

C. T. EVENNETTE.
CLUTCH FOR METALLIC PILING.
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985,150.

Patented Feb. 28, 1911.

Fig 1

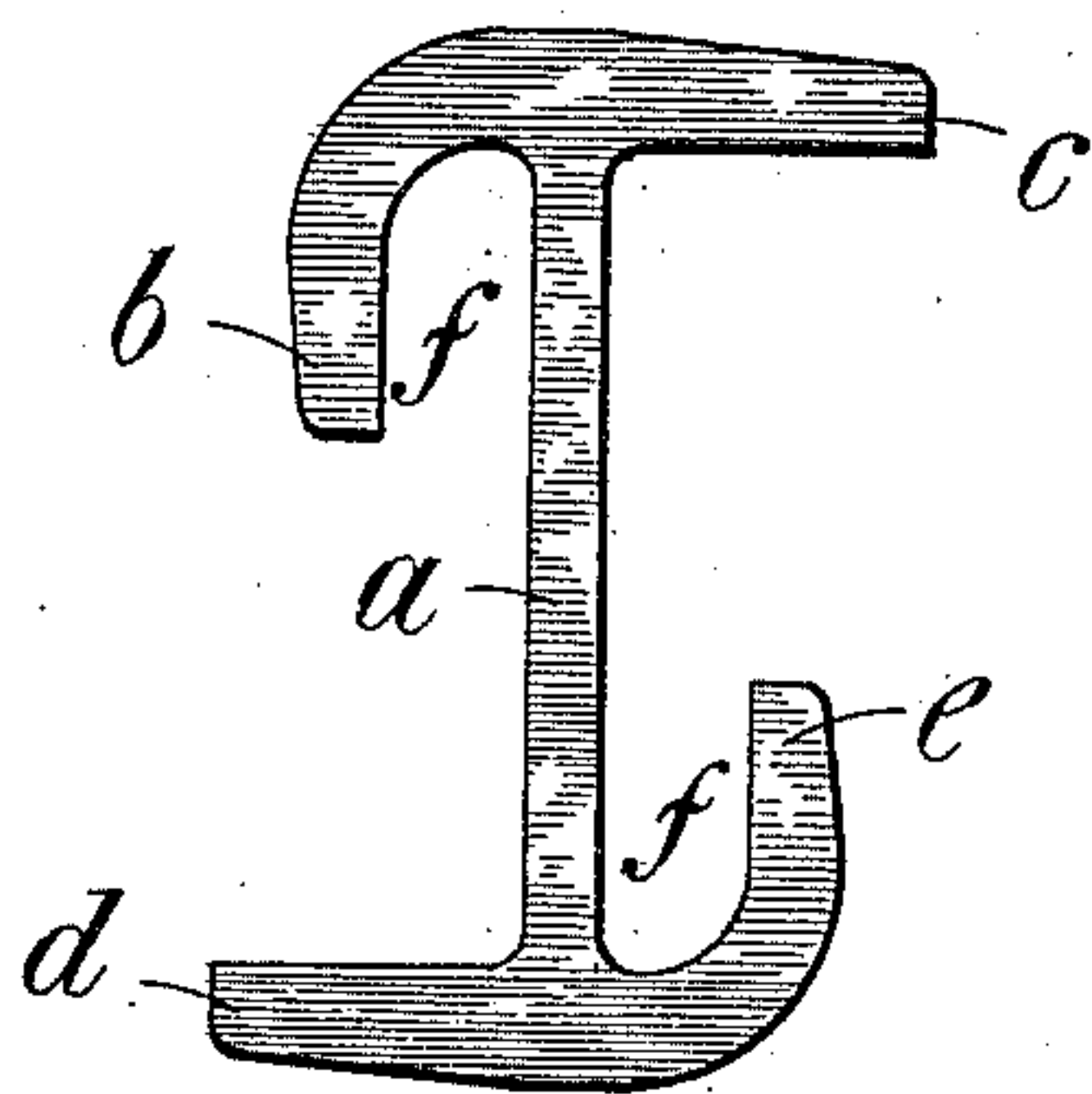


Fig 2

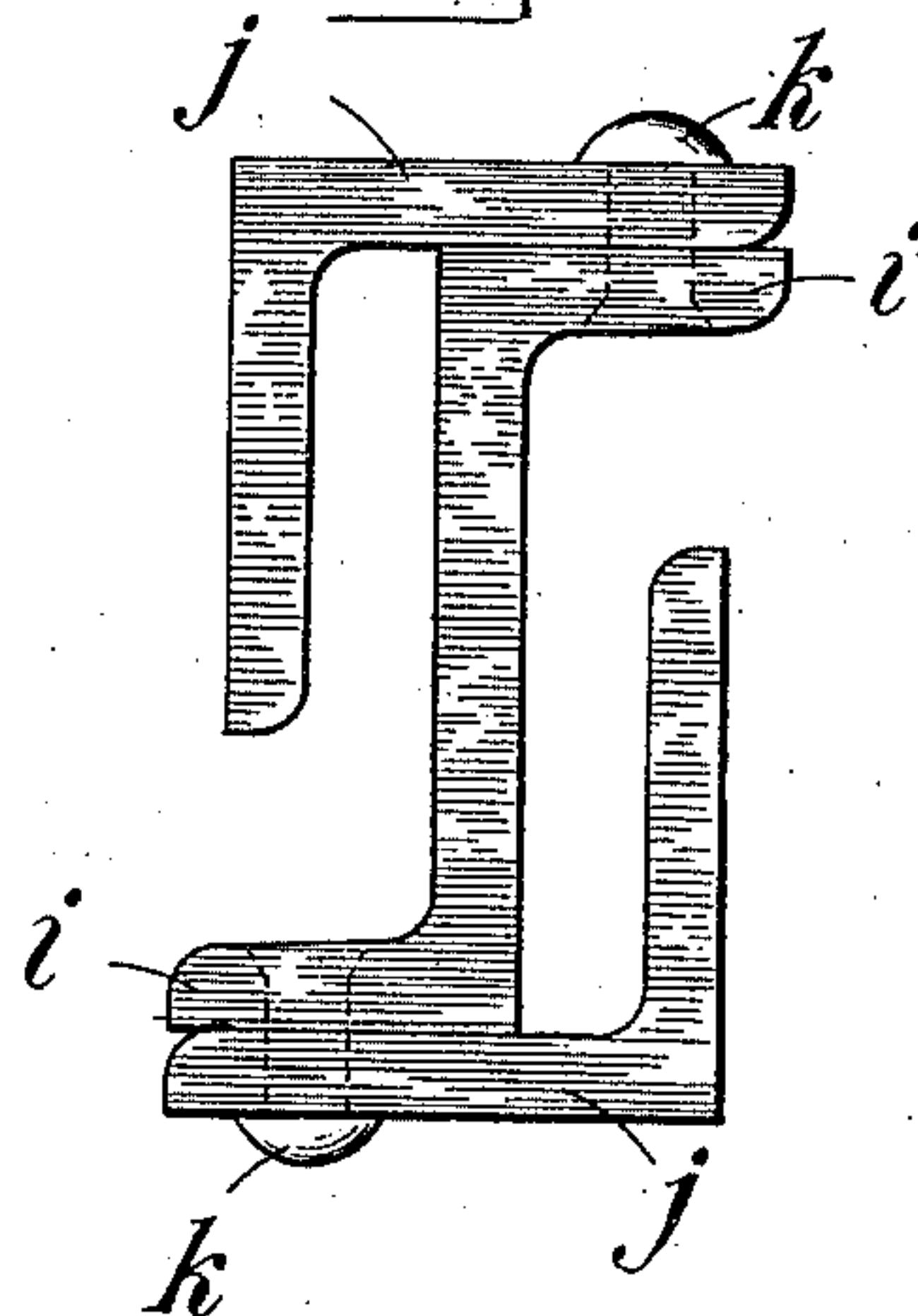
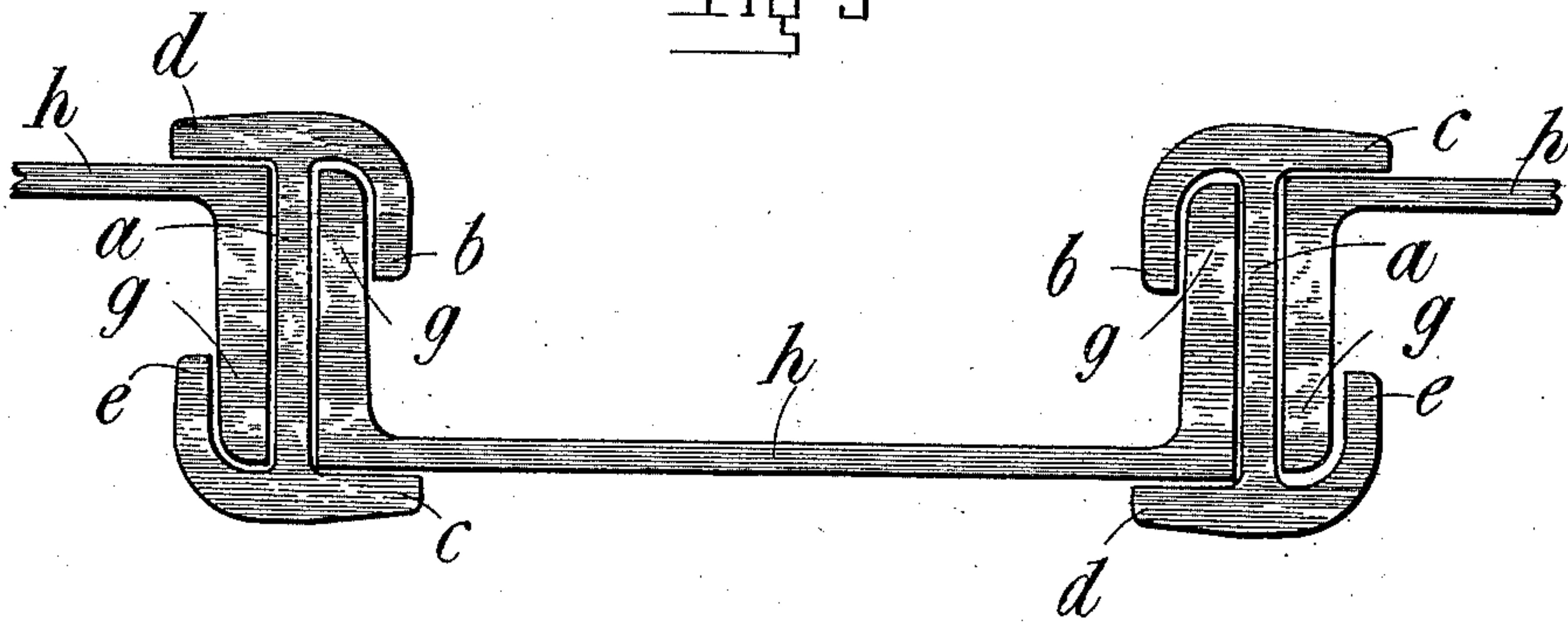


Fig 3



Witnesses

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CLUTCH FOR METALLIC PILING.

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To all whom it may concern:

Be it known that I, CHARLES THOMAS EVENNETTE, a subject of the King of Great Britain, residing at London, in the county of Middlesex, England, have invented a new and useful Improvement in Clutches for Metallic Piling, of which the following is a specification.

My invention has reference to clutches for use with metallic piling and has for its object to provide an improved clutch or locking clip whereby an interlocking joint may be readily made between the adjacent sections of metallic piling without the necessity of employing bolts rivets or other like fastening means.

The invention relates more particularly to metallic piling of that type in which sheets of metal of channel section are used and heretofore considerable difficulty has been experienced in constructing piling of this description which shall possess the maximum of strength when in position and yet be capable of being pulled after use without damage and used afterward for ordinary constructional work for which channel sections are ordinarily intended for it will be understood that one of the most, if not the most, useful advantage of metal sheet piling is its adaptability to continuous usage by being pulled and re-used after the work to be done through its temporary application has been completed, and it is therefore advisable that the original strength and the general usefulness of the channel sections should not be lessened by the presence of holes and rivets.

In all present systems of metal piling composed of channel sections where it is desired that such sections should be entirely free from holes and rivets so as to preserve their original strength and general usefulness in order that they may be repeatedly used as piling and afterward used for ordinary constructional work if required it is usual to arrange the channel sections with their webs all on one side of a horizontal line parallel to the webs of the channel sections and through the center of the flanges. On the other hand where the webs of the channel sections have been placed alternately on opposite sides of such a horizontal line it has owing to the lack of an effective clutch or locking piece to allow of such a disposition been necessary to resort to more

or less holing and riveting through the flanges or webs of a large proportion of the channel sections an operation which detracts from their salvage value and lessens their original strength. From the point of view of efficiency however it is advisable that the webs should be arranged alternately as by keeping all the webs on one side when the piling is in position there is not so great a "least moment of inertia" (through the neutral axis parallel to the web) and "section modulus" on one side of the interlocked piling obtained from any given area of metal in the web of the channel section as is obtained by using the same area of metal and placing the webs alternately on opposite sides of a central horizontal line parallel to the webs. By the latter means the "least moment of inertia" of the interlocked piling is increased and the "section modulus" is uniform on both sides and greater in each case thus making the interlocked piling stronger and capable of resisting a greater lateral thrust from either side.

By means of the clutch hereinafter described all channel sections can be employed without being holed or riveted in any way and greater strength in the interlocked piling for any given area of metal in the web by comparison due to placing the webs alternately on opposite sides of the horizontal center line is obtained.

Now the object of my present invention is to provide a clutch or locking clip for use with metallic piling having means which will permit sheets of channel section to be so arranged that the webs of each sheet are situated alternately with respect to a horizontal line through the center of the piling and to be retained in this position without the employment of rivets or other fastening means.

With these and other ends in view the invention comprises a joist of substantially double T section the flanges of which are so shaped as to form retaining means for securely holding the channel sections in position with the webs of each sheet alternating with respect to a horizontal line parallel to the webs and through the center of the flanges of said channel section.

In order that my invention may be readily understood and carried into effect by those skilled in the art to which it appertains I will now proceed to describe the

same fully for which purpose reference is to be had to the accompanying sheet of drawings in which:—

Figure 1 represents a top plan view of a rolled steel or iron clutch or locking piece embodying my invention for use with metallic piling. Fig. 2 is a modified form of construction of the same showing the clutch built up of steel or iron Z bar. Fig. 3 is a top plan view of a portion of metallic piling in accordance with my invention showing two of my improved clutches in which are engaged adjacent sheets of channel section.

My improved clutch or locking piece as shown in Fig. 1 comprises a rolled steel or iron joist having a central web *a* and four flanges *b c d* and *e*. Flanges *c* and *d* project approximately at right angles from one top and one bottom corner respectively on opposite sides of the web *a* while the other flanges *b* and *e* project from the remaining two corners of the web *a* and are then bent toward the two flanges *d* and *c*, thus forming recesses *f* adapted to receive and retain in position the ends of the flanges *g* of the sheets of the channel sections.

The manner in which my improved clutch is employed will be obvious from an inspection of Fig. 3 from which it will be seen that the flanges *g* of the sheets of channel sections are arranged close to and parallel with the webs *a* of the clutches the webs *h* of each of the channel sections occupying a position upon opposite sides of a line drawn at right angles to and through the centers of the webs *a* of the clutches. It will be seen that by means of this arrangement the flanges *g* of the channel sections will be supported and retained in position by the flanges *b e* of the clutches while the webs *h* will be supported at their ends by the flanges *d c* thus securing a firm interlocking of the parts throughout the entire length of the piling without necessitating the employment of rivets or like fastening means.

In the modification illustrated in Fig. 2 I have shown means whereby ordinary Z bars and angle irons may be utilized to produce my improved clutch and in this form of my invention to the outside of each of the flanges *i* of an ordinary Z bar of suitable dimensions an angle bar *j* is secured by means of rivets *k* preferably countersunk on the inside of the clutch as shown on the drawing. Clutches constructed in this way may be employed in a manner similar to those first above described.

Although I have described my invention as applicable for use with metallic piling in which channel sections are used it is to be understood that I do not desire to limit its use thereto as it is conceivable that its sphere of utility may embrace other forms of me-

tallic piling having flanges at the ends of each section.

It will be seen that a clutch for use with metallic piling under my present invention possesses many important advantages over clutches or locking clips heretofore proposed for like purposes it admits of the piling being readily driven and withdrawn and owing to the fact that it is unnecessary to resort to riveting for any part of the piling, the maximum salvage value is obtained after withdrawal. When in position it forms a watertight joint of great strength and rigidity the whole line of piling possessing the maximum degree of resistance to lateral thrust.

What I claim and desire to secure by Letters Patent of the United States of America is:—

1. In metallic piling a clutch comprising a web portion flanges projecting from said web portion to form means for holding and supporting channel section piling with the webs thereof alternating on both sides of a horizontal line through the center of the piling and channel sections interlocked with said clutch for the purposes specified.

2. In metallic piling the combination with a clutch member comprising a web portion having oppositely directed right angled flanges projecting therefrom and oppositely directed flanges having portions lying in a plane parallel to said central web portion also projecting therefrom and channel sections engaged in said clutch with the webs thereof alternating on both sides of a horizontal line through the center of the piling for the purposes specified.

3. In metallic piling the combination with metallic sheet piling of a clutch member comprising a web portion flanges projecting from each corner of said web portion two of said flanges forming means for supporting the corners of the sheets of channel sections and two of said flanges forming means for holding the flange portions of said channel sections with the webs thereof alternating on both sides of a horizontal line through the center of the piling and channel sections interlocked with said clutch members for the purposes specified.

4. In metallic piling the combination with a clutch member comprising a web portion having oppositely directed right angled flanges projecting therefrom oppositely directed right angle bars riveted to the flanges of said web portion to form means for supporting and holding channel sections with the webs thereof alternating on both sides of a horizontal line through the center of the piling and channel sections interlocked with said clutch members substantially as described with reference to Fig. 2 of the accompanying drawings for the purposes set forth.

5. In metallic piling the combination with a clutch member comprising a web portion having right angled flanges projecting from opposite corners of said web portion an upwardly directed flange and a downwardly directed flange projecting from the remaining two corners of said web portion and metallic piling having flange portions engaged in and interlocked by the aforesaid clutch member with the webs thereof alternating on both sides of a horizontal line through the center of the piling for the purposes specified.

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Witnesses:

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