June 1, 1915.

DRAWING

768

A careful search has been made this day for the original drawing or a photolithographic copy of the same, for the purpose of reproducing the said drawing to form a part of this book, but at this time nothing can be found from which a reproduction can be made.

Finis D. Morris,

Chief of Division E.

AWK.

UNITED STATES PATENT OFFICE.

WM. THORN AND JAMES THORN, JR., OF PLAINFIELD, NEW JERSEY.

MACHINE FOR SHAVING SHINGLES.

Specification of Letters Patent No. 768, dated June 7, 1838.

To all whom it may concern:

Be it known that we, WILLIAM THORN and JAMES THORN, Jr., of Plainfield, in the county of Essex and State of New Jersey, have invented a new and useful Machine for Shaving, Tapering, and Edging Shingles, which is described as follows, reference being had to the annexed drawings of the same, making part of this specification.

The frame of this machine is made oblong of suitable size and strength to contain and support the several parts of the machine hereafter described.

The annexed drawing, A, Figures 1, 2, 3, and 4, represents one composed of four posts, two caps, four girts, and two inclined side rails, mortised, tenoned, and pinned together. Above this frame, toward the feeding end, from the center, are arranged three horizontal rollers B, B, B, parallel with each other at the required distance apart, whose gudgeons turn in the lower parts of oblong apertures in vertical standards C, C, C, C, C, C, mortised and tenoned into the caps having blocks over said gudgeons which rise and fall in spaces in the upper parts of said standards, spiral springs being placed in said spaces above said blocks. The surfaces of these rollers are roughened by fluting or otherwise and their gudgeons on one side of the frame project beyond the sides of the standards sufficiently far to receive spurred or cogged wheels D, D, D, by which they are turned. These rollers are called the bearing and drawing rollers. Under said bearing rollers are arranged 7 supporting rollers E, E, E, E, E, E, E, Fig. 4, two under each, whose gudgeons turn in the caps of the frame and one under the cutting cylinder. The shingle to be planed passes between these bearing and supporting rollers and is drawn forward by the fluted bearing rollers. Between the first pairs of supporting rollers (near the feeding end of the machine) is placed the cylinder of cutters F for planing the under side of the shingle. This consists of a horizontal axle extending across the frame and turning in the caps. On it are fixed two round heads with bars extending from the one to the other to which the cutters are fastened by screws or other means. On the axle is likewise fixed a pulley G, Fig. 1, around which passes a band H, Fig. 3, leading to a pulley I turning on a spindle inserted into one of the posts near the bottom thereof around which pulley passes another band J leading to the main drum K fixed on an axle turning in boxes on the inclined rails near the discharging end of the machine for revolving said cutters.

Above the frame between the second and third drawing rollers is placed the revolving cutters L for tapering and planing the upper side of the shingle. This is made like the wheel of cutters for planing the under side of the shingle just described. Its gudgeons, however, turn in movable uprights M, M, which rise and fall in cutting the taper of the shingle by means of a wheel with eccentric grooves. The movable uprights are connected together near the center by a cross piece N, Fig. 3, from which cross piece projects downward two pieces O, O, one on each side of the eccentric wheel between which it turns without touching, one of which, O′, is forked to allow it to embrace the axle of the eccentric wheel without touching it. See also Fig. 6. In this forked piece are made a row of holes P to correspond with the eccentric grooves through which is passed horizontally a pin Q that enters the eccentric grooves of the wheel. From the edge of the forked piece near its upper end projects horizontally at right angles to the same, and lengthwise, of the frame, an arm R, extending to the feeding end of the machine from which rises vertically on index pin *y* passing through a round aperture in one of the top girts of the frame for indicating the position of the cutting cylinder and the time to introduce a shingle. The lower ends of the movable uprights are made round with shoulders. The round parts pass through round apertures in braces T, T fastened to the under side of the caps for steadying them as they rise and fall with the cylinder of cutters. Said cylinder of cutters is turned by means of a band U, Fig. 1, passing around a pulley V on its axle leading to the main drum K. The vertical movement of the cylinder is effected by means of a wheel W with parallel eccentric grooves X, Fig. 4, in its face into which the pin Q of the forked piece O′ enters and as the wheel revolves the side of the eccentric groove into which the pin is placed presses against the under side of said pin which causes it to rise with the cross bar N, movable uprights M and cylinder of cutters L. The descent of the same may either be effected by the

pressure of the other side of the groove upon the upper side of the pins; or by gravity. The wheel containing the eccentric grooves is represented at Fig. 4. It is fixed on a horizontal axle turning in boxes on the inclined rails having a pulley Y, Figs. 1 and 3, on one of its ends around which passes a band Z leading around a small pulley *a* on the end of the axle of the drum K. On the other end of this eccentric wheel axle is another pulley *b*, Fig. 3, around which passes a band *c* extending around the pulleys D on the ends of the axles of the drawing rollers B. The pin of the forked piece is changed from one hole to another and its corresponding eccentric groove of the wheel according to the length of the shingle to be shaved. When the longest kind of shingle is to be shaved the pin must be placed in the groove farthest from the center; and when the shortest kind are to be dressed the pin must be put into the groove nearest the center.

In the rear of the horizontal wheels of cutters are arranged two vertical wheels of cutters *d'*, *d* for jointing or taking off the edges of the staves placed about the width of the shingle apart. They are both fastened to the upper ends of vertical axles *e*, *e*, on which are pulleys *f*, *f*, with bands *g*, *g*, Fig. 5, leading around them to the main drum K for turning said wheels of cutters.

The axle *e* on the left turns in round apertures in projecting pieces of the frame, shoulders being formed on it to prevent its falling too low. The axle *e'* on the right turns in the ends of two horizontal parallel pieces *h*, *h*, united in the center by a cross piece *i*, having a round vertical rod *j* passed through the ends opposite to those containing the axle, which rod is fastened to the main frame near one side thereof on which rod this small cutter frame vibrates to the right or left in order to set said cutters on the right nearest together or wider apart according to the width of shingle to be jointed. These cutters are pressed against the shingle by means of a spring *k* or weight and receded from it by means of an angular gage lever *l* vibrating on a pin *m* passed through one of its ends into the top of the frame, its other end *n* being curved inward toward the center of the frame and against which the edge of the shingle bears as it is introduced into the machine. The vibrating cutter frame is attached to this vibrating lever by a pin *o* near the center thereof. On the top of the left side of the frame at the feeding end is fastened a rest *p*, Fig. 1, with a straight edge against which the edge of the shingle moves, the spring or weight crowding the gage lever against the other edge of the shingle. The left jointing cutters turn in a cavity in the end of the rest *p*. Near the periphery of the right wheel of cutters and toward the shingle is placed a vertical guard *r*, Figs. 1 and 5, parallel with the axle of said cutter wheel for the purpose of preventing the cutters entering too far into the edge of the shingle. On the top of the frame in the rear of the last drawing roller is secured a horizontal board or table *s* of sufficient length and breadth furnished with parallel side ledges for conducting the shingle after being finished off at the end of the machine.

It may be well to mention that the cylinder of cutters for giving the taper to the shingle may receive its vertical movement as it revolves by means of a horizontal sliding board having one or more of its sides parallel oblique grooves into which the pin of the forked piece may be placed. Also that the gearing may be by means of cog-wheels, straps, chain-wheels, or bands, or any suitable gearing known to mechanics. And that the main drum may be turned by the power of steam, horse or any convenient power. And that the movable jointer may be moved by a spring slide with notches or screws.

The operation of the machine is as follows: The pieces of wood being properly prepared for the shingles and the machine set in motion one piece is introduced at a time between the rollers B E which draw it forward. The spring-guide *l* presses it against the rest *p* and as it is drawn through between the rollers the first or lower cylinder of cutters F dresses the under side of the shingle and when it arrives at the second or upper cylinder of cutters L the operation of tapering and dressing the shingle takes place. The cylinder being at its greatest elevation, the cutting commences at the forward or butt end of the shingle and as it advances the cylinder of cutters descends gradually by the action of the eccentric groove-wheel *w* and cuts away the shingle to the point of the same and thus forms the taper. As soon as it leaves this cylinder of cutters it is met by the revolving jointing cutters *d* which take off the edges. It is then carried forward between the last rollers B E and delivered upon the table *s* at the rear end of the machine from which it is pushed off by the next shingle that is introduced, and so on.

The attendant having observed the index pin *y* in order to ascertain the exact position of the upper cylinder of cutters L another piece of wood for another shingle must be introduced and dressed in a similar manner to the last. Should pieces of wood of a greater width be introduced the end of the gage lever *l* to which the right jointing cutter cylinder *d'* is attached, must be extended from the gage board in order to ad-

mit the shingles and of course the said jointing cutters are extended at the same time. The spring or weight will keep it against the edge of the shingle and the guard *r* will prevent the cutters entering too deep.

The invention claimed and desired to be secured by Letters Patent consists in—

1. The combination and arrangement of parts for giving the horizontal revolving cylinder of cutters a simultaneous vertical movement as the shingle is drawn between the rollers by which it is made to receive its proper taper in the manner before described.

2. Also the combination and arrangement of parts for jointing shingles of different widths in the manner before described.

WILLIAM THORN.
JAMES THORN, Jr.

Witnesses:
CORNELIUS BOICE,
TRUSTUM MANNING.