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[33] **Great Britain**
[31] **35186/66**

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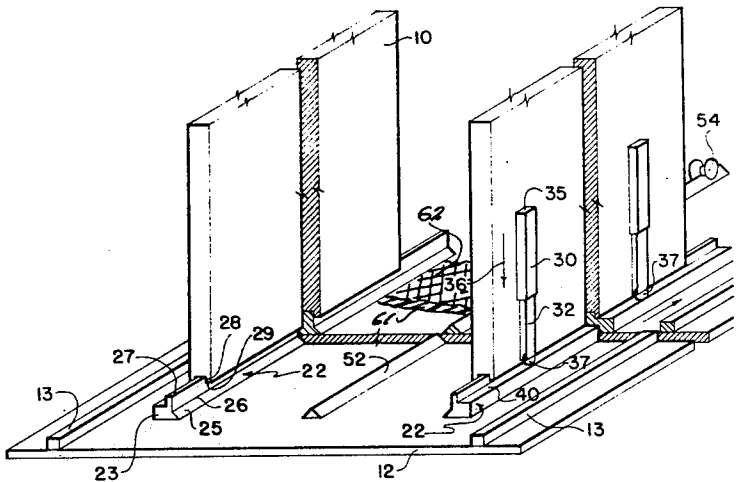
[54] **CONCRETE SLAB FORMING MACHINE WITH
REMOVABLE SOFFIT EDGES**
19 Claims, 7 Drawing Figs.

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[51] Int. Cl..... B28b 7/00
[50] Field of Search..... 25/1 (A), 2,
41.2 (B), 121 (A), 122, 41.1, 41 (J), 41.2, 1 (M)

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ABSTRACT: This device is a removable soffit edge for forming accurate, smooth, lower corners to a concrete slab or the like being extruded or slip formed on a bed. It consists of an elongated form placed on the bed and engaged within a groove on the underside of the side plates of the machine which maintains the parallel relationship of the forms as the machine passes thereover. These forms can be any desired shape and in fact can be extended to act as the sidewalls of a slab if it is desired that the side faces of the slab be accurately and smooth finished. After the slab has been formed and cured sufficiently, the slab can be lifted from the bed leaving the forms in place or, alternatively, the forms can be removed and replaced with forms having a different configuration or different spacing. The device will also permit the use of a different soffit form as either the complete form itself may be replaced or a "liner," such as a plastic or rubber sheet, can be inserted underneath the soffit edges.



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SHEET 1 OF 2

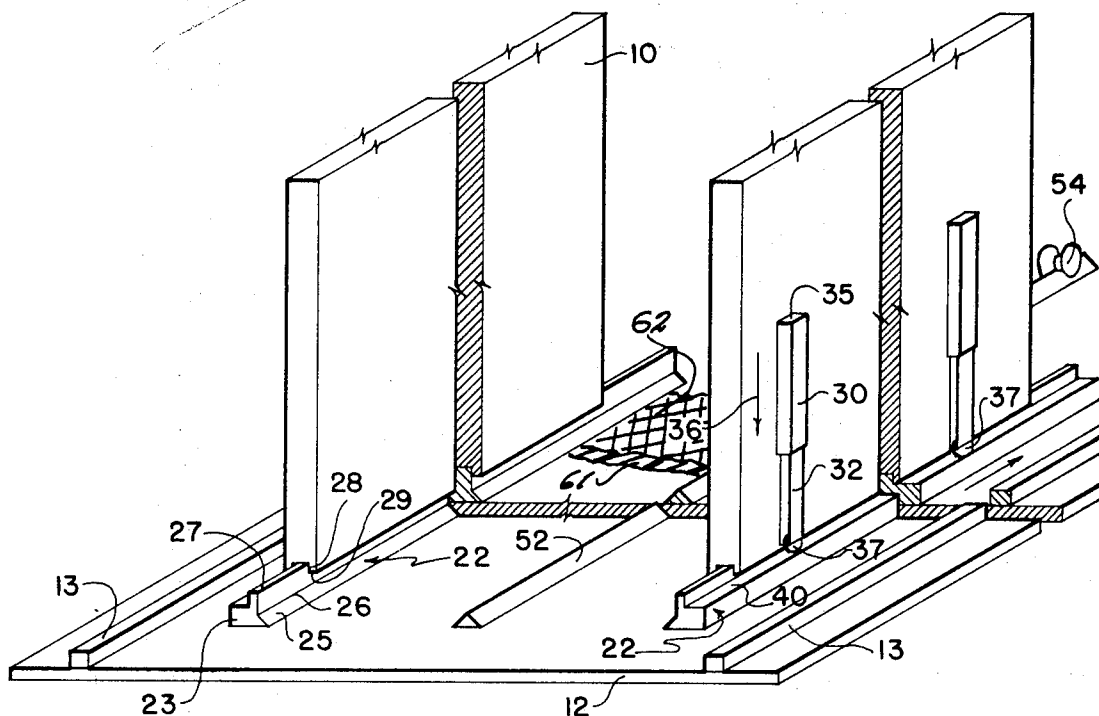


FIG. 1

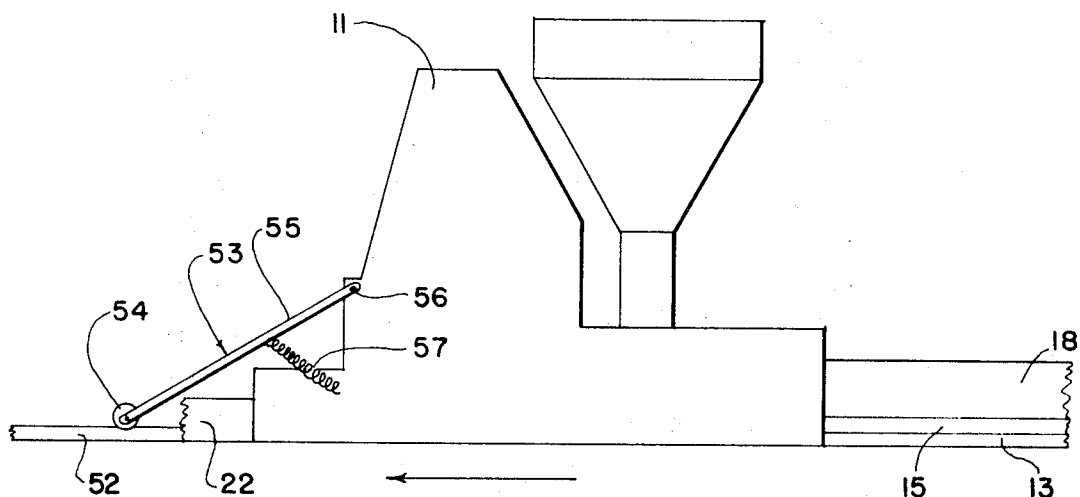


FIG. 5

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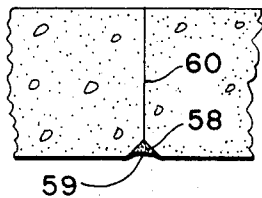


FIG. 7

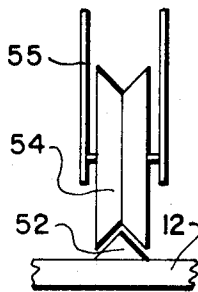


FIG. 4

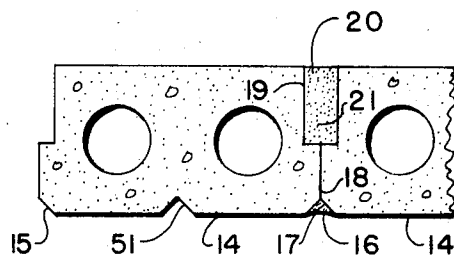


FIG. 6

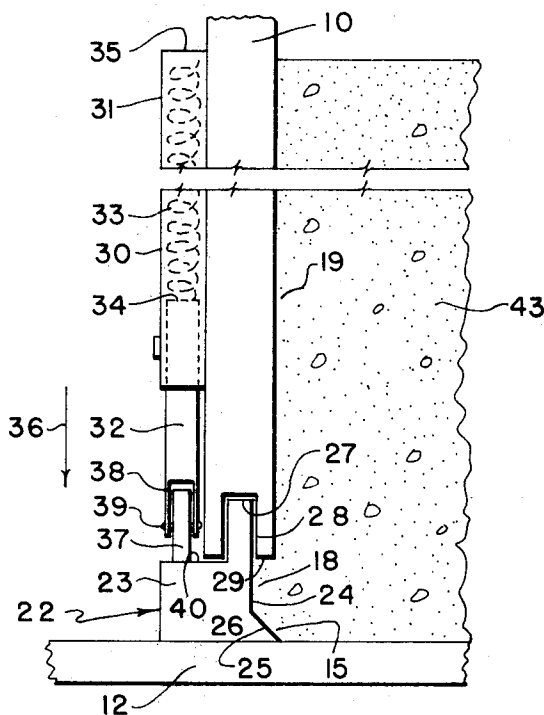


FIG. 2

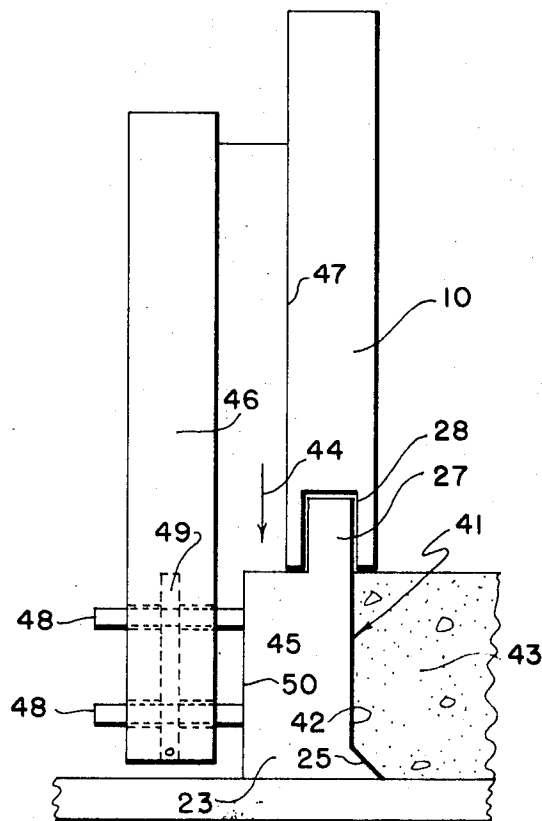


FIG. 3

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1 CONCRETE SLAB FORMING MACHINE WITH REMOVABLE SOFFIT EDGES

At the present time, when a precast slab is formed by using a machine, whether it be a slip former or an actual extruder such as illustrated in U.S. Pat. No. 3,159,897, the bottom corners of the slab are either formed using fixed bed edges or having the edge forming strips attached to the machine and moving with the side plates. Neither of these methods is entirely satisfactory for the reasons given below.

When the soffit edges of a slab are formed using a fixed edge, the producer is tied to this particular section and has no versatility either in width of slab or in the style of joint or soffit finish. He also has an initially expensive bed to construct.

When the forming of the edges is carried out by the machine, quite a rough edge is left because of the sliding motion. It is also difficult to get a clean joint where the edge form slides over the soffit form or bed.

The apparatus herein presented is to leave the edge form in place on the bed while the machine side plates slide over it. In this manner, it will act in the same way as does the fixed bed edge. Because of this then, a good edge is obtained. However, after the machine has passed and the slab has been cured, the edge forms can be removed or they can be removed after the slab is lifted off the bed. Therefore, versatility in width, style of joint and soffit finish can be obtained as different edges and soffit form liners can be used with the same bed and also at different locations on the bed.

Another consideration is the use of a removable strip to form dummy joints in the slab soffit. This, of course, could not be held down by a machine side plate and would have to be held by the machine on the bed ahead of the concrete forming chamber.

With the foregoing considerations in view, and such other objects, purposes or advantages as may become apparent from consideration of this disclosure and specification, the present invention consists of the inventive concept which embraces or includes the method, process, construction, arrangement of parts, or new use of any of the foregoing, as herein particularly exemplified in one or more specific embodiments of such concept, reference being had to the accompanying FIGS. in which:

FIG. 1 is a partially schematic isometric view of the bed plate showing the invention incorporated therein.

FIG. 2 is an end view of one of the side plates showing the holding down of the edge strip which is removable.

FIG. 3 shows an end view of one of the side plates with an alternative embodiment of the edge form which is removable.

FIG. 4 is an end view showing the holddown means for the removable strip for forming dummy joints.

FIG. 5 is a side elevation of an extruding machine reduced in scale from the other drawings and showing a portion of a slab formed with the present device.

FIG. 6 is an end view partially fragmented of a pair of slabs in side to side relation formed by the present device.

FIG. 7 is a similar view to FIG. 6 but showing slabs formed by the embodiment shown in FIG. 3.

In the drawings like characters of reference indicate corresponding parts in the different FIGS.

Proceeding therefore to describe the invention in detail, reference character 10 illustrates the slab side plates forming part of the slip former or extruder machine shown in FIG. 5 and identified by the reference character 11.

It should be noted at this point that these side plates 10 normally form the sides of the slab as the machine moves along but, of course, it is not necessary for these side forms to touch the side of the slab but could terminate flush with the upper edge of the slab particularly when used in the embodiment shown in FIG. 3.

The machine 11 normally runs along a bed plate 12 having guide rails 13 situated in spaced and parallel relationship thereon. However, it is also conventional for these guide rails to be situated externally of the bed plate 12 but this does not effect the operation of the invention hereinafter to be described.

Reference character 14 illustrates the base of the slabs, normally known as the soffit and the angulated corners 14 are known as the soffit edges. Although it is normal to form these corners as shown in FIGS. 6 and 7, nevertheless it should be understood that the shape of these corners can be varied according to the design of the slabs. These angulated corners, when they meet in adjacent slabs as shown in FIG. 6 by the reference character 16, form a joint which is usually "pointed" or filled with calking compound as indicated at 17. Conventionally, slabs are formed as shown in FIG. 6 with side faces 18 in contact for a portion of the height thereof and these side faces are then set back or recessed as shown at 19 so that when adjacent slabs are jointed as shown in FIG. 6, a relatively deep, longitudinally extending recess 20 is formed and this is filled with grout or some similar material as indicated at 21.

FIGS. 1 and 2 show the preferred embodiment utilized to form slabs similar to those shown in FIG. 6. The stationary but detachably removable soffit edge forms are collectively designated 22 and may be manufactured of extruded plastic, metal or other suitable material.

In the embodiment shown in FIGS. 1 and 2, these forms consist of an elongated body portion 23 having a vertically situated face 24 to form the side face 18 of the slab. Formed integrally with the body portion 23 is an inwardly and downwardly inclining face 25 extending from the lower edge 26 of the face 24 and this forms the angulated corner 15 on the slab as the machine passes thereover.

Means 27 are formed integrally with the form and in conjunction with the side plates 10, maintain the forms in the desired spaced and parallel relationship. The means 27 comprises an elongated longitudinally extending strip having a configuration clearly shown in FIGS. 1 and 2. This strip engages a corresponding longitudinally extending groove or recess 28 formed in the lower edge 29 of the plate 10 and the plates 10 guide the forms 22 in position as the machine passes thereover and maintains them in position as the concrete slab is extruded by the machine.

It is desirable to maintain the forms 22 in contact with the bed plate 12 as the machine passes thereover and in this connection I provide a plurality of spring loaded assemblies 30.

These spring loaded assemblies consist of a casing 31 secured to side plates 10, said casing acting as a guide for a vertically movable support bar 32 extending downwardly therefrom. A compression spring 33 is situated within the casing and above the support 32 and reacts between the upper end 34 of the support and the upper end 35 of the casing thus normally urging the support downwardly in the direction of arrow 36. A roller 37 is journaled for rotation within the lower end 38 of the support, upon pin 39 and this roller engages the shoulder 40 between the strip 27 and the body 23 of the form 22 as clearly shown in FIGS. 1 and 2.

In the alternative, the forms 22 may be detachably secured by adhesive to the bed plate 12 and this method is of particular use where bed plates are slightly deformed. By this it is meant that a longitudinal wave shape or bumps or hollows or warping may have taken place within the bed plate. This type of bed plate may not permit the necessary close contact between the plate and the form 22 at all points even although the form is pressed downwardly against the bed by means of the spring loaded devices hereinbefore described. A slab cast upon such a bed will tend to squeeze some of the concrete mix under the edge strip form at certain points leaving an unsightly "fin" on the bottom of the finished slab.

To eliminate this possibility, the aforementioned adhesive securing can be used. However, when this method is used the forms 22 have to be placed in the correct location before the machine passes over the bed. The adhesive used is strong enough to prevent concrete or mortar from being squeezed under the strip but will permit the strip to be removed after the slabs are removed from the bed. Several well-known commercial adhesives are available and a tape having both sides containing pressure sensitive adhesive can also be used with success.

FIG. 3 shows an alternative embodiment inasmuch as the soffit edge formed collectively designated 41 not only includes the corner forming portion 25 and the body portion 23 but also the slab side forming face 42 which extends upwardly from the corner forming portion 25, the full height of the slab indicated by the reference character 43.

The strip 27 is then formed integrally upon the upper end of the slab forming face 42 and engages within the groove or recess 28 of the sidewall 10 as hereinbefore described.

Arrow 44 is a schematic representation of the pressure roller assembly 37 and has been deleted from this view for clarity.

Due to the height of the form in this embodiment, it is necessary to give lateral stability to the slab-sidewall forming portion 45 as the machine passes thereby. In this connection I have provided a support member 46 secured to the outer side 47 of the side plate 10 and depending downwardly therefrom. A pair of rollers 48 are journaled for rotation upon a spindle 49 and are rotatable in a horizontal plane as clearly indicated in FIG. 3. These rollers engage the outer face 50 of the slab-sidewall forming portion 45 as clearly illustrated.

In operation, the forms 22 or 41 are placed upon the bed 12 so that the grooves 28 can engage the strips 27 thereon. The machine is then moved along the bed extruding or slip forming the slab therebehind with the forms acting to provide the necessary configuration to the portion of the sidewalls and soffit corners depending upon the shape of the forms.

The rollers 37 maintain the forms in contact with the bed as the machine passes thereover, and, if the embodiment shown in FIG. 3 is being utilized, the rollers 48 maintain the lateral position of the form as the machine moves along same thus controlling the lateral dimensions of the slab 43 being formed by the machine.

As soon as the slab has cured, the forms 22 and 41 can either be removed or, alternatively, the slab can be lifted from the bed and the forms reused immediately.

It is occasionally desirable to form a dummy joint 51 on the base or soffit 14 of the slab and in this connection I provide a dummy joint form 52 extruded from plastic or similar material and placed upon the bed 12 intermediate the forms 22.

It is necessary to maintain and guide this form as the machine passes thereover so that I utilize a spring loaded roller assembly collectively designated 53 and attached to the machine 11.

The form 52 is usually triangular in cross section as shown and the roller 54 is shaped to engage the apex of this form as clearly shown in FIG. 4. FIG. 5 shows one embodiment of this roller assembly which includes arms 55 pivoted upon pin 56 on the machine 11 and having a tension spring 57 urging the arms downwardly and hence the roller 54 in pressure engagement with the form 52.

In all instances it should be stressed that the forms 22, 41 and 52 are stationary upon the bed 12 and that the machine passes thereover.

It should also be clearly understood that the configuration of the forms 22, 41 and 52 can be changed depending upon the configuration required on the soffit edges or sides of the slabs being formed.

FIG. 7 shows a pair of slabs formed by the embodiment shown in FIG. 3, in adjacent relationship with the soffit corner joint 58 pointed in the conventional manner as illustrated at 59. In this instance the faces 60 of the slabs are in close interfacial relationship and, due to the fact that they are formed by the removable forms 41, do not require any grouting.

A soffit form liner 61 (FIG. 1), made of thin sheet of such material as plastic or rubber, may be laid flat on top of the bed plate 12. This liner will act as if it were the top surface of the bed plate and its function will be to provide a different soffit finish on the slab or to assist in releasing the cured slab from the bed plate. The liner will in no way affect the function of the removable soffit edges 22 and 52. The upper surface of this liner may be provided with various patterns or textures 62 which will provide a similar pattern or texture to the surface of the slab.

Various modifications can be made within the scope of the inventive concept disclosed. Accordingly, it is intended that what is described herein should be regarded as illustrative of such concept and not for the purpose of limiting protection to any particular embodiment thereof, but that only such limitations should be placed upon the scope of protection to which the inventor hereof is entitled, as justice dictates.

I claim:

1. In a slab forming machine which includes a bed, guide means for said machine, and product forming side plates thereon; a stationary but detachably removable soffit edge form, and means on said machine engageable with said form to maintain the desired relationship of said form with said machine as said machine passes thereover, said means including a longitudinally extending groove formed in the underside edge of the side plates of said machine, said form having an upstanding longitudinally extending strip engageable within said groove.

2. The device according to claim 1 which includes means to maintain said form in contact with said bed as said machine passes thereover, said last-mentioned means including a plurality of spring loaded pressure devices secured to said machine and being movably engageable with said form.

3. The device according to claim 1 in which said form includes a soffit edge forming portion and an upstanding slab-sidewall forming portion.

4. The device according to claim 1 in which said form includes a soffit edge forming portion and an upstanding slab-sidewall forming portion, said upstanding longitudinally extending strip being on the upper side of said upstanding slab-sidewall forming portion.

5. The device according to claim 3 which includes spring loaded pressure devices on said machine movable engageable with the outer face of said slab-sidewall forming portion.

6. The device according to claim 4 which includes spring loaded pressure devices on said machine movable engageable with the outer face of said slab-sidewall forming portion.

7. The device according to claim 1 which includes a pair of said removable soffit edge forms, one on each side of the slab being formed, and a removable dummy joint forming strip situated on said bed between said edge forms, and means on the associated machine movable along said dummy joint form strip with said machine to maintain the position of said dummy joint form strip as said machine passes thereover, said last-mentioned means comprising a spring loaded roller extending from said machine and engaging said joint strip.

8. The device according to claim 2 which includes a pair of said removable soffit edge forms, one on each side of the slab being formed, and a removable dummy joint forming strip situated on said bed between said edge forms, and means on the associated machine movable along said dummy joint form strip with said machine to maintain the position of said dummy joint from strip as said machine passes thereover, said last-mentioned means comprising a spring loaded roller extending from said machine and engaging said joint strip.

9. The device according to claim 3 which includes a pair of said removable soffit edge forms, one on each side of the slab being formed, and a removable dummy joint forming strip situated on said bed between said edge forms, and means on the associated machine movable along said dummy joint form strip with said machine to maintain the position of said dummy joint form strip as said machine passes thereover, said last-mentioned means comprising a spring loaded roller extending from said machine and engaging said joint strip.

10. The device according to claim 5 which includes a pair of said removable soffit edge forms, one on each side of the slab being formed, and a removable dummy joint forming strip situated on said bed between said edge forms, and means on the associated machine movable along said dummy joint form strip with said machine to maintain the position of said dummy joint from strip as said machine passes thereover, said last-mentioned means comprising a spring loaded roller extending from said machine and engaging said joint strip.

11. The device according to claim 6 which includes a pair of said removable soffit edge forms, one on each side of the slab being formed, and a removable dummy joint forming strip situated on said bed between said edge forms, and means on the associated machine movable along said dummy joint form strip with said machine to maintain the position of said dummy joint form strip as said machine passes thereover, said last-mentioned means comprising a spring loaded roller extending from said machine and engaging said joint strip.

12. The device according to claim 5 in which said spring loaded pressure devices include a support secured to the outer face of said side plate and depending downwardly therefrom, and at least one roller journaled in said support for rotation in a horizontal plane, said roller engaging the outer face of said slab-sidewall forming portion.

13. The device according to claim 6 in which said spring loaded pressure devices include a support secured to the outer face of said side plate and depending downwardly therefrom, and at least one roller journaled in said support for rotation in a horizontal plane, said roller engaging the outer face of said slab-sidewall forming portion.

14. The device according to claim 1 which includes a liner on said bed and spanning same and extending under said soffit

edge form, said lining having a patterned or textured upper surface.

15. The device according to claim 2 which includes a liner on said bed and spanning same and extending under said soffit edge form, said lining having a patterned or textured upper surface.

16. The device according to claim 3 which includes a liner on said bed and spanning same and extending under said soffit edge form, said lining having a patterned or textured upper surface.

17. The device according to claim 7 which includes a liner on said bed and spanning same and extending under said soffit edge form, said lining having a patterned or textured upper surface.

18. The device according to claim 10 which includes a liner on said bed and spanning same and extending under said soffit edge form, said lining having a patterned or textured upper surface.

19. The device according to claim 12 which includes a liner on said bed and spanning same and extending under said soffit edge form, said lining having a patterned or textured upper surface.

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