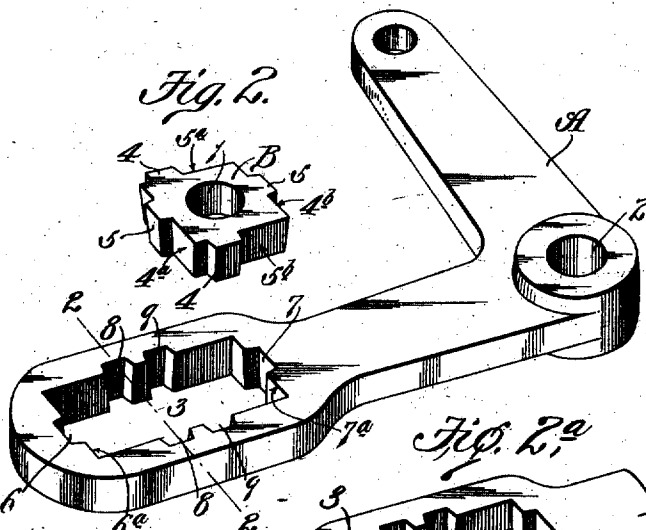
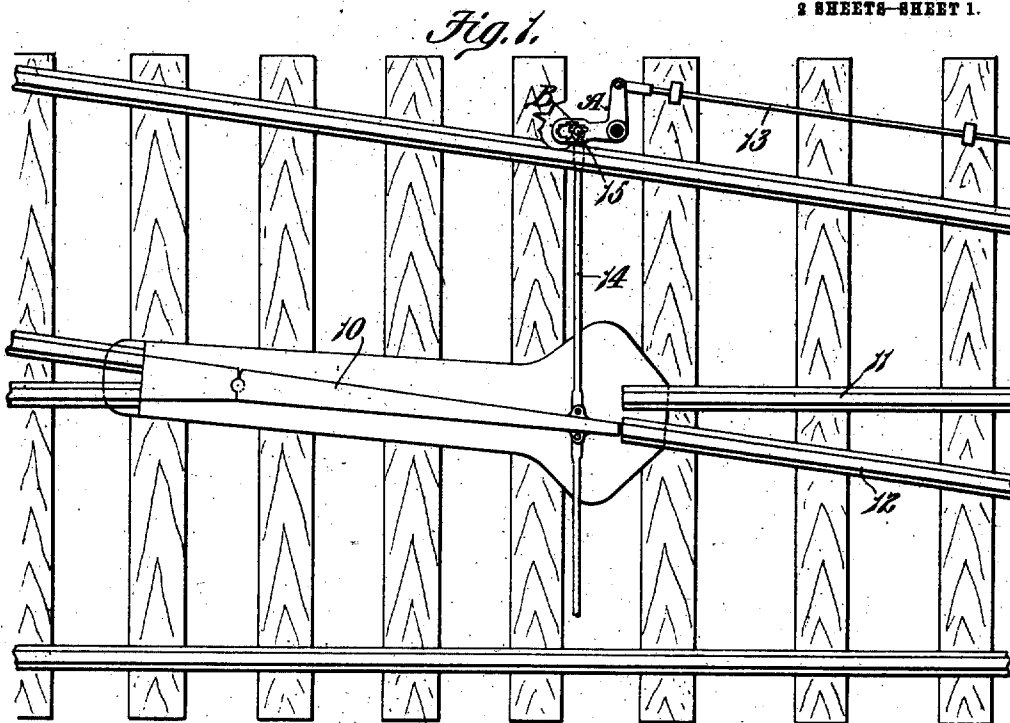


H. F. ROACH.  
ADJUSTABLE CONNECTING DEVICE.  
APPLICATION FILED MAR. 7, 1910.

990,594.

Patented Apr. 25, 1911.

2 SHEETS-SHEET 1.



*Fig. 3.*



Witnesses:  
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Wells L. Church

Inventor:  
Harry F. Roach.  
By Paul Bakewell  
att'y.

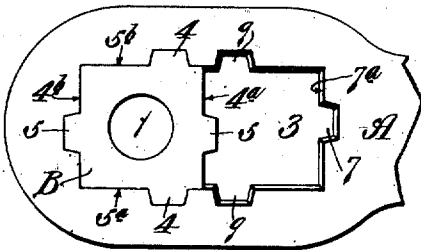
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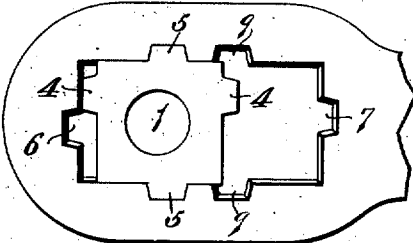
Patented Apr. 25, 1911.

2 SHEETS—SHEET 2.

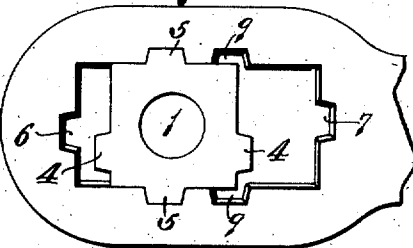
*Fig. 4.*



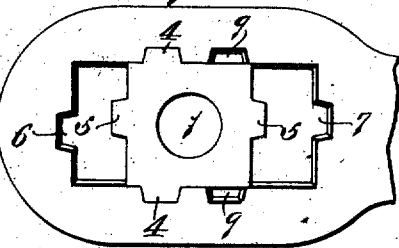
*Fig. 5.*



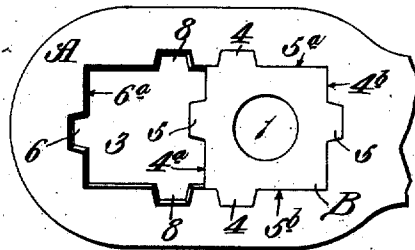
*Fig. 6.*



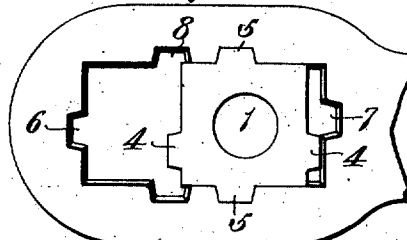
*Fig. 7.*



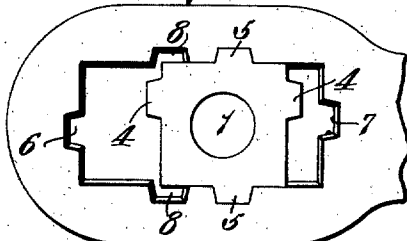
*Fig. 11.*



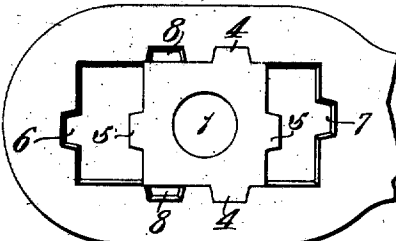
*Fig. 10.*



*Fig. 9.*



*Fig. 8.*



Witnesses:  
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Inventor:  
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By Paul B. Kewell Atty.

# UNITED STATES PATENT OFFICE.

HARRY F. ROACH, OF ST. LOUIS, MISSOURI, ASSIGNOR TO CONTINUOUS RAIL & SAFETY SWITCH CO., OF ST. LOUIS, MISSOURI, A CORPORATION OF NEW JERSEY.

## ADJUSTABLE CONNECTING DEVICE.

990,594.

Specification of Letters Patent.

Patented Apr. 25, 1911.

Application filed March 7, 1910. Serial No. 547,854.

*To all whom it may concern:*

Be it known that I, HARRY F. ROACH, a citizen of the United States, residing at St. Louis, Missouri, have invented a certain  
5 new and useful Improvement in Adjustable Connecting Devices, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the  
10 same.

This invention relates to devices that are used for connecting two movable elements together.

The main object of my invention is to provide a connecting device of novel construction that has an adjustable portion or member which is adapted to be arranged in a plurality of different positions so as to vary the throw or degree of movement that is imparted to one of the elements with which  
20 the connecting device coöperates.

Another object is to provide an adjustable connecting device for the purpose described, which is so constructed that a very  
25 slight adjustment of the movable element can be effected.

Another object is to provide a connecting device that comprises a body portion and a removable member carried thereby and constructed in such a manner that it can be  
30 arranged in a plurality of different positions without throwing certain points on said member and body portion out of longitudinal alinement with each other.

Another object is to provide an adjustable connecting device that can be manipulated easily and which is so designed that the adjustable portion thereof is securely locked  
35 in position.

Another object is to provide a bell crank lever having an adjustable portion or member which can be arranged in a number of different positions so as to vary the distance between the fulcrum of the lever and the  
40 point at which the lever is connected to one of the elements with which it coöperates. And still another object is to provide an adjustable mechanism of novel construction for operating the movable tongue of a railway  
45 track structure of that type in which a movable tongue is arranged at the intersection of the inside rails of two intersecting tracks so as to form a continuous wheel-tread surface.

While I have herein shown my invention

embodied in a bell crank lever that is used for connecting two elements of movable frog tongue operating mechanism together, I do not wish it to be understood that my broad  
60 idea is limited to such a device for my invention is applicable to various other devices that are used for connecting movable elements together.

Figure 1 of the drawings is a top plan view of a portion of a railway track structure that is equipped with a bell crank lever constructed in accordance with my invention; Fig. 2 is a perspective view of said lever showing the parts thereof separated; Fig. 2<sup>a</sup> is a perspective view of a slightly  
65 modified form of lever; Fig. 3 is a vertical sectional view of the arm of the lever shown in Fig. 2 with the adjustable member arranged in operative position, said view being taken on approximately the line 3—3 of  
70 Fig. 2; Figs. 4 to 11, inclusive, are detail views illustrating the various positions of the adjustable member of the lever.

Referring to the drawings which illustrate a bell crank lever constructed in accordance  
80 with my invention, A designates the lever, and B designates an adjustable portion or member that is mounted in one arm of said lever. This adjustable member B is provided with an opening 1 for receiving the  
85 fastening device that connects the lever to one of the elements with which the lever coöperates, and said adjustable member is connected to the lever in such a manner that it can be arranged in a plurality of different  
90 positions so as to vary the distance between the fastening device opening 1 and the opening 2 through which the fulcrum of the lever passes, and thus vary the throw of the element that is connected to the arm of the  
95 lever in which said adjustable member B is mounted. The adjustable member B is so constructed that it can be arranged in eight different positions, as shown in Figs. 4 to 11, inclusive, Figs. 4 and 11 illustrating the two extreme positions of said member, and Figs. 5 to 10, inclusive, illustrating the intermediate positions of said member. Said member B consists of a square block that is adapted to fit in an oblong-shaped  
105 pocket or opening 3 formed in the lever A, the coöperating side faces or edges of said block and opening being tapered slightly, as shown in Fig. 3, so that the top and bottom faces of said block will be flush with the  
110

top and bottom faces of the lever when said block is arranged in operative position. Instead of having the pocket or opening 3 extend clear through said lever, said pocket 5 could be formed in the top face of said lever and the bottom of the pocket provided with a slot 3<sup>a</sup> for receiving the fastening device that passes through the opening 1 in the block B, as shown in Fig. 2<sup>a</sup>. The fastening device opening 1 is located at the center of the adjustable member B so that all of the sides or edges of said member will be located an equal distance from the center of said opening 1, and the oblong-shaped 10 pocket or opening 3 in the lever which receives the member B is twice as long as said member.

In the construction herein shown, the means for retaining the member B in adjusted position consists of laterally projecting lugs on said member that are adapted to fit in notches formed in the lever A but it will, of course, be obvious that this construction could be reversed without departing from the spirit of my invention. Furthermore, I do not wish it to be understood that my invention is limited to a structure in which the adjustable member can be arranged in eight different positions for the particular 30 number of adjustments of said member is immaterial so far as my broad idea is concerned. I prefer to provide the member B with one pair of lugs 4 that project laterally from two of the oppositely disposed side edges thereof, and a separate pair of lugs 35 5 that project laterally from the other two oppositely disposed side edges of said member. The oblong-shaped opening 3 which receives the member B is provided at one end 40 with a notch 6, at its opposite end with a notch 7, and in its sides with two pairs of oppositely disposed notches or recesses 8 and 9. These cooperating lugs and notches on the adjustable member B and in the lever 45 A are so arranged that the member B can be moved progressively from one of its extreme positions to its other extreme position with a slight variation between each position. The lugs 4 are arranged a comparatively 50 short distance from the edge 4<sup>a</sup> of the member B and a comparatively great distance from the edge 4<sup>b</sup> of said member, and the lugs 5 are so arranged that the distance between said lugs and the edge 5<sup>a</sup> of the member B will be greater than the distance 55 between the lugs 4 and the edge 4<sup>a</sup>, thus causing said lugs 5 to be spaced away a less distance from the edge 5<sup>b</sup> than the lugs 4 are spaced away from the edge 4<sup>b</sup> of the member B. 60

The distance between the notches 8 and the end wall 6<sup>a</sup> of the opening 3 corresponds to the distance between the lugs 4 and the edge 4<sup>b</sup> of the member B, and the notches 65 9 are located the same distance from the op-

posite end wall 7<sup>a</sup> of the opening 3. In the construction herein shown the distance between the notches 8 and 9 corresponds to the distance between the lugs 5 and the edge 5<sup>a</sup> of the adjustable member but this could, 70 of course, be varied without departing from my broad idea. In other words, I arrange the lugs on the square adjustable member B at different distances from the four edges or side faces of said member so that said member can be arranged in eight different positions by turning it so that one pair of the lugs thereon will aline with one of the pair of notches in the lever A. Fig. 4 shows the adjustable member B arranged in one of its 80 extreme positions with the lugs 4 projecting into the notches 8 and one of the lugs 5 projecting into the notch 6. If it is desired to move said member a trifle closer to the fulcrum of the lever A and thus reduce the 85 throw of the movable element that the lever actuates, the member B is lifted out of the opening 3 and turned a quarter of a revolution in anti-clockwise direction so that the lugs 5 will enter the notches 8. By reversing 90 the member B or turning it one-half a revolution in anti-clockwise direction from the position shown in Fig. 5, the lugs 5 will be brought into alinement with the recesses 8 and thus lock the member B in the position 95 shown in Fig. 6, and if it is desired to move said member still closer to the fulcrum of the lever said member is turned a quarter of a revolution in clockwise direction from the position shown in Fig. 6 so that the lugs 4 100 will enter the notches 8, as shown in Fig. 7. The next adjustment of the member B is effected by reversing said member or turning it one-half a revolution in anti-clockwise or clockwise direction and then shifting 105 it longitudinally of the opening 3 so that the lugs 4 will enter the notches 9, as shown in Fig. 8. The member B is now arranged in its original position shown in Fig. 4 but with the lugs 4 projecting into the second 110 set of notches 9 which are closer to the fulcrum of the lever than the notches 8. To obtain the adjustments illustrated in Figs. 9, 10 and 11, the member B is manipulated in the manner previously described in connection with Figs. 5, 6 and 7 so that the lugs 115 thereon will cooperate with the notches 9.

From the foregoing it will be seen that the notches 9 perform no function during the first four adjustments of the member B 120 and that the notches 8 perform no function during the last four adjustments of said member. The notches 6 and 7 only come into service when the member B is arranged in its two extreme positions and while the 125 principal function of said notches is to provide a clearance for one of the lugs on the member B, nevertheless, they also serve as an additional locking means for said member. 130

A construction of the character above described provides for a wide range of adjustment with slight variations in the different positions of the adjustable member or portion, and it also enables the member B to be adjusted longitudinally of the arm of the lever in which it is mounted without throwing the opening 1 out of longitudinal alinement with the opening 2 that receives the fulcrum owing to the fact that the opening 1 is formed in the center of a square block which is arranged in an oblong-shaped opening. The adjustable member can be manipulated easily and quickly and without the aid of a special tool or the necessity of loosening or tightening a clamping device, and as the device comprises only two parts which interlock with each other, it is not apt to get out of order and it can be manufactured cheaply.

As previously stated, my broad idea is not limited to a bell crank lever for various other connecting devices could be provided with an adjustable member of the kind herein shown without departing from the spirit of my invention. Furthermore, while I have herein stated that the preferred form of my invention consists of an adjustable bell crank lever that is adapted to be used in railway track structures, I do not wish it to be understood that said lever is limited to this specific use or to use with any particular type of railway track structures. I have found, however, that it is very well adapted for a railway track structure of the type shown in Fig. 1 of the drawings owing to the fact that it enables the movable frog tongue to be adjusted delicately so that it will register perfectly with the track rails with which it coöperates. Referring to said Fig. 1, 10 designates a movable tongue that is arranged at the intersection of the inside rails 11 and 12 of two intersecting tracks, and 13 and 14 designate two of the movable elements of an operating mechanism which moves said tongue laterally so as to bring the toe end of same into alinement with one or the other of the track rails 11 and 12. These movable elements 13 and 14 are connected together by a bell crank lever A of the kind shown in Fig. 2 and previously described, the movable element 14 of the tongue operating mechanism being connected to the adjustable member B by means of a fastening device 15 that passes through the opening 1 in said adjustable member.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A device for the purpose described, comprising a body portion provided with an elongated opening, an adjustable member arranged in said opening and adapted to be adjusted longitudinally thereof, and projections on one of said parts that fit in

recesses in the other part, said projections and recesses being so arranged that said member can be adjusted longitudinally, distances less than the spaces between said recesses by rotating or turning said member relatively to said body portion.

2. A device for the purpose described, comprising a body portion that is provided with an elongated pocket, an adjustable member arranged in engagement with the side walls of said pocket, and a plurality of laterally projecting lugs on one of said parts that are adapted to project into co-operating recesses in the other part and thus hold said member in adjusted position, said lugs and recesses being so arranged that said member can be adjusted longitudinally for distances less than the spaces between said recesses without throwing the center of said member out of alinement with the longitudinal axis of said body portion.

3. A connecting device having a body portion that is provided with a rectangular-shaped opening, a rectangular-shaped removable member arranged in said opening, and a plurality of lugs on said member that are adapted to coöperate with a recess in said body portion, said lugs and recess being so arranged that the distance between said member and one end of said opening can be varied by simply removing said member from said opening, then turning it so as to cause the lugs thereon to aline with said recess, and then replacing said member in said opening.

4. A device for the purpose described, comprising a body portion provided with an oblong-shaped opening which has notches or recesses formed in the ends thereof, said opening also having a plurality of notches or recesses formed in each side thereof, a square removable member arranged in said opening, and pairs of lugs that project laterally from oppositely disposed edges of said removable member.

5. A connecting device that comprises a body portion which is provided with an oblong-shaped opening whose edges or side walls are inclined, a square tapered block arranged in said opening and provided at its center with an opening for receiving a fastening device, and a plurality of pairs of coöperating lugs and notches on said block and in said body portion for holding said block in a number of different positions.

6. A bell crank lever provided in one of its arms with an oblong-shaped pocket, a square block arranged in said pocket for receiving the fastening device that connects the lever to one of the elements with which it coöperates, said block and arm having a plurality of pairs of coöperating lugs and recesses for retaining the block in a number of different positions, and said lugs and recesses being so arranged that the block can

be adjusted distances less than the spaces  
between said recesses by withdrawing it  
from said pocket, turning it so as to bring  
different lugs and recesses into alinement  
5 with each other, and then replacing it in  
said pocket.

In testimony whereof I hereunto affix my

signature in the presence of two witnesses,  
this fourteenth day of February 1910.

HARRY F. ROACH.

Witnesses:

WELLS L. CHURCH,  
GEORGE BAKEWELL.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,  
Washington, D. C."

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