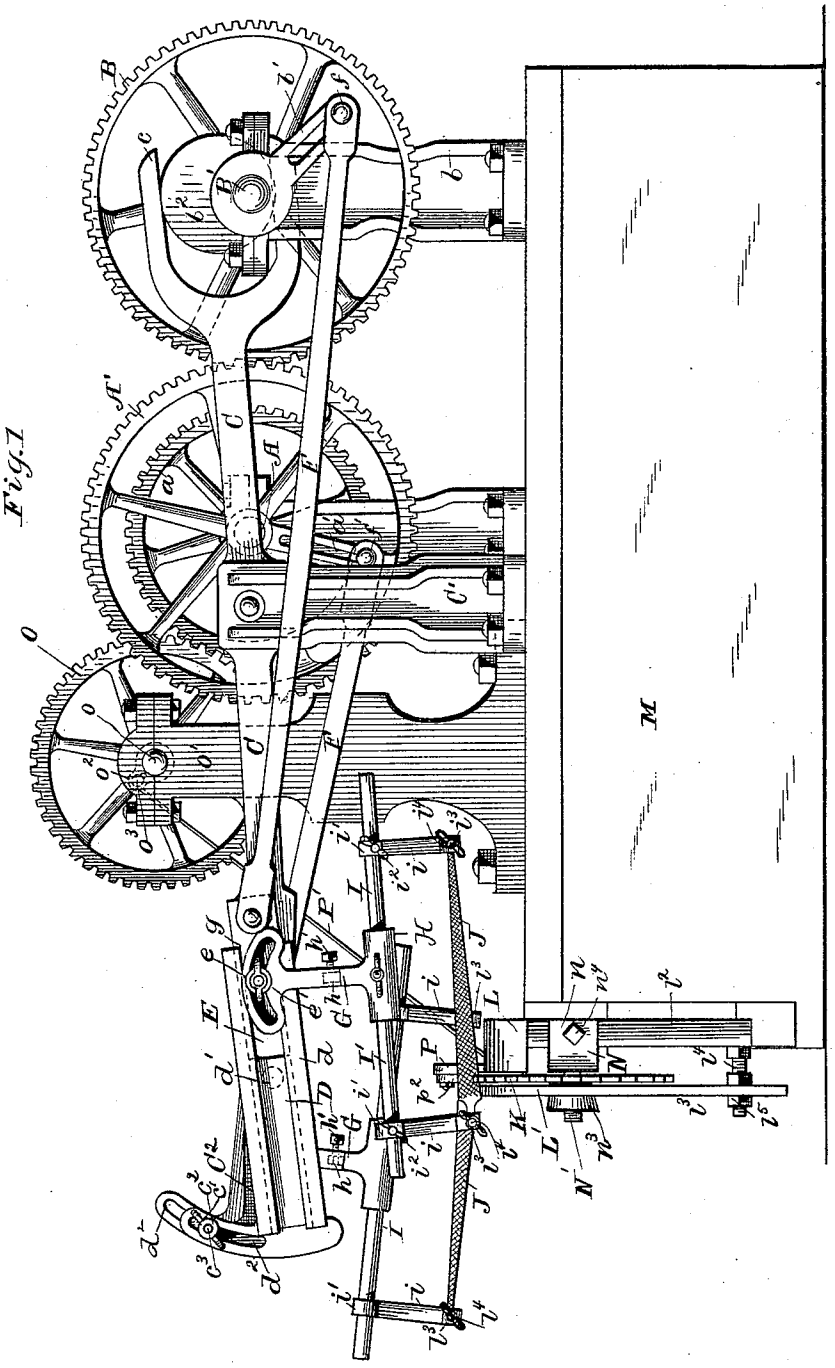
(No Model.) 2 Sheets—Sheet 1.

R. KUNDTZ & J. GEDEON.

SAW FILING MACHINE.

No. 459,912. Patented Sept. 22, 1891.

Fig. 1.



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 2

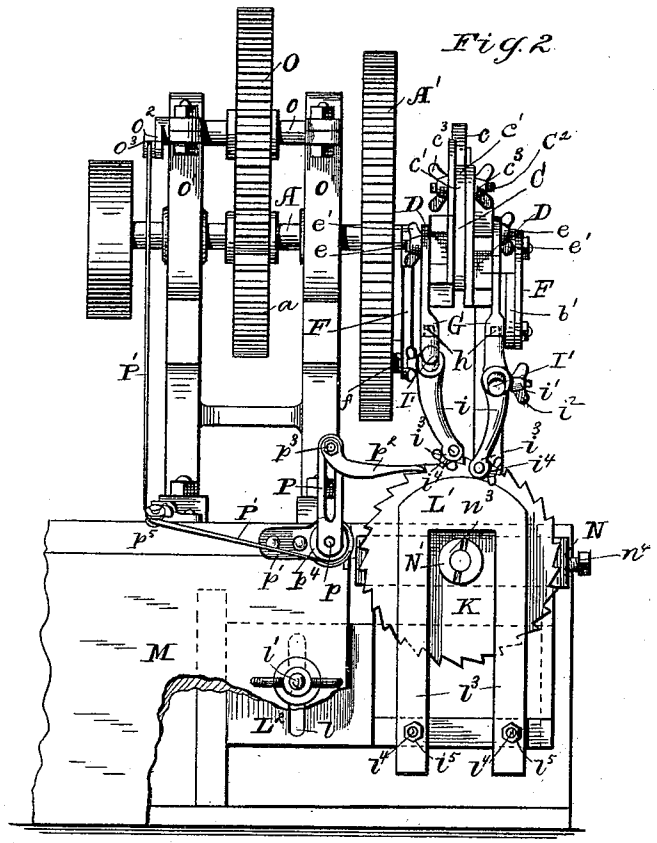


Fig. 3

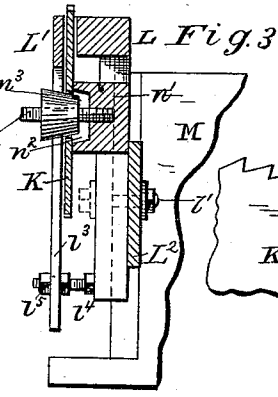


Fig. 4

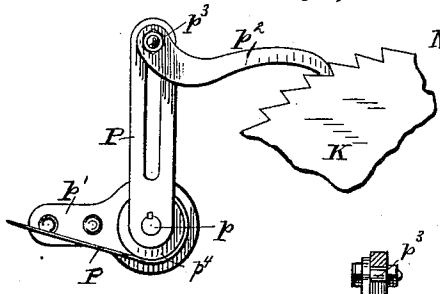


Fig. 5

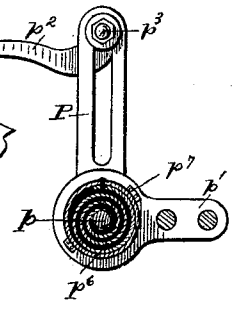
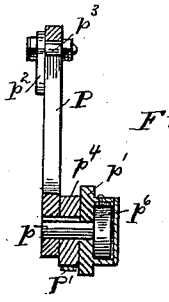


Fig. 6



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UNITED STATES PATENT OFFICE.

RUDOLF KUNDTZ AND JOHN GEDEON, OF CLEVELAND, OHIO.

SAW-FILING MACHINE.

SPECIFICATION forming part of Letters Patent No. 459,912, dated September 22, 1891.

Application filed March 5, 1891. Serial No. 383,907. (No model.)

To all whom it may concern:

Be it known that we, RUDOLF KUNDTZ and JOHN GEDEON, citizens of the United States, and residents of Cleveland, county of Cuyahoga, and State of Ohio, have invented certain new and useful Improvements in Saw-Filing Machines, of which the following is a specification, the principle of the invention being herein explained and the best mode in which we have contemplated applying that principle, so as to distinguish it from other inventions.

The objects of our invention are to provide improved means for raising a reciprocating file on its back stroke; to provide improved means for adjusting the angle of the stroke of the file; to provide improved means for adjusting the angle of the file in relation to the saw; to provide improved means for filing two saw-teeth at the same time; to provide improved means for supporting various sizes and shapes of saws, and to provide improved means for feeding the saw.

In the drawings, Figure 1 represents a side elevation of our improved saw-filing machine; Fig. 2, a front elevation; Fig. 3, a vertical section of the saw clamping or supporting device, and Figs. 4, 5, and 6 detail side and sectional views of the saw-feeding device.

In said drawings, the letter A indicates the drive-shaft, which receives its revolving motion from any suitable source and which has secured upon it a larger cog-wheel A′ and a smaller cog-wheel *a*. Said larger cog-wheel meshes with a cog-wheel B upon a shaft B′, journaled parallel to and to the rear of the drive-shaft in suitable bearings *b* and provided with a longitudinally-slotted crank *b′* at its end and with a cam or eccentric b^2 secured near one edge upon the shaft. A lever C is fulcrumed at about its middle upon an upright C′ and has its rear end *c* bifurcated to embrace the periphery of the cam or eccentric b^2, so that it may be rocked in a vertical plane when said cam is revolved. The forward end C^2 of the lever C is flattened from the sides and has at the forward extreme of its upper edge an upwardly-projecting lip *c′*, from the sides of which two screw-bolts c^2 project. Two guide-bars D, having oppositely-projecting overhanging flanges *d* at their upper and lower edges, are pivoted at their middles upon the middles of the sides of the flat end or head of the rocking lever upon suitable pins or studs *d′* and have segmentally-slotted arcs d^2 upon the forward ends of their upper edges, with which they slide adjustably upon the screw-bolts c^2, being adjusted by means of clamping thumb-nuts c^3. Blocks or slides E slide in said guides D and have connecting-rods F pivoted to their rear ends. One of said connecting-rods has its rear end pivoted upon a wrist or crank pin *f*, which is adjustably secured in the longitudinally-slotted crank *b′*, and the rear end of the other connecting-rod is pivoted upon a wrist or crank pin *f′*, which is adjustably secured in a radial slot *a′* in the cog-wheel A′. The length of stroke of the blocks within the guide may be adjusted by adjusting the crank-pins in the slots. Two socket-pieces G, having segmentally-slotted heads *g*, are secured to the outer sides of the blocks or slides by means of screw-bolts *e*, projecting from said slides, and thumb-nuts *e′* upon said bolts. Axially-perforated cross-heads H are secured with their upwardly-projecting shouldered shanks *h* in said socket-pieces by means of set-screws *h′* and have the longitudinal rods I′ of the file-supports adjustably secured in them. Two file-supporting arms *i* are secured with their perforated heads *i′* upon each of said rods, one at each side of the cross-head, by means of set-screws i^2, and have the ends of the files J secured in their perforated lower ends i^3 by means of set-screws i^4. The saw K is held clamped against a stationary jaw L by means of an adjustable jaw L′, and said stationary jaw is secured to a plate or frame L^2, having a vertical slot *l*, with which it slides upon a nutted clamp-screw *l′*, inserted through said slot and through a portion of the machine-support M. The stationary jaw has two downwardly-extending vertical bars l^2, having rearwardly-beveled side edges. A cross-piece N, having its ends *n* bent rearward to engage said beveled bars l^2 and having a block *n′* projecting between said bars, slides with said ends upon the beveled bars and with said block between the same. Set-screws n^4 serve to clamp the ends *n* upon the beveled bars l^2. A screw-bolt N′ projects from the bottom of a conical recess n^2 in the forward face of the cross-piece N, and has a truncate conical nut n^3 upon it, which nut may fit and jam into

the eye of the saw to be filed and bear against the edge of said eye, holding the saw against the cross-piece. The movable jaw L′ is provided with two downwardly-extending vertical arms l^3, which are secured adjustably toward and from the beveled bars l^2 by means of bolts l^4 and clamping and adjusting nuts l^5. A cog-wheel O is journaled with its shaft o in upright bearings o' and meshes with and is of the same diameter as the smaller cog-wheel a. A longitudinally-slotted crank-arm o^2 is secured upon the end of said shaft o and has a pin o^3 adjustably secured therein. A longitudinally-slotted arm P is pivoted with its shaft p upon a bracket p' upon the machine-frame, near the saw-clamp, and a pawl or arm p^2 is pivoted upon a nutted bolt p^3, which slides adjustably in the slotted arm. A drum or pulley p^4 is secured upon the shaft of the arm, and a cord or strap P′ is wound around said drum or pulley, passes around a guide-pulley p^5 upon the machine-frame, and is secured to the crank-pin o^3 in the slotted crank-arm o^2. One end of a flat helical spring p^6 is secured upon the shaft p, is wrapped around said shaft, and has its other end secured to a spring-barrel p^7, secured to the bracket p', so that said spring may return the pawl-arm to its normal position whenever it has been tilted by the revolving crank o^2, pulling the cord or strap and revolving the drum or pulley upon the shaft of the pawl-arm. Any other form of spring for returning the pawl-arm may of course be employed.

In practice the saw is placed against the stationary jaw of the saw-support with the screw-bolt N′ projecting through its eye. The conical nut is screwed upon the bolt into the eye of the saw until said nut jams within the same and clamps the saw against the face of the sliding cross-piece. The saw and the cross-piece are now adjusted at such a height as to bring the edge of the saw above the jaws and the adjustable jaw is clamped against the face of the saw, so as to hold the same firmly. If the saw to be filed is a straight blade such as a cross-cut, rip, or band saw, the blade is simply clamped between the jaws. The files are clamped in the supporting-arms with their faces at the proper angle to file the saw-teeth and with their teeth facing in opposite directions, and the cross-heads and socket-pieces are adjusted to present the files at the proper angle to the saw-teeth and to the plane of the saw. The guide-bars are now adjusted by the thumb-nuts and the segmental slots to adjust the stroke of the files at the proper inclination, the guide-bars being adjusted in opposite inclines. When the machine is started, the files will be reciprocated in opposite directions, one file cutting outward and one file cutting inward. The cam operating in the forked end of the lever from which the files are supported will depress the outer end of said lever when the files cut and raise said end when they are drawn back, so that the files will be operated in exactly the same manner as a workman will operate a file held in the hands. The pawl which engages the saw-teeth will be rocked sufficiently to move the saw one tooth-space forward at each stroke or whatever distance it may be desired, the length of throw of the pawl being controlled and gaged by adjusting the pawl in the longitudinally-slotted arm and by adjusting the crank-pin, to which the cord or strap is attached, in the slotted crank. The eye or center of the saw is so adjusted by the sliding and adjustable cross-piece in the saw-support as to bring its teeth just above the clamping-jaws, said cross-piece affording adjustment for saws of varying diameter, and the saw-support may be vertically adjusted by its vertical slot and clamping screw and nut to bring the edge of the saw in position to be acted upon by the files.

The file-supporting frames may be adjusted to varying lengths of files, and the file may be set to file at any angle desired. It will thus be obvious that our machine may be employed for sharpening all shapes and sizes of saws and may sharpen all shapes of teeth at any angle desired.

The foregoing description and accompanying drawings set forth in detail mechanism embodying our invention. Change may be made therein, provided the principles of construction respectively recited in the following claims are employed.

We therefore particularly point out and distinctly claim as our invention—

1. In a saw-filing machine, the combination of two guides adjusted in opposite inclines, two file-supporting frames sliding in said guides, two diametrically-oppositely-revolving cranks, and connecting-rods between said frames and cranks, substantially as set forth.

2. In a saw-filing machine, the combination of two guides pivoted at their middles and having segmental slots and adjusting-screws in said slots, reciprocating blocks in said guides, socket-pieces having segmentally-slotted heads secured to said blocks by screws in said heads, axially-perforated cross-heads having their shanks secured by set-screws in said socket-pieces, rods secured in said cross-heads by set-screws, arms secured by set-screws upon said rods, and files secured by set-screws in the ends of said arms, substantially as set forth.

3. In a saw-filing machine, the combination of a stationary saw-clamping jaw having vertical downwardly-extending bars, a cross-piece sliding upon said bars, having set-screws for adjusting it upon the same and formed with a recess in its outer face and a screw-bolt in said recess, a truncate conical nut upon said screw-bolt, and an adjustable clamping-jaw secured by nutted bolts to the stationary jaw, substantially as set forth.

4. In a saw-filing machine, the combination of a revolving crank, a pivoted arm having a pivoted pawl for engaging the teeth of the

saw and having a drum or pulley, a cord or strap wound upon said pulley and attached to said crank, and a spring for returning the arm against the draft of said cord or strap, substantially as set forth.

5. In a saw-filing machine, the combination of a revolving crank, a longitudinally-slotted arm, a saw-engaging pawl adjustably pivoted in said slotted arm, a rock-shaft for said arm, a drum or pulley upon said arm, a rigid spring-barrel, a spring secured to said barrel and to said shaft, and a cord or strap wound upon said drum or pulley and attached to the revolving crank, substantially as set forth.

In testimony that we claim the foregoing to be our invention we have hereunto set our hands this 22d day of December, A. D. 1890.

RUDOLF KUNDTZ.
JOHN GEDEON.

Witnesses:
WM. SECHER,
NORMAN S. ROSE.