

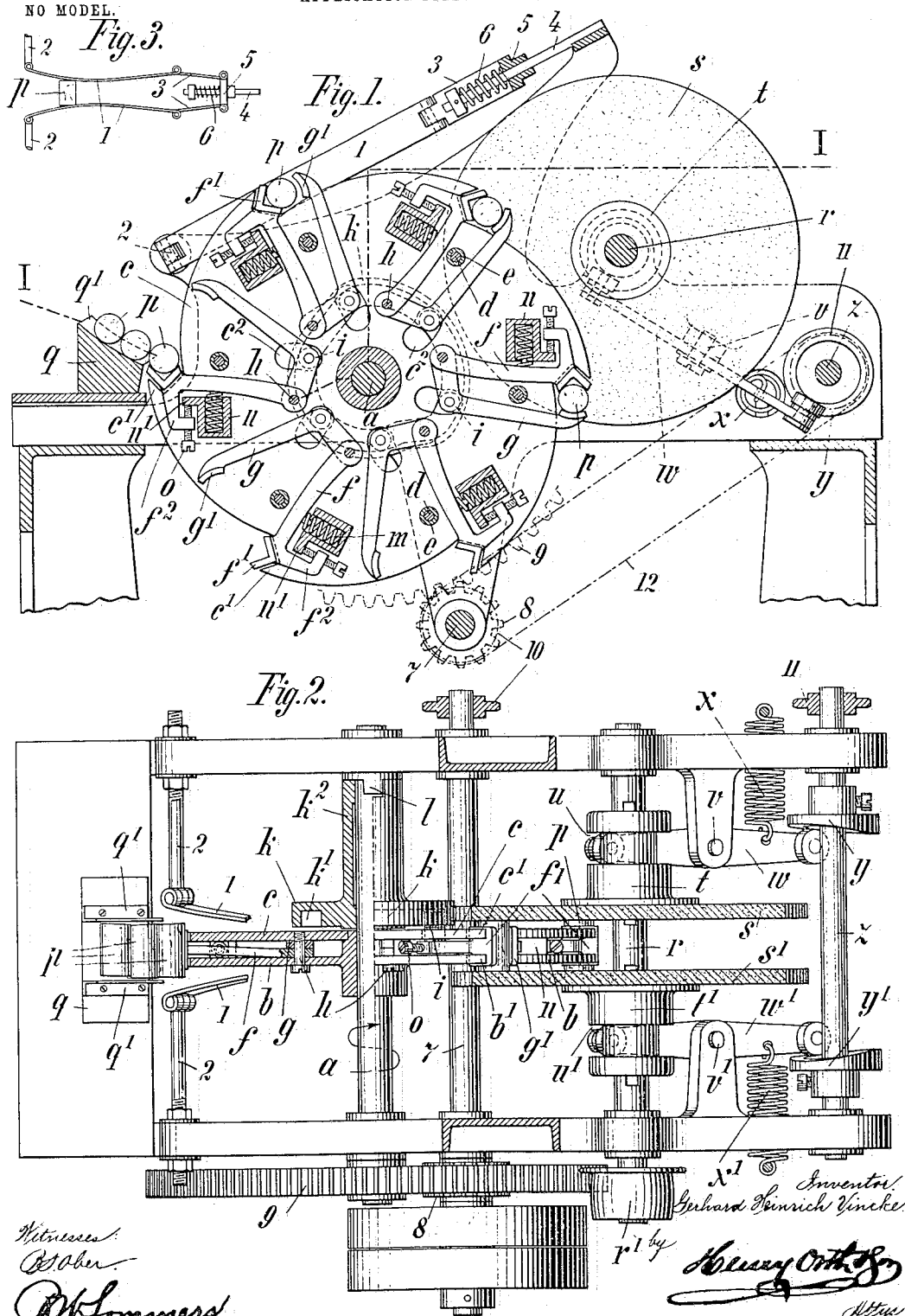
No. 766,403.

PATENTED AUG. 2, 1904.

G. H. VINCKE.

MACHINE FOR GRINDING CORKS SIMULTANEOUSLY ON BOTH ENDS  
AND FORMING THEM SAME LENGTH.

APPLICATION FILED MAR. 1, 1904.



# UNITED STATES PATENT OFFICE.

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MACHINE FOR GRINDING CORKS SIMULTANEOUSLY ON BOTH ENDS AND FORMING THEM SAME LENGTH.

SPECIFICATION forming part of Letters Patent No. 766,403, dated August 2, 1904.

Application filed March 1, 1904. Serial No. 195,975. (No model.)

*To all whom it may concern:*

Be it known that I, GERHARD HEINRICH VINCKE, a subject of the German Emperor, and a resident of San Feliu de Guixols, Catalonia, in the Kingdom of Spain, have invented certain new and useful Improvements in Machines for Grinding Corks Simultaneously on Both Ends and Forming Them of Exactly the Same Length, of which the following is a specification.

My invention has relation to cork-finishing machines—that is to say, to machines for finishing the ends of the corks.

Irrespective of details of construction one of the characteristic features of my invention resides in the provision of means whereby both ends of a cork are finished simultaneously.

A further characteristic feature of my invention lies in the means for securely holding the cork against endwise motion while its ends are operated on.

A further characteristic feature of my invention lies in the combination, with the cork-feeding devices and the cork-carriers, of centering appliances for centering the corks in their carriers.

A further characteristic feature of my invention lies in holding the revoluble abrading or finishing wheels yieldingly against the ends of the cork.

The desired end is attained owing to the fact that the corks to be treated are seized by pairs of pincers carried upon a rotating disk or the like and moving around or over a grooved cam-disk effecting the closing and opening of the pincers at the proper moments, the cork then being carried between two adjustable rotating emery-disks, which are brought together by means of levers or the like submitted to the influence of cams and springs and pressed against the ends of the cork as soon as the cork to be operated upon is situated between the emery-disks, after which they are again separated from it in order to permit of the introduction of the succeeding cork between the emery-disks, while the pincers, which again open, allow the cork which has been ground to fall. In order that

the cork seized by the pincers may be held in the proper position before they come between the emery-disks, they are carried between suitable guide-plates, (spring-plates, spring-stirrups, or the like,) which set the cork in the arms of the pincers, which are not yet completely closed, in the correct position.

The invention is illustrated by way of example in the accompanying drawings, in which—

Figure 1 is a central vertical longitudinal section. Fig. 2 is a plan view of the machine, partly in section, on the line I I; and Fig. 3 is a detail view of the spring-plate device for centering the corks seized by the pincers.

Similar letters and numerals of reference refer to similar parts throughout the several figures.

A disk *b*, serrated in the manner of a circular saw, is mounted upon a shaft *a*, mounted in a suitable machine-frame. Upon the hub of this disk is mounted an annular disk *c*, which, as regards its edge, forms an exact counterpart to the disk *b*. These two disks are rigidly connected one with the other by means of screw-bolts *d* and separating sleeves or washers *e*.

In the interval between the two disks *b* and *c* a series of clamping-pincers is arranged. Each pair of pincers consists of a lever *f*, provided with a gripping-jaw *f'*, and of a bent lever *g*, provided with a gripping-jaw *g'*. The ends of both levers are rotatably mounted upon a common pivot *h*, mounted in the disks *b* and *c*. The bent lever *g* also carries a pressure or guide roll *i*, which projects through a slot *c<sup>2</sup>* in the disk *c* into the groove *k'* of a stationary cam *k*. This latter is carried by a hub or sleeve *k<sup>2</sup>*, surrounding the shaft *a* and which is secured from rotation by means of the projections *l* on the frame of the machine or on the shaft-bearing.

If the shaft *a* or the double disk *b c* is rotated, the teeth *b'* and *c'*, which seize or surround the back of the pincers-jaws *f'*, carry the pincers-levers *f* round with them, whereupon the pressure-roll *i* of the pincers-lever *g* is carried round in the groove *k'* of the stationary cam-disk *k*. The cam-disk is formed

in such a manner that during a complete revolution of the disk  $b\ c$  it first of all rocks the pincers-levers  $g$  in succession against the corresponding pincers-levers  $f$  in order that by closing the pincers a cork introduced between the jaws  $f'$  and  $g'$  may be held and carried through the machine, whereupon the cam-disk—that is to say, its groove—acts upon the pincers-levers  $g$  in such a manner that the pincers are again opened, so as to permit the cork which has been treated to fall.

In order to impart a spring clamping action to the pincers, it is preferable that the double disk—that is to say, its teeth—should act not directly, but by means of a spring  $m$ , upon the pincers-arms  $f\ f'$ . To this end each of the pincers-arms  $f\ f'$  is mounted upon a spring  $m$ , which is inserted in a casing  $n$ , situated between the disks  $b$  and  $c$ . These casings are preferably formed with the disk  $b$  in one piece, and they are provided with a projection  $n'$ , against which a tensioning screw-bolt  $o$ , carried by an arm  $f''$  of the pincers-arm  $f$ , acts and holds the pincers-levers in the position in which they have been set. By tightening up or loosening the bolt  $o$  the action of the spring  $m$  may be regulated.

For feeding the corks  $p$  toward the jaws  $f'$  an inclined slideway  $q$ , with guide-rails  $q'$ , which is arranged in front of the double disk  $b\ c$ , is employed.

Behind the double disk  $b\ c$  a shaft  $r$ , driven by means of a pulley  $r'$ , is mounted, and upon this shaft two emery-disks  $s$  and  $s'$  are displaceably passed. The hubs  $t$  and  $t'$  of these disks are provided with grooves  $u$  and  $u'$ , in which levers  $w$  and  $w'$ , rotatably mounted at  $v$  and  $v'$ , engage by means of friction-rollers. The free extremities of the levers  $w\ w'$ , which are also provided with friction-rollers, are drawn, by means of springs  $x$  and  $x'$ , against cam-disks  $y$  and  $y'$ , respectively, which are adjustably mounted upon a shaft  $z$ . If the shaft  $z$  is rotated, the cam-disks  $y\ y'$  impart to the levers  $w\ w'$  upon each rotation of the shaft  $z$  a reciprocating rocking movement, whereby the emery-disks are correspondingly displaced on the shaft—that is to say, caused to approach or recede from each other. The setting of the cam-disks, and consequently the interval between the emery-disks, is determined in accordance with the length which it is desired that the finished corks should have.

Between the inclined cork-slide and the emery-disks and above the double disk spring stirrups or plates 1 are arranged, between which the corks seized by the pincers are introduced. These stirrups or plates, already known and used in other cork-working machines, serve to correctly arrange the corks situated between the jaws  $f'\ g'$  before they are firmly grasped by the jaws, so that the cork may lie as nearly as possible in the middle of the machine. Only after the cork has been centered by the stirrups or plates do the

pincers close completely and carry the cork, which has thus been arranged in the proper position and in which it is now firmly held, between the emery-disks, which then grind off the ends of the cork.

The stirrups or plates 1 are articulated at their lower end on adjustable screw-bolts 2 on the machine-frame. The upper ends are connected, by means of links 3, to a cross-head 5, displaceable on a rod 4, which cross-head is submitted to the action of a spring 6. By this arrangement the stirrups or plates are maintained stretched with spring-pressure in order that the corks introduced between the stirrups or plates (see Fig. 3) may be properly centered.

The machine is driven from the driving-shaft 7, which by means of the gear-wheels 8 and 9 rotates the shaft  $a$  and by means of chain-wheels 10 11 and an endless chain 12 the shaft  $z$ .

The operation of the machine is as follows: The corks placed upon the inclined slideway  $q\ q'$  slide against the rotating double disks  $b\ c$ , and the lowest cork is always received by the under arm  $f\ f'$  of the pair of pincers which is passing at the moment. The cork so held is carried round by the arm  $f\ f'$ , which are displaced with the disk  $b\ c$ , and conveyed to the emery-disks. During this time the pincers close as the pincers-arm  $g\ g'$  is rocked by the action of the cam-disk  $k\ k'$  against the pincers-arm  $f\ f'$ . Before the cork is brought by the closed jaws between the emery-disks it passes the spring stirrups or plates 1, which act upon the heads or ends of the cork and arrange this latter in the jaws in such a manner that it will lie exactly in the middle of the machine. During this centering operation the jaws  $f'\ g'$  have not quite closed upon the cork, so that its displacement or adjustment by the stirrups or plates is still possible. Only when the cork has been brought into the proper central position by means of the stirrups or plates 1 and has left this latter do the pincers-arms close tightly upon each other and hold the cork immovably in the requisite position. In this position the cork is carried by the pincers in which it is held and by the double disk, respectively, between the emery-disks, which are rotating with great velocity, the interval separating them being somewhat greater than the length of the cork introduced between them. As soon as the cork has entered completely between the two emery-disks these latter simultaneously and uniformly approach the two ends of the cork, grind down these ends to the desired extent, and then again separate. The displacement of the emery-disks takes place, as above stated, owing to the action of the cam-disks  $y$  and  $y'$  and of the levers  $w$  and  $w'$ . According to the adjustment of the cams  $y$  and  $y'$  will the interval between the emery-disks be greater or less, so as to adapt them

for grinding the ends of corks of varying lengths and give to each cork the length corresponding to the adjustment of the cam-disks  $y y'$ . On the further forward displacement of the double disk, approximately when the cork on being ground to the proper length leaves the emery-disks, the pincers holding it are gradually reopened by the action of the cam-disks  $k k'$ , so that the ground cork is able to fall into a receptacle arranged at the lower part of the machine, whereupon the open pincers seize a fresh cork and carry it in the manner described between the centering stirrup or plate device and the emery-disks, &c.

It will of course be understood that the operation of one pair of pincers only has been described. The other pincers of the series act in precisely the same manner, so that an uninterrupted or continuous operation is insured as each succeeding pair of pincers seizes a cork, conveys it through the machine, and then releases it.

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

1. In a cork-finishing machine, the combination with revoluble carriers and means to hold the corks against endwise displacement in their respective carriers; of abrading-wheels on opposite sides of the carrier arranged to act on opposite ends of the corks simultaneously, for the purposes set forth.

2. In a cork-finishing machine, the combination with revoluble carriers and means to hold the corks against endwise displacement in their respective carriers; of abrading-wheels on opposite sides of the carrier, arranged to act on opposite ends of the corks simultaneously and means to hold the wheels yieldingly against said ends of the corks, for the purposes set forth.

3. In a cork-finishing machine, the combination with revoluble carriers, each comprising a pair of jaws adapted to grip a cork, means to feed the corks to said jaws, and means to successively open and close said jaws as they are revolved; of abrading-wheels on opposite sides of said carriers arranged to act on opposite ends of the corks simultaneously, for the purposes set forth.

4. In a cork-finishing machine, the combination with revoluble carriers, means to feed the corks thereto, means to center the corks on the carriers and means to hold the corks against endwise displacement; of abrading-wheels on opposite sides of the carriers arranged to act on both ends of the corks simultaneously, for the purposes set forth.

5. In a cork-finishing machine, the combination with carriers each comprising a pair of jaws whose free ends are adapted to hold a cork, a revoluble wheel having peripheral offsets forming bearings for the free end of one of the jaws of a pair, pivots on said disk for

and common to the opposite end of both jaws of a pair, and means to hold the jaws against lateral movement; of means to alternately open and close the jaws as they revolve, and abrading-wheels on opposite sides of said disk arranged to act on both ends of the corks simultaneously, for the purposes set forth.

6. In a cork-finishing machine, the combination with carriers each comprising a pair of jaws one of which has an angular seat in its free end for a cork and the other a concave bearing-face, two rigidly-connected revoluble disks having peripheral offsets provided with angular seat-recesses for the aforesaid corresponding seat on one of the jaws, and a pivot between the disks for and common to a pair of jaws; of means to alternately move one of the jaws of a pair toward and from the other, and abrading-wheels on opposite sides of said disks arranged to act on both ends of a cork, held by the jaws, simultaneously, for the purposes set forth.

7. In a cork-finishing machine, the combination with revoluble carriers and means to hold the corks against endwise motion thereon; of revoluble abrading-wheels on opposite sides of the carriers and means to automatically move said wheels toward and from said carriers, for the purposes set forth.

8. In a cork-finishing machine, the combination with revoluble carriers, and means to hold the corks against endwise displacement thereon; of revoluble abrading-wheels on opposite sides of the carriers, means to vary the normal distance between the wheels, and means to automatically move said wheels toward and from each other, for the purposes set forth.

9. The combination with the shaft  $r$  and wheels  $s, s'$  revoluble with and having endwise motion thereon, said wheels provided with hubs having a circular groove; of the spring-actuated levers  $w, w'$  projecting into said grooves, the revoluble shaft  $z$  and the cams  $y y'$  adjustable on said shaft and acting on the opposite ends of said levers, for the purposes set forth.

10. In a cork-finishing machine, the combination with carriers each comprising a pair of jaws adapted to hold a cork between their outer or free ends, a revoluble support for and to which the inner end of said jaws is pivotally connected, means to move one of the jaws of a pair toward and from the other, and a resilient support for and intermediate of the ends of one of said jaws; of revoluble abrading-wheels on opposite sides of the carriers arranged to act on both ends of a cork held by the jaws, for the purposes set forth.

11. In a cork-finishing machine, the combination with carriers each comprising a pair of jaws adapted to hold a cork between their outer free ends, a revoluble support for and to which the inner end of said jaws is pivotally connected, means to move one of the jaws of a pair toward and from the other, a spring in-

intermediate the ends of one of said jaws to yieldingly support the same and, means to regulate the tension of said spring; of abrading-wheels on opposite sides of the carriers arranged to act on the ends of a cork held by said carriers, for the purposes set forth.

12. In a cork-finishing machine, the combination with a carrier comprising two jaws adapted to hold a cork between their outer free ends, a revoluble discoidal support to which the opposite ends of said jaws are pivoted, said support provided with a peripheral abutment for one of the jaws, and a resilient support for the latter jaw intermediate its ends; of means to open and close the jaws, and abrading-wheels on opposite sides of the carrier-support adapted to act on both ends of a cork, for the purposes set forth.

13. In a cork-finishing machine, the combination with a plurality of carriers each comprising a pair of gripping-jaws, a revoluble support to which said jaws are pivoted, means to support one of the jaws of each pair and a

cam adapted to act on the other jaw of each pair to move the same toward and from its companion jaw; of revoluble abrading-wheels on opposite sides of the carrier-support adapted to act on both ends of a cork, for the purpose set forth.

14. In a cork-finishing machine, the combination with a plurality of carriers each comprising a pair of gripping-jaws, a revoluble support to which said jaws are pivoted, a rigid and a resilient support for one of the jaws of each pair and a cam adapted to act on the other jaw of each pair to move the same toward and from its companion jaw; of revoluble abrading-wheels on opposite sides of the carrier-support adapted to act on both ends of a cork and means to automatically move said wheels toward and from each other, for the purpose set forth.

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Witnesses:

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JOSÉ COMOS.