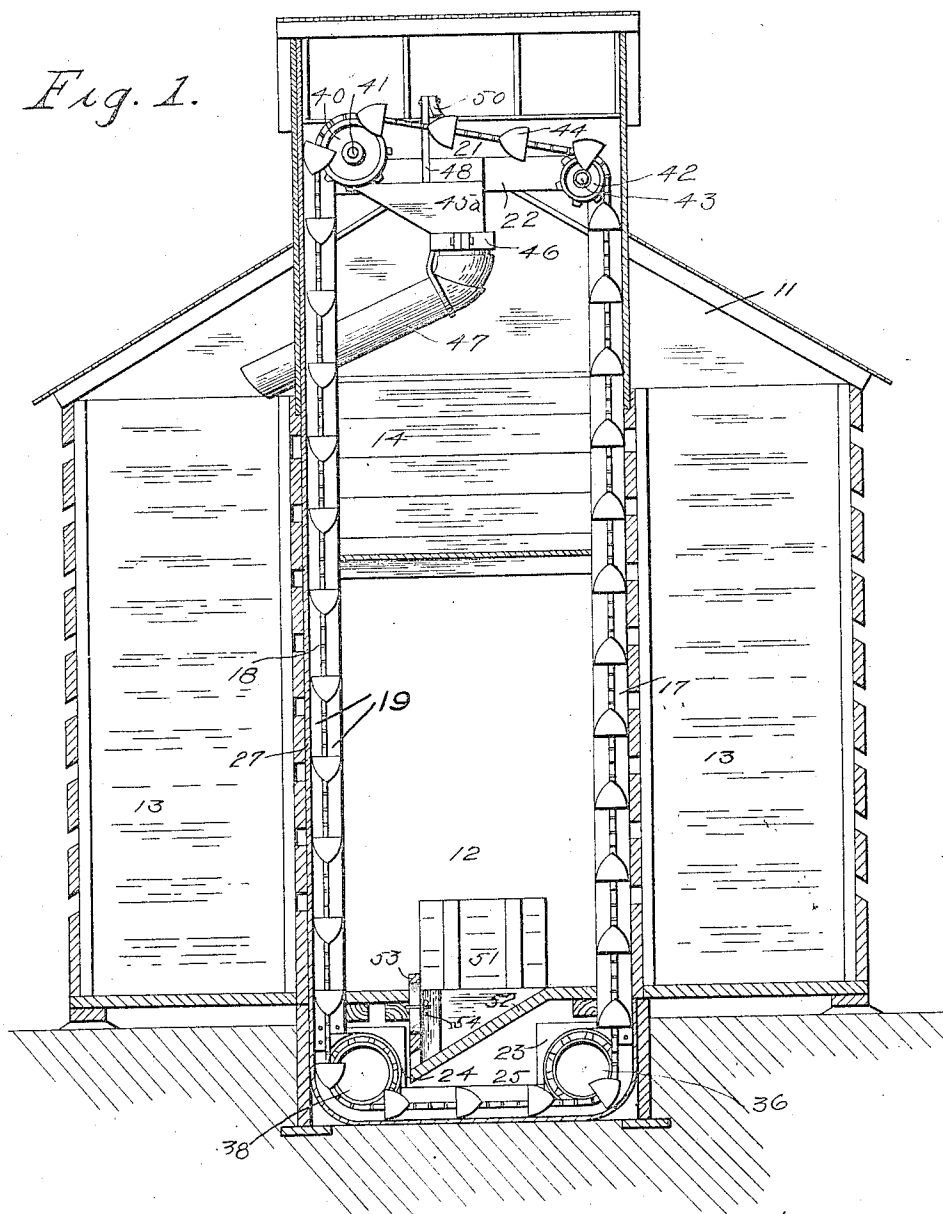


A. F. MEYER.
 BOOT STRUCTURE FOR ELEVATING DEVICES.
 APPLICATION FILED JULY 20, 1912.

Patented Apr. 29, 1913.
 3 SHEETS—SHEET 1.

1,060,476.



WITNESSES

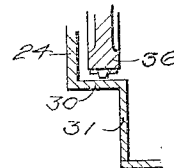
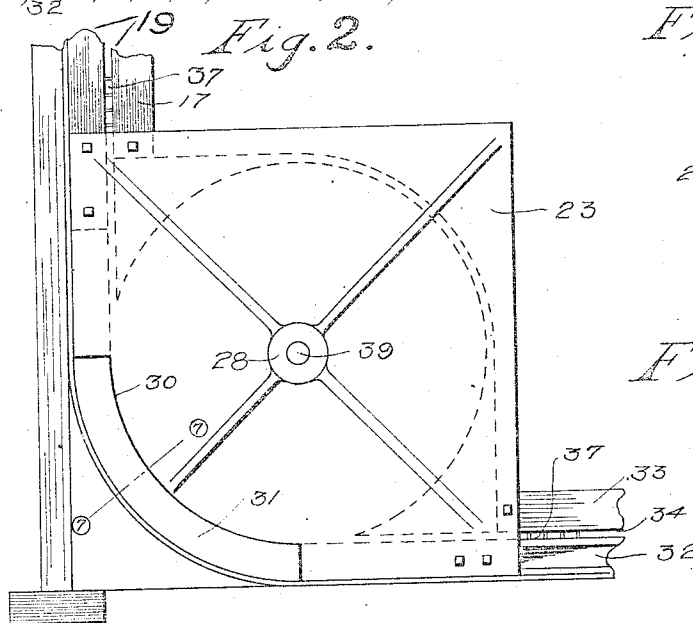
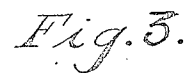
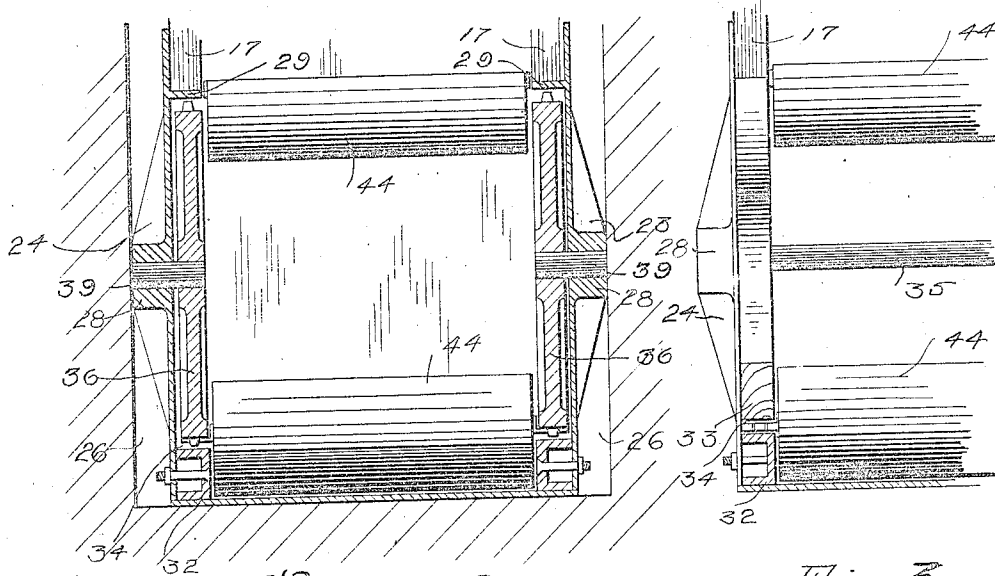
McBury
 Mildred F. Boman

INVENTOR

Alfred F. Meyer
 by LaPatro O'Brien
 Atty

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3 SHEETS—SHEET 2.



WITNESSES

Mildred F. Boman

INVENTOR

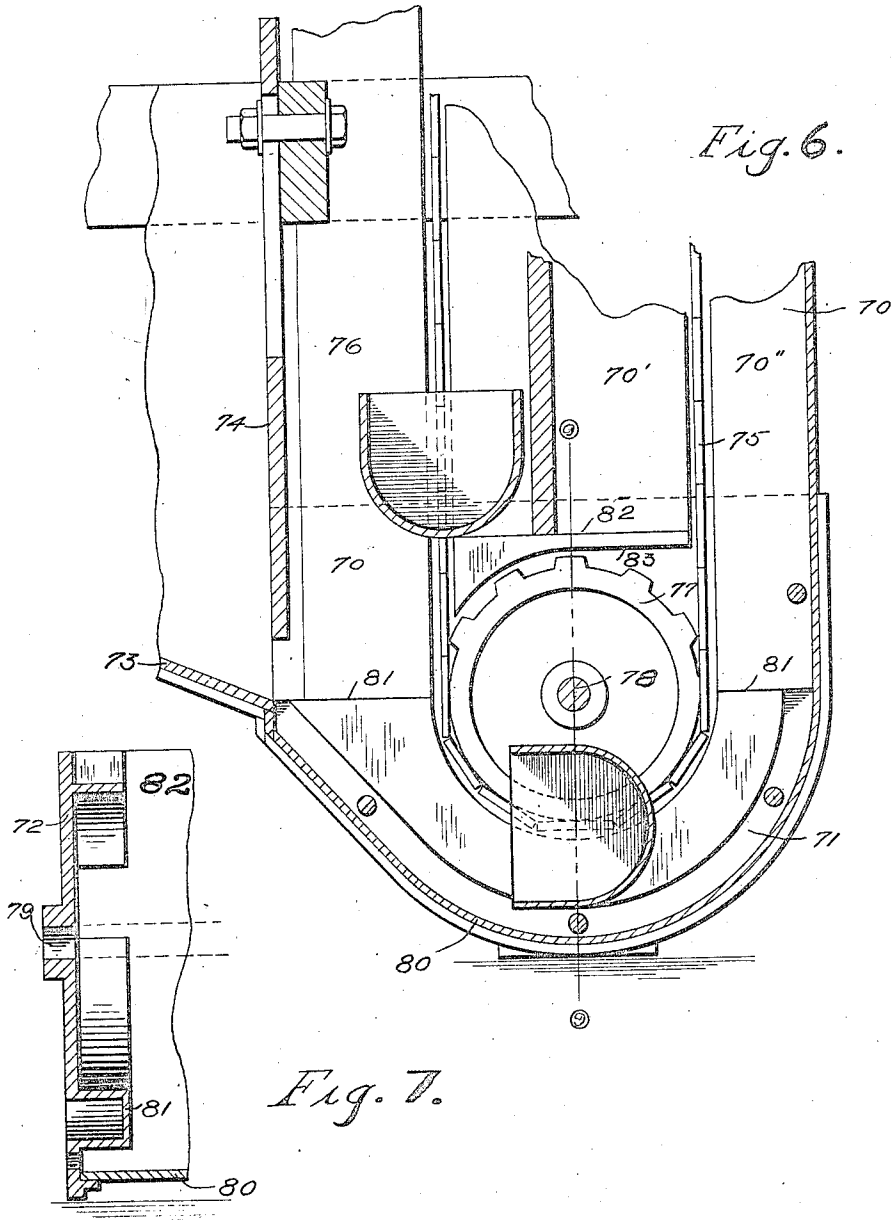
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WITNESSES

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UNITED STATES PATENT OFFICE.

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BOOT STRUCTURE FOR ELEVATING DEVICES.

1,060,476.

Specification of Letters Patent.

Patented Apr. 29, 1913.

Continuation of applications Serial No. 584,876, filed October 1, 1910, and Serial No. 634,170, filed June 19, 1911. This application filed July 20, 1912. Serial No. 710,620.

To all whom it may concern:

Be it known that I, ALFRED F. MEYER, a citizen of the United States, residing at Morton, in the county of Tazewell and State of Illinois, have invented certain new and useful Improvements in Boot Structures for Elevating Devices, of which the following is a specification.

This invention has reference to elevators for receiving and conveying grain to a position to be discharged into the bins, hoppers, or receptacles of a crib or granary.

The invention has for one of its objects to provide an elevator for a corn crib or grain bin which may be arranged either in the driveway of the crib or bin or placed on one side of the crib or bin alongside the driveway.

A further object of my invention is the provision of an improved boot construction including a particular form of guarding means for the sprocket wheels and conveyer chains.

My invention is further directed to improvements in the detailed structure and design of such an elevator having particular reference to the boot structure.

Figure 1 is a vertical sectional view showing the interior of a crib with bins located upon opposite sides of a driveway and my improved elevator arranged in the driveway. Fig. 2 is an enlarged sectional detail showing the bracket or bearing plates disposed at the lifting end of the boot; the sprocket wheels and buckets. Fig. 3 is a detail partly in section showing an edge view of one of the brackets or bearing plates, shaft and buckets disposed at the return end of the boot. Fig. 4 is a side or face view of one of the bearing plates or brackets and parts connected thereto. Fig. 5 is a cross-section on line 7—7 of Fig. 6. Fig. 6 is an internal elevation of a boot and lower supporting vertical leg, parts being shown in section of a slightly modified form of elevator having my invention applied thereto. Fig. 7 is a section taken on line 9—9 of Fig. 6.

Like numerals of reference denote corresponding parts throughout the figures.

This application is a continuation of my two prior applications bearing Serial Nos. 584,876 and 634,170, respectively, as to all

subject matter which is common to the said applications.

In the drawings, referring particularly to Fig. 1, 11 designates the entire crib or housing, preferably provided with a centrally disposed driveway 12 extending from one end of the crib to the other, and between bins 13 located upon the opposite side thereof. In the length of the crib or housing, the bins 13 may extend from one end to the other, or the same be sub-divided to form a series of bins, if it is desired; and extending longitudinally of the crib from one end thereof to the other, may be a bin or series of bins 14, the floor of which is disposed a suitable height above the floor of the driveway 12, so as not to interfere with the passage through the said driveway of a wagon or any other suitable vehicle or machine.

The elevator proper comprises the legs 17 and 18, one on each side of the driveway adjacent the walls of the bins; the former being the leg through which the conveying means travels in its downward course, while the latter is the leg through which the conveying means travels in its upward course to elevate the material. These legs consist of the side-boards 19, two for each side, which may be connected or braced through their length in any suitable manner. At their upper ends, the legs 17 and 18 are connected to the opposite ends of the head 21 of the elevator, composed of side boards 22. At their lower ends, the legs 17 and 18 are connected to the side members or plates 23 and 24 respectively, of the boot portion 25 of the elevator. This boot portion is located in an open-way 26 in the ground below the floor of the driveway, and the side members or plates 23 and 24 are arranged in pairs at each end of the open-way and on opposite sides thereof, see Figs. 1 and 2, to provide for attaching the lower ends of the legs of the elevator thereto and to provide for carrying the sprocket wheels, around which travel the chains of the elevator. The leg 17 may be open front and rear as no material is conveyed through this leg, but a rear wall 27 is provided for the leg 18 to retain within the leg of the elevator and direct back into the boot thereof all overflow material.

The side members or plates 23 and 24, are best seen in Figs. 2, 3 and 4, and are shown provided with a hub 28 on the outside faces of said side members or plates to leave a smooth inner face adjacent which the sprocket wheels will lie and the upper inwardly carried flanges 29 and the lower inwardly arranged flanges 30 formed by depressing the metal at 31. The function of flanges 29 and 30 will be further explained.

The lower portion of each side member or bearing plate 23 is connected with the lower portion of the corresponding side member or bearing plate 24 by a rail 32, preferably made of the U-shaped channel bar lying on its side and also connecting said side members or plates and spaced just above the rails 32, are beams 33, the space between beams 33 and rails 32 serving as a runway or guide for the travel of the conveyer chains through the boot. The ends of rails 32 abut against the lower ends of flanges 30, whereby the flat faces of the flanges form continuations of the flat faces of the rails 32 for the travel of the chains and to obviate the formation of pockets for the reception of grain.

35 denotes a cross shaft at the return end of the boot, being journaled in the hubs 28 of the side members or plates 23 and on said shaft and adjacent each plate 23 is carried a sprocket wheel 36 around which travel the sprocket chains 37 constituting the main conveying element of the elevator. These sprocket chains are adapted to travel in the runways or guides 34 between the rails 32 and beams 33 and at the lifting end of the boot travel around sprocket wheels 38. These wheels lie adjacent the inner faces of the plates 24 and are carried by short shafts 39 journaled in the hubs 28 of the plates 24. Both sets of wheels 36 and 38 are covered by the flanges 29 on plates 23 and 24 to prevent clogging of grain in the wheels, although there is little danger of this with the wheels 36, as will become apparent. Said chains 37 when leaving the sprocket wheels 36, at the lifting end of the boot, enter guides formed by the boards 19 of the legs, one of which said boards rests on a flange 29 of the respective side members or plates and the other of said boards rests on an extension of the flange 30, best seen in Figs. 4 and 8. With this arrangement there are substantially continuous guides and guards for the chains in the boot. Omitting a single cross-shaft to carry wheels 38 prevents clogging the mouth of the boot and leg, at the point where the grain is elevated and obviates all chance of corn husks and similar material becoming tangled or wrapping on the shaft to both clog and stop the elevator. All wheels are solid wheels, that is to say they have no open bodies, hence there is no chance for grain to pack or ear corn to clog.

The chains 37 travel through the leg 18 and at the head end of the elevator pass over the sprocket wheels 40 carried by a shaft 41 and from thence to the opposite end of the head and over the sprocket wheels 42 carried by a shaft 43 and down through the leg 17. Attached to the chains 37 are the buckets or similar flights 44. These buckets are center hung as shown and scrape along the bottom of the boot to facilitate in scooping up the material. The shaft 41 is journaled in brackets or bearings mounted on the top edges of the side-boards 22, whereas the shaft 43 is journaled in bearings attached to the sides of the side-boards 22. Such a construction locates the shaft 42 in a plane above the shaft 43, thus causing the chains 17 and the buckets or flights 44 to travel down an incline from sprocket wheels 40, to the sprocket wheels 42, thus tipping or tilting the buckets or flights 44 at such an angle as will cause the material therein to be discharged as soon as the buckets or flights 44 pass over the wheels 40, see Fig. 1.

Supported between the side-boards 22 is a hopper 45^a which may or may not extend the full width of the head of the elevator, although it need only be the length shown in Fig. 1, and adjacent the high end of the head, and said hopper has a neck 46 to which is swiveled in any suitable manner a delivery spout 47 by means of which the elevated material may be discharged at various points through the crib.

At the head of the elevator I provide a scraper or what may be more properly termed a "wiper," depending from the standards 48 which extend upwardly from the side-boards 22. The chains 17 and the buckets 44 travel between the standards, and adapted to wipe over the buckets, as they pass therebetween, is a flexible strip 50. The location of the wiper is at a suitable point above the hopper 45^a and it has for its function to wipe the buckets to insure the removal of any grain or ears of corn into the hopper. Where the buckets are placed very close, there is a tendency, as the buckets pass the wheels 40 to cause the grain or ear corn to jump out and lodge on the preceding bucket where it may remain and if not removed or forced off may descend into the elevator leg and clog the same. The wiper obviates all this difficulty.

Referring now to the boot of the elevator and the opening 26, most of the opening is closed at the floor line, except where a trap door 51 is provided, which is hinged to be raised and lowered. The opening covered by the door 51 is wide enough to receive the discharge of grain from a wagon. In the boot 25 I provide an inclined floor 52, leading from the edge of the door 51, farthest from the wheels 38, to a point in the boot at

which it is desirable to deliver material passing over said inclined floor. The discharge of material at the lowest end of the inclined floor 52 may be regulated by the gate 53, which may be raised and lowered and fixed by set screw 54 operating through a slot 55 in the gate 53. The gate may be lowered and be out of the way when the door 51 is lowered and closed.

It has been found convenient when the bin 13, at the right of Fig. 1, is used for grain, to remove the board or boards at the lower end of the bin and back of the leg 17 so as to allow the grain to run through the leg into the boot whereby the grain might be re-elevated. It is to be noted that I have provided in the boot structure the bracket members or plates which are so formed as to provide guiding means for the chains of the elevator and also having flanges or shoulders which project over the sprocket wheels so as to guard them and prevent clogging by grain or other material. I apply the same form of invention to a slightly modified form of elevator, the lower portion of which is shown in Fig. 6, wherein 70 designates the vertical leg, and 71 the boot portion including the bracket members or castings 72, which will be described at length hereinafter. The chute is provided with an adjustable gate 74, the construction being substantially the same as that previously described. The conveyer chains 75 run in the spaces between the vertical members of the leg portion carrying the buckets 76 as shown and run around the sprockets 77. These sprockets are mounted on the shaft 78 journaled in the hub portion 79 of the bracket members or castings 72, which are connected at their lower portions by the rounded bottom 80. These bracket members or castings are formed so as to provide guiding means for the elevator chains and guarding means for the sprockets. Each of these side members or castings is formed with the inwardly extending portion or flange 81 in the lower part thereof which is rounded as shown, the inner surface of said portion or flange corresponding in conformation to the lower edge of the sprocket wheel 77. In the upper part of these side members, brackets or castings is provided the horizontally extending flange 82 having the curved lower edge portion 83 which conforms generally to the curvature of the sprocket wheel. The intermediate vertical members of the leg 70 designated as 70' are supported on the upper portion of this horizontal flange 82, while the end members 70'' of the vertical leg 70 are supported on the extremital portions 81' of the curved portion of flange 81 previously described. These members are spaced as shown so as to provide a guideway for the conveyer chain, and by having the sprocket wheel 77 located in

the recesses formed between the projecting portions or flanges 81 and 82 said sprocket wheels are prevented from being clogged by grain or other material and the chain guided in its passage around said sprocket wheels. 70

What I claim is:—

1. In an elevator, a boot including side members and a bottom member, sprocket wheels mounted on said side members, conveyer chains running through said boot and about said sprocket wheels, flanges or abutments formed on said side members to cover the upper edges of said wheels, lower flanges or abutments formed on said side members, said flanges or abutments forming recesses to receive and protect said sprocket wheels and also forming a guiding means for said chains. 75

2. A boot for an elevator including spaced sets of side members or plates and a bottom member connected to said spaced side members or plates, sprocket wheels mounted on said side members or plates, conveyer chains running about said sprocket wheels and through said boot, said side members or plates being formed with flanges or abutments serving as guarding means for said sprocket wheels and as guiding means for said chains, and guideways for said chains between said spaced sets of side members or plates. 80

3. A boot for an elevator including spaced sets of side members or plates and a bottom member connected to said spaced side members or plates, sprocket wheels mounted on said side members or plates, conveyer chains running about said sprocket wheels and through said boot, said side members or plates being formed with flanges or abutments serving as guarding means for said sprocket wheels and as guiding means for said chains, and guideways for said chains between said spaced sets of side members or plates, said guideways including members extending between said spaced side members or plates below said chains and forming a continuation of certain of said flanges or abutments on said side members or plates and additional members extending between said spaced side members or plates above said chains. 100

4. A boot for an elevator including spaced sets of side members or plates and a bottom member connected to said spaced side members or plates, sprocket wheels mounted on said side members or plates, conveyer chains running about said sprocket wheels and through said boot, said side members or plates being formed with flanges or abutments serving as guarding means for said sprocket wheels and as guiding means for said chains, guideways for said chains between said spaced sets of side members or plates, and a material receiving compartment located between said spaced side mem- 120

130

bers or plates and having a chute to direct discharged material to the lifting run of said chains in the boot.

5 5. A casting for an elevator boot comprising a plate member formed with a bearing for a shaft and a plurality of flanges or abutments, said flanges or abutments being formed with their inner edges curved so as to produce a substantially circular recess adapted to receive a sprocket wheel, said flanges or abutments serving as guards for said sprocket wheel and as guides for a sprocket chain.

6. In an elevator, a boot including two sets of side members, one set at the lifting end of said boot and one set at the return end of said boot; a shaft journaled in said side members at the return end of the boot and sprocket wheels on said shaft adjacent each side member; a short shaft journaled in each of said side members at the lifting end of said boot and a sprocket wheel on each short shaft carried adjacent each side member; conveyer chains running through said boot and about said sprocket wheels and having conveying means attached thereto; flanges or abutments formed on said side members to cover the upper edges of said wheels, and lower flanges or abutments formed on said side members, said flanges or abutments forming recesses to receive and protect said sprocket wheels and also forming a guiding means for said chains.

7. In an elevator, a boot including two sets of side members, one set at the lifting end of said boot and one set at the return end of said boot; conveyer chains running through said boot and having conveying means attached thereto; guiding means for said chains on each of said side members to guard and guide the chains when entering and leaving said boot; and guarding and guiding means for said chains between said side members and the lifting and return ends of said boot, said guarding and guiding means including overlying members

connected respectively to said side members at each end of said boot.

8. In an elevator, a boot including two sets of side members, one set at the lifting end of said boot and one set at the return end of said boot, conveyer chains running through said boot and having conveying means attached thereto; guiding means for said chains on each of said side members, said guiding means comprising flanges or abutments on the said side members; legs extending up from the lifting and return ends of said boot, said legs including spaced boards suitably connected with said side members and forming guides for said chains and being a continuation of the guides on the side members; and guiding and guarding means for said chains between said side members at the lifting and return ends of said boot, said guiding and guarding means including overlying members connected respectively to said side members at each end of said boot.

9. In an elevator, boot members and connections therewith including oppositely spaced side members; sprocket wheels mounted on said side members; flanges or abutments on said side members to cover the upper edges of said wheels; lower flanges or abutments on said side members; conveyer chains running about said sprocket wheels and protected by said lower flanges or abutments; and a leg extending up from said side members, said leg including a pair of spaced boards resting on each side member and so arranged as to guide the chains and form a continuation of the guides on the side members formed by said flanges or abutments thereon.

In testimony whereof I affix my signature, in presence of two witnesses.

ALFRED F. MEYER.

Witnesses:

JOHN GETZ,
W. R. LACKLAND.