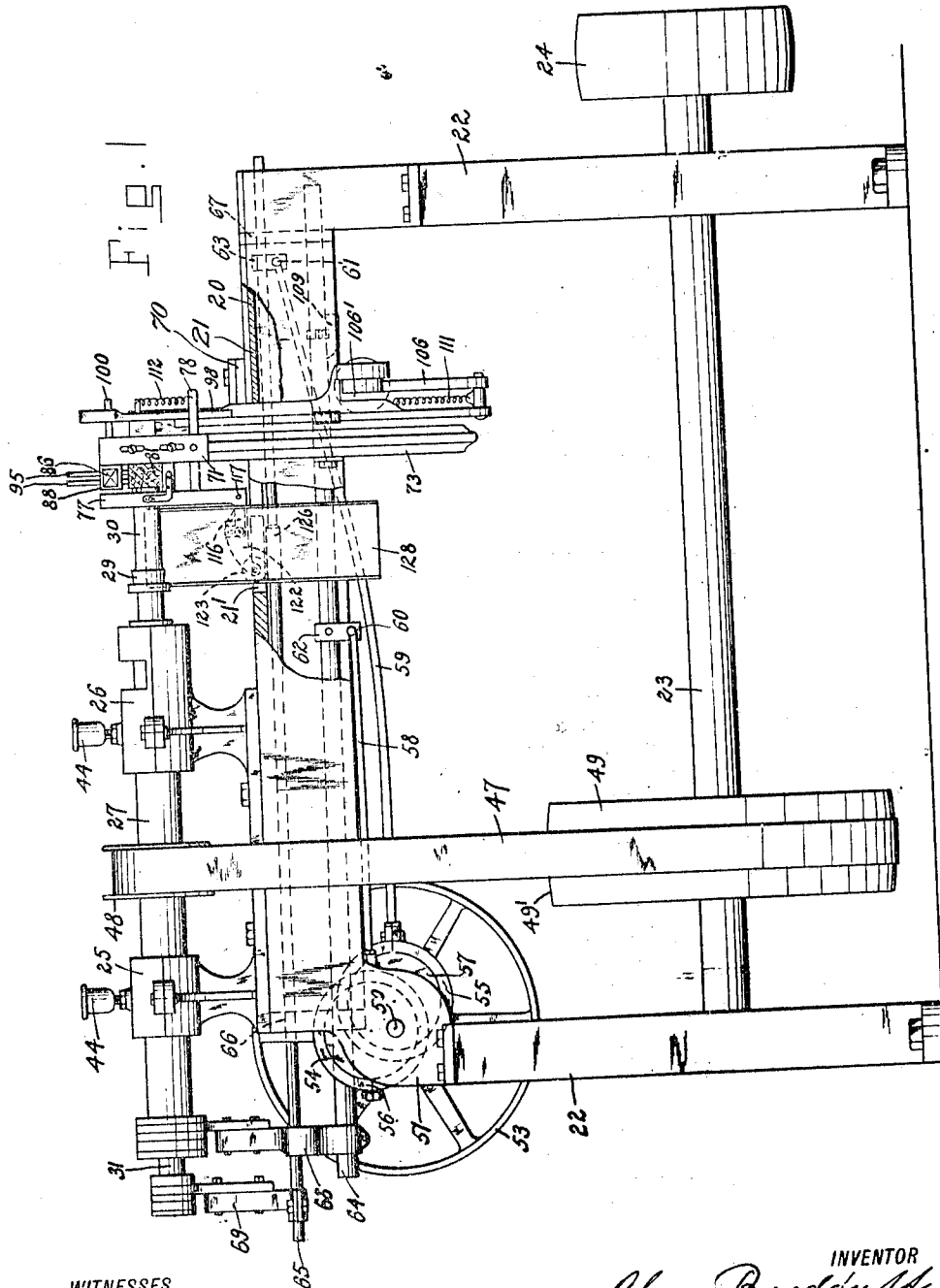


A. BOGDANFFY.
CORK SHELL CUTTING MACHINE.
APPLICATION FILED MAY 18, 1911.

Patented Dec. 24, 1912.

5 SHEETS—SHEET 1.

1,048,282.



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5 SHEETS—SHEET 2.

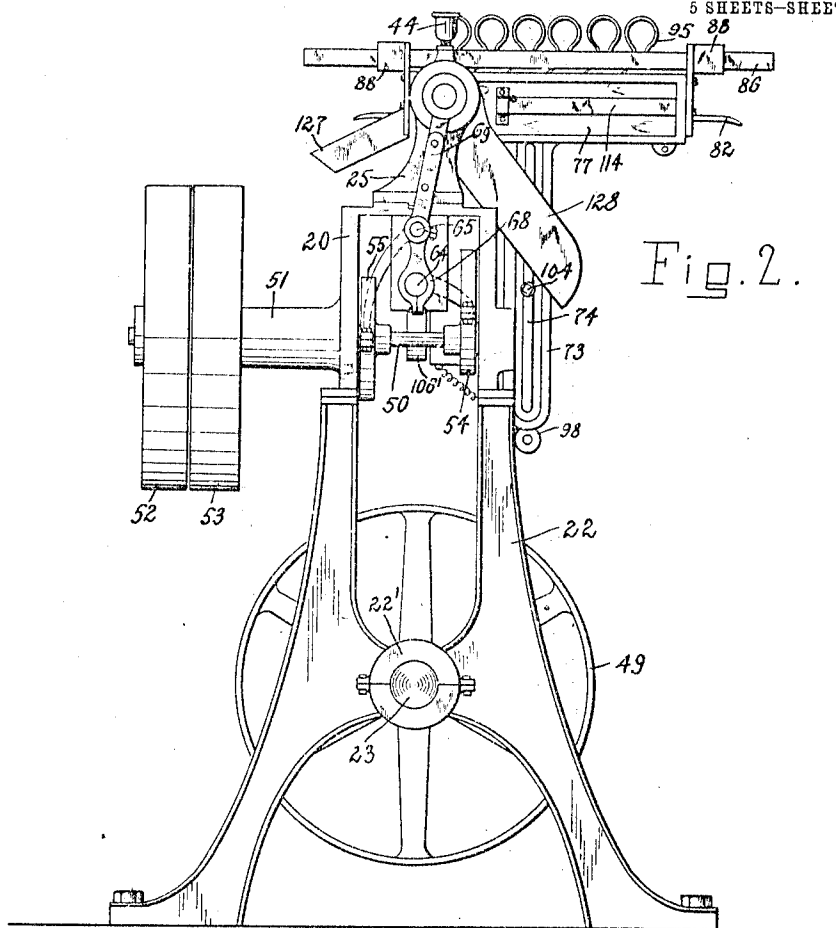


Fig. 2.

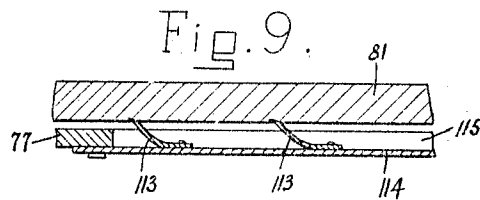


Fig. 9.

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5 SHEETS—SHEET 3.

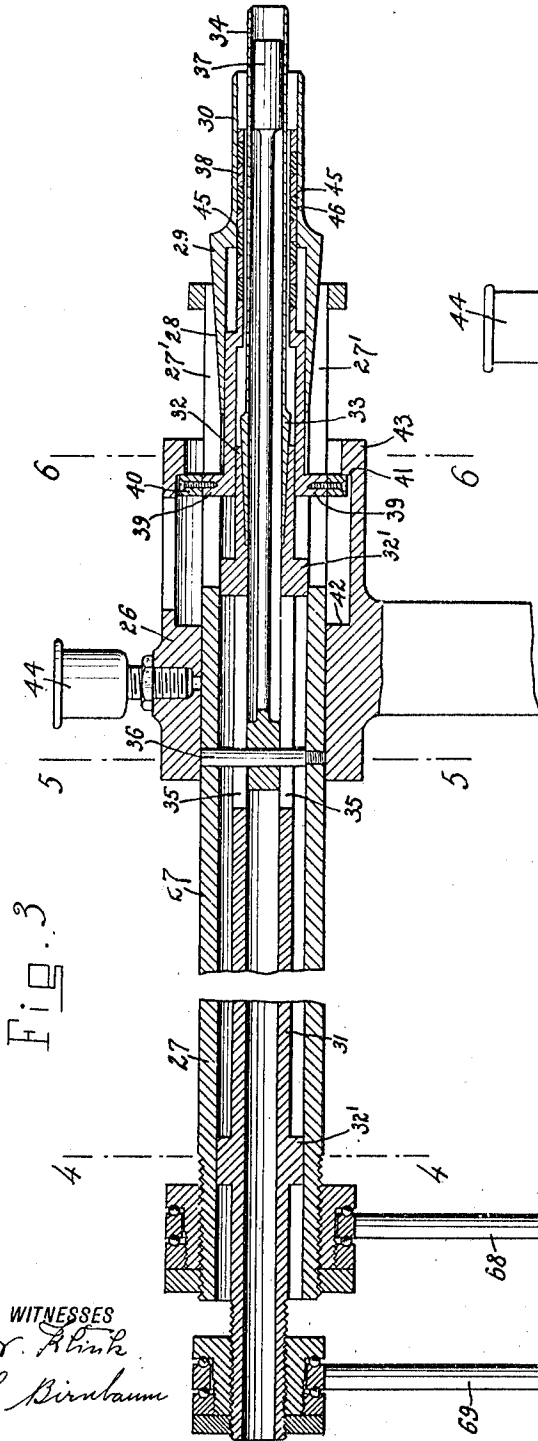


Fig. 3

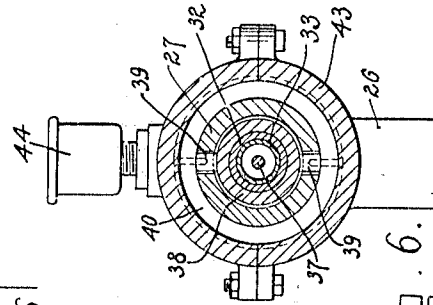


Fig. 6.

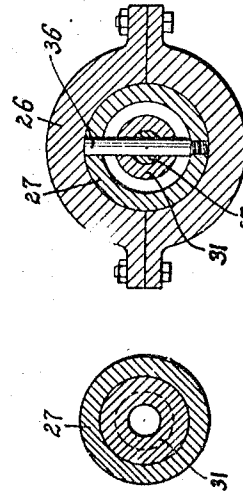


Fig. 5

Fig. 4.

WITNESSES
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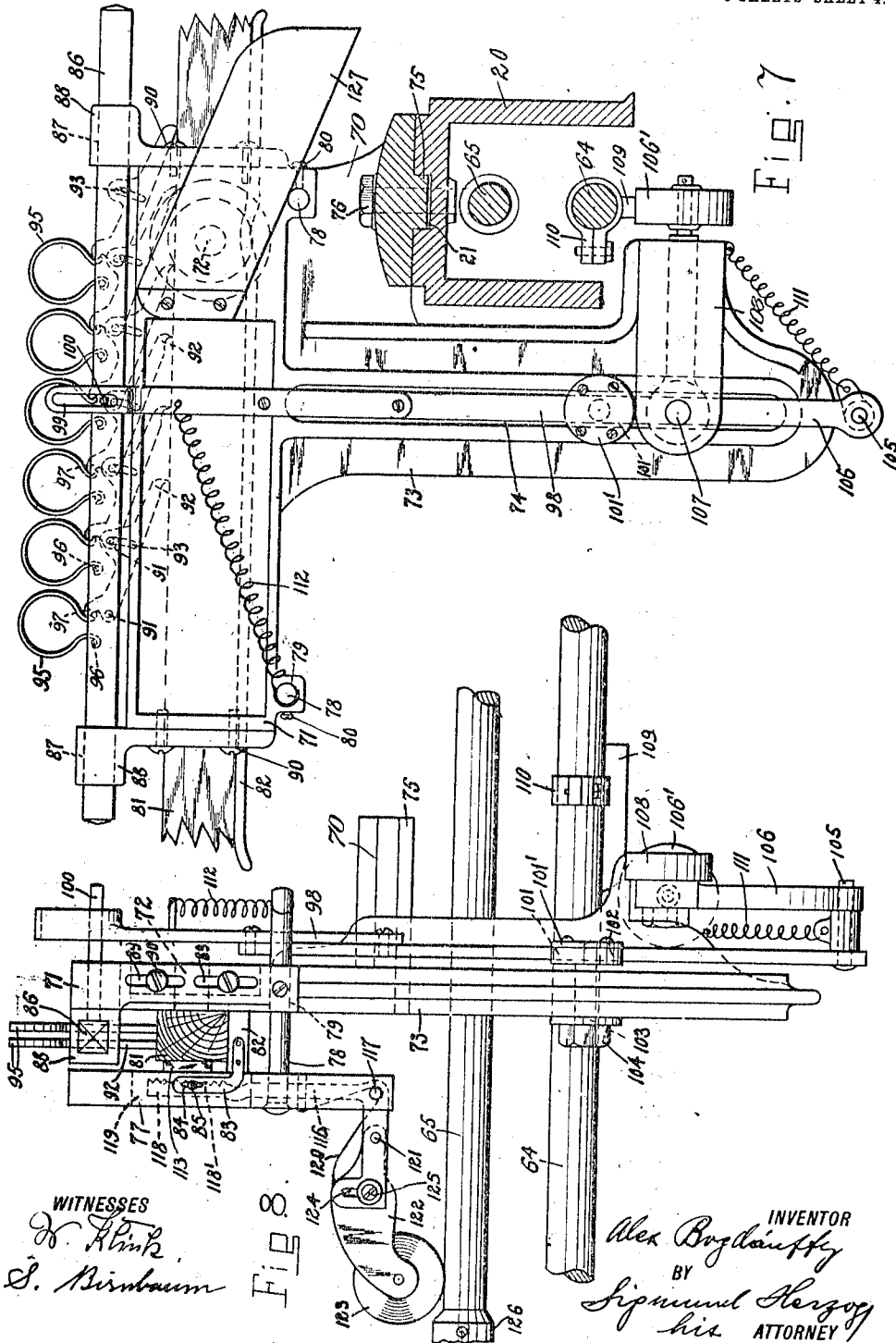
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5 SHEETS-SHEET 4.



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5 SHEETS-SHEET 5.

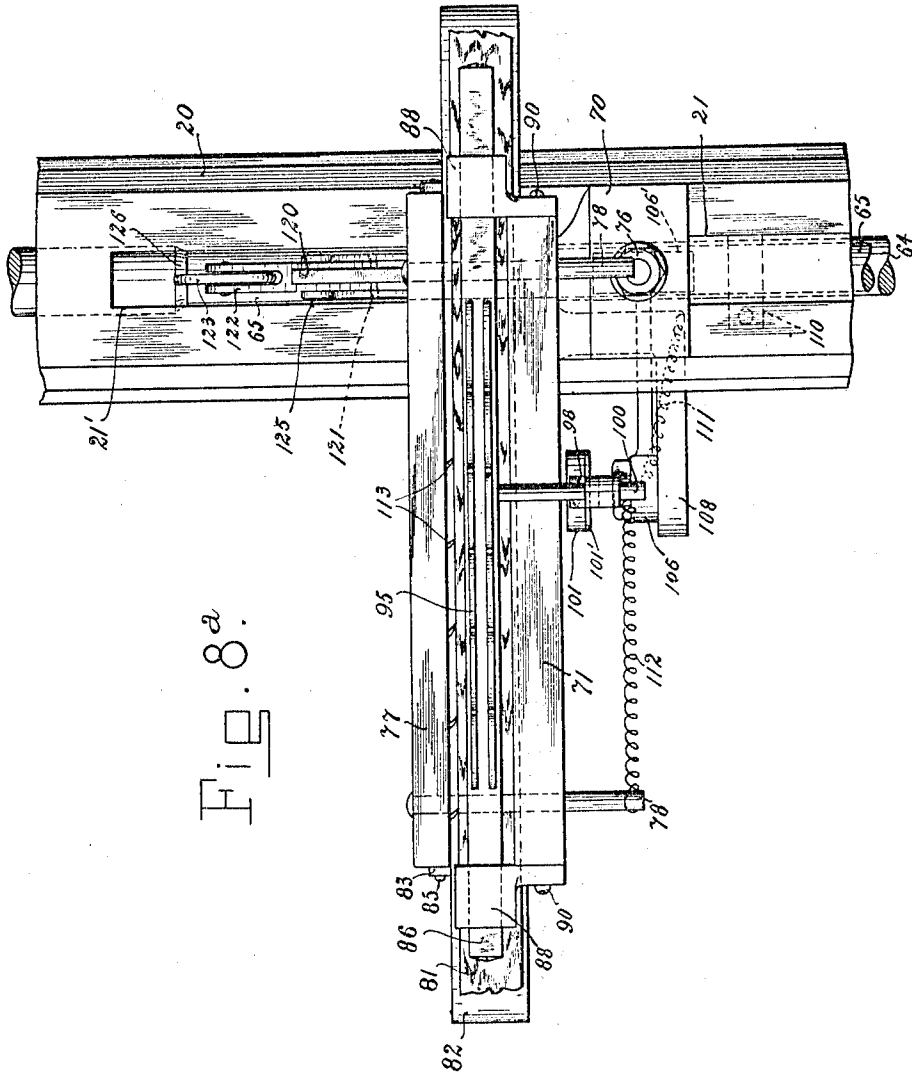


Fig. 8a.

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UNITED STATES PATENT OFFICE.

ALEXANDER BOGDÁNYFY, OF NEW YORK, N. Y., ASSIGNOR TO INTERNATIONAL CORK COMPANY, OF BROOKLYN, NEW YORK, A CORPORATION OF NEW YORK.

CORK-SHELL-CUTTING MACHINE.

1,048,282.

Specification of Letters Patent.

Patented Dec. 24, 1912.

Application filed May 16, 1911. Serial No. 627,519.

To all whom it may concern:

Be it known that I, ALEXANDER BOGDÁNYFY, a subject of the King of Hungary, and resident of the city of New York, in the county of Kings and State of New York, have invented certain new and useful Improvements in Cork-Shell-Cutting Machines, of which the following is a specification.

The present invention relates to an improved apparatus for cutting cork shells, or, as they are sometimes termed "hollow corks." This kind of work has been performed heretofore upon two separate machines by two separate operations. First the corks were cut or blocked out from cork strips, and, second, the corks were placed upon another machine for the purpose of cutting out the core therefrom to produce a cork shell or hollow cork. Another way, as far as known, to make cork shells is to combine the two machines heretofore mentioned upon one base, and to operate the cutters thereof by foot power, feeding the cork strips thereto by hand. While by means of this arrangement much time is saved, the operation of the device depends too much upon the skill of the operator.

It is now one of the objects of the present invention to construct an improved apparatus for cutting cork shells, by means of which the work is accomplished automatically at one setting of the cork strips and by one operation of the machine.

Another object of the invention is to provide an automatic feeding means for the strips to the cutters in combination with means which hold the said strips in position during the cutting operation.

A further object of the invention is to make the feeding and holding devices adjustable to conform to the size of the strips at hand, and to the size of the cork shells desired.

A still further object of the invention is to combine the cutters and strippers of the machine in such a manner that all of the same may be rotated by one belt or its equivalent, and a reciprocatory motion imparted to the same by another belt or other means.

With these and other objects in view, which will appear as the nature of the invention is better understood, the same consists in the combination, arrangement and construction of parts hereinafter fully described, pointed out in the appended claims

and illustrated in the accompanying drawings, it being understood that many changes may be made in the size and proportion of the several parts and minor details of construction without departing from the spirit or sacrificing any of the advantages of the invention.

One of the many possible embodiments of the invention is illustrated in the accompanying drawings, in which:—

Figure 1 is a front elevation, partly in section, of a cork shell cutting machine constructed in accordance with the present invention; Fig. 2 is a side elevation thereof; Fig. 3 is a vertical longitudinal section of the combined cutters and strippers; Figs. 4, 5 and 6 are sections taken on lines 4—4, 5—5 and 6—6, respectively, of Fig. 3; Fig. 7 is a side elevation of the feeding and holding means of the machine; Fig. 8 is a front elevation of the device shown in Fig. 7; Fig. 8^a is a plan view of the device shown in Fig. 7, and Fig. 9 is a plan view of a detail of construction.

In the drawings, the numeral 20 designates the supporting frame of the machine, which is, preferably, U-shaped in cross section, as clearly shown in Figs. 2 and 7 of the drawings, and provided in its horizontal portion with a groove 21 and a slot 21', for a purpose hereinafter to be described. The supporting frame rests on legs or standards 22, 22, carrying bearings 22', in which the main driving shaft 23 of the machine is journaled. Rotation may be imparted to this shaft in any suitable manner, for instance by keying to the same a pulley 24 which is driven by means of a belt or otherwise. The frame 20 supports bearings 25 and 26 of any suitable construction, in which are rotatably and reciprocatably arranged the cutting and stripping means of the machine. These cutting and stripping means are shown in detail in Figs. 3 to 6, inclusive, and comprise a tubular arbor 27, journaled in the bearings 25 to 26, and provided in its front portion with a tapering portion 28, into which fits the conical end 29 of a tubular cork cutter 30. The arbor and the cork cutter are united by forcing the conical portion 29 of the cutter into the tapering portion 28 of the arbor. In the arbor 27 is slidably arranged a tubular member 31, the outer diameter of which is considerably smaller than the inner diameter of the arbor 27. This tubular

member is provided with annular enlargements 32', 32', which will hold the same in concentric position relative to the arbor 27. The tubular member 31 has also a tapering inner end 32, into which fits the conical outer end 33 of a second tubular cork cutter 34. The cutter 30 serves to cut the exterior of the cork shell from the cork strip, while the cutter 34 cuts out the core from the shell. The tubular member 31 has in diametrically opposite portions longitudinal slots 35, 35, the walls of which are engaged by a pin 36, which is secured to the arbor 27, whereby the said tubular member will rotate with said arbor, while its reciprocating movement is independent from that of said arbor. A stripper 37, for the core of the cork shell, is located within the cutter 34, and attached by means of the pin 36 to the arbor 27. For removing the finished product from the cutters, a tubular stripper 38 is arranged between the cutters 30 and 34, its inner end being provided with outwardly extending projections 39, 39, to which a ring 40 is attached, which latter, in cooperation with the stops 41 and 42 upon the extension 43 of the bearing 26, limits the alternating movement of the stripper 38. The projections 39 engage longitudinal slots 27' in the arbor 27.

From the foregoing it will be observed that the cutters and strippers are made to rotate together in their bearings, but that the cutters 30 and 34 move back and forth in the same independently of each other, while the stripper 37 moves with the cutter 30, to which it is attached. The stripper 38, however, alternates by friction independently of said cutters and the stripper 37. The cutters 30 and 34, and so also the stripper 38 can be easily replaced by others, if shells of another size are to be made.

The bearings 25 and 26 receive lubricating material from the grease cups 44, 44, while the contacting surfaces of the cutters and strippers are lubricated by providing holes 45, 45 in the stripper 38, in which holes are arranged, for instance, felt pieces 46, which are charged with lubricating material when the stripper 38 travels outside of the cutter 30. For this purpose a felt piece which had been soaked in oil, or other means may be supported by the frame of the machine in contact with the cutters.

Rotary motion is imparted to the cutting and stripping mechanism, for instance, by means of a belt 47 running over a pulley 48, which is keyed or otherwise attached to the arbor 27, and over a pulley 49, mounted upon the driving shaft 23. It will be observed that, since the pulley 48 travels with the arbor 27, the height of the cylindrical surface 49' of the pulley 49 must be at least as much as the width of the belt 47 plus the amount of reciprocatory movement in one direction of the arbor 27.

A back and forth movement is imparted to the cutting and stripping mechanism from a rotary shaft 50, which is journaled in extensions 51, 51 of the supporting frame of the machine. Upon this shaft is mounted a loose pulley 52 and a keyed pulley 53, for the well known purpose. Two eccentrics 54 and 55 are keyed to the shaft 50; the disk of the eccentric 54 being set 90° in angular relation behind the disk of the eccentric 55. The straps 56 and 57 of these eccentrics are rigidly attached to bars 58 and 59, respectively, which in turn are pivoted at 60 and 61, respectively, to arms 62 and 63, which latter are secured to rods 64 and 65, respectively. The rods 64 and 65 are slidably mounted one below the other in the end walls 66 and 67 of the U-shaped supporting frame of the machine. To the outer ends of the rods 64 and 65 are attached arms 68 and 69, respectively, the other ends of which engage the arbor 27 and the tubular member 31, respectively, in such a manner that the said arbor and tubular member are free to turn in said arms but are caused to move back and forth with the same.

The cork strips are held in operative relation to the cutters and strippers upon a support 70, which comprises a vertical horizontally extending transverse plate member 71, provided with a perforation 72 in the longitudinal axis of the arbor 27. From this plate member projects downwardly near its middle portion a bracket 73, having a slot 74 extending throughout its length, and being shiftably arranged upon the supporting frame 20 of the machine. The support 70 is provided with a ridge 75, seated in the groove 21 hereinbefore described. A set screw 76 holds the bracket 73 and thus the plate member 71 in the desired position upon the supporting frame. To a second vertical horizontally extending transverse plate member 77 are secured pins 78, which project through holes 79 in the plate member 71, and are held in engagement therewith by means of set screws 80. The plate members 71 and 77 are thus held in parallel relation to each other, and may be set to a distance which corresponds substantially to the thickness of the cork strip 81 to be worked upon. This cork strip rests upon a base plate 82, which is attached to a lug 83, having a slot 84, engaged by a screw 85, the threads of which mesh with the interior threads of a hole in the plate member 77. By means of this arrangement, the base plate 82 can be raised or lowered as the cork strips vary in their heights.

The cork strips are fed to the cutters by the following device: A bar 86 is slidably arranged in holes 87, 87 in blocks 88, which are adjustably attached to the front and rear faces of the plate member 71. More particularly, the blocks are provided with

slots 89, 89, which are engaged by screws 90, 90 to clamp the blocks against the faces of the plate member 71. Obviously by means of this arrangement the bar 86 and the elements attached thereto may be raised or lowered relative to the supporting frame 70. To the bar 86 are pivoted at 91, 91 a plurality of feeding fingers 92, 92, having arc-shaped slots 93, each of which is in engagement with the pivot 91 of the adjoining feeding finger 92 upon said bar. Springs 95, 95, engaging lugs 96 upon said bar and the hook shaped ends 97 of the feeding fingers 92, tend to force said fingers against the upper face of the cork strips 81. The slots 93 serve to allow the pointed ends of the fingers to be raised or lowered to different horizontal planes, so that the same will always engage the upper surface of the cork strip, no matter how uneven the latter be.

When the feeding bar 86 is moved toward the plane of the pulley 53, the feeding fingers 92, which are, by means of their springs 95, held in engagement with the cork strips like a pawl with the teeth of a ratchet wheel, will move the said cork strips toward the cutters and strippers. The means for doing this comprises a lever 98, which is provided at its upper end with a slot 99, engaged by a pin 100, which latter is attached to the bar 86. This lever is arranged in the recess 101 of a disk 102, which is rotatably held upon a spindle 103, engaging the slot 74 in the bracket 73, and kept in position thereon by means of a nut 104, meshing with the screw threads of said spindle. The lever 98 is kept in the recess 101 by a disk 101', attached in any suitable manner to the disk 102. In shifting the spindle 103 in the recess 74, the fulcrum of the lever 98 may be varied and thereby the stroke of the feeding bar 86. To the lower end of the lever 98 is pivoted at 105 a bellcrank lever 106, which is fulcrumed at 107 to an extension 108 of the bracket 73. The free end of the bellcrank lever 106 carries thereon a roller 106', which is arranged in the path of a nose 109, the latter being attached by means of a clamp 110 to the rod 64. Springs 111 and 112 are attached at one of their ends to the lever 98 and at their other ends to the extension 108 and one of the spindles 78, respectively, and tend to bring the lever 98 back into its normal position shown in Fig. 7 of the drawings. It will be observed from the foregoing that, when the nose 109 acts upon the roller 106' and depresses thus the substantially horizontal arm of the bellcrank lever 106, the upper end of the lever 98 will be moved toward the rear of the machine, whereby the feeding fingers will move the cork strip a predetermined distance toward the plane of the pulley 53, which distance depends upon the stroke of the lever 98.

As soon as, in the back and forth movement of the rod 64, the nose 109 is disengaged from the roller 106', the springs 111 and 112 force the lever 98 into its normal position, and thus the bar 86 backward. In order to prevent the backward movement of the strip 81, spring prongs 113 (Fig. 9) are attached to a bar 114, which is fastened to the plate member 77. These spring prongs project through a slot 115 in the plate member 77, and their free ends extend toward the rear of the machine.

The means for holding the cork strip in position during the cutting operation of the rotary cutters comprises a presser foot 116 in the form of a bellcrank lever, which is fulcrumed at 117 to the plate member 77, and provided at its substantially vertical arm with a ring-shaped clamping jaw 118, the inner face of which is provided with a plurality of teeth 118'. This ring shaped jaw is arranged concentrically with the arbor 27 in an opening 119 in the plate member 77, and is normally held out of contact with the cork strip by means of a spring 120. To the horizontal arm of the bellcrank lever 116 is pivoted at 121 a lug 122, which carries at its free end a roller 123, projecting through the slot 21' toward the rod 65. The horizontal arm of the bellcrank lever 116 is slotted at 124. This slot is engaged by a screw 125, passing through the lug 122, to clamp said lug and bellcrank lever 116 together, or to allow the lug 122 to rise without affecting the position of the bellcrank lever 116, when the screw 125 is loosened. Motion is imparted to the bellcrank lever 116 by a sleeve 126, which is fixedly attached to the rod 65. As this sleeve moves toward the roller 123, it will lift the same and, when the lug 122 is rigidly connected by means of the screw 125 with the bellcrank lever 116, it will press the jaw 118 against the cork strip 81, and hold the same against motion as long as the roller 123 is kept in engagement with the sleeve 126. When disengaged therefrom, the spring 120 will force the jaw 118 into its inoperative position (shown in Fig. 8 of the drawings). If it is desired to operate the machine without holding the cork strip 81 against movement, the screw 125 is loosened, whereby the lug 122 will be allowed to rise without forcing the jaw 118 against the cork strip 81.

The operation of the machine is as follows: The cork strip is placed upon the support 70. When the rods 64 and 65 move inward toward the support 70, it will be observed that, since the disk of the eccentric 54 is 90° behind the disk of the eccentric 55, the sleeve 126 will lift the roller 123 before the rotary cutters start their operations, or in other words the jaw 118 will hold the cork strip against movement by the time the rotary cutters reach the cork strip 81. As

the eccentrics are rotated, first the rotary cutter 34 will perform its cutting operation, and then start its reciprocating movement backward, while the cutter 30 will still continue its reciprocating movement forward.

Before it, however, will commence the cutting, the stripper 37 will push the core of the shell through the opening 72 in the plate member 71 into the chute 127, wherefrom it will fall, owing to the inclination of said chute, into a receptacle below the same. The cutter 30 enters then the cork strip, performs its cutting operation since the arbor 27 is still advanced. This arbor, in its rotation and forward movement, will carry with it by friction the stripper 38 until it is stopped in its advance movement by the stop 41 upon the extension 43 of the bearing 26. The cutting operation being performed, the shell will remain within the rotary cutter 30, which will then start its outward movement carrying with it the stripper 38 until it abuts against the stop 42 of the extension 43. As now the rotary cutter 30 continues its outward movement, the shell is pushed by the stripper 38 into the chute 128, to slide down into a receptacle below the same. The sleeve 126 is arranged at such a place upon the rod that it will hold the jaw 118 in engagement with the cork strip until after the cutter 30 has been withdrawn from said strip. As soon as the cutter 30 has been withdrawn, the nose 109 is brought into engagement with the roller 106 to feed the cork strips into position for the next cutting operation. The cycle of operation now described is then repeated.

What I claim is:

1. In a cork shell cutting machine, the combination with two tubular cutters slidably arranged one within the other and connected so as to rotate together, of a stripper located within the inner cutter and fixedly attached to the outer one, a stripper slidably arranged within the outer cutter but caused to rotate therewith, means for imparting rotary motion to said outer cutter and thus to the parts connected therewith, and means for imparting alternating motion to said cutters independently of each other.

2. In a cork shell cutting machine, the combination with two bearings, of a tubular arbor slidably arranged therein having longitudinal slots in diametrically opposite portions thereof, a tubular member slidably arranged within said arbor having also longitudinal slots in diametrically opposite portions of the same, tubular cutters fastened to said arbor and tubular member, respectively, a stripper located within the inner cutter, a pin attaching said stripper to said arbor, said pin passing through the slots in said tubular member, a second stripper located within said outer cutter having projections engaging the slots in said arbor, means on one of said bearings for limiting the sliding movement of said second stripper, a pulley attached to said arbor through the intermediary of which rotary motion is imparted to said cutters and strippers, and means for imparting alternating motion to said cutters independently of each other, said second stripper being reciprocated by the friction between the same and said outer cutter.

3. In a cork shell cutting machine, the combination with a supporting frame, of two tubular cutters slidably arranged one within the other and connected so as to rotate together upon said supporting frame, two rods slidably mounted upon said supporting frame, eccentrics adapted to alternately reciprocate said rods, rigid connections between said rods and cutters, whereby the latter are independently alternated, a support for the cork strip to be worked upon, a bar reciprocatably mounted upon said support, feeding fingers pivoted to said bar, means operated by one of said rods for actuating said bar, a presser foot adapted to hold the cork strip against movement during the cutting operation, and means upon the other rod for actuating said presser foot.

Signed in New York, in the county of New York and State of New York, this 29th day of March, A. D. 1911.

ALEX. BOGDÁNFY.

Witnesses:

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