

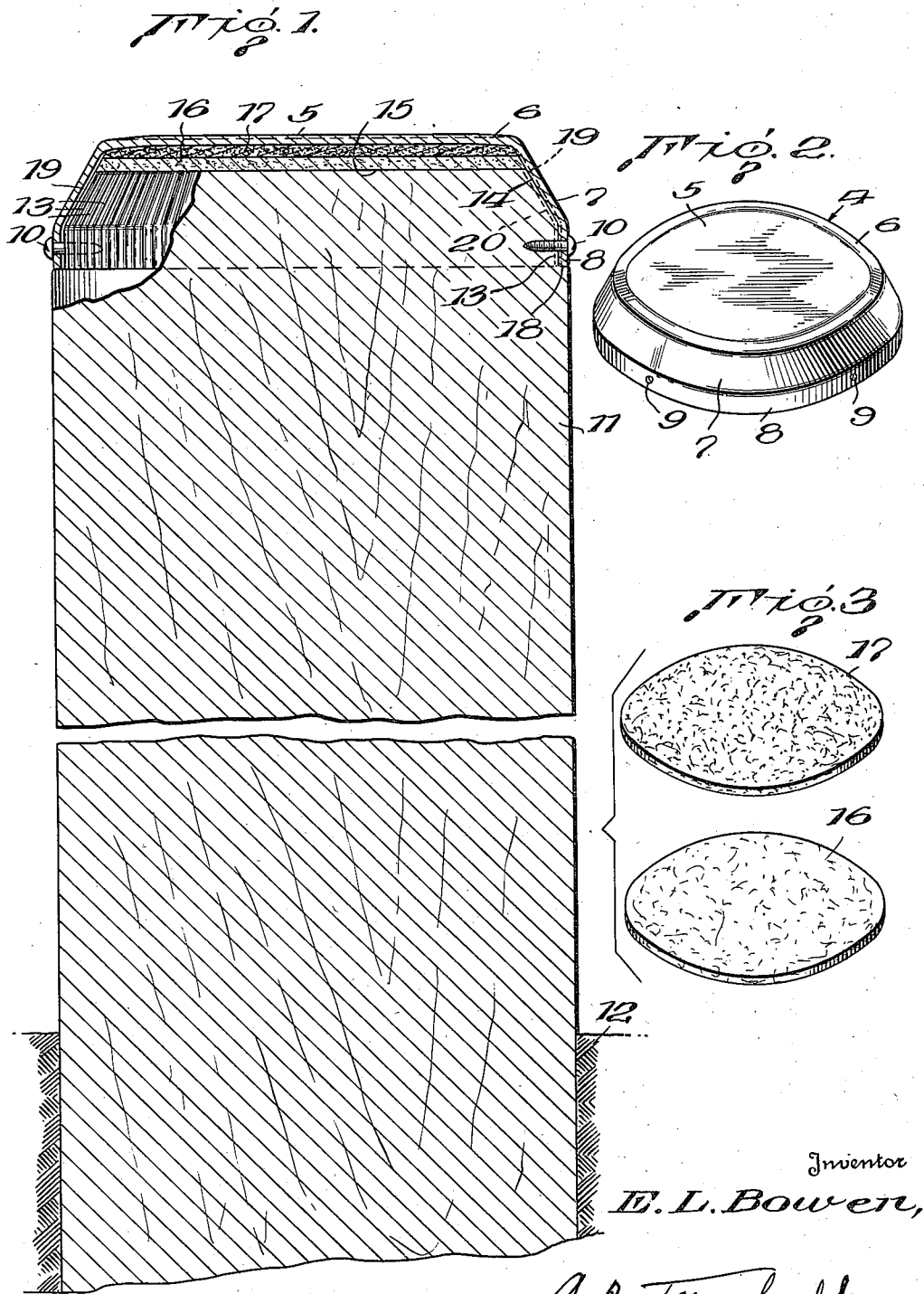
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PILE HEAD PRESERVER

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PILE HEAD PRESERVER

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9 Claims. (Cl. 61—77)

This invention relates to the art of piling, particularly that dealing with preservatively treated wooden piles such as are impregnated with a preservative prior to use. The present application is a continuation as to all common subject matter of my prior copending application Serial No. 742,-492 filed September 1, 1934.

An object of the invention is the provision of a protective cover for pile heads, having self contained preservative replenishing means. Another object is the provision of such a cover having also a self contained end sealing means that is self applicable in superposed relationship to the preservative replenishing means. A further object is the provision of a durable metal cover of economical material wherein the inner surface is protected against rusting; the outer surface being subjected to service conditions that preclude the formation of rust. Other objects will be readily apparent to those skilled in the art.

The invention possesses great practical utility in connection with piling used in river and harbor installations, particularly on piles employed for the mooring of ships, such as dolphins, fender piles, and wharf piles intended to take ships, hawsers; the heavy thick hawser loop being thrown over the pile head. For centuries wood piles have been employed for such purposes, with the ever present necessity for comparatively frequent replacement due to the destructive activity of marine borers and the inevitable progressive deterioration inwardly and downwardly from the pile head through warping and decay resulting from exposure to the action of the elements, enhanced by the strains incident to service.

The advent of the preservatively treated pile, such as the creosoted pile, materially decreased the frequency of replacement of piles eaten away by marine borers, but at the cost of increased capital expenditure. The present market price of creosoted piling is approximately ninety cents a lineal foot. However, the creosoted pile has not eliminated the destructive warping, cracking, and breaking down of the upper exposed portions of piles. In the operation of driving a pile the powerful blows of the pile driver cause the pile head to mushroom whether it be creosoted or not and set up longitudinal fault lines in the head which ultimately develop into cracks. In the case of creosoted piles a substantial portion of the creosote is exuded from the head, being driven out and lost. In this manner the resistance of the head to decay is weakened.

It has been almost the universal practice to use piles of a much greater length than necessary,

to obtain a larger height of exposed portion than is needed. By this means the progressive deterioration from the head to the area of service strain is delayed as its longitudinal extent of travel is increased. This practice is expensive as it entails the employment of more lineal footage than is necessary; an important economic factor of installations where any considerable number of piles are used.

The present invention is designed and intended to provide a protective metal cover for pile heads that will prevent slivering and sloughing off such as occurs as the result of dropping heavy hawser loops over the head, and which is provided with self acting means for capillary replenishment of preservative to replace that driven from the pile body and that lost through surface removal. The cover is self sealing against internal rust and against loss of its reservoir content of preservative, and at the same time it provides a circumferential binder that prevents radial warping of the head. It permits use of piles having only the effective length required, reducing the footage, and preserves the pile head against any deterioration.

Figure 1 of the drawing is a vertical section of a pile provided with a cover in accordance with the invention.

Figure 2 is a perspective view of the metal cover.

Figure 3 is a group perspective view of the preservative reservoir and sealing means.

The invention comprises a cover 4 of steel or copper, preferably steel, or any suitable metal or alloy formed as a flat circular plate 5 having a circumferential portion 6 thereof immediately adjacent its periphery disposed at an obtuse angle with respect to the plate and merging into an annular outwardly flared frusto-conical portion 7 terminating in a cylindrical flange 8 provided with apertures 9 at suitably spaced intervals for reception of securing elements 10, such as screws, by which the cover is attached in service position at the head of a pile 11 after being driven into its bed material 12.

After the pile is positioned the head is trimmed to provide a cylindrically reduced portion or zone 13, the extent of reduction being determined by the thickness and height of the cylindrical flange 8 so that when the cover is applied the outer surface of the flange is substantially flush with the peripheral surface of the pile. Also, above the zone 13 the body of the head is bevel trimmed to a frusto-conical portion 14 to fit within the frusto-conical portion 7 of the cover. The ex-

tent of the cover portion 7 is greater than that of the pile head portion 14 however, so that when the cover is applied there remains a space between the flat top 15 of the pile head and the plate 5 of the cover, which space or chamber is occupied by a plurality of circular pads of fabric material, preferably felt. In the illustrated embodiment two such pads 16 and 17 are employed, being disposed in superposed relation. The lower pad 16 is saturated with a suitable liquid preservative, of which creosote of light grade is typical, capable of capillary penetration into the body of the pile. The upper pad 17 is saturated with some suitable viscous preservative which may be a heavy creosote, liquid tar, or any bituminous product or equivalent thereof of pronounced viscosity.

The cover is accurately fitted to the pile head with a tight fit, sufficiently tight to require the application of a slight force to drive the edge of the flange 8 down into biting engagement with the shoulder 18 resulting from the cylindrical reduction of the pile to provide the portion 13.

In applying the cover the pile head is first trimmed as described and the saturated pad 16 is then laid on the pile top 15 which it completely covers. The pad 17 saturated with the viscous material is placed within the cover against the plate 5 and the portion 6, to which it will adhere, or it may be laid over the pad 16, both pads being of the same area or substantially so. The cover is then forced down over the pile head whereupon the angled portion 6 compresses the subjacent area of the pads and acts to force viscous sealing material from the pad 17 down between the frusto-conical surfaces of the pile head and cover.

In order to provide an escape for air as the cover is applied, the inner face of the cover portion 7 and the flange ring 8 may be appropriately corrugated axially of the cover as indicated at 19 or the peripheral surfaces of the pile head portions 13 and 14 may be axially grooved as at 20, or both. By this means seepage channels are provided that will become filled with viscous sealing material from the pad 17 and this material will also collect on the shoulder 18 behind the flange ring 8 effectively sealing the joint.

The maximum external diameter of the cover is no greater than the diameter of the pile with which it is associated, so that no portion of the cover overhangs the pile or projects laterally thereof, and the configuration of the cover facilitates the application and release of hawsers and the like. The pad 16 provides a reservoir of preservative that impregnates the pile head through capillary action, and the pad 17 provides a reservoir of viscous sealing material that is superimposed on the preservative and which insures a rust preventing coating over the interior surface of the cover. The outer surface of the cover may be treated in any desired manner to prevent rusting, but as such surface is generally subjected to service conditions that preclude rust formation a special treatment of the outer surface is unnecessary.

The flange 8 acts as a binder ring encircling the pile head and prevents radial warping or cracking. Within the chamber occupied by the reservoir pads a certain amount of volatilization of the preservative will occur which builds up pressure beneath the plate 5 and acts to force the preservative into the pile head.

An important feature of the invention is the water tight seal of the flange 8 against the shoul-

der 18. The seal prevents any possibility of air or water entering beneath the cover, rendering the cover particularly efficacious on piles that are used as concealed anchorages, being embedded in fills and the like.

I claim:—

1. A cover for wood pile heads comprising a circular plate provided with an outwardly flared marginal portion, a cylindrical flange extending from the edge of said marginal portion axially of the plate, and means for securing said cover to a pile head.

2. A cover for wood pile heads comprising a flat circular metal plate having an area adjacent its periphery disposed at an obtuse angle respecting the plate, a frusto-conical portion extending from the edge of said angled area, and a cylindrical flange extending from the edge of said frusto-conical portion axially of the plate.

3. A cover for wood pile heads comprising a circular metal plate provided with a peripheral zone disposed at an angle obtuse with respect to the plate, and a frusto-conical marginal portion integral therewith.

4. A cover for wood pile heads comprising in combination a circular metal plate having a frusto-conical marginal portion, a cylindrical flange extending from the edge of said marginal portion, and a pad saturated with a flowable preservative housed within said marginal portion.

5. A cover for wood pile heads comprising in combination a circular metal plate having an obtusely angled circumferential portion, a cylindrical flange extending from the angled portion, a pile top engageable pad within said circumferential portion and carrying a liquid preservative, a second pad within said circumferential portion in engagement with the inner face of said plate and carrying a viscous sealing liquid.

6. A cover for wood pile heads comprising in combination a flat circular metal plate having a frusto-conical margin terminating in a cylindrical flange axially of the plate, reservoir pads housed within said frusto-conical portion and carrying preservative and sealing material, and said plate immediately adjacent its margin having a circumferential area obtusely angled with respect to said plate and frusto-conical margin.

7. In combination, a wood pile having a cylindrically reduced head and a frusto-conically trimmed top, a pad saturated with a liquid preservative and seated loosely on the flat portion of the top, a frusto-conical cover plate seated over said trimmed top, a cylindrical edge flange depending therefrom and tightly engaging the cylindrically reduced portion of the head, and the outer face of said flange being substantially flush with the peripheral surface of the pile.

8. In combination, a wood pile having a cylindrically reduced head providing a circumferential shoulder at its base, a frusto-conically trimmed top, a pad saturated with a liquid preservative and seated over the flat portion of the top, a second pad saturated with a viscous sealing liquid and seated over said first pad, a frusto-conical metal cover plate seated over said pads and top, said plate having its top marginal portion depressed for edge compression of the subjacent pad, a cylindrical flange depending from said plate in tight fitting engagement over the cylindrically reduced portion of the pile head and with the edge of said flange in biting engagement with said shoulder, and the maximum diameter of said cover plate and flange being no greater than the diameter of the pile below said shoulder.

9. In combination, a wood pile having a cylindrically reduced head providing a circumferential shoulder at its base, the top of said head being shaped as a frusto-conical portion, a pad disposed over said top and saturated with a viscous sealing liquid, a frusto-conical metal cover disposed over said head, a binding ring flange depending from said cover in tight fitting engagement with said cylindrically reduced portion and with its edge tightly abutting said shoulder, and seepage channel means within said cover to convey sealing liquid to said shoulder behind said flange.

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