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Patented Dec. 26, 1899.

W. M. McCONNAUGHAY.

RAISIN SEEDER.

(Application filed Apr. 29, 1898.)

(No Model.)

2 Sheets—Sheet 1.

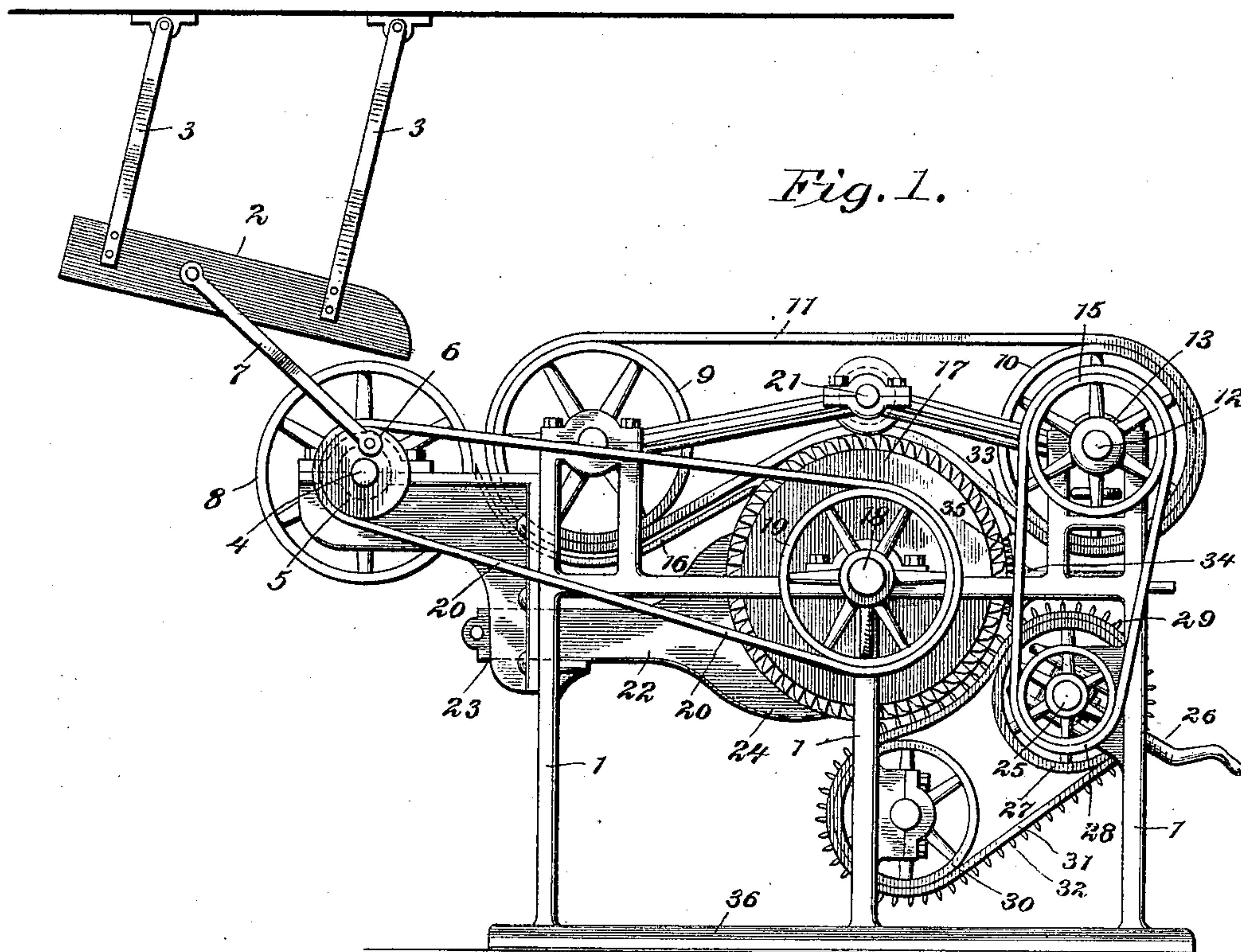


Fig. 2.

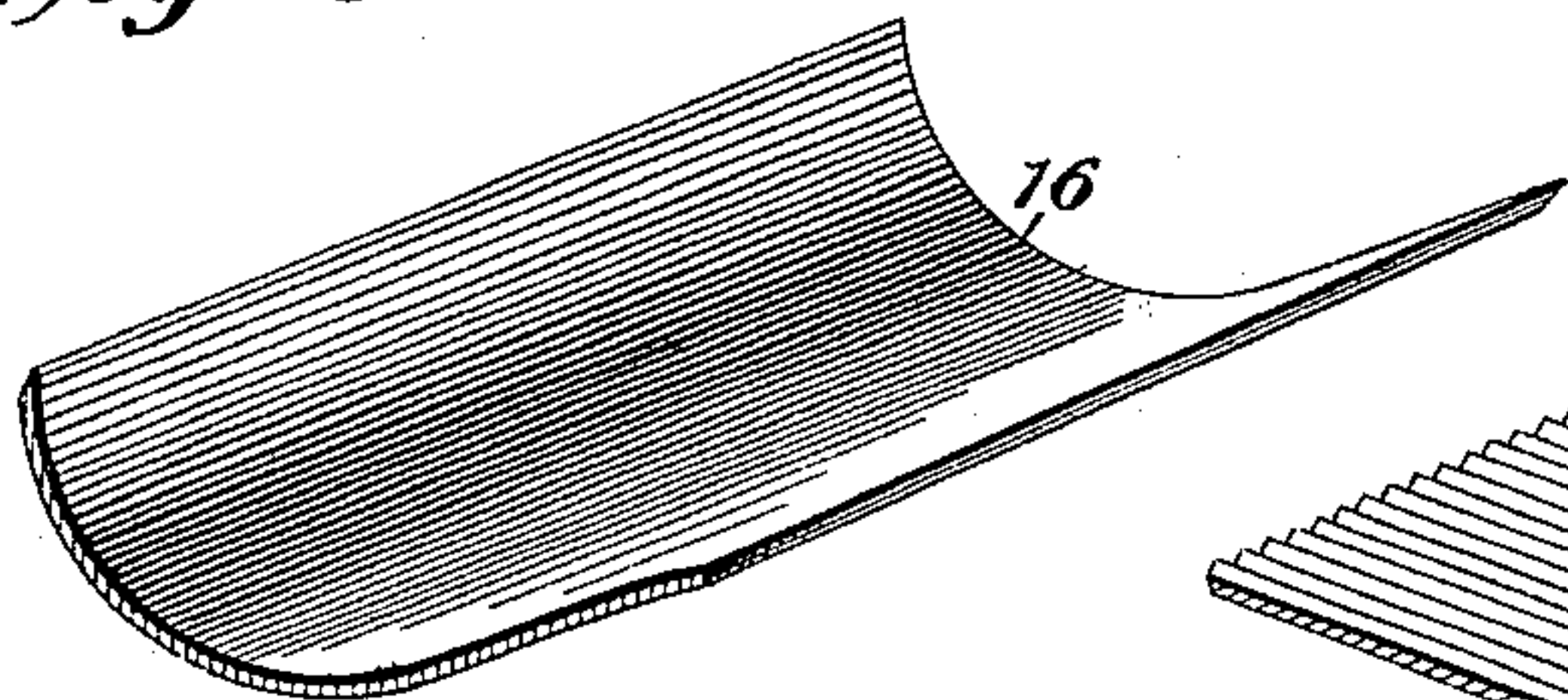


Fig. 3.

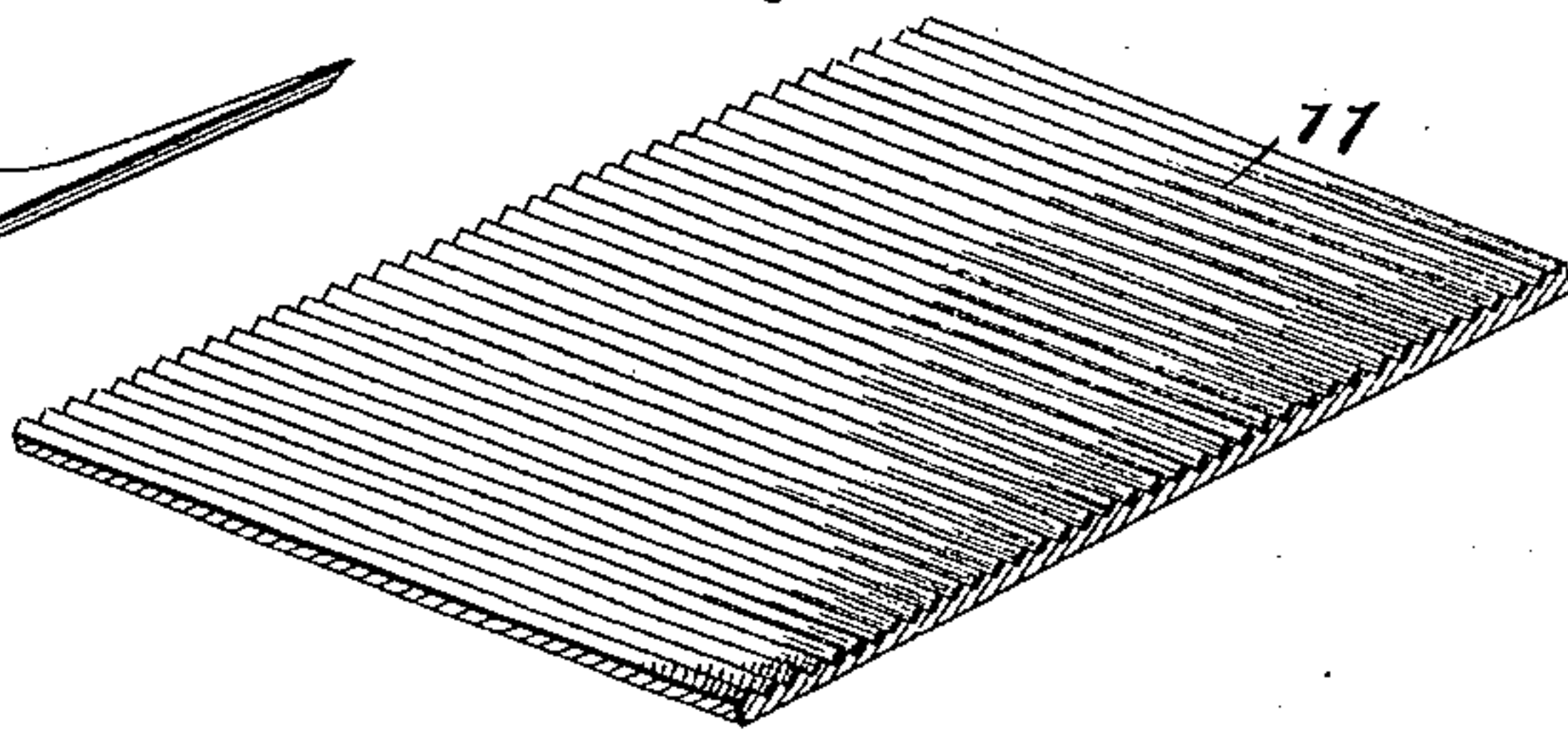
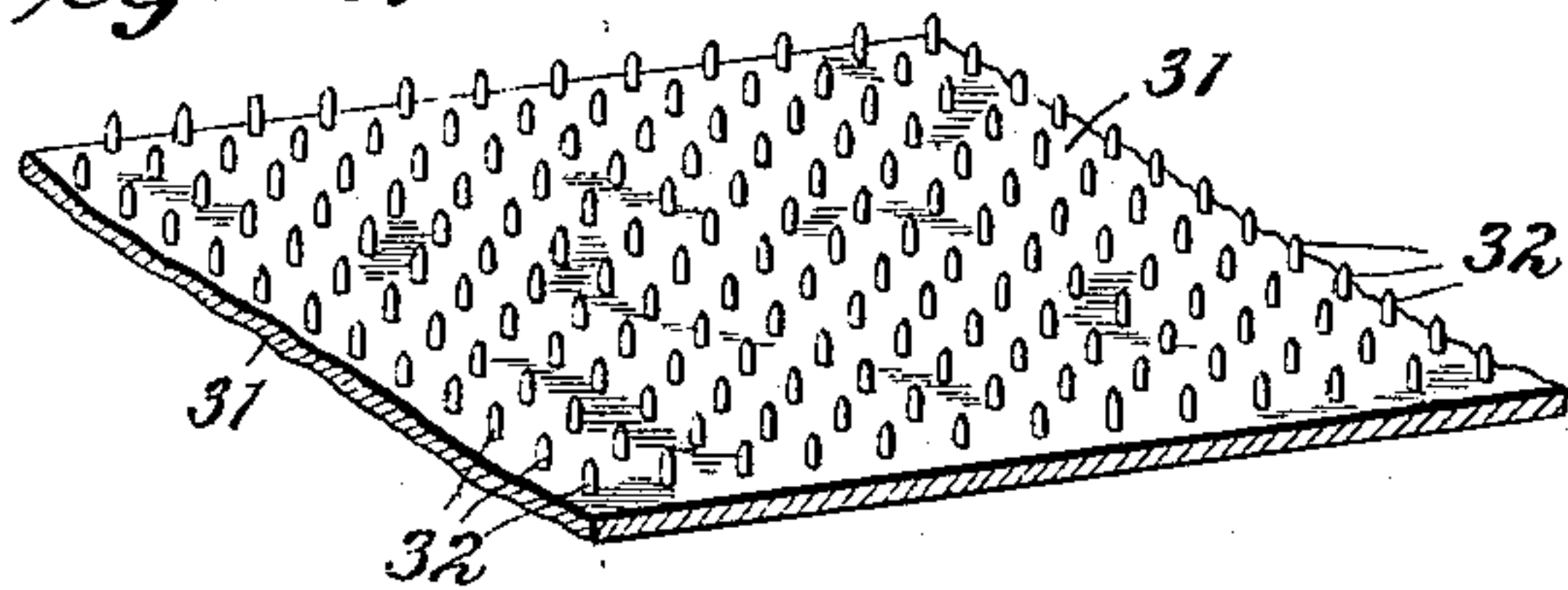


Fig. 4.



Witnesses

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2 Sheets—Sheet 2.

Fig. 5.

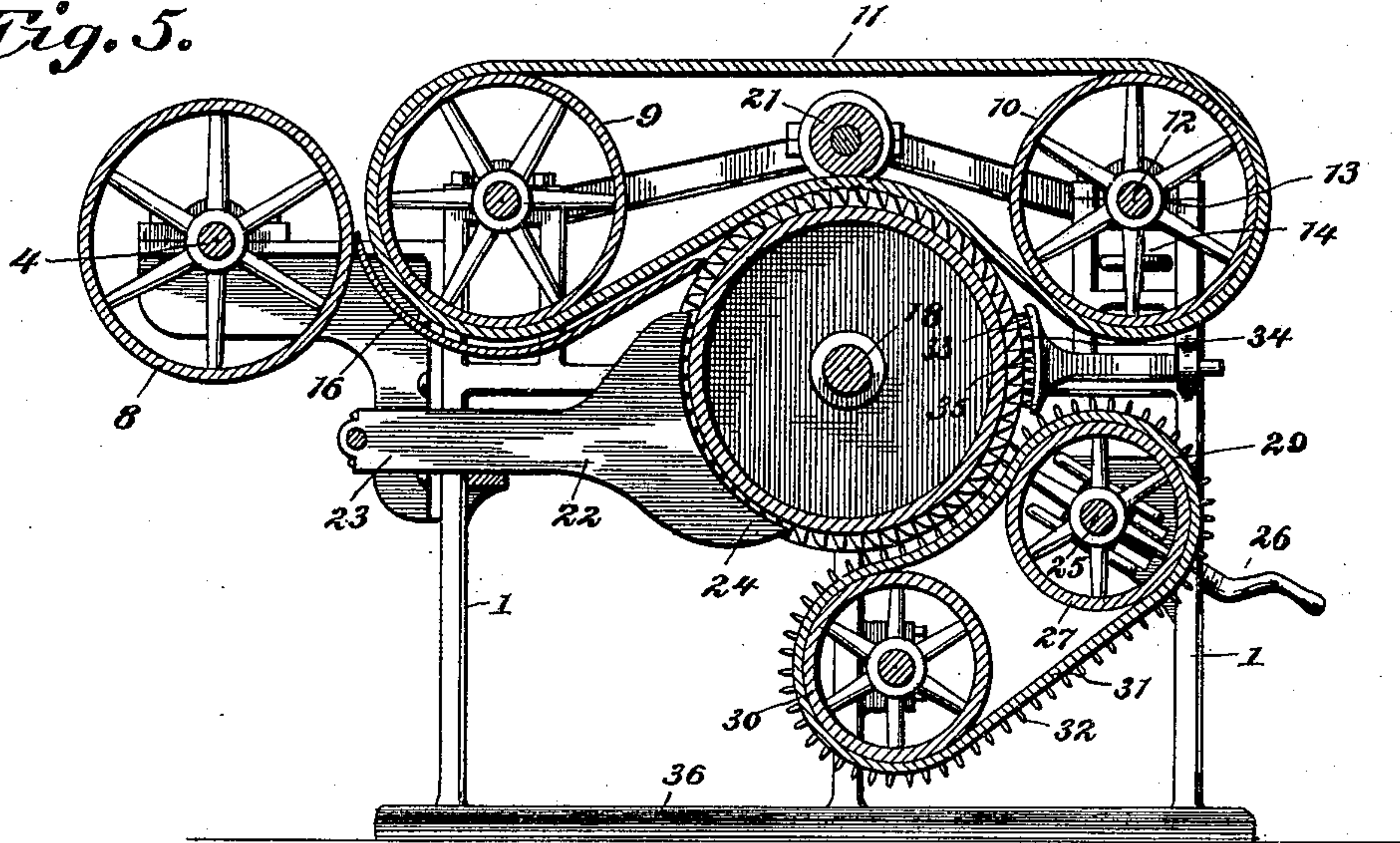
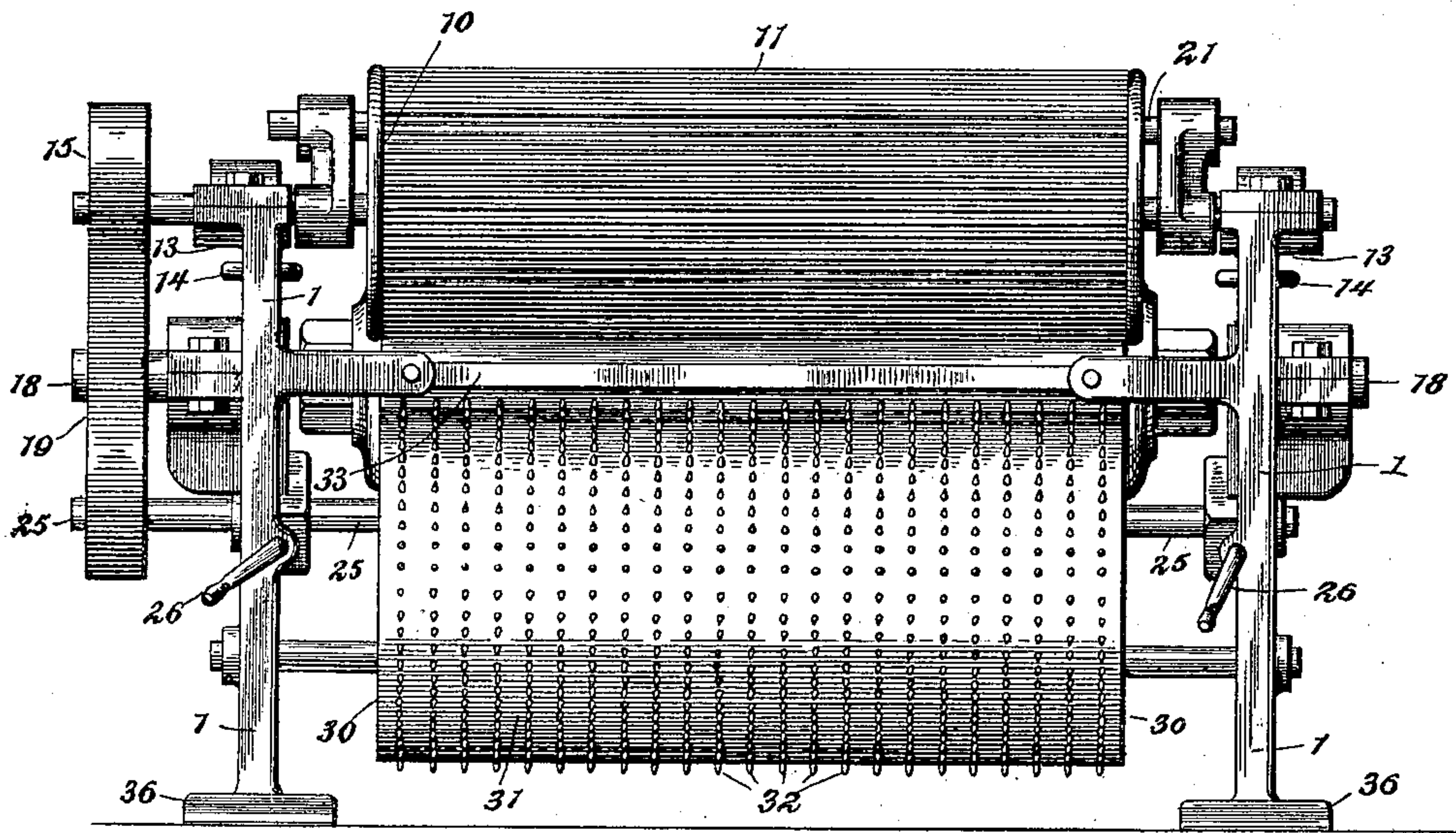


Fig. 6.



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UNITED STATES PATENT OFFICE.

WILLIAM M. McCONNAUGHAY, OF FRESNO, CALIFORNIA, ASSIGNOR TO THE CALIFORNIA SEEDING MACHINE COMPANY, OF CALIFORNIA.

RAISIN-SEEDER.

SPECIFICATION forming part of Letters Patent No. 639,756, dated December 26, 1899.

Application filed April 29, 1898. Serial No. 679,223. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM MORTON McCONNAUGHAY, a citizen of the United States, residing at Fresno, in the county of Fresno and State of California, have invented certain new and useful Improvements in Raisin-Seeder; 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.

This invention relates to a raisin-seeder adapted to rapid voluminous work and in its operation first prepares the raisins for seeding by pressing them into a thin flat shape and then feeding them with marked regularity by means of an apron located very close to an impaling-belt, the said feeding device placing the raisins by single rows at one time across the apron and upon the teeth of a series of saws, and at this step of the operation the impaling-belt begins to press the pulp of the raisins between the teeth of the said saws and force the said pulp away from the seed.

The invention consists of the specific and general construction, arrangement, and combination of the several parts, which will be more fully hereinafter described and claimed.

The object of the invention is to facilitate the operation of seeding raisins in large quantities, thus saving the expense usually incidental to machines working slowly, and efficiently remove the seeds without mutilating the pulp to any marked degree.

In the accompanying drawings, Figure 1 is a side elevation of a raisin-seeding machine constructed in accordance with my invention. Fig. 2 is a detail perspective view of the raisin-flattening concave removed from the machine and which is adapted to cooperate with the feed-roll and a portion of the impaling-belt. Fig. 3 is a perspective view of a fragment of the impaling-belt. Fig. 4 is a similar view of a fragment of the seed-extracting belt. Fig. 5 is a longitudinal sectional elevation taken centrally through the machine shown by Fig. 1, and Fig. 6 is an elevation looking at the rear end of the machine.

Referring to the drawings, wherein similar numerals of reference are employed to indicate corresponding parts in the several views,

the numeral 1 designates a frame of any preferred form of construction and has at different points therein vertical and horizontal supports—such as sills, braces, and analogous devices—to accommodate the reception and relative location of the several mechanisms, which will be more fully hereinafter set forth. All the rolls, pulleys, and belts, or, in fact, any rotatable parts that may be hereinafter referred to are intended to move with any desired speed. In the upper portion of one end of the frame 1 a feeding chute or trough 2 is movably suspended preferably by rods 3 and at an angle of inclination, the outer end being higher than the inner end. Below the said feeder a shaft 4 is located and extends the full width of the machine and has thereon a pulley 5, carrying a wrist-pin 6, of course eccentrically positioned thereon. Attached to the wrist-pin 6 and to one edge of the feeding trough or chute 2 is a shaking-arm 7, which imparts a reciprocating motion to the said feeding trough or chute, and thereby moves the raisins toward the lower end of said feeding device. On the shaft 4 is firmly secured a roll 8, which is constructed of any suitable hard substance and extending the full width of the machine, the shaft 4 being slightly longer than the said roll to engage suitable bearings and also to receive the pulley 5 at one end. In advance of the roll 8 a hollow roll 9 is mounted and has rotary motion imparted thereto, and traveling over the same and a second roll 10 at the opposite side of the machine and in line with the said roll 9 is an impaling-belt 11, which must also be of the width of the machine on which it is used and is composed, preferably, of a leather or canvas base overlaid with soft rubber on the outer surface, which may be either smooth, corrugated, or checked. The roll 10 is operated by a shaft 12, mounted in movable bearings 13, which are adapted to be adjusted by means of a screw-rod and handle 14, the latter extending upwardly through the frame and within convenient reaching distance. On the said shaft 12 is also mounted a pulley 15, and the shaft 12 and roll 10 extend entirely across the machine, as well as the roll 9 and impaling-belt 11. Leading from a point between the rolls 8 and 9, the latter being closely ar-

ranged, is the upper end of a metallic apron 16 of a concave form and having its opposite end extending over a part of a saw-cylinder 17, composed of a series of circular saws placed
 5 on a shaft 18 with a narrow space between each saw. The back edge of each of the teeth of the saws points directly to the center of the shaft, the point of the teeth being diamond or chisel shaped and the bevel slanting
 10 from the point in the direction that the saws move. The adjacent end of the apron 16 fully projects over the said saw-cylinder from end to end, the said apron and cylinder being also extended from one side of the frame to
 15 the other. The saw-cylinder is operated by means of a pulley 19 on the shaft 18, which is engaged by a belt 20, running to the pulley 5, and the impaling-belt 11 closely bears upon the upper portion of the said cylinder 17,
 20 passing between the said cylinder and a guide and presser-roll 21. The rolls 9 and 10 are so situated relatively to the cylinder 17 that the said impaling-belt is drawn up over the said cylinder in a curved line and a pressure is
 25 thereby instituted between the said belt and cylinder, which facilitates the operation of forcing the raisins upon the saw-teeth. Under the apron 16 a series of shedders 22 are positioned and consist of rear arms 23, having
 30 front crescent-shaped heads 24, which engage the spaces between the circumferential lines of saw-teeth, the said shedders being closely arranged in series and equal in number to the said spaces between the saw-teeth, and the
 35 function of the same is to remove the fruit-pulp from the saw or prevent said pulp from being forced down too closely between the saw-teeth and in such position as to prevent succeeding mechanism from properly operating thereon. Below the shaft 12 is another
 40 shaft 25, mounted in adjustable bearings, which are operated by screw-rods 26, exteriorly projecting from one end of the machine. On the said shaft 25 is a pulley 27, which is
 45 surrounded by a belt 28, running from the pulley 15 on the said shaft 12. A roller 29 is also fixed on said shaft 25, and moving over the same and over a lower roller or elongated pulley 30 is a seed-extracting belt 31, having
 50 a series of steel picks 32 on the outer surface thereof. The roller 29 and the roller or pulley 30 are also arranged in such position relatively to the saw-cylinder 17 that the seed-extracting belt will be brought to bear against
 55 the saw-teeth with a certain amount of tension and in a curved line to always insure an engagement of the said belt with the cylinder. Above the roller 29 and standing closely to the saw-cylinder is a concave 33, having mounted
 60 therein a series of removable bars 34, carrying teeth 35. By having the teeth of the concave mounted on bars, breakage of one or more of the teeth in any one of the bars can easily be remedied by removing such bar or
 65 bars and substituting others therefor without rendering the entire concave unfit for use or inefficient in its operation.

All of the parts, as will be understood from the construction and arrangement heretofore set forth, will be extended from one side to
 70 the other of the machine, and this is done to give a greater working surface and permit operation on a larger quantity of raisins.

In operation the raisins are dropped from the automatic feeder, consisting of the chute
 75 or trough 2, between the rolls 8 and 9 and onto the adjacent portion of the apron 16, the latter being so closely arranged to the said rolls that as the impaling-belt 11 comes around over the roll 9 and the apron the raisins will
 80 be brought adjacent to the said belt and carried along over the said apron to the saw-teeth of the saw-cylinder. The raisins deposited on the apron are first prepared for seeding by being pressed and flattened out by
 85 the impaling-belt and the resistance offered by the said apron and are subsequently evenly fed on the saws. When the raisins thus prepared fall upon the saws, the impaling-belt begins pressing the pulp of the raisins between
 90 the saws, with the raisin-seeds remaining on the points of the teeth, the pressure continuing to increase until the presser-roll 21 is reached, at which point, by reason of the close relation between said roll and the saw-cylinder, sufficient
 95 pressure is exerted to force the yielding surface of the impaling-belt, whether it be checked or corrugated, close around the seeds, and thereby force the pulp away from them. On leaving the presser-roll 21 the raisins
 100 will have been cleared from the impaling-belt and deposited upon the saws of the cylinder 17, and the raisins will then be positioned on the saws so that the pulps thereof are pressed between said saws and the seeds
 105 held on the points of the teeth with the skin of the raisins drawn firmly over said teeth, and in this condition the raisins are carried by the saws to the concave 33. The small teeth of the concave cut the skins which are
 110 drawn tightly over the sides of the points of the saws and loosen said seeds. From this point, with all the pulp between the saws, the skins over the seeds ruptured, and the seeds loosened, the product is then carried by the
 115 saws to engaging position with the extracting-belt 31, where the seeds are removed by the short steel or wire picks. On leaving the seed-extracting belt all the pulp is drawn between the saws and the seeds removed, and
 120 in this condition the pulp is finally operated upon by the shedder being sharp enough to pass under the raisin-pulps between the saws, and as the saws move toward the shedder the said pulps are lifted clear of the teeth and
 125 deposited on an apron 36 and carried from the machine to any suitable point.

The machine of my invention operates first to press the raisins to a flattened condition previous to feeding them to the seeding mechanism, the latter consisting in the saw-tooth
 130 cylinder and the movable impaling-apron; secondly, the presser-roll 21 operates to depress the pulp of the raisins into the spaces

between the teeth on said saw-cylinder and thereby to impale the raisin-skins on the saw-teeth; thirdly, the toothed concave breaks the raisin-skins as the pulps of the raisins are presented to the concave; fourthly, the toothed seed-apron removes the seeds from the saw-teeth of the revoluble cylinder while allowing the raisin-pulps to remain in engagement with the cylinder, and, finally, the shedding mechanism removes the raisin-pulp from the revoluble cylinder, because this shedding mechanism closely embraces the cylinder in the intervals between the series or rows of teeth thereon.

The teeth of my revoluble saw-cylinder are peculiarly formed for the purpose of having the raisin-pulps wedged in the intervals between said teeth and to carry the raisin-pulps to and past the concave and the spiked seed-apron and to effect the removal of the seed from the raisins when the pulps are forced by the impaling-apron and the presser-roll 21 into the spaces between the teeth. Each tooth has its rear edge in a line radially to the axis of the cylinder; but the edge which faces in the direction in which the tooth travels in the rotation of the cylinder is inclined for a part of its length to a radius of the cylinder and the outer extremity of the inclined part of the tooth is abruptly inclined, as clearly shown by Fig. 1. By giving the double inclination to the front edge of the tooth a space is left for the wedging of the raisin-pulp and a space is provided on the outer extremity of the tooth when it is opposed to the surface of the impaling-apron, which space allows the seed to lodge or adhere to the tooth in a manner to effect the removal of the seed by the spikes of the seed-apron which are adapted to travel in close relation to the beveled ends of the teeth on said cylinder.

It will be understood that subsequent to the action of the impaling-belt and the presser-roller 21 relatively to the toothed cylinder the raisin-pulps are pressed upon the teeth of the cylinder or they are impaled thereby. This operation of impaling the raisins on the teeth causes the teeth to press the raisin-seed through the pulp and to the skins, and the skins of the raisins are drawn firmly over the teeth of the saws. In order to remove the seeds from the raisins which are impaled by the teeth, it is desirable to cut or slit the raisin-skins, and to attain this end I provide the concave in close relation to the cylinder, said concave having teeth which extend toward the rows of cylinder-teeth and operate efficiently in cutting the skin, so that the raisin-seeds may lodge on the cylinder-teeth, and said seeds may be removed by the seed-extracting belt before the raisin-pulps are thrown off the cylinder by the shedders.

Changes in the dimensions, proportions, and minor details of construction may be made and substituted for those shown and described without in the least departing from

the nature or spirit of the invention or sacrificing any of the advantages thereof.

Having thus described the invention, what is claimed as new is—

1. In a raisin-seeding machine, the combination of a saw-cylinder, rolls on opposite sides of the cylinder, an impaling-belt engaging said rolls and cylinder, a concave under one of the rolls leading to the said cylinder and closely arranged to the impaling-belt for the purpose of flattening the raisins, means for delivering the raisins to the said concave, and means for releasing the seeded raisins from the said cylinder.

2. In a raisin-seeding machine, the combination of a cylinder having a series of teeth thereon, an impaling-belt engaging the said cylinder and operating to press the raisins closely on the teeth thereof, an unyielding apron over which the said impaling-belt closely travels and flattens the raisins thereon, and shedders engaging the said cylinder.

3. In a raisin-seeding machine, the combination of a saw-cylinder, an impaling-belt movable over the upper portion of said cylinder, a presser-roll located adjacent to said cylinder for instituting a pressure of the belt closely against the cylinder, an unyielding apron over which said belt also moves for flattening the raisins before being fed to the said cylinder, means for feeding the raisins to the apron, a concave on one side of the cylinder for loosening up the pulp and breaking the skins of the raisins, a seed-extracting belt having series of picks thereon bearing against the said cylinder, and shedders for clearing the cylinder of the raisin-pulp.

4. In a raisin-seeding machine, the combination with a cylinder having a series of points projecting therefrom, an impaling-belt closely bearing upon the upper portion of said cylinder, and an apron over which the said belt also closely moves to flatten the raisins before delivery to the said cylinder.

5. In a raisin-seeding machine, the combination of a cylinder having teeth projecting therefrom, means for impressing raisins upon said cylinder, spaced rollers adjacent to said cylinder, and a traveling seed-extractor belt supported by said rollers to present a concave surface in close relation to the toothed cylinder, said belt having a series of picks for removing the seeds from the cylinder-teeth, substantially as described.

6. In a raisin-seeding machine, the combination of a frame, a reciprocating feeding chute or trough at the upper portion of one end thereof, a roll below the said chute or trough, a pair of oppositely-disposed rolls in advance of the said roll below the chute or trough, a saw-cylinder between the oppositely-disposed rolls, one of the latter rolls being closely arranged to the roll below the chute or trough, an apron extending from the pair of rolls situated close to the said cylinder, an impaling-belt surrounding the oppo-

sitely-disposed rolls and closely bearing on the upper portion of the said cylinder, a presser-roll above the cylinder to force the said belt in close operative position, a toothed
5 concave on the further side of the cylinder, a seed-extracting belt below the said concave and having a series of picks thereon, and a shedder engaging the said cylinder to remove the seeded pulp therefrom.

10 7. In a raisin-seeding machine, the combination with a revoluble toothed cylinder, and an impaling-surface coöperating therewith, of a raisin-flattening mechanism situated in advance of the toothed cylinder and contiguous
15 ous to the impaling-surface, said impaling-surface coöperating with the raisin-flattening mechanism and with the toothed cylinder, substantially as described.

8. In a raisin-seeding machine, the combination with a revoluble toothed cylinder, and an impaling-surface coöperating therewith,
20 of a feed-roll in advance of the toothed cylinder and in active relation to the impaling-surface, and a flattening-apron situated between the feed-roll and the toothed cylinder and
25 conforming to the impaling-surface to serve in connection therewith in pressing raisins to a flattened condition before passing to the toothed cylinder, substantially as described.

30 9. In a raisin-seeding machine, the combination with a revoluble toothed cylinder, apron-rolls arranged in planes on opposite sides of the axis of the cylinder, and an impaling-apron fitted to said rolls, of a toothed concave below the path of the impaling-apron and
35 contiguous to the surface of the cylinder, and a presser-roll situated between the apron-rolls and opposite to the cylinder to act against the impaling-apron, substantially as described.

10. In a raisin-seeding machine, a revoluble
40 cylinder having the teeth thereof provided with bevels which incline backwardly from the direction of rotation of said cylinder, combined with an impaling-surface in active
45 relation to the cylinder, and a traveling spiked seed-apron supported by rollers to present a concave surface to the toothed cylinder and arranged for its spikes to travel contiguous
50 to the path described by the beveled faces of the cylinder-teeth, substantially as described.

11. In a raisin-seeding machine, the combination of a revoluble toothed cylinder having
its teeth provided with beveled outer extremities, an impaling device, a toothed concave
55 below the impaling device, and a seed-re-moving mechanism having spikes or teeth arranged to travel contiguous to the path of the beveled extremities of the cylinder-teeth,
substantially as described.

12. In a raisin-seeding machine, the combination with a revoluble toothed cylinder, a
60 feed mechanism, and an impaling-surface to wedge the raisin-pulps between the teeth and force the seed to lodge on the cylinder-teeth, of a toothed concave having its teeth projecting
65 toward the cylinder to break the skins of the raisins, a seed-clearing mechanism contiguous to the path of the cylinder-teeth, and a shedding mechanism operatively fitted to the cylinder in the intervals between the rows
70 of teeth thereon, substantially as described.

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

WILLIAM M. McCONNAUGHAY.

Witnesses:

FRANK LANING,
W. A. CONN.