C. M. EMERSON.

FILE SHARPENING MACHINE.

APPLICATION FILED APR. 3, 1909.

945,924. Patented Jan. 11, 1910.

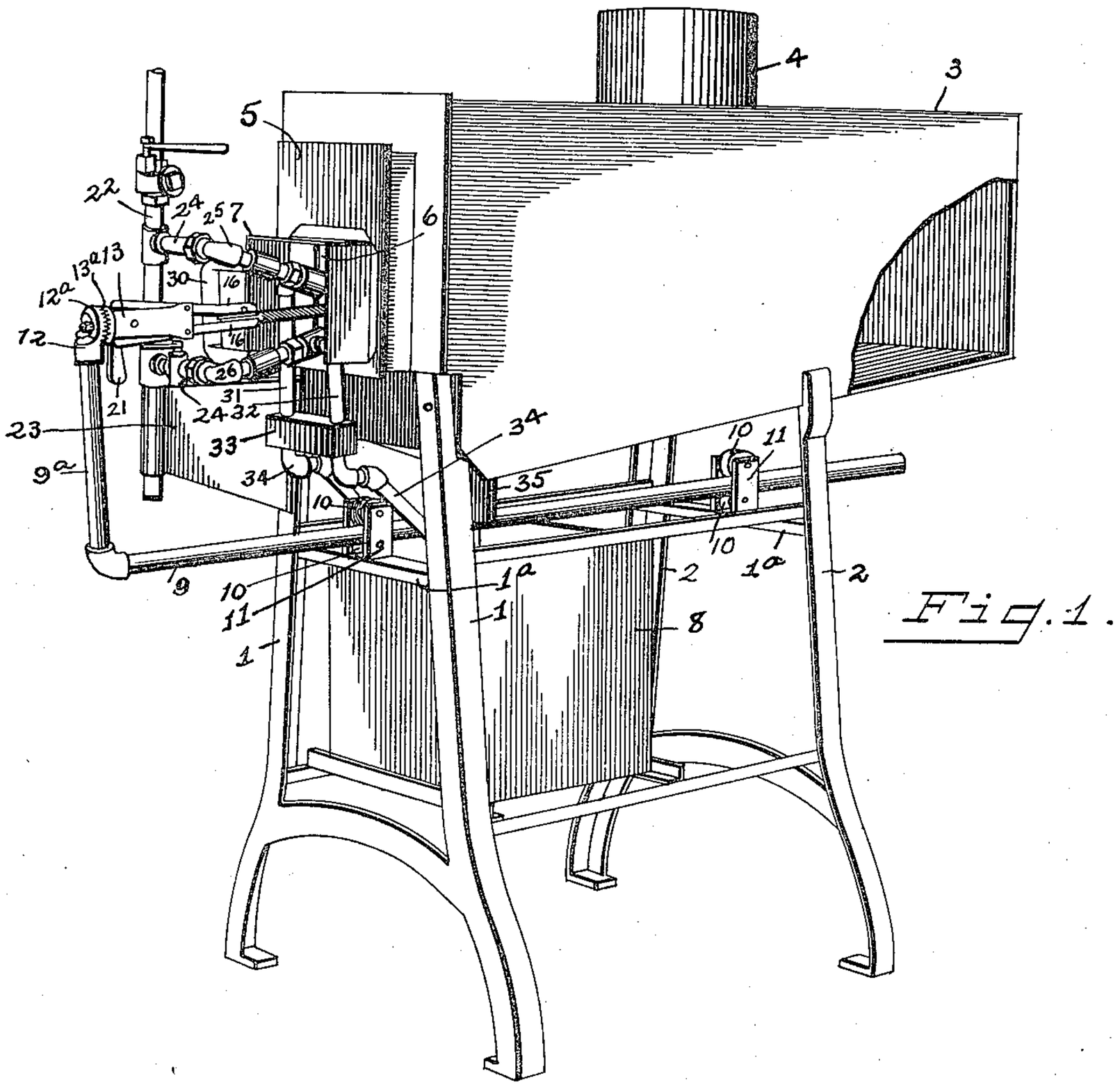

Fig. 1.

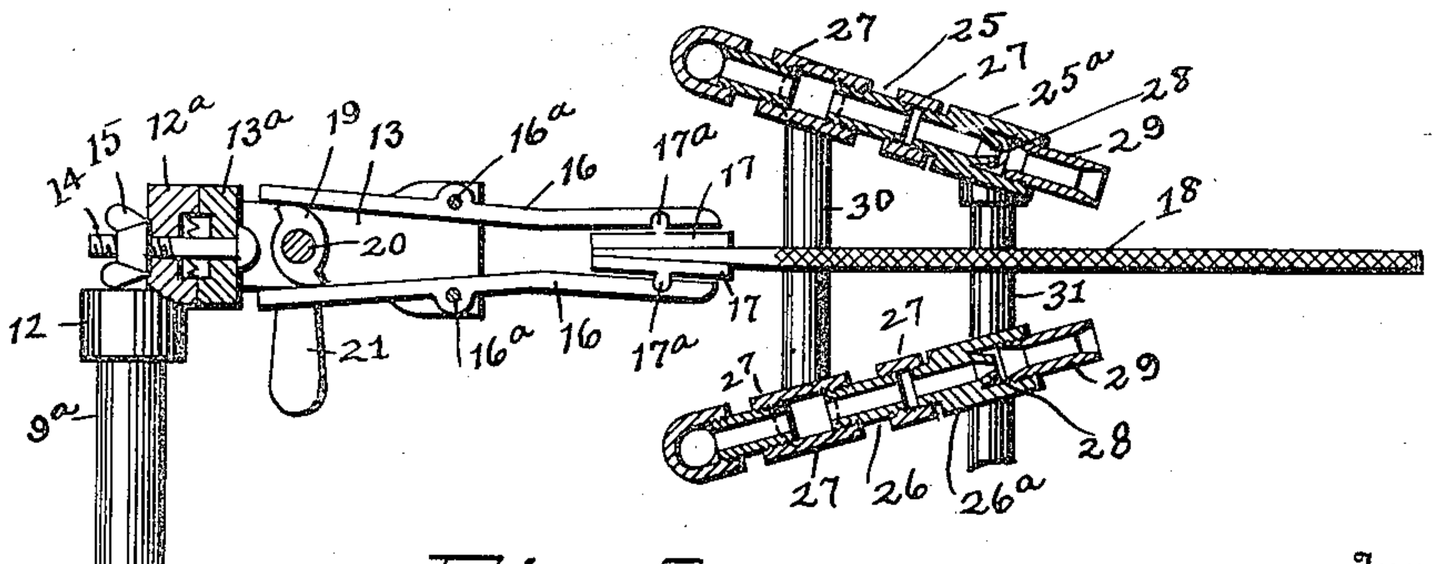

Fig. 2.

Witnesses

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FILE-SHARPENING MACHINE.

945,924. Specification of Letters Patent. Patented Jan. 11, 1910.

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To all whom it may concern:

Be it known that I, CHARLES M. EMERSON, a citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented certain new and useful Improvements in File-Sharpening Machines, of which the following is a specification.

My invention relates to the improvement of file sharpening machines of that class in which the sharpening of the file is attained by forcing abrasive material against its cutting surfaces.

The objects of my invention are to provide an improved file sharpening machine of this class of improved construction and arrangement of parts; to provide improved means for assuring the constant support of the upper and lower nozzles at fixed angles or inclinations; to provide improved means for engaging and holding files of different sizes or the tangs of which are of different degrees of taper; to provide improved means for adjusting the file to different positions for receiving the abrasive material and to produce other improvements which will be more fully pointed out hereinafter. These objects I accomplish in the manner illustrated in the accompanying drawing, in which:

Figure 1 is a view in perspective of my improved file sharpening machine, and, Fig. 2 is a vertical longitudinal section through the steam nozzles and parts in the same plane.

Similar numerals refer to similar parts throughout the several views.

In carrying out my invention, I employ an upright framework, which preferably comprises connected front and rear standards such as are indicated at 1 and 2. The upper portions of these standards support, as shown, an elongated casing or box 3, which as indicated in the drawing, has its bottom portion inclined toward its forward end and which is provided on its upper side with a suitable steam outlet 4. The forward end of the casing or box 3 has formed therewith, a forward extension 5, in the outer face of which is formed an opening 6 of suitable size, said opening having projecting from its upper and opposite sides a hood or shield 7.

In the lower portion of the framework, beneath the forward portion of the casing 3, I provide a receptacle 8 having an open upper side and adapted to receive and support suitable abrasive material in a liquid or semi-liquid state.

In further carrying out my invention, I employ a file holding mechanism which comprises among other parts an angular rod consisting of the horizontal arm 9 and its forward upturned arm 9^a. The horizontal arm 9 bears, as shown, between rollers 10 which are carried between brackets 11 which project from horizontal frame cross pieces 1^a at the front and back of the framework. This slidably mounted support is provided at the upper end of its arm 9^a with a head 12, which comprises a vertically disposed disk like extension 12^a having teeth formed on its inner or rear face.

With the teeth of the member 12^a are adapted to engage the teeth of a similar member or head 13^a formed on or connected with the outer ends of two rearwardly extending parallel arms 13, one of which is disclosed in Fig. 1 of the drawing, and the remaining one of which is shown in Fig. 2 thereof. The engaging members 13^a and 12^a are held in proper engagement one with the other through the medium of a bolt 14 which passes loosely through said members, as shown more clearly in Fig. 2 of the drawing, and the threaded forward end of which receives a finger clamping nut 15. Between the outer ends of the arms or bars 13 are pivoted one above the other, as shown at 16^a, file retaining fingers 16, the latter extending to and terminating at a desirable point in front of the opening 6 of the casing 3. The underside of the outer end portion of the upper finger and the upper side of the outer end portion of the lower finger, are formed with transverse opposing recesses having contracted mouths or entrances and each of these recesses is adapted to receive and movably hold the rounded transverse projection or tongue 17^a of a clamping plate 17, said clamping plates being adapted to have inserted between them, the tang or shank of a file 18, such as is indicated in the drawing.

In order to insure the clamping of the members 17 against opposite sides of the file tang, I provide between the outer ends of the fingers 16 a cam body 19 which is carried on a transverse pin 20 journaled in the members 13 and which pin is provided on one end with a depending handle 21. It will be understood that said handle may be so turned as to bring the oppositely lo-

cated projecting portions of the cam member into contact with the adjoining faces of the fingers 16 and thereby cause a clamping action of the members 17 against the file tang sufficiently to rigidly hold said file in the position shown in the drawing, wherein it will be observed that said file is by movement of the support 9—9ª adapted to be projected to a greater or less degree within the casing 3.

22 represents a vertical steam conducting pipe which leads from any suitable source of steam supply and which, as shown in the drawing, is adapted to be supported at one side of the forward end of the casing 3 by means of a laterally extending frame bracket 23. Leading laterally from the steam pipe 22 to points in front of the opening 6 of the casing, are short pipe arms 24, these pipe arms being arranged respectively above and below the file holding means and are respectively connected with nozzle pipe arms 25 and 26, each of which as shown in the drawing, preferably consisting of short pipe sections united by coupling sleeves 27. These nozzle arms 25 and 26 are inclined respectively downward and upward toward their outer ends and are projected into the opening 6 of the casing. Each of the outer sections of the nozzle arms, which are indicated respectively at 25ª and 26ª, has its central passage contracted or formed with an internally tapering nozzle 28 having a comparatively small opening, which internal nozzle projects within an end enlargement of the bore of the nozzle arm section, which enlargement also receives a discharging nozzle member 29 having flaring end openings, as shown. Two corresponding sleeves 27 of the nozzle arms are connected rigidly by the parallel arms of a connecting yoke 30 and into one side of each of the nozzle arm sections 25ª and 26ª lead respectively vertical pipes 31 and 32, said pipes leading into said nozzle arm sections at the points therein in which the internal nozzles 28 are formed. The lower ends of the pipes 31 and 32 connect with an oblong box 33 in front of the lower portion of the casing 3 and with the underside of this box, connect two pipes 34 which lead downward into the abrasive material tank or receptacle 8.

In the lower forward portion of the casing 3, I provide an outlet, from which extends downwardly a short discharge pipe 35.

In utilizing my device, the file to be sharpened is held, as shown and described, rigidly between the clamping members 17, the body of the file being thus supported between the terminal nozzles 29 of the nozzle pipe arms.

It will be understood that steam under pressure from the pipe 22 entering and passing through the nozzle pipe arms and through the terminal nozzles 29 thereof, will create a suction in the pipes 31, 32 and 34, which will result in the abrasive material contained in the receptacle 8 being drawn into the nozzle pipe arms immediately in front of the contracted internal nozzle 28, said abrasive material being thus forced by the steam at high speed against the upper and lower faces of the file simultaneously, the action of the abrasive material against the teeth of the file, serving to sharpen the same rapidly and uniformly. It is essential for the proper sharpening operation, however, as will be readily understood, that the predetermined inclination of the discharging nozzles 29 must be at all times maintained, as a variation of these angles will result in the teeth of the file receiving the blast of abrasive material at an improper angle. It will be understood that any variation in the positions or inclinations of the discharging nozzles, will be prevented through the employment of the rigid connecting yoke 30. By moving the angular rod 9—9ª inward and outward between its bearing rollers, it is obvious that the entire upper and lower surfaces of the file may be subjected to the action of the blasts from the nozzles.

Owing to the employment of the adjustable connected toothed members 12ª and 13ª, it is obvious that the surfaces of the file to be acted upon, may be readily changed by first turning the finger nut 15 outward, then separating said members 12ª and 13ª, turning the latter until the file is in the desired position and again clamping said toothed parts together.

Owing to the inclination of the underside of the casing 3, it is obvious that the abrasive material discharged within the casing, will find an outlet through the pipe 35 which is in the lower portion of the casing and that from said pipe the abrasive material will be returned to the casing 8.

What I claim, is:

1. In a file sharpening machine, the combination with a framework, a steam supply pipe, nozzle carrying pipe arms leading from said supply pipe and converging toward their outer ends, and pipes leading from a supply of abrasive material to said nozzle pipe arms, of a file holder comprising pivoted fingers, the adjoining faces of said fingers having rounded transverse recesses, clamping plates having rounded projections adapted to movably engage said finger recesses, means for forcing said clamping fingers toward each other, and means for supporting and moving said clamping fingers between said nozzle pipe arms.

2. In a file sharpening machine, the combination with a framework, two rigidly connected converging nozzle pipe arms and connections with said arms for supplying the

same with steam under pressure and with abrasive material, of a file holding device adapted to engage and hold the tang of a file, said file holding device having a toothed member 13^a, and a supporting member having a traveling support in said framework, said supporting member having a toothed head 12^a adapted to engage the toothed member 13^a, and means for detachably connecting said toothed members.

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

CHARLES M. EMERSON.

Witnesses:
A. L. PHELPS,
L. CARL STOUGHTON.