

E. C. HUNTLEY.
APPARATUS FOR SHARPENING FILES.

(Application filed Dec. 15, 1900.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.

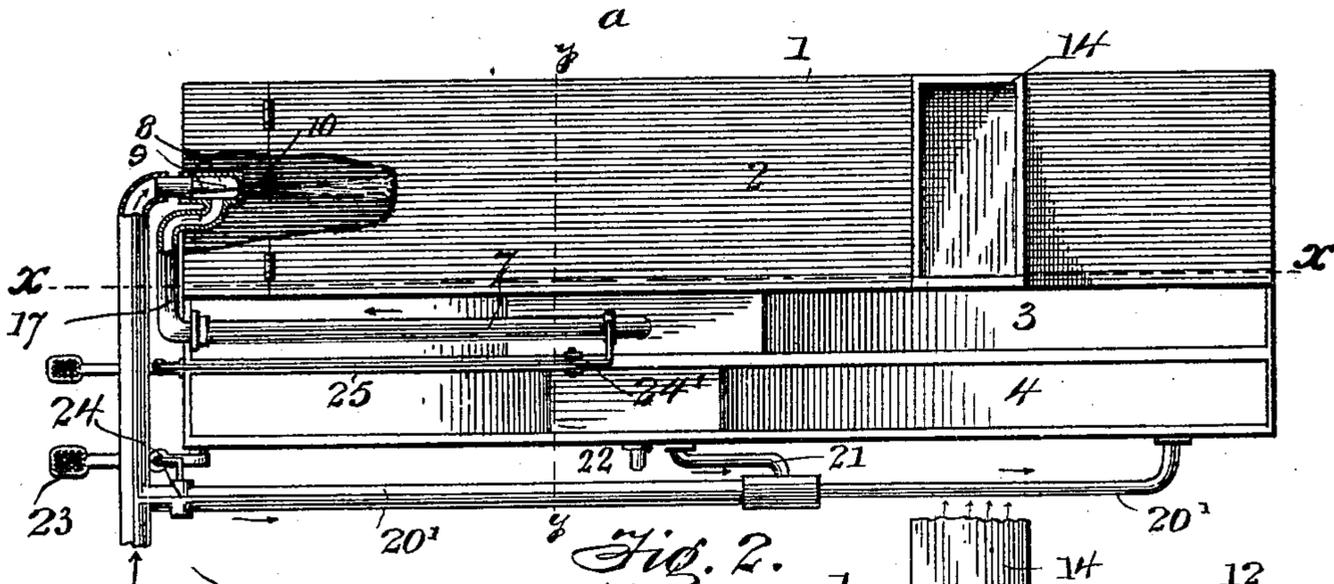


Fig. 2.

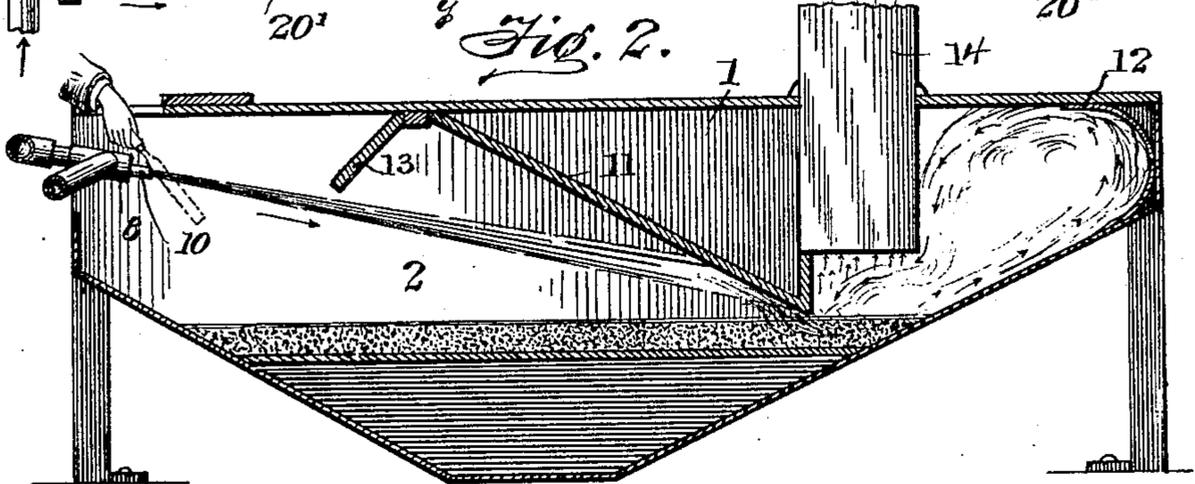
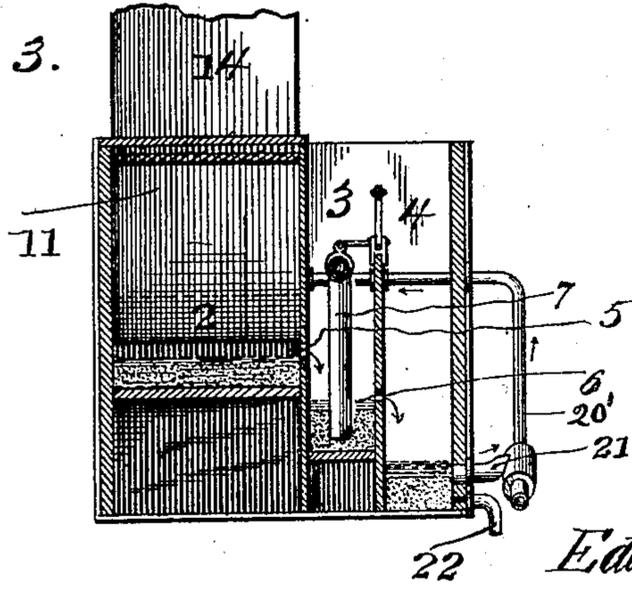


Fig. 3.



Inventor

Edward C. Huntley.

Witnesses
Fenton & Belt,
Geor Kingsbury.

Mason Finnick Lawrence.

By

Attorneys

No. 680,152.

Patented Aug. 6, 1901.

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2 Sheets—Sheet 2.

Fig. 4.

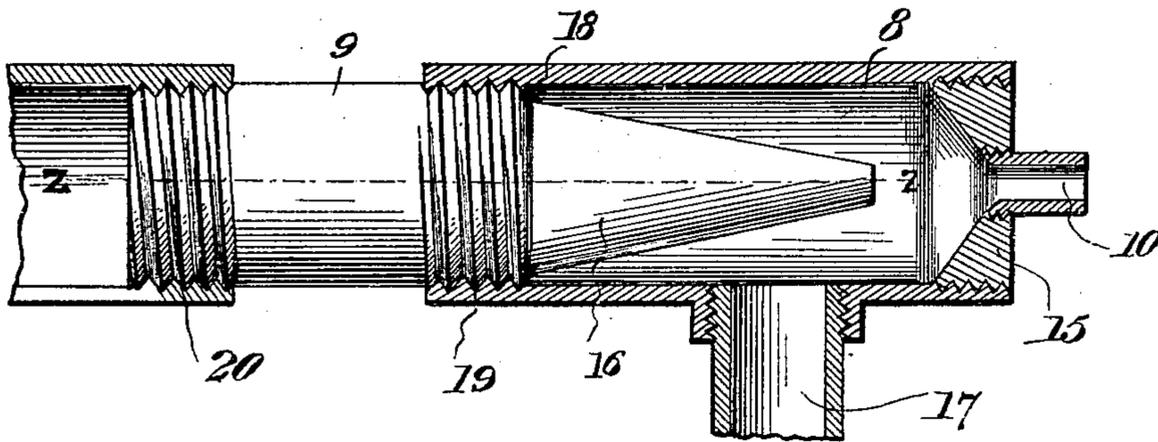


Fig. 5.

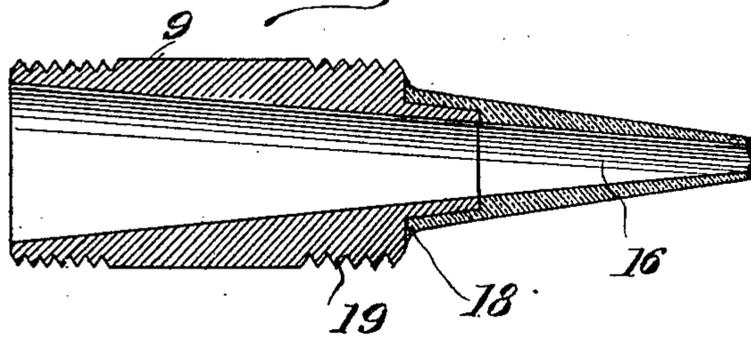
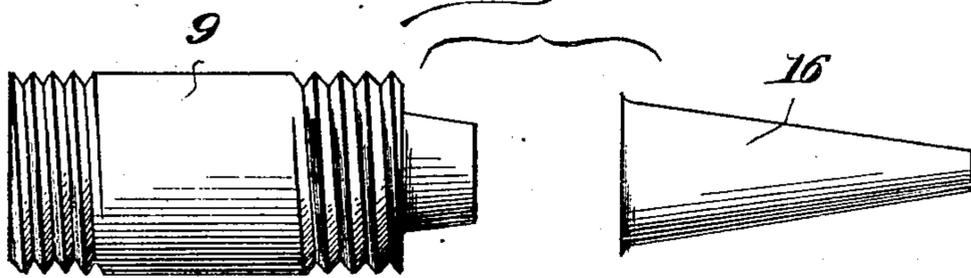


Fig. 6.



Witnesses
Anton Welt
Geo Kingsbury

Inventor
Edward C Huntley
Mason French Lawrence.
Attorneys

UNITED STATES PATENT OFFICE.

EDWARD C. HUNTLEY, OF CHICAGO, ILLINOIS, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, OF SEVEN-EIGHTHS TO MINNIE J. HUNTLEY, OF SAME PLACE, ALFRED WEYHENMEYER AND OLIVER F. BITTNER, OF MAUCHCHUNK, AND BENEDICT H. BIRKEL AND ALEXANDER C. GRAHAM, OF SOUTH BETHLEHEM, PENNSYLVANIA.

APPARATUS FOR SHARPENING FILES.

SPECIFICATION forming part of Letters Patent No. 680,152, dated August 6, 1901.

Application filed December 15, 1900. Serial No. 40,034. (No model.)

To all whom it may concern:

Be it known that I, EDWARD C. HUNTLEY, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Apparatus for Sharpening Files or other Tools; 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.

My invention relates to improvements in apparatus for resharpening files and other tools; and it consists in certain novel constructions, combinations, and arrangements of parts, as will be hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a top plan view of an apparatus constructed in accordance with my invention, a portion of the cover of the casing being broken away to disclose the nozzle. Fig. 2 is a vertical longitudinal section of the same on the line X X of Fig. 1. Fig. 3 is a transverse section on the line Y Y of Fig. 1. Fig. 4 is a vertical longitudinal section through the twyer or nozzle and mixing-chamber. Fig. 5 is a longitudinal section on the line Z Z of Fig. 4 with the mixing-chamber removed. Fig. 6 is a side elevation showing the twyer or nozzle in a separated condition.

1 in the drawings represents a suitable casing, which is provided, preferably, with three compartments extending substantially the entire length of the casing and vertically side by side. The compartment 2 in practice will be about fourteen inches wide and the compartments 3 and 4 about five inches wide, the compartment 2 being provided with an inclined bottom. These compartments communicate with each other by means of a series of holes 5, provided about four inches from the bottom of the compartment 2, and a series of holes 6, provided about four inches from the bottom of the compartment 3, there being an overflow of material from one compartment to the other, as clearly shown in Fig. 3.

The chamber or compartment 2 is the operative chamber—that is, where the operation of sharpening the files is carried on—and the chamber or compartment 3 is the one in which the material is sucked or drawn up by the pipe 7 and conducted to the mixing-chamber 8 and there mixed with a powerful jet of steam or hot air issuing from the end of the nozzle 9 and forced out at the reducer 10, as clearly shown in Figs. 1 and 4. The compartment 2 is closed to contain the steam or air under pressure and provide for the circulation of the abrasive material and the direction thereof. The direction of the steam or hot air is further controlled by means of a deflector 11 and a corner deflector 12. The deflector 11 is extended forwardly and downwardly, as at 13, to prevent the return of the abrasive material to the forward end of the machine before coming in contact with the file or other tool to be sharpened. The compartment 2 is also provided with a pipe or chimney 14 for the escape of exhaust-steam. The bottom of the compartment 2 being filled with the abrasive material to the depth of, say, four inches, is caused to circulate in the direction of the arrows shown in Fig. 2 by the blast of steam or hot air striking the same, as shown in said figure, and forcing the abrasive material back to the end of the machine, around the deflector 12, and back to the bottom of the compartment, thus keeping the material in constant agitation within said chamber or compartment. The exhaust-steam is allowed to pass up the chimney 14. The abrasive material being quite heavy will return to the bottom of the compartment without being forced up said chimney.

As heretofore stated, there is an overflow from compartment 2 into the compartment 3, and sufficient abrasive material mixed with water will always be maintained in the apparatus to allow for such overflow. As also stated, the suction-pipe 7 is arranged in said compartment 3 and draws up the material from said compartment and conducts it to the mixing-chamber 8, so that a constant supply

of mixed steam and abrasive material is being discharged into the compartment 2. The file or other tool to be sharpened is projected into the compartment 2, as clearly shown in Fig. 2, and is allowed to rest on the outer end of the reducer 10, which also serves as a "tester" to determine when the file or other tool is sufficiently sharpened. This is accomplished by drawing the file back and forth several times across the end of the reducer, which will indicate to an experienced operator the condition of the tool being sharpened. This operation of testing the sharpness of the tool naturally wears the outer end of the reducer, and for that reason it is made removable, as clearly shown in Fig. 4, and the plug or bushing 15 is also made removable.

Owing to the nature of the material being operated with, sharp corners or angles must be avoided as far as possible and the parts of the apparatus with which the abrasive material come in contact while in circulation must be well protected. The greatest wear in this respect comes upon the outer end 16 of the nozzle or twyer, as it is constantly receiving on its outer surface the blast of abrasive material entering through the pipe 17 into the mixing-chamber 8. It is therefore necessary that this end of the nozzle should be constructed of a material which will be able to stand the grinding or cutting action for as long a period as possible, and as the rear end of the nozzle does not come in contact with the abrasive material it is not necessary that this portion of the nozzle should be particularly protected. I therefore construct the outer end of the nozzle of Babbitt or other equivalent metal and secure the same to the main body portion of the nozzle, which is constructed of a material which will receive the Babbitt metal in a manner preferably as shown in Figs. 5 and 6.

An important feature in constructing the nozzle and uniting the babbitt end to the main body portion is in forming a positive shoulder 18 at the juncture of the two parts, so that the abrasive material will not be permitted to collect or get into the screw-threads 19, formed on the body of the nozzle, as it would render the removal of the nozzle difficult and also would tend to cut out the thread. The body of the nozzle is also provided with screw-threads 20 for attaching it to a steam or compressed-air pipe.

The overflow of material from compartment 4 is conducted to the chamber 2 by means of a pipe 20' and a short coupling-pipe 21, preferably of flexible tubing, which latter connects the pipe 20' with the coupling-nozzle 30 at the lower end of the compartment 4, as clearly shown in Figs. 1 and 3. A drain-off pipe 22, as shown in Fig. 3, is also provided in the bottom of the compartment 4 for conducting the abrasive material and any deposits contained therein to any suitable receptacle. This is important, as it not only enables the operator to clean out the machine,

but also enables him to collect any valuable products, such as gold or silver, which may have been removed from jewelers' files. The circulation of steam through the pipe 20' may be cut off at any time desired by pressing on the foot-lever 23, connected with valve 24, as shown in Fig. 1.

After a file or other tool has been sharpened it is more or less moistened and not in a condition to be oiled, and therefore in order to dry off the file to receive the oil the suction-pipe 7 can be raised out of contact with the abrasive material in compartment 3 by means of the bell-crank lever 24', to which is connected an operating-rod 25, connected with a treadle which is within easy reach of the operator. By pulling on the rod 25 the lower end of the suction-pipe 7 would be raised out of contact with the abrasive material and water, and thus cut off the circulation of the same and permit only steam to come in contact with the sharpened file or other tool.

In operating a machine of this kind all classes of files and other tools are sent to the factory to be sharpened—say from the very finest to the roughest—and consequently the manipulation of the machine to the extent of the quantity and coarseness or fineness of the abrasive material to be applied to such files or tools must be carefully regulated. To accomplish this, the holes 6 in the wall of the compartment 3, dividing compartment 3 from compartment 4, may be stopped up and the water allowed to back up or accumulate in said compartment 3, which has a tendency to thin out the abrasive material employed, and thus apply a finer abrasive or cutting surface to the file or other tool being sharpened. Of course this would only be done in operating upon fine tools.

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

1. An apparatus for resharpening files and the like, comprising in its construction a suitable casing provided with a plurality of compartments extending longitudinally of the casing and vertically side by side, the first compartment being where the file or other tool is sharpened and provided with a blast-nozzle extending into said compartment, the bottom of the said compartment being imperforated and inclined for directing the abrasive material to a discharge-opening, a second compartment provided with means for sucking up the abrasive material discharged from the first compartment and conducting it to the blast-nozzle, and a third compartment provided with means for drawing off the overflow from the other two compartments and delivering it into one of the other compartments, substantially as described.

2. An apparatus for resharpening files and the like, comprising a suitable casing provided with a substantially closed compartment having imperforated end boards which are inclined in opposite directions toward the

center of the compartment for conducting the abrasive material to a discharge-opening located near the bottom of the compartment, a deflector arranged within the compartment in line with the blast-nozzle, a deflector at the upper rear end of the compartment, and an exhaust-pipe, substantially as described.

3. An apparatus for resharpening files and other tools, comprising in its construction a suitable casing, a single blast-nozzle arranged at one end of the casing and projecting into the same, a mixing-chamber completely surrounding the outer end of the nozzle and also projecting into the casing, the wall of the mixing-chamber being provided with an inlet for the abrasive material, which inlet is connected by a suction-pipe with the interior of the casing, and combined reducer and file-tester provided on the end of the mixing-chamber in front of the nozzle, substantially as described.

4. An apparatus for resharpening files and other tools, comprising in its construction a suitable casing, a single blast-nozzle arranged at one end of the casing and projecting into the same, a mixing-chamber completely surrounding the outer end of the nozzle and also projecting into the casing, the wall of the mixing-chamber being also provided with an inlet for the abrasive material which inlet is connected by a suction-pipe with the interior of the casing, and a combined removable reducer and file-tester provided on the outer end of the mixing-chamber, the inner ends of the mixing-chamber being provided with screw-threads and the nozzle provided with screw-threads which engage the screw-threads on the rear end of the mixing-chamber, substantially as described.

5. An apparatus for resharpening files and other tools, comprising in its construction a suitable casing, a single blast-nozzle arranged at one end of the casing and provided with a tapering end, said tapering end being formed of Babbitt metal or the like and extending within the casing, the main body portion of the nozzle being formed of hard metal capable of receiving the Babbitt-metal end, a mixing-chamber completely surrounding the outer end of the nozzle and projecting into the casing, the wall of the mixing-chamber being also provided with an inlet arranged at right angles to the Babbitt end of the nozzle, so that the force of the abrasive material will be received by said end of the nozzle, which inlet is connected by a suction-pipe with the interior of the casing, substantially as described.

6. In an apparatus for resharpening files and the like, comprising a suitable casing, a blast-nozzle arranged at one end of the casing, a mixing-chamber surrounding the outer end of the blast-nozzle, a comparatively short combined reducer and file-tester carried at the outer end of the mixing-chamber and disconnected from the nozzle, there being a space between the outer end of the nozzle and said

reducer, said mixing-chamber being connected with the interior of the casing by a suction-pipe, substantially as described.

7. An apparatus for resharpening files and other tools, comprising in its construction a suitable casing having a plurality of compartments extending longitudinally of the casing and vertically side by side, communicating one with the other by passages formed in the walls of the compartments, the passages being a sufficient distance from the bottom of each compartment to always retain a quantity of abrasive material, a blast-nozzle arranged in one of the compartments and enclosed by a mixing-chamber, and a suction device arranged in one of the other compartments for drawing up the abrasive material and delivering it to the mixing-chamber, substantially as described.

8. An apparatus for sharpening files and other tools, comprising in its construction a suitable casing having a plurality of longitudinally-extending compartments extending side by side, the first compartment being where the file or other tool is sharpened and provided with a blast-nozzle extending into said compartment, the compartment being enclosed on all sides, and having its bottom converging in opposite directions toward its center and provided with apertures in its partition-wall arranged at a suitable distance above the bottom of the compartment so as to always retain a quantity of the abrasive material in the bottom of said compartment, a mixing-chamber surrounding the blast-nozzle and a suction device arranged in one of the other compartments for drawing up the abrasive material which overflows from the first compartment and returning it to the mixing-chamber, substantially as described.

9. An apparatus for sharpening files and other tools, comprising in its construction a suitable casing having a plurality of longitudinally-extending compartments arranged vertically side by side, one of the compartments being where the files or other tools are sharpened and having a blast-nozzle extending into said compartment, a second compartment communicating with the first compartment and provided with means for sucking up the abrasive material and conducting it to the blast-nozzle, and a third compartment communicating with the second compartment, means connected with the third compartment for drawing off the overflow of abrasive material therefrom and delivering it into one of the other compartments, and means for cutting off the suction from the last compartment, substantially as described.

10. An apparatus for sharpening files and other tools comprising in its construction a plurality of communicating compartments, a blast-nozzle arranged at one end of one of the compartments and projecting into the same, a suction-pipe arranged in another compartment, and a lever mechanism for

bringing the said suction-pipe into and out of operative position, so that the supply of abrasive material to the blast-nozzle will be cut off and only steam or air be forced from
5 said nozzle, substantially as described.

11. An apparatus for sharpening files and the like, comprising in its construction a suitable casing having a plurality of longitudinally-extending compartments arranged vertically side by side, one of the compartments
10 being where the files or other tools are sharpened, and having a blast-nozzle extending into the said compartment, a mixing-chamber surrounding said nozzle, a second compartment
15 communicating with the first compartment and provided with means for sucking

up the abrasive material and conducting it to the mixing-chamber, and a third compartment communicating with the second compartment, the construction and arrangement
20 being such that the discharge-apertures in the partition between the second and third compartments can be closed, and the abrasive material allowed to rise and be thus thinned
25 out for sharpening fine files.

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

EDWARD C. HUNTLEY.

Witnesses:

JOHN L. FLETCHER,
E. T. FENWICK.