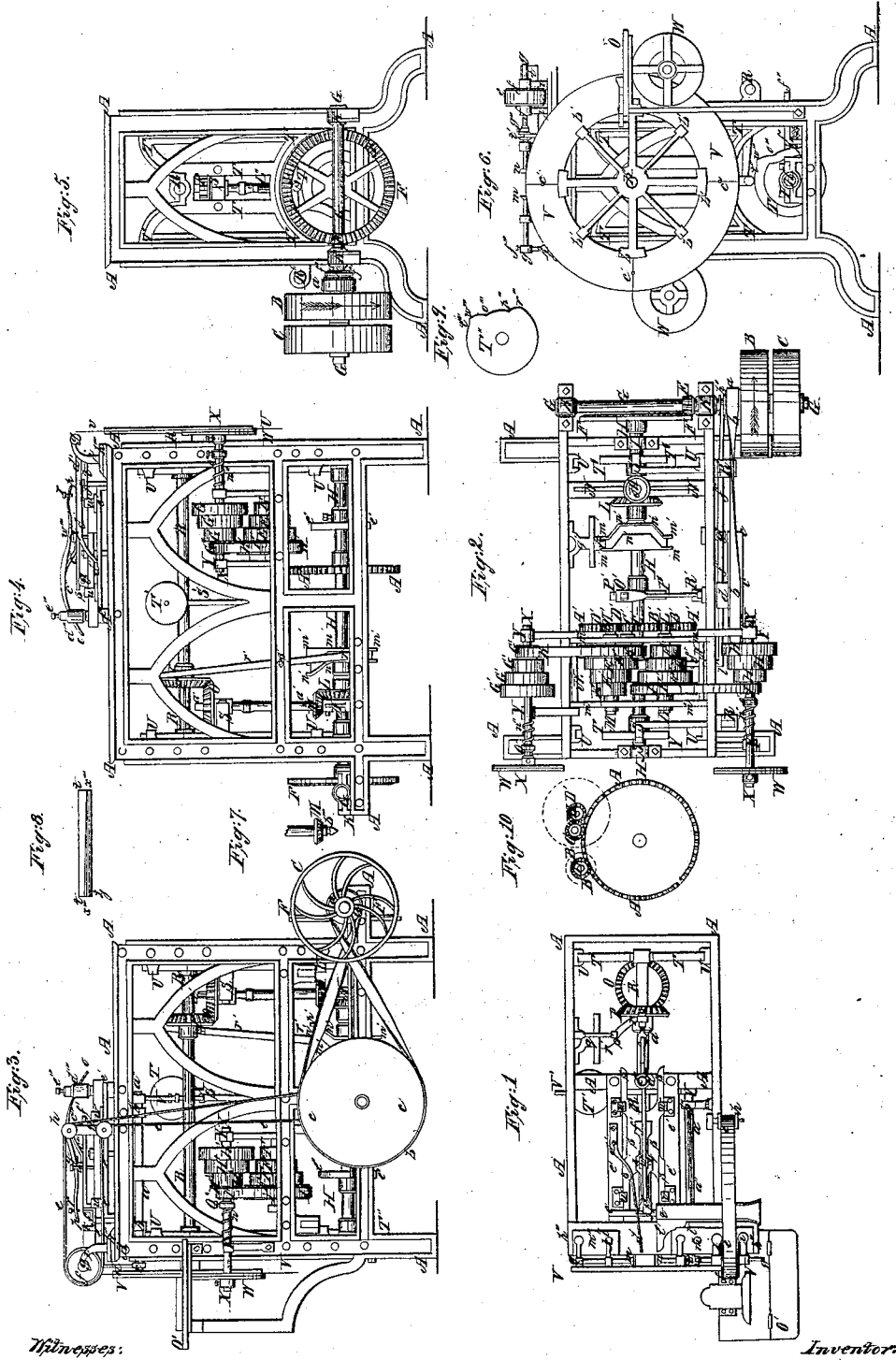


Cork Machine.

Ms 1842.

Patented Oct. 31, 1840.



Witnesses:
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UNITED STATES PATENT OFFICE.

CHARLES R. MACY, OF HYDE PARK, NEW YORK.

MACHINE FOR CUTTING CORKS.

Specification of Letters Patent No. 1.842, dated October 31, 1840.

To all whom it may concern:

Be it known that I, CHARLES R. MACY, of the village of Hyde Park, county of Dutchess, and State of New York, have invented an improved machine for manufacturing corks of all descriptions by power and also a mode for sharpening the knife used in such and similar machines without stopping the same; and I do hereby declare that the following is a full and exact description thereof.

Figure 1 is a plan view of certain parts of the machine. Fig. 2 is a plan view of the other parts of the machine. Fig. 3 is a side view of the machine looking at it with the knife on the left hand. Fig. 4 is a side view of the machine looking at it with the knife on the right hand. Fig. 5 is a view of the machine looking at the end on which the pulley B is attached. Fig. 6 is a view of the machine looking at the end on which the knife is attached.

The letters are the same on all the figures in the drawing hereto annexed.

A, A, A, A, is the frame made of cast iron or any other solid material, say three feet long, three feet high, sixteen inches wide on the top with a proper spread on the floor.

B, is a driving pulley one foot in diameter and gives motion to the machine, being connected with the driving power by an ordinary band and moves in the direction of the arrow.

C, is a loose pulley one foot in diameter, on which the driving band runs when the machine is at rest. G, G, is a shaft on which the pulley B, is fastened, and which is driven by that pulley.

E, is a beveled cog-wheel on the shaft G, G, which works into a beveled cog wheel F, and thereby gives motion to the shaft H, H, which is supported by the bearings I, I, in the frame; the respective sizes of E, and F, and the number of their teeth depend on the speed of the driver; the shaft G, G, is also supported by bearings K, K, which are ordinary bearings, and so are also I, I. L, is a beveled cog wheel set on the shaft H, with 48 teeth which work into the pinion M, having 24 teeth; this pinion is fastened on to the foot of the upright shaft a', a', which runs in an ordinary step in a cross piece N, and through the beveled wheel

O, which wheel is supported on an ordinary box S, connected firmly with the slides T, T;

the step of a' a' has a groove b''', see Fig. G, turned in it in which two horizontal pins passing through N, are set so as to prevent the shaft from being raised; on that part of the shaft a' a' which passes through O, there is a feather and in O, there is a corresponding groove so that the wheel O, revolves with the shaft a', a', and yet the wheel O, is allowed to move freely on the shaft with the slides T, T, and the box S, in a vertical direction. P, and O, are mitered cog wheels of 48 teeth each and P, is set on to the shaft R, R, and communicates motion to it. On this shaft R, R, is set the cutting knife V, V, which turns with the shaft. The knife is fastened to the shaft R, by a set screw passing through the hub in a manner well known to all mechanics or other convenient means so as to allow it to be slipped along the shaft toward or from the frame of the machine to enable it to cut a smaller or larger cork as may be desired. This cutting knife V, V, is made of four pieces, each a quarter of a circle, or it may be of any number of pieces. The blade is set in slots cut in the arms b', b', and is fastened with two rivets in each arm. There are rivets c', c', in each joint of the knife in order to keep the pieces firm, the holes being countersunk. On the top of the machine is a slide s, s, by which the quarter or blank or block out of which the cork is to be formed is carried to the knife. The corkwood being first cut into square strips is then cut of the right length for the cork by the workman at the table O', by means of the knife V or in any other convenient mode. t, t, is the box into which the block is slipped and shoved through on to the movable piece f', f', which is connected with the slide s, s, until it strikes the spring d'. The slide s, s, runs on the pieces e', e', and is kept down by the clamps w w. The spring d', is also fastened to one of the pieces e'. f', f', is fastened to the slide s, s, by means of two circular ears g', g', one on each side. f', f', is counterbored so that these ears fit in and a screw h', is passed through each ear and confines f', f', at that point and serves as the axis on which f', f', is raised or depressed as required in order to suit the size of the block placed upon it to make the cork of. In order to move f', f', vertically there is a screw q, which passes through a female screw cut in f' and the lower end of the screw bears on s, s, and by

turning this screw, f' , f'' , is raised or allowed to be depressed according to the direction in which the screw is turned.

i' , is a screw which passes through f' , f'' , and takes into a female screw in s , s , and by turning it forward f' , f'' is depressed, it also confines f' , f'' , in its required position, the slide s , s , and piece f' , f'' , with the block on it are moved forward toward the knife and the block is passed into the space between the spindles m , g , and n , g , being guided by the spring d' , and the elbow l' , the spindle n , g , having a lateral motion which increases and diminishes the distance between it and m , g . While the block is moving with the slide s , s , toward the knife it is held in its place by the pressure of the jaw or lever p , w'''' , o , the fulcrum of which is at w'''' and the end p , is pressed on the block by the spring c'''' , in order to raise this jaw to admit the block the end o , w'''' , of the lever runs into a mortise in the standard d'''' , fastened to the frame and not connected with the slide s , s , as the slide is drawn back from the knife the end o , of the jaw or lever enters the mortise and is gradually depressed till the end at p , is raised to the required height, there is a screw e'''' , in the standard by which a greater or less depression is produced on that end of the lever—by turning the screw r , on to f' , the end p , of the jaw is always raised sufficiently to clear the head n of the spindle g , n ,—on the inner ends of these spindles are heads m , n , whose inner faces are concave so as to prevent the block from slipping, that at n , is a little roughened so as to insure the turning of the block, these faces may be of any convenient size, but they must be always smaller than the end of the cork which they are respectively to hold, these spindles are sustained and revolve in the stands i , k , and are made to revolve by a band e , e , passing over the pulley f , 4 inches in diameter and rollers h , h , and the pulley d , $3\frac{1}{4}$ inches in diameter. These stands i , k , h , are fastened to the bed plates l'''' , l'''' , and these are fastened to the cross piece h'''' , by the screws m'''' ,—these screws may be turned out and the bed plates l'''' , set nearer to or farther from each other so that the spindles may hold very long or short corks. The cross piece h'''' , is fastened to the frame by screws or other convenient means so as to allow it to have either end brought nearer or farther from the knife and thus present the spindles g , m , and g , n , and the block between them to the knife at the angle necessary to give the cork the required taper; in the end of the spindle g , m , and in that part which is directly under the screw f'''' , a groove is cut in which the screw f'''' , works and prevents the spindle from slipping out of its place. On the spindle n , g , is a feather and a cor-

responding groove in the pulley f , by which motion is communicated to the spindle; motion is given to the pulleys and band by the pulley c , 9 inches in diameter which gets its motion from the clutch pulley a , $3\frac{1}{2}$ inches in diameter by the cross band b . a , being loose on the shaft G , G , the slide s , s , is moved toward and from the knife v , v , by means of the cam m' , m' , n' , n' , and the lever r' . The cam is a cylinder with a groove turned on its face, on one portion of the periphery of the cylinder, a projection n' , n' , is fastened having a groove in it and inclined from the knife V , V , at an angle of about forty-five degrees the pin p' , on the lower end of the lever r' , r' , passes through the groove.

S , is the fulcrum of the lever supported by a stud a'''' , Fig. 1 fastened to the frame A , A , and the slide is moved toward and from the knife as the lever is moved by the cam the lever r' , r' , is fastened to the slide s , s , by a connecting rod a'''' , which has a screw on it and passes through the end of the lever r' , r' , on each side of the lever are nuts which turn on the connecting rod and bring the slide closer to or remove it from the lever at pleasure; the spindle g , n , gets its lateral motion from the cam P' , P' , on the shaft H . This cam is cylindrical having on one portion of its periphery a projection of one inch in height, which has a stationary bearing of about $2\frac{1}{2}$ inches.

Q' R' is the lever which runs on the cam and has a joint at R' . The shaft a'' , c'' , is set into the bearings b'' , b'' , and on its end c'' , the clutched lever d'' is fastened and takes into the clutch box t' , on the spindle n , g . The clutch box t' , is held in any required place on the spindle by means of the screw g'''' . A bent lever V' , is fastened on the shaft a'' , c'' , and in it the weight F' , is fastened. This lever V' , is connected with the lever Q' , R' , by the connecting rods S' , and H' . H' passes through the lever V' , has a screw cut on it on which are placed nuts above and below the lever. H' is fastened to S' with a joint, and S' also has a joint at Q' . The nuts are on X' , to allow the lever V' , to be moved up and down upon it in order to regulate the position of the clutch d'' and the spindle g , n . There are times when the spindles g , m , and g , n , are required to be stationary in order to effect this the pulley a , is made so as to be moved on the shaft G , G , laterally and when disengaged from the pulley B , to which it is connected by clutch teeth ceases to revolve there being clutch teeth on the hubs of both pulleys B , and a . This disengagement and consequent stopping is regulated by the lever f'' , f'' , having its fulcrum at g'' , and which is moved by the cam e'' , e'' . This cam is similar to P' , P' , except that its projecting stationary bearing is about $4\frac{1}{2}$ inches.

The lever f'' , f'' , is crooked so as to pass under the pulley d , is bent at right angles at l'' , and kept against the cam by a spiral spring or other convenient means, the other end of this lever is clutched and takes into the clutch box h'' ; when the projection on the cam e'' , e'' , strikes the end of the lever the pulley a , is disengaged from the pulley B, and the spindles g , n , and g , m , cease to move. W, W, are sharpeners which are attached to the machine for the purpose of keeping the knife sharp without stopping it. They are caused to revolve so that the upper points of each revolve from the center of the knife V, V. The faces of the sharpeners are first covered with leather, then any composition or material calculated to sharpen and produce an edge is laid on the leather or they may be used without anything being put upon the leather or the whole may be made of stone or wood or any other convenient material as may be thought most proper. These sharpeners W, W, are made to revolve by the cog-wheel A, A, represented in section Fig. 10 on the shaft H, H, and the intermediate gearing this cog-wheel has 156 teeth, the pinion B', B', is fastened on the end of the shaft L', L', which is properly sustained by cross-pieces m'' , m'' , and this pinion works into the wheel A', A', and has 24 teeth; on this shaft L', L', are also fastened a system of cone pulleys F', F', these pulleys are connected with and driven by the band I', I', and the system H', H', H', which are fastened on the shaft X, X, and thus motion is given to the sharpener W. The shaft H, H, is sustained by and revolves in the standards Y, Y. This sharpener is the one which revolves against the outer face of the knife and on its shaft H, H, there is a spiral spring n'' which by its elasticity regulates the pressure of the sharpener against the knife. The tension of the spring is regulated by the position of the collar o'' the other sharpener works on the inner face of the knife and has a similar spring and collar by which its pressure is also regulated; in order to get the proper motion for this sharpener a pinion C', C', is fastened to the cross-piece m'' , m'' , by means of an ordinary stud. This pinion has 24 teeth and works directly into the cog-wheel A', A'. Into this pinion another pinion D' D', of 24 teeth works. This second pinion is fastened on to a shaft M', M', and is connected with the pulleys E', E', and G', G', by the band K', K', and drives the second named sharpener as the first one above described is driven. The object of these systems of pulleys is to regulate the speed of the sharpeners—these require to run with less or greater speed according as the knife is sharp or dull. When the knife is sharp and the sharpeners may be run slowly the band K', K', would be put

on the smallest pulley E', and its corresponding pulley G' and as the knife grows dull the band would be shifted on to the larger pulleys E', E', according to the judgment of the workman for the same reasons there will be a corresponding change of the band I', I.

N', N', are rollers over which the bands I', I', and K', K', run and are thereby kept clear of the frame.

The knife in order to cut the cork properly has a vertical as well as a rotary motion, this is obtained by raising and depressing the shaft R, R, with which the knife revolves and which is set into and borne upon the slides T, T, at either end of the machine, these slides T, T, are raised or depressed vertically in the grooves U, U, by means of the cams T'', T'', and levers S'', R''. The fulcrums R'', R'', of these levers are outside of the frame A, A, A, A. The cams T'', T'', represented in section at Fig. 9, are made thus: Take a cylinder about 8 inches in diameter, then describe on the end a circle of about $6\frac{1}{2}$ inches in diameter, lay off on the circumference of this circle 4 inches say from o''' , to p''' , remove all of the cylinder outside these four inches and the cam is cut away so that the points o''' , and p''' , are connected with the periphery by easy curved lines, on one side of the opening there is a projection w''' , of a quarter of an inch which is brought to a point, this projection is for the purpose of raising the knife above the center of the cork so as effectually to clear off the chip. The knife is depressed so as to allow the block to be passed over it sufficiently far to get a proper thickness for the chip which is to be cut off the block.

As the knife V, V, becomes worn and thus diminished in diameter it is necessary to raise it permanently so that it may cut the cork completely, for this purpose female screws are cut into each slide T, T, at M'', M'' and through these and bearing on the end of the levers S'', S'' directly over the cams T'', T'', are screws L'', L'' and by turning these in the proper direction the shaft R, R, and the knife V, V, are raised.

I will now proceed to describe the operation of the machine and the relative positions of the respective parts during such operation. Suppose the slide s , s , to be drawn back from the knife, the several parts of the machine will be in the positions represented in the drawings. As the machine moves the projection w''' , on the cams T'', T'', will approach the levers S'', R'', and when these projections have passed under those levers and the levers begin to fall into the hollow parts of those cams the projection on the cam P', P', begins to raise the lever Q', R', and by means of the be-

fore described connections S' , and H' , the bent lever V' , the shaft a'' , c'' , the arm d'' , and the clutch box t' , the spindle g , n , is drawn away from the spindle m , g , allowing the cork just finished to drop out, when the levers S'' , R'' , have dropped on to o''' . on the smaller circle of the cams T'' , T'' the projection p' , on the lever r' , r' , begins to bear on the projection n' , n' , on the cam m' , m' , and the slide s , s , begins to move toward the knife, the jaw p , w'''' , is settling down upon the block the end Q' , of the lever Q' , R' , has reached its highest point on the projection of the cam P' , P' , and the spindle g , n , has ceased to recede from the other spindle. When the projection p , has receded from the knife two thirds of its greatest distance the jaw p , w'''' , has settled, firmly on the block. When the levers S'' , R'' , are midway from o''' , to p''' , on the cams T'' , T'' , the lever Q' , R' , has begun to drop off the projection on the cam P' , P' , the spindle g , n , has begun to approach the spindle m , g . The projection p' , on the lever r' , has reached its greatest distance from the knife and is slipping in the bearing n' , n' , of the cam m' , n' , the projection on the cam c'' , c'' , beings to operate on the lever f'' , and the pulley a , is disengaged from the pulley B and the spindles g , n , g , m , cease to revolve, the slide s , s , has reached its nearest point to the knife and the block is in the interval m , n , between the spindles; when the cams T'' , T'' , have revolved so as to bring p''' , under the levers S'' , R'' , the lever Q' , R' , has dropped on to the circular part of the cam P' , P' , and the spindle g , n , has been sprung by the weight T' , against the block so as to press it firmly against the face m , of the spindle m , g , and ready for cutting by the knife; the projection p' , on the lever r' , is beginning to approach the cutting end of the machine and the slide s , s , is beginning to recede; while the cams T'' , T'' , are revolving so that they are passing under the levers S'' , R'' , from p''' , to r''' , the knife is raising and is cutting into the block and when the point r''' , has been brought under the levers S'' , R'' , the knife has cut up to a horizontal plane passing through the center of the block, and the slide s , s , has receded to its greatest distance from the knife the pulley a , is still disengaged from B; when the point r''' , has passed from under the levers S'' , R'' , the pulley a , is engaged with the pulley B, the spindles m , g , and n , g , with the block between them begin to revolve and while the cams T'' , T'' , revolve so as to pass under the levers S'' , R'' , from r''' , to w''' , the block and spindles have made one revolution and by the action of the knife V , whose revolution is con-

tinual a cork has been cut; the cork being kept between the spindles g , m , and g , n , until the knife has been raised by the projection t''' , w''' , so as to insure the knife to cut off the chip if from any cause it should not have been entirely cleared. It is obvious that the revolution of the sharpeners as well as of the knife will continue as long as the pulley B, revolves.

As the face of the slide s , s , which receives the block is sometimes raised above the box t , the block would not readily slip on to the slide, there is therefore a false bottom x'''' , x'''' , represented in section at Fig. 8, in the box t , which lies loosely in it and is prevented from being moved toward the slide by its bell-mouthed shape and that of the box; under the end of the false bottom nearest to the slide there is a screw z , which turns into a female screw in the bottom of the box and by turning this screw in the proper direction the false bottom is elevated or depressed so as to bring it up or down to the level of the face of the slide on which the block is to lay.

The axes X , X , on which the sharpeners W , W , revolve are set at such an angle with the shaft R , on which the knife revolves as to bring the faces of the sharpeners parallel with the bevel of the knife.

In describing the modes in which various parts of the machine are fastened, geared, and connected, I do not wish to be understood as limiting myself to those modes in particular; there are very many other convenient modes well known to mechanics in which the same things may be effected; the size of different parts of the machine may be varied according to the power and speed of the driver and according to the other usual different circumstances in which different machines may be placed and according to the judgment of the workman.

What I claim as my invention and for which I desire Letters Patent is—

1. The combination of the rotary cutter with the sharpening rotary disks one on each face of the rotary cutter for the purpose and in the manner described.

2. The method of moving the rotary cutter wheel up and down at the commencement and end of every operation by means of the sliding frame T , T , acted upon by the cams T'' , T'' , for the purpose and in the manner described.

3. The method of feeding the machine with the block by means of the slide and jaw in combination with the receiving box and spindles as herein described.

CHARLES R. MACY.

Witnesses:

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JAMES GILLENDER, Jr.