Sept. 1, 1931. F. D. COPPOCK 1,821,881

PORTABLE STACKER

Filed Nov. 13, 1930 4 Sheets-Sheet 1

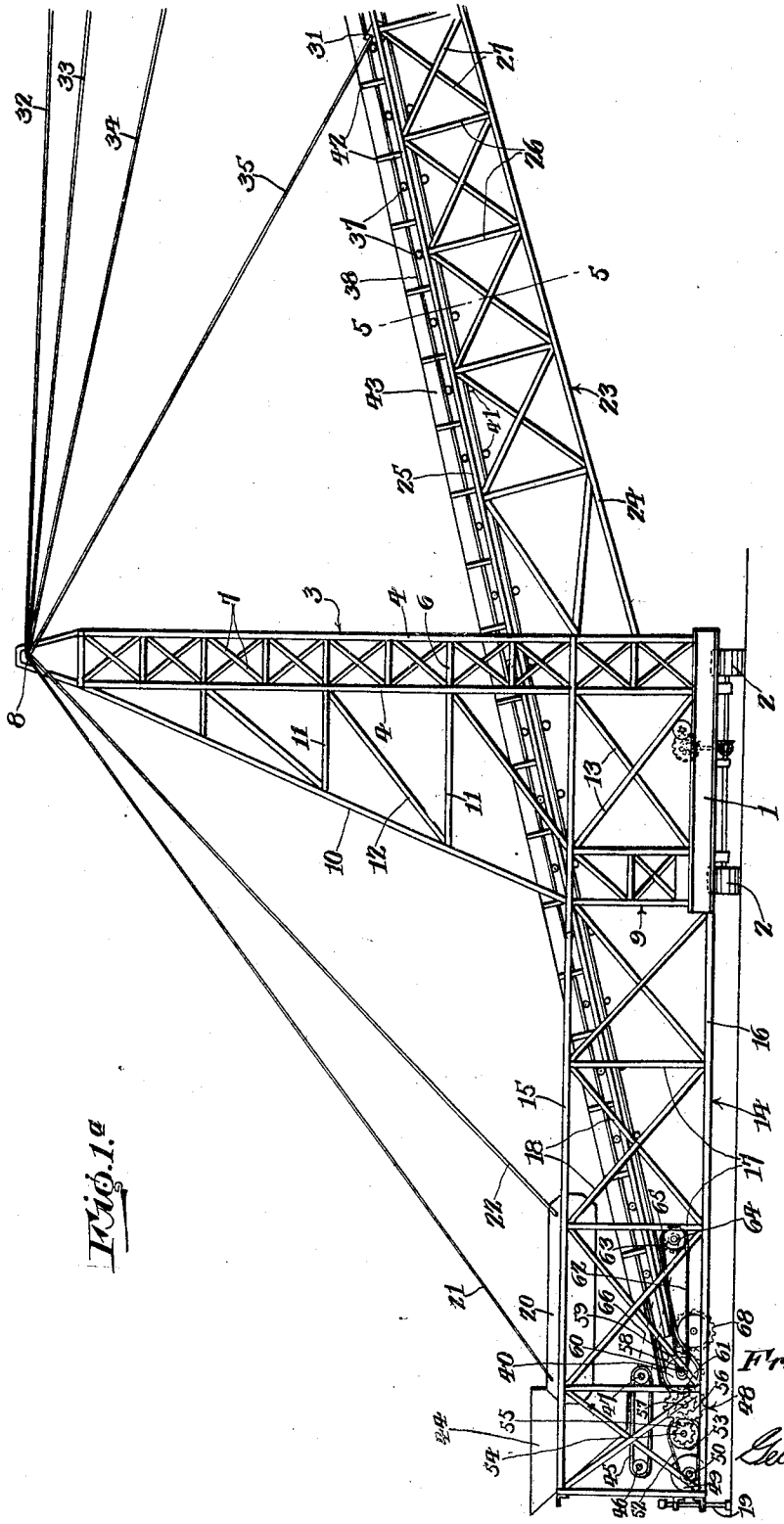


FIG. 1.

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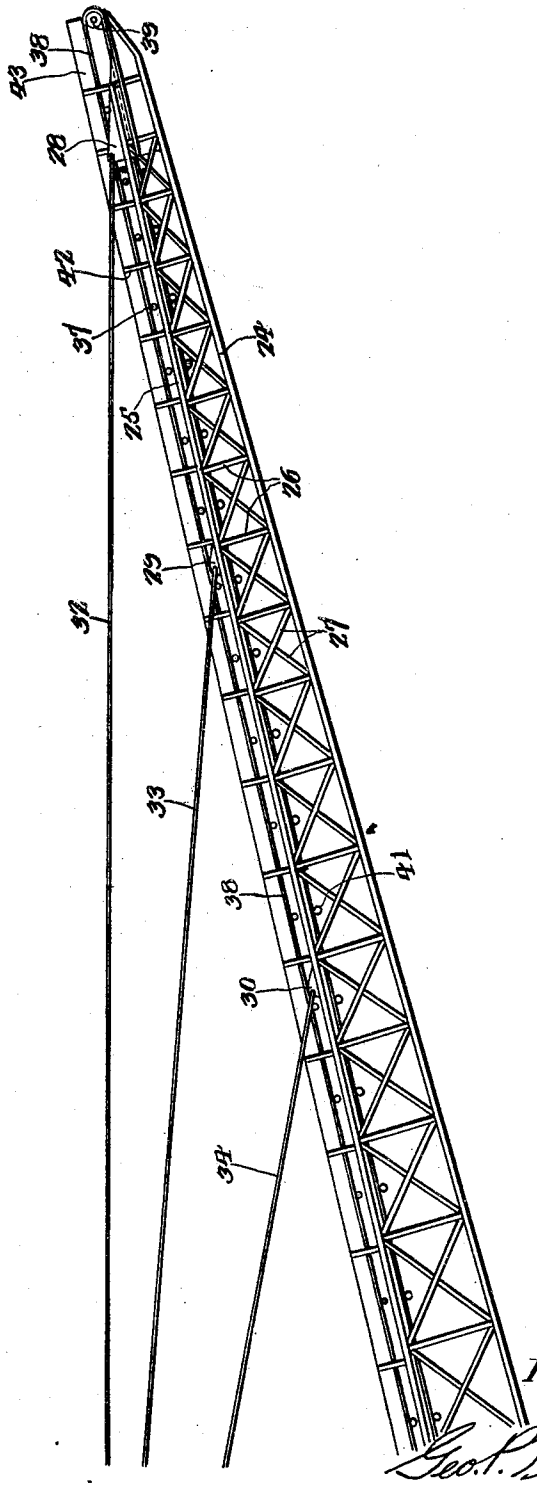


Fig. 1a.

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Fig. 2.

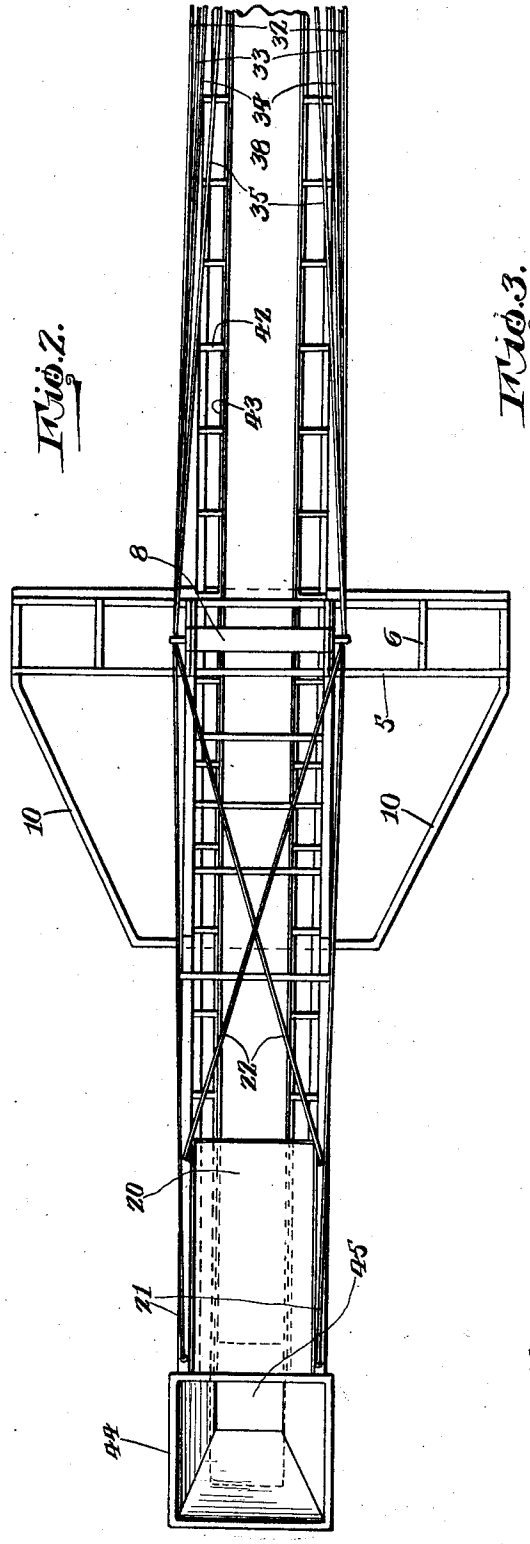
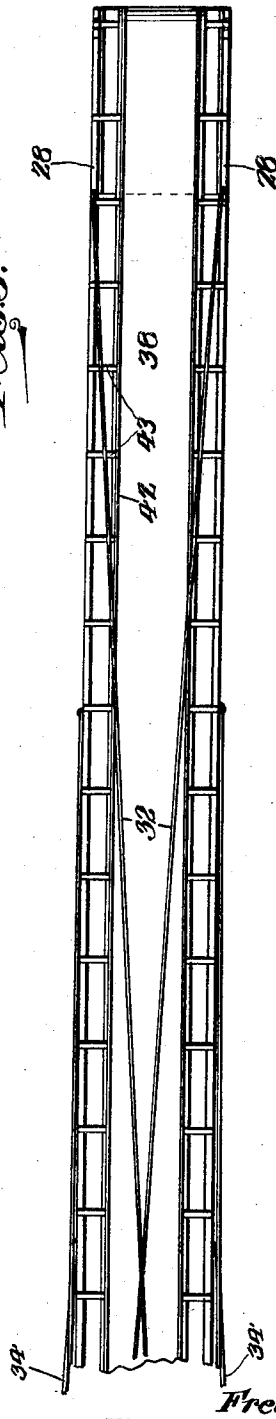


Fig. 3.



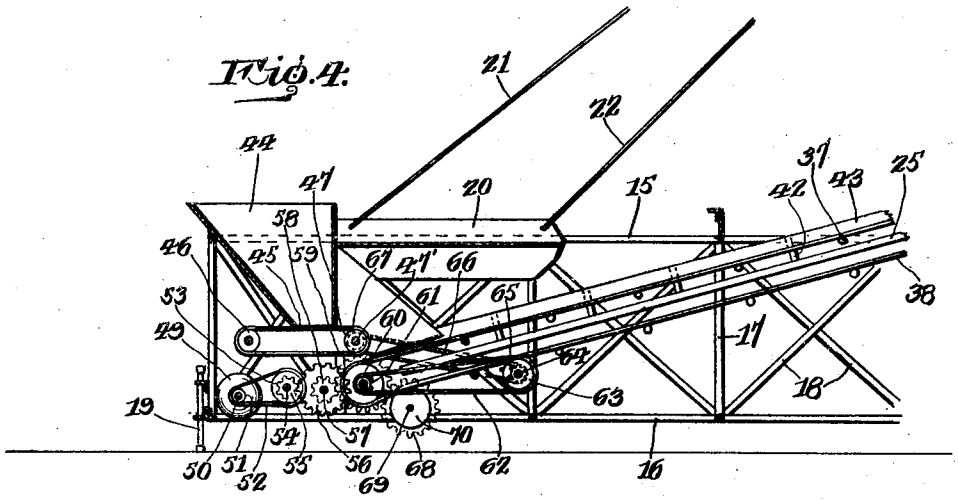
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Fig. 4.



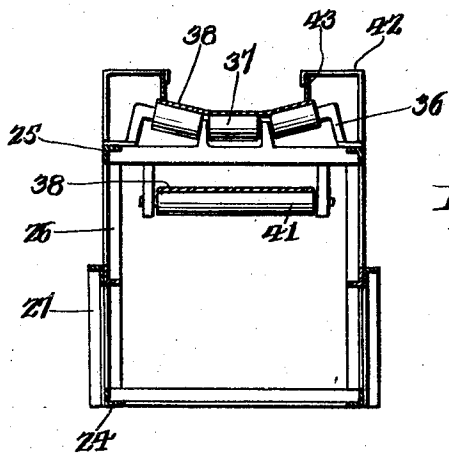


Fig. 5.

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UNITED STATES PATENT OFFICE

FRED D. COPPOCK, OF GREENVILLE, OHIO

PORTABLE STACKER

Application filed November 13, 1930. Serial No. 495,485.

This invention relates to a portable stacker and has for its primary object to provide, in a manner as hereinafter set forth, a device of such character which may be used for conveying the stripping or over-burden from the top of a stone quarry, gravel or mineral deposit, and for depositing such stripping or over-burden on the floor of the worked out portion of the quarry, thereby definitely disposing of the stripping or over-burden in a single operation.

A further object of the invention is to provide a device of the character aforesaid whereby the surface of a quarry may be maintained clean in advance of the working face thereof, and whereby the stripping or over-burden removed from the top of the quarry may be deposited on the floor of the worked out portion of the quarry without interfering with the loading or mining of the stone from the working face of the quarry.

A further object of the invention is to provide a device of the character aforesaid which is of strong, durable and balanced construction and capable of carrying out the work for which the device is designed.

With the foregoing and other objects in view, the invention consists of the novel construction, combination and arranagement of parts as hereinafter more particularly described, and as illustrated in the accompanying drawings wherein is shown an embodiment of the invention, but it is to be understood that the description and drawings are to be taken as illustrative and that the invention is intended to be limited only by the scope of the claims hereunto appended.

In the accompanying drawings in which like numerals are employed to designate like parts throughout the several views:

Figures 1*a* and 1*b* are fragmentary views collectively showing a conveyor in accordance with this invention in side elevation.

Figures 2 and 3 are fragmentary views collectively showing the conveyor in top plan.

Figure 4 is an enlarged fragmentary sectional elevation.

Figure 5 is an enlarged transverse section taken at a point indicated by the line 5—5 of Figure 1*a*.

Referring to the drawings in detail, the numeral 1 indicates a carriage equipped with a pair of motor driven traction elements 2, the traction elements being of the flexible, endless, track laying type.

Mounted on the carriage, adjacent one edge thereof, is a tower including a relatively tall portion indicated generally by the numeral 3. The tower portion 3 includes a plurality of upright frame members 4 which are interconnected by means of suitable horizontally disposed braces 5 and 6 and diagonal braces 7. The diagonal braces 7 are arranged in intersecting pairs with the respective ends of each pair abutting adjacent, superposed cross braces 5 and 6 respectively. At the top thereof the tower portion 3 is provided with a cap structure 8, the length and width of which are materially less than the cross sectional length and width of the tower portion on which it is mounted.

Adjacent the opposite edge of the carriage from the tower portion 3 is a relatively short tower portion 9, the construction of which is similar to that of the tower portion 3. Connecting the top of the tower portion 3 with the top of the tower portion 9 are a pair of braces 10, and connecting the braces 10 with the tower portion 3 are a plurality of horizontally disposed braces 11. Extending diagonally between adjacent braces 11 are a plurality of braces 12. Interposed between the tower portion 9 and a lower portion of the tower portion 3 are a plurality of diagonal braces 13 which are arranged in intersecting pairs.

Projecting from the edge of the carriage adjacent which the tower portion 9 is mounted is a horizontally disposed frame indicated generally by the numeral 14. The frame 14 includes a pair of upper frame members 15 which are secured to the upper end of the tower portion 9 and which are also secured to the tower portion 3 in spaced

relation to the lower end of the latter. The frame 14 further includes a pair of similar supporting members 16 which are secured to the carriage 1. Extending between the lower frame members 16 and upper frame members 15 are a plurality of spaced uprights 17, and extending between the uprights 17 are a plurality of diagonally disposed braces 18 arranged in intersecting pairs. At the outer end thereof, the frame 14 is provided with vertically adjustable supporting members, such as 19.

Secured to the top of the frame 14, in spaced relation to the outer end thereof, is a counter weight box 20. Adjacent the outer end thereof, the box 20 is connected with the cap structure 8 by means of a pair of cables 21 which are disposed in parallel relation to the vertical plane of the frame 14. Adjacent the inner end thereof, the box 20 is connected with the cap structure 8 by means of a pair of cables 22 which are arranged in intersecting relation.

Projecting at an upward inclination with respect to the carriage, at the opposite side thereof from the frame 14, is a diagonally disposed frame indicated generally by the numeral 23. The frame 23 includes lower supporting members 24 which are secured to the tower portion 3 and upper supporting members 25 which are secured to the tower portions 3 and 9 and horizontal frame 14. Extending between the frame members 24 and 25 are a plurality of spaced uprights 26, and disposed between the uprights 26 are a plurality of diagonally disposed braces 27 which are arranged in intersecting pairs. The upper frame members 25 are provided with spaced securing plates, 28, 29, 30 and 31 which are connected respectively with the cap structure 8 by means of cables arranged in pairs indicated at 32, 33, 34 and 35 respectively, the pair of cables 32 being disposed in intersecting relation, and the pairs of cables 33, 34 and 35 being disposed in parallel relation to the vertical plane of the frame 23.

Carried by the upper frame members 25 are a plurality of spaced supporting brackets 26 for a plurality of rollers 37. The rollers 37 are arranged end to end in groups of three with the intermediate roller of each group being disposed horizontally and with the end rollers of each group inclining upwardly from the intermediate roller. Mounted on the rollers 37 is the upper strip of an endless conveyor belt 38 which extends around rollers 39 and 40 respectively mounted on the diagonal frame 23 and horizontal frame 14. Preferably the lower stretch of the belt 38 will be supported on suitable rollers, such as 41. Owing to the disposition of the rollers 37, the upper stretch of the belt 38 is dished as clearly shown in Figure 5. Carried by the upper frame members 25 are a plurality of spaced arms 42 which are of angular construction and which have secured thereto a pair of longitudinally extending retaining strips 43 which extend throughout the length of the belt 38 and the lower edges of which are disposed in proximity to the upper face of the upper strip of the belt at the side edges of the latter.

Suitably mounted on the frame 14, adjacent the outer end of the latter, is a hopper 44, the restricted lower end of which is arranged over an endless conveyor belt 45 mounted on a pair of rollers 46 and 47 suitably mounted on the frame 14. The belt 45 extends longitudinally of the frame 14 with the inner end thereof disposed above and in overlapping relation to the lower end of the belt 38.

The belts 45 and 38 are operated by means of a suitable actuating mechanism carried by the frame 14 and indicated generally by the numeral 48. The actuating mechanism 48 includes a motor 49, the shaft 50 of which is provided with a pulley 51. Extending around the pulley 51 is a belt 52 which also extends around a pulley 53 mounted on a shaft 54 provided with a pinion 55. The pinion 55 meshes with and drives a gear 56 which is mounted on a shaft 57 provided with a pinion 58. The pinion 58 meshes with and drives a gear 59 which is mounted on a shaft 60 having the roller 40 mounted thereon. The shaft 60 rotates with the gear 59 whereby the endless belt 38 is rotated about the rollers 40 and 39. The shaft 60 is also provided with a sprocket 61 for driving a chain 62 which in turn drives a sprocket 63 mounted on a shaft 64. The shaft 64 is provided with a sprocket 65 which drives a chain 66 extending around a sprocket 67 mounted on the shaft 47′ of the roller 47, thereby providing for the rotation of the belt 45 about the rollers 46 and 47. The gear 59 is also in mesh with an idler gear 68 mounted on a shaft 69 having a roller 70 in engagement with the lower face of the lower stretch of the belt 38 for preventing slack in the belt.

In the use of the conveyor, the carriage 1 is driven under its own power to a point adjacent the working face of a quarry with the traction members 2 arranged in parallel relation to the working face and with the diagonal frame 23 projecting over the working face and terminating a material distance inwardly thereof. Preferably the outer end of the frame 23 will be projected approximately 160 feet from the carriage in order to provide ample room for mining the stone and loading the same without interference from the material being discharged from the conveyor into the quarry. The stripping or over-burden at the top of the quarry is loaded into the hopper 44 in any

suitable manner, such as by means of a steam shovel, such material being discharged from the hopper onto the belt 45, which feeds the material to the belt 38. The counter weight box 20 is provided with suitable ballast sufficient to overcome the weight of the projecting frame 23 when the conveyor belt 38 is loaded whereby the frame 23 is indirectly supported by the box 20 owing to the cables 21, 22, 32, 33, 34 and 35.

It is thought that the many advantages of a stacker in accordance with this invention will be readily apparent, and although the preferred embodiment of the invention is as illustrated and described, it is to be understood that changes in the size, shape and arrangement of parts may be resorted to, so long as such changes fall within the scope of the invention as defined in the appended claims.

What I claim is:—

1. A portable stacker comprising, a travelling carriage, a tower mounted on the carriage, said tower including a relatively tall portion and a relatively short portion spaced from the tall portion, brace means connecting the tower portions, a horizontal frame connected to said carriage and tower portions, a diagonal frame connected to said horizontal frame and tower portions, a conveyor carried by said frames, cables connecting the frames with the tower, and a hopper carried by the horizontal frame adjacent one end of the conveyor.

2. A portable stacker comprising, a travelling carriage, a tower mounted on the carriage, said tower including a relatively tall portion and a relatively short portion spaced from the tall portion, brace means connecting the tower portions, a horizontal frame connected to said carriage and tower portions, a diagonal frame connected to said horizontal frame and tower portions, a conveyor carried by said frame, cables connecting the frames with the tower, a hopper carried by the horizontal frame adjacent one end of the conveyor, a relatively short conveyor arranged beneath the hopper and extending above an end portion of the first mentioned conveyor in spaced relation thereto, and actuating means for rotating said conveyors.

3. A portable stacker comprising, a travelling carriage, a tower mounted on the carriage, said tower including a relatively tall portion and a relatively short portion spaced from the tall portion, brace means connecting the tower portions, a horizontal frame connected to said carriage and tower portions, a diagonal frame connected to said horizontal frame and tower portions, a conveyor carried by said frames, cables connecting the frames with the tall tower portion, a hopper carried by the horizontal frame adjacent one end of the conveyor, a relatively short conveyor arranged beneath the hopper and extending above an end portion of the first mentioned conveyor in spaced relation thereto, and actuating means for rotating said conveyors, said actuating means including a roller around which the first mentioned conveyor extends, a shaft on which said roller is mounted, a gear carried by the shaft, means for rotating the gear, a roller around which the short conveyor extends, a shaft on which the last mentioned roller is mounted, and means operatively connecting the last mentioned shaft with said gear to provide for the rotation of the shaft upon the rotation of the gear.

4. A portable stacker comprising, a travelling carriage, a tower mounted on the carriage, said tower including a relatively tall portion and a relatively short portion spaced from the tall portion, brace means connecting the tower portions, a horizontal frame connected to said carriage and tower portions, a diagonal frame connected to said horizontal frame and tower portions, a conveyor carried by said frames, cables connecting the frames with the tall tower portion, a hopper carried by the horizontal frame adjacent one end of the conveyor, means for conveying the contents of the hopper to the conveyor, means carried by the horizontal frame for actuating the conveyor, and a counter-weight box carried by the horizontal frame.

5. A portable stacker comprising, a travelling carriage, a tower mounted on the carriage, a cap structure at the upper end of the tower, a horizontal frame connected to said carriage and tower, a diagonal frame connected to said horizontal frame and tower, an endless belt conveyor carried by said frames, a counter-weight box carried by the horizontal frame, a plurality of cables connecting the cap structure with the counter-weight box and with said diagonal frame at spaced points longitudinally of the latter, and a hopper carried by the horizotnal frame adjacent one end of the conveyor.

6. A portable stacker comprising, a travelling carriage, a tower mounted on the carriage, said tower including a relatively tall portion and a relatively short portion spaced from the tall portion, brace means connecting the tower portions, a horizontal frame connected to said carriage and tower portions, a diagonal frame connected to said horizontal frame and tower portions, and a conveyor carried by said frames.

In testimony whereof, I affix my signature hereto.

FRED D. COPPOCK.