(No Model.)

T. B. & W. E. HAZARD.

MACHINE FOR SHARPENING MATCHER HEAD CUTTERS, &c.

No. 490,283. Patented Jan. 24, 1893.

Fig.1

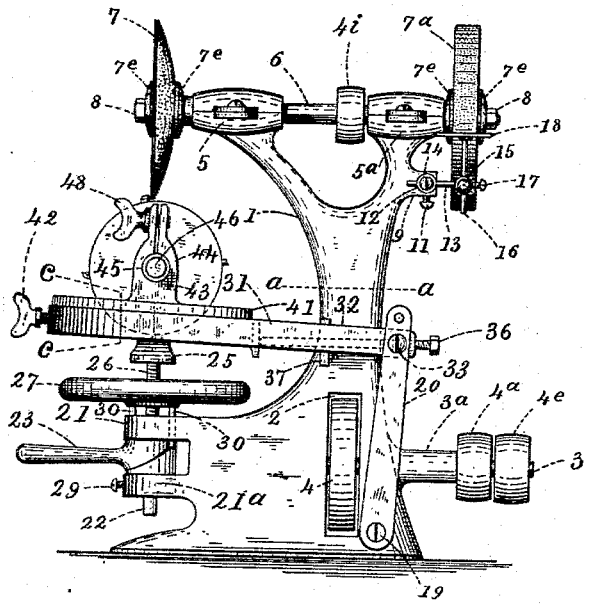

Fig.2

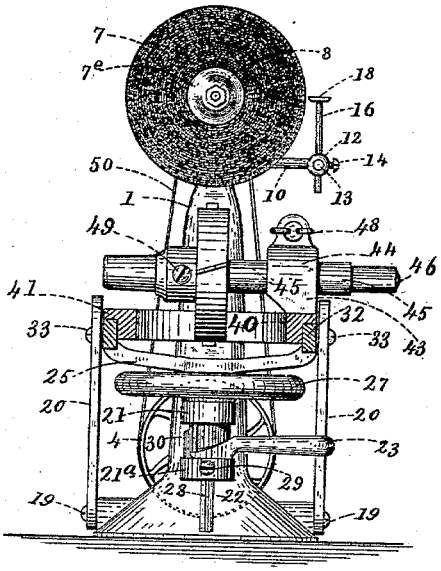

Fig.4.

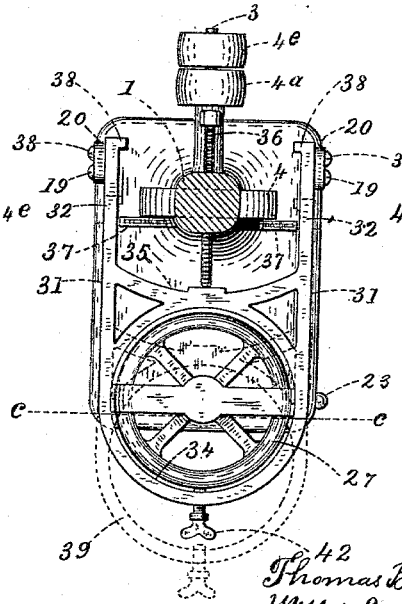

Fig.3

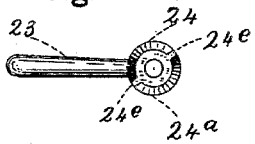

Fig.5.

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MACHINE FOR SHARPENING MATCHER-HEAD CUTTERS, &c.

SPECIFICATION forming part of Letters Patent No. 490,283, dated January 24, 1893.

Application filed July 8, 1892. Serial No. 439,336. (No model.)

To all whom it may concern:

Be it known that we, THOMAS B. HAZARD and WILLET E. HAZARD, citizens of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Machines for Sharpening Matcher-Head or other Similar Cutters, of which the following is a specification.

Our invention relates to certain improvements in machines for sharpening matcher or other head, cutters, or for other uses for which it is adapted, all of which will be fully and clearly hereinafter described and claimed, reference being had to the accompaning drawings, in which:—

Figure 1 is a side elevation of the machine complete. Fig. 2 is a front elevation of the machine showing a portion in section; a vertical cross section in or about line *c c*, Figs. 1 and 4, being shown through the pivoted movable frame and the circular frame portion upon which is mounted the cutter head carrying the cutters to be sharpened. Fig. 3 is a detached top view of the cam arm for raising or lowering the cutter head frame. Fig. 4 is a plan view, showing a horizontal section in or about line *a a*, Fig. 1, the matcher head holder, and some details below the hand wheel being omitted. Fig. 5 is a side elevation of the arbor upon which the cutter head is mounted when its cutters are to be sharpened.

Referring to the drawings, 1 represents the main frame of the machine. It is preferably made of cast iron formed in one piece having an opening 2, through it near the base within which is mounted the driving shaft 3, and main pulley, 4. The driving shaft, 3, passes through the box, 3^a, at the rear of the frame see Fig. 1 and is provided with a loose pulley 4^a and a tight pulley 4^e, for driving the machine. At the top of the frame are two boxes 5 and 5^a see Fig. 1 in which is mounted the emery or grinding wheel spindle, 6, having at the front end the grinding wheel, 7, for sharpening the matcher head cutters and at the opposite end an ordinary grinding wheel 7^a, of emery or other well known material. These wheels are secured by the usual collars, 7^e, and nuts 8, so as to be rigidly secured and still be easily removable when required. At the rear of the frame is a lug, 9, in which is fitted the end of a round bar, 10, so as to be easily adjustable lengthwise, see Fig. 2, and is rigidly secured when adjusted, by means of a set screw, 11, shown in Fig. 1. The opposite end of the bar, 10, is provided with an enlargement, 12, through which passes horizontally or substantially at right angles to it, a round bar, 13, which is also kept rigidly in place when adjusted by means of a set screw, 14. The outer or opposite end of the bar, 13, is also provided with an enlargement 15, through which is passed the lower end of the vertical bar, 16, having a set screw, 17, see Fig. 1 to tighten it in place when adjusted. At the top of the vertical bar 16, is a rest, 18, which as will be seen can be adjusted to any position desired.

To each side of the base of the frame is pivoted by pins, 19, a substantially or nearly vertical side bar, 20, so that their top ends are free to swing back and forth.

At the front of the machine near the base are two forwardly projecting lugs 21 and 21^a, between which is pivoted by the vertical bar, 22, a cam arm, 23. This cam arm is provided with two inclined cams, 24 and 24^a, see Fig. 3, each having a stop 24^e at the top, the cam 24 inclining in one direction and the cam 24^a inclining in the opposite direction. The upper portion of the vertical bar, 22, is provided with a cross bar, 25, (shown in Figs. 1 and 2) rigidly secured to it at the top, and it is also provided with a screw thread 26, (see Fig. 1) above the cam arm, 23, so that the cam arm has a smooth portion to turn on. On the screw threaded portion is mounted a hand wheel, 27, so that when turned it can be made to lift or lower the cross bar, 25.

To prevent the vertical bar, 22, from turning either way it is provided with a slot or groove 28, (shown in Fig. 2) and a screw, 29, the end of which is reduced so as to fit in said slot and prevent it from turning and at the same time allow it to move freely up or down.

The hand wheel, 27, rests upon the two downwardly projecting pins, 30, each of which passes down through the lug, 21, so that their lower ends rest, one on the cam 24 and the other on the cam 24^a. At the top of the cross piece, 25, rests a substantially horizontal frame, 31, having its rear end side pieces, 32, pivoted by pins, 33, to the pivoted arms, 20.

From the above construction it will be seen that the pivoted frame, 31, has a free sliding movement forward and back over the ends of the cross bar, 25, which supports its front portion. The forward top portion of this sliding frame is provided with a circular opening 34, see Fig. 4, and at the rear of the circular opening is a cross bar, 35, also shown in Fig. 4. Through the frame 1 is fitted a long adjusting screw, 36, for adjusting the distance the frame, 31, shall move back-ward. It is limited in its forward movement by laterally projecting pieces, 37, shown in Figs. 1 and 4, which project out from the vertical portion of the frame 1 to receive the hook portions, 38, (shown in Fig. 4) of the side frame pieces 32, and thus limiting the movement, see Fig. 4. The forward movement of this frame is indicated by the dotted lines, 39, in said Fig. 4. Within the circular opening 34, is fitted a ring, 40, shown in Fig. 2. It is provided with a surrounding flange, 41, shown in Figs. 1 and 2, so that when placed in the circular opening, 34, the flange will rest on the top of the circular frame portion within which it is supported and may be turned around in either direction. When turned to any desired point it is held rigidly to its place by a set screw or thumb screw 42. To this ring portion is either attached in any well known way, or cast in one piece with it, a supporting standard, 43, having a box, 44, in which is mounted a removable arbor, 45. This arbor is shown separate in Fig. 5, and is provided with two end portions 46 and 47, adapted to fit different cutter heads.

The arbor is securely and rigidly held in place when adjusted as may be desired, in order to be used as a vise for setting the cutters up to a templet or pattern, by means of a clamping portion and a nut or thumb screw, 48, shown in Figs. 1 and 2.

When using the machine the cutter head is put onto the arbor, 45, and rigidly secured thereon by means of the set screw, 49, (belonging to the cutter head.) The frame supporting the cutter head is then elevated or lowered so as to bring the upper edge of the cutter nearly to the wheel, by means of the hand wheel 27, now, when it is desired to sharpen a cutter all that is necessary to do is to turn the cam arm 23 so as to lift the cutter head the proper height to operate on the cutters, the cutter head is pushed or turned so that the face of the cutter lays against the face of the wheel to be ground.

It will be noticed that the cutter head can be turned around to any angle and then fastened by the thumb screw, 42, and that it can be moved laterally by moving the cutter head and the arbor, 45, lengthwise back or forth as may be desired while grinding the cutters. It will also be seen that the cutter head may be adjusted to any required position and then all the parts tightened up, so that the cutter head may be operated upon for any purpose as if it was rigidly held in a vise. The machine is operated by means of a belt, 50, (shown in Fig. 2) connecting the pulleys 4 and 4^1, shown in Fig. 1, and a belt connected with the driving pulley connected with a steam engine or other well known source of power.

The cutter head frame may be raised or lowered by the hand wheel, 27, alone while operating the machine but its operation would not be as rapid as it would be when the cam arm is used. The wheel 27, being used only for the purpose of raising the cutter head frame high enough to allow the cam arm to be used as hereinbefore mentioned.

We claim as our invention.

1. In a machine for sharpening matcher head or other similar cutters, the combination with the frame, its grinding wheel mounted on a spindle set in suitable boxes thereon, and carrying the pulleys and means for driving it, of a substantially horizontal cutter-head frame having its rear ends pivoted to pivoted rock arms, a cross bar for supporting its front end provided with a vertical screw shaft which passes down through lugs projecting out from the front of the machine, a hand wheel adapted to operate on said screw shaft for adjusting the cross bar and cutter head frame up or down and a cam arm having its cam end interposed between the two lugs so that the screw shaft passes down through it, and pins passing down through the upper lug so that the hand wheel rests upon the top of the pins and their lower ends rest upon the cam, whereby the hand wheel may be used for one adjustment and the cam for the second or quicker adjustment, substantially as described.

2. In a machine for sharpening matcher head or other similar cutters, the combination with the horizontally movable cutter head frame and the frame of the machine carrying the grinding and operating mechanism substantially as above described, of a cutter-head holding frame mounted in a circular opening in the cutter head frame so as to be capable of being turned therein, a means for fastening it at any point to which it may be turned, a clamping holder for receiving the arbor upon which the matcher head is secured for sharpening so that it may have a lateral adjustment therein and a means for clamping it rigidly in position when adjusted substantially as described.

3. In a machine for sharpening matcher head or other similar cutters, the combination with the frame, of rock arms having their lower ends pivoted thereto, a horizontal cutter head frame having its rear end pivoted to said rock arms, a means substantially as above described for supporting and adjusting its front end, and a cutter head holding frame mounted in a circular opening at the front of the horizontal cutter head frame, so that it can turn therein, a means for holding it rigidly when turned to the point desired, and a

clamping support for the cutter head arbor provided with a tightening device substantially as above described.

4. In a machine for sharpening matcher head or other similar cutters, the combination with a substantially horizontally movable cutter head frame and its pivoted and supporting connections, of an adjusting screw, 36, for adjusting and limiting its backward movement, substantially as described.

5. In a machine for sharpening matcher head or other similar cutters, the combination with a horizontally movable cutter head frame and its pivoted and supporting connections as above described, of laterally projecting bars, 37, and hook shaped projections at the rear of the horizontally movable cutter head frame for limiting its forward movement substantially as described.

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