEIN

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IMPACT PRODUCING DEVICE

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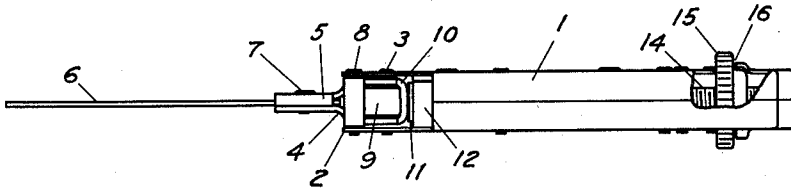


FIG. 5

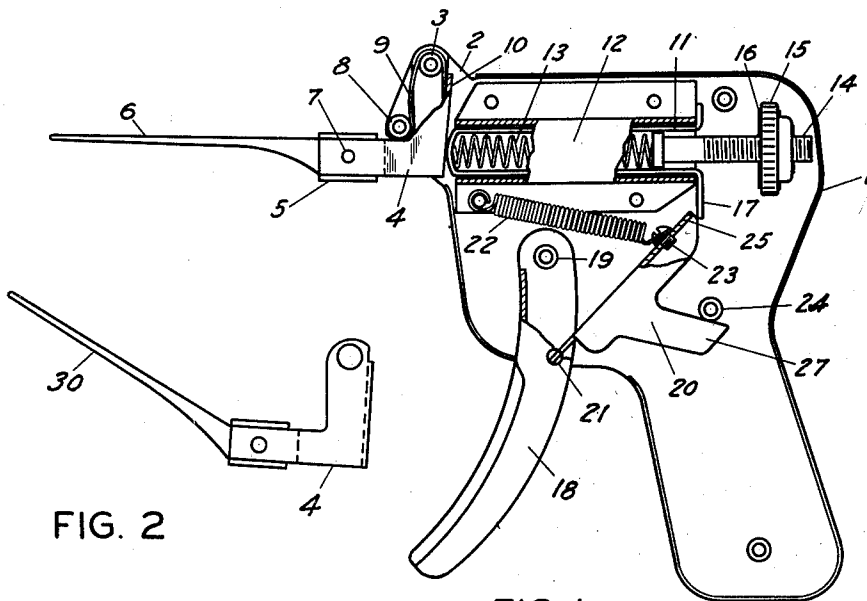


FIG. 1

FIG. 2



FIG. 3

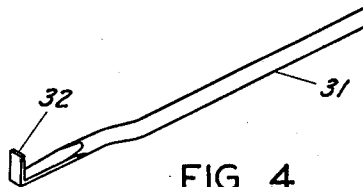


FIG. 4

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IMPACT PRODUCING DEVICE

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8 Claims. (Cl. 81—3)

The present invention relates to a mechanical vibrating mechanism adapted to deliver a sharp blow with a comparatively short motion.

The device may have a number of useful applications and, in particular, can be used by a locksmith for a lock-picking mechanism. In other modifications it may be used as a light automatic hammer such as is commonly used by glaziers in setting small brads in windows. Numerous other uses will readily occur to one.

In the present invention the device is more particularly adapted for use by a locksmith in opening locks of the barrel type in which a group of plungers interlock between a movable cylinder and a surrounding wall. In the use of the invention for this purpose the plungers or pins are given sharp short blows in such a manner that they are sent upwards against the action of a spring. The barrel of the lock may be slightly tensioned in the direction of rotation while the impact device is being operated, and when the plungers have been so restrained in motion that the lower ones drop but the upper ones are restrained beyond the barrel, the barrel may easily be rotated.

The present invention will be more fully described in connection with the attached drawing in which Fig. 1 shows the device with one side of the cover removed; Fig. 2 shows a detail of the pivoted arm; Fig. 3 shows a spring element; Fig. 4 shows a tension instrument which may be applied in the operation of the device for picking locks; and Fig. 5 shows a top view of a part of the element shown in Fig. 1.

In Fig. 1 the whole mechanism is mounted on a back plate 1 which is shaped in the form of the handle of a gun or pistol. At the front muzzle end 2 is pivoted by means of the bearing 3 a right angle or bell-crank lever 4. The free end of the lever has a pocket or recess 5 in which a blade or needle 6 may be firmly held by means of the screw 7. A pin 8 is provided at the inner corner of the angle to limit the motion of the angle and blade. In back of the pin 8 is a leaf spring 9 partly bent around the pin and extending over the bearing 3 and in front of the inner face of the back plate 10 of the lever. The tendency, therefore, of the spring 9, indicated in Figure 3, is to keep the lever 4 down and away from the pin 8. Acting against the plate 10 of the lever 4 is a U-shaped member 11. This U-shaped member rides in the frame or cover 12 which is shown as partly broken away to indicate the helical spring 13 by which the U-shaped member in connection with the screw

14 and the thumb nut 15 is tensioned against the lever 4. By screwing the nut 15 which is prevented from movement along the screw 14 by being positioned in a slot 16 in the casing, the spring 13 may be compressed or expanded within certain limits. Through this the U-shaped member 11 is tensioned more or less against the back plate 10 of the lever 4. The U-shaped member 11 has a depending portion 17 extending below and exterior of the back of the frame 12.

By means of the lever 18 pivoted in the casing 1 at 19 and the pawl of finger element 20 which is pivoted at 21 to the trigger, the U-shaped or impact member is operated. The finger 20 is tensioned to the casing by means of a spring 22 held to the member by means of a screw 23. The member 20 is guided in its motion in the casing by means of a pin 24 in such a way that when the trigger 18 is pulled backward, the member 20 gradually recedes from operating against depending arm 17.

In the operation of the device it will be noted that as the trigger 18 is moved backwards, the end 25 of the member 20 swings downward until the end has cleared 17. When this occurs the element 11 is released and the spring 13 forces it against the back of the lever 4. When the trigger is released, the spring 22 acts to pull the arm 20 and the trigger 18 back to its normal position. It will be noted that the arm 20 has a projecting portion 27 extending downward in such a manner that as the arm 20 is carried backwards, the end 25 swings downward. As the U-shaped element 11 is retracted backwards, the arm 4 through the spring 9 is forced against the frame 12 and remains in this position until the U-shaped member is released, whereupon the impact sends the lever 4 forward and swings the blade 6 about the pivot 3. It will be noted that the blade 6 makes a transverse motion up and down with a rather powerful force in a limited motion.

As indicated in Fig. 2 in place of using a blade positioned directly in the line of the free end of the lever 4 a blade as indicated by 30 in Fig. 2 might be employed. In fact the blades may be shorter or longer as desired and a number may be supplied with a device so that a suitable operating element may be chosen.

In Figure 4 is indicated a tension tool 31 which may be used in picking locks. The turned end 32 of the tool may be applied to the lock so as to tension it sufficiently to hold the upper plunger in place in the operation. While other types of tools may be used, the type indicated in Fig. 4 is more generally adaptable in ordinary work.

Having now described my invention, I claim:

1. An impact delivering device comprising a bell-crank lever, means for pivoting the same, a spring-tensioned element adjacent the point of pivot of the lever, means for retracting and releasing the spring-tensioned element against the lever and means limiting the motion of the free end of the lever. 80
2. An impact delivering device comprising a bell-crank lever, means for pivoting the same, a spring-tensioned element adjacent the point of pivot of the lever, means for retracting and releasing the spring-tensioned element against the lever, means limiting the motion of the free end of the lever and spring means to return the retracting and releasing means to its normal position. 85
3. An impact delivering device comprising an elbowed element, means for pivoting said elbowed element at one end, means adapted to deliver an impact near the pivoted arm of the elbowed element, means limiting the movement of the elbowed element, and spring means for holding the elbowed element against the impact delivering means. 90
4. An impact delivering device comprising an elbowed element, means for pivoting said elbowed element at one end, a spring-tensioned element positioned substantially perpendicularly to the pivoted member of the elbowed element, means for adjusting the tension of said element, a trigger, means for pivoting one end of the trigger, a pawl element pivoted to said trigger near the trigger pivot, said pawl being positioned to engage the spring-tensioned element, means tensioning said pawl near its free end and means guiding the pawl with the movement of the trigger. 95
5. An impact delivering device having a pistol-like casing and a trigger, a tool positioned at the front muzzle end of the casing, pivoted means comprising a substantially right-angle lever for holding said tool and means operable by the trigger for delivering an impact to the tool whereby it will oscillate about the pivot. 100
6. An impact delivering device having a pistol-like casing and a trigger, a tool positioned at the front muzzle end of the casing, pivoted means comprising a substantially right-angle lever for holding said tool, means operable by the trigger for delivering an impact to the tool whereby it will oscillate about the pivot, and means for limiting the motion of oscillation of the blade. 105
7. In an impact delivering device, an elbowed element, means for pivoting the same, guiding means positioned perpendicularly to one side of the elbowed element, a U-shaped element working in said guide, spring means adapted to exert a tension against said element in the guide and holding it against the elbowed element, said U-shaped element having a dependent arm, means having a definite limited motion for engaging said arm during a portion of its movement and withdrawing said U shaped element from said elbowed element and means moving said engaging means until said U-shaped member is released. 110
8. In an impact delivering device, a casing having the shape of a pistol grip, a bell-crank lever positioned in the front end thereof, means for pivoting the lever at that end, impact means adjacent the lever acting in the front end direction to cause a transverse vibration of the free end of the lever and a thin tool attached at the free end of the lever. 115

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