# United States Patent

**Cook, III**

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[54] **PALLET**


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[52] **U.S. Cl.** ..... **108/58,** 108/51

[51] **Int. Cl.** ..... **B65d 19/38**

[58] **Field of Search** ..... 108/51, 58; 280/21



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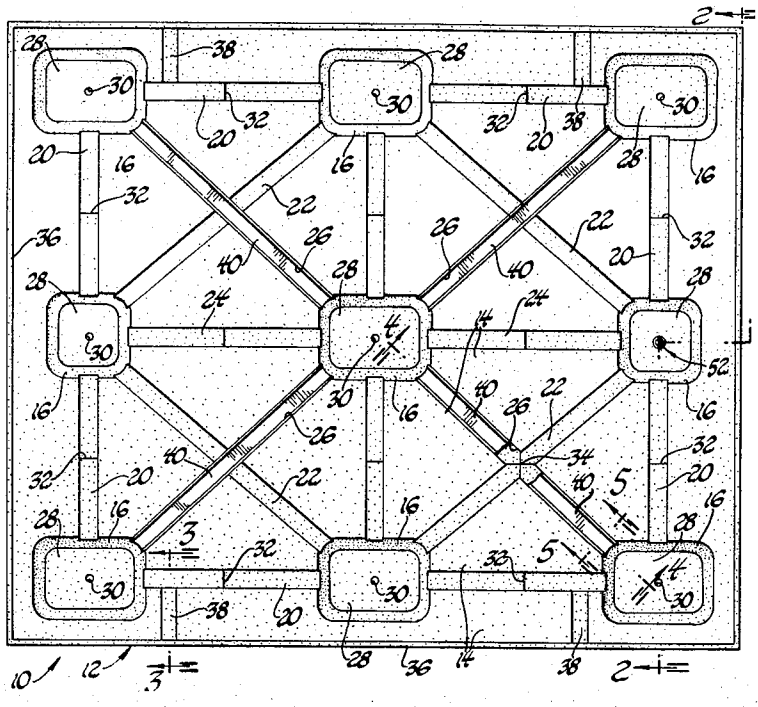
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[57] **ABSTRACT**

A pallet made of a plastic or organic polymeric material and of a unitary surface having a deck providing a load supporting surface. A plurality of spaced hollow legs project from the opposite surface of the deck. A plurality of hollow ribs project from the same opposite surface to define channels in the load supporting surface. The legs have drain holes in the bottom thereof. Each channel extends between a pair of legs and has a bottom which slopes downwardly to each of the pair of legs from a high point intermediate each pair of legs. Pairs of banding ramps are disposed on opposite extremities of the periphery of the pallet and project from the opposite surface of the deck. Each ramp presents a sloping surface extending upwardly from an adjacent rib toward the adjacent extremity of the deck. Metal channel-shaped reinforcing members are disposed in at least some of the channels in the load supporting surface. A reinforcing platform extends across and is attached to the extremities of the legs in a plurality of rows of legs. The platform includes a runner extending along and attached to the extremities of the legs in each row and a plate interconnecting adjacent runners.


**23 Claims, 5 Drawing Figures**



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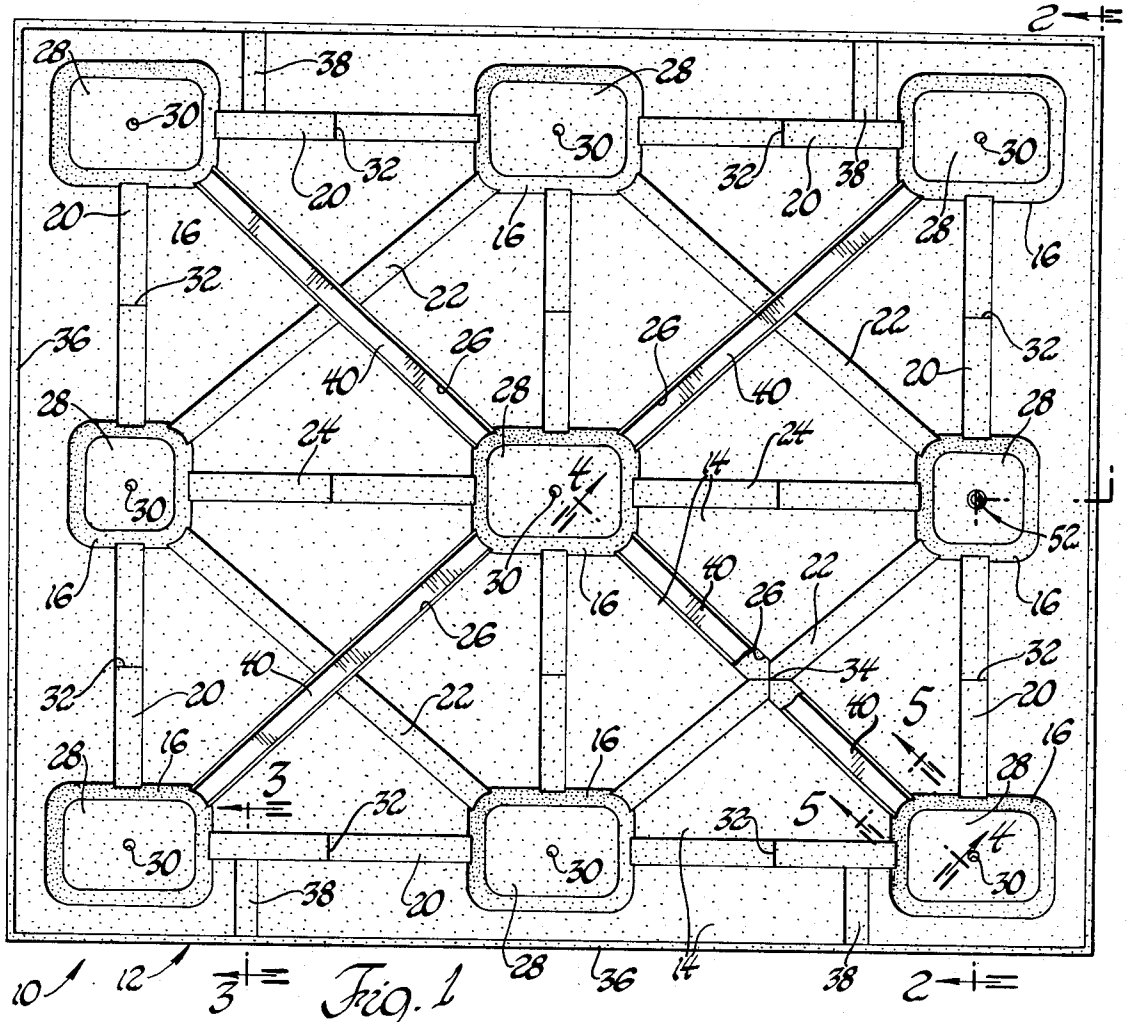



Fig. 1

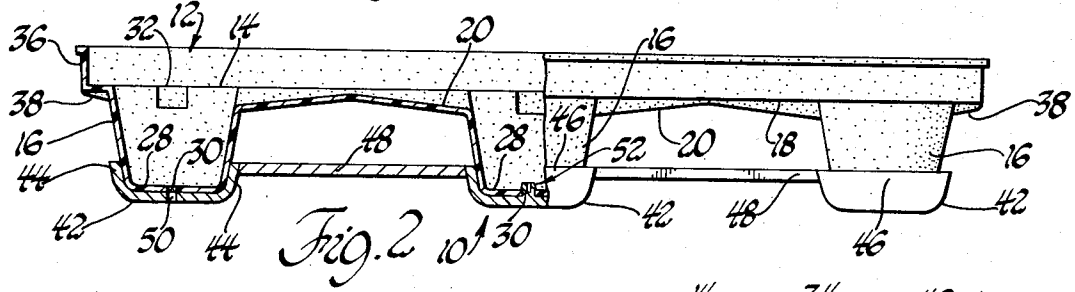



Fig. 2

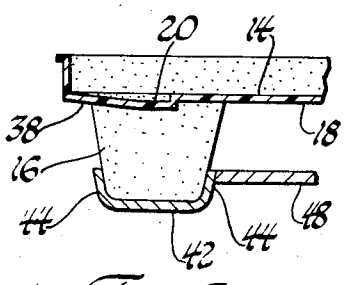



Fig. 3

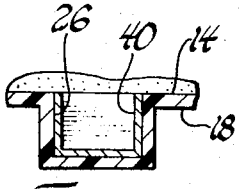



Fig. 5

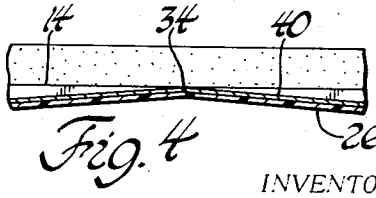



Fig. 4

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# PALLET

This invention relates to a pallet made of a plastics or organic polymeric material. Such pallets are handled by fork lift vehicles and are usually rectangular in configuration and have an upper load supporting surface upon which articles are disposed for handling, storage and transport.

An object and feature of this invention is to provide such a pallet having a deck providing a load supporting surface and a plurality of spaced hollow legs projecting from the opposite surface of the deck along with a plurality of hollow ribs which define channels in the load supporting surface and which channels extend between the legs and slope downwardly from the middle thereof to the legs with the legs having drain holes in the bottom thereof.

Another object and feature of this invention is to provide such a pallet having a plurality of legs and ribs spaced inwardly from and disposed about the periphery thereof with at least one pair of banding ramps disposed on opposite extremities of the periphery and providing sloping surfaces extending upwardly from an adjacent rib toward the adjacent extremity of the pallet.

Still another object and feature of this invention is to provide such a pallet having a deck with legs and ribs projecting from a surface of the deck and a reinforcing member associated with at least one of the ribs and having a strength greater than the strength of the plastics or organic polymeric material at the deck.

Yet a further object and feature of this invention is to provide such a pallet having a deck portion with rows of legs extending from a surface of the deck with a runner member extending along and attached to the extremities of the legs in each row with each runner member having a base and side flanges extending therefrom and engaging the sides of the legs.

A still further object and feature of this invention is to provide such a pallet having a deck and a plurality of legs projecting from a surface of the deck and aligned in rows and a reinforcing platform extending across and attached to the extremities of the legs in a plurality of rows.

Other objects and attendant advantages of the present invention will be readily appreciated as the same becomes better understood by reference to the following detailed description when considered in connection with the accompanying drawings wherein:

FIG. **1** is a plan view of a preferred embodiment of the instant invention;

FIG. **2** is a view taken substantially along line **2—2** of FIGURE **1**;

FIG. **3** is a fragmentary cross sectional view taken substantially along line **3—3** of FIGURE **1**;

FIG. **4** is an enlarged fragmentary cross sectional view taken substantially along line **4—4** of FIGURE **1**; and

FIG. **5** is an enlarged fragmentary cross sectional view taken substantially along line **5—5** of FIGURE **1**.

Referring now to the drawings wherein like numerals indicate like or corresponding parts throughout the several views, a preferred embodiment of a pallet constructed in accordance with the instant invention is generally shown at **10**.



The pallet **10** includes a unitary deck structure generally indicated at **12**. The deck structure **12** is made of a plastics or organic polymeric material. Examples of such materials are polyethylene, polyprophylene and various acetal resins. The deck **12** provides a load supporting surface **14**. A plurality of spaced, hollow legs **16** project from the opposite or undersurface **18** of the deck **12**. Also included are a plurality of hollow ribs **20, 22, 24** and **26** projecting from the opposite surface **18** to define channels disposed in the load supporting surface **14**.

The pallet is generally rectangular and the legs **16** are disposed in a plurality of parallel rows. The legs **16** are tapered downwardly to their respective bottoms **28**. Each of the legs **16** has a drain hole **30** in the bottom thereof.

Each of the channels, as defined by the ribs **20, 22, 24** and **26**, extends between a pair of the legs **16**. Also, each channel is generally U-shaped and has a bottom which slopes downwardly to the pair of legs at the end thereof from a high point disposed intermediate the legs. The high points for the channels defined by the ribs **20** are indicated at **32**. The high points for the channels defined by the ribs **22** and **26** are indicated at **34**.

A side wall or flange **36** extends upwardly from the load supporting surface **14** about the periphery of the deck **12**.

It will be noted that the channels as defined by the ribs **20** are spaced inwardly from and disposed about the periphery of the deck **12** and the remaining channels as defined by the ribs **22, 24** and **26** extend between legs of different rows or to the centrally disposed leg.

There are included two pairs of banding ramps **38** disposed on opposite extremities of the periphery of the deck and projecting from the opposite or undersurface **18** of the deck **12**. Each ramp **38** is disposed to present a sloping surface extending upwardly from an adjacent rib or channel **20** to the adjacent extremity of the deck **12**. Metal bands may be disposed beneath the pallet and about articles stored on the pallet to retain the articles to the pallet with the bands extending over the upwardly inclined surfaces of the ramps **38**. The disposition or sloping of the ramps **38** mitigates high linear stress loads in the band due to the band engaging sharp edges formed by surfaces joining one another at an angle of 90° or less.

The ramps **38** are hollow to define ramp channels in the load supporting surface **14**. The channels formed by the ramps **38** extend down from the extremity of the deck **12** to the adjacent rib or channel **20**.

A reinforcing member **40** is disposed in the channels defined by the ribs **26**. Each reinforcing member **40** is U-shaped in cross section and is of a material having strength greater than the organic polymeric material of the deck **12**. Preferably, the reinforcing members **40** are made of metal such as steel. The reinforcing members **40** are secured to the ribs adhesively although it will be appreciated that they may be secured by appropriate fasteners or other means. The legs of each U-shaped reinforcing member engage the opposite walls of the channels defined by the ribs **26** and the bottoms of the reinforcing members engage the bottoms of the channels. Although only the channels defined by the

ribs **26** are shown as including reinforcing members **40**, it will be appreciated that such reinforcing members **40** may be utilized with any of the other ribs **20, 22** or **24**.

Also included are the runners **42**. Each runner has a base and side flanges **44** which extend upwardly from the base. The side flanges **44** engage and are coextensive with the side of the legs **16** so that each leg is nested within a runner. Each runner extends along and is attached to the extremities of the legs in each row. The runners **44** are attached to the legs by an adhesive but may also be attached by appropriate fasteners or other means as will be discribed hereinafter. Each runner also includes an end flange **46** at each end thereof which is integral with the side flanges **44** and which also engages an adjacent leg **16**.

The runners **42** may be utilized alone or may form a platform with the plates **48**. Each plate **48** extends between and interconnects the runners **42**. The plates **48** extend between adjacent runners **42** at the upper extremities of the side flanges **44** thereof. Furthermore, the plates **48** may be made integrally with the runners **42**. The plates **48** and the runners **44** define a reinforcing platform extending across and attached to the extremities of the legs **16** in a plurality of rows. The runners **42** have drain holes **50** therein which are aligned with the drain holes **30** in the legs **16**. Thus, water in the channels defined by the various ribs will flow into the bottoms of the legs and will drain through the drain holes **50** therein.

The combination of the runners **42** and the plates **48**, which may be integral, define support means for supporting the legs **16** upon a surface and as alluded to above, other means may be utilized to attach this support means to the legs. Such an alternative is shown at the middle leg **16** in FIG. **2**. A snap-in means is generally shown at **52** for removably connecting a runner **42** of the support means to the legs. The snap-in means **52** includes a male portion extending from the runner. The male portion is radially compressible and has a head inserted through and retained in a hole in the bottom of a leg **16**. The hole defines a receiving portion and may or may not be a drain hole **30**. In other words, each leg may have a drain hole and a second hole for receiving the male portion of the snap-in means. The male portion is therefore snapped into mechanical interlocking engagement with a hole in a leg.

As it will be appreciated from the foregoing description, the instant invention relates to a pallet employing various features which may be employed singularly or in various combinations with one another. For example, the sloping channels, reinforcing members, banding ramps, runners, and reinforcing platform may each be utilized separately as in various combinations with one another.

The invention has been described in an illustrative manner, and it is to be understood that the terminology which has been used is intended to be in the nature of words of description rather than of limitation.

Obviously, many modifications and variations of the present invention are possible in light of the above teachings. It is, therefore, to be understood that within the scope of the appended claims, the invention may be practiced otherwise than as specifically described.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

**1**. A pallet made of organic polymeric material comprising: a unitary structure having a deck providing a load supporting surface; a plurality of spaced, hollow legs projecting from the opposite surface of said deck; a plurality of hollow ribs projecting from said opposite surface to define channels in said load supporting surface; said legs having drain holes in the bottoms thereof; each of said channels extends between a pair of said legs and has a bottom which slopes downwardly to each of said pair of legs from a high point disposed intermediate said pair of legs.

**2**. A pallet as set forth in claim **1** including a side wall extending from said load supporting surface about the periphery of said deck.

**3**. A pallet as set forth in claim **1** wherein said legs are aligned in rows, some of said channels are spaced inwardly from and disposed about the periphery of said deck and some of said channels extend between legs of different rows.

**4**. A pallet as set forth in claim **3** including at least one pair of banding ramps disposed on opposite extremities of said periphery and projecting from said opposite surface of said deck, each of said ramps being disposed to present a sloping surface extending in a direction from an adjacent rib toward the adjacent extremity of said deck, reinforcing members disposed in at least some of said channels, and a runner extending along and attached to the extremities of the legs in each row, each runner having a base and side flanges extending therefrom and engaging the sides of said legs so that each leg is nested within a runner.

**5**. A pallet made of organic polymeric material comprising: a unitary structure having a deck providing a load supporting surface; a plurality of spaced legs projecting from the opposite surface of said deck; a plurality of ribs projecting from said opposite surface; said ribs being spaced inwardly from and disposed about the periphery of said deck and with each such rib extending between a pair of said legs; and at least one pair of banding ramps disposed on opposite extremities of said periphery and projecting from said opposite surface of said deck; each of said ramps being disposed to present a sloping surface extending in a direction from an adjacent rib toward the adjacent extremity of said deck.

**6**. A pallet as set forth in claim **5** wherein said ribs are hollow to define channels in said load supporting surface, said ramps are hollow to define ramp channels in said load supporting surface which extend downwardly from said extremity to said adjacent rib.

**7**. A pallet as set forth in claim **6** including reinforcing members disposed in at least some of said channels defined by said ribs.

**8**. A pallet as set forth in claim **7** wherein said reinforcing members are of metal and are U-shaped in cross section.

**9**. A pallet comprising: a deck structure made of organic polymeric material and having a load supporting surface; a plurality of spaced legs projecting from the opposite surface of said deck; said legs being aligned in rows; a runner extending along and attached to the extremities of the legs in each row; each runner having a base and side flanges extending therefrom and engag-

ing the sides of said legs so that each leg is nested within a runner.

**10**. A pallet as set forth in claim **9** wherein each runner includes an end flange at each end thereof which is integral with said side flanges and engages the adjacent leg.

**11**. A pallet as set forth in claim **9** including plates extending between and interconnecting adjacent runners.

**12**. A pallet as set forth in claim **11** wherein said plates extend between adjacent runners at the upper extremities of said side flanges.

**13**. A pallet as set forth in claim **12** wherein each runner includes an end flange at each end thereof which is integral with said side flanges and engages the adjacent leg.

**14**. A pallet as set forth in claim **13** wherein said runners are adhesively attached to said extremities of said legs.

**15**. A pallet comprising: a unitary deck structure made of organic polymeric material and having a deck providing a load supporting surface; a plurality of spaced legs projecting from the opposite surface of said deck; said legs being aligned in rows; a reinforcing platform extending across and attached to the extremities of the legs in a plurality of rows.

**16**. A pallet as set forth in claim **15** wherein said platform includes a runner extending along and attached to the extremities of the legs in each row and a plate interconnecting adjacent runners.

**17**. A pallet as set forth in claim **16** wherein each runner has a base and side flanges extending therefrom and engaging the sides of said legs so that each leg is nested within a runner.

**18**. A pallet as set forth in claim **17** wherein said plates extend between adjacent runners at the upper extremities of said side flanges.

**19**. A pallet as set forth in claim **18** wherein each runner includes an end flange at each end thereof which is integral with said side flanges and engages the adjacent leg.

**20**. A pallet as set forth in claim **15** including snap-in means removably connecting said platform to said legs.

**21**. A pallet comprising: a unitary deck structure made of organic polymeric material and having a deck providing a load supporting surface; a plurality of spaced legs projecting from the opposite surface of said deck; support means for supporting said legs; snap-in means for removably connecting said support means to said legs.

**22**. A pallet as set forth in claim **21** wherein said snap-in means comprises a male portion and a receiving portion into which said male portion is snapped into mechanical interlocking engagement.

**23**. A pallet as set forth in claim **22** wherein said receiving portion is defined by a hole in the bottom of at least some of said legs and said male portion extends from said support means.

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