

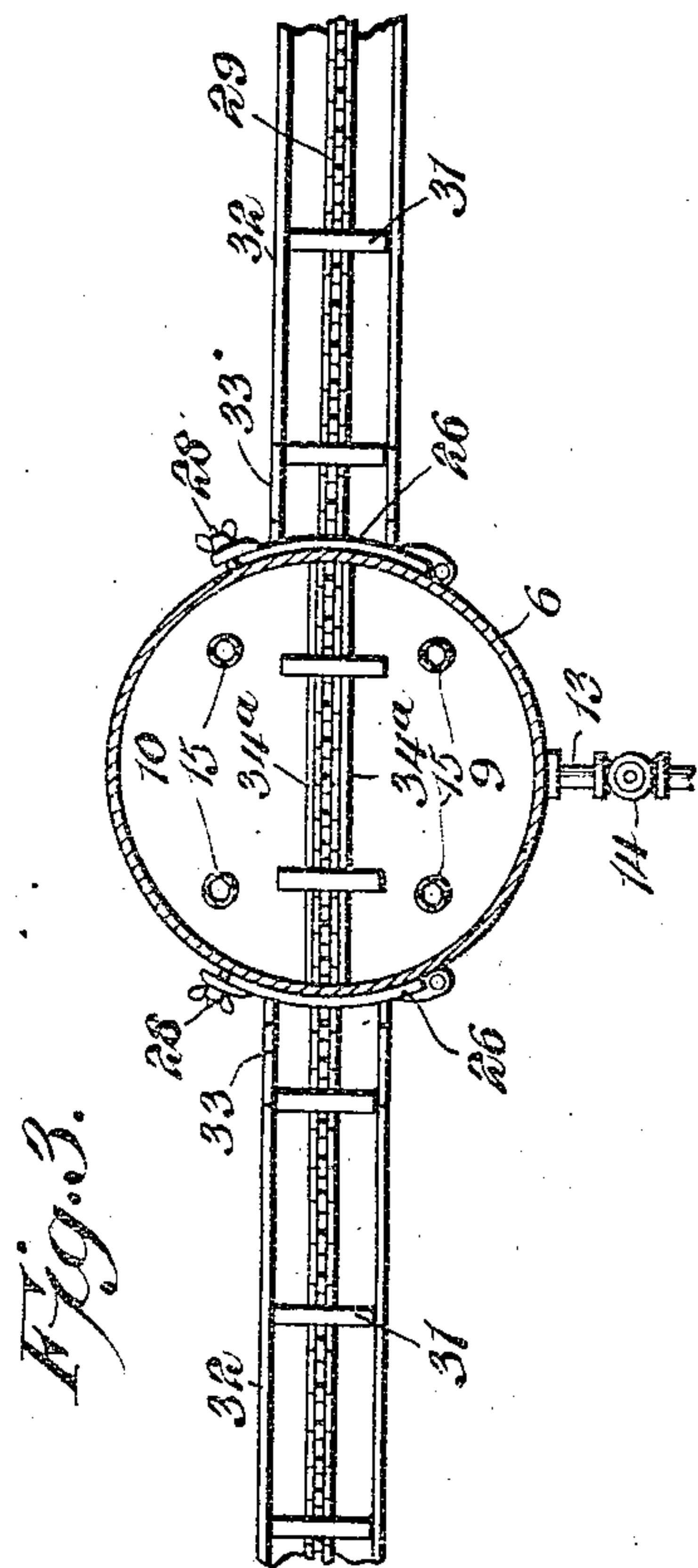
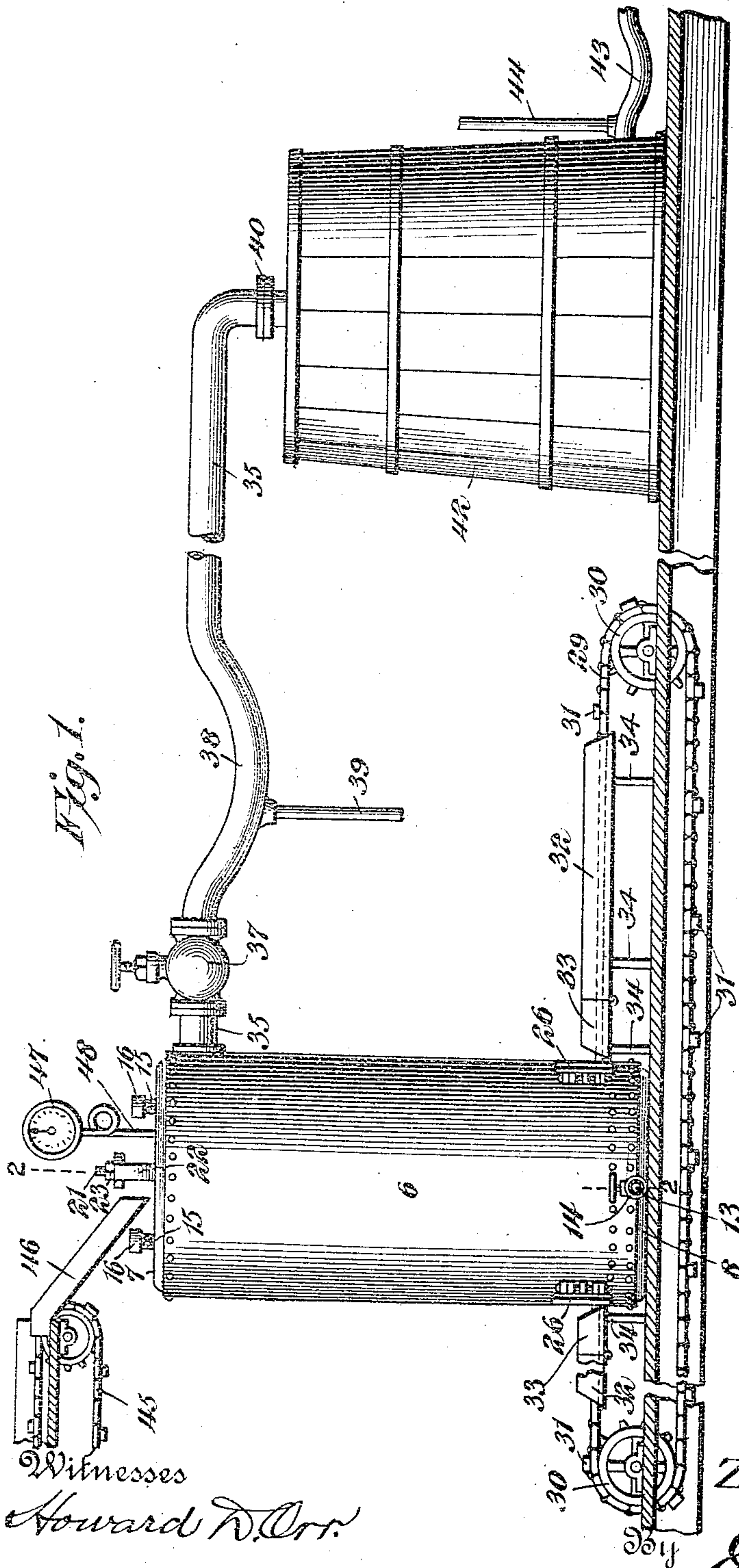
No. 817,552.

PATENTED APR. 10, 1906.

Z. E. FIVEASH.
STILL.

APPLICATION FILED JUNE 29, 1905.

2 SHEETS—SHEET 1.



Witnesses

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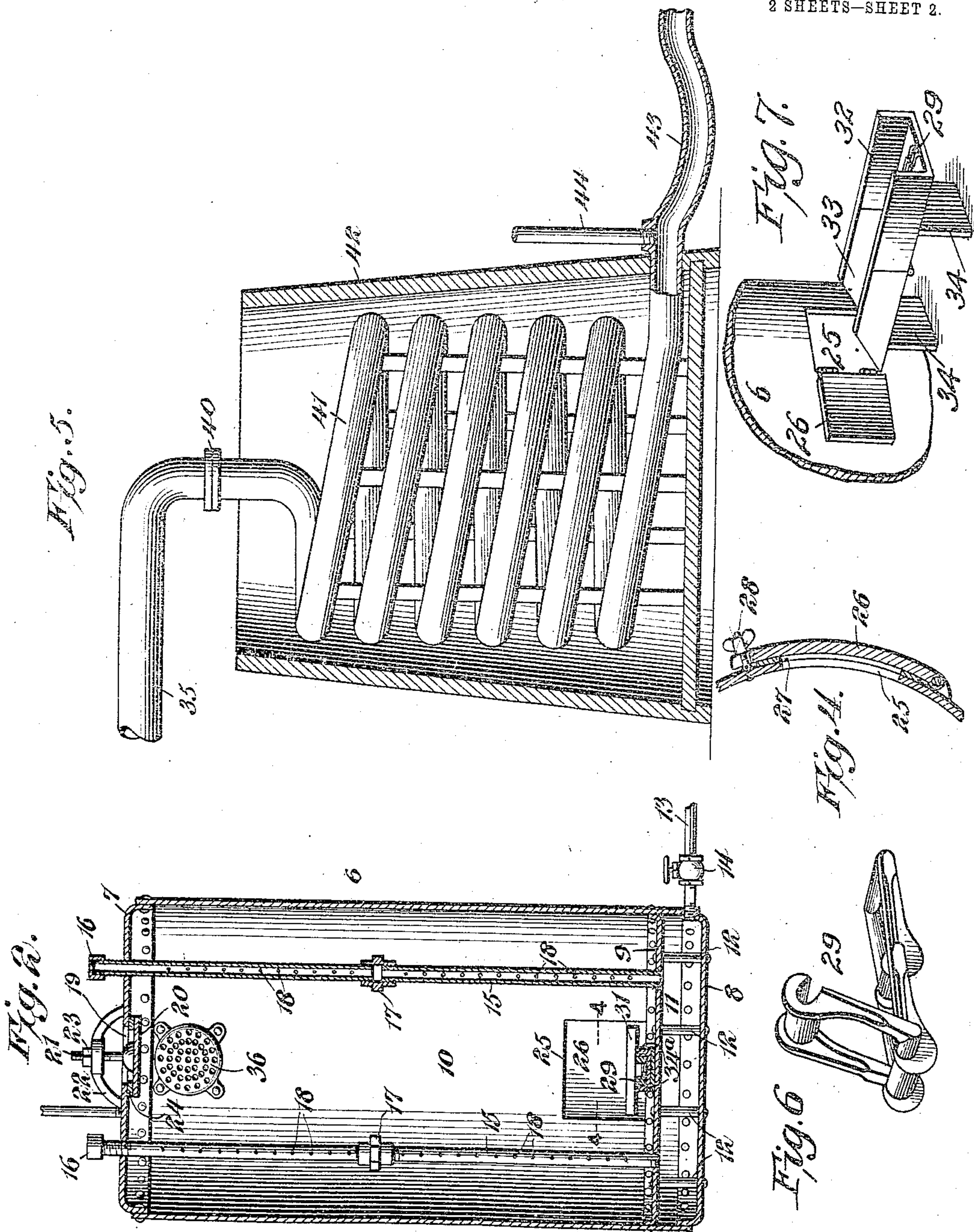
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UNITED STATES PATENT OFFICE.

ZION E. FIVEASH, OF RAWLES SPRINGS, MISSISSIPPI.

STILL.

No. 817,552.

Specification of Letters Patent.

Patented April 10, 1906.

Application filed June 29, 1905. Serial No. 267,568.

To all whom it may concern:

Be it known that I, ZION E. FIVEASH, a citizen of the United States, residing at Rawles Springs, in the county of Perry and State of Mississippi, have invented a new and useful Still, of which the following is a specification.

This invention relates to improvements in apparatus for distilling wood in order to obtain the various products—such as creosote, turpentine, and the like—therefrom.

One of the principal objects is to provide novel means of a simple nature that will effect a thorough heating of the material and a complete permeation of the same with steam, said steam being, furthermore, employed as a vehicle to carry the desired products from the retort to a condenser.

Another object is to provide simple and efficient means for removing the refuse from the retort with rapidity in order to permit the use of the apparatus with successive charges and without any great waste of time between the charges.

The preferred embodiment of the invention is illustrated in the accompanying drawings, wherein—

Figure 1 is a view in elevation of the novel still. Fig. 2 is a longitudinal sectional view through the retort on the line 2 2 of Fig. 1. Fig. 3 is a horizontal sectional view through the same. Fig. 4 is a detail sectional view on the line 4 4 of Fig. 2. Fig. 5 is a vertical sectional view through the condenser. Fig. 6 is a detail view of a portion of the chain, illustrating the detachable links. Fig. 7 is a detail view of one of the still-doors and the associated portion of the guide-trough.

Similar reference-numerals designate corresponding parts in all the figures of the drawings.

In the embodiment illustrated the retort consists of a tubular or cylindrical upright body 6, having a top end wall 7 and a bottom end wall 8. Within the body and contiguous to its lower end is arranged a partition 9, that subdivides the interior of the body into an upper retort-chamber 10 and a lower steam-chest 11. Stay-bolts 12 connect the bottom 8 and partition 9, and a suitable steam-supply pipe 13 communicates with the chest and has a controlling-valve 14.

A plurality of tubular connections in the form of pipes 15 extend longitudinally through the retort-chamber, their lower ends

being suitably secured to the partition 9 and communicating with the steam-chest, their upper ends being fastened to the top 7 and projecting therethrough, caps 16 being screwed upon the projecting ends to close the same. These pipes are preferably formed of sections coupled together, as shown at 17, and the portions located within the retort-chamber are perforated, as illustrated at 18. These steam-pipes constitute stays between the partition 9 and the stop 7.

A charging-opening 19 is formed in the top 7 and is normally closed by a cover 20, that is fitted against the inner side of the top 7 and has a stem 21 passing through a holding-yoke 22, that bridges the opening 19. A nut 23 is threaded onto the stem 21 and bears against the yoke, thus holding the cover 20 in place. The joint between the cover and top is suitably packed, as shown at 24. In the lower portion of the retort-chamber are formed oppositely-disposed doorways 25, arranged to be closed by hinged doors 26, having packing-gaskets 27 and locked by swinging bolts 28, illustrated particularly in Fig. 4. Operating through the lower portion of the retort-chamber 10 and through the doorways is an endless conveyer comprising a chain 29, of detachable links, passing about pulleys 30 and carrying transversely-disposed scraper-blades 31. Guide-troughs 32 are located on opposite sides of the retort in line with the doorways, and through these troughs the said conveyer runs. The inner ends of the troughs 32 consist of swinging sections 33, which may be dropped down in order to permit of the opening and closing of the doors, being supported by suitable removable blocks 34. Any other structure that is found desirable may be substituted for the swinging sections. The conveyer when traveling through the retort-chamber is guided by strips of angle-iron 34^a, which embrace the chain, as illustrated in Fig. 2.

Leading from the upper portion of the retort-chamber 10 is an outlet-pipe 35, the inlet end of which is covered by a screen 36, said outlet-pipe having a controlling-valve 37 therein. This outlet-pipe is provided with a dip 38, to which is connected a depending creosote outlet-pipe 39. The outer end of the pipe 35 is downturned and coupled, as shown at 40, to the upper end of the worm 41 of a condenser, said worm being located in a

suitable tank 42 and having its lower end projecting therefrom, as shown at 43, said projecting end having a dip therein. A gas-vent 44 is located between this dip and the tank.

Any suitable means may be employed for supplying material to the retort. Said material is preferably finely divided and is in the form of small pieces—chips, sawdust, and the like. In the present instance this means consists of an endless conveyer (a portion of which is shown at 45) that leads from the mill in which the material is prepared. A chute 46, associated with the conveyer, has its discharge end disposed above the top of the retort and in a position to deliver the material through the charging-opening 19. A steam-gage 47 may be connected by a pipe 48 with the retort-chamber.

Before charging the retort the section of the conveyer that is within said retort-chamber is uncoupled from the remainder of said conveyer, and this may be readily accomplished, for, as already stated, the chain consists of detachably-associated links. The doors 26 are then closed and fastened, while the cover is removed from the charging-opening. Material is then supplied to the retort-chamber by the conveyer 45, which is driven in any suitable manner, and when the chamber is partially or completely filled the cover 20 is replaced and fastened. Steam is thereupon turned into the steam-chest through the supply-pipe 13 and, passing through the perforated pipes 15, will thoroughly permeate the material in the chamber, opening the pores thereof and carrying the volatile products through the screen 36 and outlet-pipe 35 to the condenser. The heavier products, such as creosote, will find their way through the pipe 39, while the turpentine and other distillates, being condensed in the worm 41, will escape through the projecting pipe 43. After the charge has been thoroughly treated the steam is shut off, the doors 26 are opened, and the section of the conveyer within the retort-chamber is again coupled to the remaining portions of said conveyer, which is then operated by any suitable means. It will thus be seen that the refuse is quickly carried from the chamber and may be delivered to any suitable point desired.

It will be apparent that an efficient apparatus is provided which will effect a thorough heating of the material, and the steam, which acts as the heating medium, will completely permeate the charge and will, furthermore, act as a vehicle to carry the products from the chamber. Moreover, the conveyer constitutes simple means of a novel nature for emptying the retort with rapidity, thus permitting the use of the apparatus with successive charges without any very great delay between the same.

From the foregoing it is thought that the

construction, operation, and many advantages of the herein-described invention will be apparent to those skilled in the art without further description, and it will be understood that various changes in the size, shape, proportion, and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

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

1. In a still of the character described, the combination with a body having a partition dividing the interior of said body into a retort-chamber and a steam-chest, of means for introducing steam into the chest, a tubular connection extending across the retort-chamber between the partition and the end of the body and connected to both, said connection constituting a stay therefor and having perforations that communicate with the retort-chamber, said connection also communicating with and receiving steam from the chest and delivering it into the chamber, and means communicating with the chamber to carry off the products therefrom.

2. In a still of the character described, the combination with a body having end walls and a partition dividing the interior of said body into a retort-chamber and a steam-chest, of means for introducing steam into the chest, a plurality of pipes extending across the chamber and secured to the partition and one of the end walls of the body and constituting stays therebetween, said pipes having perforations that communicate with the chamber and said pipes also communicating with the steam-chest, and an outlet-pipe communicating with the retort-chamber.

3. In a still of the character described, the combination with an upright tubular body having a top, a bottom, and a partition located contiguous to the bottom and dividing the interior of said body into an upper retort-chamber and a lower steam-chest, of upright perforated pipes connecting the partition and top, said perforations opening into the retort-chamber and said pipes constituting stays between the partition and top, means for introducing steam into the steam-chest, and a pipe leading from the retort-chamber.

4. In a still of the character described, the combination with a cylindrical body having a top and a bottom, of a partition located in the body contiguous to but being spaced from the bottom, forming an upper retort-chamber and a lower steam-chest, a steam-supply pipe connected to the chest, stay-bolts connecting the bottom and partition, perforated pipes connected to and extending from the partition longitudinally through the retort-chamber, said pipes being connected to the top and constituting stays between the top and partition, a screened outlet-pipe lead-

ing from the upper portion of the retort-chamber, and a condenser connected to said pipe.

5. In a still of the character described, the combination with a body having a partition dividing the same into an upper retort-chamber and a lower heater-chest, said body having doorways located just above the partition, a conveyer operating through the doorways and over the partition, said conveyer comprising a detachable section adapted to remain in the chamber, and doors for closing the doorways.

6. In a still of the character described, the combination with a body having a partition dividing the same into an upper retort-chamber and a lower steam-chest, of spaced perforated pipes connected to the partition and communicating with the chamber and chest, means for introducing steam into the chest, said body furthermore having doorways located just above the partition, a conveyer operating through the doorways and over the partition between the pipes, said conveyer comprising detachable sections adapted to remain in the chamber, and doors for closing the doorways.

7. In a still of the character described, the combination with a retort-chamber having a doorway, of a conveyer operating through the doorway, a guide for the conveyer located outside the chamber and having a movable section arranged to be alined with the lower portion of the doorway, said section being movable to one side of the doorway, and a guide for closing the doorway.

8. In a still of the character described, the combination with a retort-chamber having a bottom, a charging-opening in its upper portion, and doorways in opposite sides of its lower portion, of means for directing material to the charging-opening, closures for the charging-opening and doorways, means for

heating the chamber, and an endless conveyer that operates through the doorways and across the bottom of the chamber to carry off the refuse from the chamber, said conveyer comprising detachably-connected sections, all of which are movable through the chamber and doorways, and one of which may be detached from the others and remain within the chamber.

9. In a still of the character described, the combination with a retort-chamber, of means for heating the material in the chamber, means for directing the products therefrom, said chamber having doorways in its lower portion, doors for closing the doorways, a guide-trough projecting from one of the doorways, and a conveyer operating through the doorways, the chamber and the trough.

10. In a still of the character described, the combination with an upright tubular body having a top, a bottom, and a partition dividing the interior of said body into a lower steam-chest and an upper retort-chamber, said retort-chamber having doorways located just above the partition, doors for closing the doorways, perforated steam-pipes extending longitudinally through the retort-chamber and having inlet ends communicating with the steam-chest, a steam-supply pipe connected to said steam-chest, an outlet-pipe connected with the retort-chamber, a condenser connected to the pipe, and an endless conveyer operating through the retort-chamber upon the partition and through the doorways.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

ZION E. FIVEASH.

Witnesses:

C. W. DOBBINS,
JAS. L. MCGOWIN.