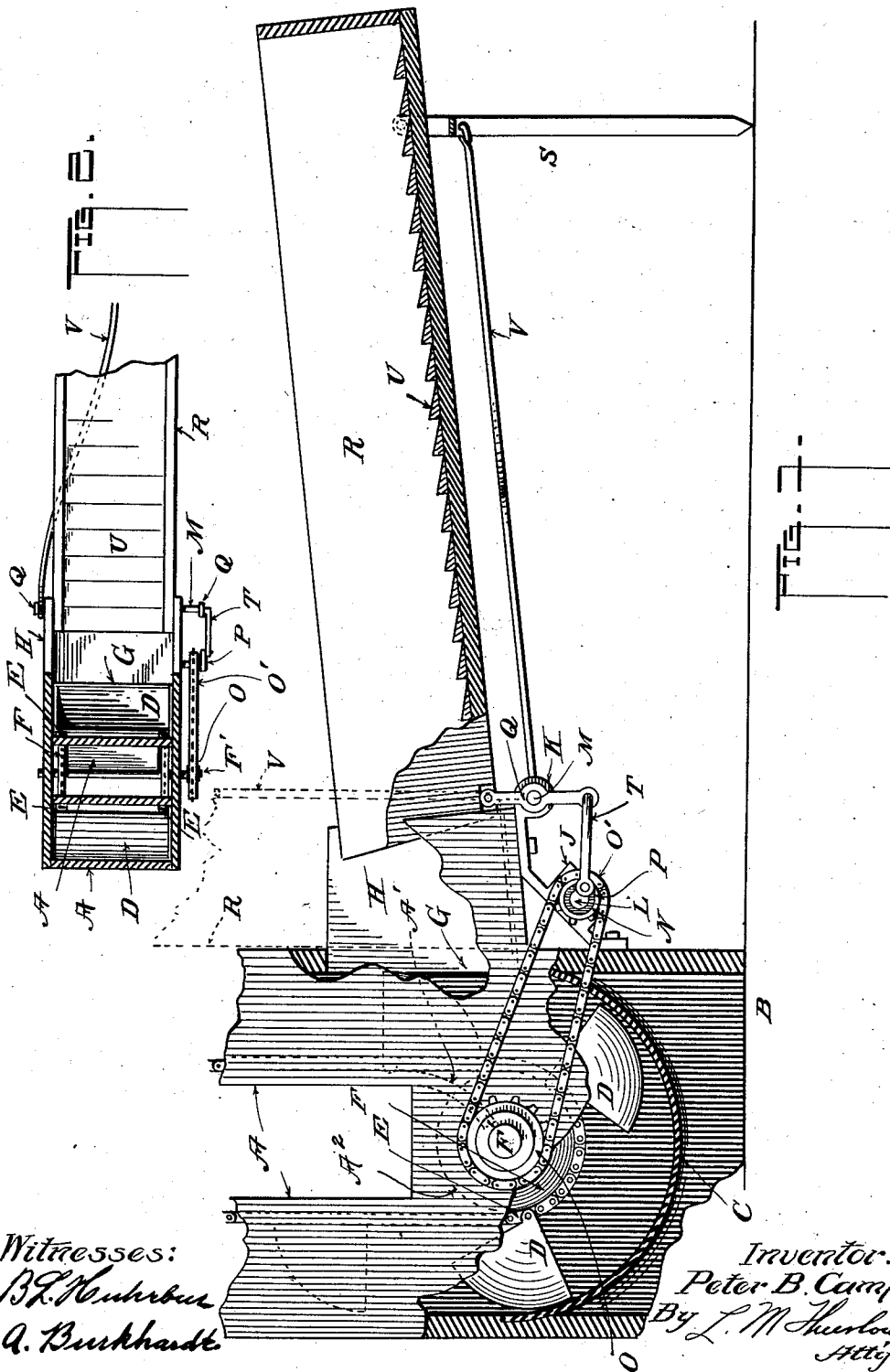


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ELEVATOR AND CONVEYER.
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UNITED STATES PATENT OFFICE.

PETER B. CAMP, OF WASHINGTON, ILLINOIS.

ELEVATOR AND CONVEYER.

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To all whom it may concern:

Be it known that I, PETER B. CAMP, citizen of the United States, residing at Washington, in the county of Tazewell and State of Illinois, have invented certain new and useful Improvements in Elevators and Conveyers; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to a combined conveyer and elevator and pertains particularly to a conveyer and elevator for conveying grain from a wagon or other receptacle to any desired place of deposit and is applicable both for portable and stationary work.

One of the purposes of my invention is to combine with an elevator a conveyer or chute arranged and adapted to vibrate in the direction of its length whereby ears of corn can be made to arrange themselves in close order parallel to each other so as to be fed in that position into the elevator whereby said elevator can carry a larger amount thereof than when the ears are fed to it in irregular order.

Another object is to combine a vibrating chute with an elevator whereby the corn can be arranged parallel to each other and fed sidewise into the elevator buckets.

Another object is to provide a vibrating conveyer or chute with members extending transversely thereof whereby to cause the arrangement of the ears of corn parallel to one another across or transversely of said bottom.

Another object is to provide a simple device of this character from which the ordinary chain drag can be eliminated to thereby provide a structure of low cost.

Still another object is to discharge grain into one leg of an elevator and besides making a device of simple structure and low cost providing one that requires a minimum of power to operate it since the flights or buckets lift the grain at one side as it is fed thereto instead of having to raise it entirely out of the boot as is ordinarily the case.

Another object is to provide a vibrating conveyer for ear corn having what I term a stepped bottom for use with an elevator of the vertical type where any other form of conveyer could not well be used.

In the appended drawing:—Figure 1 is

a side elevation of the apparatus in part section, and Fig. 2 is a plan of a portion of the same showing the elevator in horizontal section.

The elevator consists of two legs A only a part of each of which is shown, which terminate in a boot B having a cylindrically curved bottom C concentric to the line of travel of the elevator buckets D. Said buckets are carried on the usual chains E, of which, however, there may be but one if desired, said buckets traveling between the sprocket F mounted on a shaft F' and said cylindrically curved bottom. At one side the elevator boot and one of its legs is provided with an opening G with which communicates a short chute H. Beneath the latter and secured to it and the boot B is a casting to form two bearings J and K the former for carrying a shaft L, the latter for carrying a rock shaft M. The said shaft L is provided with a sprocket N and the shaft F' carries a sprocket O while a chain O' running upon both it and the said sprocket N serves to transmit motion from the said shaft F' to the shaft L, the latter being provided with a crank P. Upon the rock shaft M is mounted a cross-arm Q the upper one of which is pivotally connected with the conveyer or chute represented at R one end of which lies within the short chute H, the other end being supported on a leg S pivoted thereto. The lower end of the said arm Q is connected through a link T with the crank P just mentioned so that motion imparted to the said crank P through the sprockets F' and N will impart a vibrating movement to the conveyer in the direction of its length the said arm Q and said conveyer will pivot both upon the said arm and upon the leg there being a second arm Q carried on the rock shaft M at the opposite side of the conveyer to aid in imparting vibratory motion and assist in supporting the said conveyer.

The bottom of the conveyer is provided with slats U which extend transversely thereof and upon and between which the ears of corn arrange themselves in parallel order due to the vibrations set up in the conveyer through the mechanism described. The opening G in the leg of the elevator with which the chute H communicates receives the corn and as the buckets D ascend they receive the ears of corn as they are moved toward them and said buckets are

preferably sufficient in number to carry away the corn as fast as it is discharged into the leg but such ears as descend in the bottom of the boot will of course be in the path of the buckets and be carried upward.

The speed imparted to the elevator by any of the usual means (not shown) is of course a slow one and in order that the vibratory movement of the conveyer shall be sufficiently fast to cause the ears of corn to arrange themselves in the desired position, the sprocket N is made to revolve quite fast by reason of its smaller size as compared with that of the sprocket O so that in the revolution of the crank P the desired fast movement is imparted to the conveyer. The slats U or their equivalents, as arranged, with their vertical surfaces facing the elevator and their slanting surfaces facing rearwardly or toward the outer end of the conveyer, have the effect, of course, of gradually working the ears toward the said elevator and the latter is intended to carry them away as fast as they are fed to it. The conveyer is tiltable on the pivots of the arms Q so that in use it can be raised on end to permit a wagon to be placed in position and then let down behind it to receive the load, and a rod V is loosely carried at one end upon the rock-shaft M for instance and its other end is loosely connected to the leg S. Its relation is such as to cause the leg to be carried down toward the conveyer when the latter is raised so that said leg will be withdrawn from the driveway in each raising movement.

I do not intend to confine myself necessarily to the means used for imparting the vibratory movement of the conveyer or in fact to any of the structures shown since other means may be used that will still be within the meaning and intent of the invention and the appended claims.

Although applicable to handling all small grains my device is particularly adapted for carrying ear corn because of its ability to arrange the ears parallel to one another and feed them sidewise into the elevator buckets and thus handle more of it in a given time and with less power than other devices commonly used.

I consider it new and of considerable advantage to provide in an elevator structure of the type herein a vibrating conveyer of the stepped form shown. While this form of conveyer is not new of itself it has a distinct advantage in its adaptation to an elevator in that while the ear corn is fed to the elevator in a more or less positive manner, yet if a bucket of the latter is full of the ears and no more can therefore be handled by it, the conveyer will not force the corn into it but through its vibrating movement the corn will be kept close to said elevator, and its buckets, so as to always be in posi-

tion to fill said buckets though it would be pushed back by a full one, while an empty one will pick it up. If a positively driven chain or drag or a screw-conveyer were used, the ear-corn will be jammed into the elevator causing breakages and untold trouble. While this type can be used with an elevator of the ordinary open slanting type using plates or flights, it cannot be employed on an elevator of the vertical type under consideration where the buckets can hold but a limited amount. Again, it is evident that where a tilting conveyer is used behind a wagon, one that would have to be slanted sufficiently to cause the corn to move into the elevator by gravity could not be used for the reason that the space below the wagon is limited and the conveyer could not be accommodated. Now, since the two forms described cannot be employed in a vertical elevator for the reasons stated, that described herein is made necessary.

In order to provide that the ears of corn will not catch between the buckets and the parts of the elevator boot I show an extension of one of the walls of the elevator at A' which may be in the nature of a plate curved downwardly and terminating in the vicinity of the shaft F so that the corn will not get between the shaft and the parts of the elevator boot immediately above it. However, this member A' may follow the curve of the chain in the form of a drum substantially as indicated by the broken lines A² in Fig. 1 thus answering in the same way.

While particularly adapted for handling ear corn by having the vibratory conveyer R provided with slats to arrange the ears parallel to one another so as to be properly fed to the buckets D the said conveyer is tiltable so as to provide for the passage of the wagon to be unloaded and for the purpose of permitting such tilting the conveyer is preferably pivoted on an extension of the elevator which in this instance is in the form of a chute.

Having thus described my invention, I claim:—

1. The combination with an upright elevator and its elevating mechanism of a conveyer adapted to vibrate in the direction of its length and associated with and adapted to discharge grain into said elevator, and means associated with the elevator and its said elevating mechanism for imparting a vibrating movement to the conveyer, including a member directly connected to the latter, and a rotating part oscillating the member, said conveyer adapted to tilt upward on end upon said member.

2. The combination with a vertical elevator, of a conveyer associated therewith, its bottom comprising a series of laterally

disposed steps, a receiving chute communicating with the elevator into which the conveyer is adapted to discharge, a vibrating member to which the conveyer is pivotally
5 connected, the latter adapted to tilt upward upon said member.

3. The combination with an elevator, of a chute communicating with one interior, a conveyer having its end within said chute,
10 an arm supported between its ends and having the conveyer pivoted to one end thereof, and means to impart a vibratory motion to the other end of said arm, said conveyer adapted to tilt on said arm relative to the
15 chute.

4. The combination with an elevator, of a conveyer associated therewith and adapted to tilt upward upon its end adjacent to the elevator, means to support it at that
20 end, a supporting leg carried by the outer end of the conveyer, and a member attached at one end to said leg and pivotally held at its other end.

5. The combination with an elevator, of a conveyer associated therewith and adapted to discharge thereinto, a receiving chute between the conveyer and elevator, a rock-arm mounted on the chute, one end pivotally supporting the conveyer at its end adjacent the elevator, means connecting the
30 elevating mechanism and the opposite end of the said rock-arm, a supporting leg for the outer end of the conveyer, and a member pivotally connected to the said leg and having pivotal relation with a fixed part of the
35 elevator.

6. The combination with an upright ele-

vator, of a conveyer associated with and pivoted relative to the same and adapted to discharge grain into it, and means to impart a vibratory movement to the conveyer,
40 the latter adapted to tilt on end on said means.

7. In combination, an elevator, a vibratory member adapted for supplying grain
45 to the same from a wagon, a chute carried by said elevator and with which the member is associated, means for imparting a vibratory motion to said member, the said member adapted to tilt on end upon said means
50 for the purposes set forth.

8. The combination in an elevator of an elevator boot and the uprising extensions thereof, receptacles adapted to travel therein and a member extending within said boot
55 below one of its extensions at that side through which said receptacles have their upward travel, for the purposes set forth.

9. In an elevator the combination with a boot for the reception of the material to
60 be elevated, an elevating chain and its buckets, and a member to carry the chain including a shaft to carry said member, of a plate lying behind and close to the stretch of the chain having upward travel,
65 said plate curving downward away from said chain and terminating close to said shaft.

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

PETER B. CAMP.

Witnesses:

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