

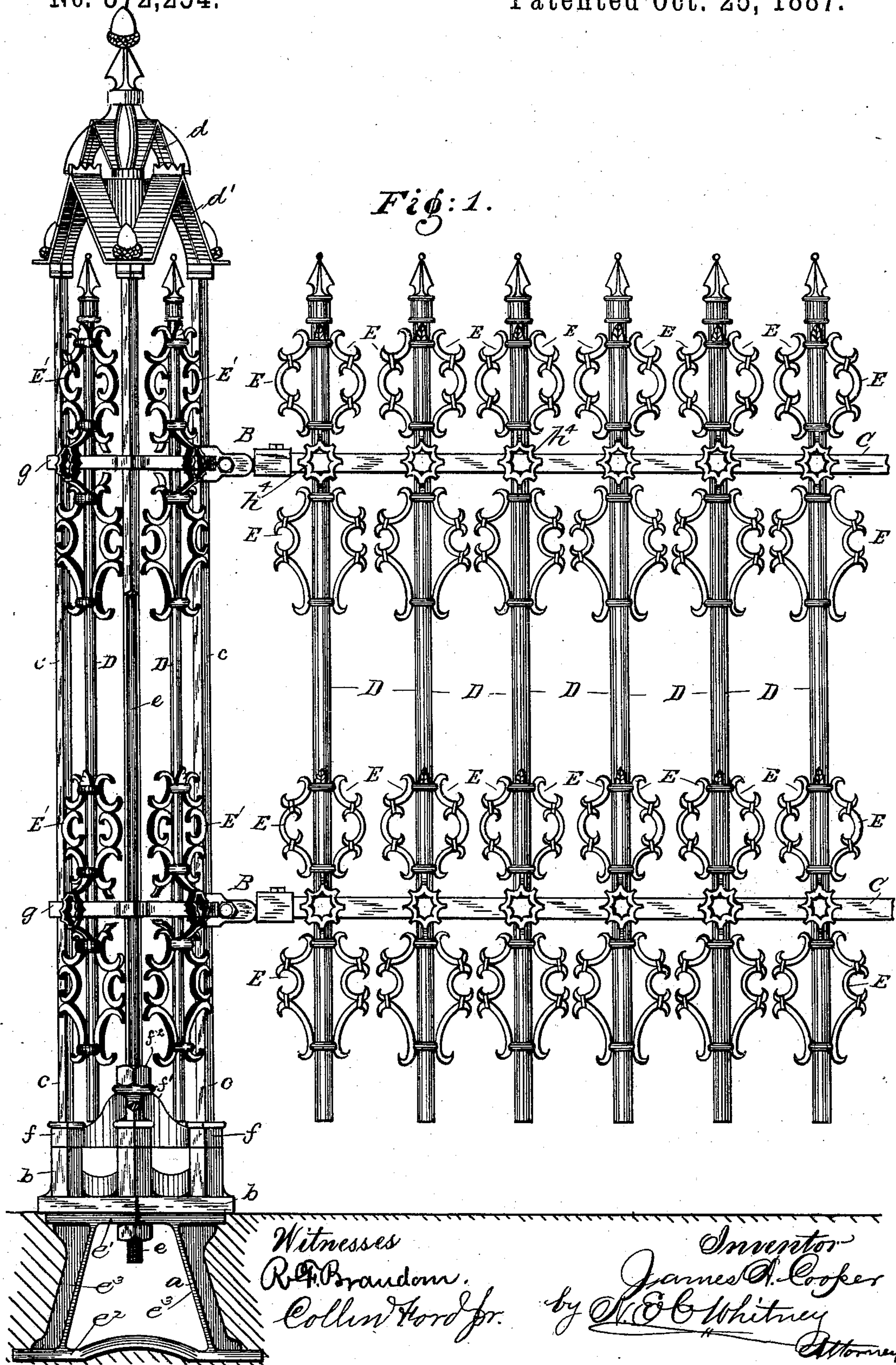
(No Model.)

2 Sheets—Sheet 1.

J. A. COOPER.
METALLIC FENCE.

No. 372,254.

Patented Oct. 25, 1887.



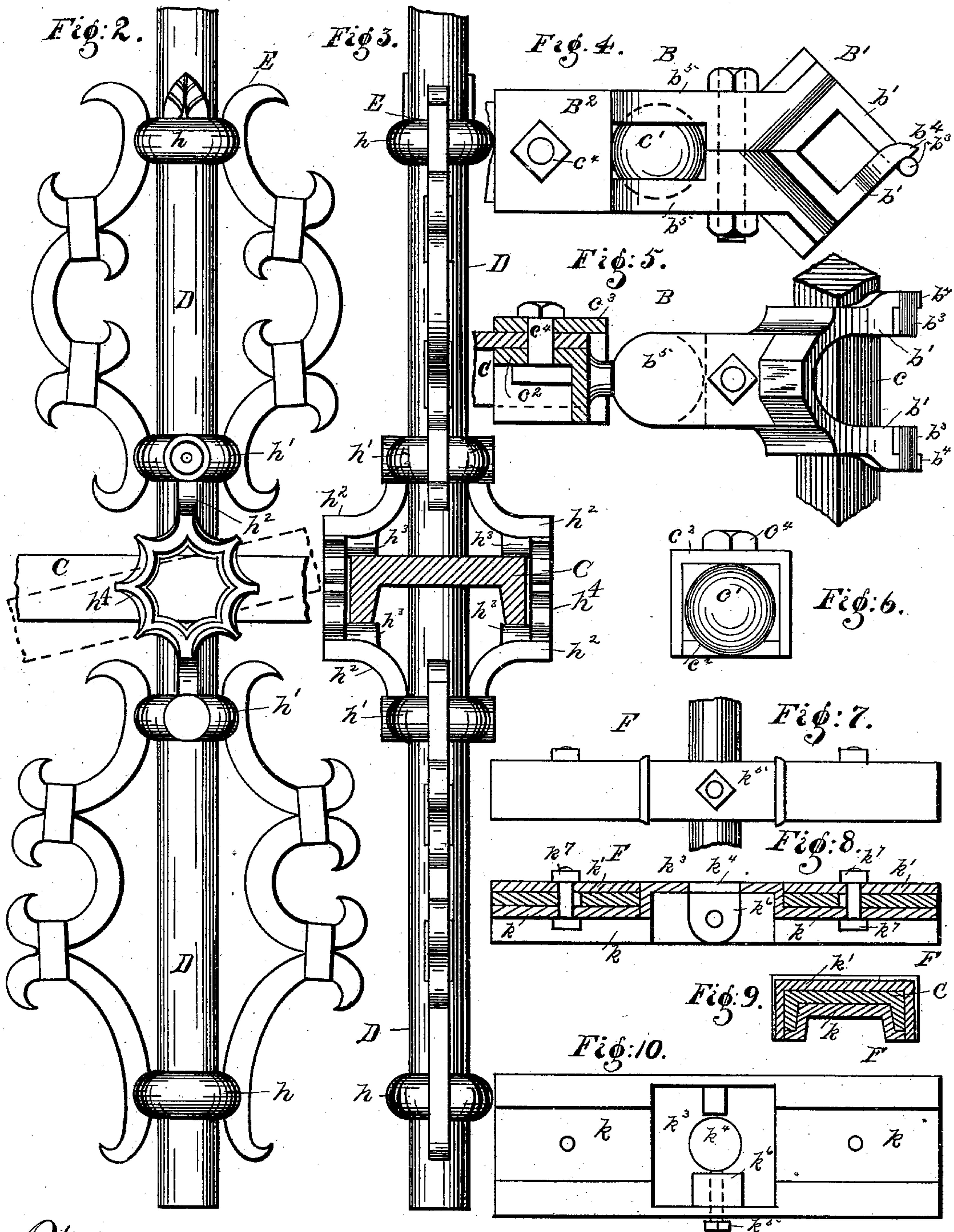
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UNITED STATES PATENT OFFICE.

JAMES ATEN COOPER, OF LIMA, OHIO.

METALLIC FENCE.

SPECIFICATION forming part of Letters Patent No. 372,254, dated October 25, 1887.

Application filed April 16, 1886. Serial No. 199,100. (No model.) Patented in England May 13, 1886, No. 6,637, and in France May 15, 1886, No. 176,169.

To all whom it may concern:

Be it known that I, JAMES ATEN COOPER, of the city of Lima, county of Allen, and State of Ohio, have invented certain new and useful Improvements in Metallic Fences, (patented in Great Britain May 13, 1886, and numbered 6,637, and in France May 15, 1886, and numbered 176,169,) of which the following is a specification.

10 This invention relates to improvements in metallic fences, the object of the invention being to provide a metallic fence of such construction that it may be quickly and readily adjusted to different angles to adapt the same to grades of greater or less pitch, and to provide picket-holding ornaments of such construction that when in place they have a bearing upon the rail at its extreme edges inward at the upper and under sides and in a direct line with the center of the picket, and will have the same appearance when viewed from either side.

Another object of the invention is to provide a fence-post with pickets and ornaments similar to the pickets and ornaments which constitute the main portion of the fence proper, so that the same general ornamentation will extend from end to end of the fence.

Another object of the invention is to provide the fence with metallic connections of such construction that the adjacent ends of the rails (which constitute the picket-supports) of two sections or panels may be connected together after all the line-posts are set without tipping or inclining the said rails to enter their ends into the connection and without sliding them forward to accomplish this result.

In order that others may use and construct my invention, I will now proceed to describe the same, reference being had to the accompanying drawings, in which—

Figure 1, Sheet 1, represents in front elevation a portion of a fence as constructed in accordance with this invention; Fig. 2, Sheet 2, a front view of a portion of a picket and channel-rail and the ornament which secures them, the rail being shown by dotted lines as slightly inclined; Fig. 3, a side elevation of the same, the rail being shown in section; Figs. 4, 5, and 6, details of the adjustable connection

which connects the rails of the fence to the post; Fig. 7, a side elevation of the rail-connection; Fig. 8, a vertical central longitudinal section of the same; Fig. 9, a vertical cross-section of the same on dotted line *xx*, Fig. 7; and Fig. 10, an under side view of the same.

The metallic fence forming the subject of this invention comprises the post A; its component parts; the adjustable connection B, connecting the post and channel-rails; the channel-rails C, the pickets D, the ornaments E, which engage the pickets and channel-rails; and the rail-connections F, that connect the ends of the rails of adjacent sections or panels of the fence proper, all of which parts are constructed and arranged substantially as and for the purpose hereinafter set forth.

The post is composed of the base *a*, base-cap *b*, vertical supporting-standards *c*, top pieces, *d d'*, stay-rod *e*, brace *f*, picket-supporting bands *g*, pickets D, and picket-holding ornaments E', all of which are constructed and arranged as hereinafter set forth.

The adjustable connection B, which connects the rails of the fence proper to the post-standard, consists of a two-part ball-socket clutch, B', having fingers *b'* at one end to grasp the post-standard, and a two-part rail-engaging sleeve, B², having a ball, *c'*, formed integral with one of its parts to enter the ball-socket of the clutch B', these two elements forming together a universal or ball-and-socket connection between the fence-rails and the post, and allowing the fence proper to be inclined more or less with relation to the post, to adapt it to grades of various pitch, and at the same time permitting lateral adjustment of the same, if desired.

As above stated, the socket-clutch, which forms one element of the adjustable connection B, is made in two parts, it being centrally and vertically divided, as clearly illustrated in the drawings, Fig. 4, Sheet 2. Each part or member of the clutch has two standard-grasping fingers, *b'*, the inner contour of which is of right-angle or V shape—that is to say, they are of such construction that when the two members or parts of the clutch are united an inclosed square space is left between them for the reception of the post-standard. The fingers

of one member of the clutch have upwardly and downwardly projecting lugs b^3 , which lugs are engaged when the two members are united by a slightly hook-shaped projection, b^4 , on the fingers b' of its fellow member, said pin and hook preventing any liability of the two members becoming separated when bolted together around the post-standard. The opposite end of the clutch B' is shaped to form projecting ears b^5 , having spherically-concaved inner faces, the said ears forming a socket for the reception of the ball-like end c' of the two-part rail-engaging sleeve B^2 , the clutch members being clamped together around the post-standard and ball c' by a bolt between the socket and finger ends.

The sleeve B^2 consists of a lower plate, c^2 , to support the channel-rail C of the fence, and a cap, c^3 , to overlap and cover said plate and channel-rail, the said plate c^2 being of a shape in cross-section to correspond to the cross-sectional shape of the channel-rail, it being of less diameter, however, being interposed between the depending flanges of the rail C . The ball c' , which is engaged by the clutch, is preferably formed integral with the plate c^2 , and the cap c^3 , which covers the plate c^2 , is constructed similar to a square or oblong box with one end and the bottom off, the said cap being of sufficient internal diameter to overlap the rail C and plate c^2 , which supports the rail, an open slot being made in the forward end of the cap to straddle the stem or shank of the ball c' . The rail C is secured to the two-part sleeve B^2 by the bolt c^4 , extended through the plate c^2 , rail C , and cap c^3 , as illustrated in Fig. 4, Sheet 2.

In the post A (illustrated in Fig. 1, Sheet 1) the vertical standards c are seated at their base in square bearings formed in square upwardly-projecting bosses d^2 on the base cap b , and at their upper ends in like bearings in the top piece, d' , the said standards being secured in position at points intermediate between opposite ends by the metallic bands or spiders g , the said bands having openings at their corners, through which the standards c extend, and having central openings, through which the stay-rod e (which extends from one end of the post A to its other) passes. The base-cap b rests upon and is supported by the base a , which base has a square top plate, e' , and a bottom plate, e^2 , connected together by flanged supporting-legs e^3 . As will be noticed by reference to the drawings, the bottom plate, e^2 , of the base a is raised somewhat near its center, so as to have a bearing only at its ends, the object being to prevent rocking of the base upon stones or other obstructions which may accumulate to mar the evenness of the ground upon which the plate rests. The top of the post may be of any design desired, the design shown in the drawings being preferable. The headed stay-rod e extends from the top of the post its entire length through the base-cap b and top plate of the base a , a nut being provided at

its extreme lower end to hold and tighten the same.

At a point just above the base-piece b of the post is a four-armed brace, f , each arm of which is provided at its extreme end with square openings, through which the standards c of the post extend, said brace being preferably of cast metal, and being provided at its center with a sleeve, f' , through which the central stay-rod of the post A extends, said sleeve resting (when the brace is pressed downward by means of the nut f^2 , which engages the central stay-rod and bears upon the center piece of the brace f) upon the base-piece b , thereby securing the standards c of the post against movement.

The picket D , which may be of any ordinary pattern, will preferably be used with a channel-supporting rail C of the shape clearly illustrated in Fig. 3, Sheet 2, of the drawings. Other forms of rail might be used, however, if desired, the said rail having a slightly-elongated slot through its central web, through which the picket is inserted when putting the fence together.

The ornament E , by means of which the channel-rail C and picket D are secured in place, is provided at its upper and lower ends with picket-encircling eyes h h , as in ornaments of usual construction. Located upon the ornament E , a suitable distance above and below the center, are picket-encircling eyes h' h' , connected together by ornamental arms or webs h^2 h^2 , which extend outward in opposite directions for a short distance from each eye h' h' , above and below the rail C , and extend around both sides of said rail, thereby forming a bearing for the said rail and preventing lateral movement. These arms h^2 h^2 , which extend around the rail C , are in a line with the center of the picket, and have projecting lugs h^3 , to bear upon the rail at its upper and under faces in a line with the center of the picket, said lugs being rounded at their ends and forming axial bearings for the rail, upon which the rail may rock when being inclined to a desired angle to adjust the fence to grades. By this construction of ornament, it having arms h^2 , to extend around both sides of the rail C , and being provided with lugs h^3 , to bear upon the upper and under sides of the rail, as described, (said lugs extending inward a considerable distance from the outer edges of the rail, as shown,) a central bearing is secured for the rail on its extreme edges at its upper side, and at its flanges at its under side, and in consequence of the provision of two arms h^2 , constructed and arranged as described, the strength of the ornament is materially augmented, and the strain upon the main parts of the ornament is thereby equalized, and the ornament is less liable to become bent, broken, or displaced. Again, it will be apparent to any one skilled in this art that by providing arms of like construction at each side of the center of the ornament the ornament is less liable to warp or twist in

casting. It will also be understood that by providing a fence with ornaments of this construction the appearance of the fence is alike when viewed from either side, which is very desirable. In the post A pickets are extended through the openings in the bands *g* between the post-standards *c*, and are secured thereto by ornaments *E'*, which ornaments are of the same general construction as those before described, which connect the pickets and fence-rail, with the exception that the arms *h*² of the post ornaments are cut away upon one side sufficiently to permit the interposition of the band *g*, the ornaments being placed upon the band from one side, which construction and arrangement gives approximately the same general ornamentation to the post as to the fence by giving it the appearance of a like and continuous ornamentation from end to end. As shown in the drawings, the arms *h*² have a central vertical ornamental part, *h*⁴, to bear against the two sides of the rail C, which ornamental part *h*⁴ is of greater width than the main portion of the arms and forms an ornamental part for the center of the ornament E and the side bearing for the rail, and on account of its width and bearing against the rail prevents any possibility of the ornament turning sidewise.

In Figs. 7, 8, 9, and 10, Sheet 2, an improved connection, F, for the ends of the rails in the fence-sections, is illustrated. This connection F is constructed in three pieces—a rail-supporting plate, *k*, and two caps, *k'* *k'*. The supporting-plate *k* will in practice be of a width equal to the width of the rail C, it having a raised box-like central portion, *k*³, as shown most clearly in Fig. 8, the ends of the plate each side of the portion *k*³ being of a shape to correspond to the interior contour of the rail C, the said rail straddling said ends, and being secured thereto by a bolt, *k*⁷, extending through the cap *k'*, rail C, and plate *k*, the rail having an elongated opening therein to permit expansion and contraction.

The caps *k'*, which cover the rail C and plate *k*, are shaped like a box without a bottom or ends, and are placed over the rail after the same is in position. By this construction of rail-connection the rails may be secured in place without tipping or inclining them and without sliding them forward to enter the connection, as is customary with connections of ordinary constructions, which is greatly advantageous, as it permits the panels or sections of fence to be connected after setting all the line-posts, which is impossible with other connections. The plate *k* has a picket-opening, *k*⁴, formed therein for the reception of the picket, a set-screw, *k*⁵, extending through a boss, *k*⁶, upon the side of the plate *k*, holding the picket in place.

An ornament, E, similar to those used with the fence-pickets D, will be used to secure the picket and connection F together. The space between the arms *h*² will, however, be somewhat greater than in the ornaments before de-

scribed, to permit the interposition of the connection F (which connection is wider than the rail C) between the arms.

It is not desired to limit the invention to the exact shape of rail or ornament, as many different forms may be used without departing from my invention.

I am aware that a fence has been provided with an ornament having an arm to extend around and engage one side of the rail, said ornament being provided with downwardly and upwardly extending V-shaped prongs to contact with the upper and undersides of the web of the rail, as described and claimed in Patent No. 326,535, dated September 15, 1885; but this construction I do not desire to claim.

I claim—

1. A metallic fence comprising the punched rail C, the picket D, extended therethrough, and the ornament E, having eyes to engage the picket, and having the arms *h*² extending out in opposite directions entirely around the front and rear sides, respectively, of the rail, which arms have lugs *h*³, to bear upon the upper face of the rail at both edges and upon the under faces of the flanges of the rail in a line central with relation to the center of the picket, substantially as and for the purpose described.

2. The picket-holding ornament E for metallic fences, having the picket-encircling eyes *h* *h'*, the arms *h*² *h*², extending out in opposite directions around both sides of the rail, and having the central vertical ornamental part, *h*⁴, of greater width than the main body of the arms *h*², to bear against the sides of the rail, as described, and having the lugs *h*³, to bear upon the upper face of the rail near both its edges and upon the under faces of the rail-flanges in a line central to the center of the picket and ornament, all substantially as and for the purpose set forth.

3. In a metallic fence, the fence-post A, composed of the base-cap *b*, having upwardly-projecting bosses with the sockets formed therein, the vertical standards seated in said sockets, the top pieces, *d* *d'*, the brace *f*, the bands or spiders *g*, having openings through which the standards extend, and intermediate openings through which pickets are extended, pickets D, and picket-holding ornaments *E'*, all constructed and arranged substantially as shown and described.

4. In a metallic fence, the adjustable connection B, to connect the fence-rails to the post, consisting of the two-part clutch B', having fingers at one end to grasp the post-standard, and ears at the opposite end having spherically-concaved inner faces to form a ball-socket, and a two-part rail-engaging sleeve having a ball at one end to enter and be held by the ball-socket of the clutch, substantially as shown, and for the purpose described.

5. The adjustable connection for the post A and rail C of the fence, consisting of the two-part clutch B' and the two-part rail-engaging

sleeve B², the clutch being composed of two members and being divided vertically and longitudinally, each member having fingers b', of such shape that when joined a square space 5 is left between them, the two fingers of one member having upwardly-projecting lugs and the two fingers of the other member having projections to engage said fingers, as described, the opposite end of the clutch having a ball-socket formed therein, the two members being 10 clamped together by a bolt, as set forth, and the rail engaging sleeve being composed of the lower plate, c², to enter between the flanges of the channel-rail, and having the ball c' 15 formed integral therewith, and the open cap c³, to overlap the rail and lower plate, the whole being secured by the bolt c⁴, all as and for the purpose set forth.

6. In a fence, the connection for the rails,

consisting of the plate k, shaped to correspond 20 to the interior contour of the rail C, having a raised central box-like portion, k³, with a picket-opening through its upper web, and a boss upon its inner side to receive a set-screw, as described, and the box-like caps k' k', to 25 cover the said lower or main plate, k, all constructed and arranged substantially as shown and described, whereby the rails may be secured together without tipping them or sliding them forward, as set forth. 30

In witness whereof I have hereunto set my hand and seal, at Pittsburg, Pennsylvania, this 9th day of January, A. D. 1886.

JAMES ATEN COOPER. [L. S.]

In presence of—

F. L. STEPHENSON,
J. M. MCBRIDE.