

(No Model.)

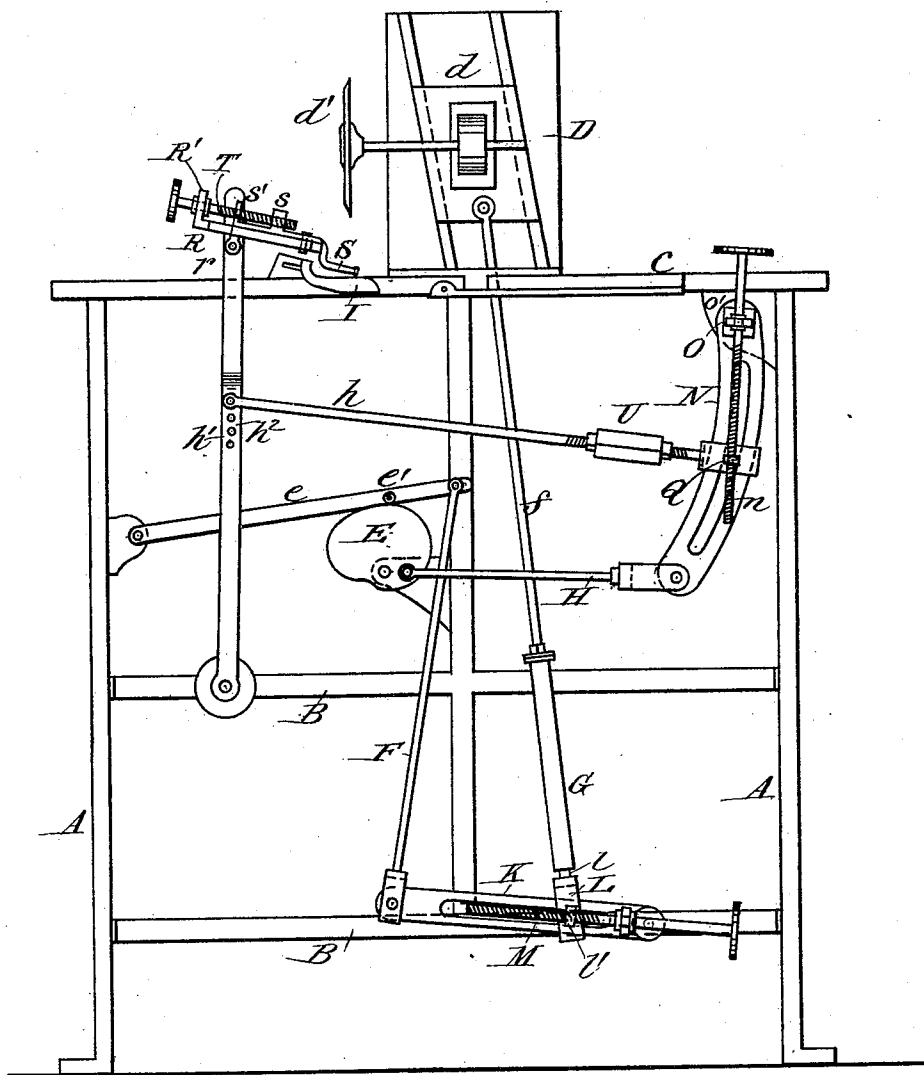
2 Sheets—Sheet 1.

B. F. SHEETS.
SAW SHARPENING MACHINE.

No. 460,452.

Patented Sept. 29, 1891.

Fig 1.



Witnesses.
Chas. W. Parker.
Wm. L. Boyden.

Inventor.
Benjamin F. Sheets.

(No Model.)

2 Sheets—Sheet 2.

B. F. SHEETS.
SAW SHARPENING MACHINE.

No. 460,452.

Patented Sept. 29, 1891.

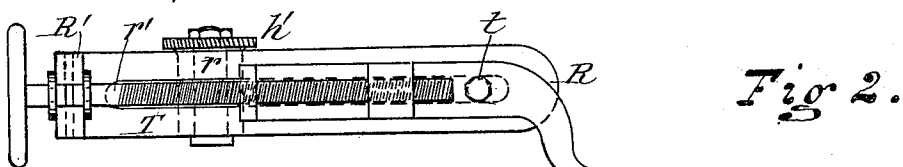


Fig 2.

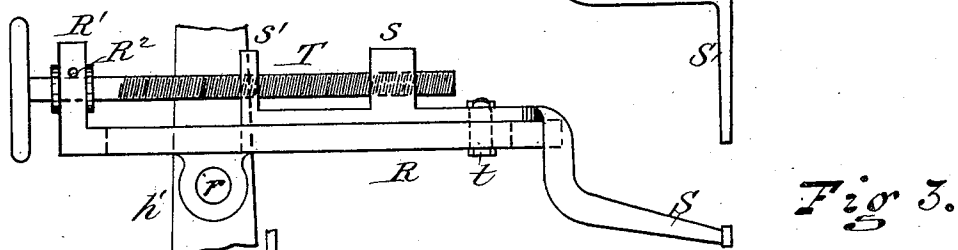


Fig 3.

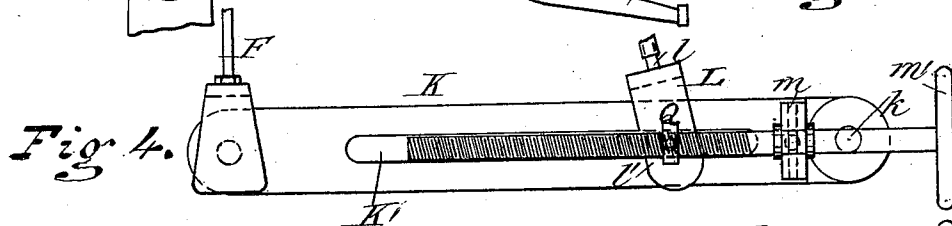


Fig 4.

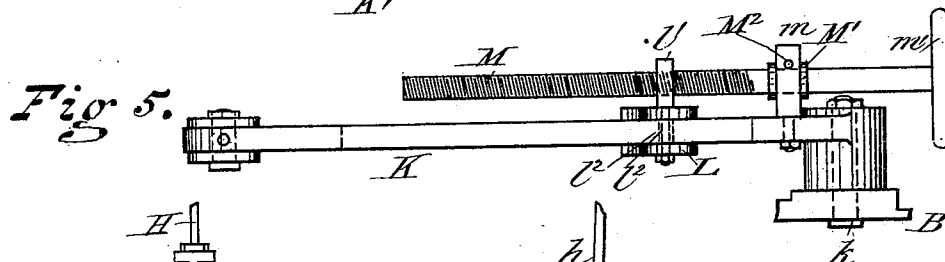


Fig 5.

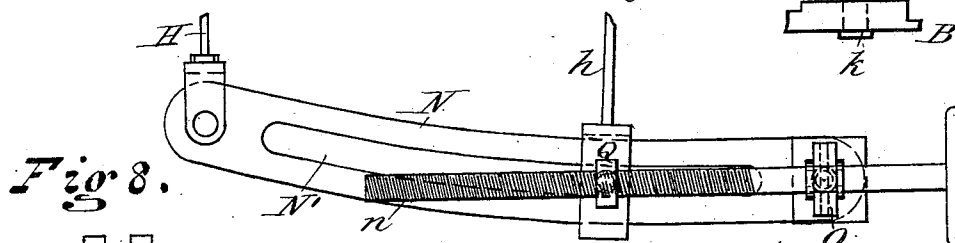


Fig 6.

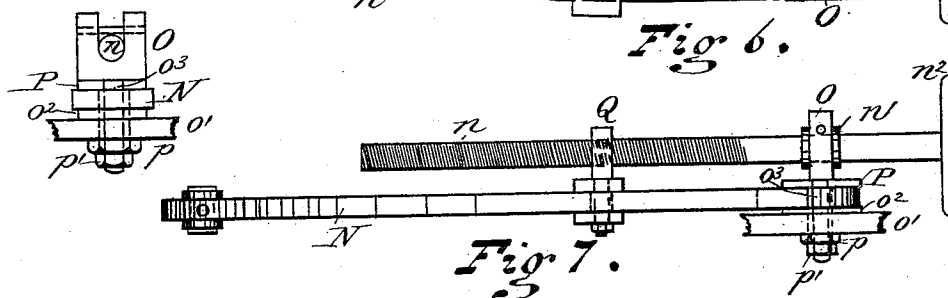


Fig 7.

Witnesses.
Chas. A. Baker,
Am. L. Boyden

Inventor.
Benjamin F. Sheets

UNITED STATES PATENT OFFICE.

BENJAMIN F. SHEETS, OF MUSKEGON, MICHIGAN.

SAW-SHARPENING MACHINE.

SPECIFICATION forming part of Letters Patent No. 460,452, dated September 29, 1891.

Application filed January 29, 1891. Serial No. 379,607. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN F. SHEETS, 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 Saw-Sharpener Machines; 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 an improvement in automatic saw-sharpening machines for sharpening saw-teeth, the object of the invention being to provide a machine in which the several parts thereof shall be so arranged as to communicate motion between them of such a delicate nature that teeth of any desired form can be ground and finished by the emery-wheel without the necessity of subsequently filing off the wire-edge from every tooth, as is necessarily the case with those machines now in common use, thus effecting not only a superior combination of movements, but also a great saving of time and labor in manipulating the machine while in motion; and it consists in the arrangement and construction of the several parts which regulate the vertical movement of the emery-wheel and the horizontal movement of the finger which regulates the throw of the saw when changing from one tooth to another; and, further, it comprises certain details in the construction, arrangement, and combination of parts, substantially as will be hereinafter described and claimed.

In the accompanying drawings, illustrating my invention, Figure 1 is a front elevation of a portion of a saw-sharpening machine, showing my improvements applied thereto. Fig. 2 is an enlarged plan view of the finger which regulates the throw of the saw when changing from one tooth to another. Fig. 3 is a side elevation of the same. Fig. 4 is an enlarged side elevation of the lower straight slide-link which operates the emery-wheel. Fig. 5 is a plan view of the same. Fig. 6 is an enlarged side elevation of the upper curved slide-link which operates the arm to which the finger is attached. Fig. 7 is a plan view of the same. Fig. 8 is an end view of the same.

Similar letters of reference designate corresponding parts throughout all the different figures of the drawings.

In machines as now constructed when large saws are being sharpened the periphery of the saw covers the points where the changes are regulated. The operator in that case has to reach around the saw, making it extremely dangerous to perform this operation while the machine is in motion. In my device, the hand-wheels for operating the several parts being clear of the teeth of the largest saw, changes can be made without danger while the machine is in motion. It is impossible in the old machines to effect the changes on the links without stopping the machine, and thus causing a large loss of time and labor.

A A denote the side portions of the frame of my improved saw-sharpening machine, B B the center girts, and C the top portion of the frame.

D denotes the frame, and *d* the slide for carrying the emery-wheel *d'*.

E is the cam which communicates motion to all of the levers. On the lever *e*, which is fulcrumed at one end of the frame A, is provided a roller *e'*. To the opposite end of this lever *e* is pivoted the rod F, which connects at its lower end with the link K. These levers give motion to the vertical rod *f*, which operates the emery-wheel slide *d*. To the lower end of the rod *f* is attached a hollow tube G, in which works the rod *l* of the forked lever L, which is connected to the arm K.

H is a horizontal rod communicating motion to the curved arm N, and *h* is the connecting-rod between the arm N and the finger-lever *h'*. The rod *h* is provided with a right and left hand screw-nut U for regulating its length so as to adjust the position of the finger. The lower portion of the lever *h'* is pivoted to the cross-bar B of the main frame.

I is a rest, which projects outwardly from the top of the main frame, and on which the finger S slides.

The parts just described are the same as those now in common use in machines of this class, and I make no claim to the same.

K represents my improved lower arm or link, enlarged detail views of which are shown in Figs. 4 and 5. This link is provided with a longitudinal slot K' of the requisite length.

To one end of this link the rod F is pivoted, (see Fig. 1,) while the other end of the arm K is pivoted to the frame B by means of the bolt k .

- 5 L is a double jaw or fork straddling the arm or link K, the upper portion of which is a round rod l , extending some considerable distance into the tube G. In this jaw the screw-nut l' is held, and is kept in place by a nut
10 on the opposite side of the fork. The body of the nut l' , which is round, is enveloped in a thimble l'' , which fits neatly in the slot K' . This nut l' is capable of changing its position as it is moved along the slot by the screw
15 M. This screw M is provided near the hub of the link with a double collar M' .

m is a yoke or journal-box securely fastened to the link K by a nut or otherwise. The screw M, being journaled in this box, is kept
20 in position by the double collars M' and also by a pin M^2 , extending through both jaws of the yoke m .

m' is a hand-wheel secured to the end of the screw for working the same.

- 25 N represents my improved curved arm or link, enlarged detail views of which are shown in Figs. 6, 7, and 8. It is provided with the proper length of slot N' for operating the machine, and also with the screw-threaded rod n ,
30 provided with the double collars n' and hand-wheel n^2 . To accommodate the present style of machines, this link is fulcrumed on the part o' of the main frame by means of the stem of the yoke O and its surrounding sleeve. Between the part o' of the frame and the link
35 is a square collar o^2 . Through arm N, collar o^2 , and frame o' passes a sleeve o^3 , having a square head on one end and a threaded nut p on the other end, which secures this arm N
40 solidly to the frame, allowing only sufficient play between the two collars P and o^2 to permit the link to work easily on its fulcrum. In this sleeve o^3 is the stem of the yoke O, which is provided on its outer end with the
45 nut p' . This yoke is not rigid, but changes its position relatively with the angle of the screw. Other means of constructing this yoke may be provided without departing from the spirit of my invention so long as it is made
50 movable.

Q is a threaded movable nut fastened to a yoke on the rod h , (see Fig. 1,) and is constructed in the same manner as yoke L in Figs. 4 and 5. To the end of this arm or link
55 N is attached the rod H, which receives its motion from the power-cam E. (See Fig. 1.)

R is a frame pivoted to the upper end of the lever h' by the bolt r , and oscillates thereon. This frame is provided with a slot r'
60 long enough to allow the proper travel of the finger S. (See the enlarged views in Figs. 2 and 3.) The upper portion of the finger, which constitutes a slide, is provided on the upper face with the boxes s and s' , threaded
65 to receive the screw T. This screw-rod is also provided with double collars and a hand-

wheel, as shown in Figs. 2 and 3, and is fulcrumed to the double jaw end R' of the frame R and kept in place by a suitable pin R^2 . The screw-rod T, being screwed into the
70 threaded boxes s and s' , moves the finger laterally back and forth as far as desired. The bolt t near the end of the slot r' keeps the finger from rising up while working, but has clearance enough to allow its travel with the
75 finger in its motion either way.

In my arrangement the rod h can be made plain, dispensing with the right and left hand nut U, if desired, providing lateral movement in the lever h' by means of a series of holes
80 h^2 , formed in the lever h' .

In adjusting machines as now in common use the links K and N are not provided with a screw-movement, but have holes drilled in them at suitable distances apart for adjustment with a pin, and to the upper end of the lever h' is attached merely a finger pivoted thereto by means of a pin. The adjustment of the finger is necessarily accomplished by means of the right and left hand nut U. (See
90 Fig. 1.) It will be evident that while the machine is in motion this is a dangerous proceeding, and might result in an accident by reason of the operator shortening the rod when it ought to be lengthened, or vice versa.
95 It will be evident to those skilled in the art that by the use of my improved method of screw adjustment I overcome the existing defects in this class of machines, accomplishing any change of movement while the machine
100 is in motion, thereby saving considerable time in the sharpening of saws, obtaining more perfect results therefrom in the formation of the tooth, and no feather-edge is left on the tooth to be subsequently filed off. By this
105 arrangement of links or arms adjustments will always be exact and positive, and a great deal of time is saved and danger avoided. By manipulating the hand-wheel of the link K the emery-wheel is adjusted for different
110 saws, according to the required depth of the teeth. The emery-wheel gate is supported in a suitable guide-frame, which has a slightly-inclined movement, as shown in Fig. 1, by means of which the emery-wheel is brought
115 into contact with the teeth of the saw in such a manner as to impart a fine sharp point to the same, and the required motion is given to the emery-wheel and arbor on which it is mounted by a belted connection with a suitable band-pulley mounted at the back portion of the machine. (Not shown.)

The feed-finger may be set as desired, so as to give the emery-wheel a light or heavy cut on the teeth by means of the right and
125 left hand nut U on the rod h .

The leverage connections and other parts of the machine are not described here, as they are the same as those now in common use, my invention residing simply in the improved construction of slide-links for operating the same.

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

1. In a saw-sharpening machine, the combination, with the main frame, of suitable arms or links for regulating the cut and depth of the saw-teeth, having adjustable screw devices and means for operating the same, substantially as described.
2. In a saw-sharpening machine, the combination, with the main frame, of the lower arm or link fulcrumed at one end to the main frame and at the other end to a connecting-rod, said arm being provided with a longitudinal groove, in which one end of a screw-nut works, and also with a jaw or yoke carrying the screw-rod, having attached to it a handle for operating the same, and a connection between the screw-nut and the grinding-wheel, substantially as described.
3. In a saw-sharpening machine, the combination, with the main frame and the connecting-rods, of the lower arm or link K, supported on the main frame by the bolt k and provided with the longitudinal slot K' , carrying a thimble l^2 , the screw-nut l' , running through the yoke l and thimble and secured at one end by means of a suitable nut, the yoke m , and collars M' , the screw-rod M , secured in said yoke and operating the screw-nut l' , and the handle for operating said rod M , all substantially as described.
4. In a saw-sharpening machine, the combination, with the main frame and the connecting-rods, of the upper curved arm or link having a longitudinal slot therein, said arm being secured movably in position by means of the yoke O and its surrounding sleeve, and the screw-nut working in the longitudinal slot, substantially as described.
5. In a saw-sharpening machine, the combination, with the main frame and the connecting-rods, of the upper curved arm N , having a longitudinal slot N' therein, the threaded nut Q , partly surrounded by a suitable thimble working in said slot, collars P

and o^2 and sleeve o^3 , the yoke O and collars n' , and the screw-rod n , said screw-rod passing through the collars n' and nut Q and operated by means of a hand-wheel n^2 , substantially as described.

6. In combination with the levers h and h' and arm N for operating the finger-lever, the finger-frame R , provided with a suitable finger and the screw-rod for operating the same, said lever h' being provided with perforations h^2 therein, substantially as described.

7. The finger-frame R , provided with a slot r' , the finger S , having screw-threaded boxes s and s' , the screw-rod T , working in said boxes, the bolt t for keeping the finger in proper position, and the hand-wheel for operating said screw-rod, substantially as described.

8. The combination of the finger-frame R , pivoted to the lever h' by means of the bolt r , the finger S , having the screw-boxes s and s' , the double jaw or yoke R , provided with collars R^2 for supporting the screw-rod, the screw-rod T , working in boxes s and s' , the hand-wheel for operating said screw-rod, and the bolt t for keeping the finger-slide in position, substantially as described.

9. In a saw-sharpening machine, the combination, with the emery or grinding wheel and a finger carried by a finger-lever, of the pivoted arm or link having an adjustable nut which is connected by a connecting-rod with the finger-lever, the pivoted arm or link having an adjustable nut which is connected by a connecting-rod with the grinding-frame, and suitable connecting-rods which connect the free ends of the said arms or links, with means for moving the same, substantially as described.

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

BENJAMIN F. SHEETS.

Witnesses:

ROBERT WEIR,
A. A. H. ECKERMANN.