March 25, 1952 B. J. VOSLAMBER 2,590,807

MEANS FOR STRIKING LUGS OF HEADED FORM FROM A METAL SHEET

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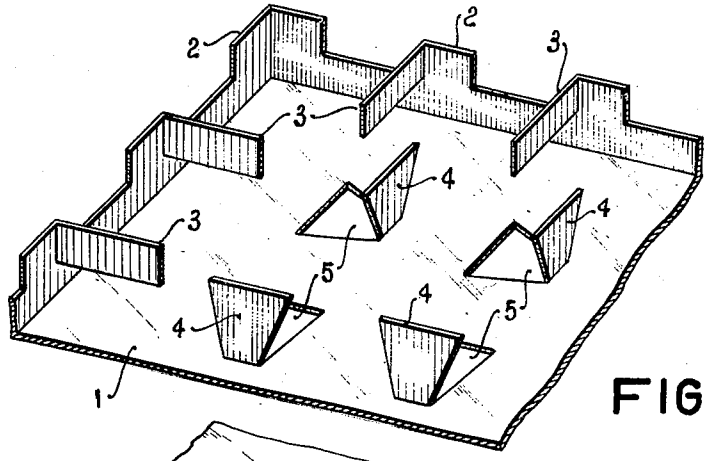


FIG. 1

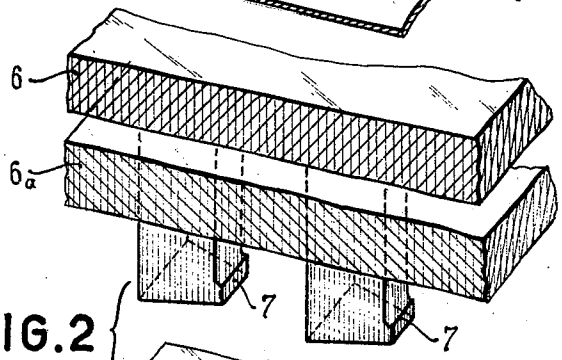
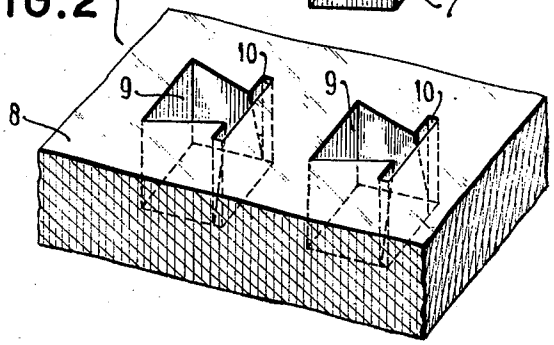


FIG. 2



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MEANS FOR STRIKING LUGS OF HEADED FORM FROM A METAL SHEET

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3 Claims. (Cl. 164—109)

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This invention relates to improved means for striking, punching or pressing lugs, ears, tongues or the like of headed form from a metal sheet or plate, such as a sheet to be used for facing a tile of concrete or other setting material, said lugs or the like serving as clinchers around which the setting material may engage. The said lugs may, for instance, be of trapezoidal or dove-tail forms, either or not with rounded corners, but whatever their shape may be, it is essential for their width to be greater at their free end than at their base, in order that the sheet may be firmly anchored or keyed to the tile by a wedging fit.

The object of this invention is to provide improved means for striking such lugs from a metal sheet in such manner that, after being partially cut from the sheet by means of a punch member cooperating with a suitable die, the lug can readily be retracted from the die cavity notwithstanding the fact that it is of headed form.

Fig. 1 of the accompanying drawing illustrates, in a fragmentary perspective view, a metal sheet or plate provided with flanged edges and with a plurality of trapezoidal anchoring lugs, whereas Fig. 2 is a similar view of a punch and of a die in accordance with the invention.

As shown in Fig. 1, the sheet or plate comprises a flat web member 1 formed at its edges with flanges 2 provided with inturned tongues 3. Projecting from the rear or inner side of the web member 1 are trapezoidal lugs 4 partly cut therefrom and bent at right angles thereto, leaving trapezoidal slots 5 therein. This form of the lugs 4 ensures a reliable wedging fit of the lugs with the concrete or other setting material of the tile by which the sheet is to be faced.

In Fig. 2, the numeral 6 designates a support for punch members 7 of trapezoidal cross sectional form, corresponding with the shape of the lugs 4. Said punch members cooperate with a die 8 provided with cavities 9 adapted to receive the punch members 7. The cross section of the mouth of each cavity 9 is substantially the same as that of the cooperating punch member 7, and the end walls of the cavity are vertical, but the side walls thereof diverge so that the bottom has the form of a rectangle, the lengths of the sides of which are equal to the width of the lug at its free end and to the length of the lug, respectively. Cut in each side wall of the cavity, on the side of the narrow end of the mouth, is a cross groove having a width slightly greater than the thickness of the web member 1, the depth of said groove gradually decreasing from a maximum at the mouth of the cavity to zero,

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it being understood that at said mouth the distance between the bottoms of the grooves is at least equal to the width of the lug at its large, i. e. free end.

It will be appreciated that, if the web 1 is placed on the die 8, each punch 7 during the downward stroke of support 6 will strike a lug from the web and bend the same down at a right angle therefrom so that the bottom face of the lug engages the vertical end face of the cavity on the side of the base of the lug. After retraction of the punches, the web can freely be removed from the die in a vertical direction, owing to the lugs passing through the aforesaid grooves.

The reference 6a designates a plate adapted to be lowered, into contact with the web resting on the die, prior to the downward movement of the punches, so as to prevent the web from buckling during the punching operation, as is usual in apparatus of this type.

What I claim is:

1. Means for striking lugs of headed form from a metal sheet comprising a die having a first opening formed therein, said first opening being of a width substantially equal to the thickness of the sheet from which the lug is to be struck and being of a depth substantially equal to the length of the lug, said die having a second opening formed therein, the second opening having a cross sectional shape substantially equal to the cross sectional shape of a punch insertable therein to strike the lug from the sheet and said second opening having a first end wall and an opposing second end wall, said second end wall being open and in communication with the first opening, said second opening also having opposing side walls, the distance between the side walls adjacent to the first end wall being greater than the distance between the side walls at the open end wall, the length of the first opening being at least equal to the maximum distance between the side walls of the second opening parallel to the length of the first opening, the width of the open end wall increasing from the mouth of the second opening and being of a sufficient size at a point remote from the mouth to permit the passage of the free end of the formed lug from the second opening into the first opening under the force of the punch as the lug in formation stages gyrates about an axis defined by a line forming the upper edge of the second end wall into a position at right angles to the sheet and said side walls diverging from the mouth to a point remote therefrom to permit gyrating

movement of the free end of the lug through the second opening.

2. Means for striking lugs of headed form from a metal sheet comprising a die having a first opening therein, said first opening being of a width substantially equal to the thickness of the sheet from which the lug is to be struck, said die having a second opening formed therein, the second opening having a cross sectional shape equal to the cross sectional shape of a punch insertable therein to strike the lug from the sheet and said second opening having a first end wall and an opposing open end wall the length of the first opening being at least equal to the maximum distance between the side walls of the second opening parallel to the length of the first opening, the open end wall being in communication with the first opening and increasing in width from the mouth of the second opening to a point remote from the mouth at whic hpoint the width of the end wall is equal to the width of the free end of the lug, said second opening also having opposing side walls, said side walls diverging from the mouth of the second opening axially of the opening and converging at the mouth of the second opening relative to the first opening transverse of the axis of the second opening.

3. Means for striking lugs of headed form from a metal sheet comprising a die having a first opening formed therein, said first opening being of a width substantially equal to the thickness of the sheet from which the lug is to be struck and being of a depth substantially equal to the length of the lug, said die having a second opening formed therein, the second opening having a cross sectional shape substantially equal to

the cross sectional shape of a punch insertable therein to strike the lug from the sheet and said second opening having a first end wall and an opposing second end wall, the length of the first opening being at least equal to the maximum distance between the side walls of the second opening parallel to the length of the first opening, said second end wall being open and in communication with the first opening, said second opening also having opposing side walls, the distance at the mouth of the second opening between the side walls adjacent to the first end wall being greater than the distance between the side walls at the open end wall, and the distance between the side walls at a point remote from the mouth of the second opening being substantially equal at both the first and second end walls and being equal to the width of the free end of the lug and the width of the open end wall increasing from the mouth of the second opening and being of a sufficient size at a point remote from the mouth to permit the passage of the free end of the formed lug from the second opening into the first opening under the force of the punch as the lug in formation stages gyrates about an axis defined by a line forming the upper edge of the second end wall into a position at right angles to the sheet.

BEREND J. VOSLAMBER.

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