No. 843,082. PATENTED FEB. 5, 1907.

J. M. GALE.

FILE SHARPENING APPARATUS.

APPLICATION FILED NOV. 9, 1905.

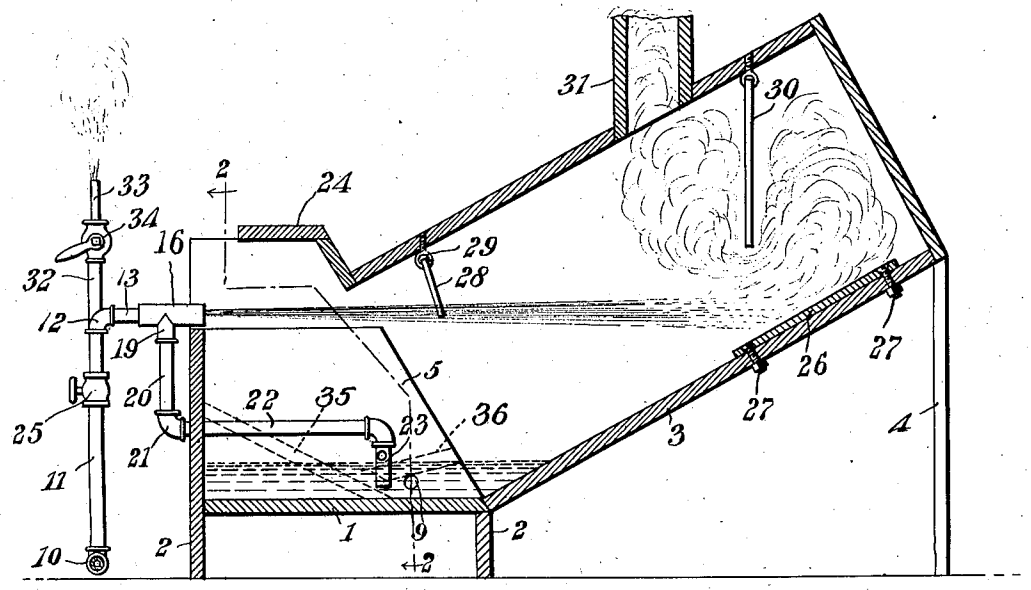


Fig. 1.

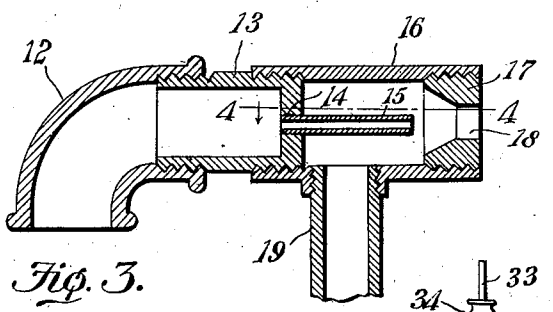


Fig. 3.

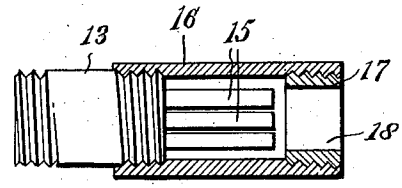


Fig. 4.

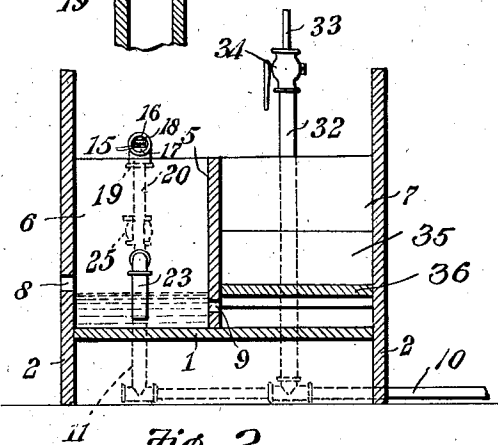


Fig. 2.

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UNITED STATES PATENT OFFICE.

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FILE-SHARPENING APPARATUS.

No. 843,082. Specification of Letters Patent. Patented Feb. 5, 1907

Application filed November 9, 1905. Serial No. 286,562.

To all whom it may concern:

Be it known that I, JAMES M. GALE, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented a new and useful File-Sharpening Apparatus, of which the following is a specification.

This invention relates to blast apparatus, and is particularly designed for use in resharpening files by directing a blast of sand or other suitable material against the file. It is proposed to provide simplified and at the same time efficient means for collecting and forcibly directing the sharpening compound against the files and to prevent wearing away of the casing of the apparatus under the action of the blast apparatus.

Another object of the invention is to maintain the sharpening compound in a thoroughly-mixed condition by the action of the blast device.

It is furthermore designed to provide for conveniently directing the steam or other fluid under pressure against the files, so as to clean the latter of the compound which accumulates thereon.

With these and other objects in view the present invention consists in the combination and arrangement of parts, as will be hereinafter more fully described, shown in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that changes in the form, proportion, size, and minor details may be made within the scope of the claims without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings, Figure 1 is a longitudinal sectional view of the apparatus of the present invention. Fig. 2 is a cross-sectional view on the line 2 2 of Fig. 1. Fig. 3 is an enlarged detail sectional view taken through the blast-nozzle. Fig. 4 is a detail sectional view taken on the line 4 4 of Fig. 3.

Like characters of reference designate corresponding parts in all of the figures of the drawings.

The casing for the present apparatus includes a substantially horizontal compartment 1, which is supported upon suitable leg-standards 2, and an upwardly-inclined compartment 3 of considerable length, which has its elevated end held by a suitable support 4. The compartment 1 is divided by a longitudinal upstanding partition 5 into two subcompartments 6 and 7, of which the compartment 6 is designed to contain the sharpening compound, which is usually made up of sand or the like and water. An overflow-opening 8 is formed in the outer wall of the compartment 6, and an opening 9 is formed in the partition 5 to permit of the free circulation of the liquid from the compartment 7 to the compartment 6, whereby the flow of material through the opening 9 tends to the maintain the same in a thoroughly-mixed condition.

It is proposed to suck up the compound from the compartment 6 and then direct the same forwardly in a powerful jet through the compartments 1 and 3, and this is accomplished by means of a steam-supply pipe 10, disposed transversely across the front of the case adjacent the bottom thereof. From this supply-pipe a service-pipe 11 leads upwardly and terminates in an elbow 12, directed toward the case and carries the jet-nozzle. This nozzle includes a pipe 13, threaded into the elbow and having an externally-threaded closed forward end, which is pierced by a horizontal series of threaded openings 14, into which are threaded the series of pipes 15, which have their forward discharge ends provided with laterally-elongated openings in the nature of oblong slots. A mixing-chamber 16 embraces the tubes and is threaded upon the forward end of the part 13 with its forward end projecting beyond the series of tubes and internally threaded for the reception of a reducer-plug 17, having an elongated opening or slot 18 extending in a horizontal direction, so as to produce a flat jet. The mixing-chamber 16 has an intermediate branch 19, to which is connected a suction-pipe 20, terminating in an elbow 21, to which another length of suction-pipe 22 is connected, said pipe piercing the front of the compartment 6 and having a downturned terminal 23, dipped into the compound or solution which is contained within the chamber 6. It will here be explained that the jet-nozzle has its outlet extending inwardly through the open top portion of the front of the case, which top is overhung by a suitable hood 24.

In practice the file to be sharpened is introduced through the open upper portion of the front of the case and held in front of the nozzle, after which steam or other fluid under pressure is admitted to the nozzle by opening a suitable valve—such, for instance, as shown at 25—upon the service-pipe 11. As the steam escapes through the tubes 15

a suction is produced in the chamber 16, whereby the solution in the compartment 6 is taken up through the suction-pipe and then discharged with the steam through the outlet 18 of the nozzle, thus producing a broad and relatively thin jet of the solution, which is directed against the file with considerable force to cut and thereby sharpen the same. The solution which enters the compartment 3 of course runs back along the chute or incline formed by the bottom of the compartment, and is thereby returned to the compartments 6 and 7. It will now be understood that as the solution is drawn from the compartment 6 the solution in the compartment 7 will pass through the opening 9, and thereby produce an agitation of the solution sufficient to maintain the same in the desired mixed condition.

To prevent wearing away of the chute 3 or bottom of the compartment, a hardened metallic plate 26 is secured to the part 3 in position to be struck by the jet, said plate being suitably secured to the part 3—for instance, by means of fastenings 27, the heads of which are hardened to withstand the wear of the blast. A swinging baffle-plate 28 is swung from the top of the compartment 3, as indicated at 29, said plate being of hardened metal and located in the path of the jet to break the force thereof. Another and longer baffle-plate 30 is swung from the top of the rear portion of the compartment 3, so as to break the return force of the blast, and thereby reduce to a great extent the wear of the blast upon the case. A suitable stack or chimney 31 leads upwardly from the top of the compartment 3 to carry off the steam which accumulates within the compartment.

After the file has thus been recut it is proposed to cleanse the same by means of a steam-blast, which is carried out by means of a pipe 32, rising from the supply-pipe 10 and equipped at its upper end with a nozzle 33, there being a suitable valve 34 to control the passage of steam through the nozzle 33. The recut or resharpened file is held over the nozzle 33 and the valve 34 opened, whereby the blast of steam will remove the accumulations of the sharpening solution from the file, and thereby cleanse the latter in a very simple and efficient manner.

Within the bottom portion of the compartment 7 there is a transverse partition 35, inclined downwardly and rearwardly from the front of the device to the bottom of the compartment just in front of the opening 9. Another transverse partition 36 inclines downwardly and forwardly across the top of the opening 9 and terminates short of the lower end of the partition 35. The purpose of the partition 35 is to prevent the accumulation of the liquid within the front of the compartment 7 and to compel the liquid pass through the opening 9 into the compartment 6.

Having thus described the invention, what is claimed is—

1. A file-sharpening apparatus comprising a case having a sharpening-compound-containing receptacle at the front thereof and a downwardly and forwardly inclined chute portion leading to the receptacle, a blast apparatus in communication with the receptacle with its nozzle directed into the case toward the inclined chute, a normally vertical swinging baffle within the case in the path of the jet from the nozzle, and another normally vertical swinging baffle in rear of the first-mentioned baffle and in the return-path of the blast but out of the path of the direct blast.

2. A file-sharpening apparatus comprising a case including a front compartment for containing a sharpening-point, and a rear upwardly-inclined compartment leading therefrom, a blast device in communication with the front compartment and discharging therethrough toward the rear compartment, a stack rising from the rear compartment, a normally vertical swinging baffle hung from the top of the rear compartment in front of the stack and in the path of the blast, and another normally vertical swinging baffle hung from the top of the rear compartment in rear of the stack out of the path of the direct blast and in the return-path of the blast.

3. In a file-sharpening apparatus, the combination of a case having a compartment for containing a sharpening compound, a blast device in communication with the compartment and including a nozzle made up of a pipe-section which is closed at its forward end, a series of tubes piercing the closed end of the pipe and lying in the same plane, a mixing-chamber embracing the tube, and a reducer fitted in the discharge end of the mixing-chamber and provided with a discharge-slot alined with the discharge ends of the tubes.

4. A blast-nozzle, comprising a pipe member closed at its forward end, a plurality of tubes piercing the closed end of the pipe member and lying in the same plane, and a mixing-chamber embracing the tubes and carried by the pipe member, said mixing-chamber extending in front of the tubes, a reducer fitted in the outer end of the mixing-chamber and having a discharge-slot alined with the discharge ends of the tubes, and a suction branch for the mixing-chamber.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JAMES M. GALE.

Witnesses:

JOHN M. CAPURRO.

A. MURPHY.