

(No Model.)

A. C. DIEFFENBACH.  
REAR SIGHT FOR SMALL ARMS.

No. 533,003.

Patented Jan. 22, 1895.

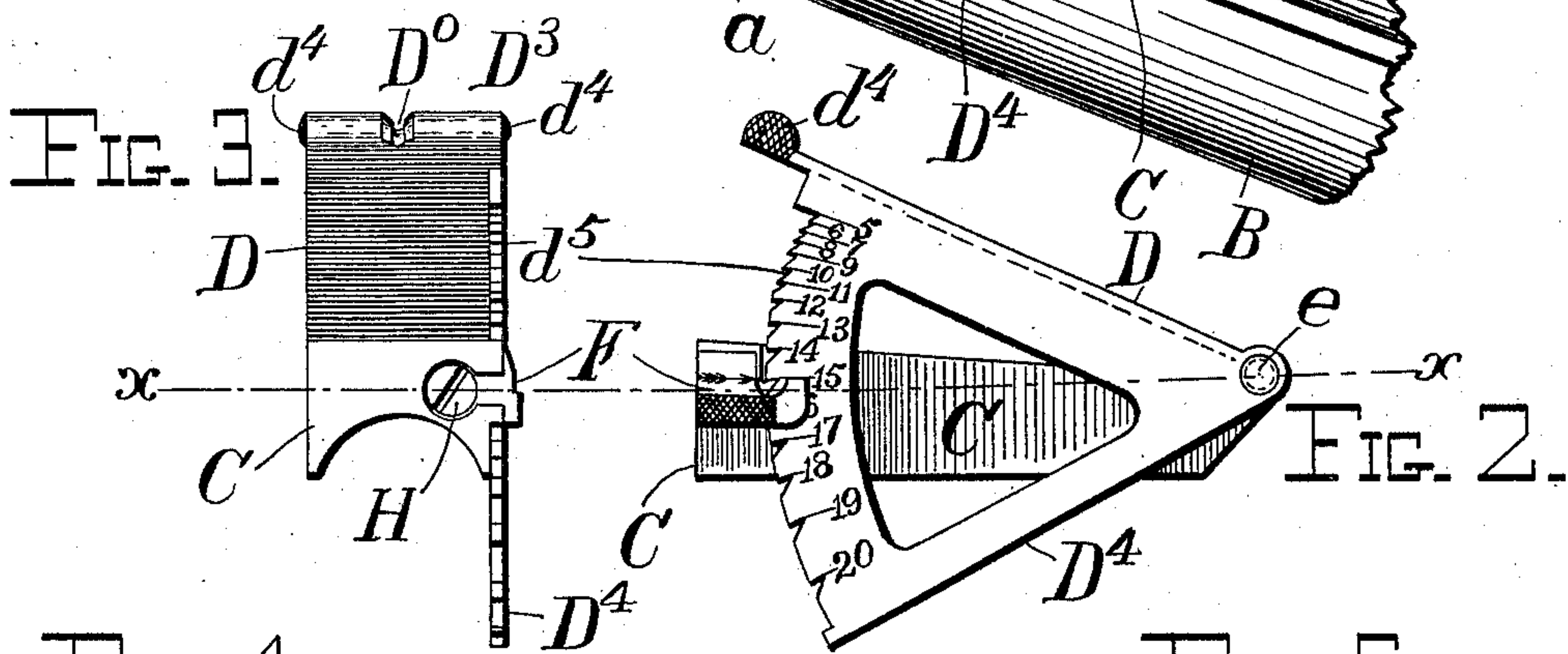
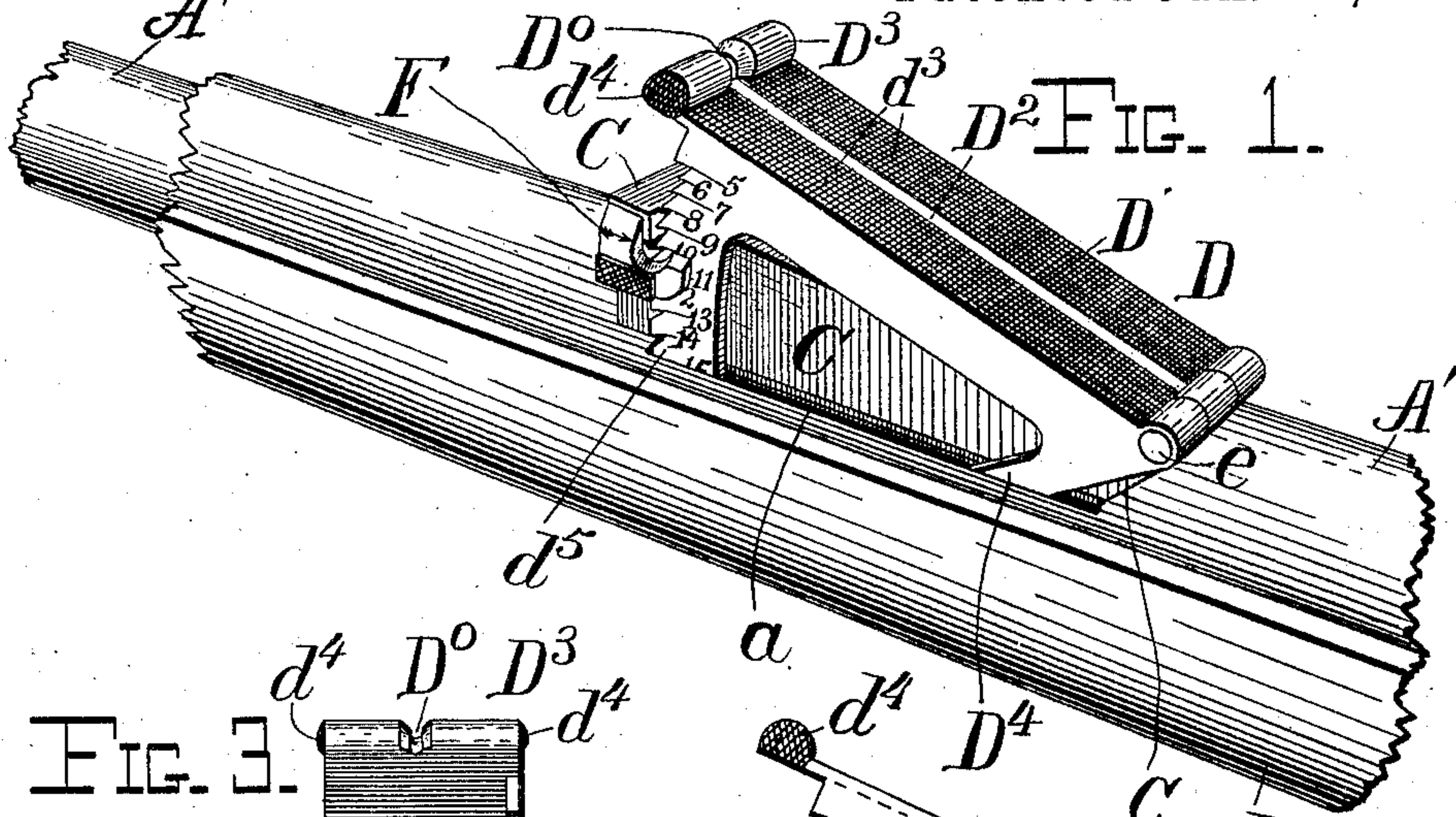


FIG. 4.

FIG. 6.

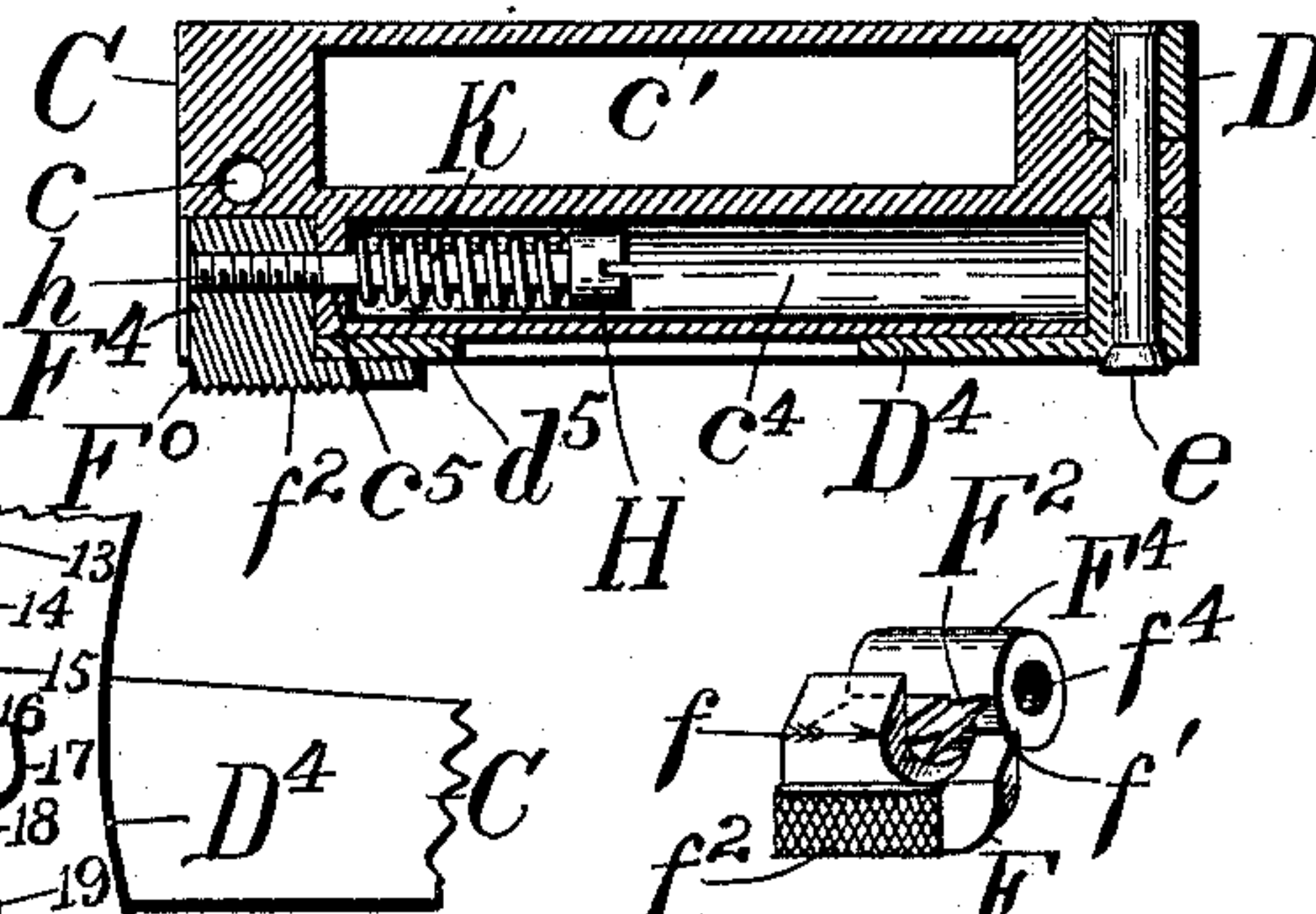
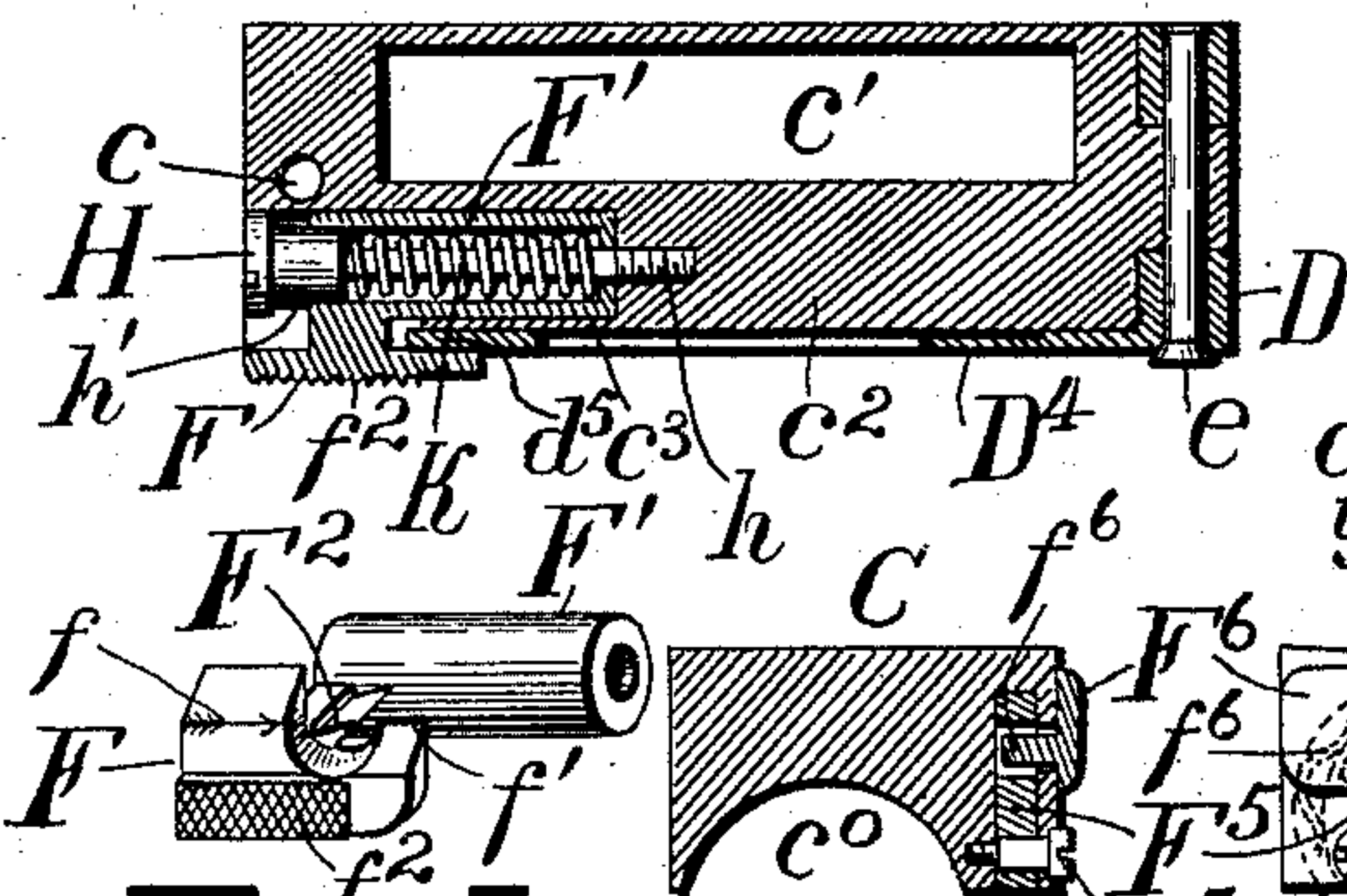
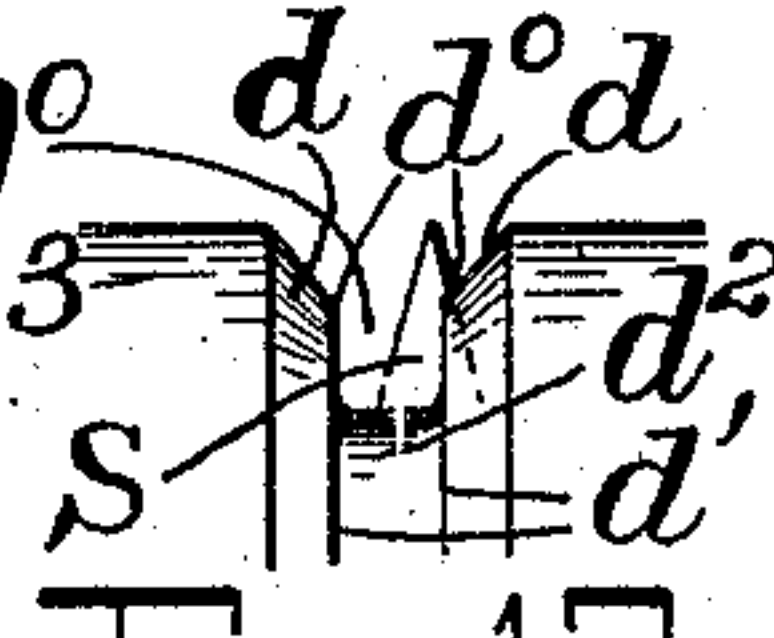
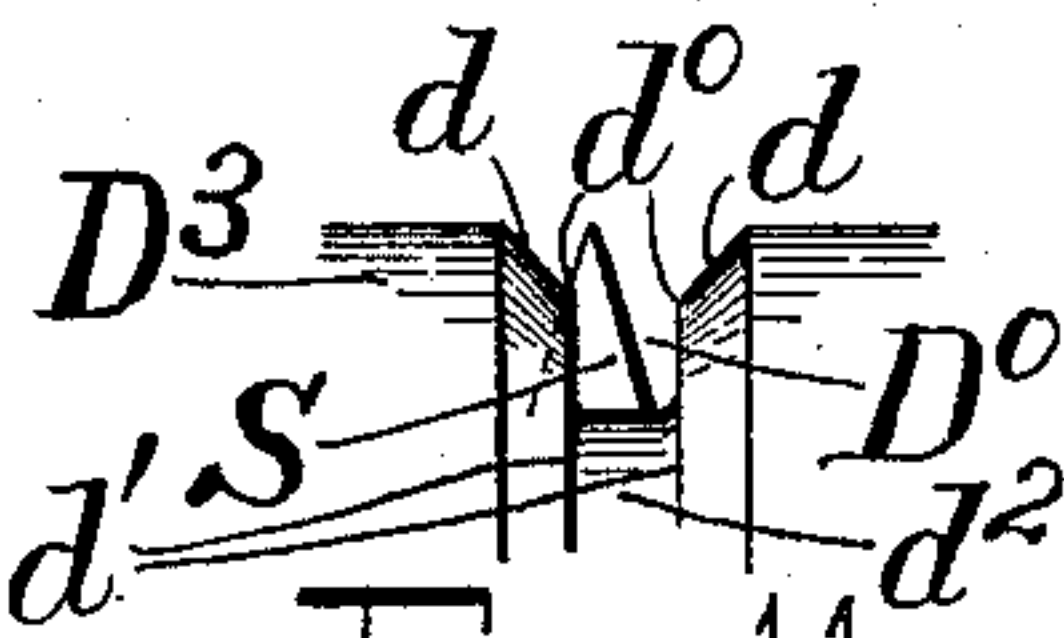


FIG. 5.

FIG. 9.

FIG. 8.

FIG. 7.



Witnesses

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# UNITED STATES PATENT OFFICE.

ALBERT C. DIEFFENBACH, OF THE UNITED STATES NAVY.

## REAR SIGHT FOR SMALL-ARMS.

SPECIFICATION forming part of Letters Patent No. 533,003, dated January 22, 1895.

Application filed June 12, 1894. Serial No. 514,313. (No model.)

*To all whom it may concern:*

Be it known that I, ALBERT C. DIEFFENBACH, an ensign in the United States Navy, and a citizen of the United States, stationed at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Sights for Rifles or other Small-Arms; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in sights for rifles or other small arms, and it consists essentially in providing a simplified and improved form of rear sight, which will be hereinafter more fully described and claimed.

My improved rear sight consists essentially of a solid leaf pivoted at its rear on the top of the rifle, and provided with a notch-arc which arc is adapted to be set at any desired elevation, and to be normally contained within the wood work of the stock. The sight is also provided with an improved form of sight-notch, and with a marked line adapted to assist the eye in rapidly adjusting itself to the line of sight. These and the various other features of the herein described invention will be more clearly understood by reference to the accompanying drawings, in which the same parts are indicated by the same letters throughout the several views.

Figure 1 represents a perspective view of my improved rear sight as mounted on a rifle, and as set for one thousand yards. Fig. 2 represents a side elevation of the sight and its base as detached from the gun and set for fifteen hundred yards. Fig. 3 represents a front view of the device shown in Fig. 2, or as seen from the left of the said figure. Fig. 4 represents a section along the line  $xx$  of Figs. 2 and 3, and looking down. Fig. 5 represents a perspective view of the sliding block and pawl carried thereby, by means of which the sight is held at the desired elevation. Fig. 6 represents a section similar to that shown in Fig. 4 with a slightly modified means of holding the pawl against the notched arc. Fig. 7 represents a perspective view of the sliding block and pawl used in the modification shown in Fig. 6. Fig. 8 represents a side elevation of another modification for operating the pawl,

and Fig. 9 represents a section along the line  $yy$  of Fig. 8, and looking to the right. Fig. 10 represents a rear view of the sight notch and the front sight when the eye is in the proper position. Fig. 11 represents a similar view to that shown in Fig. 10, when the eye is to the left of the line of sight, and Fig. 12 represents a similar view to that shown in Fig. 10 when the eye is to the right of the line of sight.

A represents the rifle barrel which is partly inclosed in the ordinary wood cover  $A'$ , and the forward portion B of the stock. This wooden cover  $A'$  is cut away as at  $a$  and the stock is cut away to allow the bracket  $D^4$  carrying the notched arc  $d^5$  to swing freely thereinto.

The rear sight D is pivoted as at  $e$  to the base or frame C which is secured to the barrel by means of a screw passing through the hole  $c$ , or by a plurality of screws passing through suitable holes, or is soldered to the gun or otherwise rigidly attached thereto in any convenient way.

The rear sight D is provided with a solid flat leaf  $D'$ , which is knurled or otherwise darkened along the upper face as at  $d^3$  leaving a light streak  $D^2$  between the said knurlings, and in the same vertical plane with the line of sight. The forward end of this leaf terminates in a rounded portion  $D^3$  in which the sight notch  $D^0$  is cut. This sight notch  $D^0$  is provided with a cylindrical bottom  $d^2$  and vertical, or nearly vertical sides  $d'$  extending up to the edges  $d^0$  and then flaring outward in the conical surfaces  $d$ . This peculiar shape of sight notch enables the same notch to be used for all elevations, and renders it possible to readily get the eye in the proper line of sight, and to make adjustment for elevation for shorter distances than the point-blank range as will be hereinafter more fully described. The edges of the rounded portion  $D^3$  of the head of the sight are knurled as at  $d^4$  for convenience in grasping the sight and raising the same to the proper adjustment.

The leaf  $D'$  is provided with a downwardly projecting bracket  $D^4$  which carries at its forward end a notched arc  $d^5$ . This arc is provided with notches corresponding to given ranges or increments of range, which notches start at the point-blank range and continue



up to the maximum range, upon which the small arm of the marksman may be relied for efficient service.

For ordinary naval or military purposes, I preferably adjust the sight so that all under five hundred yards shall be point-blank range, and above this a notch is provided for each one-hundred yards of additional range up to two thousand yards which is as far as the arm of the marksman can be depended upon.

A spring-operated pawl engages at the various notches as will be hereinafter more fully described.

In order that there may be less tendency of the pawl to slip over two, or three, or more, of the upper and finer notches, I preferably have the notched arc cut in toward the upper end, and make each of the upper notches project a little beyond the notch above. In this way if the pawl is moved back far enough to slip over one notch it will be more likely to catch on the tooth below, and so the pawl is more likely to catch on each tooth as the sight is elevated. This is of especial importance in firing at night, when each click of the pawl will indicate an additional hundred yards of elevation.

For use with the herein described sight any convenient form of pawl may be adopted and I have shown several forms in the drawings, any one of which might be used, but preferably that shown in Figs. 1 to 5. In these figures the base C, which should preferably be cut away as at  $c'$  to lighten the same, is provided with a solid portion  $c^2$  into which the screw-threaded end  $h$  of the bolt H engages. This base C is also provided with a cylindrical groove  $c^3$  into which the hollow sleeve  $F'$  slides. This sleeve  $F'$  is rigidly attached to the pawl  $F^2$  and the block F, which block is provided with an arrow  $f$  and an index edge  $f'$  which indicate the elevation on the notched arc. The pawl is ordinarily held in engagement by means of the spring K which is held between a shoulder at the bottom of the sleeve  $F'$ , and the shoulder  $h'$  near the head of the screw H.

In the modification shown in Figs. 6 and 7, the screw H engages in the nut  $F^4$  carried by the block F, which nut is screw-threaded as at  $f^4$ , shown in Fig. 7, the spring K being held between the head of the said bolt H, and the shoulder  $c^5$  at the end of the cylindrical groove  $c^4$  in the base C. In this form of device the bolt H and the block F move together, and the spring K normally holds the pawl  $F^2$  in engagement with the notched arc  $d^5$ . These sliding blocks carrying the pawls should be knurled or otherwise roughened as at  $f^2$  for convenience of manipulation.

In the form of device shown in Figs. 8 and 9 a sliding block  $F^6$  is pivotally connected to the pawl  $F^5$ , which pawl is normally pressed forward by the spring  $f^6$  shown in dotted lines in Fig. 8. The pawl  $F^5$  is pivoted on the screw  $f^5$  set in the base C. The block  $F^6$  should be provided with the arrow  $f$  and in-

dex edge  $f'$ , and should be roughened as already described with reference to the block F, but these features have been omitted from the drawings for the sake of clearness therein.

S, shown only in Figs. 10 to 12, represents the front sight, and when in the proper position, the point of the said front sight should be in the vertical plane passing through a center of the rear sight notch  $D^0$ .

The relative positions of the sides of the front sight with the annular edges  $d^0$  will enable the marksman to rapidly get the eye in the line of sight. It will be seen that, with a little practice, variations in the speed of the object aimed at may be readily compensated for; and that also by slight variations in the height that the point of the front sight extends above the annular edges  $d^0$ . Adjustments for sighting within point-blank range, or between any of the ranges indicated on the notched arc may be made. These adjustments are a matter of practice and will depend upon the skill of the marksman.

In order to use the sight, it should be left down or in the initial position for all ranges less than the point-blank range indicated on the notched arc, and any adjustments inside of this range should be made by the eye of the marksman. To set the sight, say at a thousand yards, the leaf  $D'$  is swung upward about its pivot  $e$ , until the pawl has clicked five times, or until the arrow or index edge points to ten.

To lower the sight, draw back the block F, and ease the leaf  $D'$  down to the initial position.

Since the pawl will click as it passes over each tooth on the notched arc, the herein described sight is eminently adapted for use at night, or when the marksman desires to keep his eye on the target while adjusting the sight. Thus to sight at an object a thousand yards away, the marksman presses forward the sliding block and allows the sight to fall into the initial position, that for point-blank range. This is done to make sure that the sight has not been set at any elevation. Then if the marksman raises the sight slowly until the pawl has clicked five times he will be sure that the sight is set at the right elevation.

In order to prevent the inertia of the recoil from disengaging the pawl, the spring should be strong enough to overcome the inertia of the block F and the parts connected thereto, and also as an additional preventive, the notches on the arc are undercut, and the pawl is inclined slightly upward, as is shown most clearly in Fig. 2. The sight is thus firmly held in position until the marksman desires to alter the elevation of the same.

The block F is placed within easy reach of the left-hand of the marksman, and he can thus operate the sight by the use of one hand. Moreover should the pawl-spring get broken or fail to operate, which is not likely to hap-



pen, the marksman may readily hold the block F with his thumb while firing, and thus insure the permanent elevation of the leaf D'.

It will be obvious that when the sight is not in use, the leaf will lie close along the barrel, and will not be likely to be accidentally injured. Moreover the adjustable parts project but little when in use, the pawl and its attachments being close along the barrel, and the notched arc being ordinarily mainly inclosed within the stock. The drift should be compensated for by properly setting the front sight. Correction for wind is considered a needless refinement for the practical purposes of the military or naval service.

It will be seen that in the sight herein described only one sight notch, one set of marks, and one origin are used; and thus the often needless and generally bewildering array of figures and the complicated adjustments of the sights most ordinarily in use are obviated.

It will be seen that the herein described sight is rigid, is not displaced by the recoil, has a small amount of projection either when set or when not in use, is not delicate enough to be easily put out of order, and is not difficult to repair.

It will also be evident that the herein described sight with or without minor modifications is adapted for use in rapid fire guns and other ordnance.

These and the various other advantages of the herein described invention will readily suggest themselves to any one skilled in the use of firearms or cannon.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. In a sight, the combination with a sight leaf pivoted approximately horizontally and connected to the gun, and being provided with a sight notch and a bright strip in the same vertical plane with the line of sight, of means for raising and lowering said pivoted leaf and of holding the same at any desired elevation, substantially as described.

2. In a sight, the combination with a sight leaf pivoted approximately horizontally and connected to the gun, the upper face of said leaf being striped longitudinally, a rear sight piece carried by said pivoted leaf, and means for raising and lowering said pivoted leaf and of holding the same at any desired elevation, substantially as described.

3. A rear sight for guns consisting essentially of a vertically movable sight piece provided with a Y-shaped notch therein, the sides of said notch being bent outward at an angle toward their upper ends and being annular in shape, thus forming an annular edge at or near the center of the sides of said notch, substantially as and for the purposes described.

4. In a sight, the combination with a sight leaf pivoted approximately horizontally near its rear end and connected to the gun, and being provided with a sight notch near its forward end and a bright strip in the same vertical plane with the line of sight, of means for raising and lowering said pivoted leaf and of holding the same at any desired elevation, substantially as described.

5. In a sight, the combination with a sight leaf pivoted approximately horizontally near its rear end and connected to the gun, the upper face of said leaf being striped longitudinally, a rear sight piece carried by said pivoted leaf near the front end thereof, and means for raising and lowering said pivoted leaf and of holding the same at any desired elevation, substantially as described.

6. In a sight, the combination with a sight leaf pivoted approximately horizontally and connected to the gun, and being provided with a sight notch of a graduated toothed arc rigidly connected to said leaf and moving therewith, the teeth being shorter near the upper end of said arc and each succeeding tooth projecting beyond the one above, and a pawl engaging in said teeth and locking said arc at any desired elevation, substantially as described.

7. In a sight, the combination with a sight leaf pivoted approximately horizontally and connected to the gun, being provided with a sight notch, of a graduated toothed arc rigidly connected to said leaf and moving therewith, the teeth being shorter near the upper end of said arc and each succeeding tooth projecting beyond the one above, and a spring operated pawl adapted to lock said arc at any desired elevation, substantially as described.

8. In a sight, the combination with a sight leaf pivoted approximately horizontally and connected to the gun, and being provided with a sight notch and a bright strip in the same vertical plane with the line of sight, of a notched arc projecting from the said leaf and rigidly connected thereto, and a pawl holding said notched arc in any desired position, substantially as described.

9. In a sight, the combination with a sight leaf pivoted approximately horizontally and connected to the gun, the upper face of said leaf being striped longitudinally, a rear sight piece carried by said pivoted leaf, a notched arc projecting from said leaf and rigidly connected thereto, and a spring operated pawl holding said arc in any desired position, substantially as described.

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

ALBERT C. DIEFFENBACH.

Witnesses:

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MAURICE J. SIOUSSA.