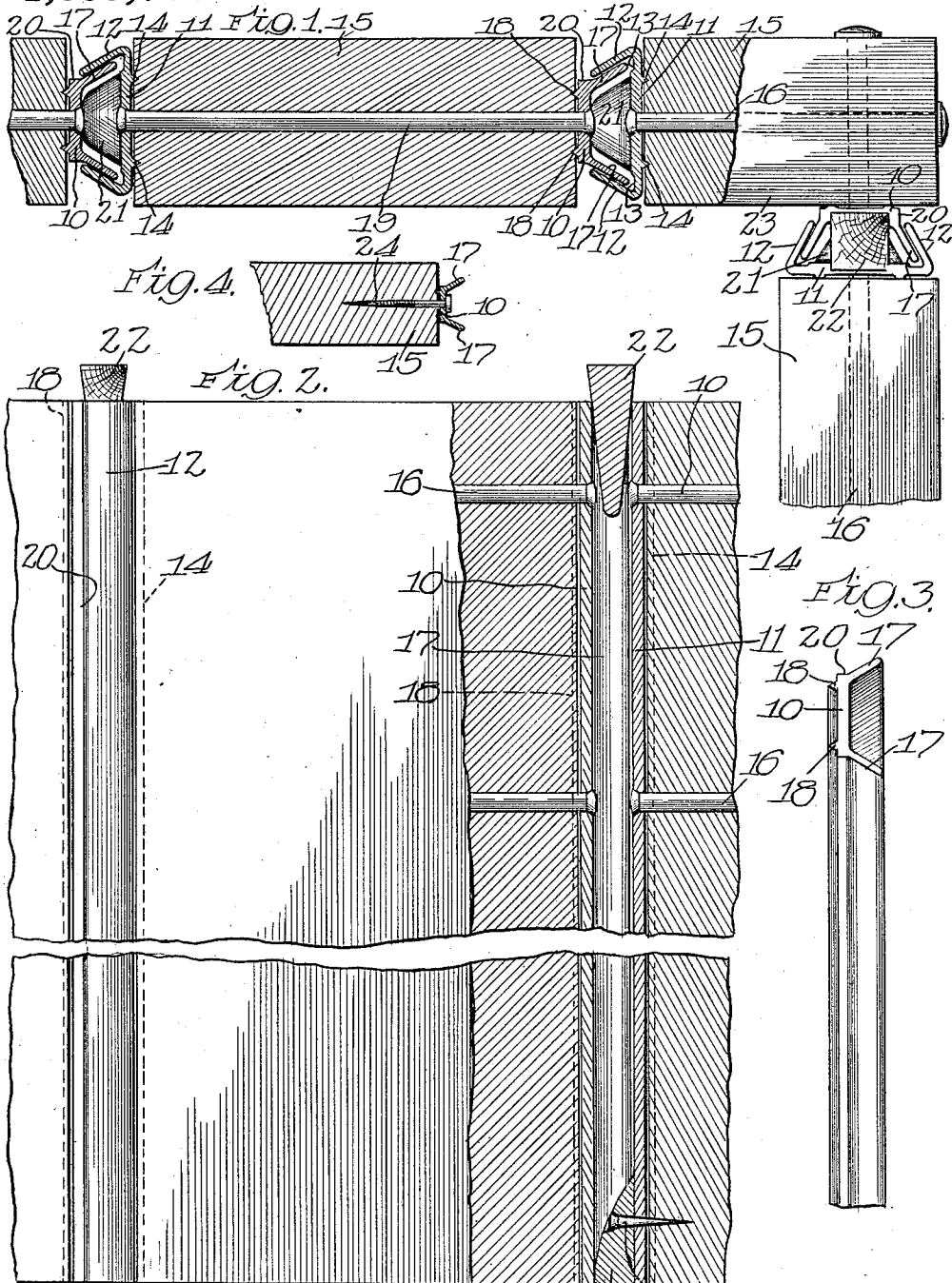


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 DEVICE FOR SECURING TOGETHER SHEET PILING, &c.
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UNITED STATES PATENT OFFICE.

EMERY H. FAHRNEY, OF CHICAGO, ILLINOIS.

DEVICE FOR SECURING TOGETHER SHEET-PILING, &c.

1,059,722.

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To all whom it may concern:

Be it known that I, EMERY H. FAHRNEY, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Devices for Securing Together Sheet-Piling, &c., of which the following is a specification.

This invention relates to improvements in devices for fastening or connecting sheet piling, particularly adapted, though not necessarily limited in its use, for the construction of caissons, coffer-dams, and the like, and one of the objects of the invention is to provide an improved device of this class, by means of which the piling members may be removably secured together, and which will also form a liquid tight joint between the respective pile members.

A further object is to provide an improved device of this class, which may be readily secured to the pile members.

A further object is to provide an improved device of this class which will be simple, durable and cheap in construction, effective and efficient in operation, and which may be readily attached or secured to the pile members.

To the attainment of these ends, and the accomplishment of other new and useful objects, as will appear, the invention consists in the features of novelty in substantially the construction, combination and arrangement of the several parts hereinafter more fully described, and claimed, and shown in the accompanying drawing, illustrating the invention, and in which—

Figure 1 is a top plan view, partly in section and partly in elevation, showing the manner of connecting together the pile members in accordance with the principles of this invention; Fig. 2 is a front elevation partly broken away and partly in section, of some of the parts shown in Fig. 1; Fig. 3 is a detail perspective view of one of the connecting members; Fig. 4 is a detail cross sectional view of a portion of one of the pile members and one of the fastening members showing another manner of securing the fastening member to the pile member.

Referring now particularly to the drawing, and in the present exemplification of the invention, the fastening device comprises two channel shaped members designated generally by the reference numerals 10 and 11. These channel shaped members may be con-

structed of any suitable material, but are preferably constructed of rolled metal, and may be of any desired width and length. The members 11 comprise a body portion, the longitudinal edges 12 of which are deflected toward each other to form inclined walls, and when so deflected the fastening members will be of a channel formation. In order to permit the edges to be readily deflected, the body of the member 11 adjacent the edges is shaped so as to be narrower in cross section, as shown. Provided on the back of the member 11 are any number of ribs 14 (in the present exemplification of the invention two are shown), which are formed integral with the member and extend for the entire length of the member. These ribs 14 are pointed or sharpened as shown, and are located preferably some distance from the lateral edges of the member which edges are formed by the deflected portions 12. The member thus formed may be secured to the pile member 15 in any suitable manner, preferably by means of a fastening device 16 in the form of a bolt which passes through the member 11 and also through the pile member. Any number of these fastening devices may be provided, and the member 11 may be provided with the desired number of apertures through which the fastening devices pass. The other and cooperating member 10 of the fastening device is preferably of a width somewhat less than the width of the member 11, and is provided with deflected portions 17, extending laterally beyond the outer face of the member 10. These portions 17 are arranged at an angle with the body portion of the member 10, and are adapted to be inserted into the channel formed by the body of the member 11 and the sides 12. Projecting laterally beyond the opposite face of the member 10 are ribs 18, similar in construction to the ribs 14 of the member 11, and which extend for substantially the entire length of the member 10. This member 10 is also fastened to one of the pile members 15 by means of suitable fastening devices 19, passing through apertures in the base of the channel formed by the member 10 and sides 17, and also engaging the pile member. The member 10 is provided with straight edges arranged at the base of the deflected edges 17 and the width of the channel member thus formed at the base of the deflected portions 17 is slightly less than the space between the

extremities of the deflected portions 12 of the member 11, so that the members can be connected by longitudinal movement, and by inserting one end of the member 10 into one end of the member 11, and may be similarly disconnected. When these fastening devices are secured to the pile members, one of the members 15 may be placed in position, and the next adjacent member connected thereto by connecting the fastening devices in the manner just described. The body portion of the member 10 extends for some distance beyond the extremities of the deflected portions 12 of the member 11, and forms with the deflected portions 17 a closure for the channel in the member 11. Likewise the member 11 and the deflected portions form a closure for the channel in the member 10. When these fastening devices are secured to the respective pile members, the ribs 14 and 18 will be embedded in the adjacent faces of the pile members, thereby preventing any liquid from flowing between the pile members and the adjacent faces of the fastening devices. When the parts are thus connected the straight edges 20 of the member 10 will prevent lateral movement of the two fastening devices or members.

In order to cause the adjacent faces of the deflected portions 12—17 of the fastening devices to form frictional contact, and also prevent liquid from flowing between these faces, any suitable means may be provided which will tend to force the fastening devices away from each other when they are assembled. For this purpose there may be provided a protuberance or projection 21 carried by one of the members, preferably the member 11 within the channel. This projection is provided with an inclined face, and is located preferably adjacent the bottom of the member, so that when the other member of the fastening device is telescoped with the member 11, the lower edge will engage the inclined faces of this protuberance or projection, and a further longitudinal movement of the member 10 with respect to the member 11 will cause the lower portion of the member 10 to be forced outwardly or away from the member 11, thereby forcing the deflected portions 17 and 12 tightly against each other. In order to separate the upper extremities of these members 10 and 11, any suitable means may be provided, which in the present exemplification of the invention is shown as a wedge adapted to be driven between the upper extremities of these fastening members.

Obviously the fastening devices 16—19 may be employed for securing another fastening device on the opposite edge of the respective pile member, in which instance the members 16—19 will pass through the respective fastening devices on the opposite faces of the pile member.

When it is desired to form a caisson or coffer-dam, of angular configuration one of the fastening devices may be secured adjacent the face 23 of the pile member, as shown in Fig. 1.

With this improved construction it will be manifest that the pile members may be readily connected and disconnected from each other, and after the parts are assembled, if desired the space between the two members 10 and 11 may be filled with any suitable material, such as sand or the like.

In Fig. 4 there is shown another form of securing device by means of which the fastening devices may be attached to the pile member. In this form of the invention the securing devices 24 are shown in the form of spikes, which are driven through the apertures in the bottom of the channel of the fastening members and into the pile member. With this form it will be manifest that the fastening devices may be readily secured to any form of pile and at any time without the latter being specially prepared.

When it is desired to separate the pile member, all that is necessary is to withdraw the wedge 22 and raise one of the pile members, or move it longitudinally with respect to the adjacent pile member, when the fastening devices 10—11 may be readily separated.

The protuberance or projection 21 may be formed separately from the respective channel member and fastened within the member with one or more suitable fastening devices 21^a, which fastening device or devices pass through the protuberance, the bottom of the channel member and into the body of the pile member.

What is claimed as new, is:

1. The combination of cooperating channel-shaped members adapted to slide longitudinally one within the other, means whereby the members may be secured to the respective adjacent faces of parts to be connected, and means tending to separate said members laterally.

2. The combination of cooperating channel-shaped members adapted to slide longitudinally one within the other, means whereby the members may be secured to the respective adjacent faces of parts to be connected, and means carried by one of the members and operating to separate said members laterally.

3. The combination of cooperating channel-shaped members adapted to slide longitudinally one within the other and connected against lateral disengagement, means whereby the members may be secured to the respective adjacent faces of parts to be connected, and means tending to separate the members laterally.

4. The combination of cooperating channel-shaped members adapted to slide longi-

itudinally one within the other and connected against lateral disengagement, means whereby the members may be secured to the respective adjacent faces of parts to be connected, there being a projection on one of the members, with which a portion of the other member engages and operating to separate the members laterally.

5 The combination of cooperating channel-shaped members adapted to slide longitudinally one within the other, the open side of one member being disposed adjacent the closed side of the other member, said members being connected against lateral disengagement, means whereby the members may be secured to the respective adjacent faces of parts to be connected, and means for forcing the members apart laterally.

10 6. The combination of cooperating channel-shaped members adapted to slide longitudinally one with respect to the other, the open side of each member being disposed adjacent the closed side of the other member, a portion of one member embracing a portion of the other member for holding the members against lateral disengagement, means whereby the members may be secured to the respective adjacent faces of parts to be connected, and means for forcing the members apart laterally.

20 7. The combination of cooperating channel-shaped members adapted to slide longitudinally one with respect to the other, the open side of each member being disposed adjacent the closed side of the other member, a portion of one member embracing a portion of the other member for holding the members against lateral disengagement, means whereby the members may be secured to the respective adjacent faces of parts to be connected, and means carried by one of the members for forcing the members apart laterally.

30 8. The combination of cooperating channel-shaped members, the sides of one member diverging from the base of the channel, the sides of the other member converging from the base and embracing the sides and open side of the first said channel member whereby the members will be connected together for relative longitudinal movement and against lateral disengagement, and means whereby said members may be secured to the respective adjacent faces of parts to be connected.

45 9. The combination of cooperating channel-shaped members, the sides of one member diverging from the base of the channel, the sides of the other member converging from the base and embracing the sides and open side of the first said channel member whereby the members will be connected together for relative longitudinal movement and against lateral disengagement, means whereby said members may be secured to

the respective adjacent faces of parts to be connected, and means for separating the members laterally.

10. The combination of cooperating channel-shaped members, the sides of one member diverging from the base of the channel, the sides of the other member converging from the base and embracing the sides and open side of the first said channel member whereby the members will be connected together for relative longitudinal movement and against lateral disengagement, means whereby said members may be secured to the respective adjacent faces of parts to be connected, and means carried by the face of the members adjacent the respective faces of said parts and adapted to be embedded in the last said faces.

11. The combination of cooperating channel-shaped members connected together for relative longitudinal movement and against lateral separation, means whereby the members may be secured to the respective adjacent faces of the parts to be connected, and means carried by the members and adapted to be embedded in the faces of the said parts to form liquid-tight joints therebetween.

12. The combination of cooperating channel-shaped members connected together for relative longitudinal movement and against lateral separation, means whereby the members may be secured to the respective adjacent faces of the parts to be connected, and one or more ribs carried by each of the members and adapted to be embedded in the faces of said parts to form liquid-tight joints therebetween.

13. The combination of cooperating channel-shaped members connected together for relative longitudinal movement and against lateral separation, means whereby the members may be secured to the respective adjacent faces of the parts to be connected, and one or more ribs carried by each of the members, extending longitudinally of the members and having sharpened edges and adapted to be embedded in the faces of said parts to form liquid-tight joints therebetween.

14. The combination of channel-shaped members for connecting parts to be connected, the open side of each of the members being disposed adjacent the closed side of the other member, the sides of one member diverging from the bottom of the channel and the sides of the other member converging from the bottom of the channel and embracing the diverging sides of the first member whereby the parts will be connected for relative longitudinal movement and will be held against lateral disengagement, the portion of the first member adjacent the base of the diverging sides being of a size to substantially fill the space between the extremities of the sides of the other member,

means whereby the members may be secured to the respective adjacent faces of members to be connected, and means for forcing the said members apart laterally.

- 5 15. The combination of channel-shaped members for connecting parts to be connected, the open side of each of the members being disposed adjacent the closed side of the other member, the sides of one member
10 diverging from the bottom of the channel and the sides of the other member converging from the bottom of the channel and embracing the diverging sides of the first member whereby the parts will be connected for
15 relative longitudinal movement and will be held against lateral disengagement, the portion of the first member adjacent the base of the diverging sides being of a size to sub-

stantially fill the space between the extremities of the sides of the other member and 20 the outer faces of said portion being arranged at an angle to the outer faces of the said diverging arms, means whereby the members may be secured to the respective adjacent faces of members to be connected, 25 and means for forcing the said members apart laterally.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 15th 30 day of February A. D. 1912.

EMERY H. FAHRNEY.

Witnesses:

J. H. JOCHUM, Jr.,
EDWARD J. RYAN.

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