F. Skinner,

Cutting Shingles.

No. 8,550. Patented Nov. 25, 1851.

Fig. 3

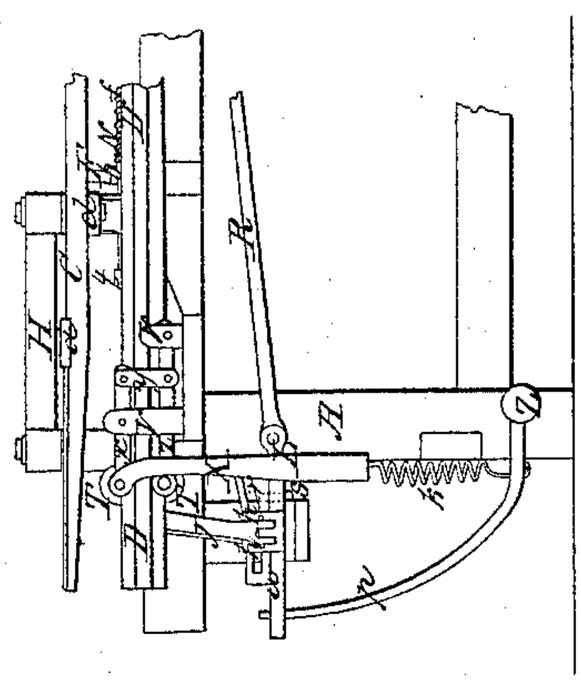


Fig. 4

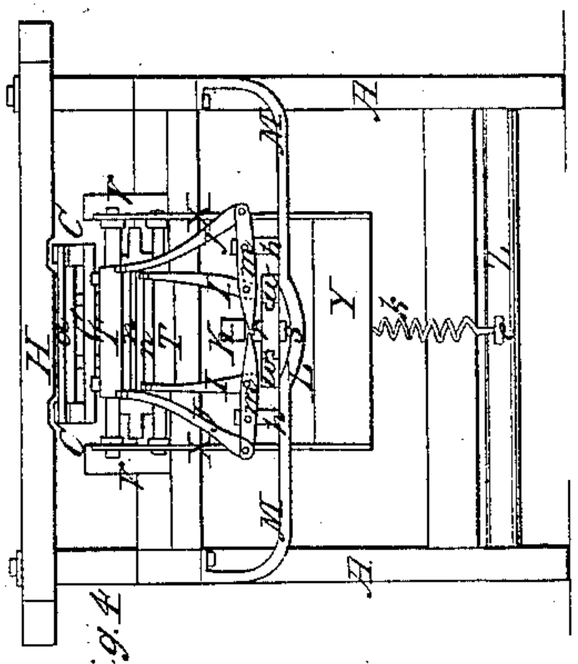


Fig. 5.

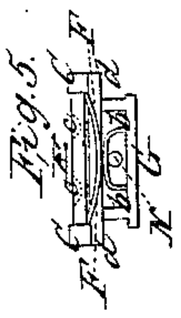


Fig. 1

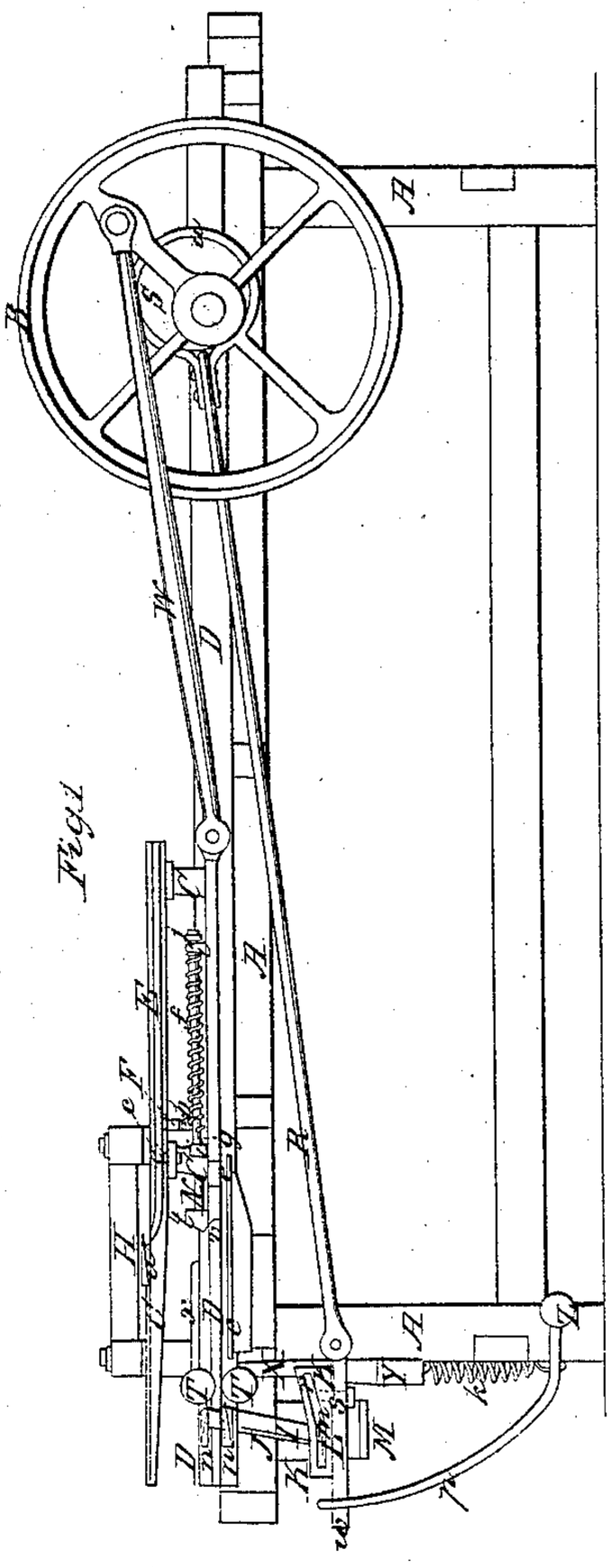
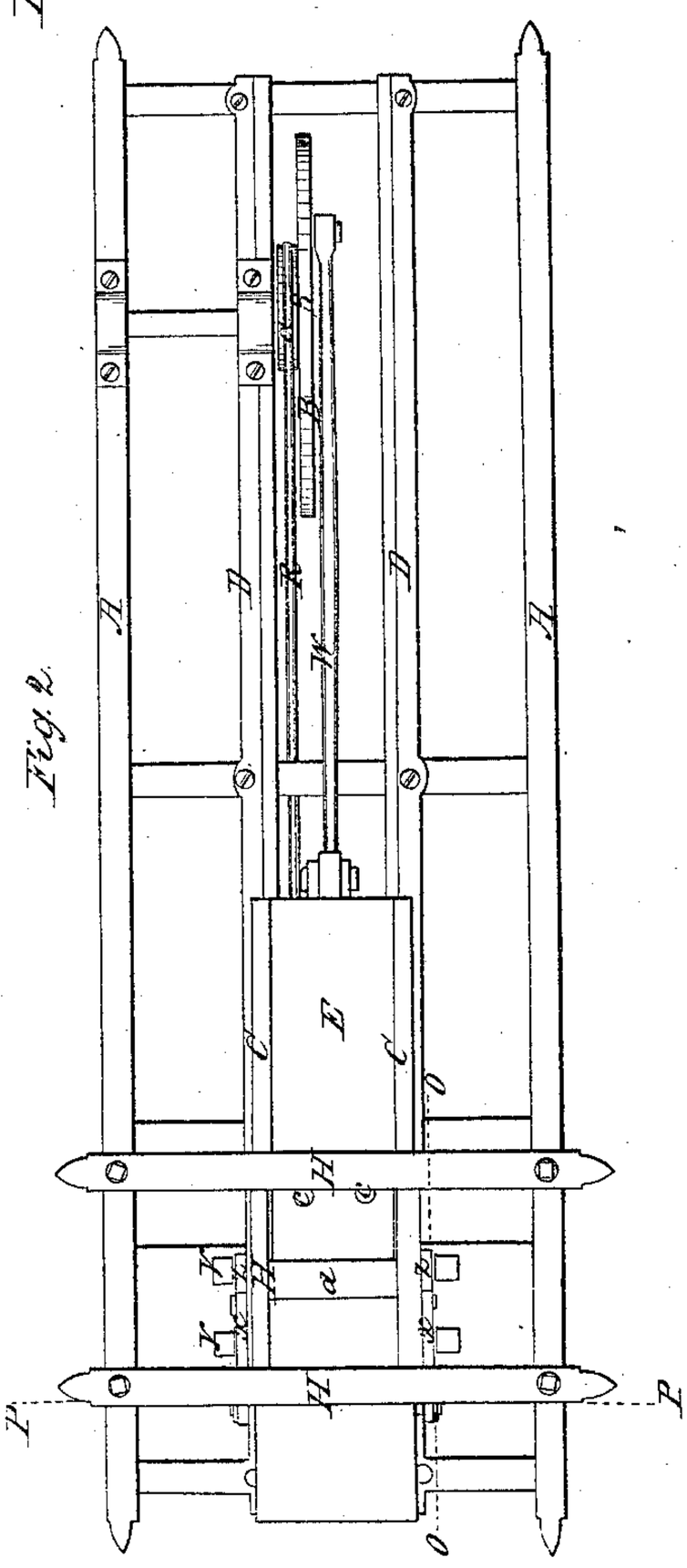


Fig. 2.



AM. PHOTO-LITHO. CO. N.Y. (OSBORNE'S PROCESS)

UNITED STATES PATENT OFFICE.

FRANKLIN SKINNER, OF DUNKIRK, NEW YORK.

SHINGLE-MACHINE.

Specification of Letters Patent No. 8,550, dated November 25, 1851.

To all whom it may concern:

Be it known that I, FRANKLIN SKINNER, of Dunkirk, in the county of Chautauqua and State of New York, have invented a new and useful Improvement in Shingle-Making Machines; and I do hereby declare that the following is a full and exact description of the same, reference being had to the annexed drawings, making part of this specification, in which—

Figure 1 is a longitudinal vertical section, nearly central; Fig. 2 is a vertical or top view; Fig. 3 is a longitudinal section on the line O O of Fig. 2, and showing especially the mode of regulating the positions and pressure of the transverse rolls; Fig. 4 is a transverse section on the line P P of Fig. 2, showing especially the horizontal levers, and the vertical connecting rods, which operate the shaving knives; and Fig. 5 is a transverse section of the reciprocating carriage, and bridge *b*, *b*, and showing especially the spring upon which the riving plate E Fig. 1 rests.

The nature of this invention consists in constructing a shingle riving and shaving machine with such devices and peculiarities that it may rive shingles of any required thickness, even from timber whose grain is crooked or irregular; and that will shave shingles on both sides at one motion, accurately preserving the longitudinal centers thereof, even when the grain of the timber is winding; and that will moreover, shave shingles of a uniform thickness for a part of the length thereof, according to the option of the operator, and wedge-shaped or tapering for the rest of the length thereof.

The frame A, crank-wheel B, carriage C and ways D, are similar to those of other shingle machines, and require no special description. A riving knife *a* is attached, transversely, to the side beams of the carriage C; and the space between the side beams, to the right of the riving knife, is occupied by an adjustable riving-plate E. The right end of this riving-plate rests upon the right cross-beam C of the carriage; but the left end thereof rests upon the two ends of a transverse, curved (semi-eliptical) spring F (see Fig. 5), the center of which is supported by a bridge *b b*, the two ends whereof are attached to the bed-plate (or shoving plate) G; and the riving plate (E) is secured by two vertical screws *c c*, which pass through the plate into the central cross-beam (*d*) of the carriage. The screws *c* are accommodated with deep countersunk cavities, so that the heads thereof are ordinarily below the line of the upper surface of the plate E. The extreme left end of the riving plate (E) is directly under, and ordinarily, about half an inch below the edge of the knife *a;* but the distance between the edge of the knife and the end of the plate (which regulates the thickness of the shingles) may be regulated by the screws *c;* moreover, the left end of the riving plate is bent upward so as to be nearly a fourth of an inch higher than the main surface of the plate; and the plate, not being in contact with the central cross-beam *d* may be occasionally depressed to accommodate any downward prominence in the timber that is being rived.

Over the carriage *c* is adjusted a riving frame H, in the center of which is a hollow square, wherein are placed the blocks of timber to be rived; and by the movement of the carriage to the right, the knife *a* rives off a rough shingle which falls upon a stationary bed-plate *e e*, between the left end of the shoving plate G, and the shaving knives *n n*. The shaving knives (*n*) are arranged transversely, parallel, and half an inch apart; one being directly over the other. Each shaving knife has two pivots projecting from each end thereof; the left pivots (near the backs of the knives) serve as axles to the knives, and have their bearings in the left ends of the ways D; and the right pivots (near the edges of the knives) enter the heads of four vertical connecting rods I, J.

The bottoms of each pair of the connecting rods, are connected to a horizontal lever *m;* and each lever has its fulcrum in a short stud *h*, midway between the points at which the vertical rods I, J, are connected to the lever; the studs *h* stand upon a horizontal plate M. The centerward ends of the two levers (*m*) are nearly in contact with each other, within a horizontal and inclined slot *r* which extends through an adjustable longitudinal plate K, which is attached by a set-screw *s* to a horizontal reciprocating slide L. In the edges of this slide are grooves to receive the corresponding tongues of two guide-plates *w w*, which are attached to the plate M; and the right end of the

slide is connected by a hinge joint, to the left end of a long connecting rod R the right end of which is attached to a ring *u*, which compasses an eccentric cam S, which is attached to the rear side of the crank-wheel B.

The left end of the slot *r* is horizontal; but about two thirds of its length is inclined, so that by its movement to the left, the centerward ends of the levers *m* become elevated, whereby the edge of the lower shaving knife (being connected to the levers by the rods I) is also elevated, while the edge of the upper shaving knife, is by the same movement depressed. Thus by adjusting the relative position of the slotted plate K, the forms of the shingles produced are controlled and regulated, as occasion may require.

The left end of the shoving plate G has a horizontal groove (*v*) to receive the edges of the shaving knives when the right end of the shingle is forced between them. Over the grooved end of the shoving plate, and resting thereon, is a transverse cross-head *t*, the left side of which projects over the end of the plate for the purpose of holding the right end of the rough shingle in a horizontal position while being shaved. This cross-head is attached, centrally, to the left end of a horizontal rod N, which, extending to the right, passes through two protuberant guides *i i*, (which are attached to the plate G,) and terminates in a screw upon which is a nut *j*. The rod N also passes through a helical spring *f*, the left end of which is attached to the said rod (at *g*), and the right end, to the right guide *i;* and the tendency of the spring is to force the rod to the left, while the nut *j* prevents it from projecting the cross-head *t* beyond the end of the shoving plate G.

Immediately on the right of the shaving knives, parallel thereto and nearly in contact therewith, are two rolls T T, which have axle pivots at both ends thereof; and these pivots have their bearings in the left ends of four horizontal levers *x x* and *z z;* and these levers are mounted upon fulcrum pivots which are attached to four studs V V. The two lower levers (*z*) are longest, and their fulcrums are at the right ends thereof; but the fulcrums of the upper levers (*x*) are nearly central; and the right end of each upper lever, is connected by a vertical connecting bar *y*, Fig. 3, to the center of the respective lower lever, so that by the depression of one roll the other is elevated.

From the ends of the pivots of the upper roll, are suspended two hanging plates X; and the bottoms of the hanging plates are attached to the two ends of a transverse bar Y, the center whereof is connected by a helical spring *k*, to a bent lever *p*, which projects from a transverse rock-shaft Z a few inches to the left, and turning upward passes to the left of the reciprocating slide L; so that by the movement of the slide to the left, the spring *k* is drawn down, whereby the two rolls T are forced toward each other. The use and effect of these rolls, are to press the left end of a rough shingle, to a horizontal position before it encounters the shaving cutters, even although it may have a natural twist or winding form; also, by an augmented pressure upon the right end of the shingle, to prevent the chips from splitting from the shingle, in advance of the shaving cutters.

The reciprocating carriage C is operated by a pitman W, which is connected by a pivot to the crank-wheel B; and when the carriage is moved to the left, the motion of the cross-head *t* is interrupted by the rolls T, but the shaving plate passes between the rolls, and approaches nearly to contact with the shaving knives, the edges of which are at the same time brought nearly in contact with each other.

In order that the operation of the levers *x*, *z*, in connection with the bent lever *p* and horizontal reciprocating slide L, shall be more clearly understood I will state that the ends of the levers *x*, *z*, in which are the pivots or bearings of the rolls T, T, are acted upon by means of the hanging rod X, X, through the spring *k* in such a manner as to press the rolls T uniformly toward each other for the purpose of first unwinding or straightening the rived shingle:—and also by means of the bent lever *p* acting upon the spring *k* through the connecting rod R, and eccentric cam S, for the purpose of increasing the force or pressure of the rolls upon the shingle during the passage of the latter between the knives—whereby the shingle is prevented from splitting in advance of the cutters at the thin end of the shingle.

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

1. The peculiar form and mode of adjusting of the riving plate E, the same being self-adjusting by means of the spring F upon which it rests; and the end of the plate contiguous to the riving knife, being bent upward (to accommodate irregularities in the grain of the shingle timber) as herein specified.

2. The employment (in combination with a shingle-shaving machine) of the rolls T, levers *x*, *z*, hanging rods X, spring *k*, and bent lever *p*, or their equivalent, the whole being arranged and operated in the manner and for the purpose herein described; the levers, rods and spring acting upon the rolls and pressing them uniformly toward each other for the purpose of unwinding or straightening the rived shingle, in the first instance, and the bent lever (being operated by the motion of the connecting rod R, and

acting upon the spring *k*) having the effect of increasing the force or pressure of the rolls upon the shingle, (as the latter passes between them) for the purpose of preventing the splitting of the shingle in advance of the cutters as they approach the thin end of the shingle, as herein set forth.

In testimony whereof I have hereunto signed my name before two subscribing witnesses.

FRANKLIN SKINNER.

Witnesses:

JOHN F. CLARK,

A. E. H. JOHNSON.