

(No Model.)

2 Sheets—Sheet 1.

W. H. HALL

MACHINE FOR GRINDING SHINGLE SAWS.

No. 379,108.

Patented Mar. 6, 1888.

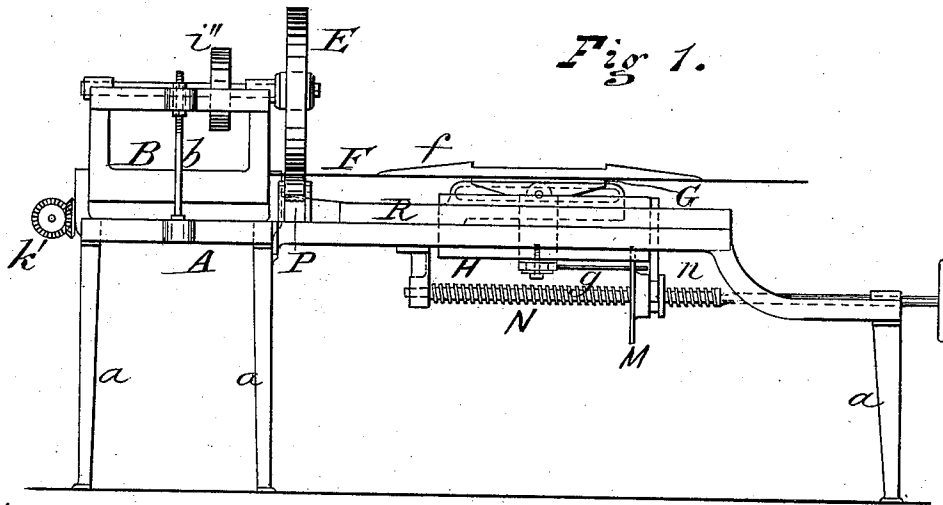


Fig 1.

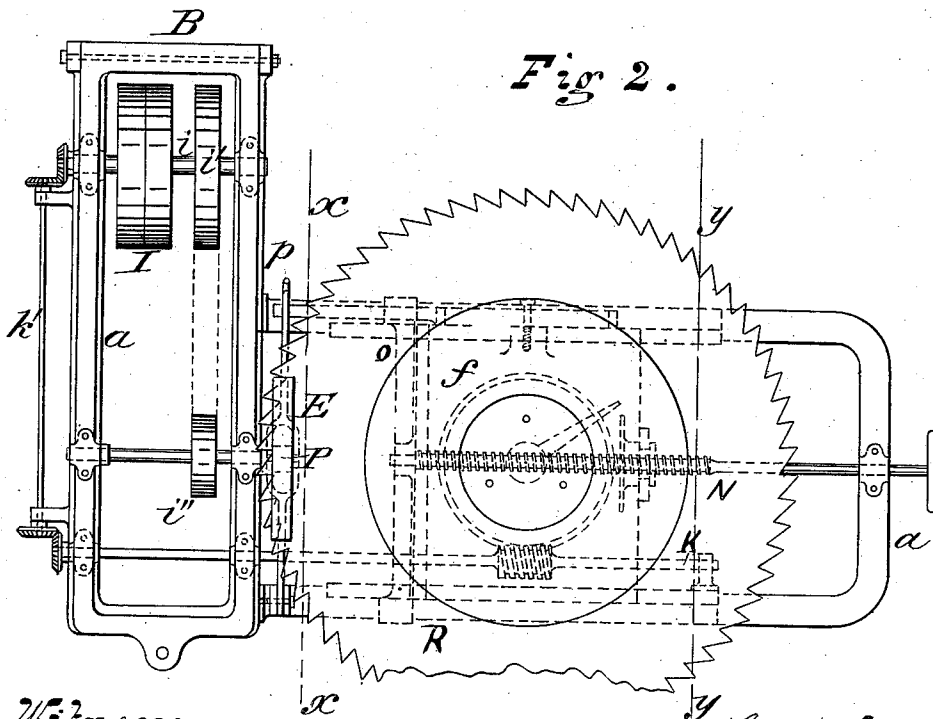


Fig 2.

Witnesses.  
 Robert Weir.  
 Alf-Coutts.

Inventor.  
 William H. Hall.

(No Model.)

2 Sheets—Sheet 2.

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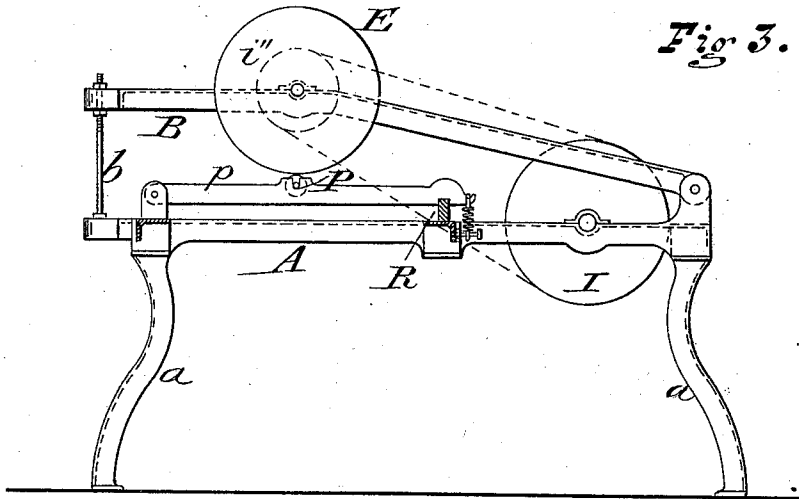


Fig 3.

Fig 4.

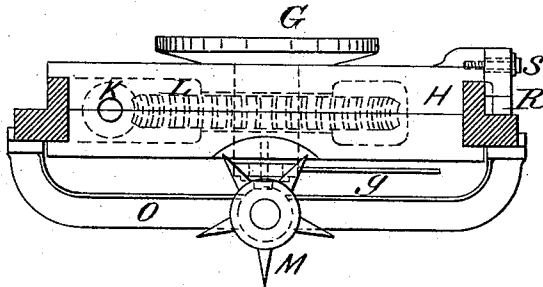


Fig 5.



Fig 6.

Witnesses.

Robert Weir,  
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# UNITED STATES PATENT OFFICE.

WILLIAM H. HALL, OF MUSKEGON, MICHIGAN.

## MACHINE FOR GRINDING SHINGLE-SAWS.

SPECIFICATION forming part of Letters Patent No. 379,108, dated March 6, 1888.

Application filed January 11, 1887. Serial No. 224,031. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM H. HALL, a citizen of the United States, residing at Muskegon, in the county of Muskegon and State of Michigan, have invented certain new and useful Improvements in Machines for Grinding Shingle-Saws; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to that class of machinery which is used in shingle-mills for the purpose of regrinding or thinning the rims of shingle-saws after their diameter has been gradually reduced through constant wear and the filing of the teeth; and my improvement consists in the construction, combination, and arrangement of the several parts, substantially as will be hereinafter described, and then more particularly pointed out in the claims.

In the annexed drawings, illustrating my invention, Figure 1 is a front side elevation of the entire machine. Fig. 2 is a top plan view of the same. Fig. 3 is a sectional side elevation on line *x x*, Fig. 2. Fig. 4 is an enlarged transverse section, on the line *y y* of Fig. 2, of the cross head, the adjustable saw-carrying head, and the mechanism for operating the same. Figs. 5 and 6 are an elevation and a plan, respectively, of the wedge which is used for raising or lowering the adjustable roller which supports the rim of the saw.

Like letters of reference indicate like parts throughout all the figures.

A represents the main frame of my machine. This frame is preferably made of iron, but may obviously be constructed out of any suitable material. It is supported at a convenient height upon the legs *a*, which are securely fastened thereto. Near one end of this main frame, and between upwardly-projecting lugs which form a part thereof, is pivoted a movable frame, B, by means of a bolt or other equivalent device extending between the said lugs. The end of this frame opposite that which is pivoted is supported and held in position by means of bolt and nuts *b*, said bolt being securely fastened to the frame A. In the movable frame B is journaled an ordinary emery or other grinding wheel, E, which is mounted on a spindle, whose opposite ends are

received into suitable journal-boxes provided on the upper side of the frame B for the purpose.

F indicates the shingle-saw, and *f* the ordinary collar, which is usually attached thereto. A head, G, is located below the saw, and upon it the saw is supported. The diameter of the head G is made of proper length to correspond with the recess formed in the saw-collar, so that said collar may be turned with its face up and secured to the head whenever the collar requires regrinding. The lower portion of the head is made more or less tapering, as shown in Figs. 1 and 4, and is provided with a journal to revolve loosely in the sliding cross-head H, the object of this construction being to permit the saw to be deflected sufficiently at the rim to correspond with the rise and fall of the roller which carries it. That part of the movable head or its journal which projects below the cross-head is preferably formed with a square, to which is attached, by means of a screw or other device, the finger *g*, which operates to feed the cross-head toward the emery-wheel, in the manner to be presently specified.

The driving-pulleys I are mounted on a transverse spindle, *i*, which is journaled in suitable boxes on the main frame A. One of these pulleys is keyed fast to the spindle, while the other is carried loosely thereon. Upon the spindle *i* is also situated the pulley *i'*. The driving-pulleys receive their motion from some convenient part of the mill. The pulley *i'* serves to impart motion to the emery-wheel through the medium of a belt-connection with a pulley, *i''*, which is secured upon the same spindle or shaft as that which carries the grinding-wheel. Upon the outer end of the spindle *i* is secured a bevel miter gear-wheel, which meshes with a bevel-gear on one extremity of the shaft *k'*, which is journaled in suitable projections on the main frame, and the other end of which carries another bevel-gear, which meshes with a gear on the end of the actuating worm-shaft K. By this train of devices motion is transmitted to the worm-shaft, which in turn actuates the worm-wheel L, which operates to revolve the saw-carrying head.

The worm-wheel L is inclosed within the cross-head H, which is constructed in two

parts, for the purpose as shown in Fig. 4, said parts being fastened together by means of screws after the worm-wheel has been situated in position between them.

5 Below the main frame is a centrally-located horizontal screw, N, which is furnished on its outer end with a hand wheel and is journaled in suitable bearings, one of which is on the main frame and the other of which is on the  
10 cross-bar O, attached to the main frame, as shown in Fig. 4. This screw carries a star-wheel, M, which is held in position by means of a forked plate, n, fastened to the cross-head and inclosing the star, which is grooved to receive it, as shown in Fig. 1.

15 P designates an adjustable roller, which is located directly below the grinding-wheel E, and serves to uphold the rim of the saw while the grinding wheel is acting upon it. This  
20 roller is journaled in a vertically-movable arm, p, (see Fig. 3,) which is pivoted at one end by means of a bolt or equivalent device to lugs or projections on the main frame, while the other end is provided with a hook, eye, or  
25 other suitable formation, to enable a spiral spring to be attached thereto, which is connected by a bolt, pin, or other device to the main frame, as represented. The object of this spring is to continually draw the free end  
30 of the roller-carrying arm downward toward the frame.

The roller P is controlled and regulated in its movements upward and downward or toward and away from the frame by means of a  
35 wedge-shaped bar or arm, R, (see Figs. 5 and 6,) one end of which is attached to the cross-head H, while the other end rests beneath the roller-carrying arm p. The arm R is furnished with an elongated slot, r, through which passes  
40 the bolt or screw by which it is attached to the cross-head, and thus said arm may be adjusted relatively to the arm p to suit the location of the wedge correspondingly with different sizes of saws. The lower side of the arm slides  
45 on the surface of the main frame, as shown in Figs. 1, 2, and 4, and is kept in place and guided by a slot on the under side of arm p, as Fig. 3 shows. The upper face of the arm at its forward end, as at 1, is parallel for a  
50 little distance with the bottom surface. This enables the saw to be ground parallel for the required distance. The face then inclines, as at 2, down to the part 3, which is also parallel to the surface of the base. (See Fig. 5.)  
55 It will be evident that as this arm R is moved beneath the arm p during the operation of the machine the roller P will gradually descend below the emery or grinding wheel, for the spring will serve to draw downward the movable arm when the wedge moves out from beneath it. Consequently the saw will be ground taperingly when the wedge portion of the arm R is operating on the arm p.

65 Briefly described, the operation of my improved machine is as follows: The saw is first securely fastened upon the adjustable head G.

The machine is then set in motion. The emery-wheel is adjusted to the proper height by regulating the position of the frame B by means of the bolt b and the nuts thereon.  
70 Through the gearing, belts, worm-shaft, &c., motion will be given to the worm-wheel. The pointer g, being fastened to the revolving saw-carrying head, will in each revolution of that  
75 head come in contact with and turn the star-wheel one point, the star always maintaining the same relative position to the cross-head by reason of the forked plate n, fastened to said head and inclosing the star. The result is that the cross-head will be given a forward  
80 movement as the star-wheel is made to travel upon the screw N and in pushing upon the plate n made to feed the cross-head along. If, now, the wedge-arm R has been properly attached to the cross-head and properly positioned  
85 beneath the arm p, said wedge will receive the same forward motion that is given to the cross-head. The forward end of the wedge will be kept in correct position by the slot in the under side of the arm p, and as the  
90 cross-head and wedge-arm move forward the saw will be ground flat while the roller-arm travels on the parallel portion of the arm R; but as soon as the wedging portion begins its forward progress under the roller-arm the  
95 roller begins to descend or recede from the emery-wheel. The saw, by reason of the fact that the carrying-head has a lateral movement in the cross-head, is kept continually in contact with the roller; consequently the saw is  
100 ground taperingly and thicker toward the center. When the saw has been sufficiently ground, the motion of the cross-head may be reversed by turning the screw N by the aid of the hand-wheel.

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

1. The combination of the main frame, the two-part cross-head H, the saw-carrying head  
110 G, journaled in the cross-head and provided on its lower end with a finger, g, the worm-wheel L, inclosed within the cross-head, the screw N, star-wheel M, carried thereby, and the forked plate n, secured to the cross-head  
115 and loosely connecting with the star-wheel, substantially as described.

2. The combination of the main frame, the adjustable frame carrying the grinding-wheel, the adjustable arm carrying the roller P or  
120 equivalent device, the sliding cross-head H, saw-carrying head journaled therein and having the finger g, the worm-wheel within the cross-head and loosely connected with the saw-carrying head, the screw-shaft N, star-wheel  
125 M, and plate n, all arranged as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM H. HALL.

Witnesses:

ROBERT WEIR,  
D. J. MORIARTY.