(No Model.) 3 Sheets—Sheet 1.

J. F. THEURER & O. MUELLER.

APPARATUS FOR PITCHING CASKS.

No. 554,899. Patented Feb. 18, 1896.

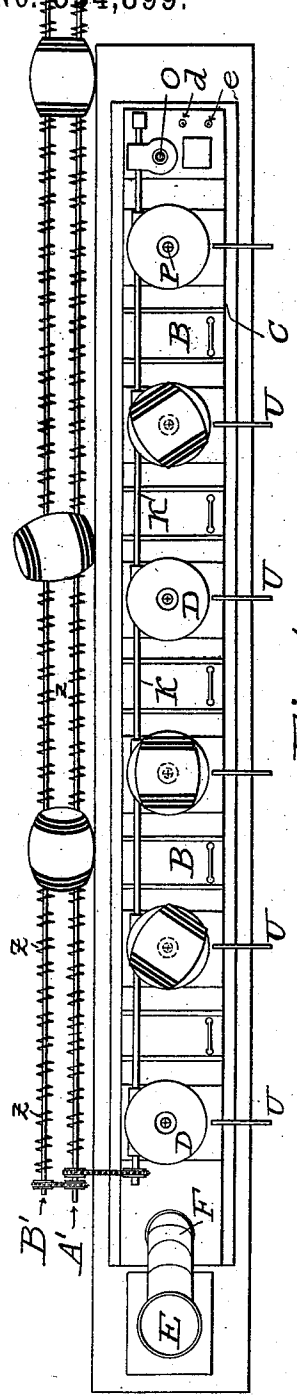

Fig. 1.

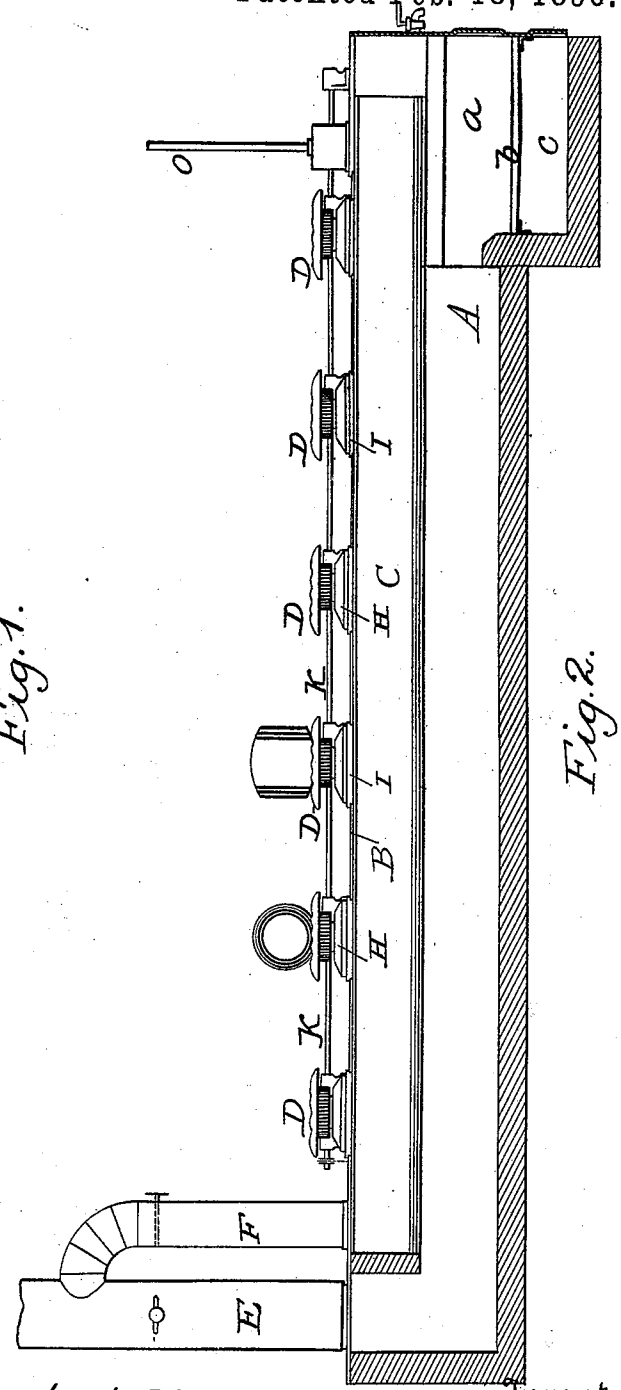

Fig. 2.

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(No Model.) 3 Sheets—Sheet 2.

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Fig. 3.

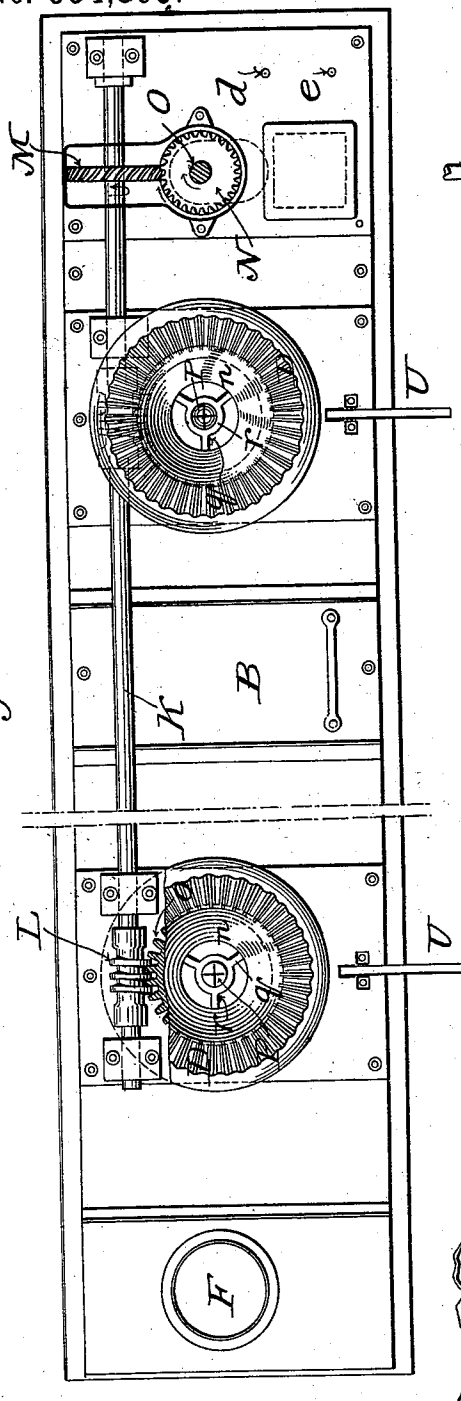
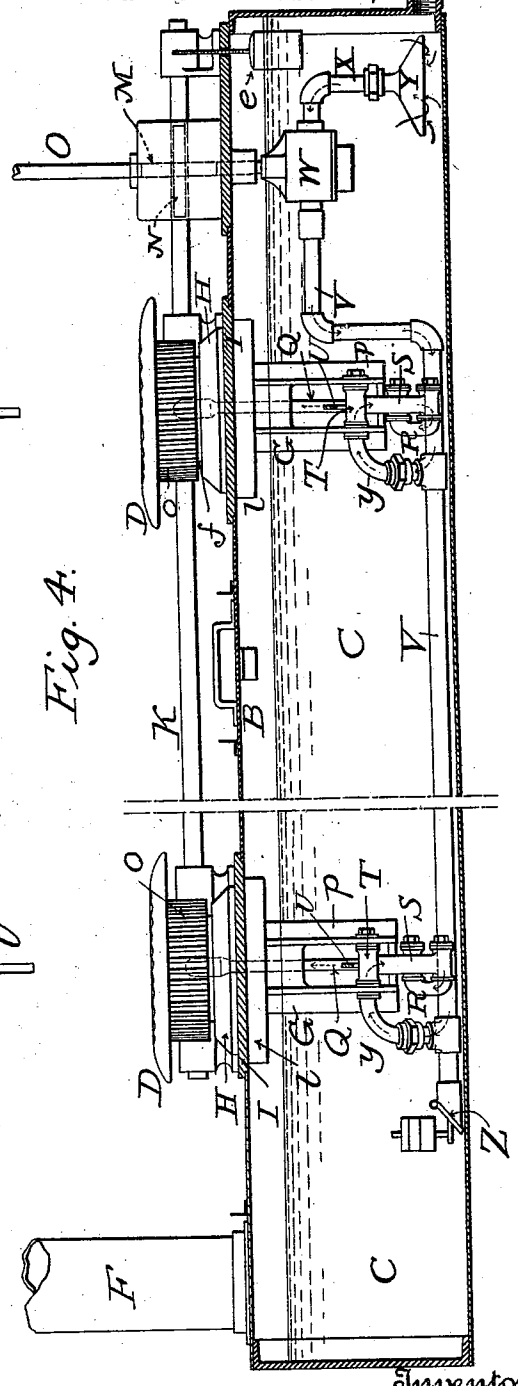


Fig. 4.



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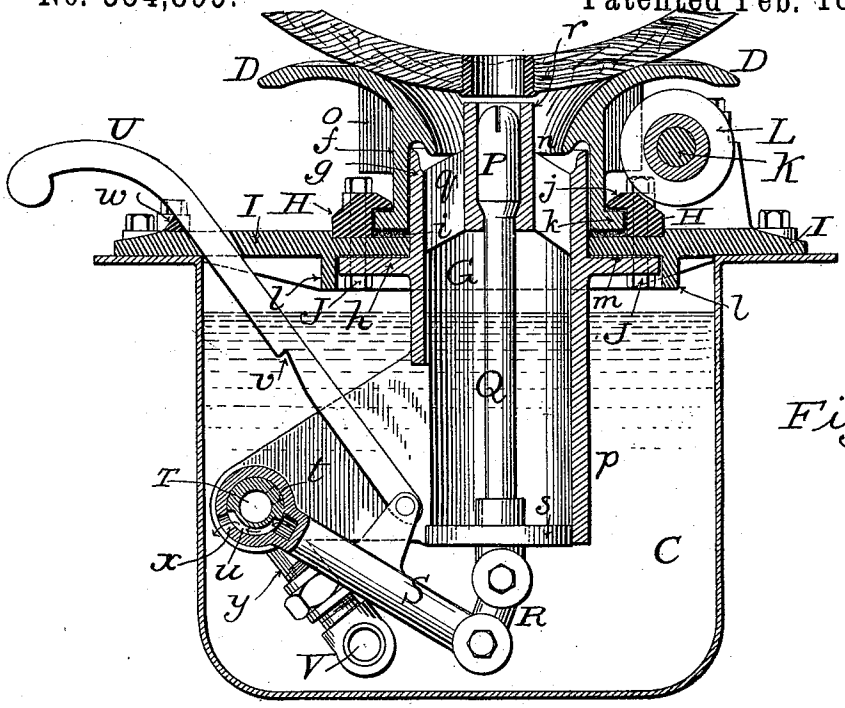

Fig. 5.

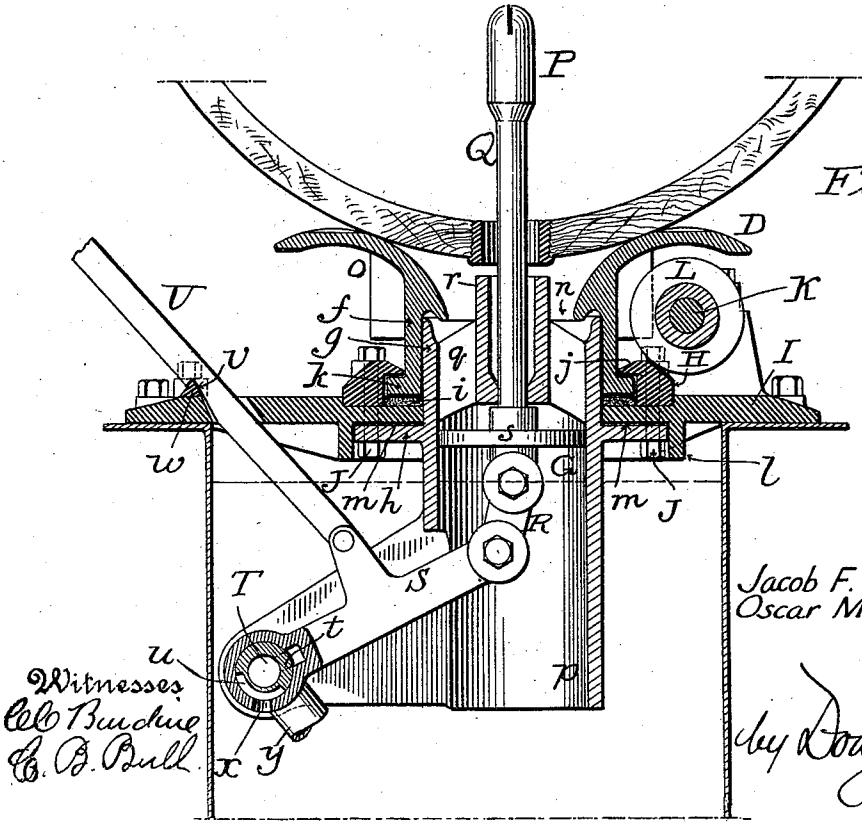

Fig. 6.

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UNITED STATES PATENT OFFICE.

JACOB F. THEURER AND OSCAR MUELLER, OF MILWAUKEE, WISCONSIN, ASSIGNORS TO THE PABST BREWING COMPANY, OF SAME PLACE.

APPARATUS FOR PITCHING CASKS.

SPECIFICATION forming part of Letters Patent No. 554,899, dated February 18, 1896.

Application filed January 29, 1895. Serial No. 536,538. (No model.)

To all whom it may concern:

Be it known that we, JACOB F. THEURER and OSCAR MUELLER, citizens of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Apparatus for Pitching or Enameling Kegs, of which the following is a specification.

Our invention pertains to apparatus for pitching or enameling kegs; and it consists in various novel features and combinations hereinafter set forth.

Figure 1 is a top plan view of our apparatus; Fig. 2, a side elevation of the same; Fig. 3, a top plan view of a portion of the apparatus on a somewhat larger scale; Fig. 4, a view showing in section the tank in which the pitch or other coating material is melted and illustrating the arrangement of parts therein. Figs. 5 and 6 are sectional views of the pitch tank or trough and of the keg-supporting and pitch-injecting devices.

The purpose of our invention is to produce an apparatus which shall replace hand labor and manipulation with mechanical work as far as practicable, and which shall at the same time insure a more thorough, uniform, and perfect coating of the interiors of kegs than is usually attained by existing methods.

A further aim is to guard against injury to working parts and to prevent the clogging of the injector.

With these objects in view we construct our apparatus in the manner illustrated in the accompanying drawings, which we will now explain.

Referring to Figs. 1 and 2, A indicates a furnace provided with a fire-box *a*, grate *b*, and ash-pit *c* of any suitable type, the grate being advisably adapted to dump the fire readily in case of necessity to avoid injury to the apparatus.

The furnace A is provided with a top or cover having sliding doors or cover-sections B, and from the top or cover or just beneath the same is suspended or supported a tank or trough C, designed to contain pitch, rosin, paraffine or other substance suitable for coating or enameling the interior surfaces of kegs.

The tank or trough C extends a suitable distance rearward from the fire-box, being advisably made of such length as to accommodate a series of keg-supports D, with their rotating and injecting devices, hereinafter described. The character of the furnace, the length of trough and like matters may be varied as circumstances require, or as experience suggests.

At the rear end of the furnace-chamber A there is a smoke stack or pipe E, and a pipe F opens into said stack from the tank or trough C, as shown in Fig. 2, the latter pipe, F, being designed to carry off the fumes and gases from said trough.

The tank or trough is provided with a cock through which to draw off its contents when desired, and it is further furnished with a thermometer *d*, Figs. 1 and 3, to show the temperature of the pitch or other coating material, and with a float *e*, Fig. 4, to indicate the level of such material in the tank.

At suitable points in the length of the apparatus there are located keg-supports D, the construction of which is illustrated in Figs. 3, 4, 5 and 6. Each keg-support consists primarily of a rotatable platform or turn-table D, the upper face of which is scalloped or corrugated to form a series of seats, so that in whatever position a keg may be placed upon the platform it shall get a firm bearing, be prevented from rolling off, and be caused to rotate with such platform.

The platforms or turn-tables D are each formed with a downwardly-extending collar *f*, which encircles and is centered and guided by the tubular neck or upward extension *g* of a casting G, which latter may be formed with or secured to the furnace top or cover.

In Figs. 5 and 6 the casting G is represented as formed with a radial flange *h*, which is bolted to the under face of a heavy metal plate I, which may be a part of the furnace top or a separate casting, extending across the tank or trough C. The plate I is provided in its upper face with a circular seat or depression to receive a bearing ring or gasket *i*, upon which the lower end of the neck *f* of the turn-table or platform rests and turns, and also to receive a retaining ring or collar H provided with an inwardly-projecting flange *j* to engage over an outwardly-projecting flange *k*, formed on the lower end of the collar *f* of the turn-table D. On the lower face of the plate I is formed a circular collar or short neck *l* of a diameter to receive the horizontal

flange *h* of the casting G, the collar serving to center and to support or steady the flange *h*. Bolts J pass through the flange *h*, the plate I and the ring H, and bind the several parts together, suitable packing *m* being interposed between the flange *h* and the plate I to insure a close joint.

As shown in Figs. 5 and 6, each turn-table D is formed with a large opening of suitable size, and with a depending lip or flange *n* which overhangs and enters slightly into the mouth of the tubular neck *g* of casting G, thereby preventing the entrance of fluid matters between the neck *g* and collar *f*, but directing the same into said neck. The collar *f* of each turn-table or platform D is provided with teeth *o*, thus constituting a worm-wheel, as best shown in Figs. 3 and 4.

K is a shaft carried in suitable bearings and provided opposite each turn-table or platform D with a screw or worm L to mesh with and impart rotary motion to the worm-wheel *o*, and consequently to the platform D. The shaft K is furnished with a wheel M having teeth cut at an angle of forty-five degrees to its axis, said wheel meshing with a similar wheel N carried by a vertical shaft O, to which motion is imparted from any convenient source of power. It will thus be seen that the several turn-tables will be caused to rotate in unison and continuously, so long as motion is imparted to the shaft O. Any equivalent gearing may be employed in lieu of that shown and described.

As shown in Figs. 5 and 6, the casting G has a depending tubular neck *p*, and is provided near its upper end with an internal spider *q* supporting a central guide *r*.

P indicates an injector-nozzle carried at the upper end of a tubular stem Q, which passes through and is guided in the guide *r*, and is furnished with a disk *s*, which fits and is guided within the tubular neck *p* of casting G, as shown in Figs. 5 and 6. The lower end of tube or pipe Q is connected by a short tubular link R with a pipe S sleeved upon and projecting radially from a fixed pipe T, which may be conveniently carried by arms or brackets projecting from the casting G, as shown in Figs. 4, 5 and 6. Each fixed pipe T, of which there is one for each turn-table and injector, is provided with a radial opening *t* (indicated by dotted lines in Figs. 5 and 6) and with a circumferential depression or channel *u*. (Shown in the same figures.)

A bail or handle U is connected with the radius-pipe S, and serves to raise and lower the same and to carry the parts to the positions indicated in Figs. 5 and 6, respectively.

The bail is provided with a notch *v*, the abrupt shoulder of which engages over a rib *w* on the plate I when the bail is drawn upward, and thus serves to hold the injector-nozzle P in the elevated position indicated in Fig. 6 and of course to sustain the radial pipe S in the position shown in the same figure. By simply lifting the bail so that the shoulder of notch *v* shall be disengaged from the rib *w* the parts are made free to fall to the position indicated in Fig. 5.

It will be observed upon referring to Fig. 5 that when the bail and the parts controlled thereby are lowered the tip of the nozzle P is carried below the upper end of the guide *r*, which in turn is below the lowest point reached by a keg resting upon the platform or turn-table D. Hence said nozzle is entirely protected and free from danger of injury through being struck by the keg. This is a matter of great importance, as the heavy kegs are necessarily handled quickly and somewhat roughly, and would speedily bend or break the nozzle were it allowed to project high enough to be struck by the keg. When, however, a keg is placed upon the turn-table D with the bung-hole opposite or in alignment with the nozzle P, the bail U being lifted, the nozzle will be protruded from its guide *r* and projected well into the keg, as indicated in Fig. 6.

By referring to Figs. 5 and 6 it will be observed that the location of the opening *t* is such that when the radius-pipe S is lowered its passage or opening is carried out of alignment with the opening *t*, and that when said pipe is fully lowered, as in Fig. 5, its passage or opening communicates with the channel *u*, so that any fluid remaining in the nozzle and the stem Q above the level of the fluid in the trough or tank C may descend to said level, the surplus in such case flowing out through the channel *u* and through an opening *x* into the trough or tank C. In this way the retention of pitch or other fluid in the nozzle or in stem Q above the level of the liquid in tank C is prevented. This is a matter of great importance, because otherwise, said parts being exposed to the cooler outer air, the pitch or other material will be liable to solidify within them and clog the apparatus. When, however, the bail U is lifted and the nozzle P is carried upward into the keg, as in Fig. 6, the passage of pipe S is first carried out of alignment with the channel *u*, and just as the nozzle reaches its highest point said passage comes into full alignment with the opening *t* of pipe T, from which the supply of pitch or other material is derived.

From the foregoing it will be seen that during the initial upward movement of the nozzle P, and until it is well entered within the keg, there is no flow of fluid through it, and there is consequently no danger of spreading the pitch or other substance over the outer surface of the keg, or over the turn-table operators and surrounding parts.

It will be observed by reference to Figs. 4, 5 and 6 that although the tubular neck *p* of the casting G is cut away at one side to permit the vertical movement of radius-pipe S, the opening in its side stops at a point considerably below the normal level of the fluid in tank or trough C. This formation of the neck *p* serves to prevent any water which may

enter from the keg spreading out over the surface of the hot liquid in the tank or trough C.

Kegs as they come to the pitching apparatus frequently contain more or less water or ice. The water, or the ice converted into water by the heat of the injected liquid, flows from the bung-hole of the keg into the neck *g* and comes in contact with the hot fluid in the tank or trough C. Were this water permitted to spread out over a considerable area, it would instantly flash into steam and cause a dangerous explosion; but by confining it within the comparatively small neck *g* a sufficient depth is secured to cause it to vaporize gradually and to pass off as steam without injury of any kind.

For the purpose of supplying the pitch or other coating or enameling material to the various injectors, we provide within the tank or trough C a main supply-pipe V, from which branches *y* pass to the several fixed pipes T, as shown in Figs. 4 and 5. The pipe V communicates with the delivery side of a suitable pump W, preferably of the rotary type, the rotating member of which pump is carried at the lower end of shaft O, as indicated in Fig. 4. The receiving side of the pump communicates by a branch X with a gathering-funnel Y, which is located preferably at a point directly over the fire where the pitch or other fluid is hottest.

The pump is made of ample capacity to supply all the injectors simultaneously, but as it will frequently happen that more or less of the injectors are out of action, we provide the main V, at a point beyond the last turntable and injector, with a weighted valve Z. This valve serves not only to prevent an undue pressure in the pipe V, but also to insure a constant circulation of the fluid through the tank from end to end, because, owing to the capacity of the pump, and to the fact already mentioned that more or less of the injectors are frequently out of action, the valve Z will be opened by the excess of pressure, and fluid will be forced through said valve and into the tank. Being thus taken from one end of the tank and discharged at the other, the liquid will set up a circulation from the delivery back to the receiving end of the pipe, and thus a nearly uniform temperature will be maintained throughout the tank or trough.

The form and construction of the injector-nozzle may be varied, but we prefer that represented in Figs. 3, 5 and 6. The nozzle here represented consists of a steel cap of cylindrical form, with a semicircular upper end, which end is slitted either in one plane only or two intersecting planes, the latter being represented in Fig. 3, and preferred.

It has hitherto been customary to employ a nozzle having a series of perforations; but it is found difficult to maintain a uniform delivery through such a nozzle or to distribute the fluid evenly over the inner surface of kegs thereof. A single slit delivers the fluid in a sheet, which as the nozzle is fixed and the keg rotates will impinge upon every portion of the inner surface of the keg as the latter is rotated. The cross-slits permit the same work to be performed with fewer rotations of the keg than are necessary where a single slit is provided.

As shown in Fig. 1, two parallel shafts A′ B′ extend along the side of the furnace A, said shafts being furnished with short worm or screw sections *z*, separated from each other as indicated in said figure. Shaft A′ receives motion, through a chain-belt or equivalent connection, from shaft K, and shaft B′ is similarly driven from shaft A′, so that the two shafts A′ and B′ rotate in the same direction. The worms or spiral *z* being of like pitch and direction, and the shafts being sufficiently separated to permit a keg to lie upon and between the spirals of two shafts, a keg placed thereon will be caused to rotate about its longitudinal axis and to travel forward along the shafts A′ B′, and finally to fall off at the end thereof. In thus passing over the spirals the kegs will also receive a rocking motion, greater or less in extent, and consequently the molten pitch or other coating or enameling substance, still limpid, will be caused to flow evenly over the entire surface of the keg, and to cool in a uniform film or lining.

The kegs are placed by hand upon the platforms D, and a little manipulation is necessary to bring the bung-holes into alignment with the injector-nozzles P. This attained, the nozzle is inserted, as above explained, and the operation proceeds without further labor on the part of the attendant, the hot pitch or other injected fluid serving to soften that already in the keg, and the surplus flowing back into the trough C through the opening of casting G.

When the keg has been sufficiently treated the bail U is released, the nozzle P is permitted to descend, and the keg is then simply rolled onto the carrier A′ B′, which by rolling and rocking the keg, as before explained, insures the proper setting of the lining without permitting it to thicken at one point or another, and finally delivers the keg at the end of the carrier.

It is obvious that the apparatus, in whole or in part, is equally suitable for spraying and washing kegs, and while its primary purpose is that of pitching or enameling, it is to be understood that the construction is claimed regardless of the special use to which it is put.

Having thus described our invention, what we claim is—

1. In a keg-pitching apparatus, the combination of a tank or trough; a furnace for heating the same; a rotatable platform; a nozzle; means for projecting said nozzle above and drawing it below said platform at will; a pipe connection between the trough and the nozzle; and a pump adapted to draw fluid from the trough and deliver it through the nozzle, substantially as set forth.

2. The herein-described apparatus for

pitching or enameling kegs, consisting of a furnace as A; a covered trough C; a series of platforms or turn-tables D; means for rotating said turn-tables; a series of injector-nozzles P; a supply-main V communicating with the respective nozzles; means for opening and closing communication between the main and each nozzle independently; and a pump W communicating with the main and with the trough, and serving to deliver fluid from the latter to the former.

3. In combination with a trough C and a cover or top plate therefor, a casting G provided with an upwardly-extending neck *g*, a rotatable platform or turn-table D having a depending collar *f* to encircle the neck *g*, and provided with a flange *k*, and a retaining-collar H secured to the cover or top plate and overhanging the flange *k*, substantially as and for the purpose set forth.

4. In a keg-pitching apparatus, the combination of a trough C, a cover I therefor, a neck *g* extending above said cover; a neck *p* extending below said cover and below the liquid level of said trough, and a platform or turn-table encircling the neck *g*, and having the overhanging flange *n*, as and for the purpose set forth.

5. In a keg-pitching apparatus, the combination of a tank or trough, a fixed pipe T communicating therewith, and provided with an opening *t;* radius-pipe S sleeved upon said pipe T, injecting-nozzle P and tubular link R connecting the pipe S and the nozzle P substantially as and for the purpose set forth.

6. In combination with trough C, fixed pipe T provided with opening *t* and channel *u*, radius-pipe S sleeved upon pipe T and having an opening *x* in its sleeve; nozzle P and tubular link R connecting the nozzle and the radius-pipe; whereby when the nozzle is raised it is placed in communication with the interior of pipe T, and when lowered communication is cut off with the interior of pipe T and opened with the trough C through passage *u* and opening *x*.

7. In combination with the keg-supporting platform D and movable nozzle P; supply-pipe T; the radius-pipe S; connecting-link R; and bail or handle U, substantially as set forth.

8. In combination with a trough C and rotatable platform or turn-table D above the same, casting G provided with guide *r*, and nozzle P provided with guiding-disk *s*, whereby the nozzle is centered and guided in casting G.

9. In a keg-pitching apparatus, the combination of a trough adapted to contain a coating fluid, a main communicating with said trough, one or more injector-nozzles communicating with said main; a pump communicating with the main and with the trough and serving to pass the fluid from the trough through the main, and a relief-valve applied to the main and serving to permit a discharge of fluid from the main directly back into the trough or tank when the pressure exceeds a predetermined limit, whereby injury to the apparatus is prevented and a circulation within the tank is established.

10. In a keg-pitching apparatus, the combination of a series of turn-tables or platforms; a shaft extending past the several platforms; worm-gearing connecting the shafts and the platforms; nozzles; and means for protruding the nozzles above and drawing them below the platforms at will, substantially as and for the purpose set forth.

11. In combination with a tank or trough, a series of platforms or turn-tables D, injecting-nozzles P, a main V for supplying said nozzles, a rotary pump W communicating with the main and with the trough, a vertical shaft O carrying the rotatable member of the pump and provided with gear-wheel N, a shaft K extending past the several turn-tables and provided with a wheel M to mesh with wheel N, and worm-gearing connecting the turn-tables and shaft K, substantially as and for the purpose set forth.

12. In an apparatus for pitching kegs, the combination of a rotatable platform to support a keg; an injector-nozzle; and means for drawing said nozzle below and projecting it above the platform at will, substantially as and for the purpose set forth.

13. In a keg-pitching apparatus, the combination of a tank or trough to contain a coating fluid; a supply-pipe communicating with said tank; a pump serving to draw the fluid from the tank and force it through said pipe; a platform to sustain a keg; an injector-nozzle connected with the supply-pipe; and means whereby said nozzle may be moved beyond or withdrawn within said platform, substantially as and for the purpose set forth.

14. In a barrel-pitching apparatus, the combination of a platform or support for a keg; a nozzle; means whereby said nozzle may be projected above the platform or withdrawn; a fluid-supply communicating with said nozzle; and a valve interposed between the nozzle and the supply and serving to open communication with the nozzle when the latter is protruded, and to cut off communication therewith when the nozzle is withdrawn.

15. In a keg-pitching apparatus, the combination of a tank or trough to contain a coating fluid; a nozzle communicating therewith; means whereby said nozzle may be moved to position to enter a cask and be withdrawn at will; and an outlet-opening communicating with the nozzle and serving when the nozzle is withdrawn, to permit fluid contained therein to flow back toward the trough or tank.

In witness whereof we hereunto set our hands in the presence of two witnesses.

JACOB F. THEURER.
OSCAR MUELLER.

Witnesses:
FRED RUENZEL,
JULIUS H. KLOEHN.