Feb. 5, 1946. G. A. SIFF 2,394,211

SLIDE FASTENER ELEMENT

Filed Oct. 16, 1943 3 Sheets-Sheet 1

Fig1.

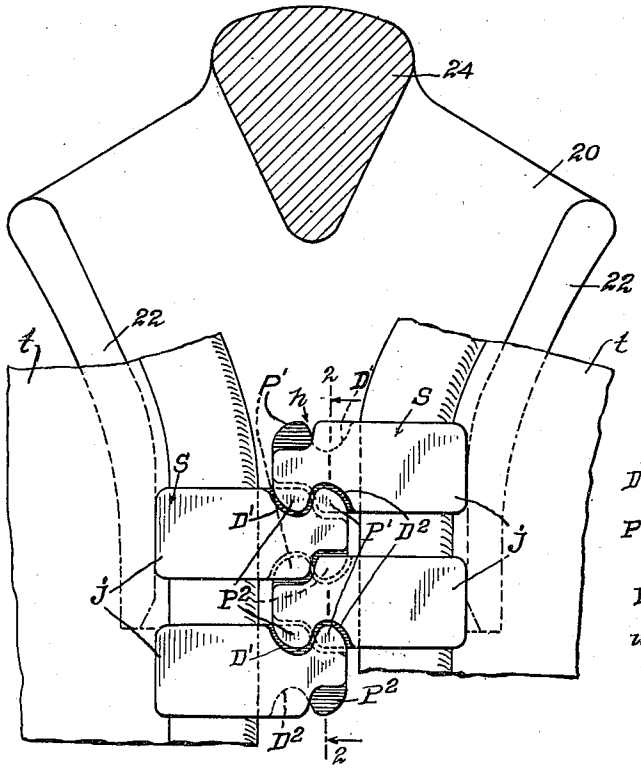
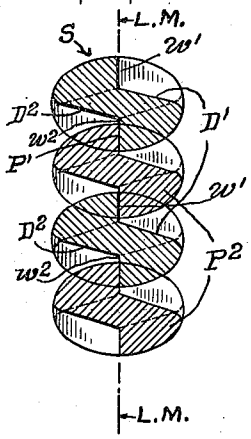
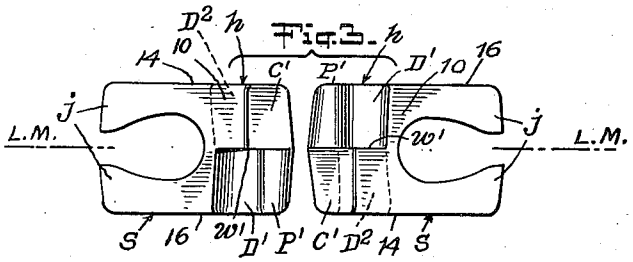
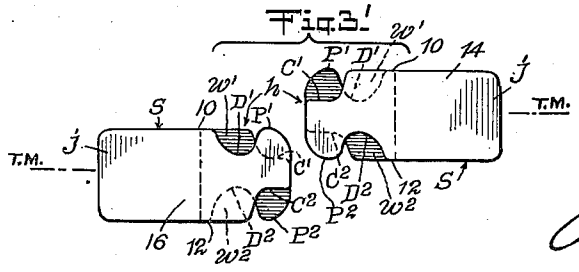


Fig2.







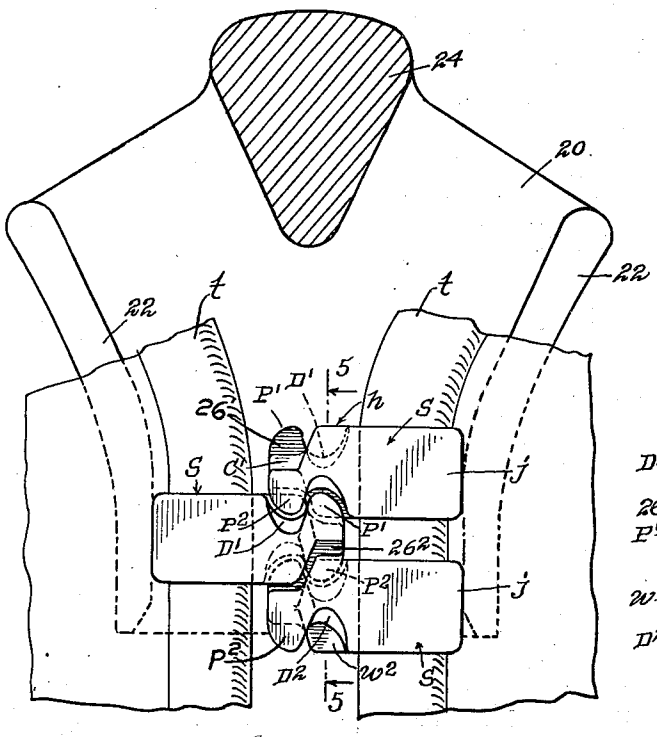
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Fig.4.



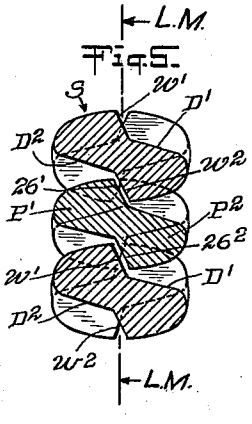
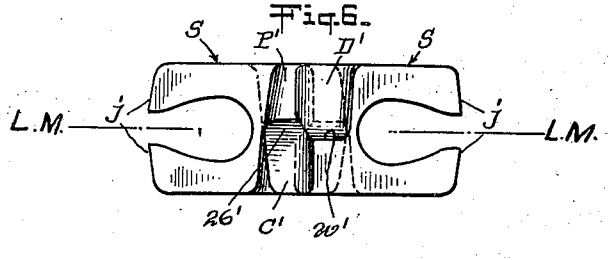


Fig.6.



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Fig. 7.

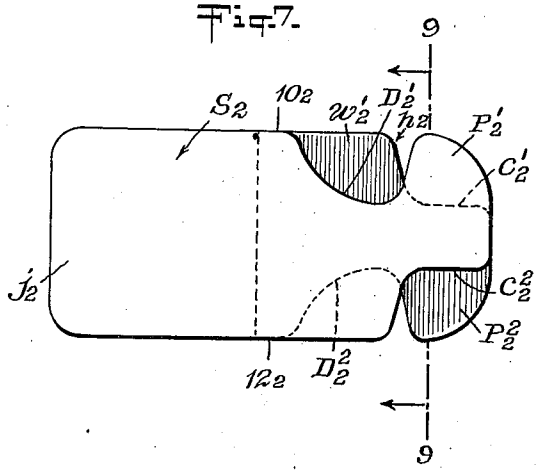


Fig. 9.

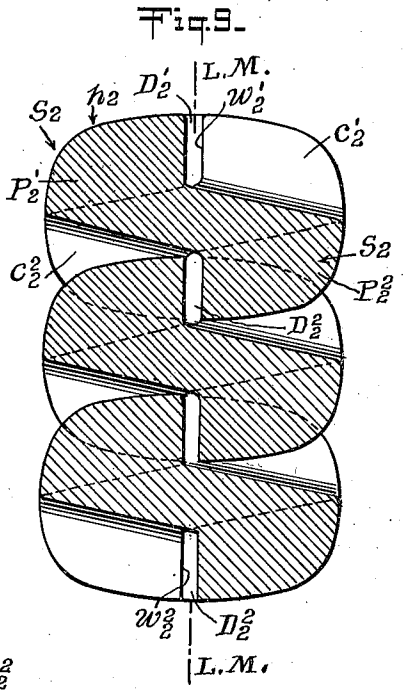
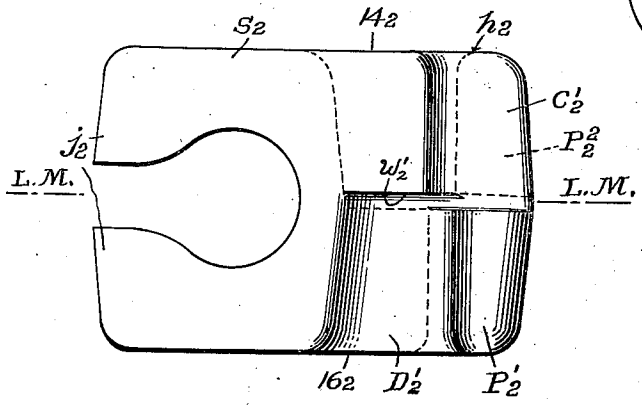


Fig. 8.



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Patented Feb. 5, 1946 2,394,211

UNITED STATES PATENT OFFICE

2,394,211

SLIDE FASTENER ELEMENT

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Application October 16, 1943, Serial No. 506,465

7 Claims. (Cl. 24—205)

This invention relates to slide fasteners and particularly to an improved slide fastener element.

The prime object of the present invention relates to the provision of a novel form or structure of slide fastener element or so-called "scoop" which possesses the following characteristics:

(1) The element or scoop is constructed so that a slider may be operated therewith from either direction, that is, from either end of a pair of mating slide fastener stringers provided with such elements;

(2) The element embodies such a construction that the element or a series of elements may be molded or cast onto a tape without the use of cores; and

(3) The elements or scoops and the resulting stringers are of one type, that is to say, there are no so-called "right" or "left" elements or stringers.

It has been heretofore suggested to so design or construct a slide fastener element or scoop that it may be operated upon by the slider equally from either end of the stringer. It has also been heretofore suggested to so construct the slide fastener element or scoop that it may be molded or cast without the use of cores. Element designs that have been made to carry out either suggestion have generally suffered the disadvantage that differently shaped elements have to be provided, resulting in what has been referred to as a "left" element and a "right" element and correspondingly left and right stringers. This is particularly so where the construction is so made as to obviate any relative transverse movement of the stringers.

By means of the construction of my present invention, a slide fastener element is produced which combines the characteristics of being capable of being operated by the slider from either end and being capable of being molded or cast without the use of cores, and in which the element formed is of but one type, the two mating stringers being made up of the same structural form of the element.

The problem of constructing a slide fastener element so that it may be operated by the slider from either end may be illustrated by reference to the patent to Poux 1,817,838 of August 4, 1931 for a "Separable fastener." Poux suggests a number of forms of the structure in each of which a projection and a depression is provided for both the top face and the bottom face of the slide fastener element or scoop. The disadvantage, however, of the various forms suggested by the patentee is that the slide fastener elements on the two mating stringers are either of different configuration, the opposing elements being "rights" and "lefts" or/and that the elements cannot be molded or cast without the use of cores. According to the principles of my present invention, slide fastener elements may be made with projections and recesses on the opposite faces thereof arranged so as to serve the purpose of being operable by a slider from either end of the slide fastener, the elements of both mating stringers, however, being of the same and not of different types, and the elements also being moldable or cast without the use of cores.

In molding or casting slide fastener elements onto a tape to make the so-called stringer, the mold has to be commonly provided with a core to form the female interlocking element or depression in one face of each slide fastener element. This is because the depression is a pocket recessed in a surface of the element that lies normal to the plane of the tape, and, hence, perpendicular to the parting plane of the mold sections. To avoid the use of cores, it has been suggested to so form the depression or pocket that it is open at the side wall of the fastener element. Since the element side wall parallels the parting plane of the mold, the open sided pocket therein may then be formed by a part of the mold sections. Slide fastener elements so produced, however, have the disadvantage that unless they are made in two different forms ("rights" and "lefts"), the mating slide fastener stringers may undesirably be separated by a sidewise or transverse movement (a direction perpendicular to the plane of the tape). The two stringers must thus be made, one with left elements and the other with right elements, the elements on one stringer being a mirror image of the elements on the other or mating stringer.

The necessity of making and handling the stringers as left stringers and right stringers for the solution of each of the two problems discussed, unduly complicates and thereby increases the cost of production.

By means of the slide fastener element construction of the present invention in the specific form disclosed herein, I am able to solve simultaneously both of the problems with the production of a single type element. Stated otherwise, I am able to provide a single type element, usable for both mating stringers, which is capable of being operated upon by the slider from either end of the stringer and which when

molded or cast onto a tape is capable of being produced without the use of cores.

To the accomplishment of the foregoing and such other objects as may hereinafter appear, my invention relates to the slide fastener element or scoop and to slide fasteners made therewith as sought to be defined in the appended claims and as described in the accompanying specification, taken together with the drawings in which:

Fig. 1 is an elevational view of four elements or scoops in interlocked relation, three of these elements being shown within the channel of a common slider suited to engage and disengage the opposed halves or stringers of a slide fastener;

Fig. 2 is a sectional view of the elements or scoops of Fig. 1, taken in the plane of the line 2—2 of Fig. 1;

Fig. 3 is a top plan view of two mateable elements shown separated one from the other, this view being taken on an enlarged scale;

Fig. 3' is a side elevational view of the elements shown in Fig. 3;

Fig. 4 is an elevational view of three scoops or elements showing a modified form, the scoops being shown in interlocked relation within a common type of slider;

Fig. 5 is a sectional view taken in the plane of the line 5—5 of Fig. 4;

Fig. 6 is a top plan view of two of the elements of the type shown in Fig. 4, shown in interlocked relation.

Fig. 7 is a side elevational view of another modified form of element;

Fig. 8 is a top plan view of this modified form of element; and

Fig. 9 is a sectional view thereof taken in the plane of the line 9—9 of Fig. 7.

Referring now more in detail to the drawings and having reference first to Figs. 1 to 3' thereof and particularly to Figs. 3 and 3', the slide fastener element or scoop generally designated as S comprises tape encompassing jaws j and an interlocking head h, the head being defined by the top and bottom faces 10 and 12 and the opposite side walls 14 and 16.

Embodying the structural principles of the present invention, the interlocking head h embodies interlocking means which comprises a depression D' followed by a terminal projection P' on the top face 10 at one side, such as the side 16, of the head h, and a similar and similarly disposed depression and projection, such as the depression D^2, followed by a terminal projection P^2 on the opposite or bottom face, such as the face 12, at the other side such as the side 14 of the head.

The interlocking head h is also provided with corner cut-outs C' and C^2 in the top and bottom faces in its sides opposite the projections P' and P^2 and in transverse alignment with these projections; and the body of the element is continued at its sides and thus left unmodified opposite the depressions D' and D^2 and in transverse alignment with these depressions, all for a purpose which will become clearer hereinafter. The head h is thus provided with the corner cut-out C' at one terminal corner thereof in transverse alignment with the projection P', and with the corner cut-out C^2 at the diagonal terminal corner thereof in transverse alignment with the projection P^2. The body of the element at its opposite faces 10 and 12 remains unmodified and is continued to these cut-outs C' and C^2, said body forming a flat top-faced or non-projecting wall w' in transverse alignment with the depression D', and a flat bottom-faced or non-projecting wall w^2 in transverse alignment with the depression D^2.

In Figs. 3 and 3' of the drawings, two elements S, S are shown in opposed relation as they would appear on opposing and mating stringers. From the description of the construction thus far given, it will be evident that the elements or scoops S, S for both mating stringers are identical in construction.

From an inspection of Fig. 3', it will be evident that each element S is inversely symmetrical about a transverse median plane such as the plane represented by the line T. M., whereby the mating elements S, S are capable of being operated by a slider from either end of the element or the mating stringers. With this construction, a slide fastener may be made with two sliders, one operating from each end of the slide fastener and each being capable of movement over the entire slide fastener length.

While the construction thus far described may be embodied in slide fastener elements or scoops which may be fashioned in any way such as by rolling, casting or molding and which may be cast or molded with or without cores, the element of my present invention is so designed that it may be molded or cast directly onto a tape such as t without the use of core members. This is accomplished by constructing the element so as to embody an inverse symmetry to be presently described with reference to the longitudinal medial plane of the element as represented by the line L. M. in Figs. 2 and 3 of the drawings. More particularly, the element is so constructed that the projections P' and P^2, the depressions D' and D^2, and the cut-outs C' and C^2 all extend from the side walls 14 and 16 of the element to the longitudinal medial plane L. M. of the element, with the depressions and cut-outs open at the side walls 14 and 16 of the element.

This longitudinal medial plane is the plane of the tape t onto which the elements are cast or molded, and it will be understood that this plane coincides with the parting plane of the mold (a two-part mold) in which the elements are cast or molded onto the tape. By dint of this construction, it will, therefore, be apparent that the elements S, S may be cast singly or in groups onto a tape in a two-part mold without the use of any cores. As shown particularly in Figs. 2 and 3 of the drawings, the projections P' and P^2, the depressions D' and D^2, and the cut-outs C' and C^2 extend inwardly from the side walls 14 and 16 of the element or scoop to the longitudinal medial plane L. M. of the element, the depressions and the cut-outs being open at the element sides 14 and 16 as is most clearly shown in Fig. 2 and Fig. 3' of the drawings.

A further feature of this last described construction (namely, an element moldable without cores, the said element being of "one type") is that transverse movement (movement in a direction perpendicular to the plane of the tape) of the elements or stringers is not possible and is thus obviated. This is achieved by the meeting of the inner surfaces of the projections of one scoop with the body walls of the mating scoop. More specifically stated and viewing Fig. 2 and Fig. 3', the inner surface of the projection P' of any one element meets or engages the wall w^2 of a mating element to prevent relative transverse movement of the elements in one direction, while the inner surface of the projection P^2 of

that one element meets or engages the wall w' of a mating element to prevent relative transverse movement of the elements in the opposite direction. These walls w' and w^2, as aforedescribed, coincide with the medial or parting plane of the scoop or element.

The interlocking engagement of mating elements against an opening force effective in the plane of the tapes is thus achieved by the interengagement of the projections P' and P^2 of any one element with the depressions D^2 and D' respectively of the two adjacent mating elements, while the interlocking engagement of the mating elements against an opening force effective transversely of the plane of the tapes is achieved by the interengagement of the inner surfaces of the projections P' and P^2 of any one element with the walls w^2 and w' respectively of such two adjacent mating elements. The cut-outs C' and C^2 function to permit the bodies of the elements to be brought into this desired locking relationship.

This construction of the element or scoop enables the following results to be attained:

(1) The elements or scoops S, S are constructed so that a slider, such as 20 in Fig. 1, provided with the usual guide rails 22, 22 and the usual arrow head center 24, may be mounted as shown in Fig. 1 or 180° to the position shown, whereby the slide fastener is slider-operated from either end.

(2) The elements or scoops S, S are constructed so that they may be molded or cast onto a tape without the use of cores, the elements and stringers being interlockable against transverse movement; and

(3) The elements or scoops S, S are of one type. The scoops of both fastener forming stringers are alike; and that also makes it possible to obtain a slide fastener the appearance of both sides of which are alike.

The modification shown in Figs. 4 to 6 is the same as that shown in Figs. 1 to 3', except that the inner surfaces of the projections and the bodies of engaging scoops do not meet in the longitudinal median plane of the scoops but instead intersect the median plane as is most clearly shown in Fig. 5 of the drawings. In this modification the rest of the structure of the elements is the same as that of the first modification and the parts are designated by the same reference characters. More specifically stated, the inner surfaces 26' of the projections P' and the inner surfaces 26^2 of the projections P^2 are inclined at the median plane and intersect the median plane, and similarly the surfaces w' and w^2 are inclined and intersect the median plane, the provision being made that there are clearances between the respective surfaces of engaging scoops.

The form of the invention shown in Figs. 1 to 3' may also be modified by making the inner surfaces of the projections and the bodies of interlocking scoops meet in planes slightly before or beyond the median longitudinal plane L. M. of the scoops, the meeting planes being parallel to the median plane L. M. The projections and the bodies of the elements would then stop slightly before reaching the median plane, whereas the cut-outs and the depressions would extend slightly beyond the median plane (see Fig. 8). Where the construction of Figs. 1 to 3' may result in a somewhat stiff fastener, this modification results in a fastener which is more flexible and has better running qualities, due to the clearances provided.

This last mentioned modification is shown in Figs. 7, 8 and 9 of the drawings where the parts similar to Figs. 1 to 3 are designated by similar reference characters subtended, however, by the numeral 2. The projections

$$P'_2$$

and

$$P^2_2$$

and the bodies forming the walls

$$w'_2$$

and

$$w^2_2$$

stop slightly before the median plane L. M., whereas the cut-outs

$$C'_2$$

and

$$C^2_2$$

and the depressions

$$D'_2$$

and

$$D^2_2$$

extend slightly beyond the median plane.

The novel and improved slide fastener element of my present invention, the manner of making the same and the advantages in the use and operation thereof will, I believe, be fully apparent from the above detailed description thereof. It will be further apparent that changes may be made in the design and construction of this slide fastener element without departing from the spirit of the invention defined in the following claims.

I claim:

1. A slide fastener element having tape encompassing jaws and an interlocking head, the head being defined by two opposite faces and opposite side walls, and interlocking means in said head comprising a depression followed by a terminal projection on one face at one side of the head and disposed longitudinally of the head, and a similar and similarly disposed depression and terminal projection on the other face at the opposite side of the head, the depressions being open at the side walls of the head, the remaining body of the head forming wall portions in transverse alignment with said depressions, and the projections and depressions extending from the side walls of the head to substantially the longitudinal medial plane of the element.

2. A slide fastener element having tape encompassing jaws and an interlocking head, the head being defined by two opposite faces and two opposite side walls, and interlocking means in said head comprising a depression followed by a terminal projection on one face at one side of the head and disposed longitudinally of the head, and a similar and similarly disposed depression and terminal projection on the other face at the opposite side of the head, the depressions being open at the side walls of the head. the remaining body of the head forming wall portions in transverse alignment with said depressions, the projections and depressions extending from the side walls of the head to substantially the longitudinal medial plane of the element, but both the inner surfaces of the body of the element defining the depressions and the inner surfaces of the projections being inclined at the median longitudinal plane and intersecting the medial plane, the said surfaces being disposed so as to leave clearances between the same and the respective surfaces of engaging elements the same as said element.

3. A slide fastener element having tape encompassing jaws and an interlocking head, the head being defined by two opposite faces and two opposite side walls, and interlocking means in said head comprising a depression followed by a terminal projection on one face at one side of the head and disposed longitudinally of the head, and a similar and similarly disposed depression and terminal projection on the other face at the opposite side of the head, the remaining body of the head forming wall portions in transverse alignment with said depressions, the depressions extending at their respective sides from the side walls of the element beyond the median longitudinal plane and opening into said side walls, the projections extending at their respective sides from the side walls of the element and stopping before the median longitudinal plane.

4. A slide fastener element having tape encompassing jaws and an interlocking head, the head being defined by two opposite faces and two opposite side walls, and interlocking means in said head comprising a depression and a projection on one of said faces and a similar depression and projection on the other of said faces, the said head being provided with a corner cut-out at one terminal corner of the head in transverse alignment with one projection and a corner cut-out at the diagonal terminal corner of the head in transverse alignment with its other projection, and the remaining unmodified body of the head forming a wall in transverse alignment with one depression and a wall in transverse alignment with the other depression.

5. A slide fastener element having tape encompasing jaws and an interlocking head, the head being defined by two opposite faces and two opposite side walls, and interlocking means in said head comprising a depression followed by a terminal projection on one of said faces and a similar and similarly disposed depression and projection on the other of said faces, the said head being provided with a corner cut-out at one terminal corner of the head in transverse alignment with one projection and a corner cut-out at the diagonal terminal corner of the head in transverse alignment with its other projection, and the remaining unmodified body of the head forming a flat-faced wall in transverse alignment with one depression and a flat-faced wall in transverse alignment with the other depression.

6. A slide fastener element having tape encompassing jaws and an interlocking head, the head being defined by two opposite faces and two opposite side walls, and interlocking means in said head comprising a depression and a projection on one of said faces and a similar depression and projection on the other of said faces, the said head being provided with a corner cut-out at one terminal corner of the head in transverse alignment with one projection and a corner cut-out at the diagonal terminal corner of the head in transverse alignment with its other projection, and the remaining unmodified body of the head forming a wall in transverse alignment with one depression and a wall in transverse alignment with the other depression, the projections, depressions and cut-outs extending from the side walls of the head to substantially the longitudinal medial plane of the element, and the depressions and cut-outs being open at the side walls of the head.

7. A slide fastener element having tape encompassing jaws and an interlocking head, the head being defined by two opposite faces and two opposite side walls, and interlocking means in said head comprising a depression followed by a terminal projection on one of said faces and a similar and similarly disposed depression and projection on the other of said faces, the said head being provided with a corner cut-out at one terminal corner of the head in transverse alignment with one projection and a corner cut-out at the diagonal terminal corner of the head in transverse alignment with its other projection, and the remaining unmodified body of the head forming a flat-faced wall in transverse alignment with one depression and a flat-faced wall in transverse alignment with the other depression, the projections, depressions and cut-outs extending from the side walls of the head to substantially the longitudinal medial plane of the element, and the depressions and cut-outs being open at the side walls of the head.

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