G. H. DEGRAW.

Machine for Cutting Shingles.

No. 165,313. Patented July 6, 1875.

Fig. 1.

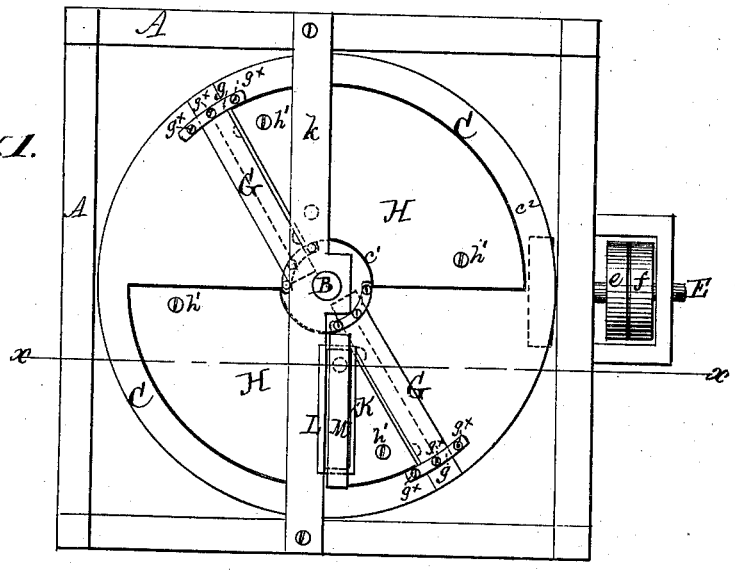


Fig. 2.

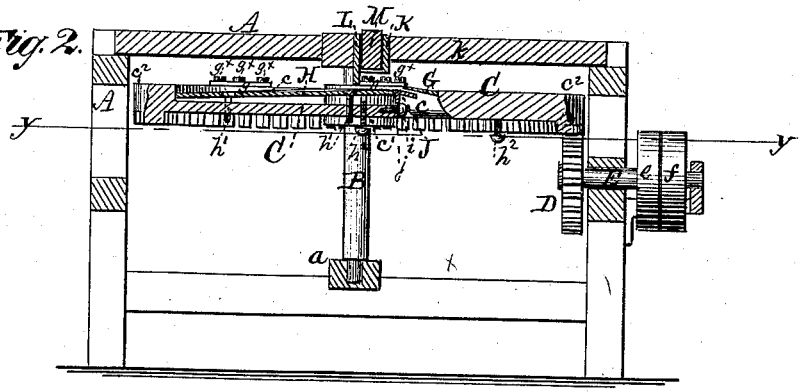
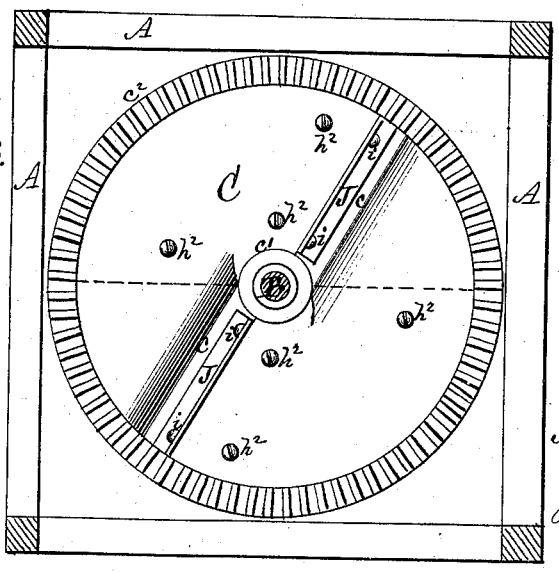


Fig. 3.



Witnesses
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UNITED STATES PATENT OFFICE.

GEORGE H. DEGRAW, OF BROOKLYN, NEW YORK, ASSIGNOR TO HIMSELF AND REUBEN C. GROVER, OF SAME PLACE.

IMPROVEMENT IN MACHINES FOR CUTTING SHINGLES.

Specification forming part of Letters Patent No. **165,313**, dated July 6, 1875; application filed May 17, 1875.

To all whom it may concern:

Be it known that I, GEORGE H. DEGRAW, of Brooklyn, in the county of Kings and State of New York, have invented certain Improvements in Machines for Cutting Shingles; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, which forms part of this specification.

My invention relates to a machine for cutting shingles, tub and pail staves, and other articles, from blocks of wood fed vertically to horizontally-revolving knives or cutters.

The invention consists in a novel construction, arrangement, and combination of a revolving table, one or more knives or cutters, one or more adjustable bed-plates, and one or more adjustable aprons or chutes, whereby the parts are adjusted to regulate the thickness of the shingle, stave, or other article, to cut with either tapering or parallel sides, and to prevent splitting or tearing of the wood during the operation of cutting; also, in the combination, with the feed-port, of a thrust-plate, as hereinafter particularly described.

In the accompanying drawing, Figure 1 is a top view of a machine constructed according to my invention, with a portion of the cover removed. Fig. 2 is a vertical section, taken on the line *x x* of Fig. 1. Fig. 3 is an under-side sectional view, taken on the line *y y*, Fig. 2.

A represents a frame-work of any suitable construction, in the lower portion of which is a step-bearing, *a*, for the lower end of a vertical shaft, B, having its upper end provided with a bearing in the upper part of the frame-work. The shaft B carries a revolving table, C, provided with gear-teeth for engagement with a driving-wheel, D, on a shaft, E, which may be provided with fast and loose pulleys *e f*. The wheel C has its upper side divided into four sector-shaped parts, two of which are each equal to about one-sixth of the circumference, and are diametrically opposite each other, and the other two are each equal to about one-third the circumference, and are opposite each other, intermediately between the two first mentioned. At one edge of each of the narrow sectors is a slot, *c*, extending from the hub c^1 to the rim c^2 of the wheel or revolving table, one side of the slot being tangential to the hub, and the other side radial thereto. The tangential side of the slot on the under side of the table is cut away, so as to incline it in a direction opposite to that of the revolution of the table, for the purpose hereinafter described. Over each of the slots *c* is a knife or cutter, G, which is secured to the wheel or table by means of straps *g*, one at each end. The ends of the knife rest in depressions at the ends of the slot, and the straps *g* are placed over the end of the knife, each strap being fastened with three screws, $g^{\times}$, two of which pass through the ends of the strap into the table or wheel, and the third one passes through the end of the knife or cutter midway between the ends of the strap, and into the table or wheel.

The seats for the ends of the knife may be provided with a packing of cloth, felt, rubber, or other soft or elastic material; or the seats may be spread with putty or cement of a suitable character, which will harden after being exposed, so as to form a rigid and solid bearing for the ends of the knife. In either case the knife is placed and permanently held in position with its upper side exactly on the same level with the upper side of the narrowest sector-shaped portion of the table. Between the narrow sector-shaped portions on the upper side of the wheel or table, the entire space forming each of the wider portions is recessed to a considerable depth. In each of these recessed portions is a plate, H, corresponding in shape, and fitting nicely therein. Each of these plates is provided with a series of set-screws, h^1, passing downward loosely through the plate, and engaging with tap-holes in the bottom of the recess, and another series, h^2, passing upward through tap-holes in the bottom of the wheel or table, and having their points bearing against the under side of the plate. By means of these set-screws h^1 h^2 the plate H is adjusted to either an inclined position or a perfectly level one, whereby the knives are adapted to cut shingles or other articles with tapering sides, or to cut pieces with their sides parallel, such as staves for tubs and pails or other similar articles.

When used to cut shingles one of the plates is adjusted to incline downward toward the center, and the other is adjusted to incline downward toward the circumference, by which means the proper tapering form is given to each shingle as it is cut.

Whether the work is to be cut with tapering or parallel sides the adjustment of the bed-plates regulates the thickness of the work by governing the distance below the edge of the knife to which the block from which the work is cut is allowed to descend.

To the radial side of each of the slots *c* in the table C is attached an adjustable angular apron or chute, consisting of a metal plate, J, attached to the vertical side of the slot by means of screws *i* passing through slots *j* in the plate, so as to be capable of vertical adjustment. The upper edge of the plate is bent at an acute angle for a distance equal to nearly one-half of the width of the slot *c*, and the upper side of the bent portion is nearly parallel with the lower side of the knife. This plate, thus arranged, forms an apron for the protection of the lower side of the shingle or other article as it is cut by the knife, and also serves as a chute to guide the work through the entire width of the slot, by which means the shingle or stave is effectually prevented from being split or torn in the operation of cutting it. In the upper part of the frame A is a feed-port, consisting of a box or casing, K, with both its top and bottom open. This box is attached to a cross-bar, *k*, or any other suitable part of the frame, with its sides and ends strictly vertical, and serves to guide the block of wood from which the shingles are cut. In the exterior of the feed-port, on the side nearest to the cross-bar or other part of the frame to which it is attached, is a vertical thrust-plate, L, arranged to admit of vertical adjustment by means of screws passing through slots in the plate, by which means it may be adjusted with its lower edge close down to the upper side of the knife, or slightly above the same, as may be found desirable. M represents a dummy or follower, consisting of a solid block of cast metal, of corresponding shape with the feed-port, but sufficiently smaller to allow it to work freely and loosely therein, and provided with lugs or projections to prevent it from falling so low in the feed-port as to interfere with the cutters G.

The operation is as follows: The wood from which the shingles or other articles are to be cut is first sawed into blocks of any convenient or suitable width, and of a length and thickness to enable them to easily drop into the feed-port K, with the grain of the wood in the same direction as the length of said feed-port. The blocks of wood are placed in the feed-port, and as the table C revolves thereunder the knives G cut a thin piece from the lower edge of the block each time that they come in contact therewith. The thrust-plate L receives the shock of the knife upon the block of wood, and also acts to some extent similar to one blade of a pair of shears, the knife G acting as the other blade. As the piece is cut by the knife it passes between the knife and the apron J, which prevents it from being split or torn, and thence passes to the inclined portion of the slot, which guides it through the slot, from whence it drops to the lower part of the frame, or to a receptacle provided for it. After each cut the block of wood rests upon the narrow or highest sector-shaped portion of the table C until the rear edge of said sector passes the block, when it drops to the bed-plate H, and is ready to receive the next stroke of the knife. When the machine is used for making shingles—the knives being inclined in different directions—one knife cuts a shingle with its thin end in one direction, and its thick end in the opposite direction, and the other knife reverses this direction, by which means the entire block of wood is utilized, and waste of material is avoided. When used for making staves or other articles with parallel sides, both knives are adjusted exactly alike. The blocks of wood are placed in the feed-port, one upon another, and when the last block is placed therein the dummy or follower M is placed upon it, and serves to follow it down and hold it in position to receive the stroke of the knife.

The machine constructed and operating as above described may be used for cutting kindling-wood, or for making other articles than shingles and staves. There may be any suitable number of cutters and their accompanying aprons or chutes, according to the size of the table; but it will be found preferable to arrange them in pairs, especially for making shingles.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with the revolving table C, knives G, and adjustable plates H, of the adjustable aprons J, substantially as and for the purpose herein described.

2. The combination, with the feed-port K, of the adjustable thrust-plate L, arranged as shown and described.

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Witnesses:
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