

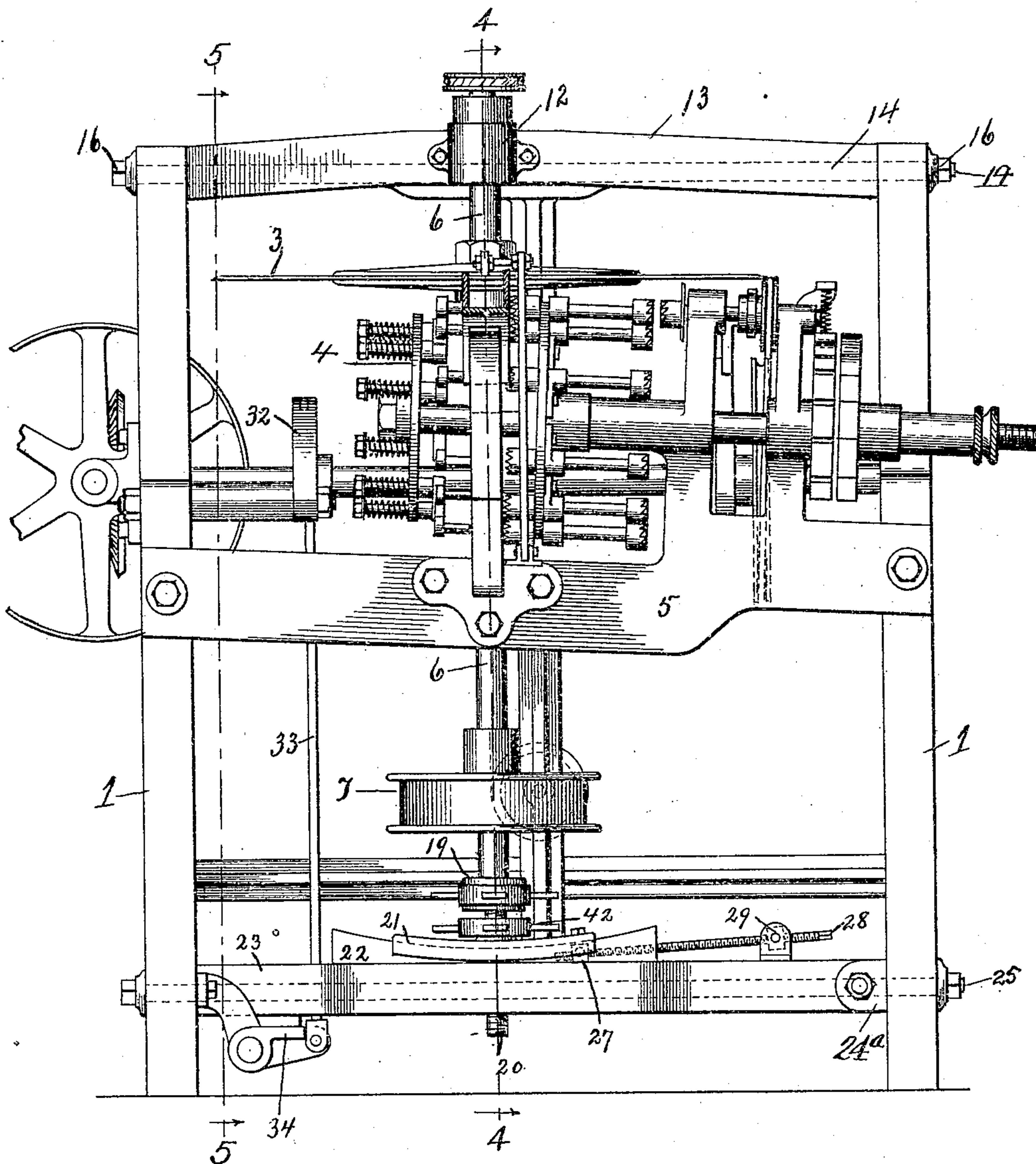
I. T. McCREADY.
CORK TAPERING MACHINE.
APPLICATION FILED APR. 13, 1905.

958,756.

Patented May 24, 1910.

5 SHEETS—SHEET 1.

Fig. 1.



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By Reesor & Kibben
his Attys

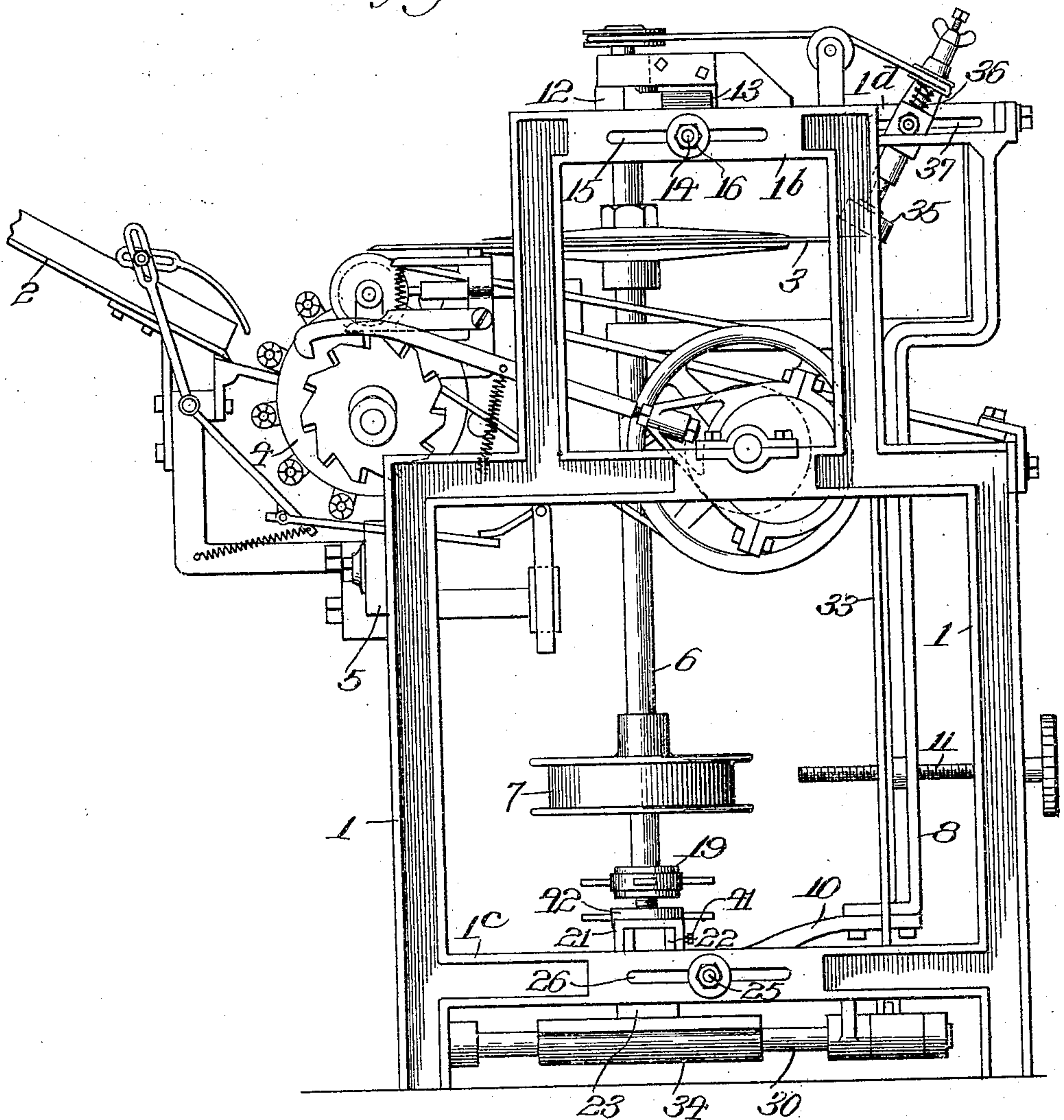
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5 SHEETS—SHEET 2.

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Fig 2



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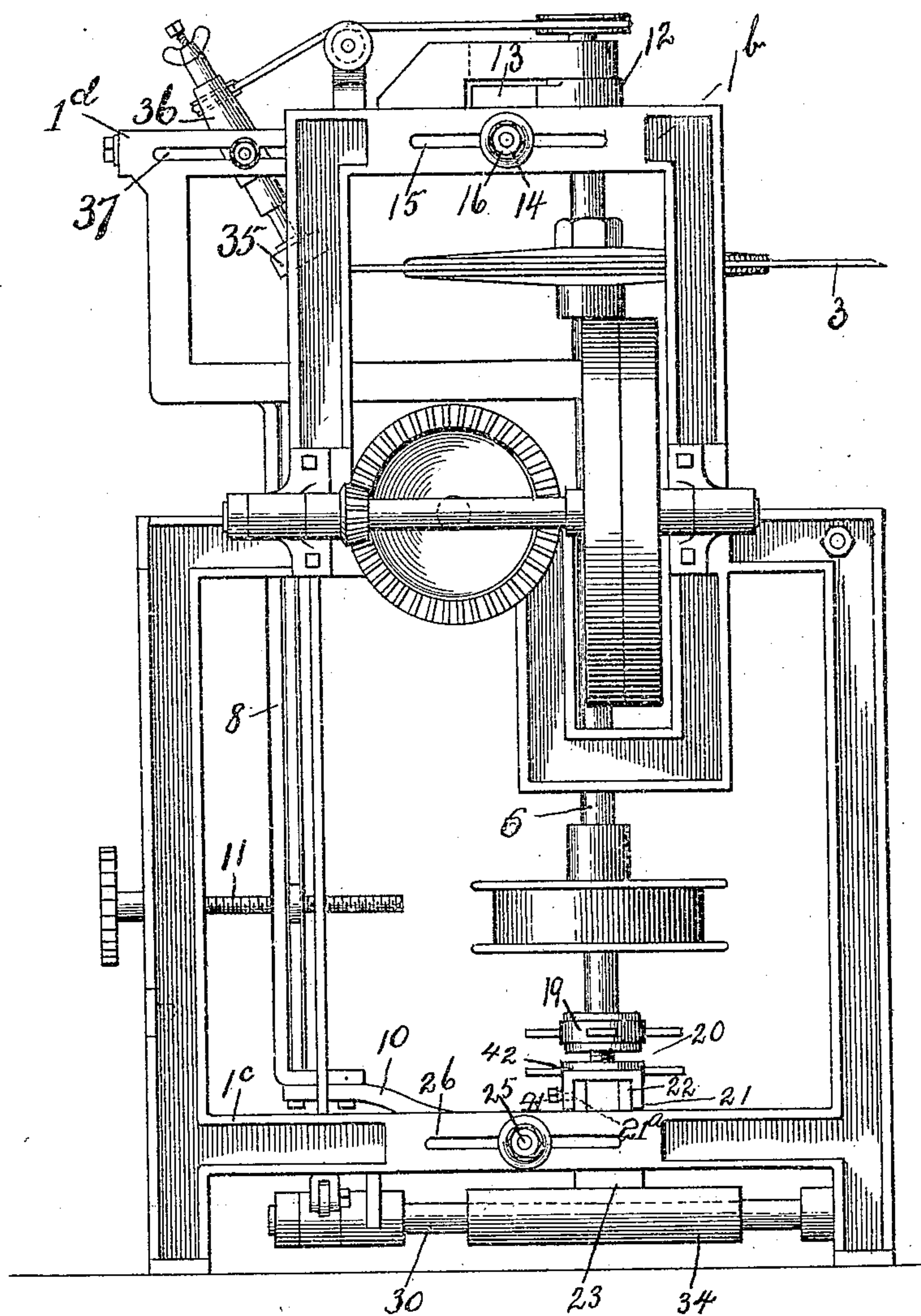
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5 SHEETS—SHEET 3.

Fig. 3.



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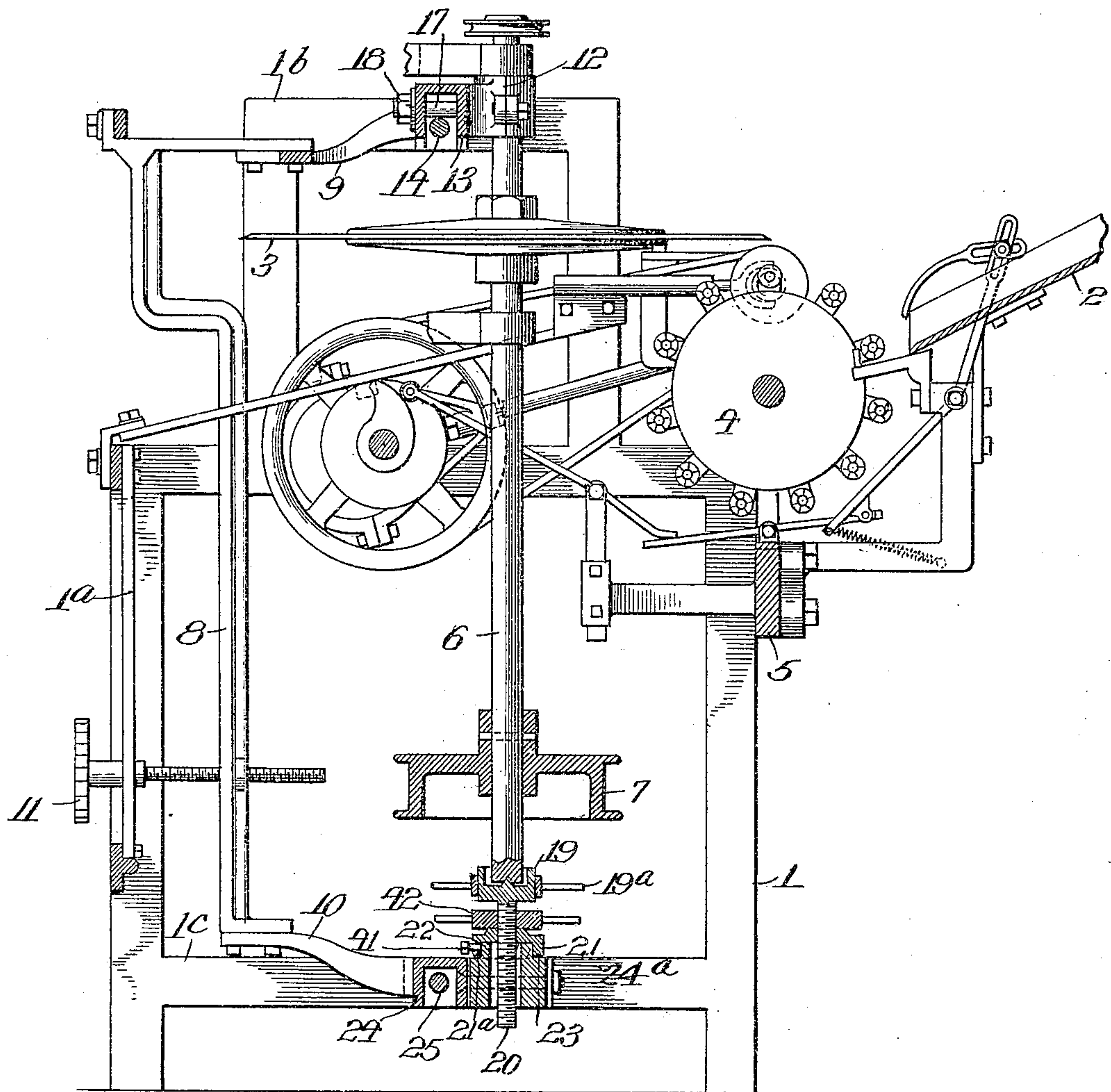
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5 SHEETS—SHEET 4.

Fig. 4.



Witnesses
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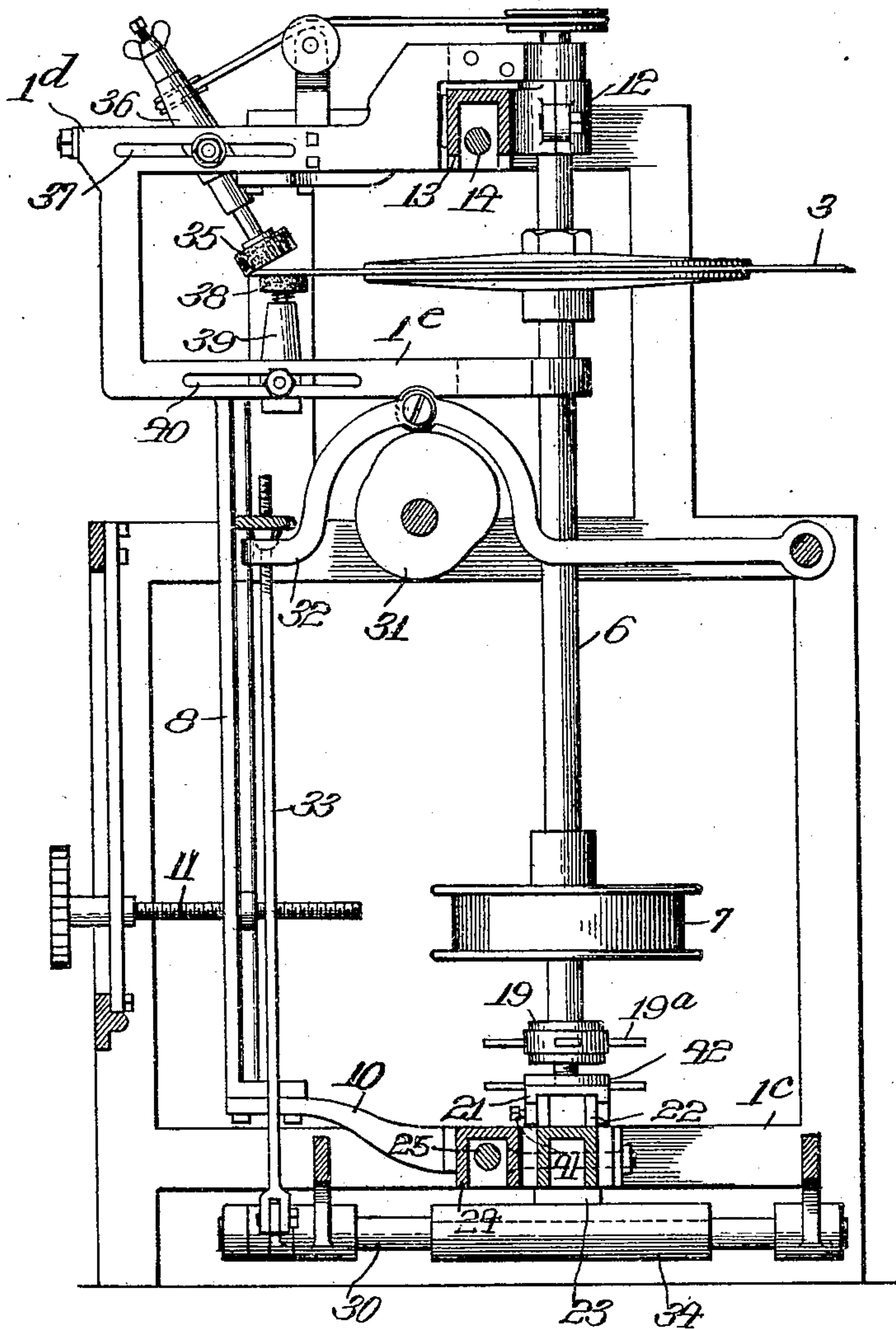
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5 SHEETS—SHEET 5.

Fig. 5.



Witnesses
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UNITED STATES PATENT OFFICE.

IRA T. MCCREADY, OF OAK PARK, ILLINOIS.

CORK-TAPERING MACHINE.

958,756.

Specification of Letters Patent.

Patented May 24, 1910.

Application filed April 13, 1905. Serial No. 255,414.

To all whom it may concern:

Be it known that I, IRA T. MCCREADY, a citizen of the United States, residing at Oak Park, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Cork-Tapering Machines, of which the following is a specification.

My invention relates to that class of machines commonly known as cork tapering machines, of the type illustrated and described in my prior Patent No. 684,847, issued to me on October 22, 1901, in which form of machine my present invention is incorporated as improvements.

The object of my invention is to improve the construction and mode of operation of cork tapering machines, by providing certain improvements thereon, as hereinafter referred to, chief among which improvements may be mentioned, first, the adjustability of the cutting or tapering knife with respect to the mechanism for holding and presenting the corks to the knife, which mechanism may be in a fixed position, second, the provision of an adjustable frame for carrying the knife, whereby the knife, as it wears, may be moved up to the proper position or cutting point, and third, the provision of means for reciprocating the knife in whatever position its frame may be adjusted.

Other features of advantage and utility of my improved machine will be understood from the description hereinafter given.

In the drawings, Figure 1 is a front elevation of the machine embodying my improvements; Fig. 2 an elevation of the right hand side of the machine; Fig. 3 an elevation of the left hand side thereof; Fig. 4 a section on the line 4—4 of Fig. 1; Fig. 5 a section on the line 5—5 of Fig. 1.

Referring to the present embodiment of my invention as illustrated in the accompanying drawings, the general construction and principles are the same as those described in my patent aforesaid and I will, therefore, only briefly refer to sufficient of the old construction for an understanding of my improvements and to distinguish the latter from such old construction.

As shown, the machine is provided at the front of its main frame 1 with the mechanism for gripping the corks as they roll down the feed trough 2 and for holding the same

and presenting them to the circular knife 3, which mechanism is substantially the same as that shown in my prior patents and is herein marked, as a whole, with the reference numeral 4. For a description of the construction and mode of operation of this cork holding or carrying device, reference may be had to my prior patent and it will suffice here to say that such mechanism is mounted upon a cross piece 5, of main frame 1 and in a fixed relation thereto, it being understood that in the present instance this cork carrying mechanism is stationary and not adjustable and moreover, it will be understood that such mechanism has an inclination to the horizontal, corresponding to the usual or standard taper of cork, assuming that the knife is in a horizontal position in the cutting operation. Furthermore, the driving mechanism for intermittently operating the cork carrying mechanism and giving it its step by step movement may be the same as that shown in my prior patent, so that a detailed description thereof is unnecessary in the present instance.

The knife 3, instead of being mounted so as to have a fixed position, is so constructed and arranged as to its bearings or supports as to be adjustable as to inclination to the horizontal, to thereby give any desired taper to the cork. Moreover, according to the present construction, novel and efficient means are provided for moving the knife bodily to the cutting point or line, the bearings of the knife or of its shaft or spindle being supported, as shown, in a movable or adjustable frame.

Referring more particularly to Figs. 4 and 5, the knife is provided with a vertical shaft or spindle 6, provided intermediate its length with the driving pulley 7 and journaled at its ends in the movable or adjustable frame which comprises, as herein shown, the vertical bar 8 and cross bars 9 and 10, connected with the bearings proper, it being understood that these bars may be made separate from each other or as a solid or integral frame. For the purpose of adjusting or moving the frame in a vertical plane forwardly and backwardly of the machine, I provide the rear upright 1^a of the machine with a feed screw 11 having a fixed relation with respect to the upright 1^a and engaging a screw threaded opening in the upright bar 8, with the result that the mov-

able or adjustable frame may be moved forwardly or backwardly of the machine according to the direction of movement of the feed screw 11.

5 Referring next to the upper bearing of the knife shaft, the bearing proper marked 12 is arranged intermediate the length of an adjustable cross bar 13, which, as indicated in Figs. 4 and 5, is channel-
10 shaped and provided with a through bolt 14, passing through horizontal slots 15 in the opposite side bars 1^a at the top of the machine frame, such bolt being provided with a nut 16, with the result that the upper
15 bearing may be held firmly in any position to which it, as well as its frame, may have been adjusted by the feed screw 11. The bearing 12 is arranged to swivel upon the cross bar 13, that is to say, such bearing has
20 an angular adjustment with respect thereto, to which end such bearing is provided with a bolt which I will term a head bolt 17, secured to, or forming a part of the bearing 12 and extending transversely through the
25 cross bar 13, Fig. 4 with the result that when the nut 18 is tightened the bearing 12 is clamped to its cross bar at any angular position to which the bearing and the knife may have been adjusted in the manner here-
30 inafter explained.

Referring to the lower bearing of the knife shaft or spindle, the lower end of such shaft is arranged in a thrust bearing or
35 step 19, having a depending screw 20, the step preferably being provided with handle 19^a, whereby the same may be adjusted up or down, as hereinafter described. The screw 20 engages a flanged plate 21, which I will hereinafter, for convenience, term a
40 shoe. This shoe engages and is supported by the upwardly extending flanges 22 of a movable or vibrating beam or bar 23, which is vibrated in the operation of the machine for the purpose of raising and lowering the
45 knife in the proper manner. This beam, which, at a point intermediate its length, supports the knife shaft through the medium of the shoe, as just described, is free at its left hand end, but is pivoted at its
50 right hand end (Fig. 1), such beam being pivoted upon the transverse bar 24, which forms a part of or is connected with the lower connecting or cross bar 10, the bar 24 being provided with a forward extension
55 from which a short arm or lug 24^a extends toward the left parallel with the bar (see Fig. 1), the beam 23 being pivoted upon a bolt extending through such short arm or lug and the adjacent side of the bar, said
60 bar being channel-shaped similar to bar 13. This bar 24, like the bar 13, is provided with a through or fastening bolt 25 extending longitudinally of the bar and cooperating with the slot 26 in the lower side bar 1^c of
65 the machine frame, as clearly indicated in

Figs. 3 and 4, such bolt serving to guide the lower end of the movable frame and to clamp the latter in its adjusted position in the same manner as the bolt 14.

The knife shaft 6 is arranged to be vi- 70 brated or adjusted on the head bolt as an axis and to this end suitable means are connected with the shoe 21 for so vibrating or adjusting the lower end of the shaft and its step or bearing. According to the pres- 75 ent construction, a block 27 is secured to one end of the shoe, and in such block is swiveled the outer end of an adjusting screw 28 which engages a screw threaded opening in an upwardly extending projection or lug 29 80 rising from the top surface of the cross beam 23, as seen in Fig. 1. By this means the knife shaft may be adjusted or vibrated as to its lower end to one side or the other of a vertical axis so as to incline the knife in 85 one direction or the other with respect to the cork carrying mechanism, and with the consequent result of giving a taper which is dependent upon the particular adjustment or inclination of the knife. It will be under- 90 stood that the beam 23 is provided with a longitudinal slot for the purpose of accommodating the screw 20, which is, of course, adjusted or moved longitudinally in unison with the shoe. 95

As in the machine of my prior patent aforesaid, the present machine is provided with a rock shaft 30 operated as usual by the cam 31, yoke 32 and vertical connecting rod 33, the cam being of such contour as to 100 depress the knife to the work in two movements so as to give two separate cuts of the cork in the tapering operation. In the present instance, however, means are provided on the rock shaft for accommodating the 105 adjustable frame which carries the knife, so that the knife may be raised and lowered in the operation of the machine regardless of the particular position or adjustment of its range. As shown, the rock shaft is provided 110 with what I will term a lifter arm 34 which is secured to the rock shaft, and is of such length as to always be in operative relationship with the beam 23, whatever may be the position or adjustment of the knife carrying 115 frame.

As clearly indicated in the drawings, knife grinders or sharpeners are provided, the upper grinder 35 being arranged in a support 36 adjustable in a slot 37 in the plate 120 1^a of the main frame in such manner as to follow up the knife as it wears away, while the lower grinder 38 is always arranged in a support 39 movable longitudinally in a slot 40 in the cross bar 1^c of the main frame. As 125 the knife wears away, not only the grinders are moved forwardly of the machine, but the entire knife is also so moved or adjusted as to keep the forward point of such knife always at the cutting line or the point which, 130

in the present machine, is directly above the center of the cork presented thereto.

In order to secure proper results it is essential that the knife shall be so presented to the cork that along the cutting line the knife and an axial plane of the cork passing through the cutting line will stand substantially at right angles. As the cutting line is an arc of the circle formed by the edge of the knife, it is of course impossible for the cutting line to lie throughout its length exactly above the center of the cork (that is, in a vertical axial plane of the cork at right angles to the plane of the knife), and the proper adjustment for the best results is attained by locating the center of the cutting arc of the knife a trifle in front of a true vertical axial plane of the cork and the ends of the cutting arc a trifle to the rear, the vertical plane mentioned thus passing through intermediate points in the cutting arc of the knife.

In practice, when it is desired to change the inclination or taper on a cork, the knife is adjusted or inclined properly to the horizontal, in which operation the head bolt 17 is loosened so as to permit the upper bearing to be adjusted angularly or to swivel on its cross bar 13, whereupon the adjusting screw 28 is rotated in the proper direction and the shoe 21 moved in one direction or the other, together with the step or bearing 19 and the lower end of the knife shaft 6, according to the desired inclination. The proper adjustment now being described is maintained by the screw 28 itself, but I prefer to use an additional means for securing and clamping the parts in such adjusted position and, according to the present construction, I provide the shoe with a slot 21^a which is arranged to receive a clamping bolt 41 in one of the lugs or flanges 22 of the bar 23. It will be understood that preliminary to any adjusting this clamping bolt is loosened and tightened up again after the proper adjustment is obtained. In this connection, it will be observed that the knife shaft may be adjusted vertically by simply rotating the step or bearing 19 in the proper direction so as to raise or lower the same owing to the screw threaded connection of its screw 20, with the shoe 21. After the proper vertical adjustment of such shaft is obtained the same may be maintained by means of the lock nut 42.

To obtain an adjustment of the knife with respect to its cutting points or line, the other bolts 14 and 25 are loosened and the screw 11 turned in the proper direction so as to move the entire frame which carries or supports the knife mechanism forwardly of the machine, after which the other bolts are tightened up to clamp the movable frame in its said adjusted position. The grinders or sharpeners are likewise adjusted or moved

forwardly of the machine so as to follow up the knife. It is evident that the cork carrying mechanism has a fixed relation with regard to the main frame of the machine, so that in obtaining the adjustments of the knife for different tapers of cut it is unnecessary to disconnect or disarrange the different driving mechanisms which are associated with such cork carrying mechanism.

I claim:

1. In a cork tapering machine, the combination, with the frame of the machine and a fixed cork-holding mechanism arranged to rotate the corks, of a circular knife mounted upon a shaft or spindle which is approximately vertical in its various positions and which is adjustable with respect to the perpendicular throughout a limited range of movement in a vertical plane parallel to a vertical axial plane of the cork passing through intermediate points in the cutting arc of the knife in order to incline the knife as desired and thereby vary the taper of the cork, the plane of the knife and said vertical axial plane of the cork being at right angles to each other, and means for automatically lowering and raising said shaft to shift the knife vertically to and from its work at each tapering operation of the machine.

2. In a cork tapering machine, the combination, with the frame of the machine and a fixed cork-holding mechanism arranged to rotate the corks, of a circular knife mounted upon a shaft or spindle having an upper collar bearing which has a swivel connection with the frame of the machine and a lower thrust bearing adjustable through a limited range of movement in the arc of a circle having said swivel as a center, said shaft being approximately vertical in its various positions and adjustable in said arc in a vertical plane parallel to a vertical axial plane of the cork passing through intermediate points in the cutting arc of the knife in order to incline the knife as desired and thereby vary the taper of the cork, the plane of the knife and said vertical axial plane of the cork being arranged at right angles to each other, and lifting means for automatically lowering and raising the lower thrust bearing of the shaft to shift the knife vertically to and from its work at each tapering operation of the machine.

3. In a cork tapering machine, the combination, with the frame of the machine and a fixed cork-holding mechanism arranged to rotate the corks, of a beam arranged to vibrate vertically; a supporting member carried thereby and adjustable thereon in the arc of a circle; a circular knife mounted upon a shaft or spindle having an upper collar bearing which has swivel connection with the frame of the machine and a lower thrust bearing carried by said supporting

member, said shaft being approximately vertical in its various positions and adjustable in said arc with said swivel connection as a center in a vertical plane parallel to a vertical axial plane of the cork passing through intermediate points in the cutting arc of the knife in order to incline the knife as desired and thereby vary the taper of the cork, the plane of the knife and said vertical axial plane of the knife being arranged at right angles to each other; and means for automatically vibrating said beam to shift the knife to and from its work at each tapering operation of the machine.

4. In a cork tapering machine, the combination, with the frame of the machine and a fixed cork-holding mechanism secured thereon and arranged to rotate the corks, of a beam arranged to vibrate vertically and provided with a way formed in the arc of a circle; a shoe adjustable on said way; a circular knife mounted on a shaft or spindle having an upper collar bearing which has swivel connection with the frame of the machine and a lower thrust bearing carried by said shoe, said shaft being approximately vertical in its various positions and adjustable in said arc of a circle with said swivel connection as a center in a vertical plane parallel to a vertical axial plane of the cork passing through intermediate points in the cutting arc of the knife in order to incline the knife as desired and thereby vary the taper of the cork, the plane of the knife and said vertical plane being arranged at right angles to each other; and means for automatically vibrating said beam to shift the knife to and from its work at each tapering operation of the machine.

5. In a cork tapering machine, the combination, with the frame of the machine and a cork-holding mechanism arranged to hold and rotate the corks at a fixed inclination to the horizontal, of a circular knife mounted upon a shaft or spindle which is approximately vertical in its various positions and which is adjustable with respect to the perpendicular throughout a limited range of movement in a vertical plane parallel to a vertical axial plane of the cork passing through intermediate points in the cutting arc of the knife in order to incline the knife as desired and thereby vary the taper of the cork, the plane of the knife and said vertical axial plane of the cork being at right angles to each other, and means for automatically lowering and raising said shaft to shift the knife vertically to and from its work at each tapering operation of the machine.

6. In a cork tapering machine, the combination, with the frame of the machine and a cork-holding mechanism supported thereby arranged to hold and rotate the corks at a fixed inclination to the horizontal, of a beam arranged to vibrate vertically and pro-

vided with a way formed on the arc of a circle; a shoe adjustable on said way, a circular knife mounted on a shaft or spindle having an upper collar bearing which has swivel connection with the frame of the machine and a lower thrust bearing carried by said shoe, said shaft being approximately vertical in its various positions and adjustable in said arc with said swivel connection as a center in a vertical plane parallel to a vertical axial plane of the cork passing through intermediate points in the cutting arc of the knife in order to incline the knife as desired and thereby vary the taper of the cork, the plane of the knife and said vertical axial plane of the cork being arranged at right angles to each other; and means for automatically vibrating said beam to shift the knife to and from its work at each tapering operation of the machine.

7. In a cork tapering machine, the combination, with the frame of the machine and a cork-holding mechanism supported thereby arranged to hold and rotate the corks at a fixed inclination to the horizontal, of a beam arranged to vibrate vertically and provided with upwardly extending flanges formed on the arc of a circle, said beam also having a lug; a shoe comprising a plate with depending flanges cooperating with the flanges on the beam an adjusting screw having swivel connection with said shoe and arranged to engage the lug on said beam to adjust the shoe in one direction or the other; a circular knife mounted on a shaft or spindle having an upper collar bearing which has swivel connection with the frame of the machine and a lower thrust bearing carried by said shoe, said shaft being approximately vertical in its various positions and adjustable in said arc with said swivel connection as a center in a vertical plane parallel to a vertical axial plane of the cork passing through intermediate points in the cutting arc of the knife in order to incline the knife as desired and thereby vary the taper of the cork, the plane of the knife and said vertical axial plane of the cork being arranged at right angles to each other; and means for vibrating said beam to shift the knife to and from its work.

8. In a cork tapering machine, the combination, with the main frame of the machine and with a cork-holding mechanism mounted in fixed position thereon and arranged to hold and rotate the corks, of a movable frame mounted in said main frame, a circular rotary knife mounted upon a shaft or spindle having bearings at its opposite ends supported in said movable frame, said movable frame being adjustable to shift the shaft and knife as a whole and move the knife in the plane of its rotation toward and from the cutting point.

9. In a cork tapering machine, the combination, with the frame of the machine and a cork-holding mechanism supported thereby arranged to hold and rotate the corks at a fixed inclination to the horizontal, of a beam arranged to vibrate vertically and pro-

nation, with the main frame of the machine and with a cork-holding mechanism mounted in a fixed position thereon and arranged to hold and rotate the corks of a movable frame mounted in said main frame, vibrating beam on said movable frame, a circular rotary knife mounted upon a shaft or spindle having an upper bearing in said movable frame and a lower bearing in said vibrating beam, said movable frame, beam, and knife being adjustable in unison to move the knife in the plane of its rotation toward the cutting point, and means for vibrating the beam in any position to which it may be adjusted.

10. In a cork tapering machine, the combination, with cork-holding mechanism arranged to rotate the corks, of a frame, and a circular knife arranged to rotate in the frame and having an upper bearing swiveled to the frame and a lower bearing adjustable on the frame in the arc of a circle, the plane of the circular knife, and an axial plane passing through the center of the cutting arc of the knife, and a plane passing through the axis of rotation of the cork and intermediate points in the cutting arc of the knife all being at right angles to each other.

11. In a cork tapering machine, the combination, with cork-holding mechanism arranged to rotate the corks, of a frame, a circular knife arranged to rotate in the frame and having a shaft with upper and lower bearings therein, the plane of the circular knife, and an axial plane passing through the center of the cutting arc of the knife, and a plane passing through the axis of rotation of the cork and intermediate points in the cutting arc of the knife all being at right angles to each other, means for adjusting the lower bearing in the arc of a circle, and a bolt on which the upper bearing is swivelly connected with said frame.

12. In a cork tapering machine, the combination, with cork-holding mechanism arranged to rotate the corks, of a frame, a circular knife arranged to rotate in the frame and having a shaft with upper and lower bearings therein, the plane of the circular knife, and an axial plane passing through the center of the cutting arc of the knife, and a plane passing through the axis of rotation of the cork and intermediate points in the cutting arc of the knife all being at right angles to each other, and a shoe adjustable on said frame and carrying the lower bearing, said shoe being adapted to swing the knife to change the angular relation of its cutting line to the axis of rotation of the cork.

13. In a cork tapering machine, the combination, with cork-holding mechanism arranged to rotate the corks, of a frame, a circular knife arranged to rotate in the frame and having a shaft with upper and lower bearings therein, the plane of the cir-

cular knife, and an axial plane passing through the center of the cutting arc of the knife, and a plane passing through the axis of rotation of the cork and intermediate points in the cutting arc of the knife all being at right angles to each other, and a shoe adjustable on said frame and adjustably connected with said lower bearing.

14. In a cork tapering machine, the combination, with cork-holding mechanism arranged to rotate the corks, of a frame, a circular knife arranged to rotate in the frame and having a shaft with upper and lower bearings therein, the plane of the circular knife, and an axial plane passing through the center of the cutting arc of the knife, and a plane passing through the axis of rotation of the cork and intermediate points in the cutting arc of the knife all being at right angles to each other, a shoe arranged on said frame and supporting said lower bearing, and an adjusting screw for adjusting or varying the inclination of the shaft or spindle and its knife.

15. In a cork tapering machine, the combination, with cork-holding mechanism arranged to rotate the corks, of a movable frame adjustable toward and away from said mechanism, a circular knife arranged to rotate in the frame and having a shaft with upper and lower bearings therein, the plane of the circular knife, and an axial plane passing through the center of the cutting arc of the knife, and a plane passing through the axis of rotation of the cork and intermediate points in the cutting arc of the knife all being at right angles to each other, a shoe arranged on said frame and supporting said lower bearing, an adjusting screw carried on said movable frame for varying the inclination of the shaft or spindle and its knife, and means for holding said shoe in adjusted position.

16. In a cork tapering machine, the combination, with cork-holding mechanism arranged to rotate the corks, of a frame, a circular knife arranged to rotate in the frame and having a shaft with upper and lower bearings therein, the plane of the circular knife, and an axial plane passing through the center of the cutting arc of the knife, and a plane passing through the axis of rotation of the cork and intermediate points in the cutting arc of the knife all being at right angles to each other, a shoe supporting said lower bearing, and a vibrating beam pivoted on said frame and having flanges on which said shoe is adjustable, and means for lowering and raising said vibrating beam to depress the knife to its work, and lift it again after the cork is tapered.

17. In a cork tapering machine, the combination, with cork-holding mechanism arranged to rotate the corks, of a frame, a circular knife arranged to rotate in a frame

and having a shaft with upper and lower bearings therein, the plane of the circular knife, and an axial plane passing through the center of the cutting arc of the knife, 5 and a plane passing through the axis of rotation of the cork and intermediate points in the cutting arc of the knife all being at right angles to each other, a shoe supporting said lower bearing and comprising a plate 10 with depending flanges, a vibrating beam pivoted on said frame and having upwardly extending flanges coöperating with the flanges on the shoe and also having a lug, a block carried by the shoe, an adjusting screw 15 swiveled in said block and arranged to engage said lug to adjust the shoe in one direction or the other, and means for lowering and raising said vibrating beam to depress

the knife to its work, and lift it again after the cork is tapered. 20

18. In a cork tapering machine, the combination, with cork-holding mechanism and with the main frame of the machine, of a movable frame comprising an upright bar and upper and lower cross bars having bolt 25 and slot connections with the main frame, a knife having a shaft or spindle, an upper bearing for such shaft connected with the upper cross bar and arranged to be angularly adjusted with respect thereto, and a lower bearing supported by the lower cross bar. 30

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