

No. 673,576.

Patented May 7, 1901.

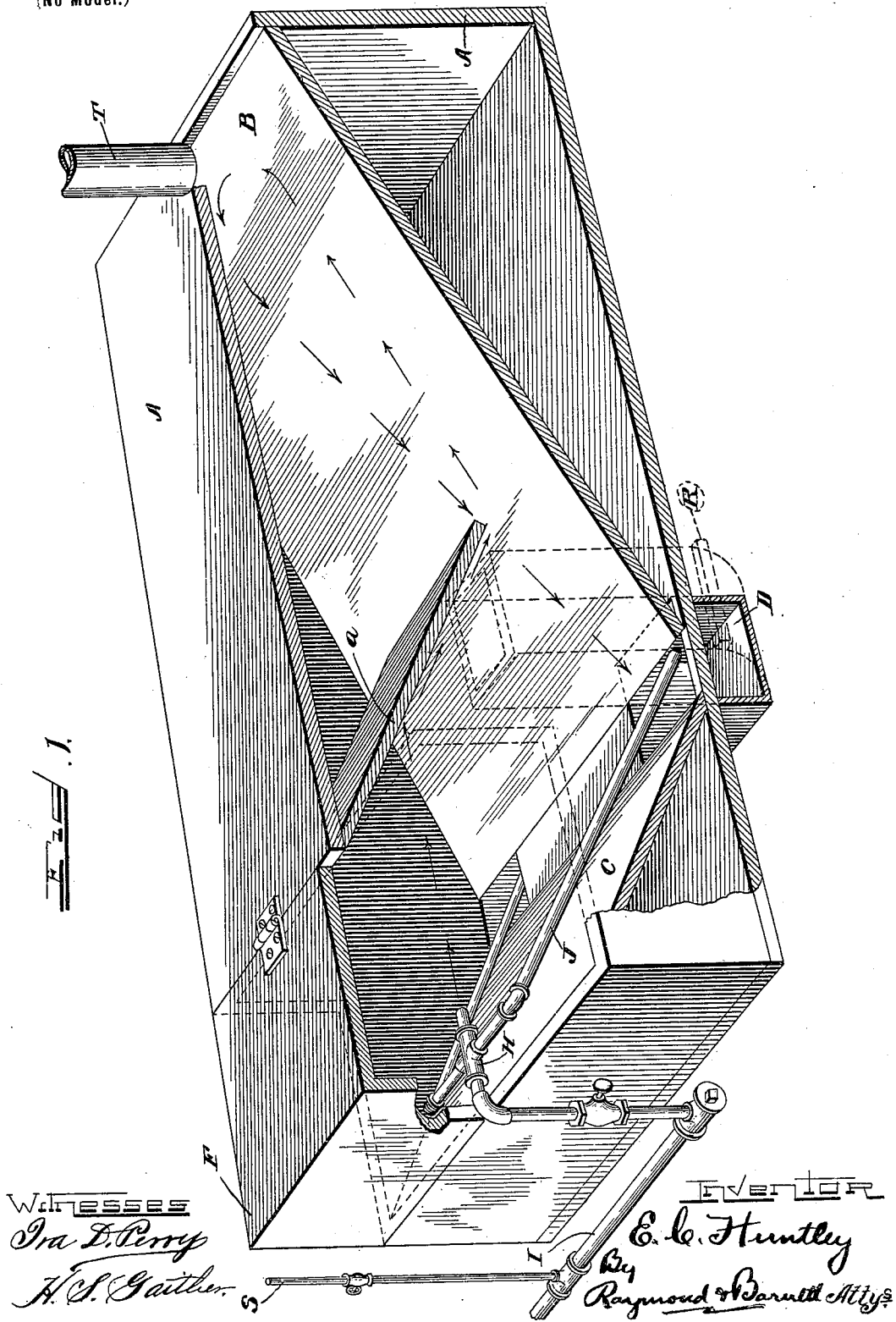
E. C. HUNTLEY.

APPARATUS FOR SHARPENING AND REGRINDING FILES.

(Application filed Nov. 12, 1900.)

3 Sheets—Sheet 1.

(No Model.)



No. 673,576.

Patented May 7, 1901.

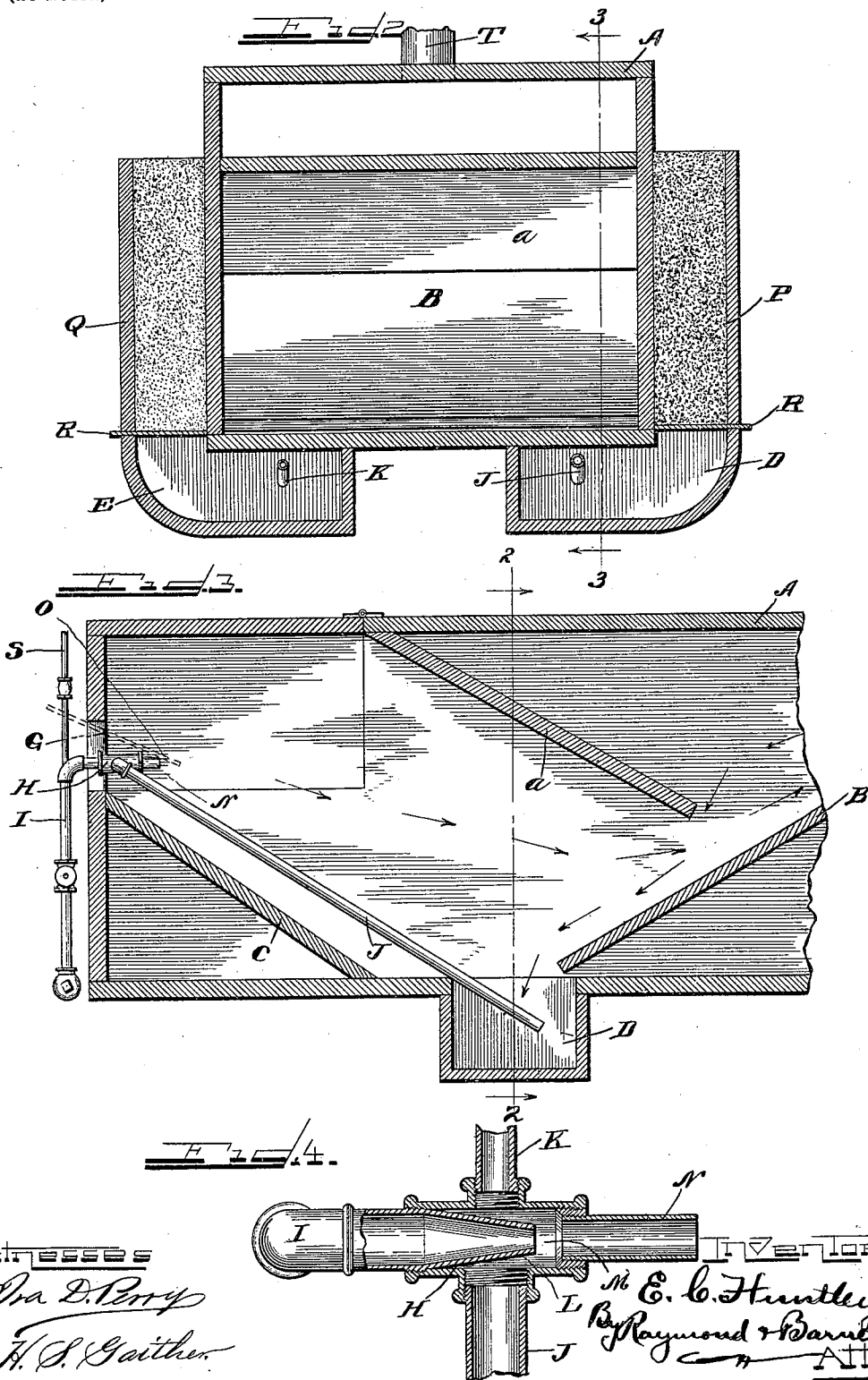
E. C. HUNTLEY.

APPARATUS FOR SHARPENING AND REGRINDING FILES.

(Application filed Nov. 12, 1900.)

(No Model.)

3 Sheets—Sheet 2.



Witnesses
Ora D. Perry
H. S. Gaither

Inventor
E. C. Huntley
 By *Raymond & Barnett*
 Attys

No. 673.576.

Patented May 7, 1901.

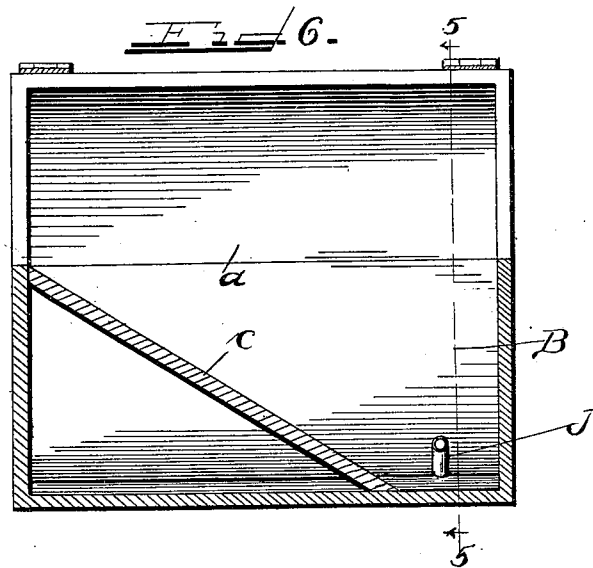
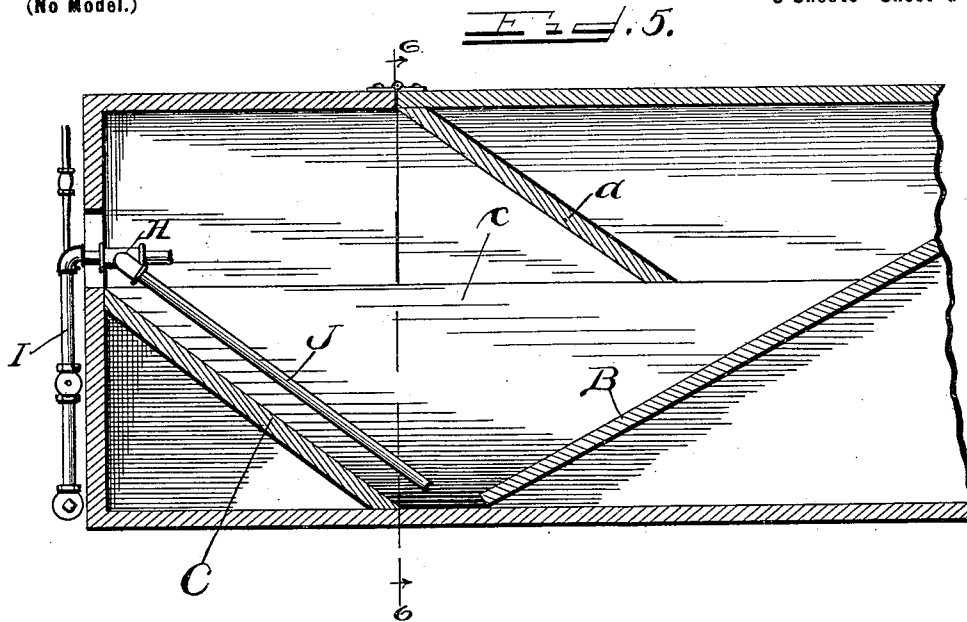
E. C. HUNTLEY.

APPARATUS FOR SHARPENING AND REGRINDING FILES.

(Application filed Nov. 12, 1900.)

(No Model.)

3 Sheets—Sheet 2



Witnesses
B. Weir
Ora D. Perry

Edward C. Huntley
By Raymond & Barnett
ATTY

UNITED STATES PATENT OFFICE.

EDWARD C. HUNTLEY, OF CHICAGO, ILLINOIS, ASSIGNOR TO AMERICAN
STEEL TOOL COMPANY, OF SAME PLACE.

APPARATUS FOR SHARPENING AND REGRINDING FILES.

SPECIFICATION forming part of Letters Patent No. 673,576, dated May 7, 1901.

Application filed November 12, 1900. Serial No. 36,271. (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 and Regrinding Files, of which the following is a specification.

This invention relates to improvements in apparatus for sharpening and regrinding files, and has for its primary object the production of an inexpensive, simple, compact, and effective apparatus for that purpose.

Another object is the production of such an apparatus comprising within itself means for controlling and altering at will the proportions of the abrasive compound used therein.

A further object is to so construct such an apparatus that when in operation the abrasive compound will be automatically and continuously kept in a sufficiently liquid state for the free and effective operation of the apparatus.

These and such other objects as may hereinafter appear are attained by the devices illustrated in the accompanying drawings, in which—

Figure 1 shows my improved apparatus in perspective, partly broken away, so as to show the interior of the box with the part F removed. Fig. 2 is a transverse section through the line 2 2 of Fig. 3 looking in the direction indicated by the arrows. Fig. 3 is a central longitudinal section on the line 3 3 of Fig. 2 looking in the direction indicated by the arrows. Fig. 4 is an enlarged section through the siphon-injector. Fig. 5 is a central longitudinal section on the line 5 5 of Fig. 6, showing a modified form of my apparatus; and Fig. 6 is a transverse section on the line 6 6 of Fig. 5.

Similar letters of reference indicate the same parts in the several figures of the drawings.

Referring by letters to the accompanying drawings, A indicates a box of any suitable shape or dimensions, preferably provided with a double inclined bottom B and C and with a deflecting-board *a*. At the lower ends of the inclined bottoms B and C may be located either a continuous well across the bottom of the box or preferably two wells D and E.

In the modified form of my device shown in Figs. 5 and 6 instead of providing a well or wells below the bottom of the box I provide a well the sides of which are formed by the inclined bottoms B and C, one side of the box, and the additional inclined bottom *c*, which may or may not be used, as the operator may desire. In order to insure an active circulation of the abrasive material and to keep the same in suspension in the water, it is desirable that the well inside the box shall be constructed with two or more inclined sides, which shall conduct the water and abrasive materials to a point of comparatively small area in immediate proximity to the lower end of the supply pipe or pipes, as the case may be, thereby preventing any possibility of the abrasive material settling in a mass at the bottom of the box while the apparatus is in operation. In using this modified form the location of the pockets or reservoirs P and Q should of course be changed, so that said reservoirs or pockets shall discharge into the well in the interior of the box, or, if desired, said reservoirs may be dispensed with, the operator relying upon adding the necessary ingredients from time to time through the movable part of the top and front of the box.

The upper half of the box at the forward end, as shown at F, is made detachable or is hinged to the remainder of the box for the purpose of allowing ready access to the interior of the box. In the front wall of the box is left an opening G of sufficient size to admit the steam siphon or injector H and still leave space for the insertion of a file above the injector. The injector H is supplied with steam through the pipe I and is provided with the lateral pipes J and K, connecting with the continuous well in the bottom of the box or with the separate wells D and E, respectively, as the case may be.

When the steam is furnished to the apparatus at sufficiently high pressure and separate wells D and E are not used, a single supply-pipe J or K of sufficient capacity is all that is necessary; but when separate wells, as D and E, are used, to which different ingredients are supplied, of course a supply-pipe should connect each well with the vacuum-chamber in the injector, and when steam

at low pressure must be used I find that the apparatus works much more efficiently with two supply-pipes, as J and K, of smaller capacity than with one pipe of larger capacity, it being essential for the most effective operation of the apparatus that a strong, rapid, and continuous circulation shall be maintained in the box and through the supply-pipes.

10 P and Q are pockets or reservoirs leading to the wells D and E, respectively, communication between the pockets and wells being controlled by the valves R.

T is a draft-pipe for carrying off the surplus steam.

The steam-pipe I terminates in the contracted nozzle L within the casing of the injector and in line with the discharge-nozzle N. Into the casing of the injector and back of the end of the nozzle L open freely the pipes J and K.

It is obvious that operating upon the well-known principle of the steam-injector a jet of steam discharged through the nozzle L into and through the nozzle N will tend to create a vacuum in the chamber M and in the pipes J and K, which will result in drawing into the chamber M any liquid or semiliquid compound in the pipes J and K, which liquid or compound will in turn be carried by the steam-jet into the nozzle N and discharged with the steam through the nozzle N.

In practice when I construct the apparatus with the inclined false bottoms B and C, I pack the space under the bottoms B and C full of sand. I then supply the box A, so as to fill the wells D and E, with a sufficient quantity of the abrasive compound to be used, consisting of water and such abrasive substance as the operator may see fit to use. I have obtained the best results from the use of a mixture of water, carborundum, and sand, which compound forms the subject of a separate application for United States Letters Patent executed by me of even date herewith. I then fill the pocket E with one of the ingredients of my abrasive compound—for instance, with a proper quality of sand—and the pocket Q with another and different ingredient, say, carborundum. Steam then being turned into the pipe I discharges through the nozzle L and the nozzle N, thereby establishing a partial vacuum in the vacuum-chamber M and in the pipes J and K, whereby the abrasive mixture or compound in the wells D and E is drawn rapidly up through the pipes K and J and is discharged with great force with a jet of steam through the nozzle N. The file to be sharpened is inserted through the opening G above or resting upon the nozzle N, so that its under surface is exposed to the abrasive action of the mixed jet of steam, water, and abrasive material. The jet of steam, &c., is deflected by the board *a*, strikes the bottom B, by which it is again deflected, and, losing most of its velocity, the steam escapes through the escape-pipe T, and the water, with the

water of condensation and the abrasive substance held in suspension, flows down the bottom B into the wells D and E, whence it is again drawn through the pipes J and K and discharged through the injector.

It is a matter of common knowledge that if in an apparatus of this sort the mixture is given an opportunity to settle the sand, carborundum, or other mineral substance will settle to the bottom of the supply-tank in a thick mass and will stop or retard the operation of the apparatus. It is obvious that by my arrangement, in which the supply-wells form a part of the closed steam-box into which the jet of abrasive material is discharged, a rapid and continuous circulation is maintained, which serves to keep the abrasive materials in constant suspension in the water and permits of the free, effective, and continuous operation of the apparatus.

I have found in practice that it is desirable and even necessary that the proportions of the ingredients forming the abrasive compound shall be varied from time to time to accord with differences in hardness of the file being sharpened, in the quality of the ingredients themselves, in the force of the steam-jet, &c. It will also happen that a part of the abrasive material will pass off with the steam through the pipe T and also with the water, which may be drawn off from time to time through any convenient overflow-opening whenever the water of condensation within the box shall add an undue proportion of liquid to the compound. I therefore have provided the pockets P and Q, from which by means of the valves R, I can from time to time without interrupting the operation of the apparatus add varying quantities of the different ingredients used. These ingredients so added will be drawn through the pipes K and J and become thoroughly mixed as they are discharged through the nozzle N. As in actual practice I use a smaller quantity of carborundum in proportion to the other ingredients used, I prefer that the pipe K, supplying the carborundum, shall be of smaller capacity than the pipe J, whereby less care need be observed in opening and closing the valve R, as by so varying the capacity of the pipes K and J the apparatus will automatically draw from the wells D and E approximately the proper proportions of the ingredients used.

Obviously numerous changes may be made in the construction and disposition of the parts without departing from the spirit of my invention—such, for instance, as adding other pipes, wells, and pockets to correspond with the number of ingredients used in the abrasive compound or constructing the box with a single or solid bottom, &c., all of which would fall within my invention and are contemplated by the claims.

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

1. In a file-sharpening apparatus, the combination of a box or casing, a well in the bottom thereof, an injector arranged to discharge into said box, and a supply-pipe connecting the vacuum-chamber of said injector with said well, substantially as described.

2. In a file-sharpening apparatus, the combination of a casing, a deflecting-plate arranged therein, an injector arranged to discharge into said casing and against said deflecting-plate, a well in the bottom of said casing and a supply-pipe from said well to said injector, substantially as described.

3. In an apparatus for sharpening files, the combination of a box or casing, a deflecting-plate projecting downwardly therein, an inclined bottom leading to a well in the bottom of said box, an injector arranged to discharge into said box, and a supply-pipe from said well to the vacuum-chamber of said injector, substantially as described.

EDWARD C. HUNTLEY.

Witnesses:

FRANK C. GERARD,
M. E. SHIELDS.