

Sept. 8, 1942.

J. T. FAGAN

2,295,033

CRIMPING DEVICE

Filed March 1, 1940

2 Sheets-Sheet 1

Fig. 1

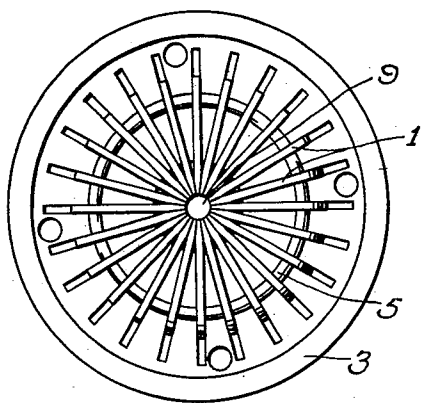


Fig. 2

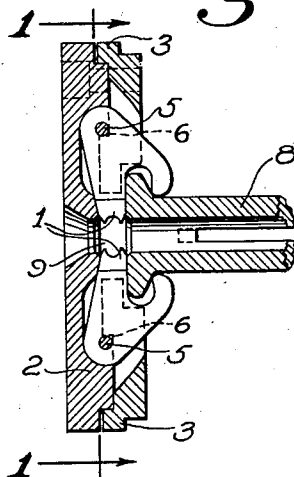
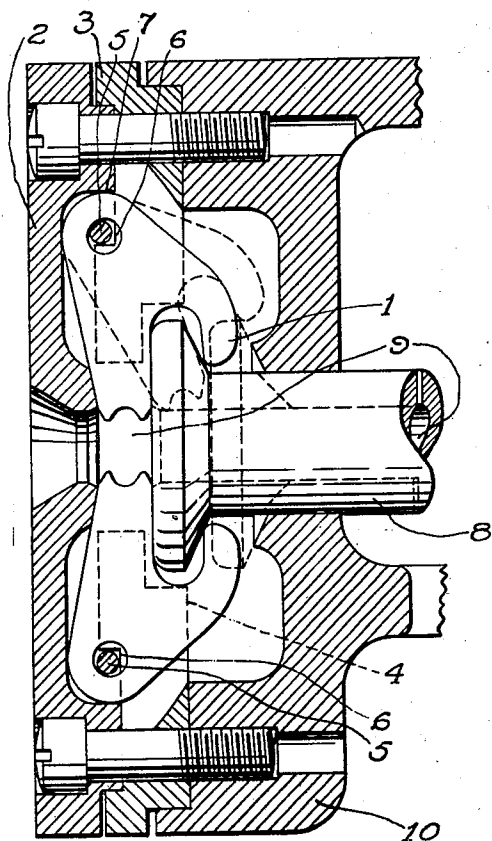


Fig. 3

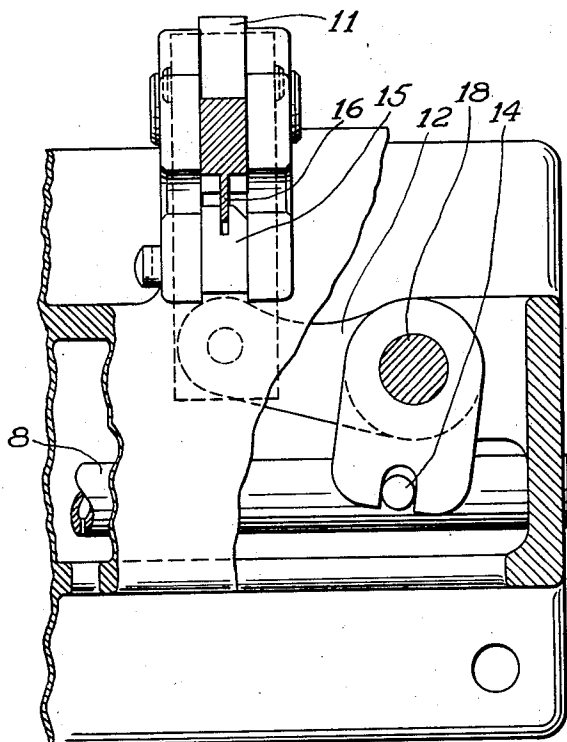


Fig. 6

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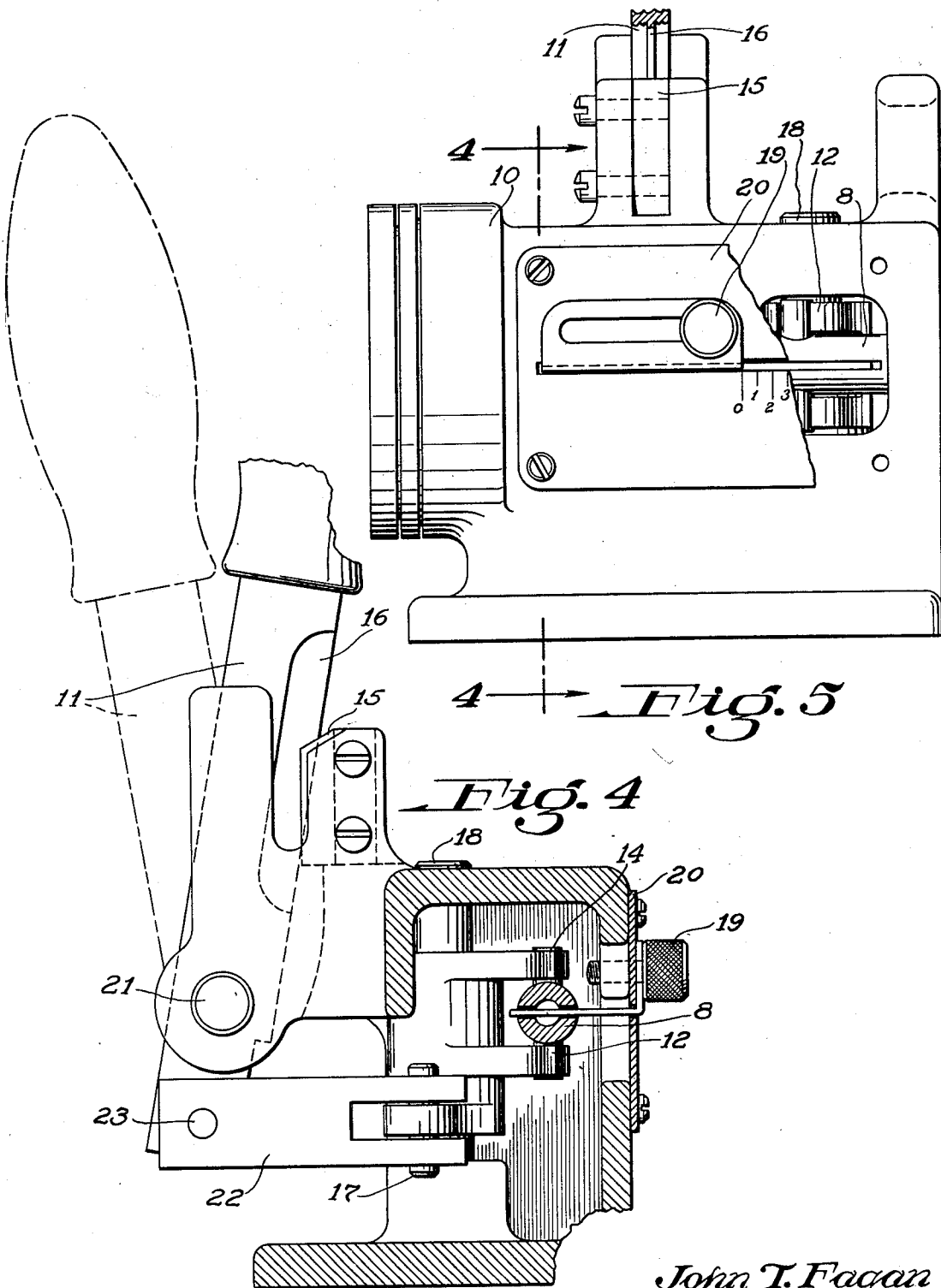
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2 Sheets-Sheet 2



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2,295,033

CRIMPING DEVICE

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Application March 1, 1940, Serial No. 321,641

3 Claims. (Cl. 86—39)

This invention relates to the art of electric blasting initiators and to a crimping device especially adapted for crimping the shells of said initiators.

The object of the invention is an improved crimping device which by a simplified crimping action will produce an annular crimp around the shell of a blasting initiator or the like. Additional objects will appear from the following detailed description of my invention.

My crimping device comprises a multitude of crimping jaws adapted to move radially inward to impinge upon and completely surround the sides of the shell or other object of circular cross-section which is to be crimped. These jaws are held loosely in a jaw retainer having the form of a circular housing. They are guided in their radial movement by being disposed in radial slots cut in a jaw guide. The jaws are actuated by a crimping ram which in combination with the retainer produces a toggle action. This may also serve as a holder for the blasting cap or the like during the crimping operation.

In order that the invention may be more readily understood, reference is made to the accompanying drawings. Similar numerals will be employed to designate corresponding parts throughout the several figures of the drawings.

Figure 1 is an end view of the jaws disposed within the jaw guide. Figure 2 is a view in cross-section of the guide, retainer and ram. Figure 3 is a view in cross-section of the complete crimping head. Figure 4 is a side elevation of the crimping head assembled in the crimping base (connected with the fuse cutter lever and bell crank). Figure 5 is an end view partially in section of the former. Figure 6 is a view of the connection between the bell crank and the ram.

Referring to these various figures in greater detail, the crimping jaws 1 cause the actual crimping of the shell. The ends of these jaws are preferably pie-shaped so that at the time of the crimp the cooperating jaws completely surround the shell. As shown in Figures 2 and 3, the plan of the jaws indicates them to be roughly V-shaped in the form of a crimping arm and a releasing arm joined by an outer cam-like shoulder which in turn is shown pivoted within the retainer element. The jaws are confined in pivotal relationship by the jaw retainer 2. This jaw retainer also limits the maximum travel of the jaws to the left. The longitudinal motion of the jaws is guided by the crimping jaw guide 3. The guiding surfaces are formed by radial slots 4 machined into said guide. The crimping jaw

guide in addition limits the rearward motion of the jaws. To assist in assembling the jaws into the crimping jaw guide and jaw retainer, an annular lock ring 5 is passed through hole 6 in the crimping jaws. The diameter of the lock ring is selected so that the crimping jaws are held radially outward against the shoulder 7 of the jaw retainer. This shoulder acts as a toggle point during the crimping cycle. The crimping jaws are actuated by the crimping ram 8 which also acts as a holder for the blasting cap shell or the like, retaining the same in the central opening 9. The foregoing parts are assembled and disposed within the crimping base 10. The crimping ram 15 with mushroom shaped head, as shown, is slidably mounted in the crimping base and is connected with fuse cutter lever 11 through bell crank 12. As indicated in Figures 2 and 3, the mushroom head of the ram engages the crimping jaws between the crimping arm and the releasing arm thereof to hold the outer cam-like shoulder of each jaw loosely against the retainer element. The solid lines of Figure 3 show the ram advanced to the left closing the jaws into the central opening, and the dotted lines therein complete the depiction of the clearance maintained between the ram and the central opening for receiving and retaining the blasting initiator during the crimping operation. The dotted lines in this figure show the ram to the right and the jaws open.

The following parts are shown in Figures 4, 5, and 6, which describe generally the fuse cutter lever and the bell crank mechanism. In particular, the drawings depict the bell crank 12, the ram pin 14, the cutter guard 15, the cutter blade 16, the bell crank pin 17, the bell crank shaft 18, the cap stop screw 19, the name plate 20, the lever pivot pin 21, the cutter lever link 22, and the cutter lever link pin 23. The arrangement and cooperation of the foregoing elements is set forth adequately in the drawings.

The crimping device is operated as follows:

The shell to be crimped is slipped onto the length of fuse or other article about which it is to be crimped and then the shell itself is inserted in the central opening 9. A force is then applied to the fuse cutter lever 11 to move the upper end of the same towards the crimping base. This leverage actuates the bell crank which in turn slides the crimping ram forward toward the crimping jaws causing said jaws to impinge upon the shell material and by acting simultaneously to completely surround said shell, producing a continuous annular recession in said material,

fastening the same into the fuse or other article to which the shell is to be crimped.

The crimping device of my invention is advantageous in view of its simplicity of construction and the waterproof crimp between shell and fuse, produced thereby.

In the foregoing I have described a preferred embodiment of my invention. However, in the light of my disclosure of the broad principles of the invention many different embodiments will be apparent to those skilled in the art. For instance, although I have described my invention in its application to the shells of electric blasting initiators, it is to be understood that I intend to include within the scope thereof devices embodying the principles of my invention for the purpose of crimping ammunition shells or other tubular metal bodies. Accordingly, I intend to be limited only by the following patent claims.

I claim:

1. A crimping device especially adapted to the crimping of shells of blasting initiators and the like, which comprises a multitude of crimping jaws radially disposed and adapted to move radially inward to define a circular central opening, a jaw retainer element, said jaws being pivoted within said retainer element, a jaw guide, radial slots in said guide, said jaws being disposed in said radial slots, a crimping ram adapted to confine said jaws loosely in pivotal relationship with said retainer and provided with means for receiving and retaining said blasting initiator or the like during the crimping operation, and a crimping base supporting the foregoing elements, adjacent jaws being in actual contact with each other in the crimped position to form a continuous annular recession free from ribs in the shell material.

2. A crimping device especially adapted to the crimping of shells of blasting initiators and the like, which comprises a multitude of crimping jaws radially disposed and adapted to move radi-

ally inward to define a circular central opening, a jaw retainer element, said jaws being pivoted within said retainer element, a jaw guide, radial slots in said guide, said jaws being disposed in said radial slots, a crimping ram constructed and disposed to provide clearance between said ram and the aforesaid central opening defined by the jaws, for receiving and retaining said blasting initiator or the like during the crimping operation, said ram confining the jaws loosely in pivotal relationship with said retainer, and a crimping base supporting the foregoing elements, adjacent jaws being in actual contact with each other in the crimped position to form a continuous annular recession free from ribs in the shell material.

3. A crimping device especially adapted to the crimping of shells of blasting initiators and the like, which comprises a multitude of crimping jaws radially disposed and adapted to move radially inward to define a circular central opening, each jaw being roughly V-shaped in the form of a crimping arm and a releasing arm joined by an outer cam-like shoulder, a jaw retainer element, the cam-like shoulder of said jaws being pivoted within said retainer element, a jaw guide, radial slots in said jaw guide, said jaws being disposed in said radial slots, a crimping ram provided with a mushroom head engaging the crimping jaws between the arms thereof to hold the cam-like shoulder of each against the retainer element, said ram being constructed and disposed to provide a clearance behind the aforesaid central opening for receiving and retaining said blasting initiator or the like during the crimping operation, and a crimping base supporting the foregoing elements, adjacent jaws being in actual contact with each other in the crimped position to form a continuous annular recession free from ribs in the shell material.

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