Aug. 8, 1944. O. R. ODMAN 2,355,102

SHEET PILING AND THE PROCESS OF ASSEMBLING THE SAME

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Fig. 2.

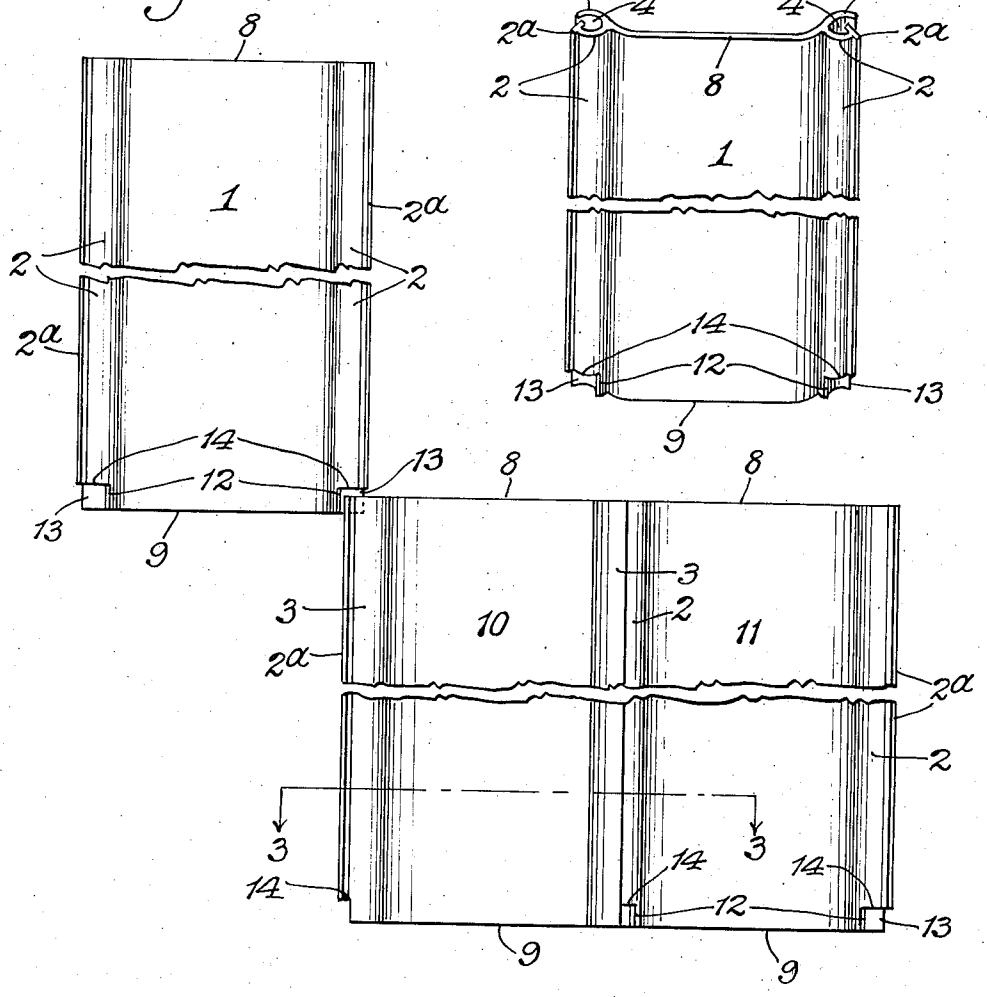
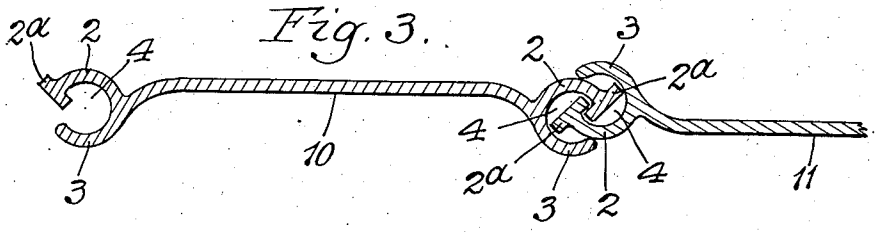


Fig. 1.

Fig. 3.



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SHEET PILING AND THE PROCESS OF ASSEMBLING THE SAME

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5 Claims. (Cl. 61—60)

This invention relates to improvements in sheet piling and has for its object to provide a new and improved piling of this description.

The invention has as a further object to provide sheet piling where the interlocking edge of the new pile may be easily, quickly and efficiently brought into interlocking position with the interlocking edge of the driven pile, that is the pile already driven into position.

The invention has as a further object to provide means for expediting the driving of sheet piling.

In the driving of sheet piling, there is a pile driver crew consisting usually of six to nine men. The new sheet pile is lowered by means of a derrick or crane boom operated by an engine controlled by an engineer.

The adjacent edges of the sheet piles have interlocking parts which consist of two opposed members, one of which projects outwardly from the face of the pile and which is called the thumb, the other being the continuation of the sheet, which is called the finger. The thumb and finger extend the length of the pile and have a space between them into which the thumb of the new pile is placed, the thumb sliding down along this space as the new pile is driven into position.

Sheet piling today, as delivered from the mill, has straight ends substantially at right angles to the vertical edges. Due to the small tolerance allowed between the interlocking thumb and finger of the pile, it is quite difficult to enter the interlocking parts of the new pile into the interlocking position with the interlocking parts of the driven pile. Many factors act to make this difficult, namely, high wind velocity, insufficient control of the engine handling the new pile, improper braking action of the engine and, if the equipment for driving the pile is floating equipment, there is the surge and roll of the water which causes the derrick and the driver and the man attempting to make the interlock to sway, thus rendering it exceedingly difficult to bring the parts into interlocking position.

The man who guides the new sheet pile to its interlocking position with the sheet pile previously driven generally sits astride the upper end of the previously driven pile with his feet in stirrups. The tops of these previously driven piles may be, and often are, from five to ten feet above the surrounding surface. The pile guiding man's task is to take hold of the bottom of the new pile, suspended from the end of the derrick or crane boom, and bring the interlocking members of one edge of the new pile adjacent to and in position to interlock with the previously driven pile.

The space between the finger and the thumb of the pile is just about the right size to receive the interlocking member of the new pile, there being generally a small tolerance of about three-eights of an inch. Great accuracy is, therefore, required of the pile guiding man to get the new pile in proper interlocking position.

With the present method in use, the pile guiding man was required to have his arms around the new pile and the engineer running the engine could not see when the guiding man had the new pile in proper position to be lowered and the guiding man had to signal the engineer. Since both of the arms of the pile guiding man were engaged, his only means for giving this signal was by nodding his head or calling out, and the guiding man had to hold the pile in this position while he signaled to the engineer. It often happened that, due to high wind or to the movement of the pile driving mechanism when floating on the water, that many attempts had to be made to bring the new pile into proper interlocking position before the piles could be interlocked. It often took as much as half an hour to make the interlock. During all of this time the six to nine men operating the pile driver were producing no beneficial result and may be said to be practically idle. This made the driving of these sheet piles very expensive. My present invention obviates this difficulty and this waste of time of the men.

In my improved pile the lower end of the thumb of the new pile, to be interlocked with the pile already driven, is removed for a short distance from the lower end of the pile, say a few inches. With this device all it is necessary for the guiding man to do is to move the finger at the lower end of the new pile in contact with the thumb at the top of the pile already driven. This can be done quickly and easily and provides a perfect guide for insuring the receipt of the thumb of the new pile into the space between the thumb and finger as the pile is lowered by the engine. The pile guiding man does not need to signal the engineer because the engineer can see when the finger of the new pile is brought into contact with the thumb of the pile already driven and can instantly lower the new pile into its interlocking position.

Referring now to the drawing, Fig. 1 is a view

showing a portion of one of the sheet piles embodying the invention;

Fig. 2 is a view showing the new pile in the first step of interlocking it with the driven pile;

Fig. 3 is an enlarged sectional view taken on line 3—3 of Fig. 2.

Like numerals refer to like parts throughout the several figures.

I have illustrated in the drawing one form of the device embodying the invention. In this construction the sheet pile 1 is provided at one edge with the thumb 2 having the enlargement 2a and the finger 3 with the space 4 between them into which the thumb of the adjacent pile is received. The other edge of the pile is provided with similar parts, namely, a thumb 2, a finger 3 and a space 4 into which the thumb of the adjacent pile is received.

The pile is shown as having a straight horizontal top 8 and a straight horizontal bottom 9.

I have shown the piles 10 and 11 which have been driven into position and which have their adjacent edges interlocking. Each of these piles has the lower part of the thumb, at one edge, omitted or removed, as shown at 12, so that a portion 13 of the finger 3 projects below the lower end 14 of the thumb.

The new pile 1, which is about to be driven by the pile driver, is suspended by a cable passing over a pulley and attached to a drum which is rotated by an engine. This new pile is lowered until its lower end comes opposite the upper end of the adjacent pile 10 and the pile guiding man then grasps the pile 1 and moves the projecting portion 13 of the finger 3 over into contact with the thumb 2 of the adjacent pile 10. This brings the end of the thumb of the new pile in alignment with the space 4 between the thumb and finger of the adjacent pile so that the new pile is ready to be lowered into interlocking position with the adjacent driven pile.

The engineer sees when the pile guiding man has brought the projecting part 13 of the finger into overlapping contact with the thumb of the adjacent pile or, if he cannot see the pile guiding man, then signals him. The engineer then lowers the new pile, the thumb of the new pile sliding into the space 4 of the adjacent pile. The interlocking parts of the new pile slide along the interlocking parts of the adjacent pile until the bottom of the new pile strikes the surface into which it is to be driven. The new pile is then driven into position. This procedure continues until all of the piles have been driven into position.

It will thus be seen that all the pile guiding man has to do is to move the new pile so that the projecting portion 13 of the finger engages the thumb of the adjacent pile because when in this position the adjacent pile acts as a stop and a holding device for preventing the thumb of the new pile from getting out of alignment with the space 4 between the thumb and finger of the adjacent pile.

It will further be seen that the swaying of the new pile due to high wind velocity, insufficient control of the engine handling it or improper braking action of the engine, or the surge and roll of the water where the equipment is floating equipment, which with the device now in use makes it so difficult to bring and hold the thumb of the new pile in proper alignment with the space 4 between the thumb and finger of the adjacent pile, is entirely eliminated. All the pile guiding man has to do is to bring these parts together and apply pressure to the new pile to hold it in engagement with the adjacent pile.

The driving of the piles can, therefore, be speeded up and the waste of time, unavoidable with the piles now in use, is eliminated.

It is desirable to have the ends of the thumbs of the new pile cut away at each side so that the piles can be driven from either side. It is, of course, evident that instead of cutting away the ends of the thumbs of the piles, the piles can be made with a portion of the finger projecting beyond the ends of the thumbs.

I claim:

1. A sheet pile comprising a body portion having two interlocking members at one edge thereof integral with said body portion and extending longitudinally therealong one of the interlocking members extending the full length of the body portion and the other interlocking member being shorter than said first mentioned member so that a side face of the longer interlocking member is exposed and not obstructed by the end of the shorter interlocking member.

2. A sheet pile construction comprising two cooperating and interfitting piles, each having a body portion and each having at one edge and integral with the body portion a cooperating finger and thumb with a space between them, which interfits with an adjacent pile, having a similar thumb and finger, by moving the piles relatively longitudinally which thumb and finger hold the piles against lateral separation, one of the piles having a portion of its finger projecting longitudinally beyond the end of the thumb so that when said pile is brought into assembling position with the other pile with the projecting portion of said finger engaging and overlapping the thumb of the other pile, the thumb of the first mentioned pile is in alignment with the space between the finger and thumb of the other pile so that the first mentioned pile may be easily and quickly brought into interlocking position with the other pile by moving it longitudinally therealong.

3. A sheet pile comprising a body portion having extending therealong at one edge two interfitting members integral with said body portion with a space between them adapted to interfit with an adjacent pile upon movement of the piles relatively longitudinally and adapted to hold the piles against separation by lateral relative movement, one of the interfitting members extending throughout only part the length of the body portion so that one of the interfitting members, at the end of the body portion, projects beyond the other, thereby providing a longer interfitting member and a shorter interfitting member, the longer interfitting member, when the sheet pile is in assembling position with an adjacent sheet pile, having similar interfitting members engaging and overlapping one of the interfitting members of the adjacent sheet pile and the shorter interfitting member of the first mentioned sheet pile being thereby in alignment with the space between the interfitting members of the adjacent sheet pile so that the first mentioned sheet pile can be easily and quickly interfitted with the adjacent sheet pile by moving it longitudinally therealong.

4. A sheet pile comprising a body portion and two interfitting members integral with the body portion extending along one edge thereof and having a space between them which is adapted to interfit with an adjacent pile by moving the piles relatively longitudinally and hold the piles against

separation by lateral relative movement one of the interfitting members projecting, at one end, beyond the other interfitting member so that when the projecting end of said interfitting member is brought into overlapping contact with an interfitting member of an adjacent similar sheet pile, the other interfitting member of the first mentioned sheet pile is in alignment with the space between the interfitting members of the adjacent sheet pile so that the first sheet pile may be moved longitudinally to interfitting position with the adjacent sheet pile.

5. The process of forming a composite structure of sheet piles which have, along their edges, cooperating thumbs and fingers, which process consists in shortening the thumb of the first sheet pile so that a portion of the side face of the finger facing the thumb at the end of the body portion is unobstructed by the thumb and thereafter bringing the inner face of the extreme end of the finger of a first sheet pile into overlapping engagement with the thumb of a second sheet pile, with the end of the thumb of the first sheet pile above and in alignment with the space between the thumb and finger of the second sheet, and moving the first sheet pile longitudinally along the sceond sheet pile to bring the interlocking thumbs and fingers of the two sheet piles into interlocking engagement.

OGDEN R. ODMAN.