Dec. 20, 1927. 1,653,311

G. L. RICE ET AL.

PILING MACHINE

Filed April 17, 1922 2 Sheets-Sheet 1

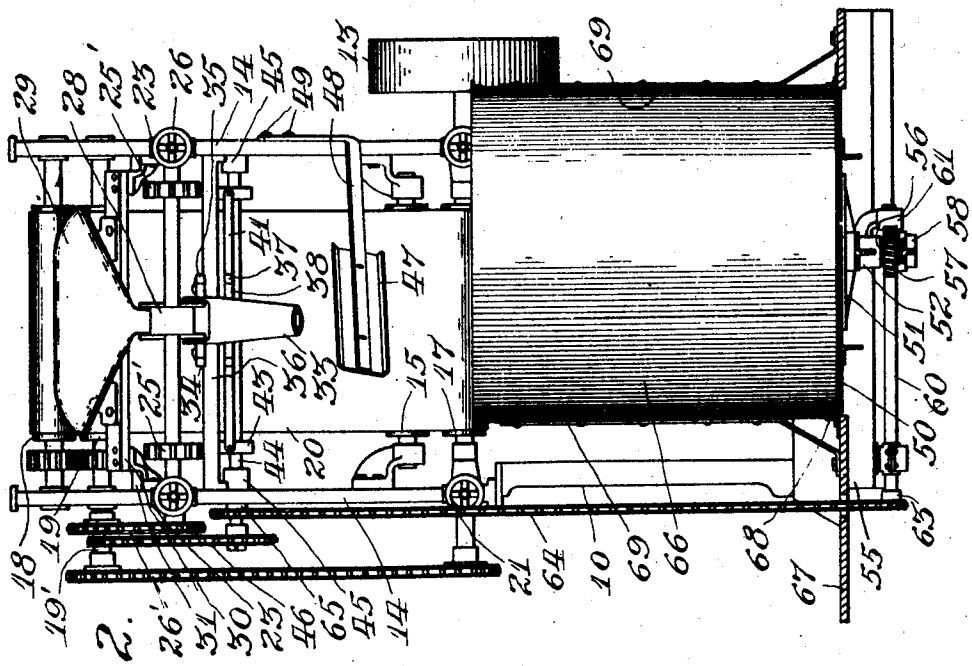


Fig. 2.

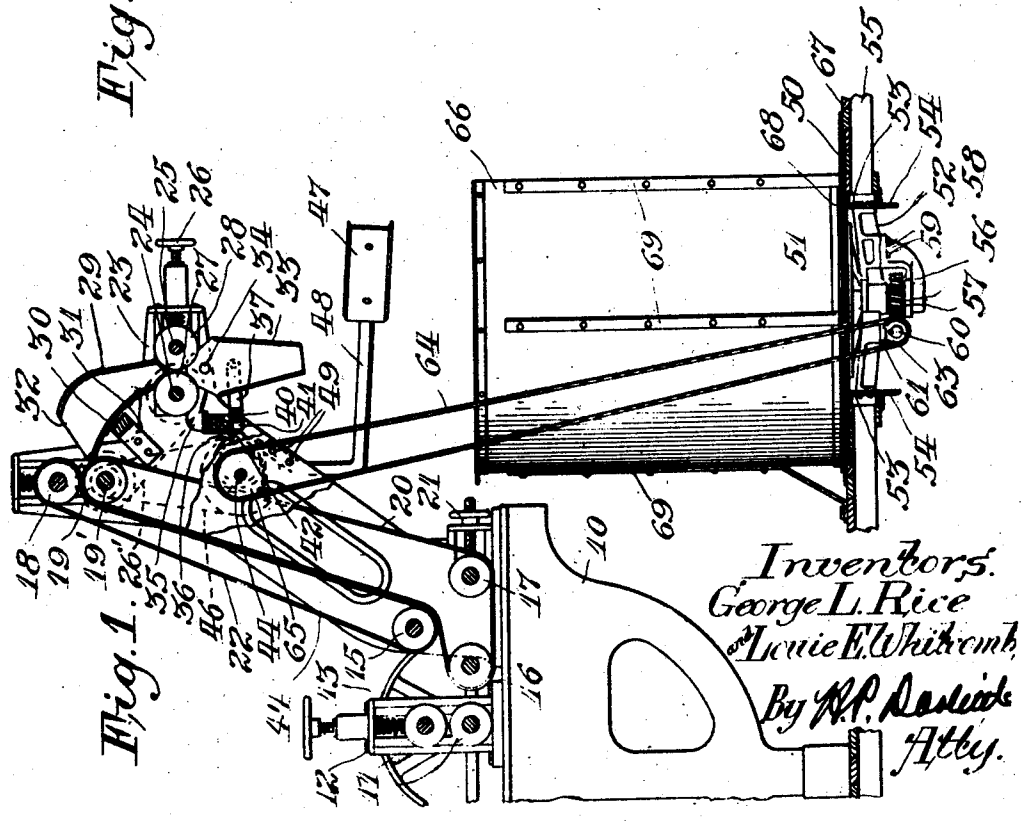


Fig. 1.

Inventors:
George L. Rice
and Louie E. Whitcomb
By R. P. Davidson
Atty.

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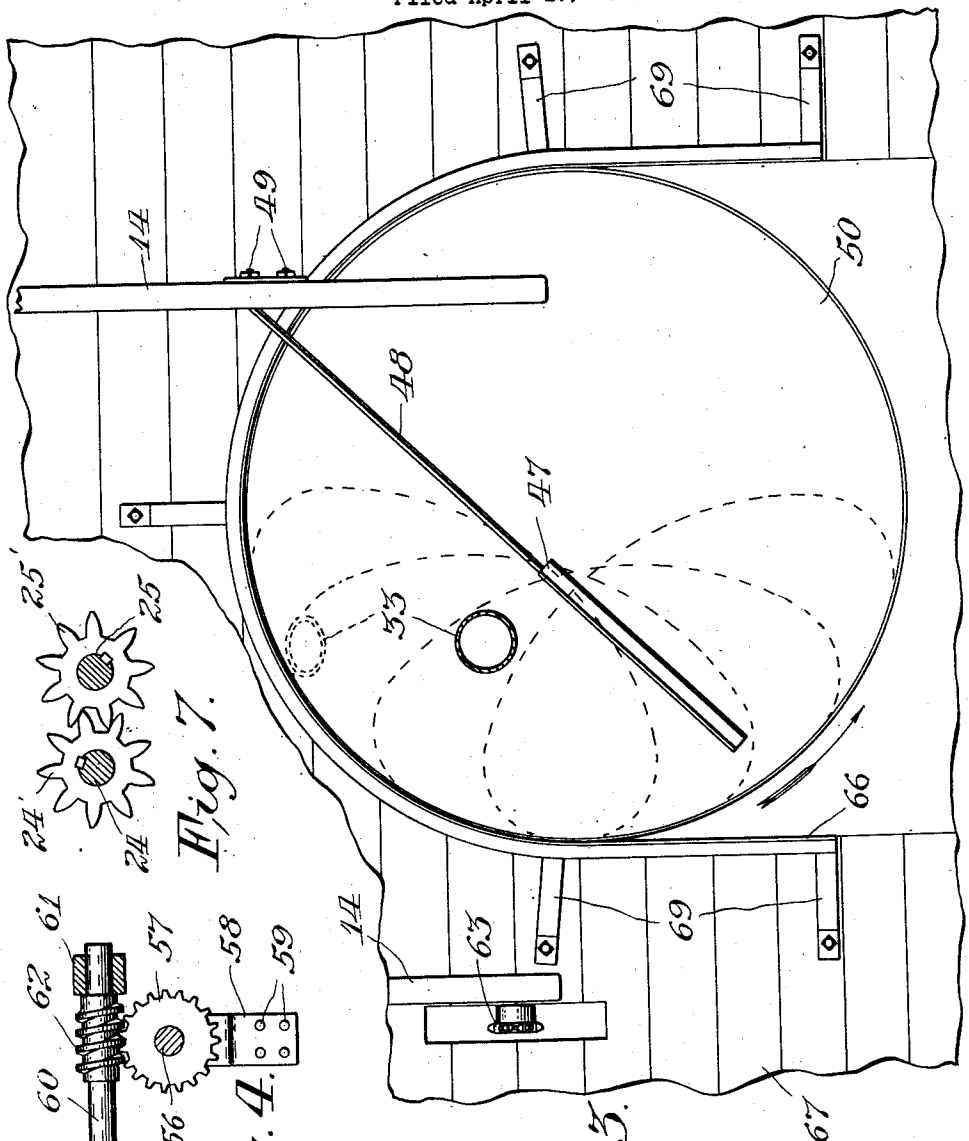


Fig. 5.

Fig. 4.

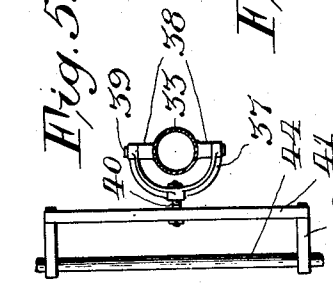


Fig. 6.

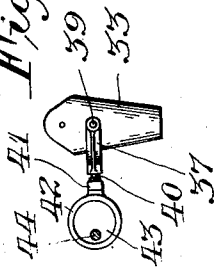


Fig. 7.

Inventors.
George L. Rice
and Louie E. Whitcomb,
By W. P. Doolittle
Atty.

Patented Dec. 20, 1927. 1,653,311

UNITED STATES PATENT OFFICE.

GEORGE L. RICE AND LOUIE E. WHITCOMB, OF CHICAGO, ILLINOIS, ASSIGNORS TO INTERNATIONAL HARVESTER COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF NEW JERSEY.

PILING MACHINE.

Application filed April 17, 1922. Serial No. 553,706.

This invention relates to a stacking or piling machine and a method in which a sliver of fiber or the like material is piled in a symmetrical form. It is particularly adapted as an attachment for a slivering machine which is used in connection with the manufacture of binder twine, rope or other like fibrous material.

The objects of this invention are to provide a method and means for piling or stacking the sliver in a series of overlapping loops as it is fed from the slivering machine without the liability of twisting or tangling the sliver of fiber.

A further object is to provide a simple and economical construction and one in which the various mechanisms cooperate in a manner to produce a stable stack or pile.

These and other objects are attained by providing an attachment for a slivering or the like machine comprising an oscillating chute through which the sliver is fed, positioned over and to one side of the center of a rotating table for piling the material in a symmetrical and stable pile.

Referring to the drawings—

Fig. 1 is a side elevational view showing part of a slivering machine having our improved piling attachment embodied therein;

Fig. 2 is a front elevational view of the piling machine shown in Fig. 1;

Fig. 3 is an enlarged top plan view of the rotating table showing diagrammatically the position of the sliver as it is delivered in overlapping loops to form a pile;

Fig. 4 is a detail cross sectional view of the worm and gear driving mechanism for rotating the table;

Figs. 5 and 6 are top plan and side elevational views respectively of the eccentric drive for the oscillating chute; and

Fig. 7 is an enlarged detail view of the gears that drive the feed rollers.

For the purposes of illustration we have shown our improved piling attachment connected to a slivering machine comprising a main frame 10, only part of which is shown, and main rollers 11 mounted in the bearing brackets 12. Main rollers 11 are operatively driven by the power pulley 13. Securely fixed to the main frame 10 are upwardly inclined elevator frame members 14 positioned on the opposite sides of the machine in a manner to form bearing supports for the endless elevator rollers 15, 16, 17, 18 and 19. Surrounding the rollers 16, 17, and 19 is an endless elevator belt 20 which is normally held taut by the adjustable member 21 which in turn is connected to the adjustable bearing of the roller 17, (not shown). The roller 16 is operatively driven by being geared to the lower roller 11, (not shown). The rollers 15 and 18 are connected to an endless elevator belt 22 adapted to operatively contact with the endless elevator belt 20 in a manner to cooperate in the elevation of the sliver as it is delivered to the piling machine. The above described mechanism per se does not form any part of the present invention and it is therefore thought that a more detailed description of the same is not necessary.

Laterally extending from and integral with the elevator frame members 14 are the arms 23. These arms 23 are provided with bearing apertures adapted to receive the shafts 24 and 25, the shaft 25 being adapted to be adjusted by the adjusting screw 26 in a direction to and from the shaft 24. Centrally mounted on the shafts 24 and 25 are two oppositely disposed feed rollers 27 and 28 respectively. The shaft 24 is operatively driven from the shaft 19′ by means of a flexible gear element 26′ interposed between these two shafts. The shaft 24 operatively drives the shaft 25 by means of a gear 24′ engaging a similar gear 25′ fixed respectively to the shafts 24 and 25, (see Fig. 7). Positioned above the rollers 27 and 28 is a funnel-like chute 29 held in position by a cross bar 30 fixed to the elevator frame members 14 by means of brackets 31. The funnel-like chute 29 is positioned with its larger mouth 32 to receive the sliver as it is delivered between the elevator conveyers 20 and 22 at the rollers 18 and 19. Positioned below the rollers 27 and 28 is an oscillating chute 33 pivoted at 34 to laterally extending brackets 35 which are fixed to a cross bar 36 secured to the elevator frame members 14. The means for driving this oscillating sliver delivering chute 33 comprises a yoke mem-

ber 37 pivotally secured to the chute 33 by means of studs 38 and bolts 39. The yoke 37 is adjustably connected by a bolt 40 to a transverse bar 41. The bar 41 is connected at its opposite ends to rings 42 which are rotatably mounted on eccentric disks 43 fixed to a shaft 44, (see Figs. 5 and 6). The shaft 44 is journaled in the bushings 45 mounted in the elevator frames 14. The shaft 44 is operatively driven by the gearing mechanism 46 connected to the shaft 19' of the roller 19 as shown in Figs. 1 and 2. Diagonally disposed with respect to the oscillating movement of the chute 33 is a guiding member 47 fixed to an extending arm 48 which in turn is secured by means of bolts 49 to the elevator frame 14, (see Fig. 3). The guiding member 47 is adapted to guide the sliver of fiber as the sliver is delivered from the oscillating chute 33.

In connection with our improved piling machine, we have provided a rotatable table 50, the center of which is positioned below and to one side of the oscillating chute 33. This rotating table 50 is preferably made of steel and securely mounted on a webbed spindle 51 journaled in a supporting bracket 52. The bracket 52 is secured by means of bolts to the channel members 53 which in turn are supported by the angular members 54 secured to the floor beams 55. The spindle 51 is provided with a vertically extending shaft 56 which has secured thereto a gear 57. The lower end of the shaft 56 is supported in a bearing bracket 58 secured to the bracket 52 by means of bolts 59. The rotating table 50 is operatively driven through the shaft 60 pivotally mounted in a bearing 61 formed integrally with the bracket 52. The shaft 60 has securely fixed adjacent the bearing 61 a worm 62 adapted to mesh with the gear 57 to operatively drive the same. The other end of the shaft 60 is provided with a sprocket 63 which is geared by means of a chain 64 to a sprocket 65 fixed to the shaft 44. From the construction above described, it will be seen that as the shaft 44 actuates the chute 33 in a back and forth direction, the gear 65 and chain 64 through the sprocket 63, shaft 60 and worm 62 will rotate the table 50. By reason of this simultaneous oscillation of the chute and rotation of the table, the sliver is delivered in the form of loops in the manner shown diagrammatically in Fig. 3.

Additional means has been provided which cooperates with the above described mechanism to assist in forming the sliver of fiber in a symmetrical and stable pile. This means comprises a substantially circular shield 66 secured to the floor 67 adjacent to and extending 180 degrees of the periphery of the rotating table 50. The shield 66 is secured to the floor 67 by means of the angle member 68. The braces 69 are provided at intervals to reinforce and support the shield 66. It will be noted that the shield 66 does not entirely surround the rotating table 50 but that an opening equal to the diameter of the rotating table 50 is provided to permit the withdrawal of the fibrous material after the same has been piled into symmetrical form.

In the operation of the above described mechanism, the sliver of fiber, after passing through the slivering machine, is fed to and passes between the rollers 11. From there it is conveyed between the elevating conveyers 20 and 22 upwardly to and between the rollers 18 and 19 from where it is delivered into the funnel shaped chute 29. From this point it is fed between the feed rollers 27 and 28 downwardly through the oscillating chute 33. As a sliver of fiber is being fed through the chute 33, the free or delivery end of the chute is swung from full line position to dotted line position shown in Fig. 3. As the sliver of fiber is fed through the chute and, at the same time, the chute has assumed the full line position shown in Fig. 3, the fiber strikes against the guiding member 47 in a manner to throw or loop the sliver outwardly toward the circumference or periphery of the rotating table 50 and, at the same time, the shield 66 confines the outward throw or loop of the sliver within the periphery of the rotating table. It will be seen from this construction that the combination of the rotating table, oscillating chute, guiding member and shield produces a stack of fibrous material in the shape of a series of overlapping elliptical loops in such a manner as to form a symmetrical and stable pile. As the sliver pile assumes substantially the height of the shield 66, the pile is removed by the operator or attendant with a large hook and a new pile is begun on the bottom of the table in the manner above described.

While we have described in the above specification one embodiment which our invention may assume, it is to be understood that modification may be made without departing from the spirit and scope of the invention as expressed in the following claims.

We claim as our invention:

1. A piling machine having an oscillating sliver delivery chute, a rotating table positioned below said chute and stationary means positioned adjacent and co-operating with said table for forming the sliver in a pile on said rotating table.

2. A piling machine having a sliver delivery chute, a rotating table positioned below said chute, and stationary means substantially surrounding said table for forming the sliver in a pile.

3. In a piling machine having a movable delivery chute, a rotating table positioned below said chute, a stationary shield posi-

tioned substantially around said table, and means for actuating said chute and table.

4. In a piling machine having a sliver delivery chute, a rotating table positioned below said chute, and stationary means for guiding the sliver onto said table.

5. In a piling machine having a movable sliver delivery chute, a rotating table positioned below said chute, a stationary shield positioned adjacent said table, and means for guiding the sliver onto said table.

6. In a piling machine having an oscillating sliver delivery chute, a rotating table positioned below said chute, a shield positioned adjacent said table, and means for guiding the sliver onto said table.

7. In a piling machine having a movable sliver delivery chute, a rotatable table positioned below said chute, and stationary means positioned over said table for guiding the sliver onto said table.

8. In a piling machine having an oscillating sliver delivery chute, a rotating table positioned below the chute, and a deflector so positioned that the sliver intermittently engages the same to be guided onto the rotating table.

9. In a piling machine having an oscillating sliver delivery chute, a rotating table positioned below the chute, and a stationary deflector positioned between the chute and table to guide the sliver onto the rotating table.

10. In a piling machine having an oscillating sliver delivery chute, a rotatable table positioned below said chute, and means positioned over said table for guiding the sliver onto said table.

11. In a piling machine having a movable sliver delivery chute, a rotating table positioned below said chute, a shield positioned adjacent said table, and means positioned over said table for guiding the sliver onto said table.

12. In a piling machine having a movable sliver delivery chute, a rotating table positioned below said chute, a shield positioned adjacent said table, and means comprising an arm positioned between said chute and table for guiding the sliver onto said table.

13. In a piling machine, the combination with the oscillating sliver delivery chute, of a rotating table positioned below said chute, a shield positioned adjacent said table, a guiding arm positioned between said chute and table, and means for operatively driving said chute and table.

14. In a piling machine having a rotatable table, an oscillating sliver delivery chute positioned above and to one side of the center of said table, and stationary means for guiding the sliver onto said table.

15. In a piling machine having a rotatable table, an oscillating sliver delivery chute positioned above and to one side of the center of said table a shield positioned adjacent said table, and means for guiding the sliver onto said table.

16. In a piling machine having a rotatable table, an oscillating sliver delivery chute positioned above and to one side of the center of said table, and stationary means positioned between said chute and table for guiding the sliver onto said table.

17. In a piling machine having a rotatable table, an oscillating sliver delivery chute positioned above and to one side of the center of said table, and stationary means positioned above and to one side of the center of said table for guiding the sliver onto said table.

18. In a piling machine having a rotatable table, an oscillating sliver delivery chute positioned above and to one side of the center of said table, a shield positioned adjacent said table, and means positioned above and to one side of the center of said table for guiding the sliver onto said table.

19. The combination with a piling machine having a sliver feeding mechanism and a movable sliver delivery chute, of a rotatable table disposed below said chute to receive a sliver therefrom, and separate driving connections from said feeding mechanism for moving the chute and rotating the table.

20. The combination with a piling machine having a sliver feeding mechanism and a movable sliver delivery chute, of a rotatable table disposed beneath said chute, a stationary shield substantially surrounding said table, a stationary deflector positioned below the chute, the deflector and shield cooperating to form a sliver in a symmetrical pile on said table.

21. The method of coiling sliver as at emerges from the machine which consists in laying it by gravity in a series of rings spaced partly away from each other and extending regularly around the periphery of a circle, said rings being so formed by rotating the lower end of the suspended sliver eccentrically with the periphery of the circle.

22. The method of coiling sliver as it emerges from the machine which consists in laying it by gravity in a series of rings spaced partly away from each other and extending regularly around the periphery of a horizontal rotary table, said rings being so formed by rotation of the lower end of the suspended sliver eccentrically with the circumference of the table as it contacts with the table.

23. A receiver for sliver located at the delivery point of the sliver feed and comprising a horizontal platform and rotary means connected thereto for coiling the sliver on said platform as received by gravity thereon, and stationary means for holding the layers in position.

24. A receiver for fibrous sliver comprising a horizontal rotary platform, means for delivering the sliver to said platform, and a stationary guard embracing the platform on three sides but open on the fourth side.

25. A receiver for fibrous sliver comprising a horizontal rotary table, means for delivering the sliver to said table, and a shield having three sides embracing the table and having its ends spaced apart to leave an opening on the fourth side.

In testimony whereof we affix our signatures.

GEORGE L. RICE.
LOUIE E. WHITCOMB.