

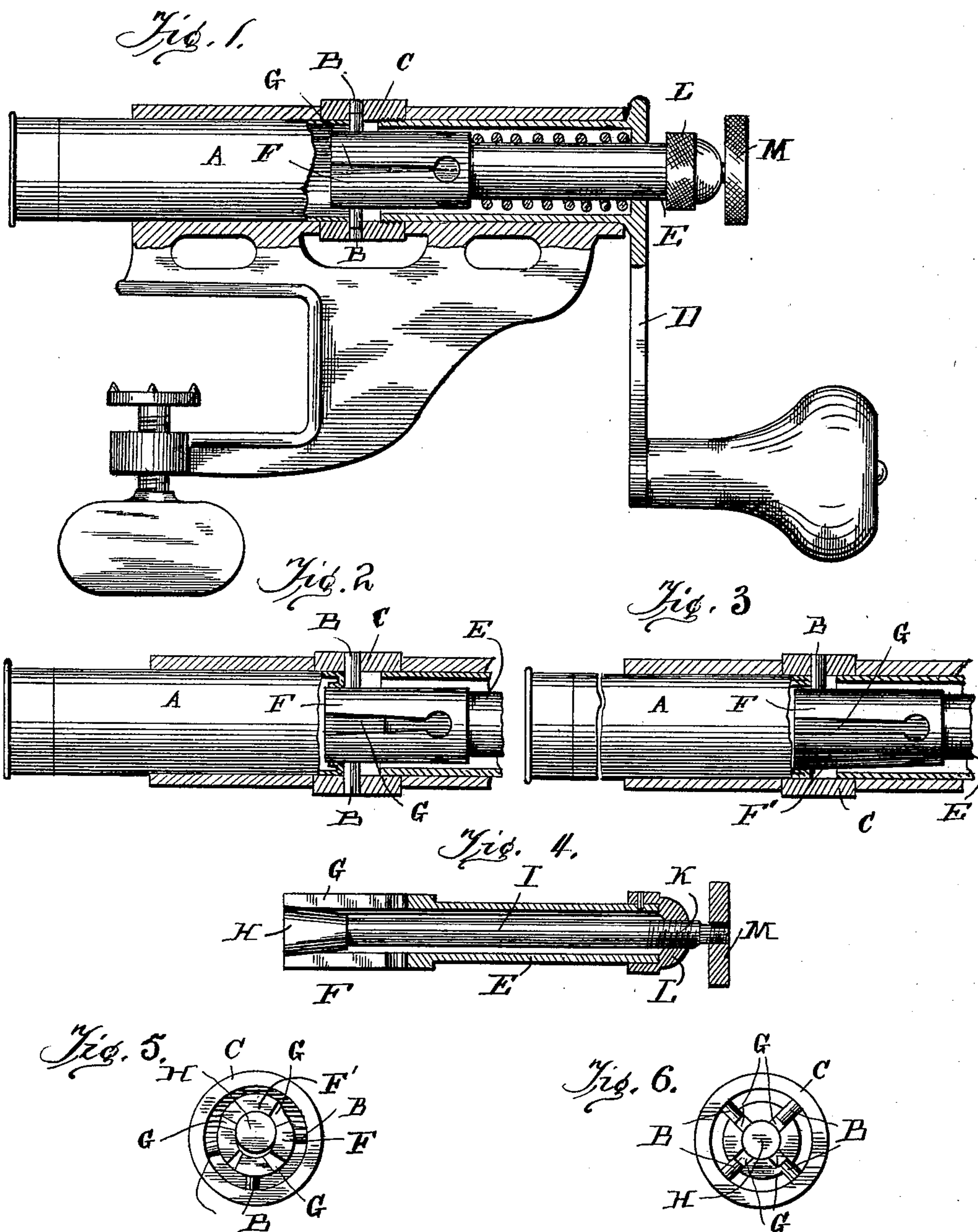
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Patented Dec. 6, 1898.

S. B. KITCHEL.  
CARTRIDGE LOADING IMPLEMENT.

(Application filed Mar. 19, 1898.)

(No Model.)



WITNESSES  
Chas. K. Davies.  
R. H. Payne

INVENTOR  
S. B. Kitchel  
By W. A. Bartlett  
Attorney



# UNITED STATES PATENT OFFICE.

SIMON B. KITCHEL, OF COLDWATER, MICHIGAN.

## CARTRIDGE-LOADING IMPLEMENT.

SPECIFICATION forming part of Letters Patent No. 615,282, dated December 6, 1898.

Application filed March 19, 1898. Serial No. 674,499. (No model.)

*To all whom it may concern:*

Be it known that I, SIMON B. KITCHEL, residing at Coldwater, in the county of Branch and State of Michigan, have invented certain  
5 new and useful Improvements in Cartridge-Loading Implements, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to cartridge-loading  
10 machines or implements.

The object of the invention is to produce a machine or implement in which the shell of a shot-cartridge may be turned in to hold the wad and compacted, so that the turned-in portion of the shell will be close against the tube,  
15 thus strengthening the cartridge and preventing the loosening or escape of the wad by transportation or by the recoil of a gun when one barrel is fired repeatedly and other cartridges  
20 are in the other barrel or magazine of a gun.

Figure 1 is a longitudinal central section of a cartridge-loading implement, showing cartridge in the implement. Fig. 2 is a broken section of a cartridge and part of the implement, the cartridge partly turned over or  
25 "crimped." Fig. 3 is a similar section showing the mandrel expanded, as in the act of compacting the turned portion or crimp of the shell. Fig. 4 is a section of so much of the  
30 implement as is necessary to show the expanding mandrel. Fig. 5 is an end view of the crimping device, showing expanded mandrel and crimping-pins bearing against sections of the mandrel. Fig. 6 is an end view of the mandrel and pins at the intervals of the mandrel.  
35

In loading paper-shell shot-cartridges it is common to insert the end of the cartridge in an inclosing casing, the end of the tube coming against rounded pins or other surfaces,  
40 which slightly indent or crimp in the shell of the cartridge. Then by rotation of the cartridge on its axis, or, more commonly, the movement of the crimping pins or surfaces in annular direction, all the time bearing on the  
45 end of the tube, said tube is gradually turned or folded inward, and the doubled-in end rests against the wad and serves to hold said wad against escape. This doubling or crimping of the end of the cartridge sometimes fails to  
50 hold the wad firmly, and the sportsman in carrying cartridges in his belt finds the wads become loosened and fall out, or the wads be-

come loose in a magazine or barrel of a gun when another barrel is fired. By my invention I compact or compress the turned-in or  
55 crimped end of the cartridge-shell, so as to make it much stronger, and thereby prevent the escape of the wad.

Let A represent a cartridge-shell of any of the usual forms used for shotguns, the powder, shot, and wads being in place. In Fig. 1 the  
60 end of this shell, usually of paper or paste-board, is shown against the crimping-pins B, of which there may be one, two, or more. In my preferred construction I use three such  
65 crimping-pins, arranged in the tube C and extending radially toward the center of the tube. These pins, as shown, are on the inside of tube C and, in fact, may be mere lugs or bosses, with rounded surfaces to bear against the end  
70 of the cartridge-shell. Any usual means may be used for advancing the shell or the pins toward each other, and in Fig. 1 the crank D is shown for rotating the tube or casing C, bearing the pins, such crank being connected  
75 to the casing C by a spindle, which, so far as has been described, is as usual. The rotation of casing C or of the cartridge will turn in or crimp the end of the cartridge, as in Fig. 2.

The end of shell A being turned in as usual, my improvement is brought into operation.  
80 For this purpose the mandrel E, which is connected to and rotates with the crank, has entered the front end of the cartridge, the end of the mandrel being nearly or quite against  
85 the wad in the cartridge. The mandrel is preferably a split metallic cylinder, as shown, having a hollow center and four elastic arms F F F F', separated by slots G. The slots G are by choice not exactly opposite each other,  
90 so that preferably the arms differ slightly in size, for a reason to be stated, but this is not essential.

The arms F are tapered on their inner faces, and a tapered piece or conic frustum H lies  
95 against these tapered faces, the frustum H being connected to a spindle I, which passes through the mandrel.

A screw-thread K on spindle I engages a nut or cap L, and a milled handle or finger-  
100 piece M is firmly connected to spindle I, and by turning this handle or grasp M the spindle I may be drawn into or moved out of nut L. This gives endwise as well as rotary movement to



spindle or rod I and causes frustum H to bear against the inclined inner faces of arms F and force said arms outwardly in a manner common in expanding mandrels. This expansion or forcing out of arms F causes them to bear against the inside of the turned-in end of the shell. Now by rotating the mandrel by means of crank D the mandrel will rub or compress the turned-in crimp of the shell compactly against the outer body thereof and against the wad, and as the mandrel can be gradually expanded the compacting of the crimp or folded end of the shell against the body and wad can be made very solid, so that no ordinary strain will release it. Cartridges which have been fired and the crimp straightened out can be reloaded and so compacted with this machine as to be very serviceable and equal to or better in this respect than many new cartridges as ordinarily made and not so compacted.

I have described the mandrel as operating by the expansion of all the arms F, which may be the case; but by preference I split the expansible end of the mandrel into unequal parts, as in Fig. 5. Three of the arms F, as shown in Fig. 5, are in line with the pins or bosses B, and after these arms have been expanded slightly they will bear against the inner ends of the pins or bosses B and will be prevented from further expansion; but the fourth arm F', being free, may expand to a greater extent. The frustum II, bearing against the arms F, will be pressed to one side—that is, the side toward arm F'—and will bear said arm more rapidly outward by reason of the action of the inclines at both sides of frustum II. The corners of the arms F may be slightly cut away to permit this side movement of tapered head II, or the slots G may be wide enough to permit it.

In Fig. 6 I have shown a modification wherein the pins B extend into the slots G in the expansible mandrel. In such case all the arms may expand.

A reversal of the direction of movement of the spindle I and of direction of the inclines on arms F is feasible and other modifications of mechanism. I intend my claims to be broad and generic, except as otherwise stated.

It will be understood that my expansible mandrel is collapsed while the process of turning in the end of the cartridge-tube is going on, so that the mandrel does not interfere with the turning in of the tube. After the end of the tube is turned in against or nearly against the wad the mandrel is expanded outwardly and with any desired degree of pressure, preferably beginning with a low pressure and increasing as the work goes on, so that the intumed fold of the tube may be pressed solidly against the straight tube of the shell and compressed to form a square end and a square bearing against the wad.

I am aware that a cartridge-loading implement has been made in which a so-called

“ironer” composed of tubular sections pressed apart by a spring has been attached to the rotating device in the position of my expanding mandrel. I have used this device and find it unsatisfactory. This “expanding mandrel,” if such it may be called, being actuated by a spring, enters into the cartridge-shell and holds the same outward by spring-pressure while the tube is being turned in or crimped, so that the crimping-pins cannot operate freely to turn in or crimp the cartridge-shell. The spring-expanded mandrel cannot be collapsed, so as to oppose no resistance to the turning in or crimping of the shell. It must always act with the full power of the spring, and this power at the point of turning is in resistance of the turning or crimping action. On the other hand, this spring-actuated mandrel can never act as an ironer with more power than the force of its spring, which is usually quite insufficient to thicken the turned-over edge of the cartridge or to produce a square shoulder at the end of the cartridge. I am also aware that tube-expanders have been used for expanding steam-boiler tubes and the like, in which a sectional cylinder has been expanded by an internal wedge. So far as I am informed such a device has not been used with an inclosing casing, as in my cartridge-loader. My expanding mandrel cooperates with the inclosing casing and does not expand the exterior of the cartridge-tube as a tube-expander would do, but compacts and solidifies the paper of the tube between the mandrel and casing without external expansion of the cartridge-tube.

I claim—

1. In a cartridge implement, the inclosing casing, an expanding mandrel extending within said casing, and positively-driven mechanism by which said mandrel may be expanded within the cartridge-shell, while the shell is held from outward expansion by the casing, all combined substantially as described.

2. In a cartridge-shell crimper, the inclosing casing, an expanding mandrel extending within the same and having a plurality of sections, and means for positively pressing out less than the whole number of sections, and means to rotate the mandrel to compact the crimp of a cartridge-shell within the casing, all combined substantially as described.

3. In a cartridge-crimper, the inclosing casing, the mandrel having movable sections extending within the casing, means for holding a section against outward movement, positively-actuated means for pressing out a movable section, and means for rotating the mandrel, all combined substantially as described.

4. In a cartridge-crimper, the shell-supporting casing, the mandrel extending within the same and having movable fingers with inclined inner faces, the movable spindle having an inclined portion bearing against the inclines of the fingers, and means for moving said spindle lengthwise to press out said fin-



gers within the cartridge-shell while the shell is confined by the casing against outward expansion, all combined substantially as described.

5 5. In a cartridge-crimper, the casing, the crimping-pins, the expanding mandrel extending within the casing, means for positively expanding the mandrel within the cartridge-shell while the shell is supported by  
10 the casing, and means for rotating the mandrel relatively to the casing, all combined substantially as described.

15 6. In a cartridge-crimper, the casing having crimping-pins projecting inwardly, the split mandrel within said casing, and means for positively expanding the sections of the mandrel against the pins, while permitting one section to expand without such resistance.

20 7. In a cartridge-shell crimper, the casing, the crimping-pins extending inwardly at three sides thereof, the split mandrel having four arms with inclined faces three of which arms

are in line with said pins, the tapering spindle bearing against all the arms of the mandrel, and means for moving said spindle 25 lengthwise.

8. In a cartridge-crimp-compacting implement, the combination of the casing, crimping-pins carried thereby, an expanding mandrel in position to enter the end of the shell, 30 means for rotating said casing and mandrel relatively to the cartridge-shell, a movable spindle having inclines bearing against corresponding inclines of the mandrel to expand said mandrel, and a screw-thread and nut to 35 give movement to said spindle, all substantially as described.

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

SIMON B. KITCHEL.

Witnesses:

W. A. BARTLETT,

WALLACE MURDOCK.