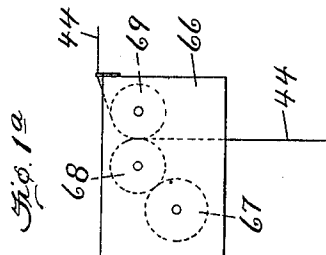
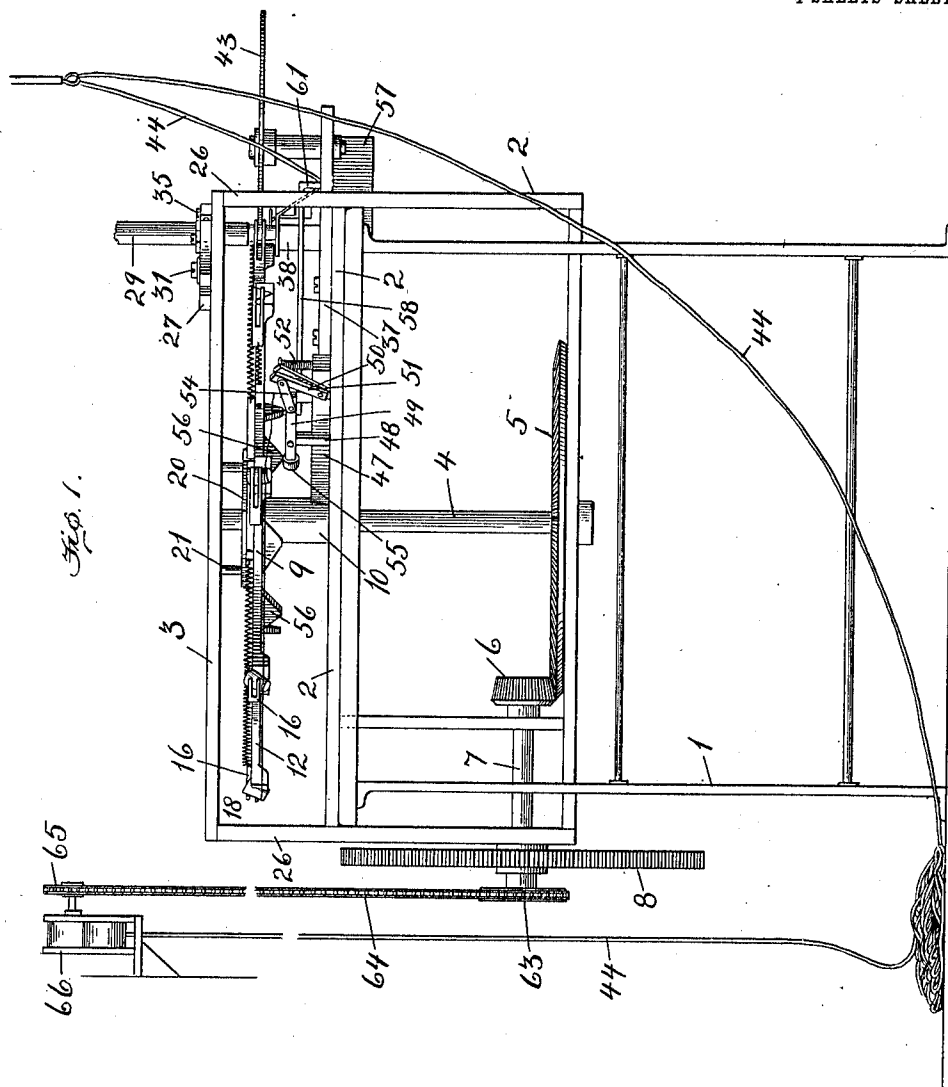


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4 SHEETS-SHEET 1.



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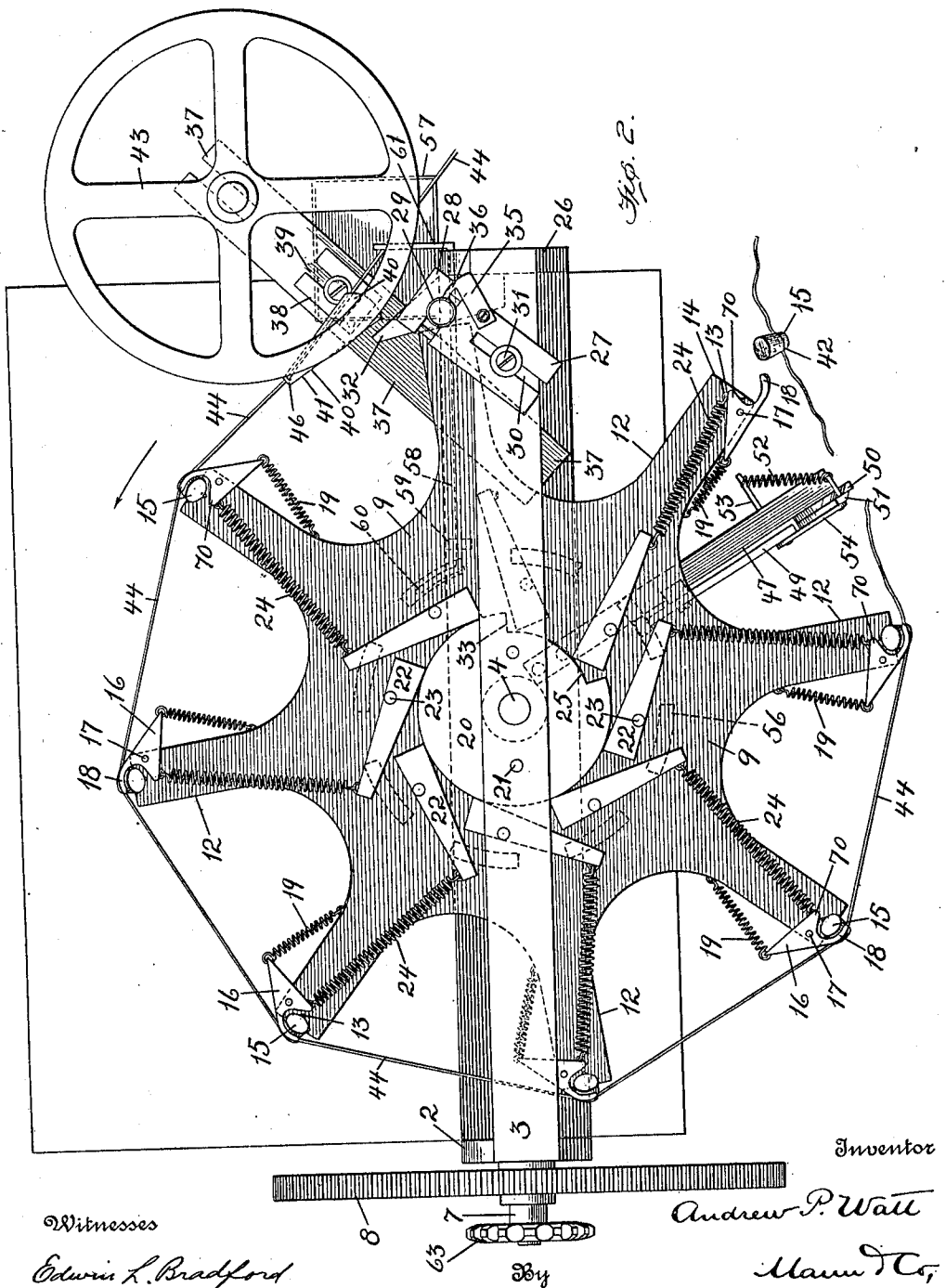
Attorneys.

A. P. WATT.
MACHINE FOR STRINGING CORKS.
APPLICATION FILED SEPT. 24, 1909.

Patented May 9, 1911.

4 SHEETS—SHEET 2.

991,915.



Witnesses

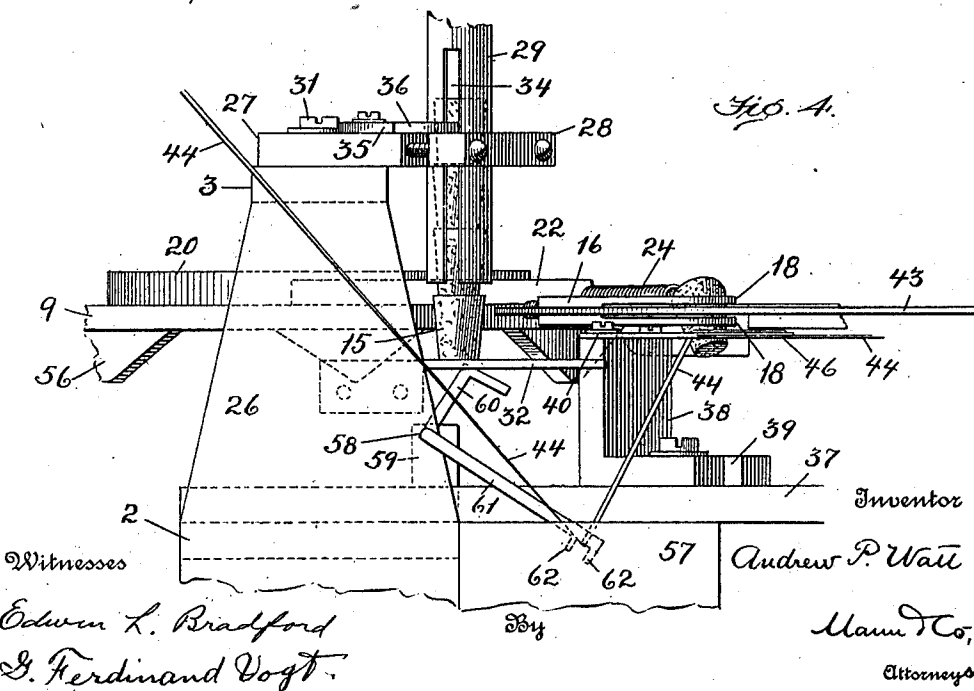
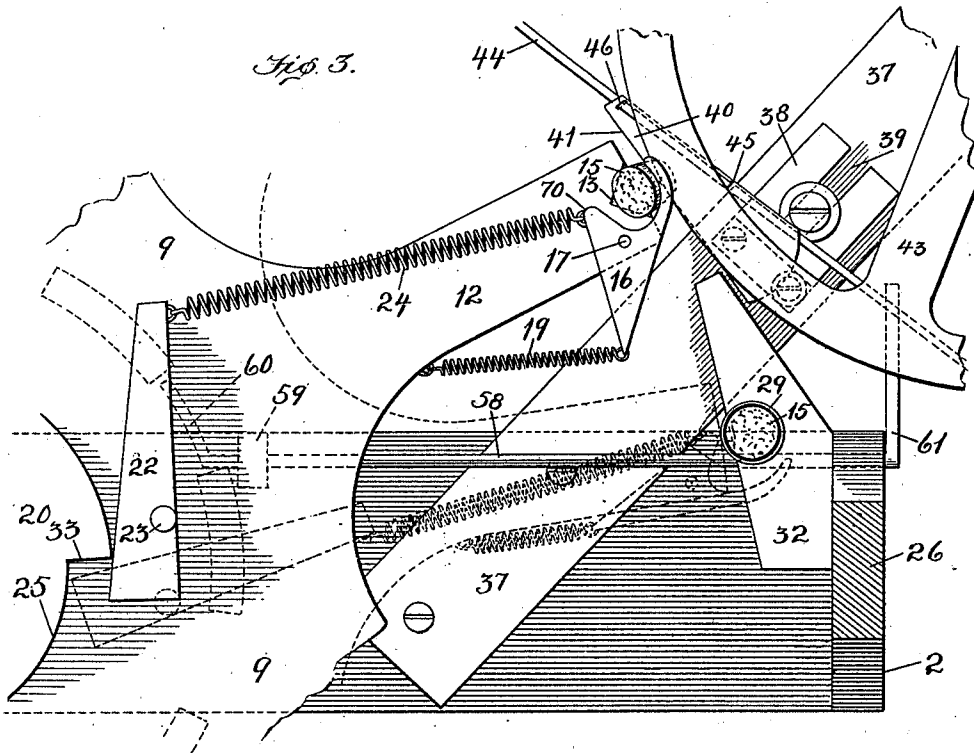
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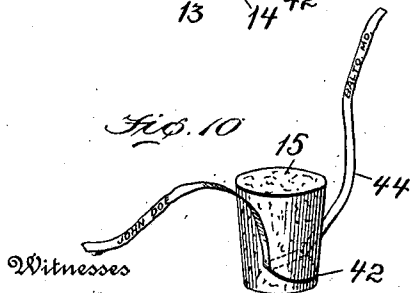
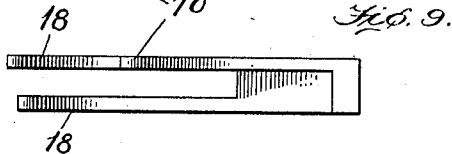
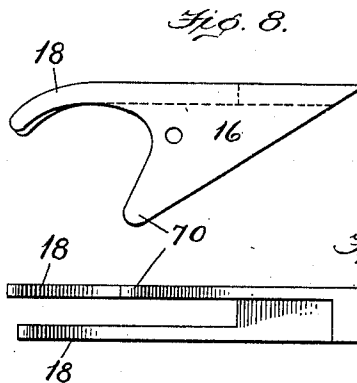
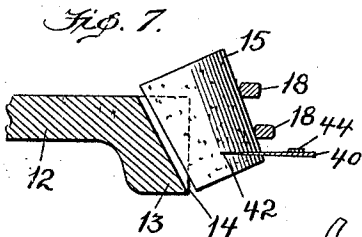
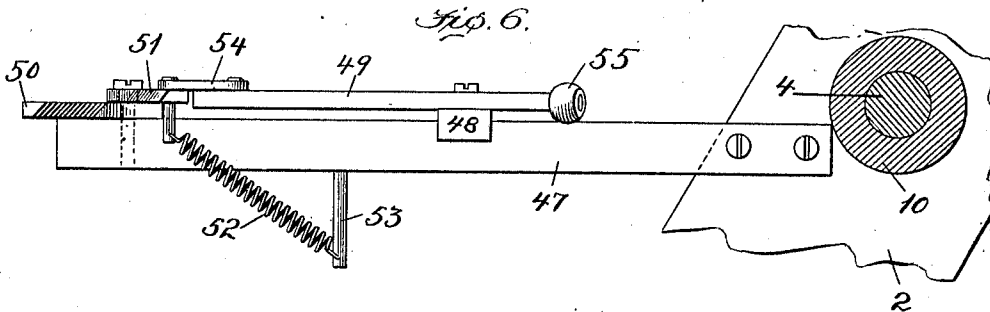
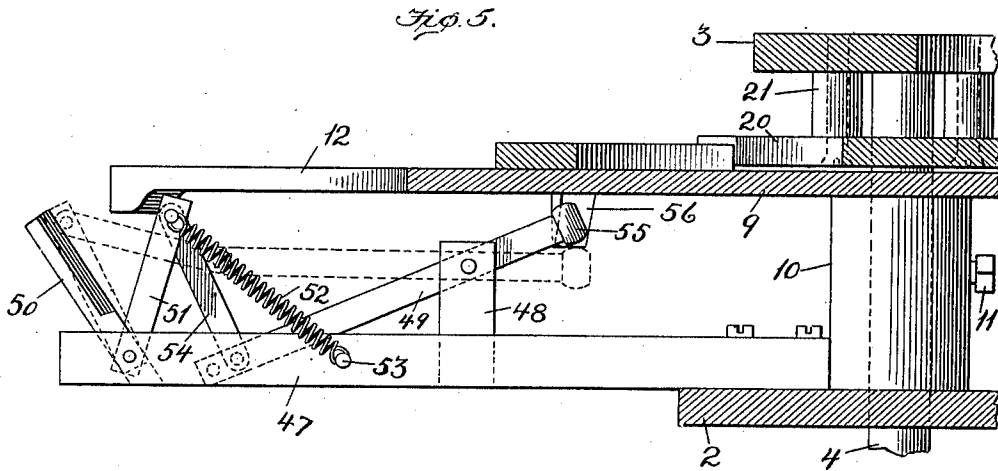


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Patented May 9, 1911.

4 SHEETS—SHEET 4.



Witnesses

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UNITED STATES PATENT OFFICE.

ANDREW P. WATT, OF BALTIMORE, MARYLAND.

MACHINE FOR STRINGING CORKS.

991,915.

Specification of Letters Patent.

Patented May 9, 1911.

Application filed September 24, 1909. Serial No. 519,492.

To all whom it may concern:

Be it known that I, ANDREW P. WATT, a citizen of the United States, residing at Baltimore, in the State of Maryland, have
5 invented certain new and useful Improvements in Machines for Stringing Corks, of which the following is a specification.

This invention relates to a machine for attaching pull tapes or strings to corks
10 whereby each cork will be provided with means by which it may be extracted from the receptacle into which it has been inserted to effect a closure thereof.

One object of the invention is to provide
15 a machine that will string corks in quick succession so that the ends of the string may be exposed at the upper or outer end of the cork where the same may be grasped during the pulling of the cork from the
20 closure.

Another object of the invention is to provide automatic means for feeding the corks with means for attaching the corks to a string or tape.

25 A further object is to provide a machine having cork-feeding and string or tape feeding mechanism with means for attaching the corks to the string or tape at spaced apart intervals.

30 A still further object is to provide an improved means for separating the strung corks from each other.

Another object is to provide means for coating the string or tape if desired where
35 the corks are attached, to prevent the escape of liquids through the string or tape through the action of capillary attraction.

A further object is to provide a means for printing on tapes or strings at spaced
40 apart intervals with means for attaching corks on the string between the printed portions.

With these and other objects in view the accompanying drawings illustrate the in-
45 vention, wherein,

Figure 1, is a side elevation of the entire machine. Fig. 1^a, is a similar view of the printing attachment. Fig. 2, is a top plan view of the machine on an enlarged scale.
50 Fig. 3, is a detail on a still larger scale, of a portion of the cork carrier and slit and the devices for holding the cork during the slitting and stringing operations. Fig. 4, is an elevation of the same. Fig. 5, is a sectional elevation through the carrier and a side elevation of the cord or tape cutting
55 device. Fig. 6, is a plan view of the cut-

ting device. Fig. 7, is a vertical sectional view through one of the cork seats of the carrier; the clamp and the cutter blade for
60 producing a slit in the cork. Figs. 8 and 9 are plan and elevations respectively of the detached cork clamp, and Fig. 10, is a perspective view of a cork having the cord or tape attached thereto as produced by
65 the machine.

Referring to the drawings the numeral, 1, designates a base or stand of any suitable construction and, 2, a supplemental frame carried thereby and having an upper hori-
70 zontal cross-bar, 3. A vertical shaft, 4, is sustained by the base or stand and is provided adjacent its lower end with a beveled gear, 5, which meshes with and is driven by a beveled pinion, 6, on a horizontal driving shaft, 7.
75 This driving shaft may be driven by any suitable means but in the present instance it is shown as having large gear, 8, which in practice meshes with the gearing from a motor which it is deemed unnecessary to
80 illustrate. A horizontal carrier, 9, has a depending central hub, 10, which fits down over the upper end of the vertical shaft, 4, and a set bolt or screw, 11, passes through the collar and into said shaft whereby to se-
85 cure them in rotary engagement. It will thus be understood that the carrier and vertical shaft revolve together. The carrier is provided with a plurality of radial arms, 12, the number of which may be varied at will,
90 and each arm is provided with a suitable cork gripping or clamping mechanism which will now be described, particular reference being made to Figs. 3, 7, 8 and 9 of the drawings. The outer end of each arm,
95 12, is provided with a V-shaped notch or seat, 13, which at present is inclined with respect to the extreme vertical edge, 14, of the arm so that a cork, 15, when placed therein will be slightly tilted as clearly seen
100 in Fig. 7. A cork clamp, 16, is also provided at the outer end of each arm and each clamp is provided with a pivot, 17, so that it may be swung about said arm-end. In the present instance the clamp has a plu-
105 rality of spaced-apart curved gripping fingers, 18, which during the absence of a cork, project beyond said arm so as to embrace the cork and draw it into the notch or seat, 13, as the arm passes the point where the corks
110 are fed. The particular shape of these clamps is immaterial and may be different from that shown, but in the present instance each clamp is of substantially a V-shape. A

coiled or spiral spring, 19, has one end attached in an suitable manner to the point end of the clamp and the other end of said spring is secured to the arm so that normally, and during the absence of a cork, the gripping fingers will be rejected to engage a cork.

At the center of the machine and directly over the carrier there is a stationary cam plate, 20, which in the present instance is sustained at the lower ends of suitable posts, 21, that depend from the cross-bar, 3. It will be understood that the carrier revolves immediately below the stationary cam plate, 20, so that suitable means may be mounted on the carrier and operated by the cam plate to actuate the gripping fingers, 18, as will now be described.

By reference to Figs. 2 and 3 it will be seen that on the upper surface of the carrier there are a plurality of levers, 22, provided with pivots, 23, which enable them to rock horizontally with respect to the surface of the carrier. The number of these levers will be determined by the number of arms and cork-clamps employed on the carrier and as eight clamps and arms are shown in the present instance, so also are eight levers employed. The inner ends of these levers have position adjacent the periphery of the cam plate, 20, while the outer ends thereof are yieldingly connected with the broader gripping-finger ends of the cork clamps. In the present instance coiled or spiral springs, 24, form the yielding connection between the levers and clamps.

It will be noted that the stationary cam plate is provided at one side with a notch, 25, into which the inner ends of the levers, 22, will swing as they travel about said cam, and when said inner ends enter this notch the outer ends thereof will swing around substantially parallel with the springs, 24, and relieve the latter of tension so that the clamp and gripping fingers thereof may be swung around by the spring, 19, so as to project the fingers outwardly and away from the notch or seat, 13, as shown at the lower right-hand of Fig. 2, of the drawing. When in this outward projecting condition, the fingers are ready to engage a cork and as the carrier-arms advance they convey the projected fingers toward the point where the corks are fed into position to be embraced and placed by the fingers in the notches or seats, as will now be explained.

By reference to Figs. 2, 3 and 4 it will be seen that the top cross-bar, 3, is sustained by the supplemental frame, 2, the upper side portions, 26, of which project above the carrier-arms, 12, and said cross-bar carries or sustains a horizontal plate, 27, which has a clamping block, 28, at its outer end. A tube or chute, 29, is clamped between the plate 27 and block and the corks to be strung are fed

through this chute from any convenient point so as to be delivered in the path of the gripping fingers 18, at the side of the carrier arms. The chute-sustaining plate, 27, and block, 28, are preferably adjustable with respect to the cross-bar, 3; a slot, 30, in the plate and locking bolt, 31, carried by the bar permitting this adjustment. Beneath the lower end of the chute I provide a shelf or cork-sustaining bracket, 32, which is sustained by the frame and extends horizontally so that the stack of corks in the chute may be sustained in a vertical position by the lower most cork of the stack resting upon said shelf or bracket. The horizontal position of this shelf or bracket is such that the projecting gripping fingers, 18, may pass over the same and embrace the lowermost cork of and carry it from beneath the stack thus permitting the remaining corks to drop down until the next lowermost cork will rest upon the shelf or bracket. Upon dragging the lowermost cork from the stack the fingers will begin to swing around to push the cork against the seat at the end of the arm,—this swinging movement being effected by the inner end of the lever, 22, contacting with the shoulder, 33, at the end of the cam notch, 25, and exerting a pull on the spring, 24, and as soon as this is effected and the cork securely clamped against the seat the cork will then travel forward to undergo the stringing operations.

While the construction of the tubular chute is immaterial and may be varied, I prefer to provide the lower end of the same with a longitudinal slot, 34, at one side and to mount on the plate, 27, an adjustable stop plate, 35, which has a finger, 36, that may be projected through the chute-slot to engage the corks and check or completely stop their descent in the chute.

The first operation on the cork is to produce a cross-slit therein so that the cord or tape may be passed into the slit. It has been found desirable to make this cross-slit near the lower end of the cork and to have it extend in an upwardly inclined direction, for the better securement of the cord or tape therein and it is for this reason that the cork is clamped in an inclined position on the arms.

By reference to Figs. 3, 4 and 7, it will be seen that a horizontal bracket, 37, is secured to and extends laterally from the supplemental frame, 2, and that an angle-iron bracket, 38, having an adjusting slot, 39, is attached to said bracket. The upper edge of the angle-iron bracket sustains a horizontal knife, 40, the cutting edge, 41, of which confronts and is so positioned with respect to the ends of the carrier arms that the corks clamped to the latter will wipe over and have a slit, 42, made therein by said cutting edge.

In order to aid in holding the corks dur-

ing the slitting operation and prevent them from turning or revolving, I provide a wheel, 43, at the outer end of the bracket, 37, the rim of which projects between the gripping fingers, 18, and presses against the outer side of the clamped cork.

In the operation of the machine the stringing of the corks either on cord or tape, is effected as the cork leaves the cutter and while the lips at opposite sides of the slit are held open by the cutter*but before the cord or tape is entered into the slit of the cork it has been subjected to several desirable and useful operations such as printing and coating which operations will be more fully explained hereinafter.

In the present instance the drawings show the corks as strung on a band or tape, 44, which passes through a slot, 45, at one end of the knife or cutter, then along the outer side of the knife and finally through another slot, 46, back to the inner side of the knife before it is carried or drawn around at the outer ends of the arms as clearly shown in Figs. 2 and 3. As the cork travels with the arm and clamp and is about to pass off the far end of the knife or cutter blade the latter will hold the lips of the cut open so they may receive the band or tape and the latter enters the slit of the cork and is immediately clamped by the lips as the latter close. It will be understood that as the arms pass the chute the corks are clamped into position, then slit and finally strung on the tape and as the arms move around they will draw the tape with them until they reach another point where the tape is cut between each two arms. The tape or cord cutting device will therefore now be described, reference being made particularly to Figs. 2, 5, and 6 of the drawings. A bracket or bar, 47, is bolted to one of the cross-bars of the supplemental frame below the carrier and extends outwardly therefrom and said bracket is provided with a post or lug, 48, to which a lever, 49, is pivoted at a point between its ends. The extreme outer end of the bar, 47, carries an upwardly inclined stationary shear blade, 50, to one side and lower end of which a movable shear blade, 51, is pivoted. A pin projects from one side of the movable shear blade and a spiral spring, 52, has one end attached to said pin and its other end secured to a pin, 53, that is carried on the bar, 47. By means of this spring, 52, the movable shear blade is drawn away from the stationary blade thus normally leaving the shears open and ready to receive the tape to be cut. A link, 54, connects the upper end of the movable shear blade, 51, with the lower forward end of the lever, 49, so that an upward movement of said lever end and link will impart a forward swinging movement to the shear blade, 51, and cause it to shear anything that may

be between it and the blade, 50. The inner upper end of the lever, 49, is provided with a roller, 55, which has position just below the carrier and in the path of cam plates, 56, carried at the under side of the carrier and in a plane between the arms. When the shear blades are in the normal separated position the corks at the ends of the carrier arms will pass in a vertical plane between them, and as the cam plates, 56, on the carrier are positioned midway between the arms they will press the roller end of lever, 49, down and thus move the shear blade, 51, toward blade, 50, and thereby cut the string or tape midway between adjacent arms, thus separating one cork and its attached string or tape at each cutting operation as indicated in Fig. 2.

I have found in practice that in some instances where bottles containing liquids have been corked that the liquid will find outlet by capillary attraction through the cord or tape and to overcome this I have provided a novel device to apply a water or liquid proof coating to the tape before it is attached to the cork. I have also found in practice that it is preferable to leave the cork and the projecting ends of the cord or tape free of the coating, and the device shown in the drawing operates to intermittently bring the tape and a coating material into contact so that at spaced apart intervals the tape will be provided with short stretches that are coated. By reference to Figs. 2, 3 and 4 one form of device for effecting this coating will be described. A receptacle, 57, is located below the cork cutter blade, 40, and is designed to contain a water or liquid-proof coating material, for example, paraffin in a melted condition, and the cord or tape, 44, in passing toward the cutter blade will be coated at intervals, by bringing the tape and coating material into contact, in any suitable manner. In the present instance I provide a horizontal rock shaft, 58, the outer end of which is supported or has bearing in the side portion, 26, of the supplemental frame and the inner end of which projects through and has bearing in a block, 59. Beyond this block said rock shaft carries an upwardly-extending arm, 60, which has position in the path of the cam plates, 56, on the bottom of the carrier so that upon the cam plates contacting with the said arm the rock shaft will be given a slight rocking movement. The outer end of the rock shaft carries an arm, 61, which extends laterally and downwardly over the receptacle, 57, and the lower end of this arm has downwardly-extending lugs, 62, between which the tape, 44, passes before it extends upwardly toward the cutter blade. By means of this construction the rocking of the shaft as each cam plate, 56, passes over the arm, 60, will cause the arm, 61, to dip

the tape into the solution or coating material, which will immediately rise again because of the tension on the tape. The position of the arm, 61, is such with respect to the cutter blade that the coated portion of the tape will reach the end of said blade simultaneously with the slitted cork so that said portion will be entered into said slit while the uncoated portions at each side thereof will project at each side of the cork. During the passage of the tape through the slots, 45, and, 46, of the cutter-blade all surplus coating will be scraped from the tape but sufficient coating will remain to effect a sealing of the slit in the cork and also to prevent the capillary attraction herebefore referred to.

It has also been found desirable in some instances to provide the tape with spaced-apart lines of printing so that the ends of the tape at each side of the cork will contain printed matter of any desired character. To effect this I have provided the outer end of the shaft, 7, as seen in Figs. 1 and 2 with a sprocket wheel, 63, and a chain, 64, passes over said wheel and also over a sprocket, 65, on the shaft of a printing mechanism, 66, (see Figs. 1 and 1^a). The particular construction and location of this printing mechanism is immaterial and is not essential to the invention, but in the drawing the same comprises a suitable case having an inking roller, 67, a printing roller, 68, and a platen, 69. The tape, 44, passes between the platen, 69, and printing roller, 68, and one side thereof is printed upon at spaced-apart intervals as clearly shown in Fig. 10.

In order to aid in ejecting the corks each clamp, 16, is provided with a prong, 70, which projects around the inner side of the cork during the clamping of the latter and when the lever, 22, and spring, 24, is released by the cam-plate, 20, the spring, 19, will swing the clamp outwardly and the prong, 70, will push the cork off the seat at the end of the arm.

It will therefore be seen that in the present instance the tape is printed upon one side at intervals; that it is coated at intervals between the lines of printed matter; that the corks are fed and automatically clamped one at a time and then slit; that the tape is entered into the slits of the corks and finally the tape is cut between each two corks leaving a short length of tape attached to each cork.

It is to be understood that the application of a liquid-proof coating to the tape either at intervals or continuously may be dispensed with, as in corking bottles containing powdered or granular materials. It is also to be understood that the particular material employed on which the corks are strung is also immaterial to the invention and may be a cord, tape or cloth or strong

paper or wire and while the term tape is herein employed both in the specification and claims it is to be construed as including a band, cord or wire or any material suitable for the purpose.

Having thus described my invention what I claim and desire to secure by Letters Patent is,—

1. The combination with a rotary carrier, of a plurality of cork-gripping devices on said carrier; a cutter blade sustained at the side of the path of the gripping devices and means for sustaining a tape adjacent the blade whereby the latter may slit the gripped corks and hold the slit open while the tape is entered therein.

2. The combination with a rotary carrier, of a plurality of cork-gripping devices on said carrier; a cutter blade sustained at the side of the path of the gripping devices, said blade having means for engaging a tape to be entered in a slit made by the cutter in the cork and means for rotating the carrier and drawing the tape into successively-slit corks.

3. The combination with a rotary carrier, of a plurality of cork-gripping devices on said carrier; a cutter blade sustained at the side of the path of the gripping devices; means for sustaining a tape; a receptacle to contain a coating material and means for intermittently dipping the tape in the said material.

4. The combination with means for holding and conveying a cork, of means for slitting the cork and means for holding a tape in the path of the moving cork and in register with the slit thereof whereby to insert the tape in said slit.

5. The combination with a carrier for holding a cork, of means for sustaining a traveling tape so the latter may be drawn with the carrier and means for slitting the cork, and holding the slit open while the traveling tape enters the slit of the cork.

6. The combination with a carrier, of a plurality of spaced-apart cork-gripping devices on the carrier; means for sustaining a tape at one side of the path of the gripping devices and in position to be drawn by the carrier; means for slitting the corks and entering the tape therein and means for cutting the tape between adjacent gripping devices.

7. The combination with a carrier, of a plurality of spaced-apart cork-gripping devices on the carrier; means for sustaining a tape adjacent the gripping devices and means for slitting the corks and entering the tape in the slit thereof.

8. The combination with a carrier, of a plurality of cork-gripping devices arranged at spaced-apart intervals along the carrier; means for operating said devices to grip the corks; means for sustaining a tape at one

side of the path of the corks and a cutter for slitting the corks and holding the slits open while the tape is entered therein.

9. The combination with means for holding a cork, of means for sustaining a tape; means for coating the tape at spaced-apart intervals and means for slitting the cork and holding the slit open while the coated portions of the tape is entered in the open slit.

10. The combination with means for conveying a cork, of means for coating a tape at spaced-apart intervals; means for holding the tape in the path of the conveyed corks and means for slitting the corks to receive the tape.

11. The combination with means for conveying corks in succession, of means for sustaining a tape; means for coating the tape and means for slitting the corks and entering the coated tape in the slits thereof.

12. The combination with means for conveying corks in succession, of means for sustaining a tape; means for coating the tape; means for slitting the corks and entering the coated tape in the slits thereof, and means for cutting the tape between the attached corks.

13. The combination with a carrier, of a plurality of cork-gripping devices on the carrier; means for feeding corks in succession to the gripping devices; means for sustaining a tape; means for slitting the corks and entering the tape in the slit thereof and means for cutting the tape between the attached corks.

14. The combination with a rotary carrier, of a plurality of independent cork-gripping devices on said carrier; means for feeding corks in the path of said gripping devices; a cutter blade in the path of the corks to slit the latter and means for sustaining a tape so the latter may move with the carrier and enter the slits in the corks.

15. The combination with a rotary carrier, of a plurality of independent cork-gripping devices on said carrier; means for feeding corks in the path of said gripping devices; a cutter blade in the path of the corks to slit the latter; means for sustaining a tape so the latter may move with the carrier and corks and enter the slits of the latter, and means for cutting the tape between the attached corks.

16. The combination with a rotary carrier having a plurality of arms, of a cork-gripping device on each arm of the carrier; means for operating said gripping devices to clamp and release the corks; means for feeding the corks to the gripping devices in succession; a cutter blade in the path of the

corks for slitting the latter; means for sustaining a tape adjacent said cutter blade so the same may enter the slits in the corks and means for cutting the tape between the attached corks.

17. The combination with a rotary carrier having a plurality of arms, of a pivoted cork-gripping device on each arm of the carrier; a stationary cam plate about which the arms and gripping devices travel; means operating between the cam plate and said devices for moving the latter; a cork-feed; means for sustaining a tape and means for slitting the cork and entering the tape in said slit.

18. The combination with a rotary carrier having a plurality of arms, of a pivoted cork-gripping device on each arm; a stationary cam-plate; levers contacting with the said plate; a yielding connection between each lever and one of the gripping devices; a cork feed; means for holding a tape and means for slitting the corks and entering the tape in the slits thereof.

19. The combination with a rotary carrier having a plurality of arms, of a pivoted cork-gripping device on each arm; a stationary cam-plate; yielding means operating between the cam-plate and each gripping device; a stationary cutter blade to slit the corks; means for sustaining a tape while the latter travels adjacent the said blade to enter the slits in the corks and means for cutting the tape between the corks.

20. The combination with a rotary carrier having a plurality of arms with a cork seat on each arm, of a pivoted gripping device on each arm; a cork feed; means for operating the gripping devices to successively engage and clamp corks to the seats; a cutter blade in the path of the corks to slit the latter and means for sustaining a tape while the latter travels along the cutter blade and enters the slits in the corks as the latter leave said blade.

21. The combination with a rotary carrier, of a plurality of cork-gripping devices on said carrier; means for feeding corks to said devices; means for sustaining a tape; means for slitting the corks and entering the tape in the slits thereof; a stationary cutter in the path of the tape and means on the carrier for operating the cutter to cut the tape between adjacent gripping devices.

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

ANDREW P. WATT.

Witnesses:

CHARLES B. MANN, Jr.,
G. FERDINAND VOGT.