2 Sheets-Sheet 2.

Hazard & Jenner,

Dressing Millstones.

No. 8,364. Patented Sep. 16, 1851.

Fig. 2.

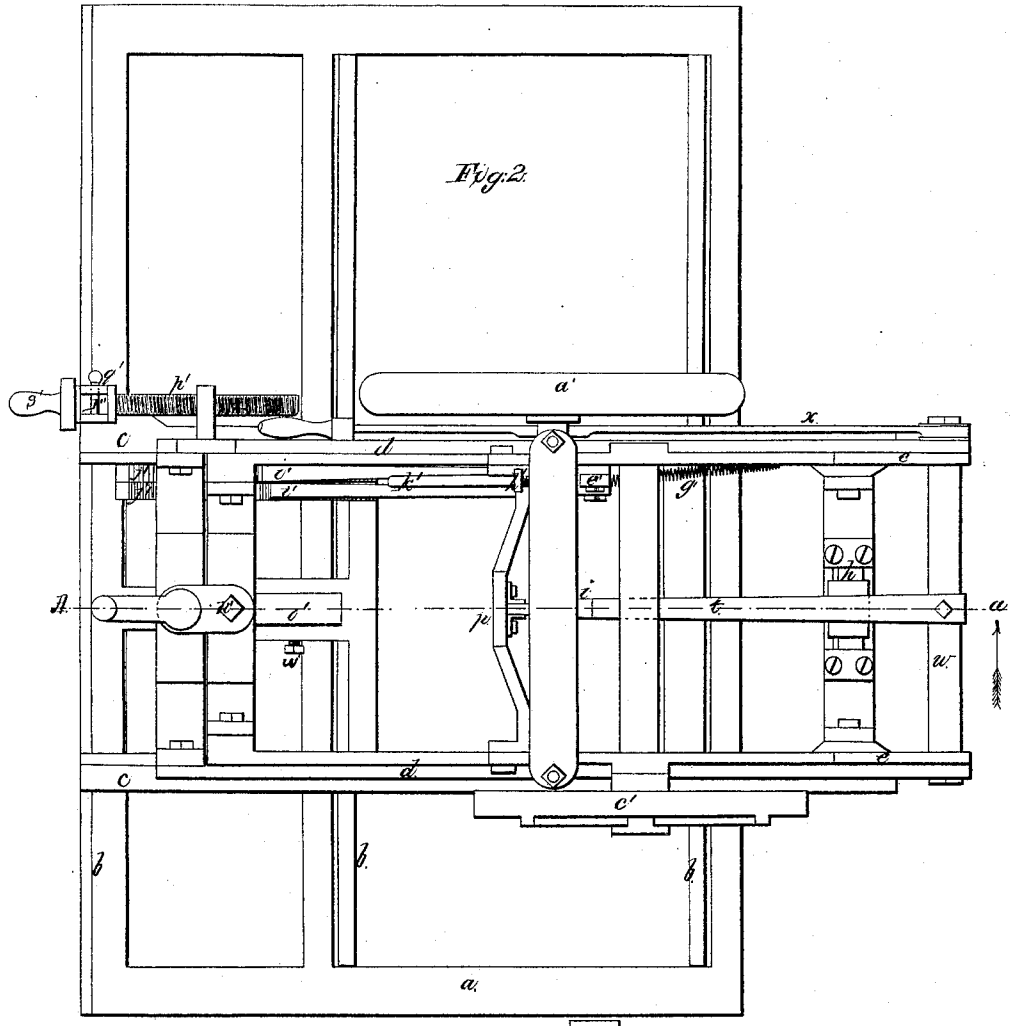
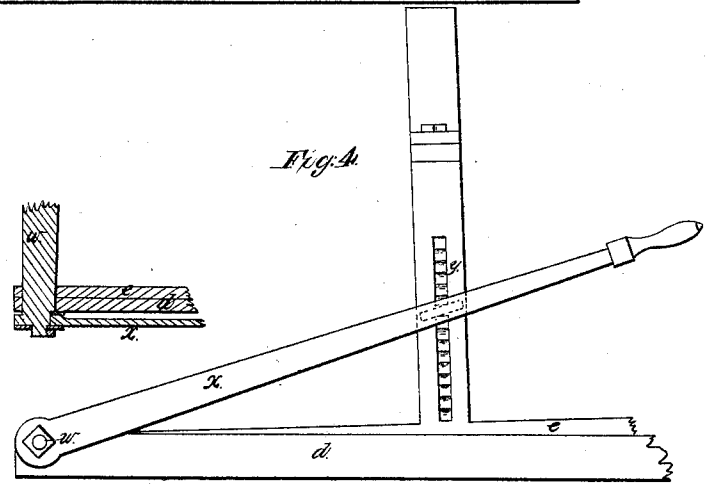


Fig. 4.



2 Sheets—Sheet 1.

Hazard & Jenner,

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No. 8,364. Patented Sep. 16, 1851.

Fig: 1

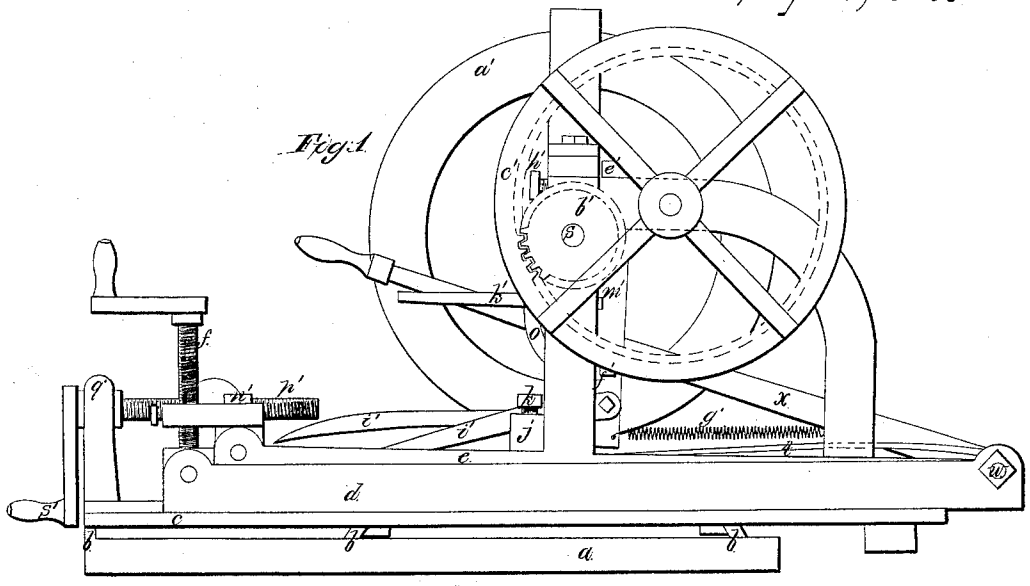
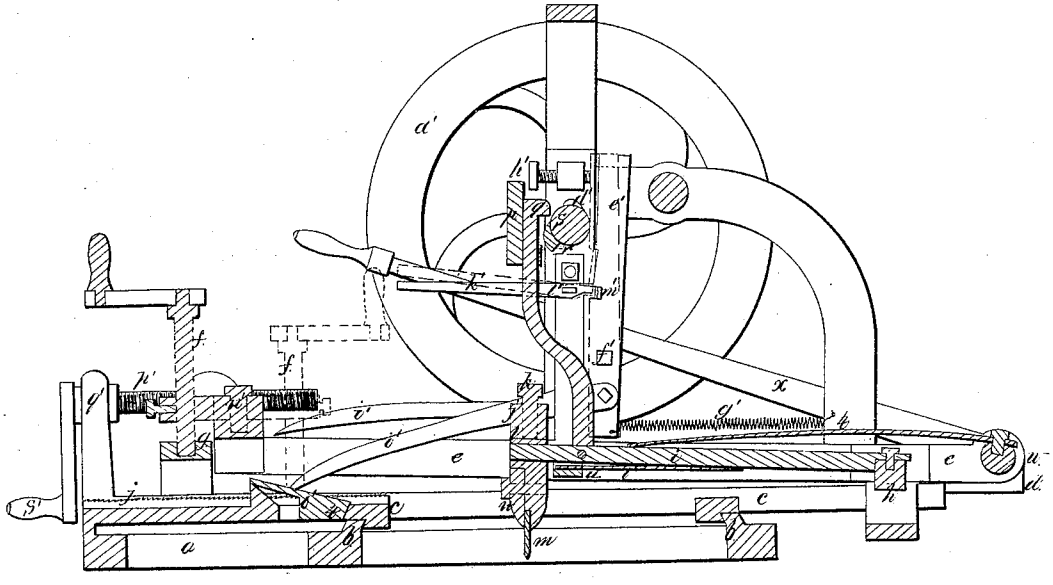


Fig: 3



UNITED STATES PATENT OFFICE.

E. W. HAZARD, OF BINGHAMTON, AND CHAS. H. JENNER, OF ROCHESTER, NEW YORK.

MACHINE FOR DRESSING MILLSTONES.

Specification of Letters Patent No. 8,364, dated September 16, 1851.

To all whom it may concern:

Be it known that we, ERASTUS W. HAZARD, of Binghamton, in the county of Broome and State of New York, and CHARLES H. JENNER, of Rochester, New York, have invented certain new and useful Improvements in Machines for Facing, Furrowing, and Cracking or Checking the Surfaces of Millstones, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a side elevation; Fig. 2, a plan; Fig. 3, a vertical section taken at the line A, *a*, of Fig. 2, and Fig. 4 sections of the lever for regulating the force of the blow of the cutter.

The same letters indicate like parts in all the figures.

The mechanism is mounted on an open bed which is to be placed on the face of the stone to be dressed. This bed is formed with ways on which slides the first carriage, which first carriage has ways on which a second carriage slides at right angles to the first, and to this second carriage is hinged one end of a frame which carries the chisel and the mechanism for operating it and giving the feed motion for determining the cuts.

Our invention consists in combining with the lever which operates the feed hand or hands and which receives motion from a rotating cam or tappet, a weighted lever or the equivalent thereof, which falls by its weight the moment the lever is carried back to give one feed motion, so that the end thereof shall act as a stop to arrest the feed motion that the cutter may continue to strike in the same place until the attendant lifts up the lever to permit the feed motion to continue.

In the accompanying drawings *a* represents an open bed frame which is to be placed on the millstone to be dressed and the said frame is provided with three parallel ways *b*, *b*, *b*, on which slides what we denominate the first carriage *c*, the two side pieces of which constitute ways on which slides the second carriage *d* so that the two carriages slide on their appropriate ways at right angles to each other. To one end of the second carriage is jointed the rear end of a frame *e* called the cutter frame, the other end of which is provided with an adjusting screw *f*, (turned by a crank handle) the end of which rests at *g* on the second carriage, so that by the turning of the said screw, the cutter frame can be elevated or depressed at pleasure. The rear end of the hinged frame *e* carries a rock shaft *h*, from which projects an arm or helve *i*, the forward end of which is rounded to fit a corresponding socket in the cutter stock *j*. The said stock is free to turn on the arm or helve to adjust the edge of the cutter to the face of the stone, and then it is there secured by a temper screw *k*, which however bears on an interposed plate (*l*) fitted to the arm or helve so as to prevent the temper screw from injuring the rounded surface. The cutter *m* is fitted to the stock, and secured by a screw jaw *n* in the usual way.

To the arm or helve, and near to the cutter stock is jointed a rod *o* the upper end of which slides in, and is guided by, a bar *p*, and the upper end of said rod is formed with a hook or lip *q*, which is acted upon at every revolution by a tappet *r* on the main shaft *s* to lift the cutter, which after the tappet has passed is forced down to make the cut by a spring *t* that bears on the helve, the downward motion being arrested by a stop or bridle *u* which is provided with a spring *v* that extends under the helve to ease off the blow. The spring *t* is attached to a rock shaft *w* to one end of which is secured a hand lever *x* by means of which the tension of the spring can be increased or reduced to graduate the force of the blow. The said hand lever extends so far in front as to be within reach of the operative, who can fix it in any position desired by hooking it into any of a series of teeth *y*, on one of the standards of the hinged frame.

The main shaft *s* that carries the tappet *r* has its bearings in the standards of the hinged frame. On one end of the said shaft there is a fly wheel *a'* and on the other a pinion *b'* which is driven by cogs on the inner periphery of a wheel *c'*. The main shaft carries a cam *d'* which acts on the upper end of a lever *e'* that has its fulcrum at *f'*, the lower arm thereof being attached to a spring *g'*, the tension of which tends constantly to force the upper arm toward the cam. The range of motion of the said lever toward the shaft is regulated by a set screw *h'*, so that the amount of vibration which shall be imparted to it by the cam can always be determined by the set screw. Two feed hands *i'*, *i'*, are jointed to the lower arm of the

lever and adapted to engage two sets of ratchet teeth j', j', one finer than the other and both attached to the lower carriage, and one set corresponding with each of the feed hands, so that if it be desired to feed or move the cutter fast, the hand corresponding with the coarse teeth is set in action and the other lifted out, and vice versa. In either case, however, the set screw must be set to regulate the vibrations of the lever.

As it is frequently necessary to repeat the blows of the cutter in the same place, (that is, without shifting the position of the cutter) there is combined with the lever that operates the feed hands, a stop lever k' that hangs on a fulcrum at l' so that the weight of the forward end shall predominate. The lever e' is notched or cut out at m', so that when the stop lever k' is lifted up, the spring g' may force it forward to draw back the feed hand, and thus put the parts in a position to give the feed when the cam passes around; but the moment the lever e' is forced back by the cam, the stop lever, by its weight, assumes the position represented in the drawings to stop the further progress of the feed motion until the operator finds that the desired depth of cut has been made, and then he simply lifts the stop lever to restart the feed motion.

As the first carriage with the second carriage on it slides on the bed frame in one direction, and the second carriage with the hinged frame carrying the cutter and its appendages, slides thereon at right angles it will be apparent that the cutter can be carried to any desired part of the face of the stone, and that when so set, a series of cuts can be made parallel to each other and as near together or as far apart as may be desired. And as the stop or bridle determines the downward motion of the cutter, and this together with the cutter, and the mechanism which operates it is attached to and makes part of the hinge frame which can be elevated or depressed, it follows that the machine can be set to make any desired number of cuts, all of the same depth. And as the machine will continue to repeat the same cut until the stop lever is lifted to set in action the feed motion whatever may be the varying texture of the stone, the cuts will all be made of the required depth for the attendant will not start the feed motion until he finds that the arm or helve of the cutter comes down to the bridle or stop.

So far we have described the machine as applied to the purpose of checking or cracking the face of lands, that is, the surface of the stone between the furrows and main furrows; but as the cross sections of the furrows and main furrows represent planes inclining down from the face of the stone, at each successive cut, the range of motion of the cutter should descend. For this purpose the adjusting screw f, before mentioned is tapped in a block secured to the hinge frame by a screw bolt n' and when the machine is to be set for cutting the furrows and main furrows, the block and screw are shifted to the position represented by red lines in Fig. 3, so that the end of the said screw shall rest on an inclined plane o' attached to, and making part of the first carriage, so that every feed motion the cutter will be let down a little lower and thus make the series of cuts on an inclined plane.

As it frequently occurs that different degrees of inclination are required in the furrows of different millstones, the inclined plane o' on which the point of the screw f, rests, as represented in red lines is provided with a stud or shank projection t' which sets in a slot in the first carriage c and against said stud or shank projection is placed a set screw u' to hold it firmly in any position desired. This enables the operator to adjust said inclined plane to any required pitch of inclination.

To facilitate the sliding of the second carriage, with all its appendages to any point desired, a hand screw p' may be used. This screw is tapped into a projection of the second carriage, and the journal on the stem of the said screw is let into a slot in a standard q' of the first carriage and there held down by a securing pin r'. The said screw is provided with a crank handle s' by means of which the operative can bring the cutter to any line desired for starting, and then feed for the facing and furrowing, as these operations require a very gradual and fine feed, the feed hands being merely employed to fed the cutter for checking or cracking the surface of the lands.

We have thus fully described the manner of constructing the machine as we have essayed it with success, but we do not wish to confine ourselves to this precise mode of construction, as it may be changed without changing the principle or mode of operation which we have invented.

We claim—

In combination with the feed lever (e') operated by the cam (d') to work the feed bands the employment of a weighted stop lever, or the equivalent thereof acting in the notch (m') of the lever (e'), substantially as described, which said stop shall be self acting to stop the feed motion that the cuts may continue in the same place, until the feed motion is restarted, and thus insure the cutting of the stone to the required depth, whatever may be the texture thereof, as described.

ERASTUS W. HAZARD.
CHARLES H. JENNER.

Witnesses:
WM. BISHOP,
ROBT. B. CAMPBELL.