March 31, 1964 J. J. DOUGHERTY 3,126,709

H-BEAM PILE POINT

Filed Oct. 13, 1960

Fig. 4

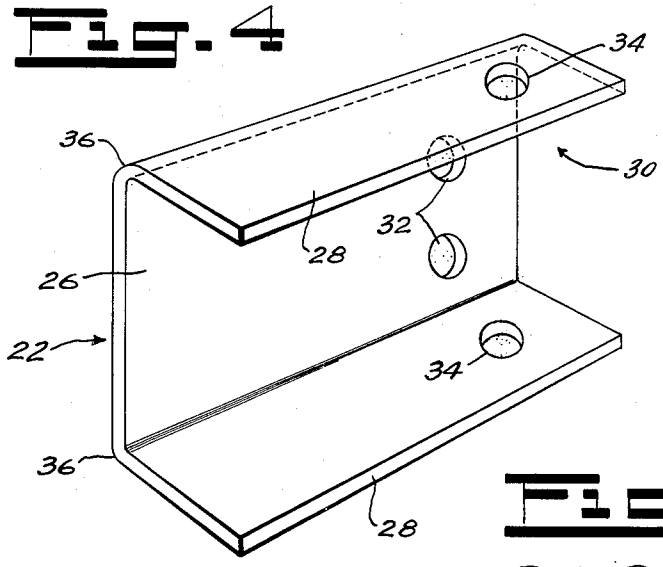


Fig. 3

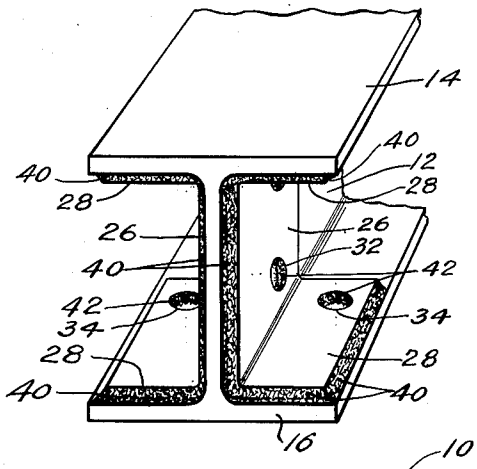
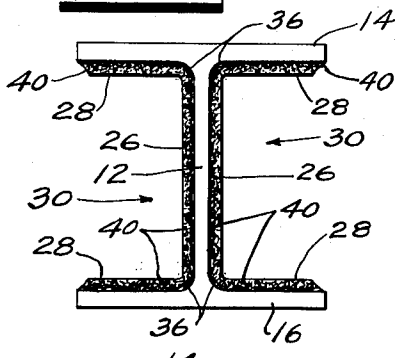


Fig. 2



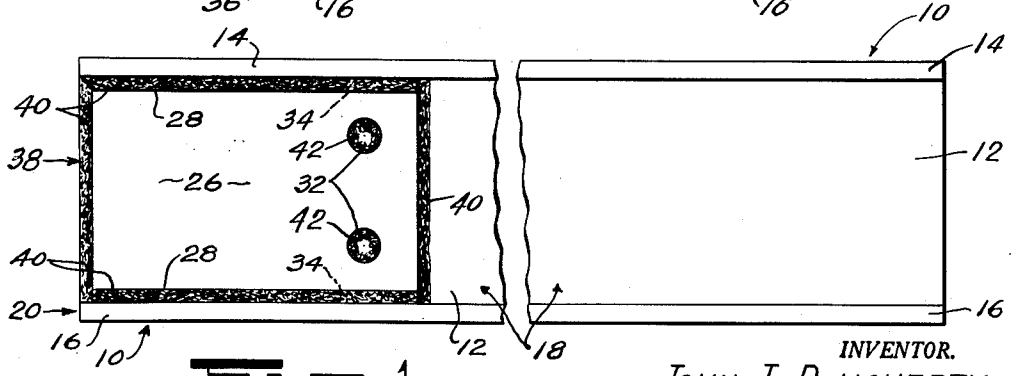


Fig. 1

INVENTOR.
JOHN J. DOUGHERTY
BY
Edw. S. Higgins
ATTORNEY

United States Patent Office 3,126,709
Patented Mar. 31, 1964

3,126,709

H-BEAM PILE POINT

John J. Dougherty, Cedar Grove, N.J.
(262 Rutherford Blvd., Clifton, N.J.)

Filed Oct. 13, 1960, Ser. No. 62,430
1 Claim. (Cl. 61—53)

This invention relates generally to H-beam piles and more particularly to new and useful improvements in an H-beam pile tip or point.

It is well known that under extremely severe driving conditions the web and the flanges of an H-beam pile are liable to become bent, separated or torn away from each other. Efforts have been made heretofore to prevent this condition by reinforcing the H-beam point with massive combinations of plates welded or riveted in place. However because such reinforcement is bulky, it punches an excessively large hole in the path of the driven beam which actually reduces the leading characteristics of the pile since some of the lateral support no longer exists. This invites buckling and bending stresses and provides undesirable conditions which promote crooked piles. Also when installing and attaching such plates to the end of the H-beam pile, the beam must be rotated three times which is laborious and time consuming and costly.

H-beam piles because of the small end section are often used to penetrate to rock or hard pan, this operation being carried on with a minimum of time and effort. Furthermore, because of the small sectional area at the ends, such H-beam piles are often the only type that can be driven to a required penetration without jetting or other similar operation. H-beam piles are also often used for penetrating into gravel hard pan or cemented sand because of the small sectional area at the ends thereof. Such operations advantageously affect the foundation.

A principal object of the present invention is to provide an H-beam pile with a tip or point of maximum strength with a minimum of material.

Another object of the invention is to provide a tip or point for an H-beam pile that provides a maximum of skin friction.

A further object is to provide a tip or point for an H-beam pile that is light in weight and easy to install.

It is also an object to provide a tip or point for an H-beam pile that assures adequate reinforcement for the web and flanges at the end of the pile and assures that the point is stronger than the remainder of the pile.

For further comprehension of the invention and the advantages thereof reference will be had to the accompanying drawing forming a material part of this disclosure wherein:

FIG. 1 is a side elevational view of an H-beam pile embodying my invention, parts being broken away.

FIG. 2 is a view of the tip or point of the pile.

FIG. 3 is a perspective view of the tip or point end of the H-beam pile.

FIG. 4 is a perspective view of the channel fitting.

Referring in detail to the drawing, an H-beam pile made in accordance with my invention is shown in FIG. 1 and is designated generally by the reference numeral **10**. The H-beam pile **10** comprises an elongated H-shaped body formed of wrought iron. The body comprises a rectangular web portion **12** and a rectangular top flange **14** and a rectangular bottom flange **16**, as viewed in FIG. 2, the flanges extending the length of the web portion on both sides thereof. The body is rolled with the web portion and flanges of the same thickness and with the long free edges and end edges of the flanges having square corners and being flat. The web portion and flanges define an elongated channel or groove **18** on each side of the body extending the length thereof.

In accordance with the present invention, one end of the body, the end known as the tip or point end, as indicated at **20**, is reinforced. This reinforcement takes the form of a channel fitting **22** positioned in each channel or groove **18** at the tip or point end **20**.

The channel fitting **22** is formed of steel and has a channel-shaped body of sufficient length, to wit, approximately 8″ to 14″ and of a thickness approximately ⅜″ to 1″ but the dimensions may vary. The body consists of a rectangular bight or web portion **26** and rectangular flanges **28**, **28** extending from the long edges of the web portion along one side thereof. The flanges are approximately 3″ to 6″ wide. The web portion and flanges define a channel or groove **30**. One end of the body is preferably formed with holes **32**, **32** across the web portion and with a single central hole **34** in each flange **28**. The web portion and flanges are flat with smooth surfaces and with slightly rounded corners **36**.

The channel fitting **22** is slightly smaller in dimensions than the dimensions of the channel or groove **18** of the pile body so that in assembling, the body of the channel fitting is manually inserted into the channel or groove **18** of the pile laterally or radially through the lateral opening of the channel or groove and is pressed into intimate contact with the surfaces of the web portion and flanges of the pile body, with an action simulating a snap action. When the channel fitting is driven home, the pile snugly embraces the channel fitting and the surfaces of the pile and fitting are in snug and intimate contact with each other, the corners of the channel fitting being in a tight fit with the corners of the groove of the pile body as shown in FIG. 2. The outer end of the channel fitting is preferably spaced away from the adjacent end of the pile body, a distance at least equal to the thickness of the material of the body of the channel fitting, thereby providing an unobstructed entrance end or tip **38**. The channel fitting is securely fixed in position by welding the edges thereof to the web portion **12** and flanges **14** and **16** of the pile as indicated at **40**. For further security, the inner edges of the weld holes **32** and **34** may be welded to the web portion and flanges of the pile as indicated at **42**.

It will thus be seen that I have provided an H-beam pile with a reinforced entrance tip or point that gives maximum strength with a minimum of material thereby preventing bending or distortion of the flanges of the pile at a minimum of cost. The pressed snap-in mounting of the channel fitting into position is a great time and labor saver and consequently considerably reduces the cost of installation of the channel fitting.

Each flange of the channel fitting is under tension when the flanges of the pile body tend to move away from each other. Contrariwise, the flanges of the channel fitting are under compression when they bend toward each other.

While I have illustrated and described the preferred embodiment of my invention it will be understood that changes might be made in details of construction without departing from the principle of the invention and I desire therefore to be limited only by the state of the prior art and the appended claim.

I claim:

A reinforced pile point construction comprising an elongated H-shaped body having an elongated rectangular-shaped web portion, flanges across the long edges of the web portion extending the length thereof on both sides thereof, said web portion and flanges defining channels on both sides of the web portion and a relatively short channel-shaped fitting in each channel adjacent one end of the body, said fitting being substantially shorter than the pile body, the pile body embracing the channel fitting with the surfaces of the pile body and fitting in snug intimate contact and with the corners of the channel

fitting tightly fitting in the corners of the pile body, the edges of the flanges of the channel fitting being welded to the web portion and to the flanges of the pile body, the web portion of the fitting having spaced holes across one end thereof, the flanges of the fitting each having a hole at the same end thereof, the outer end of the channel fitting being spaced inwardly away from the adjacent peripheries of the web and flanges a distance at least equal to the thickness of the material of the body of the channel fitting to provide an unobstructed end.

References Cited in the file of this patent

UNITED STATES PATENTS

114,039 Pratt ---------- Apr. 25, 1871
727,617 Hansen ---------- May 12, 1903
1,236,145 Burns ---------- Aug. 7, 1917
1,884,686 Hilpert ---------- Oct. 25, 1932
2,296,336 Crozier ---------- Sept. 22, 1942
2,683,927 Maronek ---------- July 20, 1954

FOREIGN PATENTS

592,377 France ---------- Apr. 29, 1925
461,146 Great Britain ---------- Feb. 11, 1937
816,680 Germany ---------- Oct. 11, 1951