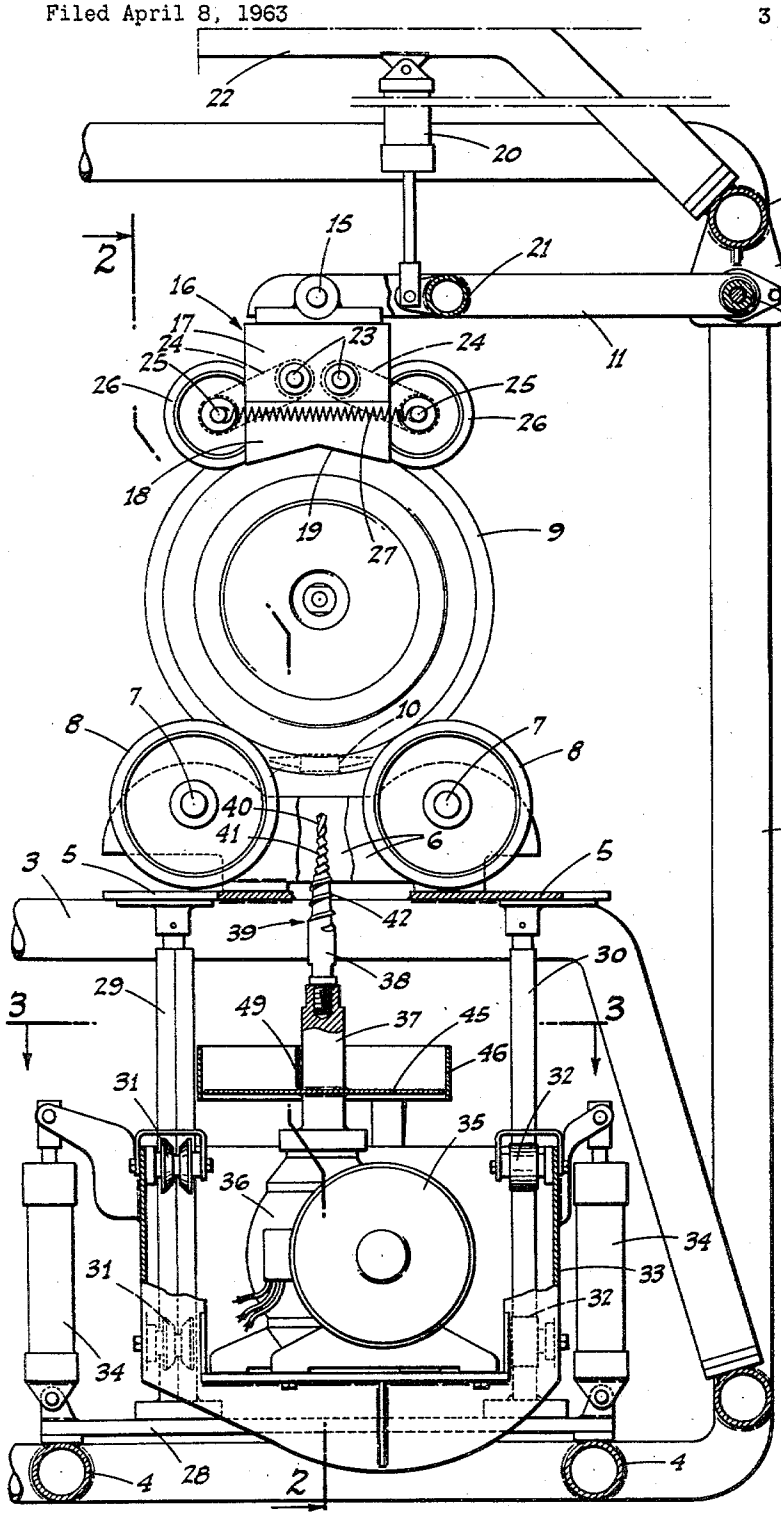
March 23, 1965 F. A. BELLATO 3,174,650

BUNG WITHDRAWING ASSEMBLY

Filed April 8, 1963 3 Sheets-Sheet 1

Fig. 1



INVENTOR.
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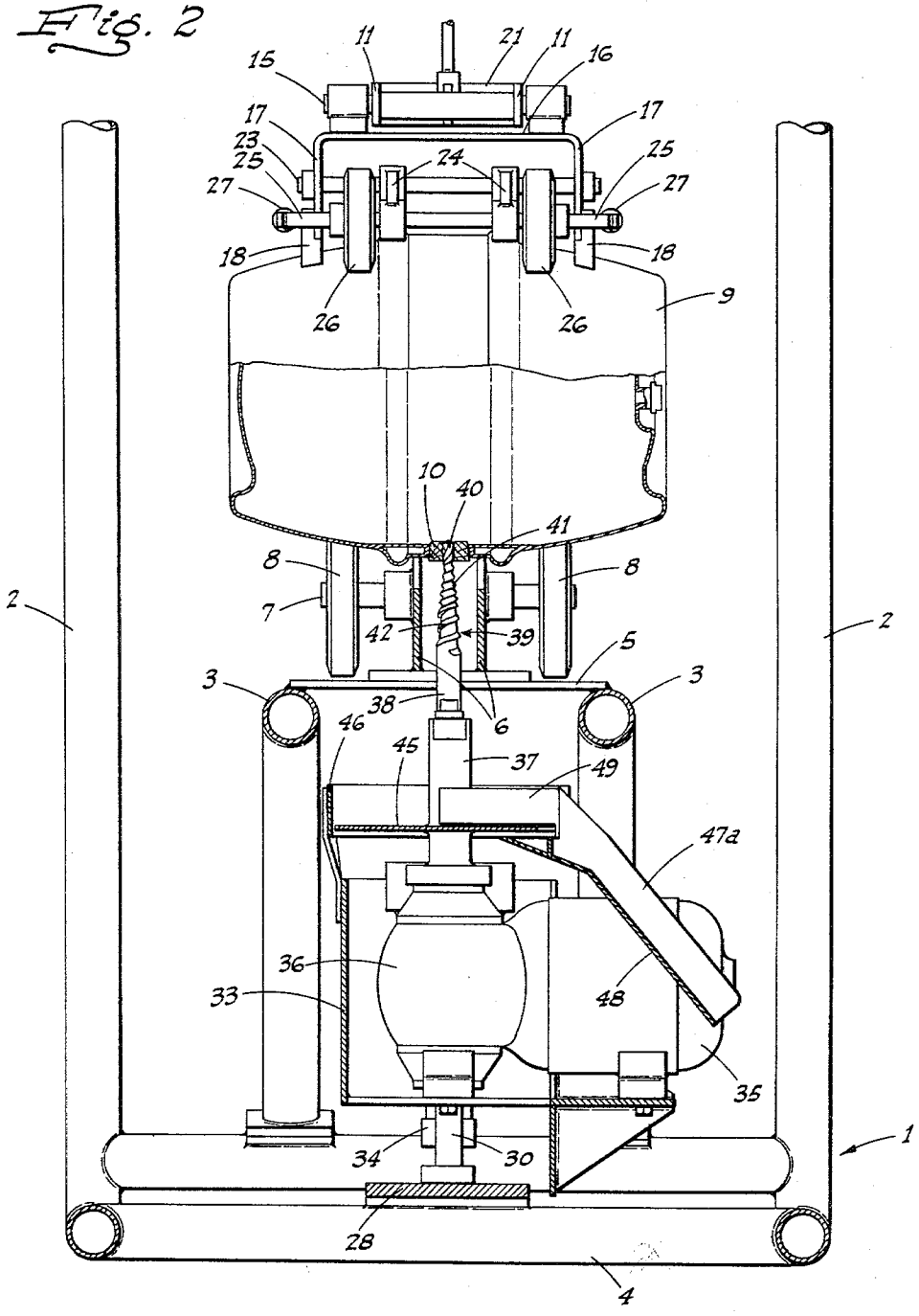
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March 23, 1965 F. A. BELLATO 3,174,650

BUNG WITHDRAWING ASSEMBLY

Filed April 8, 1963 3 Sheets-Sheet 2

Fig. 2



March 23, 1965 F. A. BELLATO 3,174,650

BUNG WITHDRAWING ASSEMBLY

Filed April 8, 1963 3 Sheets-Sheet 3

Fig. 3

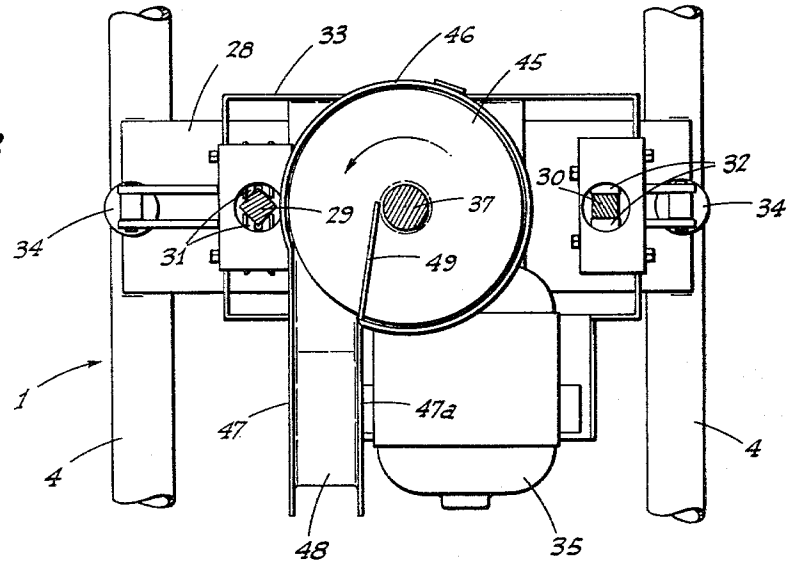


Fig. 4

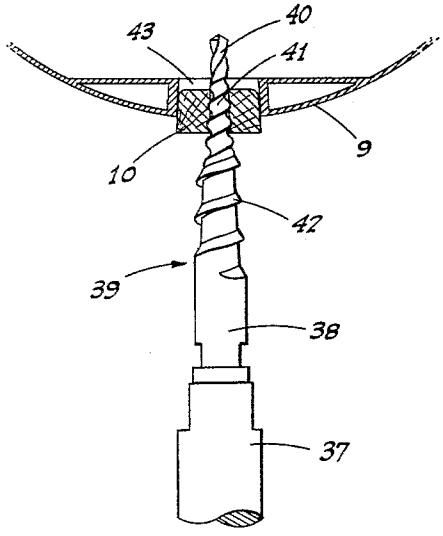
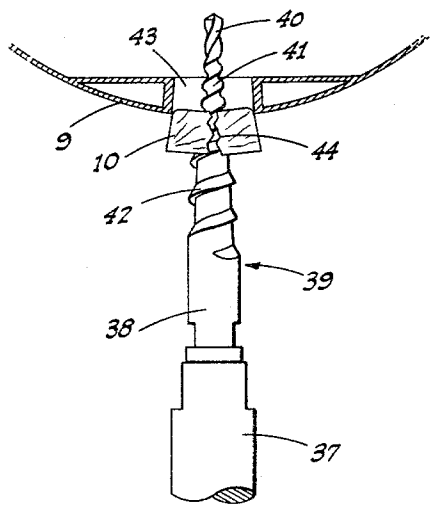


Fig. 5



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BUNG WITHDRAWING ASSEMBLY

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7 Claims. (Cl. 222—83.5)

This invention relates to a device for removing the wooden bungs from beer kegs and similar containers after such kegs have been emptied of their contents.

A major object of the invention is to provide an auger, of special form for the purpose, having a pilot portion arranged so as to first penetrate the bung along a path axially of the bung without possible deviation from such path such as grain direction or irregularities in the wood of the bung might cause, and having a portion following the pilot portion arranged to then advance into the bung in a manner to cause the bung to be withdrawn from the bung hole and split into separate sections so that such sections will fall of themselves from the auger.

It is another and important object of the invention to provide a means for operatively mounting the auger, both for rotation and axial movement, in an upwardly facing position, and a means for supporting the keg above the auger in such a position that the bung, which as usual is in one side of the keg, will be disposed in a downwardly facing position directly in line with the auger.

The importance of having the bung disposed in an inverted position, with the auger disposed below the keg and bung, is that no chips or wood dust, as created by the action of the auger, can enter the keg but will drop down clear of the keg.

A further object of the invention is to provide a catch tray and carryoff chute in connection with and directly below the auger which will receive, and cause to be carried alway, all chips, withdrawn bung pieces, as well as any liquid residue dropping from the empty keg when the bung is withdrawn, and keep such waste matter from possibly fouling the auger supporting and operating mechanism.

The keg, when initially placed on the supporting means, may not always be disposed with the bung in the necessary downwardly facing position, and a still further object of the invention is to provide a keg supporting means which enables the keg, after once being supported, to be easily rotated so as to dispose the bung in the proper position for engagement by the auger.

In connection with this latter feature, it is also an object of the invention to provide a clamping unit for engagement with the top of the keg, which will first exert a yieldable hold-down action on the keg which still allows the keg to be rotated if necessary, and which will then clamp the keg against any movement. At the same time, the clamping means is mounted so that it can be readily moved clear of the keg so as to offer no interference with the placement of the keg on or removal of the same from the supporting means.

A further object of the invention is to provide a bung withdrawing assembly which is designed for ease and economy of manufacture.

A still further object of the invention is to provide a practical, reliable, and durable bung withdrawing assembly, and one which is exceedingly effective for the purpose for which it is designed.

The objects are accomplished by means of such structure and relative arrangement of parts as will fully appear by a perusal of the following specification and claims:

In the drawings:

FIG. 1 is a foreshortened side elevation, partly in section, of the improved keg supporting and bung withdrawing assembly, showing the bung extracting tool in a retracted position relative to the bung.

FIG. 2 is an end elevation of the assembly, partly in section as on line 2—2 of FIG. 1, and showing the tool as engaged with the bung.

FIG. 3 is a fragmentary sectional plan of the assembly, taken on line 3—3 of FIG. 1.

FIG. 4 is an enlarged elevation of the bung extracting tool as engaged with a bung, and before the latter is fully withdrawn.

FIG. 5 is a similar view, but shows the bung as fully extracted and fractured.

Referring now more particularly to the drawings and to the characters of reference marked thereon, the assembly which is the subject of this invention comprises an upstanding frame structure indicated generally at 1, and which includes a pair of laterally spaced uprights 2, a pair of transversely spaced horizontal beams 3 disposed at a level intermediate the ends of the uprights, and a pair of spaced transversely extending cross beams 4 disposed on a common level adjacent the lower end of beams 2 and at right angles to the beams 3.

Longitudinally spaced transverse plate-like platforms 5 extend between and are secured on the beams 3, said platforms supporting longitudinally extending upright plates 6 spaced apart transversely. These plates 6 in turn support the transverse stub axles 7 of rollers 8 which are disposed laterally out from the related plates 6, as shown in FIG. 2. These rollers are for the purpose of supporting a standard form of keg or barrel 9 which is placed thereon so that its axis extends transversely and parallel to the axles 7 and which keg, after being supported by the rollers so that the bung 10 thereof is disposed in a transverse plane centrally between the rollers 8 and plates 6, may then be rotated if necessary to dispose the bung 10 at its lowermost position on the keg, and between the platforms 5, as indicated in FIG. 1.

In order to releasably clamp the keg in this position and so that it will not move when the bung extracting tool (as later described) is engaged with the bung, the following described keg engaging and clamping unit is provided:

Such unit comprises a pair of transversely spaced longitudinally extending arms 11 which are pivoted at one end, as at 12, on brackets 13 supported from an adjacent cross beam 14 extending between the uprights 2, as shown in FIG. 1. These arms at their free ends overhang the roller-supported keg 9, and carry a transverse shaft 15 extending therebetween, and which shaft swingably supports a depending saddle 16 having relatively widely spaced depending side walls 17 which extend crosswise of the keg. Heavy-duty shoes 18 are secured on and depend from the side walls 17 outwardly thereof; the lower edges of each shoe being formed as a wide-angle inverted V, as shown at 19, which straddles and engages the top of the keg at points equally spaced on opposite sides of the vertical center of the keg.

The arms 11 are swung up and down, between a position in which the shoes 18 are well clear of the keg to a position in which the shoes engage the keg in clamping relation, by means of a power cylinder 20 which upstands between and is connected to a cross bar 21 extending between the arms 11 intermediate their ends and a member 22 of the frame structure 1 above said arms, as shown in FIG. 1.

In order to apply a relatively light yieldable hold-down pressure to the top of the keg before the clamping shoes 18 engage the same, the following arrangement is provided:

Mounted in and extending between the side walls 17 is a pair of horizontally spaced shafts 23, each of which supports a pair of transversely spaced arms 24, the arms of the two pairs projecting downwardly and away from

each other. Each pair of arms **24**, at the outer ends thereof, and which ends are beyond the ends of the side walls **17**, support a transverse shaft **25** on which a pair of transversely spaced rollers **26** is mounted; said rollers being disposed between the side walls **17**, as shown in FIG. 2. The two shafts **25** project laterally out beyond the shoes **17**, and are connected at their outer ends by tension springs **27**.

When the arms **11** are swung up to lift the shoes **18** clear of the keg, the pairs of arms **24** are swung down toward each other by the action of the tension springs **27**; the size of the rollers **26** being such that they then depend below the shoes **18** and are consequently in a position to engage the keg before the shoes engage the same. Thus, when the arms **11** are first lowered after having been raised to enable the keg to be moved to a supported position on the rollers **8**, the rollers **26** engage and press down somewhat lightly on the keg, holding the same in position on the rollers **8** while the latter is being rotated if necessary to dispose the bung **10** in the necessary downwardly facing position. After such rotation is effected, the arms **11** are then further lowered to cause the shoes **18** to clamp the keg against movement, the keg being thus held until the bung has been withdrawn.

Such withdrawal is effected by means of the tool and its actuating and mounting mechanism now to be described:

Supported on and extending between the cross beams **4**, which are a considerable distance below the platforms **5**, is another platform **28**. Extending between and connected to platforms **5** and **28** are longitudinally spaced vertical guide standards **29** and **30**. These standards are engaged by rollers **31** and **32**, respectively, and which are mounted on and at the ends of an elevator cage **33**. At its ends, and beyond the standards, the elevator cage **33** is connected to the upper ends of upstanding power cylinders **34** which are supported on the platform **28**, as shown in FIG. 1.

The elevator cage **33** supports an electric motor **35** which is connected as a unit with a gear mechanism of conventional form enclosed in a housing **36**, and which mechanism includes a vertical axis upstanding driven spindle **37**, and which axis if extended would intersect the axis of the supported keg **9**, and consequently would extend through the bung **10** centrally thereof as well, as will be evident.

Removably secured in and upstanding from the spindle **37** is the shank **38** of an auger **39** of special form for bung withdrawing purposes. This auger comprises a relatively short and small diameter pilot portion **40** of twist drill type, with a slow lead as shown. Such pilot portion **40** is followed by a somewhat longer double-thread, fast-lead portion **41** of twist auger-bit type except that its diameter gradually increases. Portion **41** is followed by a portion of a solid-center single-thread type of auger bit form, as indicated at **42**; all such portions merging into each other without obstruction.

By means of the above described auger construction and form and when the auger, while being rotated by the motor, is advanced upwardly by the lifting of the elevator cage, the pilot portion **40** first drills through the bung **10**; the form and slow lead of such portion preventing any drifting of the auger with the grain of the wood of the bung and thus maintaining the auger in a properly centered position. The double-thread, fast-lead auger portion **41** then follows and screws its way through the bung; the speed of upward movement of the auger being so coordinated with the relative speed of advance of the auger through the bung that the latter is pulled downwardly and out of the bung hole **43**. By the time the bung is clear of the bung hole, it has moved down the still advancing auger sufficiently to become split in two, as indicated at **44** in FIG. 5, due to the gradually increasing size of the auger portions **41** and **42**.

Should the bung fail to be thus split, and fall away, when fully extracted and remain suspended on the auger portion **42**, this fact will not interfere with a subsequent bung extracting operation. This is for the reason that the next bung, when engaged and being pulled down by the auger, will press the previously extracted bung further down on the gradually enlarging auger portion **42** and cause the splitting and separating of such bung into two parts.

Such bung parts, together with any chips or wood dust, as well as any liquid draining from the keg when the bung is withdrawn, are caught on a disc-like tray **45** fixed on and rotatable with the spindle **37**; the tray being surrounded by an upstanding wall **46** fixed with the elevator cage **33**. As shown particularly in FIG. 3, the wall **46** has separated ends which provides an opening therebetween; one end being connected to one side wall **47** of a downwardly sloping discharge chute **48** fixed with the elevator cage **33**. The other end of the wall **46** connects to the opposite side wall **47***a* of the chute **48**, and to a deflector **49** which extends substantially radially of the tray **45** and tangentially of the spindle **37** so that as the tray **45** rotates, all matter caught thereon is deflected and caused to pass onto the chute **48**.

After each bung has been withdrawn in the manner described, the elevator cage **33** is lowered to fully withdraw the auger from the bung hole, and the clamping shoes **18** are lifted clear of the keg to allow said keg to be removed from the rollers **8** and another keg to be substituted in place thereof.

From the foregoing description, it will be readily seen that there has been produced such a device as substantially fulfills the objects of the invention, as set forth herein.

While this specification sets forth in detail the present and preferred construction of the device, still in practice such deviations from such detail may be resorted to as do not form a departure from the spirit of the invention, as defined by the appended claims.

Having thus described the invention, the following is claimed as new and useful and upon which Letters Patent is desired:

1. A keg supporting and bung withdrawing assembly, the keg having a removable bung in one side thereof, the assembly comprising means to support a keg in a fixed position with the axis of the keg horizontally disposed and with the bung facing downwardly, a bung extracting auger, means mounting the auger for rotation below the keg supporting means with the axis of the auger vertical and alined with the bung, and means mounting the auger mounting means for vertical movement to advance or retract the auger relative to the supported keg and the bung; the auger mounting means including an exposed rotary vertical-axis spindle supporting the auger and from which the latter upstands, a disc-like catch tray secured on and rotating with the spindle, a wall fixed separate from and surrounding the disc in upstanding relation thereto and providing an opening the lower edge of which is flush with the tray, a carryoff chute depending from the wall at said opening, and means to deflect any material on the tray into the chute as the tray rotates.

2. A key supporting and bung withdrawing assembly, the keg having a removable bung in one side thereof, the assembly comprising a horizontal-axis roller unit arranged to support a keg for rotation with its axis horizontal, a vertical-axis bung extracting auger mounted below the roller unit in position to aline with the bung when the keg is disposed on the roller unit with the bung in its lowermost position on the keg, and means to releasably clamp the keg on the roller unit when the bung is in such position and prior to the engagement of the auger with the bung.

3. An assembly, as in claim 2, in which the clamping means comprises shoes engageable with the top of the keg, the shoes being mounted as a unit and extending transversely of the keg in spaced relation lengthwise

thereof, means mounting said unit for vertical movement relative to the keg and the auger, and means to control such movement.

4. An assembly, as in claim 3, with another roller unit mounted in connection wth the shoe unit in position to engage the keg on opposite sides of the vertical center thereof prior to the engagement of the shoes therewith, and yieldable hold-down means applied to said other roller unit.

5. A keg supporting and bung withdrawing assembly, the keg having a removable bung in one side thereof, the assembly comprising, a horizontal-axis roller unit arranged to support a keg for rotation with its axis horizontal, a vertical-axis bung extracting auger mounted below the roller unit in position to aline with the bung when the keg is disposed on the roller unit with the bung in its lowermost position on the keg, and means to releasably clamp the keg on the roller unit and against rotatation when the bung is in such position, and additional means functioning prior to said clamping means to exert a hold-down action on the keg while still allowing of the rotation thereof.

6. A keg supporting and bung withdrawing assembly comprising means to support a keg in a fixed position, the keg having a bung hole and a bung therein, a bung extracting auger, means mounting the auger in a position relative to the keg supporting means so that the auger will aline with the bung, means to rotate the auger, and means to advance and retract the auger and its rotating means as a unit relative to the keg supporting means; the auger being disposed below the keg, and the auger rotating means comprising an electric motor disposed below the auger; and the advancing and retracting means

for the auger and motor comprising a platform on which the motor is mounted, means guiding the platform for vertical movement, and means connected to the platform at the sides thereof for moving the platform vertically.

7. A keg supporting and bung withdrawing assembly, the keg having a removable bung in one side thereof, the assembly comprising means to support a keg in a fixed position with the axis of the keg horizontally disposed and with the bung facing downwardly, a bung extracting auger, means mounting the auger for rotation below the keg supporting means with the axis of the auger vertical and alined with the bung, and means mounting the auger mounting means for vertical movement to advance or retract the auger relative to the supported keg and the bung; the auger mounting means including an exposed vertical-axis spindle supporting the auger and from which the latter upstands, a catch tray surrounding and fixed on the spindle, and means associated with the tray and spindle to remove material in the tray upon rotation of the auger and spindle.

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