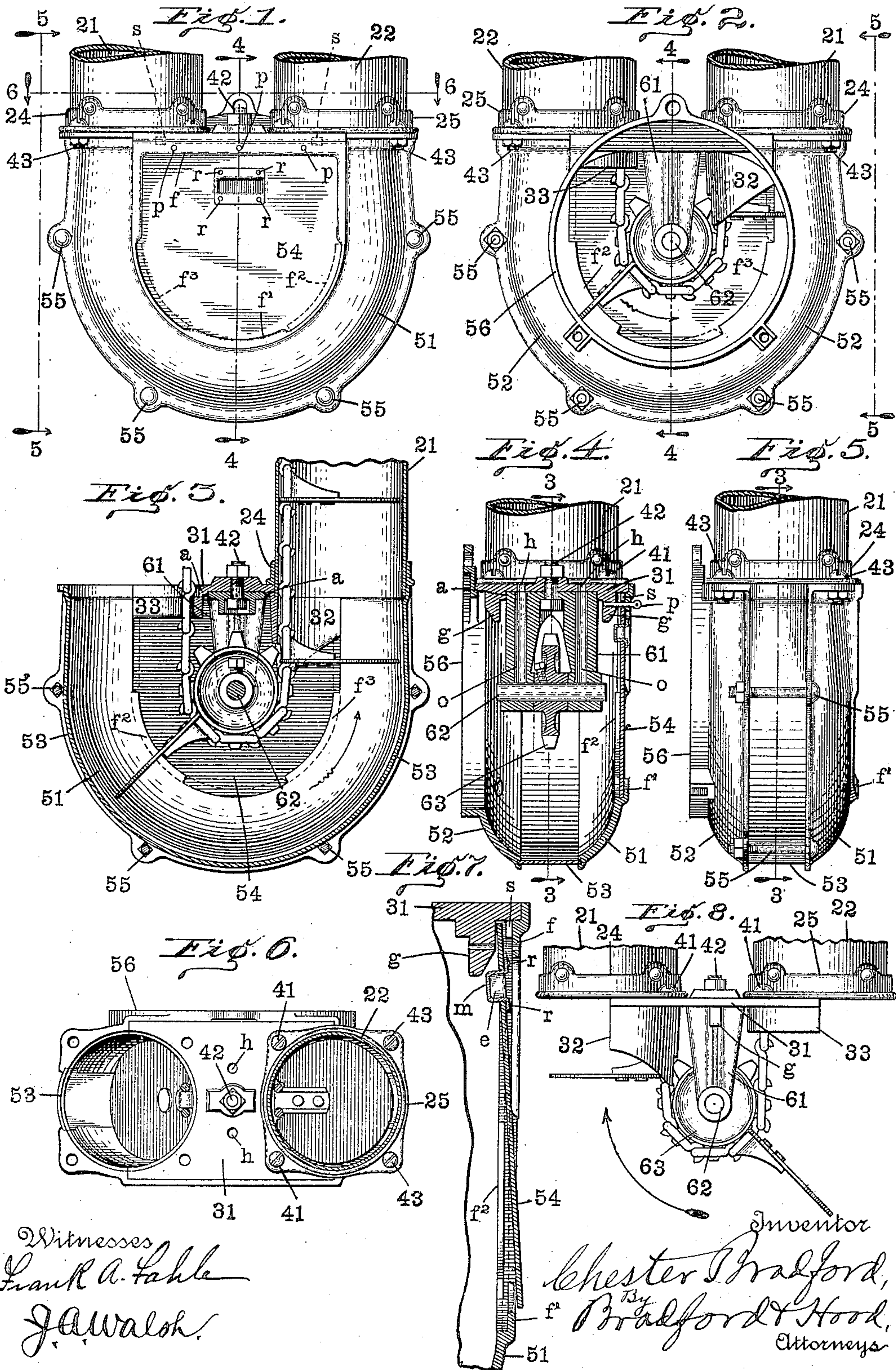


No. 875,145.

PATENTED DEC. 31, 1907.

C. BRADFORD.  
ELEVATOR BOOT.

APPLICATION FILED SEPT. 11, 1905.



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# UNITED STATES PATENT OFFICE.

CHESTER BRADFORD, OF INDIANAPOLIS, INDIANA.

## ELEVATOR-BOOT.

No. 875,145.

Specification of Letters Patent.

Patented Dec. 31, 1907.

Application filed September 11, 1905. Serial No. 277,949.

*To all whom it may concern:*

Be it known that I, CHESTER BRADFORD, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Elevator-Boots, of which the following is a specification.

The object of my present invention is to provide an improved form of "boot", or lower end for elevators, especially that variety used for elevating grain; and I have shown it of a form particularly adapted to be embodied in that variety of elevators which are used as attachments to threshing machines, such as are shown (for example) in my Letters Patent No. 782,642, dated February 14, 1905.

Elevators of the variety in question are generally designed to be used upon any of the numerous different makes of threshing machines. Upon some such threshing machines the elevator must be attached to the right hand side, and upon others to the left hand side. It is, therefore, desirable that such elevators shall be so constructed that they may be conveniently attached to either side of the threshing machine at will, in order that any elevator may be used with any threshing machine. It should, therefore, be made so that the boot (which is the part with which the grain outlet of the threshing machine immediately communicates) is capable of being turned so as to present its inlet side in either direction. This could be done with the construction illustrated in my said Patent No. 782,642; but, in the construction illustrated in said patent, the arrangement was such that the lower sprocket or chain carrying wheel had to be turned with the boot, and this necessitated the uncoupling and re-coupling of the elevator chain, and its consequent readjustment which is a work of considerable difficulty, and one which takes considerable time. My present boot overcomes these difficulties, and is also lighter in construction, and has means whereby access can be had to the bearings with greater facility. It is also capable of being fitted and assembled with very little labor, and is very strong and efficient when finished.

The accompanying drawings illustrate a boot embodying my said invention, and designed for use with an elevator of the variety in question.

Figure 1 is an elevation of the front side of such a boot, with fragments of the elevator tubes attached thereto, thus showing said boot completely assembled and in position for use; Fig. 2 an elevation of the rear side of the same; Fig. 3 a longitudinal central vertical sectional view, as seen when looking in the direction indicated by the arrows from the dotted lines 3 3 in Figs. 4 and 5, one fragment of conveyer tube, however, being removed; Fig. 4 a transverse vertical sectional view as seen when looking in the direction indicated by the arrows from the dotted lines 4 4 in Figs. 1 and 2; Fig. 5 an edge elevation of said boot, as seen when looking in the direction indicated by the arrows from the dotted lines 5 5 alongside of Figs 1 and 2; Fig. 6 a top or plan view, as seen when looking downwardly from the dotted lines 6 6 in Fig. 1, the left hand fragment of elevator tube being removed, however, as in Fig. 3; Fig. 7 a fragmentary sectional view (on an enlarged scale) similar to a portion of Fig. 4 but with the hand hole cover tipped to the position it occupies when being removed or inserted, just as the removal is beginning or as the insertion is nearly completed, and Fig. 8 a view similar to Fig. 1 but with the outer shell or boot proper removed.

The elevator legs or conveyer tubes 21 and 22 are, or may be, of any usual form. Like those of my said patent No. 782,642, they are preferably provided with rings 24 and 25 having suitable ears to receive bolts by means of which the boot structure may be connected to said legs. By a slight modification in form, however, the rings might be made in piece with and so as to practically form flanges upon the sides of the elevator boot, and thus be connected directly to the legs of the elevator by bolts passing through said parts, but this is a less desirable although somewhat cheaper construction, and I do not prefer it.

To the inner sides of the elevator legs I connect a member 31 which is so formed as to extend about half way around said legs, and has down-turned flanges 32 and 33 (see especially Figs. 3 and 8) which form portions of the terminals of said elevator legs, as will be presently more fully described. Said member is connected to the rings 24 and 25 by bolts 41. It both forms the top plate of the elevator boot proper, and also a support for the shaft-bearing for the shaft of the ele-



vator chain wheel, which support is connected thereto by means of a bolt 42, and which is entirely free from any connection with any other part of the elevator boot, which is thus  
 5 free to be attached and removed entirely independently thereof.

The elevator boot proper is composed of two approximately semicircular members 51 and 52; an intermediate strip 53, and a hand  
 10 hole cover 54. The parts 51, 52 and 53 are united by means of bolts 55 which draw the said parts 51 and 52 firmly against the edges of said part 53—said edges being preferably seated in grooves formed to receive them in  
 15 the adjacent edges of said parts 51 and 52, as best shown in Fig. 4. This structure, when assembled, is connected to the elevator legs by means of bolts 43, which, in the preferred construction, pass through ears on  
 20 the parts 51 and 52 and corresponding ears on the rings 24 and 25; but, when said rings are formed integrally with said parts, they will pass horizontally through the sides of the elevator legs and said rings or ears thereon.  
 25 The part 51 is formed to embody a hand hole. This receives the hand hole cover 54, as best shown in Figs. 1, 3 4, and 7. This cover is in the form of a plate, preferably of sheet metal, and is engaged between a series of staggered flanges formed on the adjacent edges of  
 30 the part 51. I have shown two of these flanges on the outside and two on the inside. Referring especially to Fig. 1. The upper flange  $f$  extends entirely across the top and  
 35 down each side to nearly where the curved formation begins. The lower flange  $f'$  occupies approximately one-third the formation of the peripheral distance. The two other flanges  $f^2$  and  $f^3$  (see especially Fig. 2, and  
 40 dotted lines in Fig. 1) occupy nearly the remainder of the peripheral distance, or, in other words, occupy substantially the space between the flanges  $f$  and  $f'$ . Behind the upper flange  $f$  are stops  $s$  (see Figs. 4 and 7,  
 45 and dotted lines in Fig. 1) against which the upper edge of the hand hole cover 54 will rest when in place, as in Figs. 1 and 4; but from engagement with which said hand hole cover is capable of being pressed, as shown in Fig.  
 50 7. I may also secure this hand hole cover more securely in place by means of one or more pins  $p$  passing through holes in the flange  $f$ , and which may or may not enter the guard  $g$  or other suitable adjacent part of the  
 55 structure 31. Guards  $g$  on the part 31 prevent said cover from being forced back too far, or against the shaft bearing, as is shown in Figs. 4 and 7.

The hand hole cover is provided with a finger grip to enable it to be manipulated, which I prefer to construct as follows: I first punch an oblong hole through the plate forming the hand hole cover, preferably near its upper  
 60 side. In doing this I cut away the center of the metal entirely, but bend the ends  $e$  back

at right angles with the plate. I then insert another piece of sheet metal  $m$  forming the top, bottom and back of the box-like opening, which I desire to construct, and turn up the edges thereof and rivet it by rivets  $r$ .  
 70 The previously turned back portions cut out of the plate itself form the ends of said box-like finger grip, and by this means I am enabled to get a good hold of said hand hole cover for manipulating it, without forming  
 75 an opening through which the grain might escape from the boot, and do the same very quickly and cheaply.

When it is desired to have access to the interior of the boot, without removing the  
 80 same, I press in upon the upper portion of the hand hole cover until its upper edge escapes from the stops  $s$ , and then (by means of the finger grip formation) lift the same until its lower edge escapes from the flange  $f'$ ,  
 85 when said hand hole cover can be easily removed by lowering it until its upper edge passes out below the lower ends of the flange  $f$ . The guard  $g$ , as above stated, prevents the upper edge of the hand hole cover from  
 90 being pushed in too far during this operation. Said guard also guides the hand hole cover to position when it is being inserted, which is a mere reversal of the operation just described.

The member 52 of the boot includes the  
 95 inlet formation, which is preferably in the form of a circular projecting flange 56, as shown, and a suitable number of bolt holes by means of which an inlet spout leading from the threshing machine can be properly  
 100 secured thereto.

The bearing structure for the shaft of the wheel on which the elevator chain runs I prefer to make bifurcated, as best shown in Fig.  
 105 4. Said structure 61, as before stated, is secured to the part 31 by means of the bolt 42. The under side of said part 31 is provided with projecting flanges  $a$  which form a seat for said structure 61, so that it is drawn accurately to place and held to exact position by means of the single bolt. The shaft  
 110 62 lies in bearings in the lower end of this bearing structure, and each of the two legs of said structure has a lubricating opening  $o$  leading upwardly from the bearing to the  
 115 top, where it registers with a corresponding hole  $h$  in the part 31, and by this construction the bearings are enabled to be lubricated from the outside of the machine without difficulty. The shaft 62 carries the ordinary sprocket wheel 63, over which the ordinary  
 120 elevator chain runs in the usual manner. The regular direction of travel is indicated by the curved arrow alongside Fig. 8.

Having thus fully described my said invention, what I claim as new, and desire to secure by Letters Patent, is,—

1. The combination, in an elevator boot, of two approximately semicircular side members, one of which contains a hand hole, a  
 130



rim between the edges thereof, a removable cover for said hand hole, the edges of said hole being provided with flanges between which said cover is adapted to enter, and 5 lugs or stops by which said cover is kept in place when inserted.

2. The combination, in an elevator boot, of two side members, one of which has a hand hole therein, a cover to said hand hole seated 10 in suitable flanges at the edge thereof, stops for said cover from which said cover will escape when pressed inwardly, and a finger pocket in said cover by means of which it may be manipulated.

3. The combination, in an elevator, of the legs thereof, a plate secured to the lower ends of said legs, a bearing structure secured centrally to said plate, and a shell structure independently secured in place surrounding 20 said bearing structure and the mechanism carried thereby and removable and replaceable independently thereof.

4. The combination, in an elevator, of the legs thereof, a plate secured thereto, a boot 25 shell also secured thereto independently of said plate, and a bearing structure secured centrally to said plate and carrying a shaft in its lower end, the legs of said bearing structure being longitudinally perforated to provide for the supply of a lubricant, and said 30 perforations registering with corresponding perforations in the plate to which said struc-

ture is secured, whereby the shaft bearings may be lubricated from the outside.

5. The combination, in an elevator, of the 35 elevator legs, a central plate secured to said legs, a bearing structure secured to said plate, and a boot shell secured to said legs independently of said plate and adapted to be removed and replaced or reversed with- 40 out disturbing said plate or the mechanism carried thereby.

6. The combination, in an elevator, of the elevator legs, a bearing structure secured in central position to the lower ends of said legs, 45 and a boot shell secured to said legs independently of said bearing structure and adapted to be removed and replaced or reversed without disturbing said structure or the mechanism carried thereby. 50

7. An elevator boot wherein the boot shell is separable from the elevator legs at a point above and free from the elevator mechanism and which is removable, reversible and re-attachable independently of said 55 elevator mechanism.

In witness whereof, I, have hereunto set my hand and seal at Indianapolis, Indiana, this sixth day of September, A. D. one thousand nine hundred and five.

CHESTER BRADFORD. [L. s.]

Witnesses:

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RUTH WORTHINGTON.