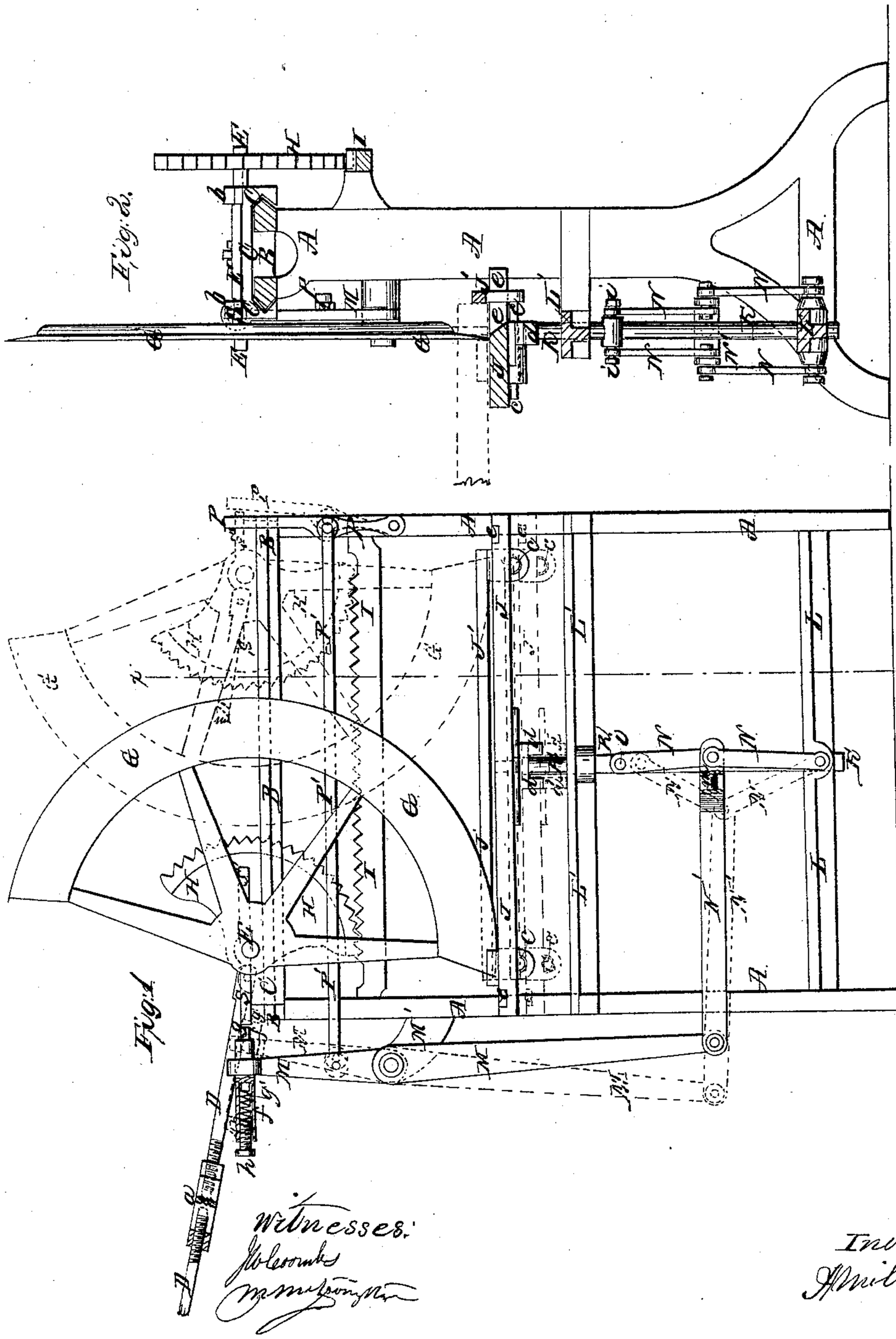
A. Millar.

Cork Machine.

No. 31,253. Patented Jan. 29, 1861.



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ALEXANDER MILLAR, OF NEW YORK, N. Y.

CORK-CUTTING MACHINE.

Specification of Letters Patent No. 31,253, dated January 29, 1861.

To all whom it may concern:

Be it known that I, ALEXANDER MILLAR, of New York, in the county and State of New York, have invented a new and Improved Machine for Cutting Cork Wood; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a front elevation of the improved cork wood cutter, representing by the aid of red lines, the movable parts in two positions. Fig. 2 is a transverse section taken through Fig. 1, in the vertical plane indicated by the red line *x x* thereon; showing the knife operating upon a piece of cork wood.

Similar letters of reference indicate corresponding parts in both figures.

Cork is received by the cork cutter in the shape of large flakes or pieces, which have to be pressed flat and cut up into slips, then into large or small blocks according to the size of the intended cork, bung or tap, as the varieties are called.

The object of my invention is to cut these flakes of cork wood up into small blocks or blanks, as they are termed in a much better and more efficient manner than has been heretofore done, by the employment of a knife with a curved edge, which knife receives a reciprocating, and at the same time a semi-rotary motion, thus performing a draw-cut on the cork wood, which, on account of the peculiar tough character of the cork-wood, will cut it and make a smoother cut than can be done with the common cutters, used for this purpose.

To enable those skilled in the art to make and use my invention I will proceed to describe its construction and operation.

A, A, is a quadrilateral frame-work which contains and supports the mechanism for cutting the cork-wood. The two upper ends of the upright sides of the frame support a horizontal slide-rest B which extends the entire length of the frame A A.

C is a sliding carriage which receives an alternate reciprocating motion on the slide rest, B, from a bell crank, through a connecting rod, D, which is provided with a coupling link, *a*, for contracting or lengthening the rod D, according to the length of movement which it is desired to give the carriage C. The carriage, C, has a flange projecting down on each side of the slide rest B, which flanges have Y grooves in them into which the edges of the slide rest, B, fit. This prevents any lateral play of the carriage and keeps it down on the slide rest during the longitudinal movement of the carriage.

On the top and on each side of the carriage C, is secured a bearing box, *b*, for the traveling rock-shaft E, which shaft passes transversely over the carriage, C, and carries on one end the semi-circular knife G, shown in Figs. 1, and 2, of the drawings; and on the opposite end of the shaft E, is keyed a sector spur wheel H, both of which, *i. e.* the knife G and sector H, move in a vertical plane and have an alternate reciprocating motion, which they receive from the carriage C. The teeth of the spurred sector H, engage with the teeth of a rack bar I, which bar is parallel with the slide rest B and arranged below it on the back part of the frame A A. This rack bar I extends the entire length of the frame A, A, and gives a semi-rotary motion to the sector H, and consequently to the knife G as the carriage is moved back and forth on the slide rest. The rotary motion of the knife G will be in a direction with the motion of the carriage C.

J is the horizontal table on which the work to be cut by knife G is placed; and J′ is a parallel bar, which is arranged behind the table and connected to the bottom of this table by transverse rods *c*, *c* and suitable set-screws which, on being loosened, will allow the bar J′ to be adjusted up to, or away from the back edge of the table. This bar J′ is used as the gage-bar for regulating the size of the slips, and blocks of cork to be cut. This bar J′ therefore projects above the plane of the top of the table and the edge of the flake of cork is pressed against the bar J′ while the knife takes off the slips. The table J is arranged under the semi-circular knife G so that the plane of the face of the knife will be in a plane with the back edge of this table. K is a perpendicular bar which projects down from the middle of the table J through the horizontal bars L, L′, which serve as guides for keeping the bar in a steady vertical position. The pieces *d*, *d*, which are secured to, and project from, the bottom of the table J, rest on the

upper horizontal bar L′ when the table is in the position shown in red lines Fig. 1. The two guide arms *e*, *e* which project from each end of the table J, and are notched to fit the edges of the uprights A, A, serve to steady the table J, in its vertical movement. The table J thus arranged receives a vertical movement from the carriage C, through the medium of the following arrangement.

M is an upright lever which is placed at one end of the machine and which has its fulcrum in a bracket M′. The upper end of this lever projects up as high as the carriage C, and its lower end projects below the bar L′. The upper end of lever M, has an eye formed on it, into which is secured a metal tube or socket *f*, which extends out a short distance from each side of the lever in a direction with the length of frame A, A, and a pin *g*, is placed in one end of this socket *f*, behind which is a spring *g′* and an adjusting screw *h*. The lower end of lever M, is connected to two pair of upright toggle-levers N, N, by the jointed rod N′. The lower ends of the levers N are pivoted to each side of the bar L, as shown in Fig. 2; and the upper ends of these levers are pivoted to the vertical bar K, at *i*, Figs. 1 and 2; and the end of connecting rod N′ is jointed to the levers N, N at their middle joints, so that by vibrating the lever M, these toggle levers N, N will alternately raise and depress the table J, as represented in Fig. 1, by the red and black lines, which show the parts just described in their two positions. In this Fig. 1, a pin *m*, is shown projecting from the bifurcated end of connecting rod N′, for the purpose of stopping the toggle levers N, N when they are straightened out. This pin *m* for this purpose strikes the vertical rod K, when the table J is at its highest point and keeps the table at this point until the toggle levers N, N are tripped by the carriage C as will be hereinafter explained. On the opposite end of the frame A A to the lever M is a short arm P, shown in Fig. 1 which is pivoted at its lower end to the front side and the end of the frame A so that its upper end can vibrate back and forth. The upper end of this pivoted arm P projects up above the slide rest B sufficiently high to be struck by the carriage C, or by a piece, which projects from this carriage, to be explained hereafter. The arm P is connected with the lever M by a horizontal rod P′ which is jointed to the arm P a suitable distance from its pivot, and also jointed to the upper arm of the lever M.

S, S′ are two straight pieces which are secured to the top of carriage C and which project from each end of this carriage a suitable distance (the piece S′ should be made adjustable in a direction with its length) to strike the arm P when the carriage C moves to this end of the slide rest B, and cause this arm to trip the toggle levers N, N, through the medium of connecting rod P′, lever M, and connecting rod N′, and depress the table J; and the piece S should be of a sufficient length to strike the upper end of lever M, when the carriage returns to this end of the slide rest, B, and cause this lever to raise the table J to the position represented in Figs. 1 and 2, through the medium of toggles N N and connecting rod N′ as before described.

The arrangement of a spring *g′* behind the piece, *g*, is merely to relieve the lever M from concussion in consequence of the piece on carriage C striking it very hard.

The bar L′, through which the bar K, plays, serves not only as a guide for this bar K, but it serves as a solid bed for the table J, to rest on when this table is in a depressed state.

When the table J is in an elevated position, as shown in Figs. 1 and 2 of the drawings, it is held in this position by the toggle levers N, N, together with the pin *m*, the end of which pin bears against the vertical bar K; this pin *m*, allows the middle joints of the toggle levers to pass behind a straight line drawn through the axes of the upper and lower joints of these levers.

The operation of the entire machine is as follows: Let it be supposed that the connecting rod D, is properly adjusted lengthwise, and connected to the bell crank of a driving shaft which in its revolutions will give the carriage C an alternate reciprocating movement on its slide rest B; and the teeth of the sector spur wheel which engage with the rack I, will give the shaft E a rocking motion which will be transmitted to the semi-circular knife G at the same time this knife will receive, bodily, a rectilinear reciprocating motion from the carriage C.

The table J being in the position represented in red lines Fig. 1, the piece of cork to be cut by the knife G, is placed on this table J, and brought up against the gage bar J′, which should be properly adjusted to the size it is intended to cut the pieces of cork. The carriage C, then moves up toward lever M, carrying the knife G, over the piece of cork without the edge of the knife touching the cork, and the piece S, strikes the pin *g*, on the upper end of lever M and pushes this end of the lever back, which operation raises the table J to the point represented in Figs. 1, and 2. The carriage C then returns to the opposite end of the slide rest B as represented in red lines Fig. 1, and in this return movement, the knife cuts off a slip from the piece of cork as shown in red lines in Fig. 2. When the knife G, has thus finished its cutting, the piece S′ pushes the upper end of arm P forward and trips or depresses the table J, through the medium of rod P′, lever M rod N and toggles N, N

as before described. The several parts are now in the position represented in red lines Fig. 1 and the knife G returns to the opposite end of the slide rest without touching the piece of cork which is supposed to be on the table J. Thus it will be seen that the table J is operated automatically by the movement of the knife carriage so as to hold the work up to the knife, G, as it approaches the arm P, and to release the work so as to allow it to be properly adjusted on table J in the return stroke of the carriage C, or, when the knife approaches the lever M. The sector spur wheel H gives the knife a forward semi-rotary motion as this knife is moved forward by the carriage C and a reverse motion is imparted to the knife by the sector H when the carriage C returns. The knife G will thus have two motions viz: a partial rotary motion and a rectilinear reciprocating motion. The knife blade G is bolted to the segment represented in Fig. 1 and this segment may be removed from the rack shaft E for sharpening the knife.

In practice a groove will be cut into the top of the table J, along its back edge, and just under the edge of the knife G and this groove will be filled with some soft wood for the purpose of allowing the edge of knife G to cut close down to the table without its edge becoming injured.

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

The semi-circular knife G, rock shaft E, spur wheel H, rack I, in combination with the reciprocating carriage C and slide rest B when the same are arranged so as to operate substantially in the manner and for the purposes herein specified.

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