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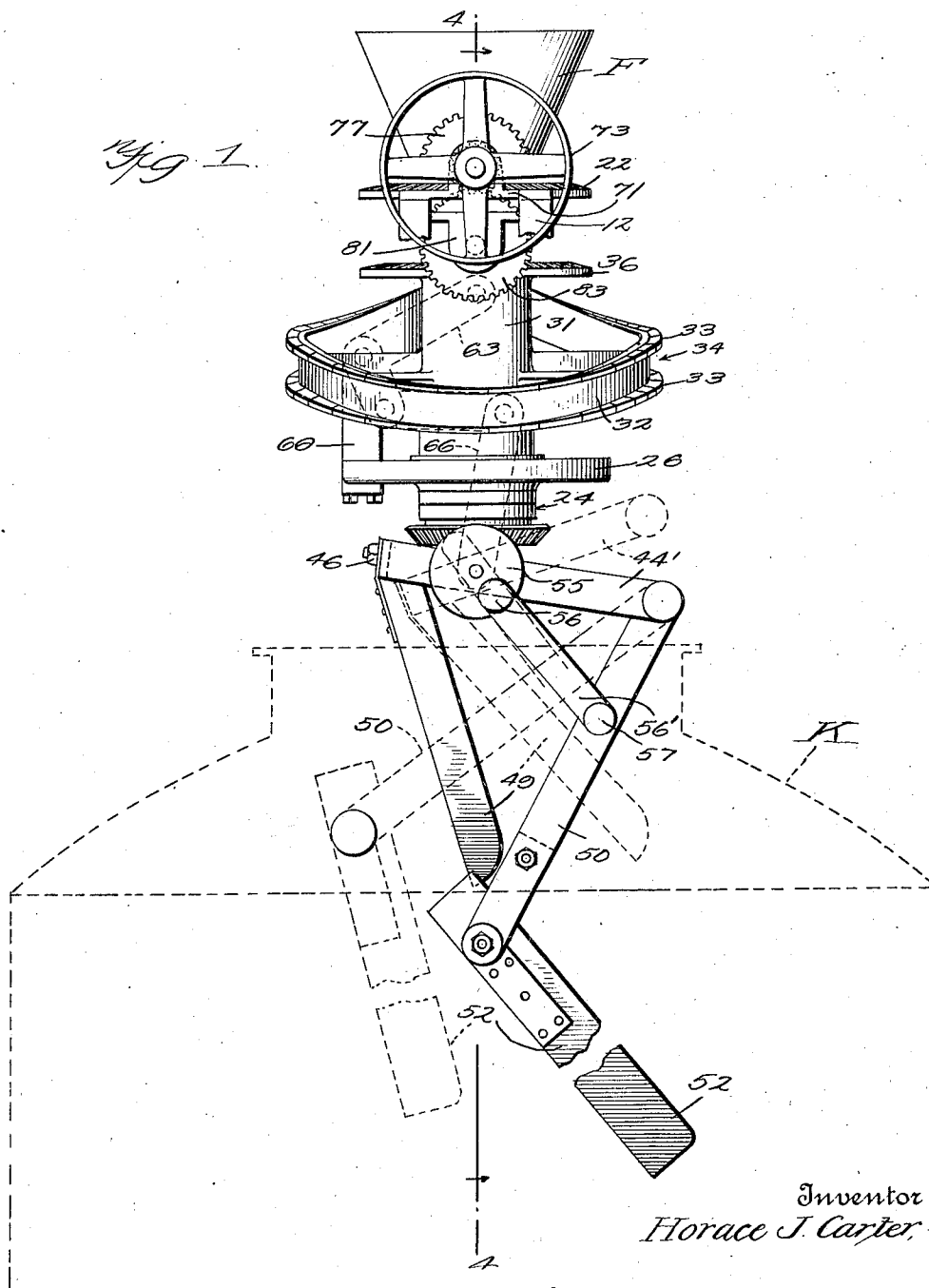
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H. J. CARTER

FABRIC PILER

Filed Dec. 27, 1919

5 Sheets-Sheet 1



By

Ch. Parker

Attorney

Nov. 27, 1923.

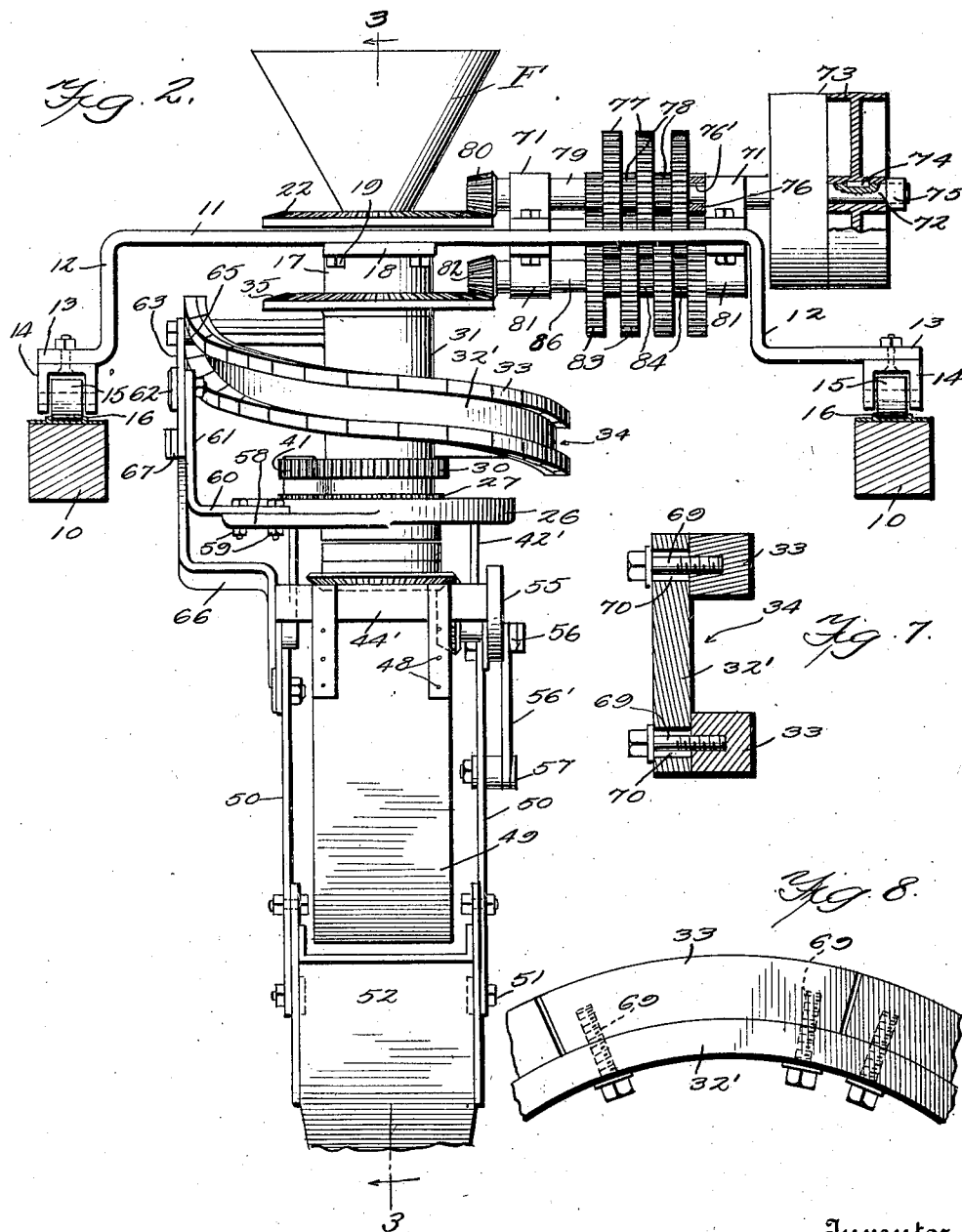
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5 Sheets-Sheet 2



Inventor
Horace J. Carter

By

Ch. Parker

Attorney

Nov. 27, 1923.

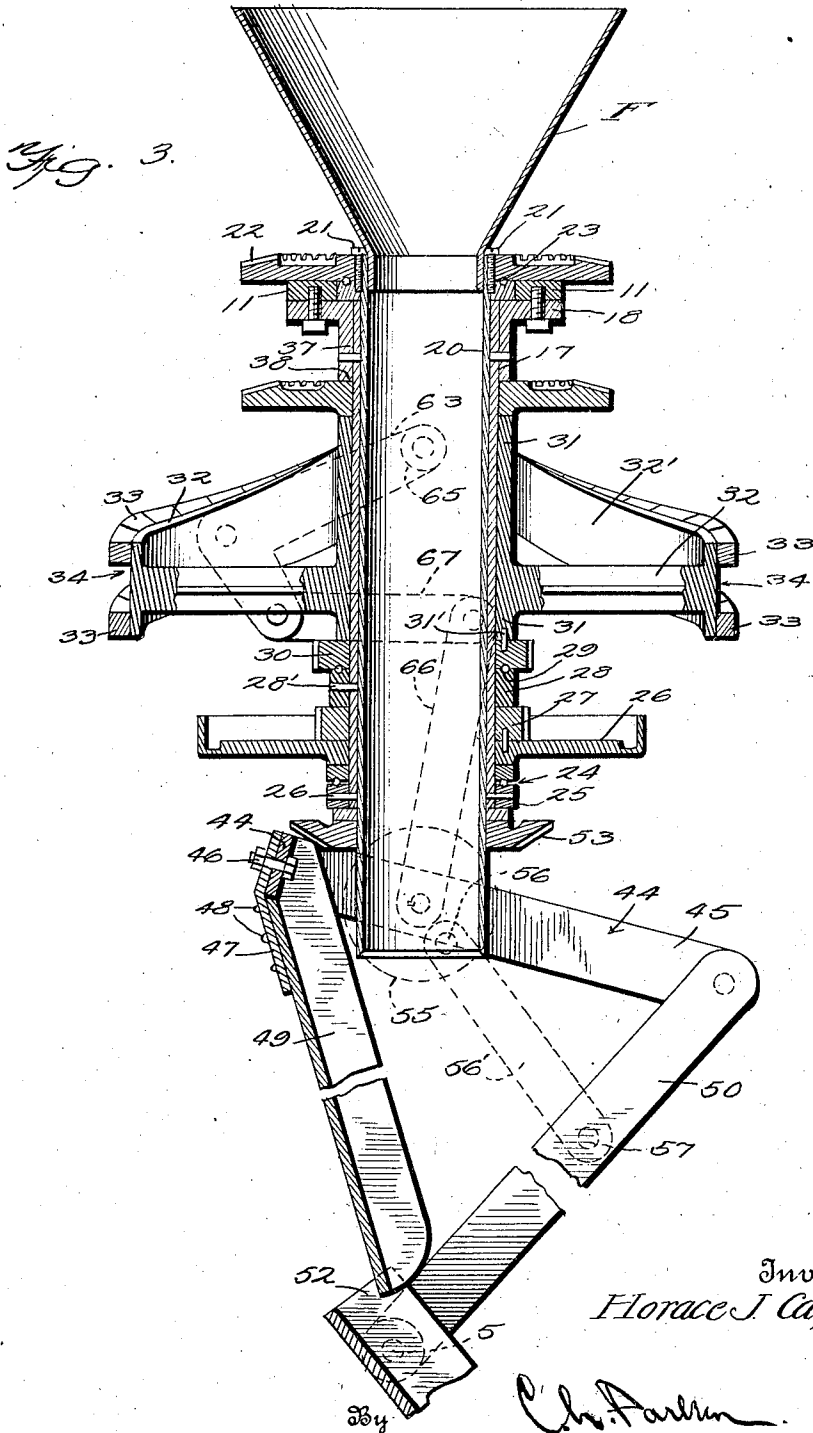
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FABRIC PILER

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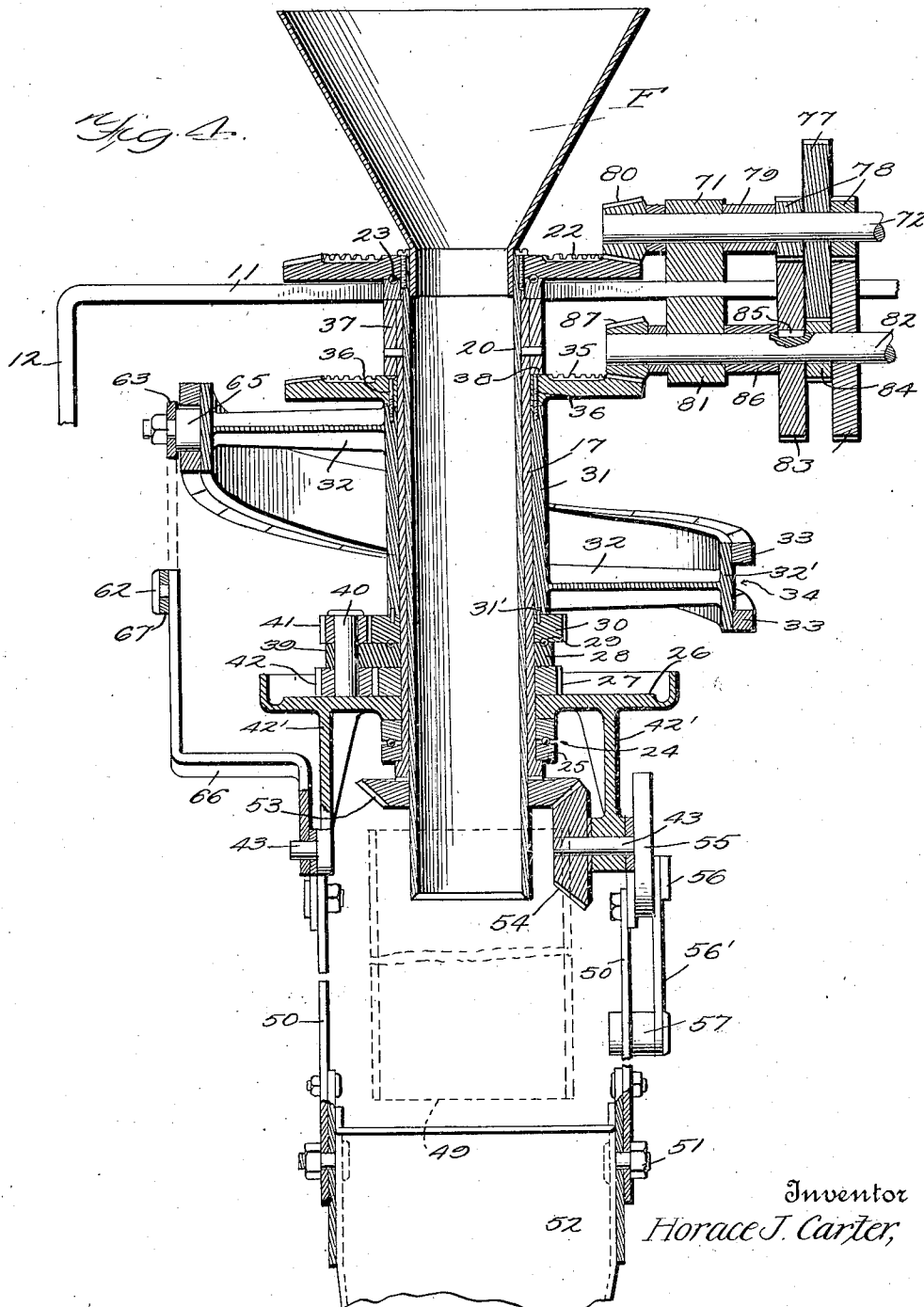
H. J. CARTER

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FABRIC PILER

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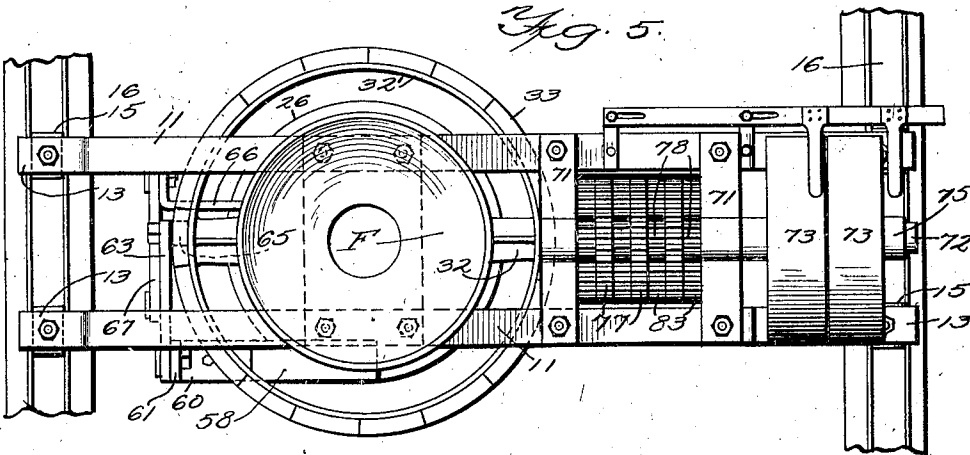
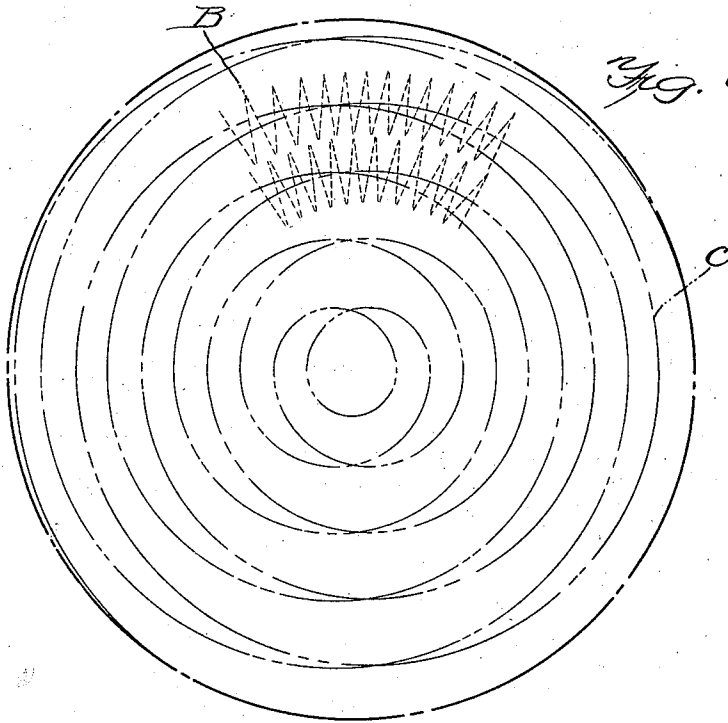
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H. J. CARTER

FABRIC PILER

Filed Dec. 27, 1919

5 Sheets-Sheet 5



Inventor
Horace J. Carter,

By

Ch. Parkin

Attorney

UNITED STATES PATENT OFFICE.

HORACE JOHNSON CARTER, OF WILMINGTON, DELAWARE.

FABRIC PILER.

Application filed December 27, 1919. Serial No. 347,869.

To all whom it may concern:

Be it known that I, HORACE J. CARTER, a citizen of the United States, residing at Wilmington, in the county of New Castle and State of Delaware, have invented certain new and useful Improvements in Fabric Pilers, of which the following is a specification.

This invention relates to improvements in fabric pilers. An important object of the invention is to provide a device of the above mentioned character wherein the fabric being piled is piled without forming knots therein.

It has been my experience that present devices for this purpose have one common objection, in that they are so constructed that as the goods pile within the kier, it is kinked to such an extent that it requires hours of labor in order to straighten it out. Furthermore, with the majority of the devices, it is necessary to have an attendant with the machine who is supplied with a stick with which he beats or whips the goods into fold.

A further object is to provide a machine having means for whipping the goods into fold as it is placed in the kier thereby eliminating the necessity of an attendant.

A still further object of my invention is to provide a fabric piler which may be advantageously used in kiers of the type known as "bottle mouthed."

Other objects and advantages of the invention will be apparent throughout the course of the following description.

In the accompanying drawings wherein for the purpose of illustration is shown a preferred embodiment of my invention, and wherein like reference characters designate like parts throughout,

Figure 1 is a side elevation of a fabric piler embodying my invention.

Figure 2 is a front elevation thereof.

Figure 3 is a section taken on the line 3—3 of Figure 2.

Figure 4 is a section taken on the line 4—4 of Figure 1.

Figure 5 is a top plan view of my piler.

Figure 6 is a diagrammatic view showing the paths of the distributing chutes.

Figures 7 and 8 are detailed views illustrating the manner in which the adjustable

blocks forming a portion of the cam are mounted.

Referring now more particularly to the drawings, the numeral 10 indicates suitable parallel horizontal supports. Spaced hangers 11 are provided having depending portions 12 provided with out-turned portions 13. Secured to the out-turned portions 13 are brackets 14 in which are rotatably mounted rollers 15. These rollers operate in suitable tracks 16 formed on the upper surface of the horizontal supports 10.

A sleeve 17 is provided having oppositely extending flanges 18 upon its upper end which are secured by means of bolts 19 or the like to the hangers 11.

A sleeve 20 is provided internally fitting the sleeve 17 and rotatable with relation thereto. The upper end of the sleeve 20 extends above the upper end of the sleeve 17 and has secured thereto by means of bolts 21 a bevel gear 22. A thrust collar 23 is disposed intermediate the upper end of the sleeve 17 and the bevel gear 22.

The sleeve 17 is provided upon its lower end with a thrust bearing 24, the lower section, 25, of which is secured to the sleeve by means of pins 26 or the like. Mounted upon the upper section of the thrust bearing 24 is a disk 26. Rotatably mounted about the sleeve 17 is a gear 27 secured to the disk 26 by means of pins or the like. Mounted above the gear 27 and surrounding the sleeve 17 is a member 28 secured to the sleeve 17 by means of pins 28' or the like. The upper end of the member 28 is provided with a ball race 29.

Mounted above the member 28 is a second gear 30 which in turn supports the hub 31 to which it is secured by means of pins 31' or the like. The hub 31 is provided with radial arms 32 which support a rim 32' having flanges 33 on the outer face thereof forming a grooved track 34.

Mounted above the hub 31 is a bevel gear 35 secured to the hub by means of screws 36 or the like. The upper end of the sleeve 17 is provided with an enlarged portion, forming a shoulder 38 which abutts the upper surface of the gear 35 preventing vertical displacement thereof.

The member 28 is provided with out-standing portion 39, in which is mounted

the stub shaft 40. The stub shaft 40 is provided upon its upper end with a pinion 41 meshing with the gear 30 and upon its lower end with a pinion 42 meshing with the gear 27. The gear 30 has a greater number of teeth than the gear 27 and the pinion 41 has a less number of teeth than the pinion 42. It will be seen that if the gear 30 is rotated, the gear 27 and disk 26 rotate in the same direction as the gear 30 but at a slightly higher rate of speed.

Secured to the lower face of the plate 26 at diametrically opposite points are depending brackets 42' bearing stub shafts 43. A U-shaped yoke 44 is provided having the arms 45 of the U pivotally connected intermediate their ends with the stub shafts 43. The base 44' of the U is secured by means of bolts 46 or the like to a bracket 47. The bracket 47 is secured as at 48 to a chute 49. It will be seen that by oscillating the arms 45 of the U, the chute 49 is oscillated. Pivotaly connected to the ends of the arms 45 of the U 44 are arms 50, to the free ends of which is secured, by means of bolts 51 or the like, a beater chute 52.

The lower end of the sleeve 20 has secured thereto a gear 53. Mounted upon one of the stub shafts 43 and secured thereto is a pinion 54 meshing with the gear 53. The opposite end of this stub shaft is provided with pitman plate 55 which is provided with a pin 56 spaced from the center thereof. A link 56' has one end connected with the pin 56 and the other end secured to the arm 50 at a point intermediate its ends as at 57. It will be seen that if the gear 53 is rotated, the beater chute 52 is oscillated, several oscillations being imparted to the chute at each rotation of the gear.

The plate 26 is provided with a horizontal extension 58 to which is secured by means of bolts 59 or the like support 60 having a vertical portion 61. Pivotaly secured to the upper end of this vertical portion as at 62 is a bell-crank lever 63, one arm of which is provided with a roller 65 engaging in the groove 34 of the cam. Rigidly secured to the one arm of the U 44 at the point of its pivotal connection with the stub shaft 43, is a lever 66. The upper end of this lever is connected with the free arm of the bell-crank lever 63 by means of a link 67.

It will be seen that if the cam is rotated, the gear 30 is rotated therewith and transmits through pinion 41, shaft 40, pinion 42, and gear 27 a slightly increased rotation to the plate 26. The brackets 42' being secured to the plate 26 are revolved therewith revolving the U 44 and chutes 49 and 52. At the same time, the increased rotation of the plate 26 causes the roller 65 to travel within the cam track 34, oscillating the lever 66 and the chutes 49 and 52. It will also be seen that if the sleeve 20 is rotated, the pitman

connection 56 is actuated through medium of gear 53, pinion 54, stub shaft 43 and pitman plate 55, and the beater chute 52 is given an additional oscillation with respect to the chute 49.

In some instances, it may be desirable to change the amount of oscillation imparted to the chutes 49 and 52 by the lever 66, as for example where the chute is used in kiers of various sizes or to change the throw imparted to the goods within the same kier. This means for changing the throw is shown in the present instance as comprising a means to adjust the flanges 33 upon the rim 32' by means of machine screws 69 or the like extending through vertically disposed slots 70 formed in the rim 32'. It will readily be seen that the flanges are adjustable within certain limits and that a considerable variation of the throw may be made by adjusting the flanges upon the lower portion of the track upwardly and those upon the higher portion downwardly.

Secured upon the upper sides of the hangers 11 are journals 71 in which is rotatably mounted a horizontal shaft 72. A pair of pulleys 73 is provided upon the shaft 72, one of the pulleys being keyed to the shaft as at 74. The pulleys 73 are held against movement longitudinally of the shaft by means of collars 75 secured to the shaft. A small gear 76 is keyed to the shaft 72 as at 76'. Rotatably mounted upon the shaft are alternate large gears 77 and small gears 78 each large gear being secured to its respective small gear as by means of pins 77'. These gears are held in position by means of a sleeve 79 or the like. The inner end of the shaft 72 is provided with a pinion 80, engaging the bevel gear 22.

Rotatably mounted in the journals 81, depending from the hangers 11, is a second shaft 82. This shaft is provided with large gears 83 and small gears mounted upon the shaft 72. These gears are also held against displacement by a sleeve 86 or the like. The gear furthest removed in the train from the gear 76 of the shaft 72 is secured to the shaft 82 as at 85 the remaining gears being positively connected in pairs, the large gears being secured against rotation with relation to their respective small gears by means of pins 86' or the like. The inner end of the shaft 82 is provided with a bevel pinion 87, engaging the gear 35. It will be seen that if the shaft 72 is rotated, the shaft 82 is driven through medium of the reducing train at a very much lower speed than the shaft 72, the approximate relative speeds of these shafts in actual practice being 850 to 1.

The operation of my device is as follows: The apparatus is shifted along the horizontal supports 10 until it is alined with the mouth of the kier K at which time it may be lowered into the mouth in any suitable

manner. The driving pulleys 73 are then connected by a belt to the power shaft.

The material to be piled within the kier is fed into the upper end of the sleeve 20, a funnel F being provided for this purpose. As the material leaves the lower end of the sleeve 20, it engages the chute 49 which is slowly oscillating and which causes the goods to be directed toward the sides and center of the kier in a substantially spiral curve as indicated at C of Figure 6. As the goods leaves the lower end of the chute 49 it is beaten by the beater chute 52, which is rapidly oscillating and whipped into folds about 18 inches in length in a manner similar to that now done by hand. These folds lie transversely of the spiral path imparted to the goods by the chute 49 as indicated at B Figure 6. As the chute 49 is rotating as it oscillates, the goods is directed equally to all parts of the kier and because of the fact that the beater chute 52 is actuated at such a high speed, the goods is formed into many folds. As is well known by those familiar with the art, rapid rotation of the feeding device has a tendency to kink or tangle the goods and I accordingly limit the relative sizes of the gear train connecting the cam and plate 26 in such a manner as to cause rotation of the chute 49 to be very slow.

As many changes are possible in the shape, size, and arrangement of the various parts herein shown and described, without in any manner departing from the spirit of the invention, I do not limit myself to the specific structure, but may make any such changes without departing from the spirit of the invention, or the scope of the subjoined claims.

What I claim is:

1. In a fabric piler, a guide chute, means for causing the lower end of said chute to travel in a substantially spiral path, a second chute disposed beneath the lower end of the first mentioned chute and traveling in the same path therewith, and means to cause said second chute to oscillate in a direction transversely of said spiral path.

2. In a fabric piler, a chute, means for simultaneously rotating said chute and oscillating said chute through a substantial arc, and means oscillating said chute through a lesser arc while being rotated and oscillated by said first named means.

3. In a fabric piler, a rotatable member, a chute pivotally connected with said rotatable member to rotate therewith, means for oscillating said chute through a substantial arc while rotating and means for oscillating said chute through a short arc while rotating and oscillating through said substantial arc.

4. In a fabric piler, a gear, means for rotating said gear, a cam, a chute, means connecting the gear and chute whereby said

chute is rotated; means connecting said cam and chute whereby said chute is oscillated as it rotates and means for oscillating said chute simultaneously with and independently of said first named means.

5. In a fabric piler, a chute, means for simultaneously rotating said chute and oscillating said chute through a substantial arc, means for adjustably limiting the length of said arc and means oscillating said chute through a lesser arc while being rotated and oscillated by said first named means.

6. In a fabric piler, a rotatable sleeve, a cam having a grooved track secured to said sleeve, a chute, means entering the groove of said cam and connected to said chute whereby said chute is oscillated, and means for varying the amount of oscillation of said chute.

7. In a fabric piler, a rotatable sleeve, a cam having a grooved track secured to said sleeve, a chute, means connecting said cam and said chute and entering the groove of said cam whereby said chute is oscillated, and means for varying the curvature of said grooved track, whereby the amount of oscillation imparted to said chute is varied.

8. In a fabric piler, a rotatable sleeve, a cam secured to said sleeve, said cam comprising an outer vertically disposed rim having outstanding edges forming a grooved track, said outstanding edges comprising separable blocks vertically adjustable upon said rim whereby the curvature of said track may be altered, a chute and means connected with said chute and entering the track of said cam whereby said chute is oscillated.

9. In a fabric piler an inner sleeve and an outer sleeve, means for rotating said sleeves at different speeds, a chute, means connecting one of said sleeves and said chute whereby said chute is simultaneously rotated and oscillated, a second chute pivotally connected with said first named chute to rotate and oscillate therewith, and means connecting the other of said sleeves and said second chute whereby said chute is further oscillated.

10. In a fabric piler, inner and outer rotatable sleeves, a cam carried by said outer rotatable sleeve, a rotatable support, a yoke pivotally connected therewith, a chute rigidly connected to said yoke, means connecting said yoke and said cam for simultaneously rotating and oscillating said yoke, a second chute pivotally connected with said yoke, and means connecting said second chute and said inner rotatable sleeve whereby said second chute is oscillated independently of the oscillation imparted thereto by said bracket.

11. In a fabric piler, inner and outer rotatable sleeves, a cam secured to said outer

rotatable sleeve, a rotatable support, a yoke pivotally connected therewith, means connecting said yoke and said cam for oscillating said yoke, a chute pivotally connected with said yoke and means connecting said chute and said inner rotatable sleeve whereby said chute is oscillated.

12. In a fabric piler, a chute, means for simultaneously rotating and oscillating said chute, a second chute connected to said first named chute to rotate and oscillate therewith and means for oscillating said second chute independently of said first named chute.

13. In a fabric piler, an inner sleeve, an outer sleeve, means for rotating said sleeves at different speeds, a chute, means connecting one of said sleeves and said chute whereby said chute is simultaneously rotated and oscillated, a second chute pivotally connected with said first named chute to rotate and oscillate therewith, means connecting the other of said sleeves and said second chute whereby said chute in further oscillated and means for adjustably varying the amount of oscillation imparted to said chute by said first named sleeve.

14. In a fabric piler, a gear, means for rotating said gear, a cam, a chute, means connecting the gear and chute whereby said chute is rotated, means connecting said cam and chute whereby said chute is oscillated as it rotates, means for oscillating said chute simultaneously with and independently of said first named means, and means for adjustably altering the amount of oscillation imparted to said chute by said cam.

15. In a fabric piler, inner and outer rotatable sleeves, a cam carried by said outer rotatable sleeve, a rotatable support, a yoke pivotally connected therewith, a chute rigidly connected to said yoke, means connecting said yoke and said cam for simultaneously rotating and oscillating said yoke, means for varying the amount of oscillation of said chute, a second chute, pivotally connected with said bracket and means connecting said chute and said inner rotatable sleeve whereby said second chute is oscillated independently of the oscillation imparted thereto by said yoke.

16. In a fabric piler, of a rotatable member, a chute pivotally connected to said rotatable member, means for rotating said rotatable member means for oscillating said chute, a beater chute arranged below said first named chute and means for oscillating said beater chute.

17. In a fabric piler, a rotatable member, a cam, means for rotating said cam,

means connecting said cam and said rotatable member whereby said rotatable member is rotated at a higher rate of speed than said cam, a yoke pivotally connected to said rotatable member, a chute rigidly secured to said yoke, means connecting said yoke and said cam whereby said yoke is oscillated a chute rigidly connected to said yoke, a second chute pivotally connected to said yoke and having its upper end disposed adjacent the lower end of said first named chute and means for oscillating said second chute.

18. In a fabric piler, an inner rotatable sleeve, a cam, means for rotating said cam and sleeve a rotatable member having depending arms, stub shafts mounted in said arms, a yoke pivotally mounted upon said stub shafts, means connecting said cam and said rotatable member for rotating said rotatable member, means connecting said cam and yoke for oscillating said yoke, links pivotally connected to said yoke, a chute secured to the free ends of said links, a pitman disc secured to one of said stub shafts and a pitman link pivotally connected at one end with said disc and at the other with one of said links intermediate its ends, and means connecting said stub shaft and said sleeve whereby said stub shaft is rotated.

19. In a fabric piler, an inner rotatable sleeve, a cam, means for rotating said cam and sleeve a rotatable member having depending arms, stub shafts mounted in said arms, a yoke pivotally mounted upon said stub shafts, a chute secured to said yoke, means connecting said cam and said rotatable member for rotating said rotatable member, means connecting said cam and yoke for oscillating said yoke, links pivotally connected to said yoke, a second chute secured to the free ends of said links, a pitman disc secured to one of said stub shafts, a pitman link pivotally connected at one end with said disc and at the other with one of said links intermediate its ends, a gear secured to said sleeve a pinion secured to said stub shafts and meshing with said gear.

20. A piling machine having a swinging chute to deliver the fabric to a pile, means for delivering fabric to the chute, and means for positioning the chute at the beginning of its swing.

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

HORACE JOHNSON CARTER.

Witnesses:

C. M. THOMAS,

HARRY B. STRADLEY.