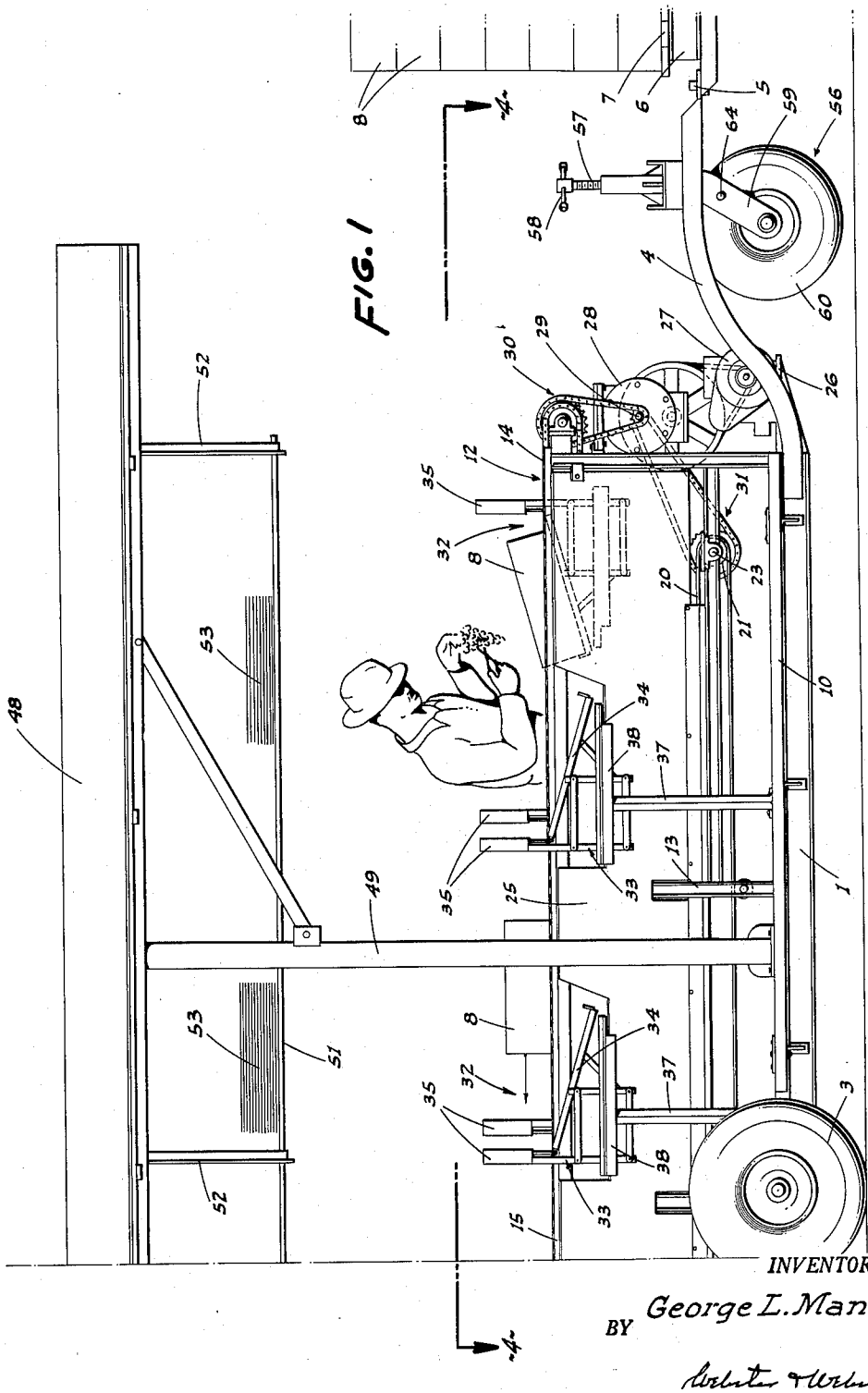
July 19, 1955 G. L. MANER 2,713,447

PORTABLE PACKING STAND

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FIG. 1



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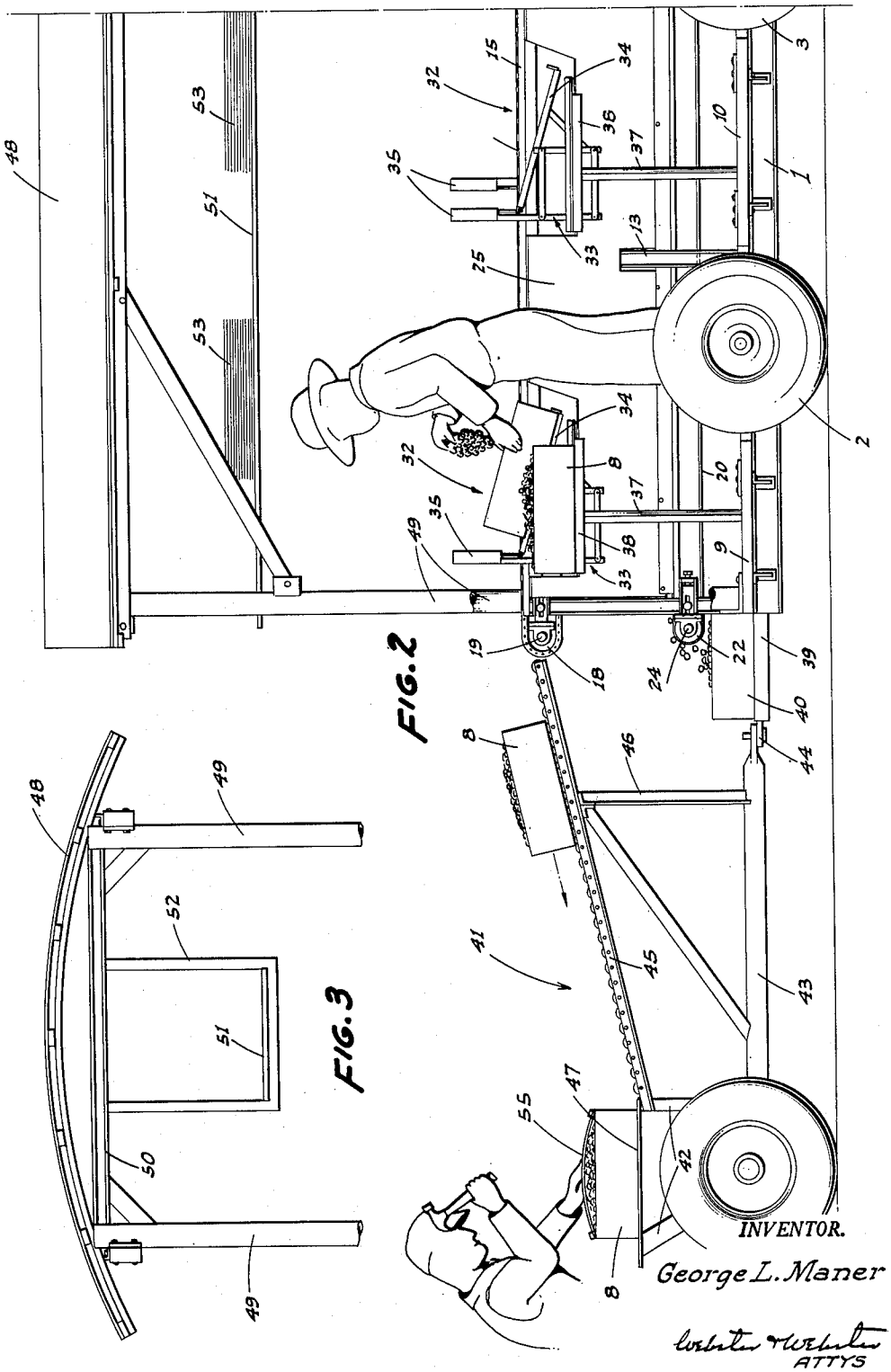


FIG. 2

FIG. 3

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PORTABLE PACKING STAND

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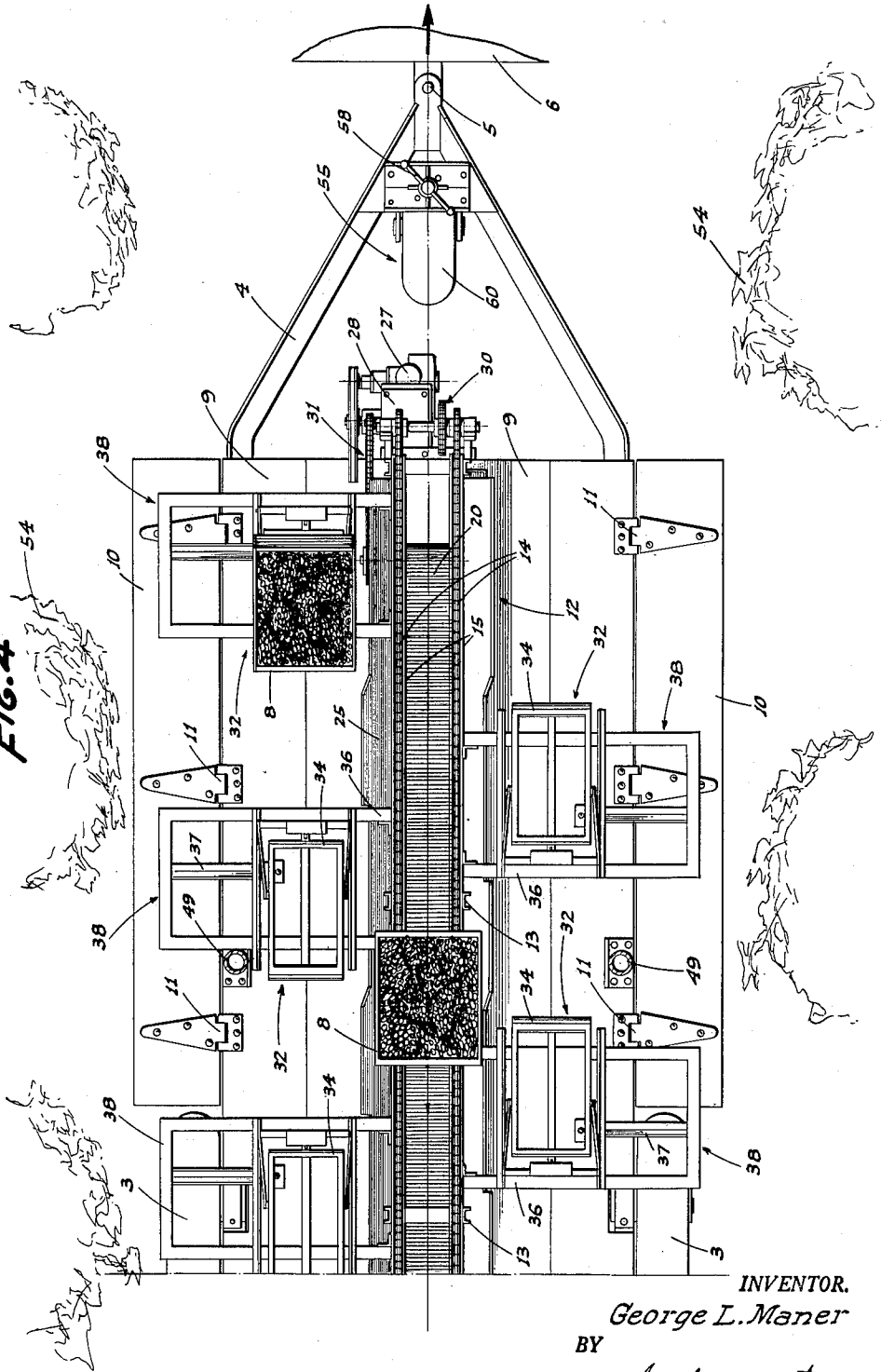


FIG. 4

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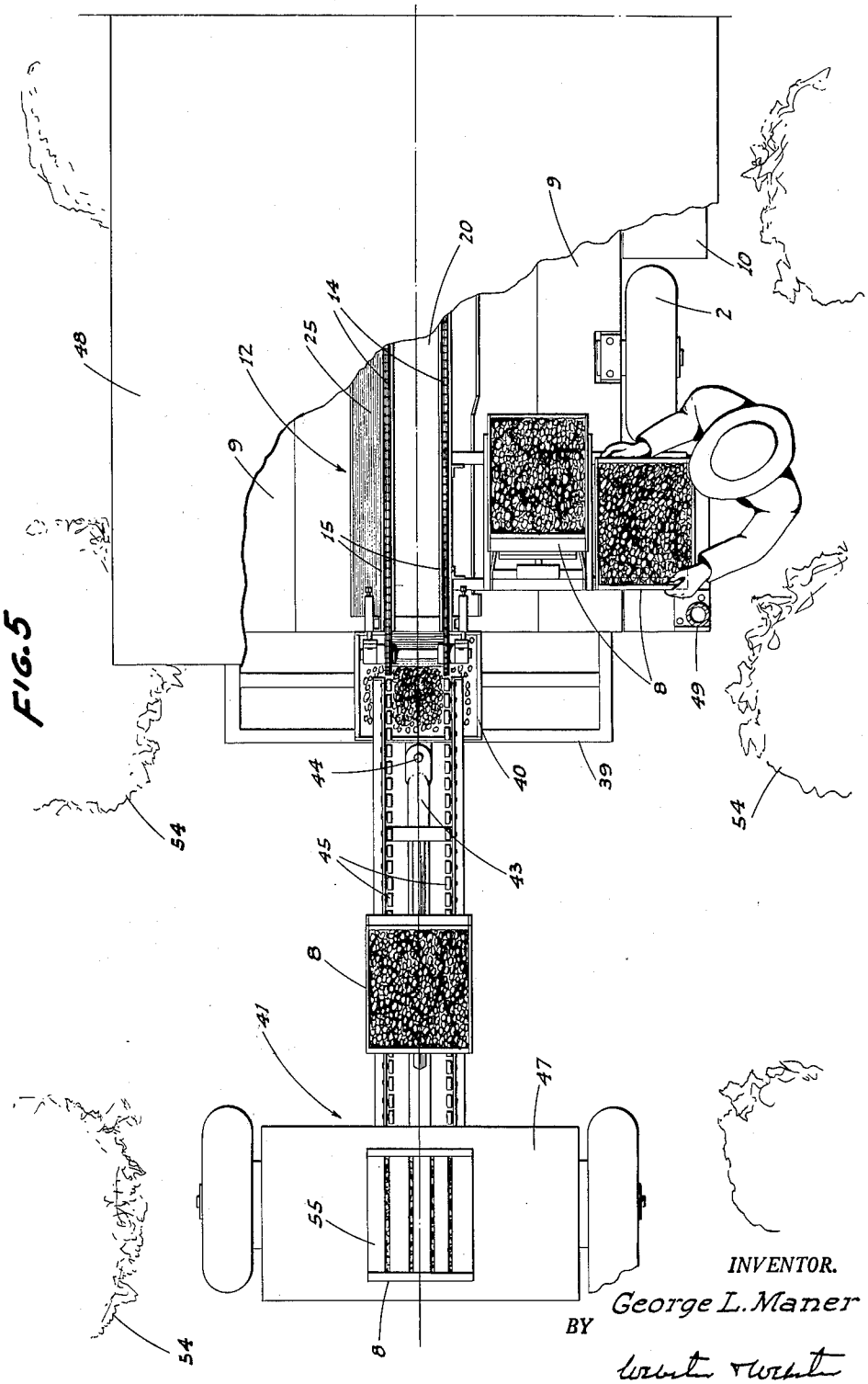


FIG. 5

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FIG. 6

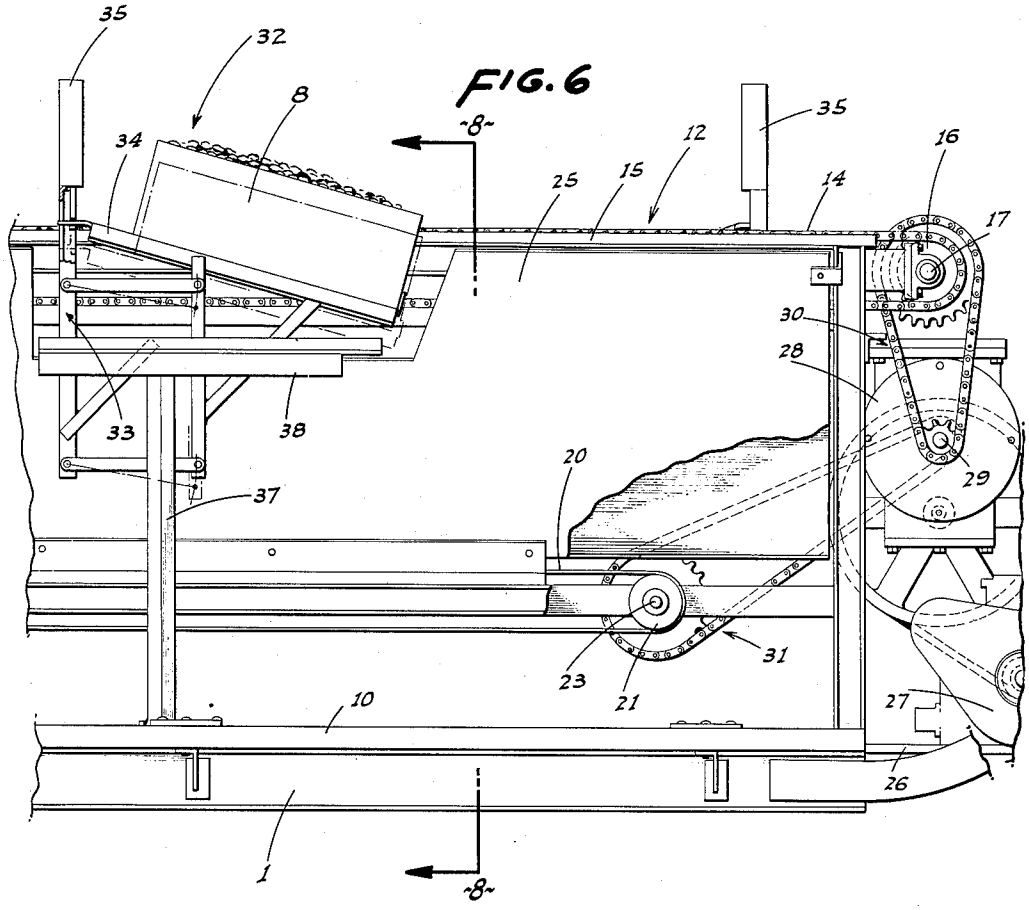
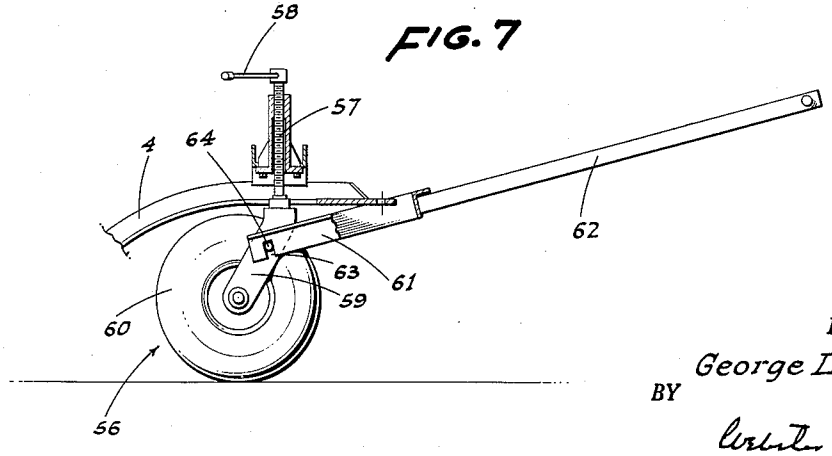


FIG. 7



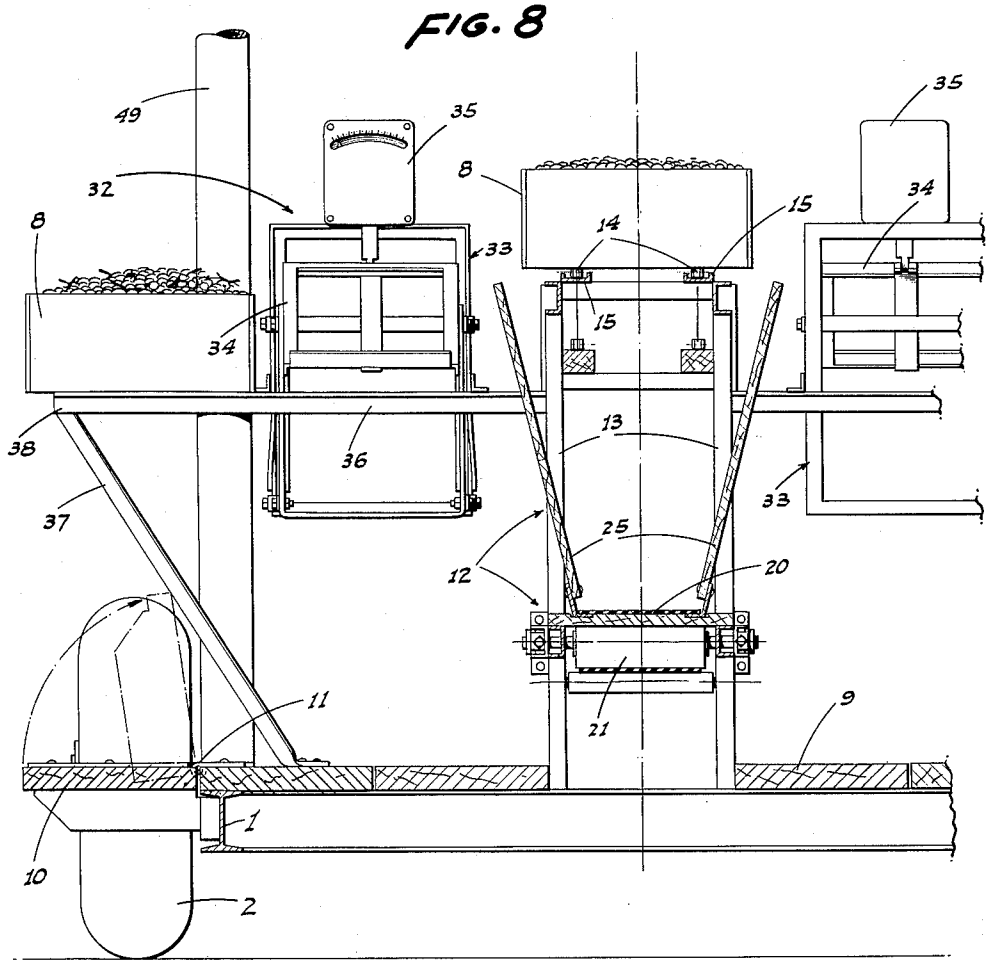
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PORTABLE PACKING STAND

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FIG. 8



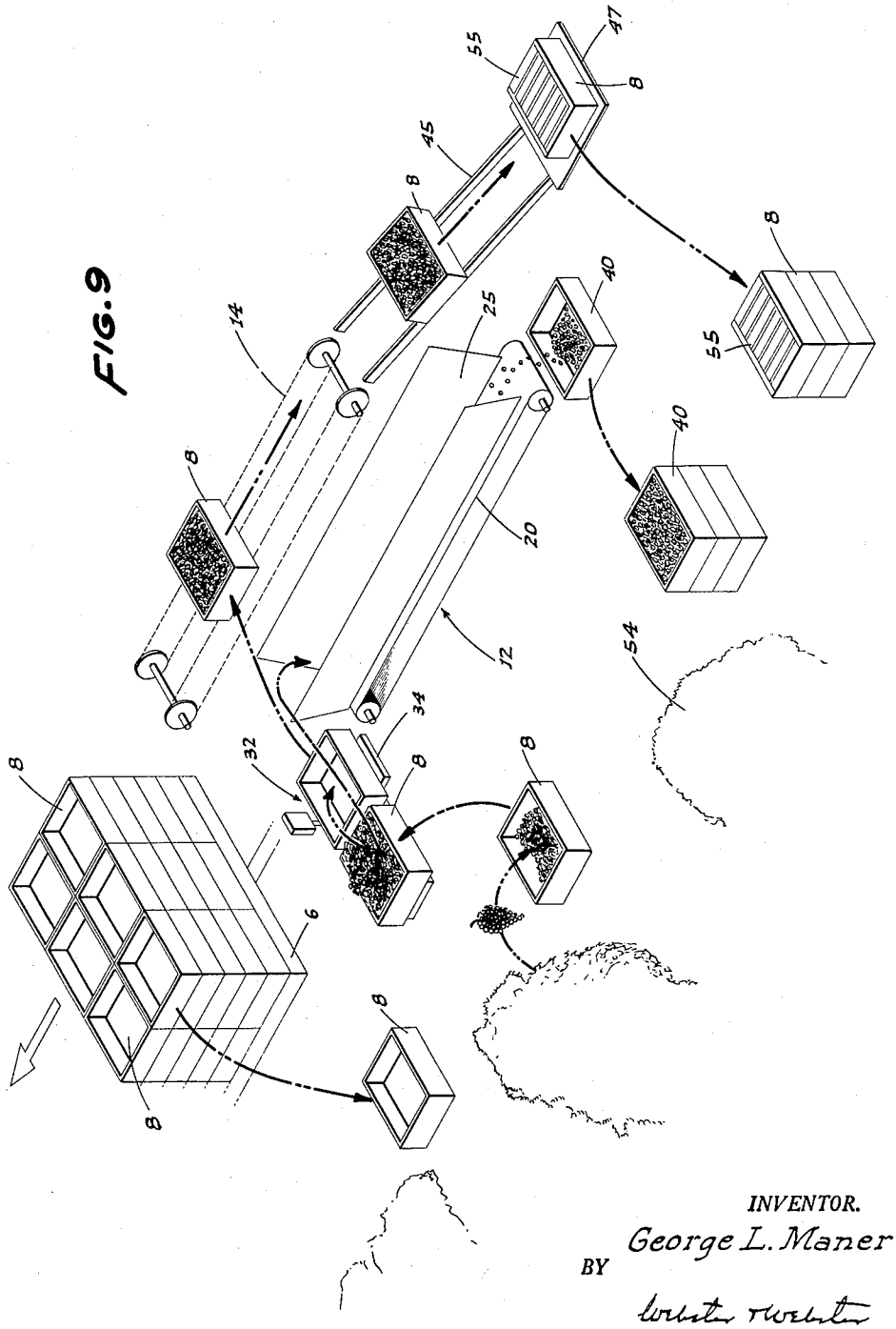
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FIG. 9



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2,713,447

PORTABLE PACKING STAND

George Lee Maner, Lodi, Calif.

Application August 3, 1953, Serial No. 372,137

10 Claims. (Cl. 226—2)

In the harvest of fresh table grapes it has been the custom to pick the grape bunches, to load them in field lugs, and to then truck the lugs to a packing shed, often miles away; the grape bunches at such packing shed being removed from the field lugs and culled, trimmed, and packed in shipping boxes, followed by lidding of the boxes preparatory for transport to the market.

It is the major object of the present invention to provide a portable packing stand which is adapted for use directly in the field to accomplish the operations heretofore conducted at the packing shed, thereby effecting a substantial economy, as well as reduction of the time consumed in the packing of fresh grapes in the final shipping boxes.

Another important object of this invention is to provide a portable packing stand which includes, in novel assembly, a plurality of shipping box packing and weighing stations, and a box lidding station; all adapted to move as a unit through the field as the harvesting operations continue; there being one conveyor adapted to move the loaded shipping boxes from the packing and weighing stations to the box lidding station, and another conveyor adapted to receive and carry the rejected grapes to a receiving point from which said grapes are accumulated in a lug for ultimate transport to a wineary.

An additional object of the invention is to provide a portable packing stand, as above, which includes an elongated, low level bed on which workers stand adjacent the box packing and weighing stations; said box packing and weighing stations being longitudinally spaced on opposite sides of the conveyor assembly, which extends longitudinally and centrally along the bed for ready and convenient access from said box packing and weighing stations. The box lidding station is disposed at one end of said conveyor assembly.

A further object of the present invention is to provide a portable packing stand, of the type described, which eliminates the need of the use of field lugs; the grape bunches as picked in the field being placed directly but at random in a shipping box, which is then carried a short distance to, and placed on, the box platform adjacent the scale unit of one of the box packing and weighing stations. At each such box packing and weighing station the worker removes the grape bunches from the platform supporting box, culls and trims such bunches, and market packs the selected ones thereof into another shipping box resting on the adjacent scale unit. As each field loaded shipping box is emptied, it is used at one of the packing and weighing stations for receiving a market pack, as above.

A still further object of the invention is to provide a portable packing stand which is designed for travel in the lanes between rows of grape vines; the stand being towed behind the truck which carries the supply of empty shipping boxes, the boxes being carried from the truck first into the field for the aforesaid random loading of grape bunches as picked from the vines.

It is also an important object of the invention to

provide a portable packing stand which, while relatively simple in structure and inexpensive to manufacture, is nevertheless capable of accomplishment—in the field with facility—of the packing of shipping boxes for transport to market.

Still another object of the invention is to provide a practical and reliable portable packing stand, and one which will be exceedingly effective for the purpose for which it is designed.

These objects are accomplished by means of such structure and relative arrangement of parts as will fully appear by a perusal of the following specification and claims.

In the drawings:

Fig. 1 is a side elevation of the forward portion of the portable packing stand.

Fig. 2 is a side elevation of the rearward portion of the portable packing stand, including the lidding station trailer.

Figs. 1 and 2, read together, comprise a full side elevation of the portable packing stand.

Fig. 3 is a fragmentary rear end elevation showing mainly the post supported roof structure, together with the central longitudinal shelf for a supply of shipping box liners adjacent each packing and weighing station.

Fig. 4 is a fragmentary sectional plan view on line 4—4 of Fig. 1.

Fig. 5 is a fragmentary plan view of the portion of the portable packing stand shown in Fig. 2; the roof structure and shelf being partly broken away.

Fig. 6 is an enlarged fragmentary side elevation of the forward portion of the portable packing stand showing one of the box packing and weighing stations, with a box on the related scale unit. The view also shows the drive mechanism for the conveyor assembly.

Fig. 7 is a fragmentary side elevation, partly broken away and partly in section, showing the front caster wheel in lowered position, with the detachable draft handle as in use when the stand is detached from the truck.

Fig. 8 is a fragmentary transverse section on line 8—8 of Fig. 6.

Fig. 9 is a perspective diagram showing the operational steps practiced in connection with use of the portable packing stand.

Referring now more particularly to the characters of reference on the drawings, the portable packing stand comprises an elongated, low-level frame **1** supported adjacent its rear ends by a pair of transversely spaced rubber tire wheels **2**, and intermediate its ends by a pair of transversely spaced rubber tire wheels **3**.

At the front end the frame **1** is secured to a forwardly projecting tongue **4** which arches upwardly, and which tongue is forked at its rear end portion, as shown. At the front end the tongue **4** includes a hitch **5** which is adapted to be detachably coupled to the rear of a truck, indicated only in part at **6**, which truck includes a bed **7** on which a supply of empty shipping boxes **8** is carried in stacked order.

The frame **1** supports, for its full length, a low-level bed **9**, which bed includes—along opposite sides—longitudinal steps **10**; such steps being hinged, as at **11**, for folding from a down or horizontal position, as shown in full lines, to a raised or upstanding position, as shown in broken lines, in Fig. 8.

The steps **10** are provided in order to increase the effective width of the low-level bed **9** when the portable packing stand is in use, but for transport—or for making a turn at the end of a vine row—it is sometimes necessary to reduce the over-all width of the bed, hence the provision for up-folding of said steps **10**.

A longitudinal conveyor assembly, indicated generally

at 12, extends substantially full length of the bed 9 centrally thereof, and some distance thereabove. The conveyor assembly 12 comprises an upstanding longitudinal frame structure 13 of open or skeleton type, and in the upper portion thereof such frame structure supports a horizontal, longitudinal, endless conveyor 14 of the type comprised of transversely spaced chains, as shown, and with the chains of the upper run supported by and running in guide channels 15. The conveyor 14 is carried at the front end on sprockets 16 supported by a cross shaft 17. Similarly, at the rear end the conveyor 14 is carried on sprockets 18 supported by a cross shaft 19. Both of said shafts are suitably mounted in connection with the ends of the frame structure 13.

Some distance below the endless conveyor 14 the frame structure 13 supports a horizontal, longitudinal, endless belt conveyor 20 which turns at opposite ends over rollers 21 and 22 carried on cross shafts 23 and 24.

For the full length of the conveyors 14 and 20, the conveyor assembly 12 is fitted with a hopper trough 25 adapted to deliver onto the upper run of the conveyor 20; such hopper trough 25 being of substantial height and terminating at the top in substantially the horizontal plane of the upper run of the conveyor 14. The top or mouth of hopper trough 25 is considerably wider than conveyor 14.

The conveyors 14 and 20 are simultaneously driven, with the upper runs traveling in a rearward direction, by means of the following mechanism:

A platform 26 projects forwardly from the front end of the frame 1, and supports an engine 27 (but which may be a battery energized electric motor) which drives a reduction gear box 28 having an output shaft 29. The cross shaft 17 of the conveyor 14 is driven from the output shaft 29 by an endless chain and sprocket unit 30, while the cross shaft 23 of the conveyor 20 is driven from the output shaft 29 by an endless chain and sprocket unit 31.

On opposite sides of the longitudinal conveyor assembly 12 the portable packing stand is fitted, at longitudinally spaced points, with shipping box packing and weighing stations, each of which is indicated at 32. The longitudinal spacing between the stations 32, on each side of the conveyor assembly 12, is such that workers may stand adjacent said stations 32 with convenient access to the same and to the conveyor assembly 12.

As each of the packing and weighing stations 32 is identical, a description of one will suffice for all.

Each packing and weighing station 32 comprises a box weighing scale 33, of generally conventional parallel linkage type, having a vertically movable scale platform 34 which extends lengthwise and at an upward incline away from the worker standing at the station; the scale platform 34 being adapted to receive one of the shipping boxes 8 in the progressive course of handling thereof, as will hereinafter appear in detail.

In addition to the scale platform 34, each box weighing scale 33 includes a weight indicator 35 which faces the worker at the station, and which indicator is worked by vertical motion of said scale platform 34.

Each box weighing scale 30 is supported by a lateral frame unit 36 which projects outwardly from the frame structure 13, being stabilized at the outer end by a diagonal brace 37.

Each lateral frame unit 36 extends outwardly beyond the related box weighing scale 33, whereby to provide a box supporting platform, indicated generally at 38.

At its rear end the frame 1 is provided with a transverse relatively wide lug box supporting platform 39 adapted to support a lug box 40 directly below the discharge end of the conveyor 20.

A lidding station trailer, indicated generally at 41, trails the wheel-supported frame 1, such trailer including an upstanding frame 42 having a tongue 43 which extends forwardly, being detachably hitched, as at 44, centrally to the rear of the platform 39.

A gravity type roller conveyor 45 is supported above the tongue 43 by means including a post 46; such conveyor 45 extending at a downward incline from an upper end receiving point at the rear end of the conveyor 14; the conveyor 45 being secured at its rear end to the frame 42 in delivery relation to a box lidding table 47 mounted on the upper end of the upstanding frame 42. The purpose of the conveyor 45 is to deliver boxes from the conveyor 14 to the table 47.

The bed 9, the mechanisms thereon, and the workers standing on said bed facing the packing and weighing stations 32, are sheltered beneath a full length arched roof 48 supported by posts 49 which upstand from said bed. The posts 49 are connected at their upper ends by cross beams 50, and a substantially full length horizontal shelf 51 is suspended by U-shaped hangers 52 from said cross beams 50; the shelf 51 being disposed in a plane a substantial distance above the conveyor 14, but within easy reach of the workers standing on the bed 9 at the packing and weighing stations 32. The shelf 51 is used for the purpose of supporting a stack of box liners 53 in an accessible position relative to each of said packing and weighing stations 32.

In use of the above described portable packing stand, it is towed by the truck 6 in the lane between rows of grape vines 54, and the progressive operational steps in the use of such stand, as shown diagrammatically in the flow-sheet diagram of Fig. 9, are as follows:

Firstly, empty shipping boxes 8 are removed from the bed 7 of the truck 6 and are disposed adjacent the grape vines from which the grape bunches are picked; the vines being those in the rows immediately adjacent the lane in which the stand is traveling, or other nearby rows within short walking distance.

As the grape bunches are picked from the grape vines 54, such bunches are placed at random in the initially empty boxes 8, and when each such box is filled with grape bunches, such box is carried to and placed on the projecting platform 38 alongside the box weighing scale 32 at one of the packing and weighing stations.

At such station the corresponding worker, after taking one of the box liners 53 from the adjacent stack on shelf 51 and placing said liner in an empty box 8 on the adjacent scale platform 34, removes the grape bunches one at a time from the box on the platform 38. Those bunches which are perfect are placed directly in said shipping box which rests on the adjacent scale platform 34. The other bunches are then culled and trimmed directly over the hopper trough 25. The culler and trimmed grapes fall into such hopper trough 25, and are thence carried by the conveyor 20 rearwardly to discharge into the lug box 40. When each lug box 40 is filled it is removed from the platform 39 and stacked for subsequent transport of the culls to a winery.

After each grape bunch is culled and trimmed by the worker at each packing and weighing station 32, such grape buch is packed in said other shipping box 8 resting on the adjacent scale platform 34. Such packing—which is neatly done—is continued until the indicator 35 reflects a load in the box 8 of certain weight, and at which time the box is full.

After completing the market packing of a box 8 on the corresponding scale platform, each worker lifts such box and places it on the conveyor 14, whence the box is delivered rearwardly, feeds onto the gravity type roller conveyor 45, and delivers to the box lidding table 47. A worker standing behind the lidding station trailer 41 nails a lid 55 onto the box; the lidded boxes being removed from the table 47 and stacked for subsequent pick-up and transport to the point at which said boxes, with the market pack therein, are placed in a railroad car for shipment.

After each field loaded box is placed on one of the

platforms 38 and thereafter emptied by the worker at the corresponding packing and weighing station 32, such box is picked up and placed on the related scale platform 34 for use to receive the next market pack. It will thus be recognized that the need of using separate lug boxes for hauling the picked grape bunches from the field to the portable packing stand is eliminated, and the entire operation is carried out with the use of the same boxes in which the grape bunches are ultimately packed and shipped to market. This not only effects an economy, but speed up the entire operation, as two kinds of boxes are not being handled.

With the described portable packing stand the harvest of fresh table grapes and the packing thereof in the ultimate shipping boxes is greatly enhanced; the major advantage being that the final or market pack is accomplished directly in the field, without the necessity of hauling the picked grape bunches to a remote packing shed.

Under certain circumstances it is desirable to provide means for supporting, manually towing, and steering the portable packing stand; i. e., when the hitch 5 is uncoupled and said stand is not connected to the truck 6. Such a situation might exist, for example, when it is necessary to make a short turn at the end of one of the lanes, and which turn could not be made with the over-all length existent when the truck 6 is hitched to the portable packing stand.

I therefore provide the tongue 4 with a normally raised but vertically adjustable front, rubber-tired tiller wheel unit 56, which unit includes a vertical screw 57 provided with a cross handle 58 by means of which such screw may be run down to dispose the tiller wheel unit 56 in ground engagement, and to the end that the portable packing stand may be wheel-supported at the front when unhitched from said truck. The tiller wheel unit 56 is of swivel type and includes a fork 59 in which the wheel 60 is journaled.

After the tiller wheel unit 56 is adjusted downward into ground engagement, the fork 59 is engaged by a U-shaped yoke 61 on the rear end of a hand tongue 62; the yoke 61 being downwardly notched in the legs thereof, as at 63, and which notches receive pins 64 which project laterally outwardly from opposite sides of said fork 59.

With the foregoing detachable hand tongue 62 connected to the tiller wheel unit 56 as described it is possible to conveniently manually pull and steer the portable packing stand.

When necessary the leading station trailer 41 may be detached from the portable packing stand by merely uncoupling the hitch 44.

While the portable packing stand has been described herein as used for the packing of fresh table grapes, it is obvious that the device may also be used successfully for packing other produce, either fruit or vegetables.

From the foregoing description it will be readily seen that there has been produced such a device as will substantially fulfill the objects of the invention, as set forth herein.

While this specification sets forth in detail the present and preferred construction of the device, still in practice such deviations from such detail may be resorted to as do not form a departure from the spirit of the invention, as defined by the appended claims.

Having thus described the invention, the following is claimed as new and useful, and upon which Letters Patent are desired:

1. A portable packing stand, for fresh produce, comprising an elongated wheel supported frame adapted for field travel adjacent the point of harvest of said produce, said frame having a low level bed thereon, an upstanding longitudinal frame structure on the bed spaced from one side thereof, a driven endless conveyor for packed boxes, extending along the frame structure above the bed, and a plurality of longitudinally spaced box packing and weighing stations mounted above the bed between said side thereof and the conveyor; each of said stations including a weighing scale having a scale platform adapted to receive a box thereon, and a fixed box supporting platform disposed adjacent the scale platform, each scale platform being disposed parallel to the conveyor, and the corresponding fixed platform projecting laterally out from the scale platform.

2. A portable packing stand, for fresh produce, comprising an elongated wheel supported frame adapted for field travel adjacent the point of harvest of said produce, said frame having a low level bed thereon, an upstanding longitudinal frame structure on the bed spaced from one side thereof, a driven endless conveyor for packed boxes, said conveyor extending along the frame structure above the bed, a plurality of longitudinally spaced box packing stations mounted above the bed between said side thereof and the conveyor, and a box lidding station disposed to receive boxes from the discharge end of the conveyor; said box lidding station comprising a wheeled trailer having a box receiving table thereon, and a forwardly projecting tongue hitched to the wheel-supported frame as its rear end.

3. A portable packing stand, as in claim 2, in which said trailer includes a gravity type box conveyor which extends from the discharge end of said driven conveyor and the table.

4. A portable packing stand, for fresh produce, comprising an elongated wheel supported frame adapted for field travel adjacent the point of harvest of said produce, said frame having a low level bed thereon, an upstanding longitudinal frame structure on the bed spaced from one side thereof, a driven endless conveyor for packed boxes, said conveyor extending along the frame structure above the bed, a plurality of longitudinally spaced box packing stations mounted above the bed between said side thereof and the conveyor, and another driven conveyor for produce culls, said other conveyor extending along the frame structure in spaced relation below said conveyor for packed boxes.

5. A portable packing stand, for fresh produce, comprising an elongated wheel supported frame adapted for field travel adjacent the point of harvest of said produce, said frame having a low level bed thereon, an upstanding longitudinal frame structure on the bed spaced from one side thereof, a driven endless conveyor for packed boxes, said conveyor extending along the frame structure above the bed, a plurality of longitudinally spaced box packing stations mounted above the bed between said side thereof and the conveyor, another driven conveyor for produce culls, said other conveyor extending along the frame structure in spaced relation below said conveyor for packed boxes, a box lidding station disposed to receive boxes from the discharge end of the box conveyor, and catch means to receive produce culls from the discharge end of said cull conveyor.

6. A portable packing stand, for fresh produce, comprising an elongated wheel supported frame adapted for field travel adjacent the point of harvest of said produce, said frame having a low level bed thereon, an upstanding longitudinal frame structure on the bed spaced from one side thereof, a driven endless conveyor for packed boxes, said conveyor extending along the frame structure above the bed, a plurality of longitudinally spaced box packing stations mounted above the bed between said side thereof and the conveyor, another driven conveyor for produce culls, said other conveyor extending along the frame structure in spaced relation below said conveyor for packed boxes, a produce cull hopper trough on said frame structure and extending along said other conveyor in position to deliver thereinto, and means disposed to receive packed boxes and produce culls from the discharge ends of the respective conveyors.

7. A portable packing stand, for fresh produce, comprising an elongated wheel supported frame adapted for field travel adjacent the point of harvest of said produce,

said frame having a low level bed thereon, an upstanding longitudinal frame structure on the bed spaced from one side thereof, a driven endless conveyor for packed boxes, said conveyor extending along the frame structure above the bed, a plurality of longitudinally spaced box packing stations mounted above the bed between said side thereof and the conveyor, a longitudinal step along said side of the bed, and means hinging said step for up-folding from a normally horizontal position in the plane of said bed.

8. A portable packing stand, for fresh produce, comprising an elongated wheel supported frame adapted for field travel adjacent the point of harvest of said produce, said frame having a low level, relatively wide bed thereon, an upstanding longitudinal frame structure on the bed substantially centrally of the sides thereof, a driven endless conveyor for packed boxes, said conveyor being mounted on and extending along the frame structure above the bed, a plurality of longitudinally spaced box packing and weighing stations mounted above the bed between each side thereof and said conveyor, each of said box packing and weighing stations including a weighing scale having a scale platform adapted to receive a box thereon, and a fixed box supporting platform disposed adjacent to said scale platform; a wheeled trailer disposed rearwardly of the wheel supported frame, said trailer including a tongue hitched to such frame, a box lidding table on the trailer, and a gravity type box conveyor mounted on the trailer and extending from the adjacent end of said driven conveyor to the table, the driven conveyor discharging onto said gravity type conveyor.

9. A portable packing stand, for fresh produce, comprising an elongated wheel supported frame adapted for field travel adjacent the point of harvest of said produce, said frame having a low level, relatively wide bed thereon, an upstanding longitudinal frame structure on the bed substantially centrally of the sides thereof, a driven endless conveyor for packed boxes, said conveyor being mounted on and extending along the frame structure above the bed, a plurality of longitudinally spaced box packing stations mounted above the bed between each side thereof and said conveyor, another driven conveyor for produce culls, said other conveyor extending along the frame structure in spaced relation below said first named driven conveyor, a produce cull hopper trough on said frame structure and extending along said other conveyor in postion to deliver thereinto, and means disposed to receive packed boxes and produce culls from the discharge ends of the respective conveyors.

10. A portable packing stand, as in claim 9, in which the means to receive packed boxes from said first named driven conveyor embodies a lidding station disposed adjacent the rear of the wheel supported frame, and said lidding station including a table, there being means to deliver packed boxes from the adjacent end of said first named conveyor onto said table.

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