Apr. 3, 1923 1,450,435

E. EPSTEIN

IMPACT PRODUCING IMPLEMENT

Filed Feb. 4, 1922

Fig. 1.

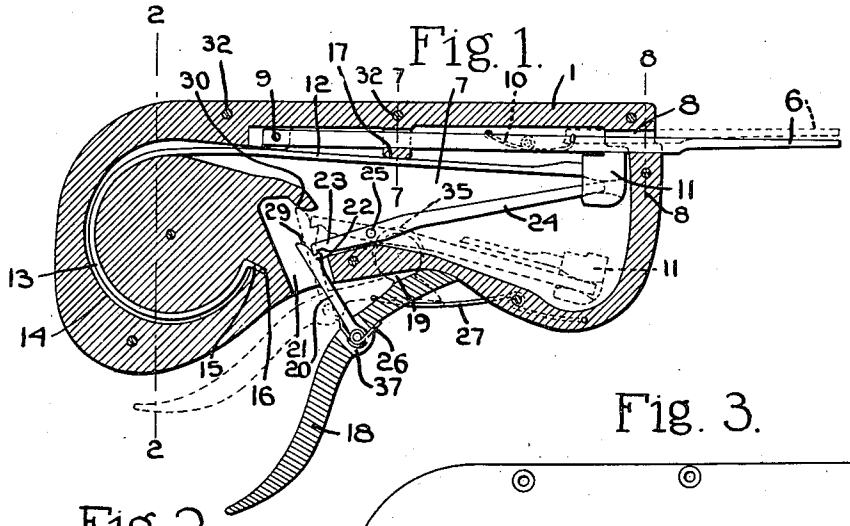


Fig. 2.

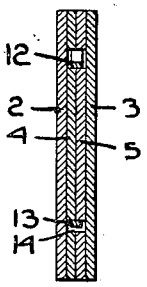


Fig. 3.

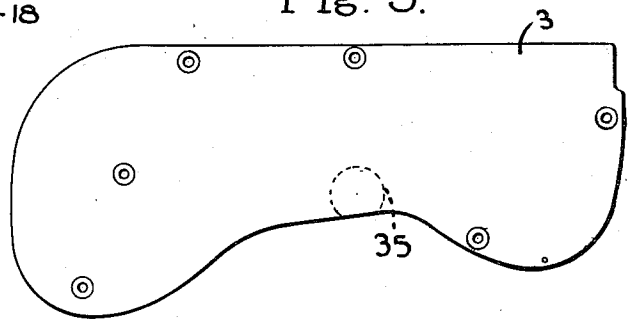


Fig. 4.

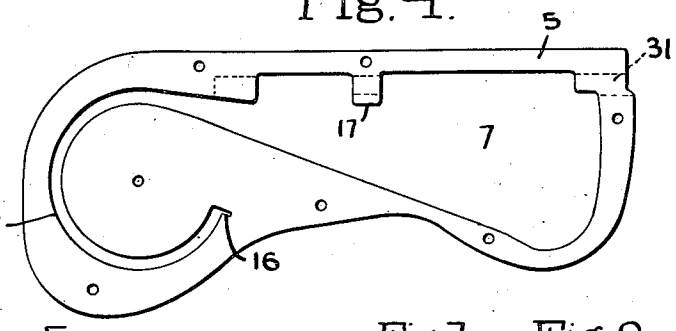


Fig. 6.

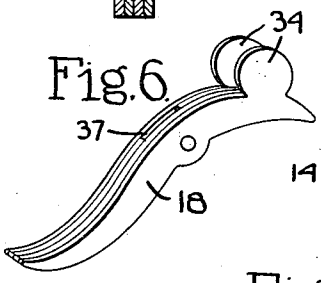


Fig. 5.

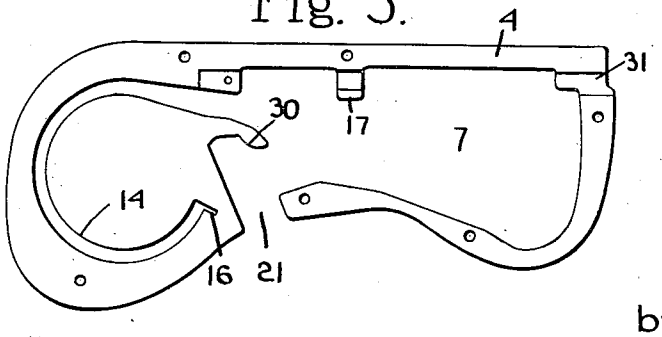


Fig. 7.

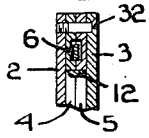
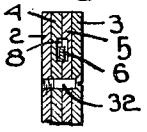


Fig. 8.



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Attys.

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UNITED STATES PATENT OFFICE.

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IMPACT-PRODUCING IMPLEMENT.

Application filed February 4, 1922. Serial No. 534,224.

To all whom it may concern:

Be it known that I, ELI EPSTEIN, a citizen of the United States, and resident of Dorchester, county of Suffolk, State of Massachusetts, have invented an Improvement in Impact-Producing Implements, of which the following description, in connection with the accompanying drawing, is a specification, like characters on the drawing representing like parts.

This invention relates to an impact-producing implement adapted to give impact or hammer-like blows and has for one of its objects to provide a novel device of this nature which is an improvement on the structure shown in United States Patent No. 1,403,753, Jan. 17, 1922.

Another object of the invention is to provide an impact-producing implement which can be inexpensively manufactured and which can be conveniently and rapidly assembled and which has other features of novelty all as will be more fully hereinafter set forth.

In order to give an understanding of my invention I have illustrated in the accompanying drawings a selected embodiment thereof which will now be described after which the novel features will be pointed out in the appended claims.

Fig. 1 is a sectional view through a device embodying my invention.

Fig. 2 is a section on the line 2—2, Fig. 1.

Fig. 3 is a view of one of the side plates.

Fig. 4 is a view of one of the inner plates of the body.

Fig. 5 is a view of the other inner plate of the body.

Fig. 6 is a perspective view of the handle.

Fig. 7 is a section on the line 7—7, Fig. 1.

Fig. 8 is a section on the line 8—8, Fig. 1.

The device illustrated in said Patent No. 1,403,753 comprises an impact-delivering member movably carried by a frame, a relatively light spring acting against said member in opposition to its impact-delivering movement, a spring-actuated impact-producing member adapted to strike the impact-delivering member a hammer-like blow, and means to operate the impact-delivering member thereby to compress its spring and then release it to permit it to strike its blow.

One of the objects of the present invention is to provide an improved construction which can be inexpensively manufactured and to this end I have designed a frame for supporting the movable parts which can be made of stamped metal constructed so that they may be quickly and easily assembled.

The frame or body for supporting the movable elements is shown at 1 and it is of a shape to be conveniently held in the hand.

The impact-delivering member is indicated at 6 and is in the form of an arm or lever which is pivotally mounted in the frame or body and is adapted to have a slight swinging movement therein as shown by the full and dotted line position Fig. 1. The interior of the body 1 is provided with the chamber 7 and the impact-delivering member extends through an opening 8 into said chamber and is pivoted to the body at 9. The opening 8 is of a greater vertical dimension than that of the impact-delivering member 6 so that said member can move from the full to the dotted line position. Said member is acted upon by a relatively light spring 10 which tends to hold it against the bottom wall of the opening 8.

The impact-producing member is in the form of a hammer 11 which operates in the chamber 7 and is connected to a spring arm 12 that tends to move it upwardly into the full line position, Fig. 1. This actuating spring 12 may be retained in position in any suitable way and one way is to form the spring with the curved portion 13 which occupies a curved groove or slot 14 formed in the body, the end 15 of the spring being bent laterally and being received in a notch 16.

Means are provided for swinging the impact-producing member from the full to the dotted line position, Fig. 1, thereby placing the spring 12 under tension and then releasing said member thus allowing the spring 12 to move it quickly upwardly to engage the member 6 with a hammer-like blow. The striking of the member 6 by the hammer 11 will drive the member 6 from the full to the dotted line position with a quick movement thus giving the desired impact or impulse.

The body 1 is formed with a stop 17 which engages the spring 12 at a distance from its end, said stop being so arranged that when the spring 12 rests thereagainst, as

shown in Fig. 1, the striking face of the hammer is about on a line with the bottom wall of the opening 8 so that the impact-delivering member 6 will normally occupy the full line position, Fig. 1. When the impact-producing member 11 has been moved into the dotted line position and then released the spring 12 will cause it to swing into the upper full line position, Fig. 1, thereby flexing the spring 12 over the stop 17, such movement giving the impact-delivering element 6 its impact-delivering blow.

For thus operating the impact-producing member 11 I propose to employ a handle or lever 18 pivoted to the body at 19 having pivoted thereto a pawl 20 that extends through an opening 21 in the body and is formed with a shoulder 22 adapted to engage the end 23 of a lever 24 that is pivoted to the frame at 25 and is connected at its end to the member 11. The pawl 20 is acted upon by a light spring 26 which tends to hold it in operative position, and the actuating lever 18 is acted upon by a spring 27 which tends to hold it also in the full line position. The parts, therefore, normally assume the full line position shown in Fig. 1, in which position the shoulder 22 is in engagement with the end 23 of the lever 24. If now the arm 18 is pressed upwardly into the dotted line position the pawl 20 will act on the lever 24 to swing it into the dotted line position, Fig. 1, thereby retracting the impact-delivering member against the action of the spring 12.

The construction is such that when the member 11 has been fully retracted, as shown in dotted lines, it will be automatically released thus allowing it to give its spring-impelled impact-delivering blow. This is provided for by making the end of the pawl 20 with a cam surface 29 adapted to engage a cam surface 30 formed on the body, the engagement of said cam surface forcing the pawl backwardly sufficiently to release the shoulder 22 from the end 23 of the lever 24. With this construction the movement of the lever 18 from the full line position against the body will retract the impact-delivering member 11 and then automatically release it so that it will deliver its impact-producing blow. If the pressure on the handle 18 is then released the spring 27 will return the handle to the full line position and the pawl 20 will automatically engage the end 23 of the lever 24 again thus setting the parts ready for another operation.

The implement can be readily held in the hands with the fingers engaging the handle 18 and the device may be operated by simply moving the handle 18 by the fingers. While the body 1 may be made in various ways without departing from the invention, I have for the sake of simplicity of structure and ease in manufacture chosen to make it of two side plates 2 and 3 which can be stamped or cut from sheet metal and two intermediate plates 4 and 5 also stamped or cut from sheet metal.

The plates 4 and 5 are cut out to form the openings 7 and the groove 14 and notch 16 for the spring and the plate 4 is cut away to form the opening 21 in which the latch 20 operates and the cam face 30 for tripping the latch. The plates 4 and 5 are provided with a notch 31 and these notches are so constructed that when the plates are assembled they form the opening 8. The two side plates 2 and 3 are preferably solid and form the side walls of the body and when the four plates are assembled and secured together by screws or other fastening means 32 a body will be provided having the necessary construction for accommodating the parts above described.

The handle 18 may, if desired, also be made of several thin pieces of metal secured together, the outside sections having the ears 34 which constitute trunnions on which the handle turns, said trunnions being received in recesses 35 formed in the inner faces of the outside plates 2 and 3. One of the plates or sections of the handle is cut away, as shown at 37, to form the opening to receive the end of the latch 20.

The device may be used for various purposes. If the end of the impact-delivering member is provided with a head the device may be used for riveting fine work or may be used as a hammer where it is desired to deliver relatively light blows.

The apparatus may also be used in various ways suggested in United States Patent No. 1,403,753 above mentioned.

I claim.

1. In an impact-producing implement, the combination with a body or frame, of an impact-delivering member pivoted thereto, a relatively light spring acting against said member in opposition to its impact-delivering movement, an impact-producing member, spring propelling means associated with said impact-producing member, a pivoted member, and means actuated by said pivoted member to place the spring propelling means under tension and then release it thereby permitting the impact-producing member to strike the impact-delivering member a hammer-like blow.

2. In an impact-producing implement, the combination with a body or frame, of an impact-delivering member pivoted thereto and extending beyond the same, a relatively light spring acting against said member in opposition to its impact-delivering movement, an impact-producing member, a spring arm to which said impact-producing member is secured, a handle pivoted to the frame, and means actuated thereby to place the spring arm under tension and then to

release it thereby permitting the impact-producing member to strike the impact-delivering member a hammer-like blow.

3. In a device of the class described, the combination with a body having a chamber, of an impact-delivering member pivoted to the body and extending beyond the same, a relatively light spring operating against said impact-delivering member, an impact-producing member operating in said chamber, a spring arm to which said member is secured, a handle pivoted to the body, and means actuated thereby to retract the impact-producing member and place the spring arm under tension and then to release said member thereby permitting it to strike the impact-delivering member a hammer-like blow.

4. In a device of the class described, the combination with a body having a chamber, of an impact-delivering member pivoted to the body within the chamber and extending beyond the body, an impact-producing member operating in said chamber, a spring arm to which said member is secured, a lever connected to said impact-producing member, a handle pivoted to the body, and a latch pivoted thereto and acting against said lever to retract the impact-producing member and place the spring arm under tension, and means to release said latch.

5. In a device of the class described, the combination with a body having a chamber, of an impact-delivering member pivoted to the body within the chamber and extending beyond the body, an impact-producing member operating in said chamber, a spring arm to which said member is secured, a lever connected to said impact-producing member, a handle pivoted to the body, and a latch pivoted thereto and acting against said lever to retract the impact-producing member and place the spring arm under tension, and means to release said latch during the final movement of said handle.

6. In a device of the class described, the combination with a body having a chamber, of an impact-delivering member pivoted to said body within the chamber and extending beyond the body, a hammer or impact-producing member operating in said chamber, a spring acting against the hammer, a handle pivoted to the body, and means actuated thereby to retract the hammer against the action of the spring and then to release the hammer to permit it to strike the impact-delivering member a hammer-like blow.

7. In a device of the class described, the combination with a body having a chamber, of an impact-producing member pivoted to said body and extending beyond the same, a hammer operating within said chamber, a spring acting on the hammer, a lever connected to the hammer, a handle pivoted to the frame, a latch connected to the handle and operating against the lever whereby movement of the handle acts through the latch and lever to retract the hammer, and means to release the latch automatically.

8. In a device of the class described, the combination with a body comprising two side plates and two intermediate skeleton plates, said plates being assembled to form a body having a chamber, an impact-delivering member pivoted to the intermediate plates and extending beyond the body, a hammer operating in said chamber, a spring acting against the hammer, and means to retract the hammer against the action of the spring and then release it.

9. In a device of the class described, the combination with a body having a chamber and an opening leading therefrom, of an impact-delivering member extending through said opening and pivoted to the body, said opening having a greater dimension than the impact-producing member so that the latter has a limited swinging movement, a hammer operating in said chamber, a spring arm to which the hammer is connected, a stop engaging said arm and normally holding the hammer free from the impact-delivering member, and means to retract said hammer thereby placing the spring under tension and then releasing the hammer whereby the latter will cause to strike the impact-delivering member a hammer-like blow.

In testimony whereof, I have signed my name to this specification.

ELI EPSTEIN.