

[54] CONSTRUCTIONAL ELEMENTS
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[58] Field of Search 52/633, 634, 720

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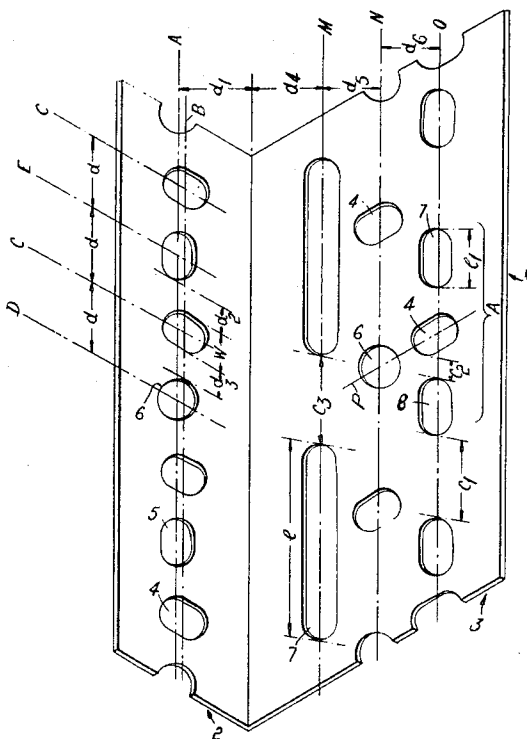
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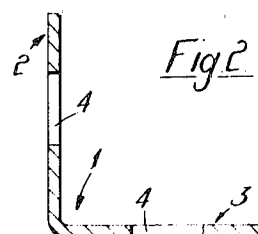
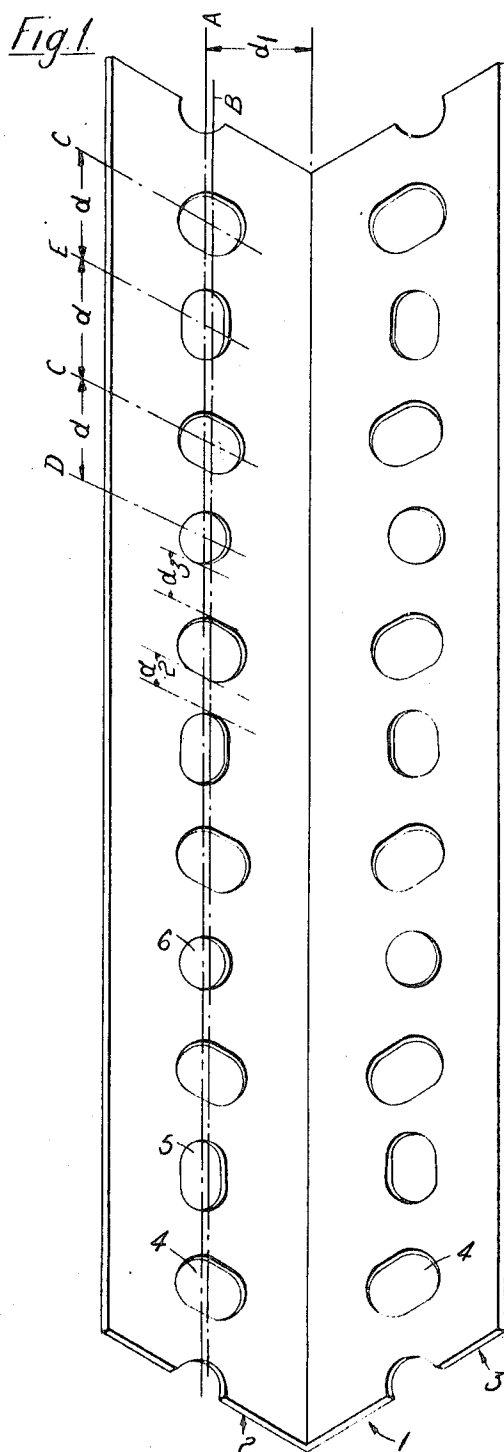
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[57] ABSTRACT

Elongated L-shaped metallic constructional elements provide a pair of angularly disposed flanges with at least one row of holes in each flange. The holes can be of different shapes and in one row holes extending transversely to the longitudinal direction of the element are alternately spaced apart by round holes and longitudinally extending holes. The flanges can be of the same or different widths and can contain one or several rows of holes.

1 Claims, 4 Drawing Figures





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Fig. 3

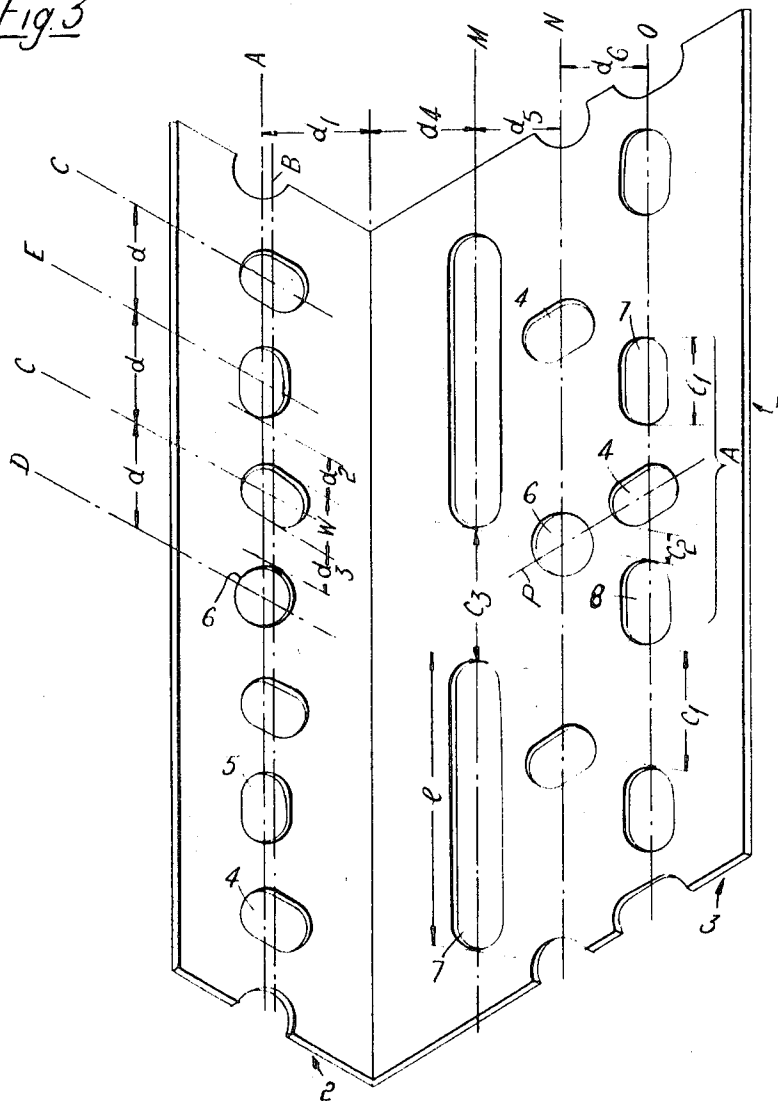
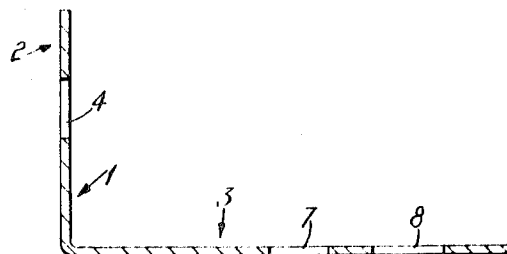


Fig. 4



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CONSTRUCTIONAL ELEMENTS

This invention relates to constructional elements made of metal and having two flanges disposed angularly to each other. In particular, this invention relates to constructional elements having a plurality of holes in each of said flanges, said elements adapted to be connected, for example by bolting, to similar or different slotted elements to form frameworks, racks, partitions and other like structures.

Various constructional elements are known in the art having two flanges disposed angularly to each other and provided with a plurality of holes therein. According to one known such constructional element, the flanges each have two rows of holes, an inner row consisting of long longitudinal holes and an outer row consisting of alternate shorter but wider longitudinal holes and transverse holes, and wherein the arrangement of said holes provided in one flange are similar to that provided in the other flange. The transverse holes lie opposite the mid points of the long longitudinal holes of the inner row. The longitudinally extending holes in the outer row are located opposite the mid lengths of the holes in the inner row.

Further, it is also known to have a constructional element of the kind set forth having a narrow and wider flange disposed angularly to each other, said narrow flange consisting alternately of a big and small round hole, said wider flange having three rows of holes and wherein the inner and outer row consist of small round holes and the middle row consists of big round holes.

An object of this invention is to provide a constructional element of the kind set forth adapted for use for heavy loading purposes and which is simultaneously lighter than the conventional elements known in the art.

Another object of this invention is to provide a constructional element of the kind set forth having particular application, though not restricted thereto, for light racking and medium load strut.

A further object of this invention is to provide a constructional element of the kind set forth which is versatile.

According to this invention, there is provided a constructional element made of metal and having two flanges disposed angularly to each other, a first flange having a single row of holes consisting of a series of transverse holes spaced from each other and having therebetween in alternate relation a longitudinal and a round hole.

In accordance with this invention, the center of the minor axis of the transverse holes lie in a plane different to the plane of the major axis of the elongated and round holes. Thus, there is an offset between said two lines. However, the center line of the major axis of the longitudinal holes is coincident with the center line of the round holes in the longitudinal axis.

In accordance with one embodiment of this invention, there is provided a constructional element wherein said flanges are preferably of equal width, a hole of one flange being in alignment and correspondence with the similar hole of the other flange to thereby provide flanges which are similar if cut at any section perpendicular to the length of the element.

In accordance with another embodiment of this invention, there is provided a constructional element comprising a said first flange and a wider flange having three rows of holes extending longitudinally of the flange, the inner row of said wider flange consisting of long longitudinal holes equally spaced from and similar to each other, the middle row of said wider flange consisting of alternate transverse and round holes, and the outer row of said wider flange consisting of a set of holes, said set of holes each comprising small longitudinal holes spaced from each other and having therebetween a transverse hole.

Further objects and advantages of this invention will be apparent from the ensuing description when read in conjunction with the accompanying drawings which shows one embodiment of the invention by way of example and wherein:

FIG. 1 is a plan view of the constructional element in accordance with the teachings of this invention; and

FIG. 2 is a cross section thereof.

FIG. 3 shows a plan view of another embodiment of the constructional element; and

FIG. 4 shows a cross section of the constructional element of FIG. 3.

Referring to FIG. 1, the constructional element 1 consists of identical flanges 2 and 3 having holes in correspondence and similar to each other. For sake of brevity, reference is hereinafter made to flange 2.

Each of the said flanges comprise of spaced transverse holes 4 and having therebetween in alternate relation a longitudinal hole 5 and a round hole 6. The line of center A along the major axis of the longitudinal hole 5 is coincident with the line of center of the round holes 6 taken along the longitudinal axis. However, the line of center B of the transverse holes 4 along its minor axis is offset from the line of center A. The lines of center C, D and E are taken along the vertical axis perpendicular to the length of the element and the distance d between C and D and C and E are equal. Thus, the pitch of the holes is d . d_1 is the distance between the line of center A and the bent edge of the flange. The width of the transverse holes 4 along its minor axis is equal to the width of the longitudinal hole 5 on its minor axis.

The distance d_2 between the outer edges of the transverse hole 4 and longitudinal hole 5 is less than the distance d_3 between the outer edges of the transverse hole 4 and round hole 6.

Referring to FIGS. 3 and 4, the narrow flange 2 is similar to that as illustrated in FIG. 1. The wider flange consists of an inner row of elongated longitudinal holes 7. The length l of the elongated holes 7 is equal to the distance C_1 which is the distance between the edges of two adjacent longitudinal holes in the third row plus twice the length l_1 of the longitudinal holes along the wider axis in said third row, i.e. $l = C_1 + 2l_1$.

The distance d_4 between the center line M of holes 7 and the distance d_1 of the narrow flange is the same, i.e., $d_1 = d_4$. The middle row consists of alternate round holes 6 and transverse holes 4. The line of center N along the smaller axis of the transverse holes 4 is coincident with the line of center of the round holes 6 along its longitudinal axis. The distance d_5 between lines M and N is equal to the pitch intervals of the holes in the narrow flange. The transverse holes 4 are equally spaced from each other.

The outer row of flange 3 consists of a plurality of a set of holes. The set A of holes consist each of two shorter longitudinal holes 8 and a transverse hole 4. Each set A of holes is equally spaced from each other. The line of center O of the longitudinal holes 8 along its major axis is coincident with the line of center of the transverse holes 4 along its minor axis. The distance d_6 between line N and O is the same as d_5 , i.e., $d_6 = d_5$. The line of center P of the transverse hole 4 along its major axis is coincident with the line of center of hole 6 along its vertical axis in said second row.

The distance c_1 is more than c_2 which is the distance between the inner edges of two adjacent longitudinal and transverse holes in said outer row. The distance c_1 is less than c_3 which is the distance between the edges of two adjacent longitudinal holes in said inner row. The distance c_1 is however greater than the pitch interval of the holes in said narrow flange.

I claim:

1. A longitudinally extending metallic constructional element of transverse L-shaped configuration having a first flange and a second flange with said flanges disposed angularly to one another and each of said flanges having a common longitudinally extending edge and a free longitudinally extending edge, said first flange having a single longitudinally extending row of holes consisting of a series of first elongated holes spaced from each other with the major axis of said holes extending substantially perpendicularly to the longitudinal direction of said flanges, a plurality of second elongated holes with the major axis of said second elongated holes extending in parallel relationship with the longitudinal edges of said flanges, and a plurality of first round holes having the line

through the centers thereof coinciding with the major axis of said second elongated holes, in the row of holes in said first flange said first and second elongated holes and said first round holes are arranged in series so that every other hole in the row is one of said first elongated holes and said second elongated holes and said first round holes alternating between said first elongated holes so that each said first elongated hole has one said second elongated hole on one side and one said first round hole on the other side thereof, the center line along the minor axis of said first elongated holes is parallel to and offset from the center line along the major axis of said second elongated holes and the center line of said first round holes, the pitch distance between the centers of the holes in the row in said first flange is the same for each pair of adjacent holes, the distance between the center line of said first round holes in the longitudinal direction of said first flange and the common longitudinal edge of said flanges is approximately equal to one and a half times the thickness of said first flange plus the pitch distance of the holes in said first flange, the distance between the adjacent outer edges of said first elongated holes and said second elongated holes in said row on said first flange is less than the distance between the adjacent outer edges of said first elongated holes and said first round holes, said second flange is wider than said first flange and has three spaced rows of holes extending longitudinally of said second flange, the inner row of said second flange adjacent to the common longitudinally extending edge of said flanges consisting of a plurality of third elongated holes equally spaced form and similar to each other and with the major axis of said third elongated holes extending in the longitudinal direction of said flanges, the middle row of said second flange consisting of alternate

fourth elongated holes and second round holes with the major axis of said fourth elongated holes extending perpendicularly to the longitudinal edges of said flanges and the minor axis of said holes and the centers of said second round holes located on a line in parallel relationship with the major axis of said third elongated holes, the outer row of said second flange consisting of a plurality of sets of holes, each said set of holes comprising two fifth elongated holes with the major axis thereof extending in parallel relationship with the longitudinal edges of said flanges and having therebetween a sixth elongated hole with the major axis thereof extending perpendicularly to the major axis of said fifth elongated holes, said third elongated holes each having a length substantially more than twice the length of one of said fifth elongated holes, the distance between the center line of the major axis of said third elongated holes of said inner row and the common edge of said flanges is equal to the distance between the center line of said first round holes along said first flange and the common edges of said flanges, the center lines along the major axis of said sixth elongated holes in said outer row and of the transversely extending center lines of said second round holes in said middle row and of the transversely extending center lines of said first round holes in the row in said first flange being coincident, the distance between the outer edges of two adjacent said fifth elongated holes in said outer row is less than the distance between the outer edges of two adjacent said third elongated holes in said inner row, and the distance between the outer edges of two adjacent said fifth elongated holes is greater than the pitch interval of said holes in said first flange.

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