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1,531,788

E. D. JEFFERSON

KIER PLAITER

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Fig. 1

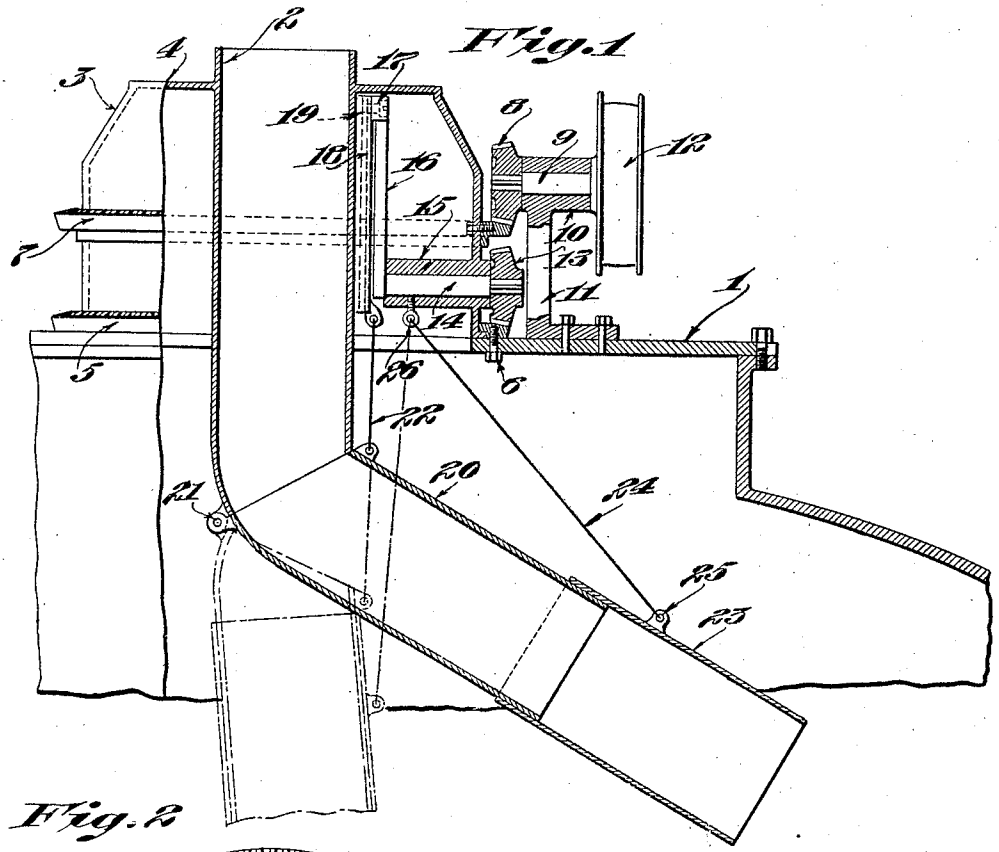


Fig. 2

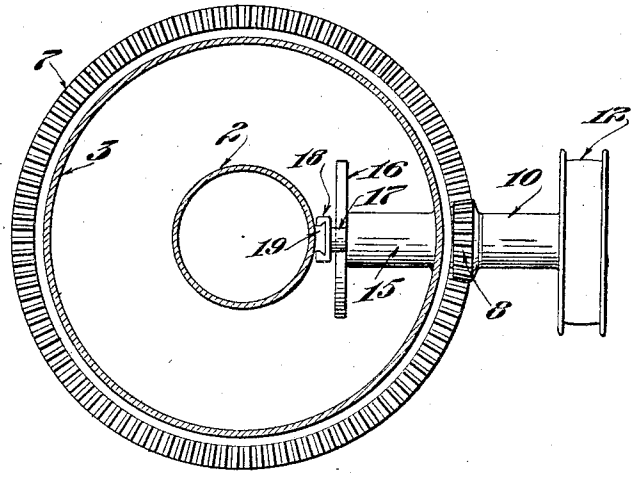
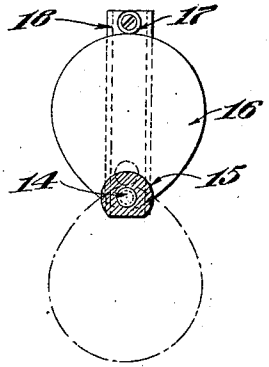


Fig. 3



Witness

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UNITED STATES PATENT OFFICE.

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Application filed March 25, 1924. Serial No. 701,881.

To all whom it may concern:

Be it known that I, EUGENE DENNISON JEFFERSON, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Kier Plaiters; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to an improvement in kier plaiters.

The object of the invention is to produce a plaiting machine for piling goods in a kier, and the invention consists in the plaiting machine hereinafter described and particularly defined in the claims.

In the accompanying drawings illustrating the preferred embodiment of the invention, Fig. 1 is a sectional elevation showing a portion of the top of a kier; Fig. 2 is a plan view; and Fig. 3 is an elevation of the invention showing the cam which operates the swinging chute.

The illustrated embodiment of the invention is described as follows: The machine is provided with a base 1, which consists of a plate adapted to be placed upon and be secured over the mouth of the kier. The goods to be introduced into the kier are fed to the pipe 2 and descend through that pipe and its extensions and are discharged in the kier. This pipe 2 is carried by a casting 3 cylindrical in form with a frusto-conical upper portion from which the upper base 4 extends to and is integral with the pipe 2. This housing 3 is rotatably secured to the base 1 by the bevel gear rack 5, which is bolted on by a series of bolts 6. This rack is provided with an overhanging lip which engages a corresponding lip on the base of the housing 3. A second bevel gear rack 7 is bolted to the housing. A bevel gear 8 meshes with the rack 7, and is carried by the shaft 9, supported in the bearing 10, carried by the standard 11 bolted to the base 1 of the apparatus. The outboard end of the shaft 9 is provided with a pulley 12. A power belt running to the pulley rotates the housing and therefore the pipe carried thereby. This rotation is slow, ordinarily taking seven minutes for one complete rotation to be accomplished. A second bevel gear 13, mounted on the shaft 14 carried by the bearing 15, is actuated by the rotation of the housing to rotate the cam 16 mounted on the inboard end of the shaft 14. The cam 16 engages a cam roll 17 mounted on a slide 18 supported on a guide 19 secured to the side of the pipe 2. By means of this cam, therefore, it will be seen that the slide 18 is raised and lowered as the housing is revolved. A guide chute 20, pivoted at 21 upon the pipe 2, is connected by means of the wire or rod 22 to the lower end of the slide 18. As the slide is raised and lowered, the chute 20 is caused to swing from the position shown in full lines in Fig. 1 to the position shown in dotted lines in that figure, thereby, as the chute is swung in and out, and as the housing carrying the pipe and chute rotates, distributing the goods introduced through the pipe in the kier, so as to lay up the goods in a pile which will afford interstices in the goods through which the liquors may penetrate the goods and be introduced into the goods so as to percolate through them.

The chute is provided with a mouthpiece 23, slidingly mounted on the chute. This mouthpiece constitutes an extension of the chute, and it is raised and lowered on the chute by means of a wire or rod 24, which is attached to the ear 25 on the mouthpiece, and to the eye 26 secured in the under side of the bearing 15. As the chute swings from full line position to dotted line position, it will be seen that the rod or wire 24 pulls the mouthpiece up on the chute so that in the lowermost position of the chute the mouthpiece is telescoped over it, as seen in the dotted line position. This shortens the fabric guide when the guide approaches the center of the kier, and it also operates to lengthen the fabric guide when the mouthpiece is swung outwardly to lead the fabric to the outer portions of the kier body.

The operation of the machine is as follows: After the kier has been emptied and cleaned, the plaiting machine is put on and secured in place, and the power belt is applied to the driving pulley 12. Then a long rope of goods is started through the pipe 2, which, taken in connection with the chute and mouthpiece, comprises the guide which leads the goods into the kier. The goods are distributed over the whole surface of the kier floor or body of goods contained thereby by the rotation of the guide and the simultaneous oscillations of the chute and mouthpiece, as a result of which the goods

are discharged into the kier and laid upon the grating therein or upon the goods previously introduced, so that a greater length of time is employed in delivering goods to the outer portions of the kier, and a lesser amount of time is employed in delivering goods to the center of the kier. This mode of operation is secured by the shape of the controlling cam 16, which raises and lowers the chute in timed relation to the rotations of the housing.

The cam may be made of any desired shape to secure the proper relative distribution of the goods in the kier. It will be observed that the short radius portion of the cam 16 shortens the time during which the guide deposits goods near the middle of the kier, and that the opposite end of the cam being full, the time during which the guide discharges goods at the outer portions of the kier is of considerable relative duration.

Until comparatively recently the goods were distributed in the kier by the services of an operative who entered the kier and with his hands or a stick guided the goods to the various parts of the kier as they were introduced. But the operation is a long and tedious one, some six hours being required for filling a kier, and the kier itself was located alongside of other hot kiers, with the result that the kier was hot and ventilation was poor, and it was difficult to obtain operatives to do the work. This machine obviates the necessity of putting a man in the kier, and in addition runs up the goods in the kier with regularity and uniformity, which it was impossible to secure in the manual guidance of the goods, so that the result accomplished is not only a cheapening of the cost of introducing the goods into the kier, but an improvement in the operation of the kier in the more regular and uniform piling of the goods therein.

Having thus described the invention, what is claimed is:

1. A kier plaiter having, in combination, a base adapted to be secured on the open mouth of a kier, a housing rotatably mounted on the base, a guide pipe mounted on the housing, a chute pivotally mounted on the lower end of the guide pipe, means for rotating the housing, and means for oscillating the chute on the lower end of the guide pipe.

2. A kier plaiter having, in combination, a base adapted to be secured to the open mouth of a kier, a housing rotatably mounted on the base, means for rotating it, a guide pipe secured to the housing, a chute pivotally mounted on the lower end of the guide pipe, a sliding mouthpiece on the chute, and means for oscillating the chute and mouthpiece having provision for telescoping the mouthpiece on the chute when the latter is swung to discharge goods near the center of the kier.

3. A kier plaiter having, in combination, a base adapted to be mounted upon the open mouth of a kier, a guide pipe rotatably mounted on the base, a chute pivotally mounted on the lower end of the guide pipe, a slide, connections between the slide and chute operating to swing the latter in and out as the slide is lowered and raised, a cam, and means for rotating the cam to operate the slide for swinging the chute in and out.

4. A kier plaiter having, in combination, a base adapted to be secured upon the open mouth of a kier, a guide pipe rotatably mounted on the base, a chute pivotally mounted on the lower end of the guide pipe, a mouthpiece slidingly mounted on the chute, means for swinging the chute, and means for telescoping the mouthpiece farther on the chute as the latter swings toward the center of the kier.

5. A kier plaiter having, in combination, a base adapted to be secured to the open mouth of a kier, a guide pipe rotatably mounted on the plate, means for rotating it, a chute pivotally mounted on the lower end of the guide pipe, and means for oscillating the chute.

6. A kier plaiter having, in combination, a base adapted to be supported upon the open mouth of a kier, a housing rotatably mounted on the base, a guide pipe mounted on the housing, a chute pivotally mounted on the lower end of the guide pipe, a rotatable cam and connections between the cam and the chute to oscillate the latter, and means for rotating the cam comprising a pinion to connect it with the cam, and a bevel rack mounted on the base plate, the pinion being driven by rotations of the housing from the rack to actuate the cam and thereby oscillate the chute.

7. A kier plaiter having in combination, a base adapted to be secured to the open mouth of a kier, a pipe provided with a pivoted guide chute, means for rotating the pipe and guide chute and oscillating the guide chute in timed relation to the rotations to cause the chute to deliver goods in the kier at a rate inversely proportional to the distance from the center of the kier.

In testimony whereof I have signed my name to this specification.

EUGENE DENNISON JEFFERSON.