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SHEET METAL PACKER.

APPLICATION FILED FEB. 27, 1909.

935,549.

Patented Sept. 28, 1909.

5 SHEETS—SHEET 1.

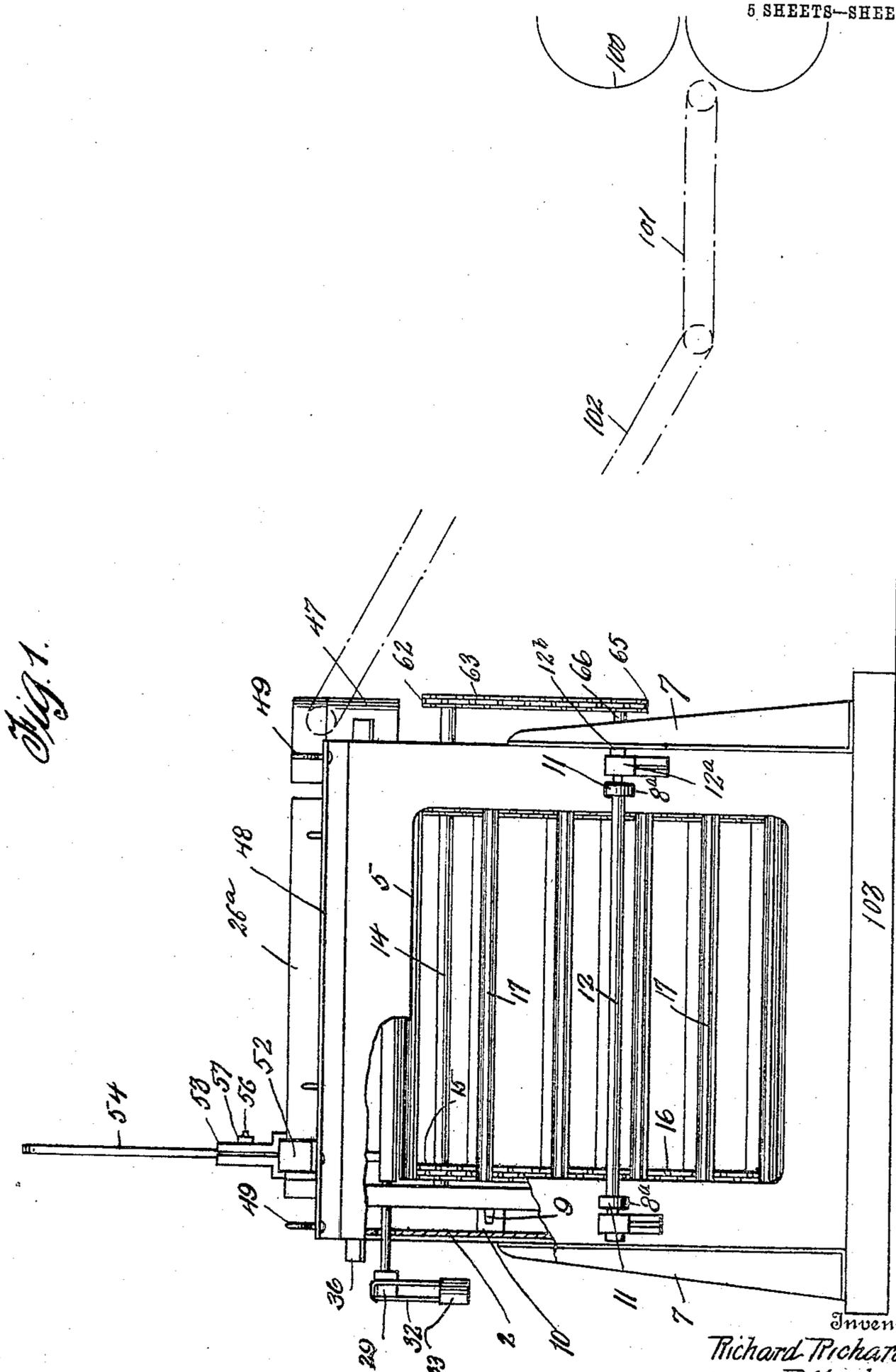


Fig. 1.

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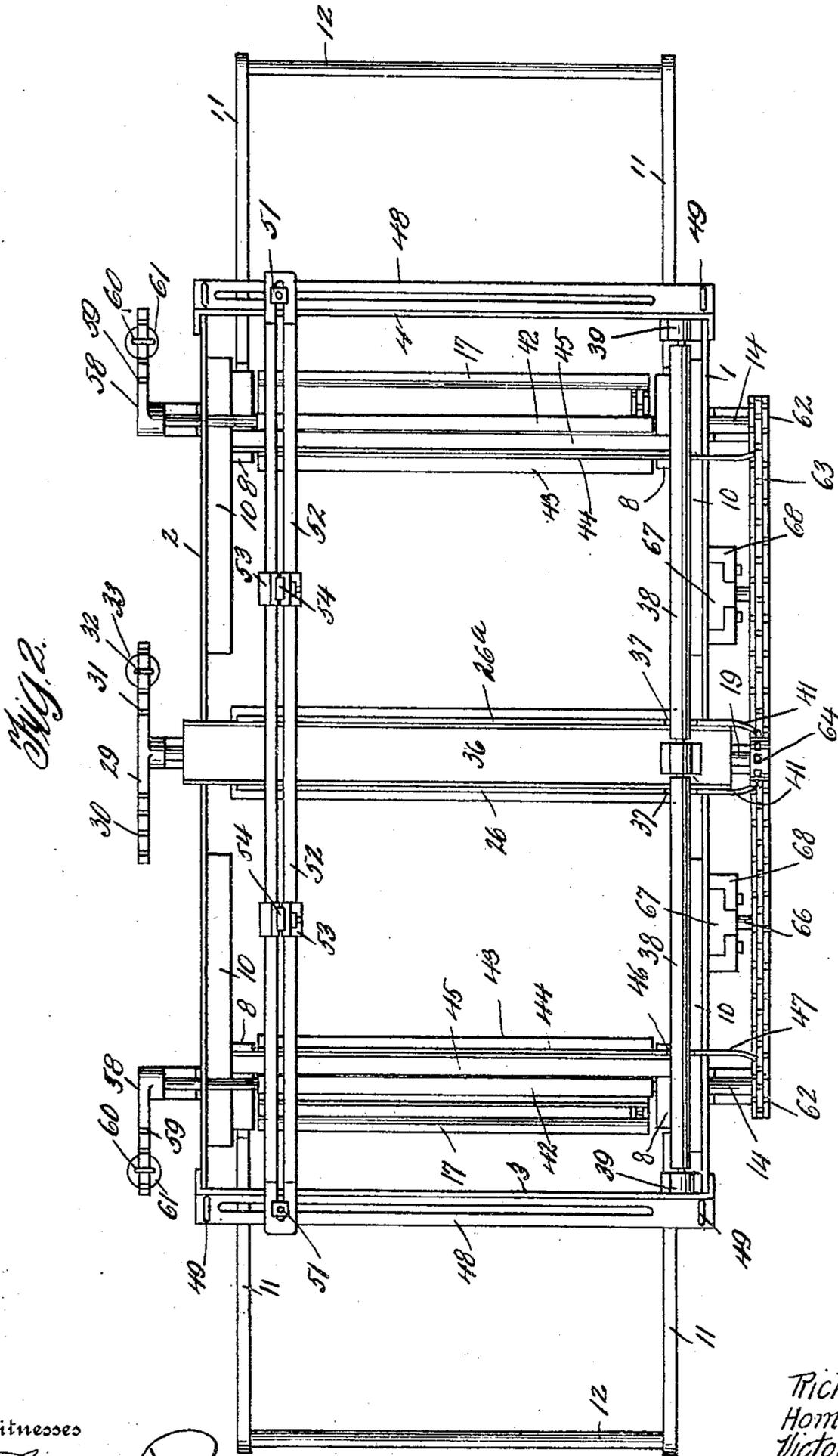
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5 SHEETS—SHEET 2.



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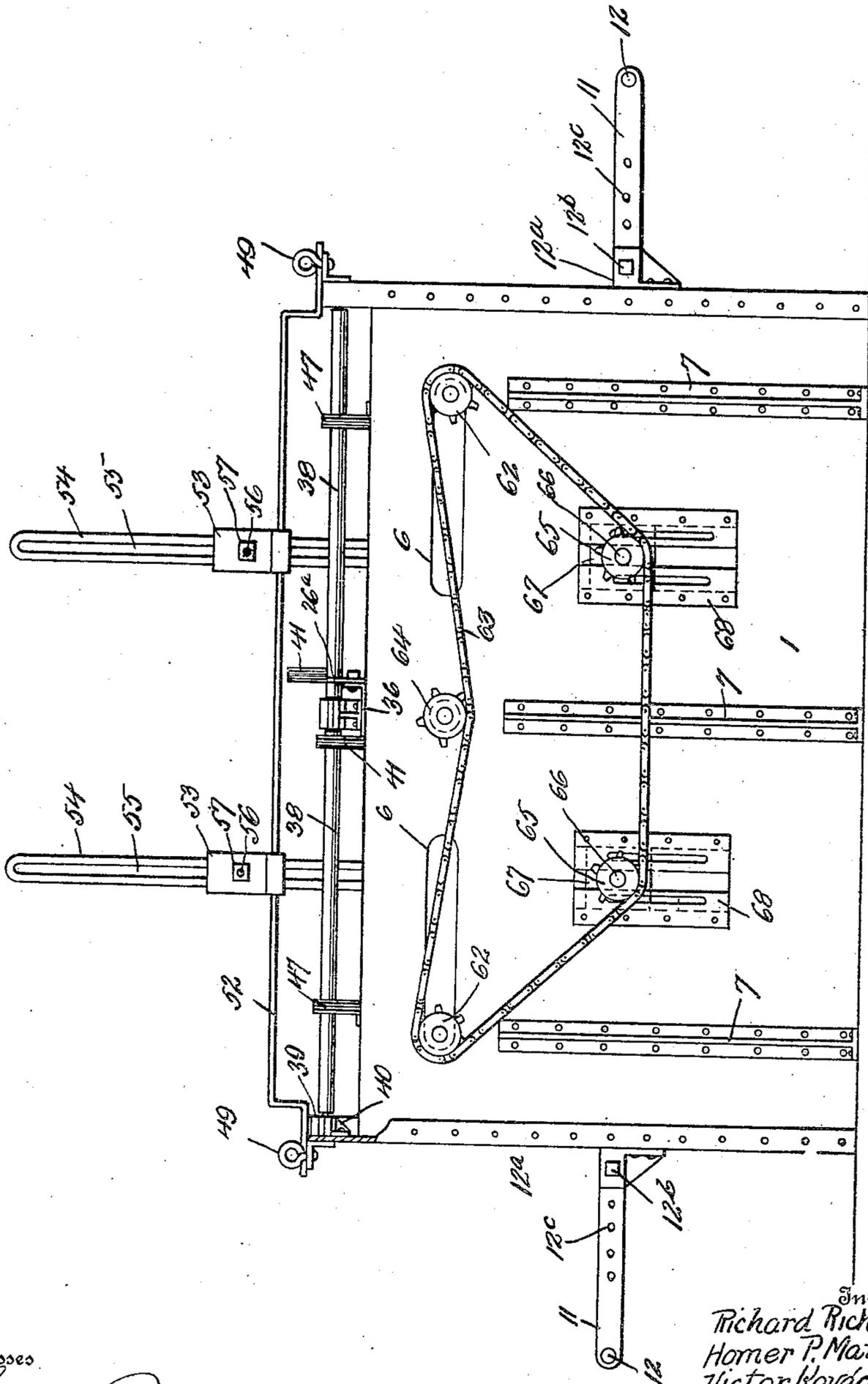
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5 SHEETS—SHEET 3.

Fig. 5.



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5 SHEETS—SHEET 4.

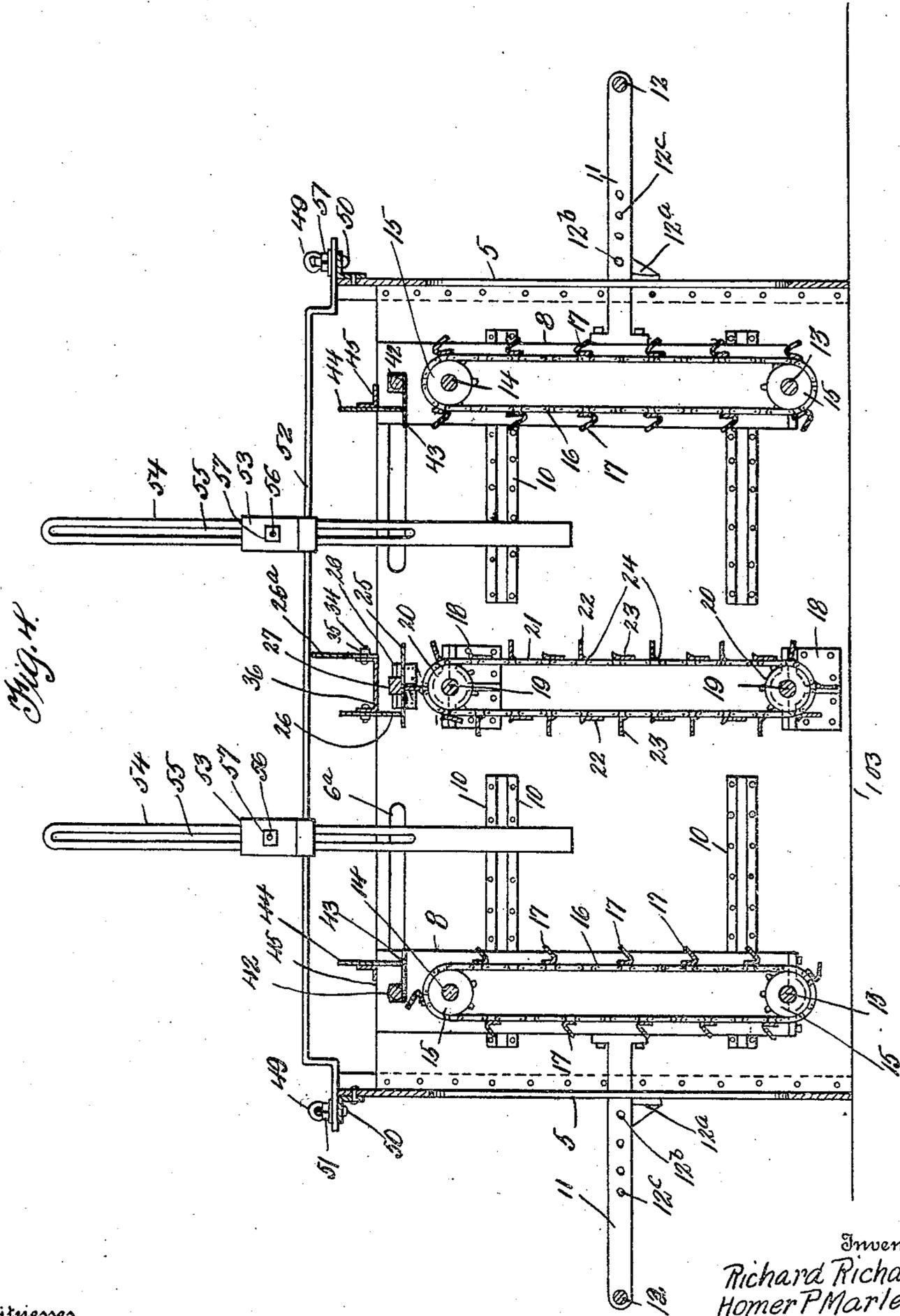


Fig. 4.

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5 SHEETS—SHEET 5.

Fig. 5.

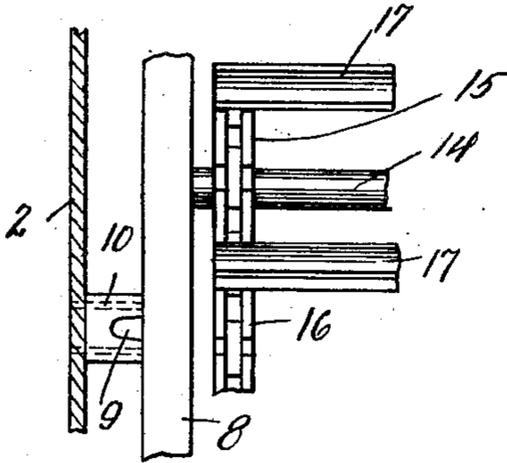


Fig. 6.

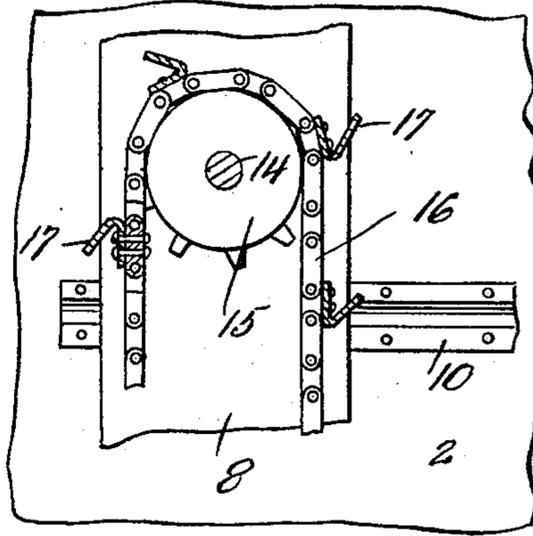


Fig. 7.

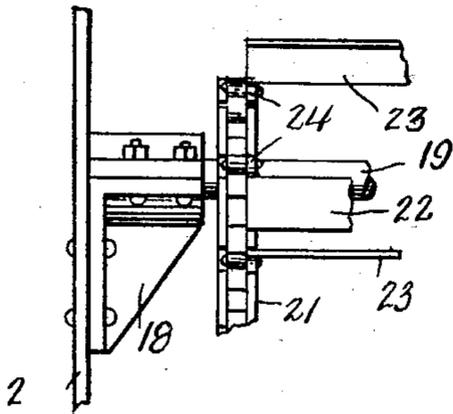


Fig. 8.

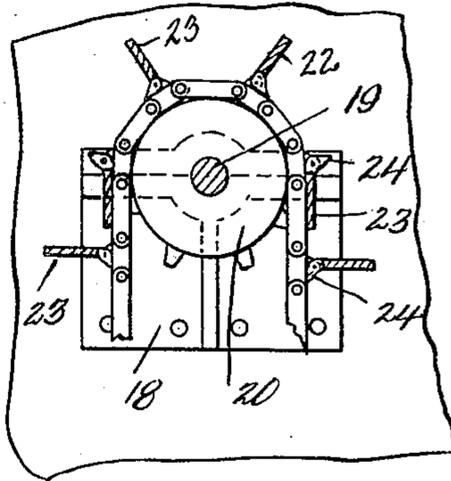
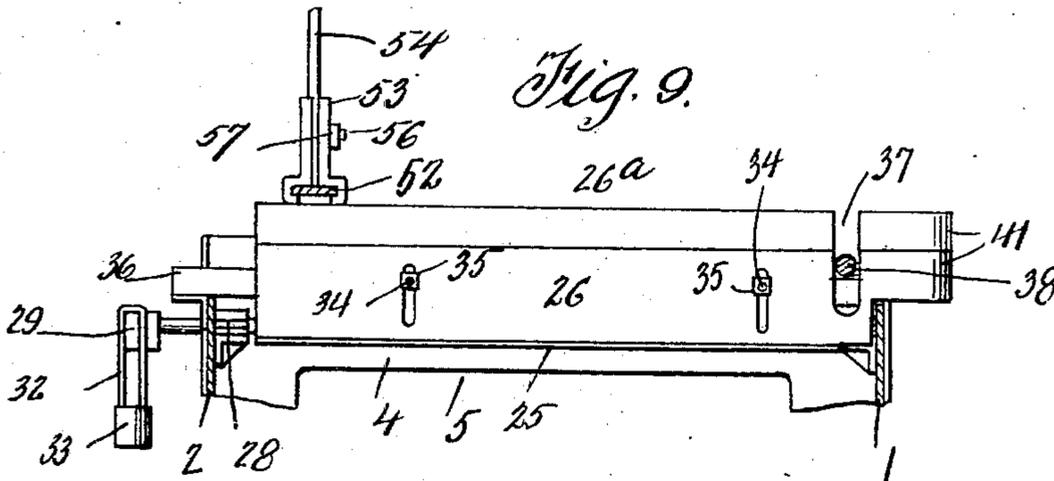


Fig. 9.



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UNITED STATES PATENT OFFICE.

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SHEET-METAL PACKER.

935,549.

Specification of Letters Patent. Patented Sept. 28, 1909.

Application filed February 27, 1909. Serial No. 480,405.

To all whom it may concern:

Be it known that we, (1) RICHARD RICHARDS, (2) HOMER P. MARLEY, (3) VICTOR KOVÁCS, and (4) ALEXANDER REVES, (1) and (2) citizens of the United States of America, and (3) and (4) subjects of the King of Hungary, residing at New Castle, in the county of Lawrence and State of Pennsylvania, have invented certain new and useful Improvements in Sheet-Metal Packers, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to packing devices for tin mills, and more particularly to tin mills wherein the black plate process is used for the production of sheets or plates of tin.

The object of our invention is to provide a movable packing device for collecting, assembling and accurately packing sheets of metal ejected by the cold rolls of a mill, whereby the packed or stacked plates can be easily moved into a furnace, as an annealing furnace, for further treatment.

It is the present practice to employ laborers to transfer sheets or plates of metal from the cold rolls of a mill to a table, and stack the sheets or plates thereon. This manual manipulation of the plates is a laborious and tiresome operation, particularly in the summer time, and it is with difficulty that laborers are found to perform the work.

Our invention aims to dispense with the manual labor and provide a novel device which will automatically stack the plates or sheets upon a table, to a desired height, prior to the table being placed in a furnace.

Our device is constructed whereby it can be adjusted to stack sheets or plates of various sizes and then removed, in order that the annealing hood can be secured on the table, to inclose the stacks for annealing purposes.

With the above and other objects in view which will more readily appear as the invention is better understood, the same consists in the novel construction, combination and arrangement of parts to be presently described and then claimed.

In the drawings, Figure 1 is an end view of the device, constructed in accordance with our invention, partly broken away and partly in section, Fig. 2 is a plan of the same, Fig. 3 is a side elevation of the device, Fig. 4 is a longitudinal sectional view of the de-

vice, Fig. 5 is an elevation of a portion of an end conveyer, Fig. 6 is a longitudinal sectional view of a portion of the same, Fig. 7 is an elevation of a portion of a central conveyer, Fig. 8 is a longitudinal sectional view of a portion of the same, and Fig. 9 is a cross sectional view of a portion of the device illustrating an adjustable guard.

Our packing or stacking device is constructed of strong and durable metal, preferably sheet steel, and standard shapes and sizes are used as much as possible throughout the entire construction. Our machine consists of an oblong structure having side walls 1 and 2, connected by end walls 3 and 4, of a greater height than the side walls. The end walls 3 and 4 are provided with large openings 5, whereby the interior of the structure can be observed, while the side walls 1 and 2 adjacent to the upper edges thereof are provided with longitudinal slots 6 and 6^a, the slots 6 being located in the wall 1 and the slots 6^a in the wall 2, the object of which will presently appear.

The side walls 1 and 2 are provided with stiffening ribs 7 extending to the lower edges of said walls and forming substantial supports for the lower edges of the side walls when resting upon a table or foundation.

In the structure are arranged vertical conveyers adapted to alternately cooperate with a central or intermediate conveyer, all of said conveyers operating by gravity due to the weight of a plate or sheet of metal deposited upon the conveyers. The end conveyers comprise vertical bearings 8 having longitudinal tongues 9 adapted to engage in grooved bearings 10 secured to the inner sides of the walls 1 and 2. The bearings 8 of each end conveyer are provided with outwardly extending arms 11, said arms protruding through the end walls 3 and 4, and having the outer ends thereof connected by a handle 12.

The outer sides of the end walls 3 and 4, adjacent to the arms 11 and at the front edge of the machine are provided with brackets 12^a, for pins 12^b said pins being adapted to engage in openings 12^c provided therefor in the arms 11, said pins preventing the arms from accidentally shifting.

The attendant of the device can shift the vertical bearings 8 and adjust the end conveyers relative to the central or intermediate conveyer.

In the upper and lower ends of the vertical bearings 8 are journaled transverse shafts 13 and 14 having sprocket wheels 15 adjacent to the ends thereof, over which are
5 mounted endless sprocket chains 16 having hook-shaped plate or sheet supports 17.

The central or intermediate conveyer is supported by brackets 18 arranged upon the inner sides of the walls 1 and 2, said con-
10 veyer comprising shafts 19 revolubly supported by said brackets, sprocket chains 20 mounted upon said shafts, and endless sprocket chains 21 carried by said sprocket wheels. Pivotaly connected to each of the
15 sprocket chains 21 are two sets of sheet or plate supports 22 and 23, said supports having lugs 24 for engaging the sprocket chains 21, whereby the supports 22 will be maintained at right angles to the chain to co-
20 operate with the conveyer at one end of the machine, while the supports 23 will be maintained at right angles to the chains to cooperate with the conveyer at the opposite end of the machine. The object of this arrangement will be further considered in the
25 general operation of the machine.

Above the central or intermediate conveyer is arranged a tilting platform or ledge 25 and adjustable guards 26 and 26^a for said
30 platform or ledge. The platform or ledge 25 is fixed to a bar 27 trunnioned in bearings 28 upon the inner sides of the walls 1 and 2. The ends of the bar 27 protrude through the wall 2 and is provided with a
35 cross head 29 having notches 30 and 31 to receive the yoke 32 of a weight 33.

The adjustable guards 26 and 26^a extend transversely of the machine and are connected by bolts 34 and nuts 35 to the sides of
40 a channel 36 mounted upon the upper edges of the walls 1 and 2. the ends of the guides 26 and 26^a adjacent to the wall 1 are cut away, as at 37, to provide clearance for rollers 38, arranged longitudinally of the device,
45 at the upper edges of the wall 1, said rollers being journaled in bearings 39 mounted upon brackets 40, carried by the end walls 3 and 4 adjacent to the upper edge of the end wall 1.

The ends of the guides 26 and 26^a protrude over the wall 1, and are bent, as at
50 41, to serve functionally as guides.

Trunnioned in the upper ends of the bearings 8 are bars 42, having platforms or ledges 43, confronting the platforms or ledges
55 25. In connection with the platforms 43, guides 44 are used, and these guides are carried by angle bars 45 arranged upon the upper ends of the bearings 8. The guides 44 are similar to the guides 26 and 26^a, in
60 so much as said guides 44 are cut away at 46, to clear the rollers 38, and bent as at 47, to serve functionally as guides.

The upper edges of the end walls 3 and 4 are provided with transverse longitudinal
65 slotted angle bars 48, the ends of said bars

having eyebolts or hooks 49 to permit of chains or cables being attached to the machine to bodily lift the same. Adjustably
mounted upon the angle bars 48 by bolts 50 and nuts 51 is a longitudinal gage support
70 52, said support being slotted from one end thereof to the opposite end, and slidably mounted upon said support are holders 53 for vertical gages 54. The gages 54 are slot-
75 ted, as at 55, and are adjustably held in the holders 53 by bolts 56 and nuts 57.

The trunnions of the bars 42 protrude through the slots 6^a and are provided with cranks 58 having notches 59 formed therein
80 for the yokes 60 of weights 61.

The shafts 14 of the end conveyers protrude through the slots 6 of the front wall 1 and are provided with sprocket wheels 62. Adapted to travel over the sprocket wheel
85 62 is an endless sprocket chain 63, said chain traveling under an idle sprocket 64 revolubly carried by the wall 1 and tension sprockets 65 revolubly and adjustably supported by the wall 1. The sprockets 65 are mounted
90 upon stub shafts 66, journaled in bearings 67 adjustably mounted in guides 68, carried by the front wall 1.

Operation: In Fig. 1 of the drawings, we have illustrated diagrammatically a set
95 of cold rolls 100, and adjacent to the pass of said rolls an endless conveyer 101, and in connection with the conveyer 101, an inclined conveyer 102 is used, said inclined conveyer extending from the conveyer 101
100 to the upper edge of the front wall 1. As the sheets or plates of tin pass between the rolls 100 onto the conveyer 101, the sheets or plates are carried upwardly by the conveyer 102 and deposited in the upper end
105 of the packing and stacking device, the rollers 38 facilitating the movement of the plates or sheets of tin into the device. The sheets or plates of tin when falling into the device will be guided by the guides 26, 26^a
110 and 44, and will be deposited upon the platforms 25 and 43, where the plates or sheets of tin will accumulate until the platforms are overbalanced, and then the plates or sheets of tin will be deposited upon the conveyers. Since the central or intermediate
115 conveyer coöperates with the end conveyers, it is only necessary to alternately use the end conveyers, and pack and stack one pile of sheets or plates at a time. Assuming that a sufficient number of sheets or plates of
120 tin have accumulated upon the platforms 25 and 43, at the left hand end of the device to overbalance said platforms, the plates or sheets of tin will be deposited upon the supports 23 of the central conveyer and the
125 supports 17 of the end conveyer. The weight of these plates or sheets of tin is sufficient to move the conveyers, whereby the confronting supports 17 and 23 of said conveyers will be carried downwardly and de- 130

posit the plates or sheets carried thereby upon the table or support 103 upon which the packing and stacking device rests. After a bunch of plates or sheets of tin has been deposited upon the table 103 in the left hand end of the device, a bunch of plates or sheets of tin can then be deposited in the right hand end of the device, and this operation continued until two stacks or piles of plates or sheets have been placed upon the table 103. The vertical gages 54 limit the rearward movement of the sheets or plates of tin upon the platforms 25 and 43, and consequently, correctly position the plates or sheets to be dumped upon the conveyers and packed upon the table 103. The gages 54 can also be used to determine the height of stacks of plates or sheets upon the table 103, and the attendant of the device can readily determine by observing through the openings 5 of the device when two stacks of plates or sheets have been evenly packed to a desired elevation upon the table 103.

The end conveyers can be easily adjusted whereby plates or sheets of various widths can be packed and stacked upon the table, but the length of the plates or sheets is limited by the width of the device and the conveyers arranged therein.

The packing and stacking device is designed whereby a crane or housing mechanism (not shown) can easily remove the same from the table 103 after two piles of sheets or plates have been arranged thereon. The table can then receive the ordinary cover and be transferred to the annealing furnace.

It is obvious that the number of plates or sheets allowed to accumulate upon the platforms 25 and 43 is determined by the position and size of the weights 33 and 61.

While in the drawings forming a part of this application there is illustrated the preferred embodiments of our invention, we would have it understood that the details of construction can be varied or changed as to the shape, proportion and manner of assemblage without departing from the spirit of the invention.

Having now described our invention, what we claim as new, is—

1. A packing and stacking device, comprising front and rear walls, end walls connecting said front and rear walls, vertical bearings adjustably supported by the confronting sides of said front and rear walls, arms connecting with said bearings and protruding through said end walls to permit of said bearings being adjusted, vertical gravity conveyers arranged between the bearings at each end of said device, platforms trunnioned between the upper ends of said bearings, weights adjustably supported by the trunnioned ends of said platforms at the rear side of said device, guides

carried by the upper ends of said bearings for normally supporting said platforms in a horizontal position, a vertical intermediate gravity conveyer arranged between the front and rear walls of said device, pivoted supports carried by said conveyer, and adapted to cooperate with the first mentioned conveyers, a tilting platform trunnioned in said device above said intermediate conveyer, guides adjustably arranged above said platform for limiting the tilting movement thereof, a weight adjustably supported at the rear end of said platform for normally maintaining said platform in engagement with one of said guides, adjustable gages supported by the end walls of said device, rollers journaled at the upper edges of the front wall of said device for conveying plates upon said platform, and means arranged upon the front wall of said device for operating said intermediate conveyer simultaneously and in an operable direction with said end conveyers.

2. A packing and stacking device, comprising front and rear walls, end walls connecting said front and rear walls, vertical bearings adjustably supported by the confronting sides of said front and rear walls, vertical gravity conveyers arranged between the bearings at each end of said device, platforms trunnioned between the upper ends of said bearings, weights adjustably supported by the trunnioned ends of said platforms at the rear side of said devices, guides carried by the upper ends of said bearings for normally supporting said platforms in a horizontal position, a vertical intermediate gravity conveyer arranged between the front and rear walls of said device, pivoted supports carried by said conveyer, and adapted to cooperate with the first mentioned conveyers, a tilting platform in said device above said intermediate conveyer, guides adjustably arranged above said platform for limiting the tilting movement thereof, a weight adjustably supported at the rear end of said platform for normally maintaining said platform in engagement with one of said guides, adjustable gages supported by the end walls of said device, and means arranged upon the front wall of said device for operating said intermediate conveyer simultaneously and in an operable direction with said end conveyers.

3. A packing and stacking device, comprising front and rear walls, end walls connecting said front and rear walls, vertical bearings adjustably supported by the confronting sides of said front and rear walls, vertical gravity conveyers arranged between the bearings at each end of said device, platforms trunnioned between the upper ends of said bearings, weights adjustably supported by the trunnioned ends of said platforms at the rear side of said device, guides

carried by the upper ends of said bearings for normally supporting said platforms in a horizontal position, a vertical intermediate gravity conveyer arranged between the front and rear walls of said device, pivoted supports carried by said conveyer, and adapted to cooperate with the first mentioned conveyer, a tilting platform trunnioned in said device above said intermediate conveyer, guides adjustably arranged above said platforms for limiting the tilting movement thereof, and a weight adjustably supported at the rear end of said platform for normally maintaining said platform in engagement with one end of said guides.

4. A packing and stacking device, comprising front and rear walls, end walls connecting said front and rear walls, vertical bearings adjustably supported adjacent to the ends of said front and rear walls, vertical gravity conveyers arranged between said bearings, tilting platforms trunnioned between the upper ends of said bearings, guides carried by said bearings for limiting the movement of said platforms, weights in conjunction with said platforms for normally maintaining said platforms in engagement with said guides, a vertical intermediate gravity conveyer arranged between said front and rear walls and adapted to cooperate with said end conveyers, a tilting platform trunnioned in said device above said intermediate conveyer, guides adjustably arranged above said platform for limiting the tilting movement thereof, adjustable gages supported by the upper edges of said end walls, and means arranged in the end walls of said device for adjusting the end bearings.

5. A packing and stacking device, comprising front and rear walls, end walls connecting said front and rear walls, vertical bearings adjustably supported adjacent to the ends of said front and rear walls, vertical gravity conveyers arranged between said bearings, tilting platforms trunnioned between the upper ends of said bearings, guides carried by said bearings for limiting the movement of said platforms, weights in conjunction with said platforms for normally maintaining said platforms in engagement with said guides, a vertical intermediate gravity conveyer arranged between said front and rear walls and adapted to cooperate with said conveyers, a tilting platform trunnioned in said device above said conveyer, and guides adjustably arranged above said platform for limiting the tilting movement thereof.

6. A packing and stacking device, comprising front and rear walls, end walls connecting said front and rear walls, vertical bearings adjustably supported adjacent to the ends of said front and rear walls, vertical gravity conveyers arranged between said bearings, tilting platforms trunnioned be-

tween the upper ends of said bearings, a vertical intermediate gravity conveyer arranged between said front and rear walls and adapted to cooperate with said end conveyers, a tilting platform trunnioned in said device above said intermediate conveyer, and guides adjustably arranged above said platform for limiting the tilting movement thereof.

7. A packing and stacking device, comprising front and rear walls, end walls connecting said front and rear walls, vertical bearings adjustably supported adjacent to the ends of said front and rear walls, vertical gravity conveyers arranged between said bearings, tilting platforms trunnioned between the upper ends of said bearings, a vertical intermediate gravity conveyer arranged between said front and rear walls and adapted to cooperate with said end conveyers, and a tilting platform trunnioned in said device above said intermediate conveyer.

8. A packing and stacking device, comprising walls, vertical bearings adjustably supported in the ends of said device, vertical gravity conveyers arranged between said bearings, a vertical intermediate gravity conveyer arranged between the first mentioned conveyers and adapted to alternately cooperate with the first mentioned conveyers, tilting platforms arranged above said conveyers for alternately delivering plates to said conveyers, adjustable gages supported above said conveyers for limiting the movement of plates above said platforms, and means arranged in the walls of said device for adjusting said bearings.

9. A packing and stacking device, comprising walls, vertical bearings adjustably supported in the ends of said device, vertical gravity conveyers arranged between said bearings, a vertical intermediate gravity conveyer arranged between the first mentioned conveyers and adapted to alternately cooperate with the first mentioned conveyers, and tilting platforms arranged above said conveyers for alternately delivering plates to said conveyers.

10. A packing and stacking device comprising walls, vertical gravity conveyers arranged within said walls, a vertical intermediate gravity conveyer arranged between the first mentioned conveyers and adapted to alternately cooperate with the first mentioned conveyers, and means arranged above said conveyers for alternately delivering plates to said conveyers.

11. A packing and stacking device, comprising end gravity conveyers, an intermediate gravity conveyer, means arranged above said conveyers for alternately delivering plates to said conveyers, and means to adjust said end conveyers.

12. A packing and stacking device, com-

prising end gravity conveyers, an intermediate gravity conveyer, and means arranged above said conveyers for alternately delivering plates to said conveyers.

5 13. A device of the type described, comprising three vertical gravity conveyers, means for feeding plates onto said conveyers to be stacked at the lower ends of said conveyers, means to adjust two of said conveyers relative to the third conveyer, and
10 means for alternately operating two of said conveyers in connection with the third conveyer.

14. A device of the type described, com-

prising three vertical gravity conveyers, 15 means for feeding plates onto said conveyers to be stacked at the lower ends of said conveyers, and means to adjust two of said conveyers relative to the third conveyer.

In testimony whereof we affix our signatures in the presence of two witnesses. 20

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