

3 Sheets--Sheet 1.

No. 129,115.

Patented July 16, 1872.



West Wagner.
Louis B. Wynne, jr.



George H. Earnest
by Johnson, Klauke & Co
his attorneys

G. H. EARNEST.

3 Sheets--Sheet 2.

Improvement in Breech-Loading Fire-Arms.

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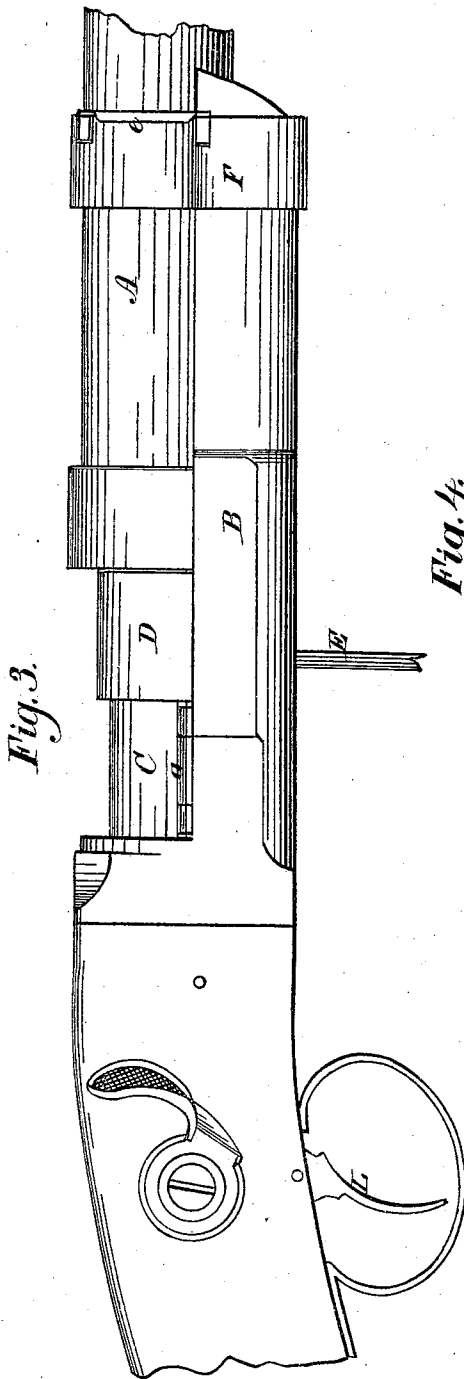
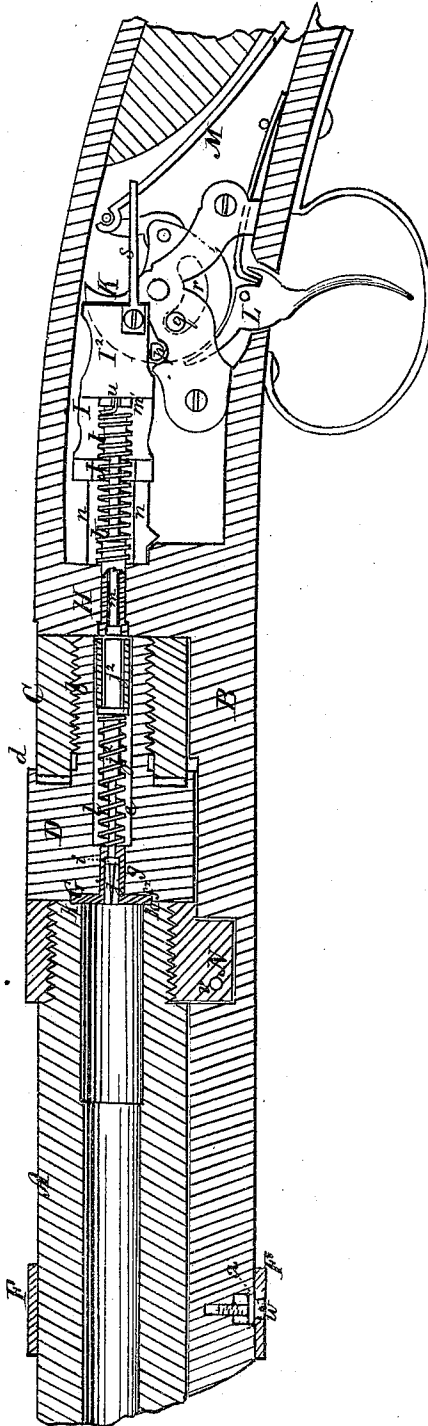


Fig. 4.



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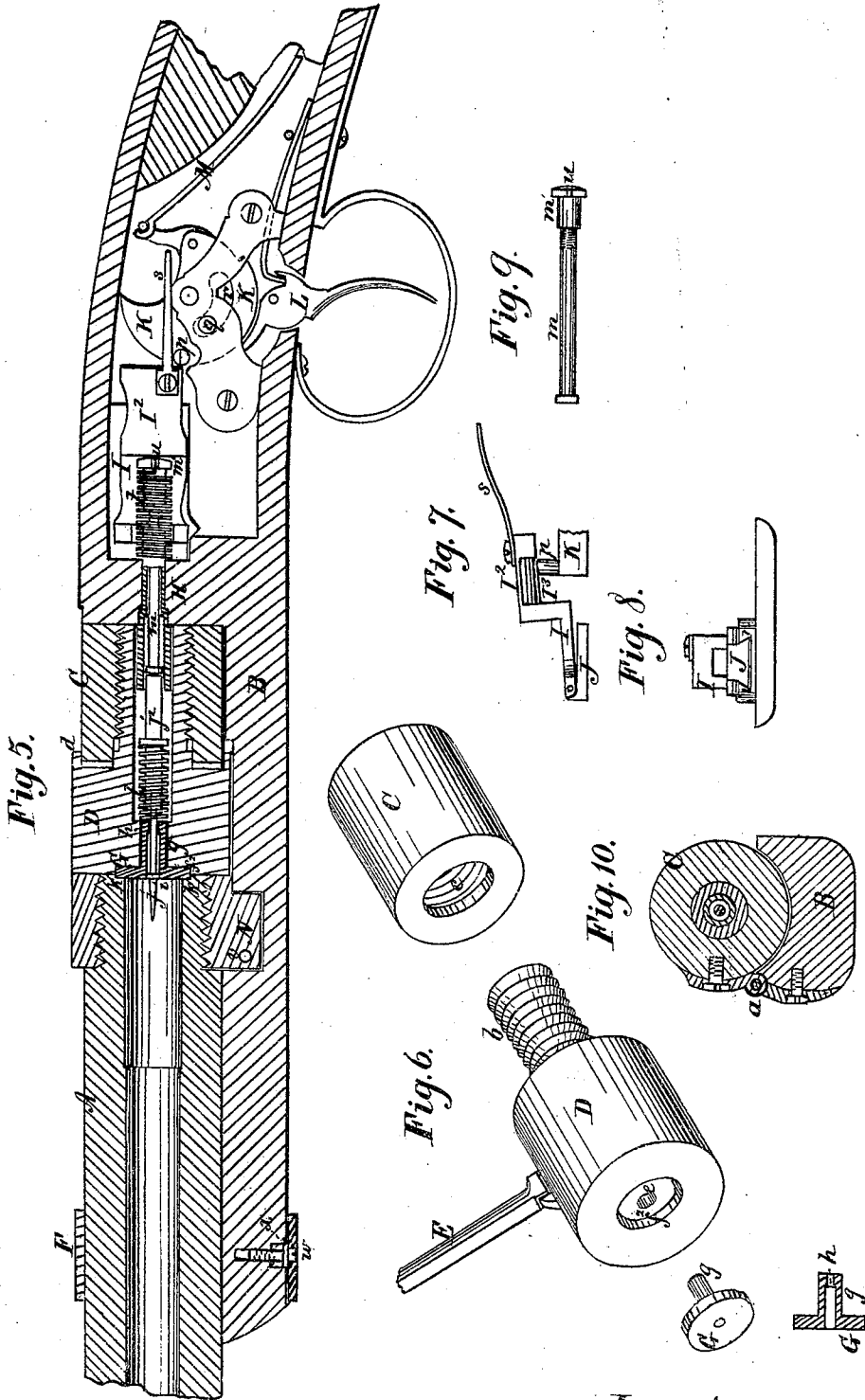
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UNITED STATES PATENT OFFICE.

GEORGE H. EARNEST, OF SPRINGFIELD, OHIO.

IMPROVEMENT IN BREECH-LOADING FIRE-ARMS.

Specification forming part of Letters Patent No. 129,115, dated July 16, 1872.

To all whom it may concern:

Be it known that I, GEORGE H. EARNEST, of Springfield, in the county of Clarke and State of Ohio, have invented certain new and useful Improvements in Breech-Loading Fire-Arms, of which the following is a specification:

My invention relates to that class of fire-arms having a laterally-swinging breech-block, and in which the charge is ignited by a firing pin or needle; and my said invention consists, first, in constructing the laterally-swinging breech-block of two parts, one part of which has a movement independent of the other, both upon its axis and in the direction of the length of the arm, for the purpose of closing the junction between the barrel and the breech-block without moving the entire breech-block for that purpose; second, in operating the firing pin or needle, so that after having performed its function by the act of firing the charge it will be instantly relieved and returned to its place within the breech-block before the latter is again opened, thereby rendering the projection and withdrawal of the firing-pin almost simultaneous with the act of firing, and obviates the necessity of having to accomplish the return of the pin by the cocking of the piece; third, in constructing the firing pin or needle of two separate and distinct sections or parts, one of which, being the needle proper, is arranged within the breech-block and has a movement laterally therewith, and the other within the stock-breech, and both operated by a sliding plate and separate springs, so as not to interfere with the opening and closing of the breech-block; fourth, in constructing that portion of the breech-block having a compound movement with an annular disk-sleeve, in connection with a corresponding recess in the end of the barrel, so as to form a seal to the junction of the parts when closed; fifth, in combining a clamp-screw with the stock-band for the purpose of firmly uniting the stock and barrel together, while said screw also serves to hold the band in position; also, in the construction and arrangement of the several operating devices of the arm.

In the accompanying drawing, Figure 1, Sheet 1, represents an elevation of a fire-arm embracing my invention, the breech-block being shown as closed. Fig. 2, same sheet, rep-

resents a similar view, the front section of the breech-block having been partially turned upon its axis to withdraw its sealed end from its junction with the barrel. Fig. 3, Sheet 2, represents a similar view, showing the laterally-swinging breech-block open to insert the cartridge. Fig. 4, same sheet, represents a longitudinal section through the arm, the several parts being in the position they occupy immediately after firing. Fig. 5, sheet 3, represents a similar section, the several parts being in the positions they occupy in the firing of the arm. Fig. 6, same sheet, represents a view in perspective of the two parts of the breech-block separated, and the firing pin or needle guide, which also serves to seal the breech-block with the barrel. Fig. 7, same sheet, represents a side elevation of the sliding hinged plate which operates the firing-pin. Fig. 8, same sheet, represents an end view of the same. Fig. 9, same sheet, represents the extensible independent stem of the firing-pin, which works within the breech of the stock; and Fig. 10, a cross-section, showing the hinge of the breech-block.

The arm represented in the drawing is constructed so that the barrel A may be readily removed from and attached to the stock B, as hereafter described. Between the breech and the end of the barrel the breech-block is interposed. It is hinged to the stock so as to be opened and closed by a lateral movement, and when so opened it will be clear of the barrel for the insertion of the cartridge. It is composed of two parts or sections—the rear part C, which is hinged at *a*, and the front part D, provided with a screw-stem, *b*, which screws into a socket, *c*, in the part C, and by which screw-stem *b* the part D is carried and allowed to have an axial movement in opening and closing the breech-block, for the purpose of withdrawing the front section away from the end of the barrel and closing it up therewith in closing said breech-block. This longitudinal movement of the front section D being effected by the turning of the stem *b* within and upon the hinged part C, the axial movement of the part D need only be sufficient to clear the breech-block from its sealed position with the end of the barrel; and in this independent movement it effects another important advantage by compen-

sating for the expansion and contraction of the barrel and the breech-block, because in closing and sealing the breech-block its axial movement is arrested when closed against the barrel. In opening the breech-block, however, the axial movement of the front part D is limited by its contact with the rear part C, and for this purpose the front part fits over the adjacent end of the rear part so as to form an inclosed joint, *d*, as shown in Figs. 4 and 5, and allow one part to move over the other sufficient to seal and unseal it with the barrel, and to lock the two parts to effect the opening of the breech-block. The part D is provided with a pivoted arm, E, which, when the breech-block is closed, may be locked by catching beneath a lip, *e*, on the barrel-band F, as shown in Figs. 1, 2, and 3 of the drawing, the end of said arm being provided with a spring-catch, *f*, for that purpose, as shown in Figs. 1 and 2. To open the breech-block the spring-arm E is disengaged and turned with its front part D upon its screw-stem *b* until it abuts against the hinged part by closing up the space at their junction at *d*, when the two parts are then turned together until the breech-block rests against the side of the stock, in which position it is fully opened. The stock B is of course made to receive the breech-block, so that the axis of its two parts will be coincident with the axis of the firing-pin or needle and the barrel. The screw-stem *b* extends entirely through the part C, and is provided with an axial opening, *e*, for the reception of the firing pin or needle; and the front end of part D has an annular recess, *f*², in its end, for the reception of a disk, G, a sleeve, *g*, from which extends into said axial opening *e*, and has an interior shoulder, *h*, which acts in connection with a shoulder, *i*, on the needle *j*, to form a closed joint within the breech-block, when the needle is retracted to prevent the gas from entering the said opening and to limit the retracting movement of the needle, as shown in Fig. 4. This sleeved disk G also projects from the face of the said part D for the purpose of entering and forming a seal with an annular recess, *k*, in the end of the barrel, and thus, when the parts are closed, prevent the escape of gas at the junction of the barrel with the breech-block, as shown in Figs. 4 and 5. The shank of the needle *j* is screwed into a stem, *j*², for the purpose of securing the needle to its stem from opposite sides of the breech-block; and the needle is retracted by means of a coiled spring, *l*, placed over its stem *j*², between the end of the sleeve *g* of the sealing-disk G, and a shoulder on the said needle-stem *j*². The needle and its stem thus arranged occupy the central opening exactly between the ends of the breech-block to allow the latter to be opened and closed with the breech. The needle or firing pin *j* is operated by an independent stem, *m*, fitted within the breech H of the stock B and extending within the lock. The means for operating this independent stem to fire the arm consists of a

sliding plate, I, arranged within the lock, and hinged to a slide, J, moving between ways *n* fixed to the inner side of the lock-plate, the said hinged plate I being situated so as to receive the action of a pin, *p*, on the lock-tumbler K. This sliding plate I is provided with a projection, I², which, when the parts are in positions to project the needle, will be between the pin *p* of the tumbler and the inner end of the independent stem *m* of the breech H, so that when the tumbler K is released from the trigger L the slide I will be projected against the independent stem *m*, which will in turn carry forward the firing pin or needle. In this action the tumbler-pin *p*, after having thrown the plate I forward, passes it and escapes to a position just below it, when its movement is limited by a stop, *q*, in the lock, against which the end of a slot, *r*, in the tumbler K, strikes, as shown in Fig. 4, and thus hold the said tumbler-pin *p* in a position to pass between the sliding plate I and the tumbler, in order to bring it again in the rear of said plate. Simultaneously with the escape of the tumbler-pin *p* from the sliding plate I the latter is instantly returned to its former position, so that the act of projecting the firing-pin *j* thereby instantly affords the means for effecting its retraction, the one being almost simultaneous with the other. In this action it will be observed that the tumbler-pin *p* must be returned to the rear end of the sliding plate I, and for this purpose the latter is hinged to the slide J, as shown in Fig. 7, so as to admit of a lateral movement to allow the tumbler-pin *p* to pass against its inner inclined side I³, Fig. 7, and press it out while moving to its rear, the sliding plate I being returned to its position in front of the tumbler-pin *p* by a spring, *s*, which presses against the lock-plate. The independent breech-stem *m* has a screw-section, *m'*, to allow its length to be increased or diminished to adjust the throw of the needle to penetrate center-firing cartridges of different lengths, and it is retracted by a spring, *t*, pressing against the head of the screw-section *m'* into a notch, *n*, in which the spring is fastened to hold the part *m'* when set, said stem when retracted being within the breech H. The tumbler K is locked with and released from the trigger L in the usual manner; and it is also operated to project the firing pin or needle *j* by a main spring, M, as shown in the drawing or in any approved way. The barrel is secured to the stock by means of a tongue, N, near its end, fitting into an opening in the stock, and fastened by a pin, *v*, also by the band F embracing the end of the stock and barrel. The screw *w*, which secures this band F, I utilize as a clamping device by forming a shoulder, *x*, upon it, so as to come in contact with the inner side of said stock-band F, and by unscrewing the screw *w*, which enters the stock, force the latter tightly against the barrel, and hold them firmly together, as shown in Figs. 4 and 5. In this case the head of the screw must pass into the stock to allow the band to

pass over it, so as to bring the hole therein opposite the head of the screw to bring its shoulder *x* against the band.

From the foregoing description of the construction of my improved fire-arm it will be observed that, by the arrangement of the driving-pin *p*, the slide *I* of the lock mechanism, after the arm is fired, will pass said driving-pin and be in a position at rest, bringing also the entire lock mechanism at an absolute rest without having either automatically or otherwise brought the arm to cock or half-cock.

Having described my invention, I claim—

1. A laterally-swinging breech-block, constructed of two sections or parts, *C D*, connected to each other, to allow one part or section to have an axial and a lengthwise movement upon the other, in opening and closing the breech-block, in the manner and for the purpose essentially as described.

2. The firing pin or needle *j*, and its independent operating stem *m* with its spring *t*, in combination with the hinged sliding plate *I* and the tumbler-pin *p*, constructed and operating to allow of the retraction of the needle or firing pin *j* simultaneously with the act of firing the arm, essentially as described.

3. In a laterally-swinging breech-block, carrying the firing pin or needle, I claim the arrangement of said firing-pin *j* within said breech-block *C D*, and its operating-stem *m* within the lock, so that the movement of the one will be independent of that of the other, as described.

4. The sealing tubular disk *G* of the breech-block, in combination with the annular recess *k* in the end of the barrel, the shoulder *i* on the needle *j*, and the shoulder *h* of the tube *g* of said disk *G*, for the purpose of forming both

a seal to the junction of the breech-block and barrel, and to exclude gas from said breech-block, as described.

5. The operating plate *I* of the firing pin or needle *j*, hinged and having an inclined inner side, *I*³, to allow the tumbler-pin *p* to pass beneath said plate *I* to bring the said pin in position to again project the firing pin or needle *j*, as described.

6. The slot *r* in the lock-tumbler *K*, in combination with the stop *q*, for arresting the tumbler-pin *p* after firing the arm, and maintain it in a position to pass beneath the operating sliding plate *I*, as described.

7. The independent stem *m m'* of the firing-pin, made of two sections, in combination with the firing-needle, adjusted to increase or diminish the throw of the needle, as described.

8. The shouldered clamping-screw *w* of the stock-band *F*, as and for the purpose described.

9. In a breech-loading fire-arm having a hinged breech-block and a retracting firing-pin, I claim the arrangement of the driving-pin *p*, with respect to the slide *I* of the firing-pin, that will bring said driving-pin *p* at an absolute state of rest, and free from any connection with the firing-pin when the arm is fired, to allow the breech to be opened, loaded, and closed, to avoid bringing the lock to a half or full-cock, as described.

In testimony whereof I have hereunto set my hand this 30th day of August, A. D. 1871, in the presence of two witnesses.

GEO. H. EARNEST.

Witnesses:

A. E. H. JOHNSON,
J. W. HAMILTON JOHNSON.