

(No Model.)

C. M. FRENCH.

MACHINE FOR GRINDING CIRCULAR KNIVES AND PLOW COLTERS.

No. 260,560.

Patented July 4, 1882.

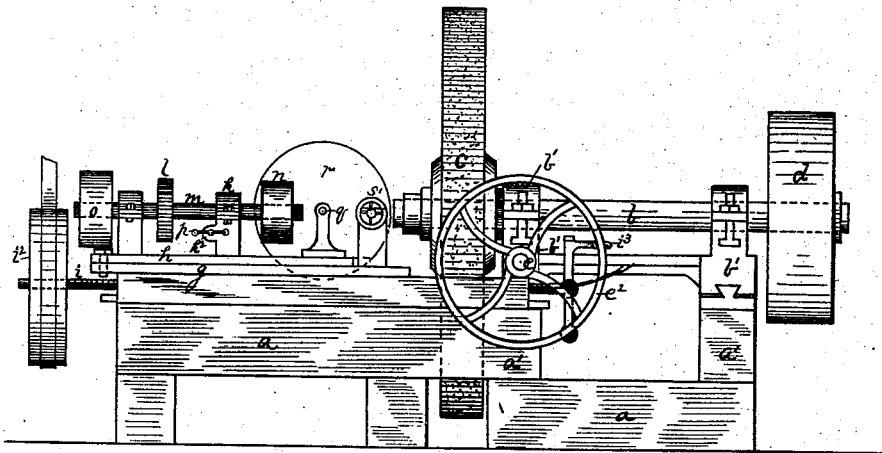


Fig. 1.

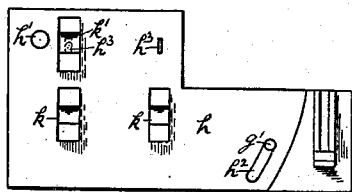


Fig. 3.

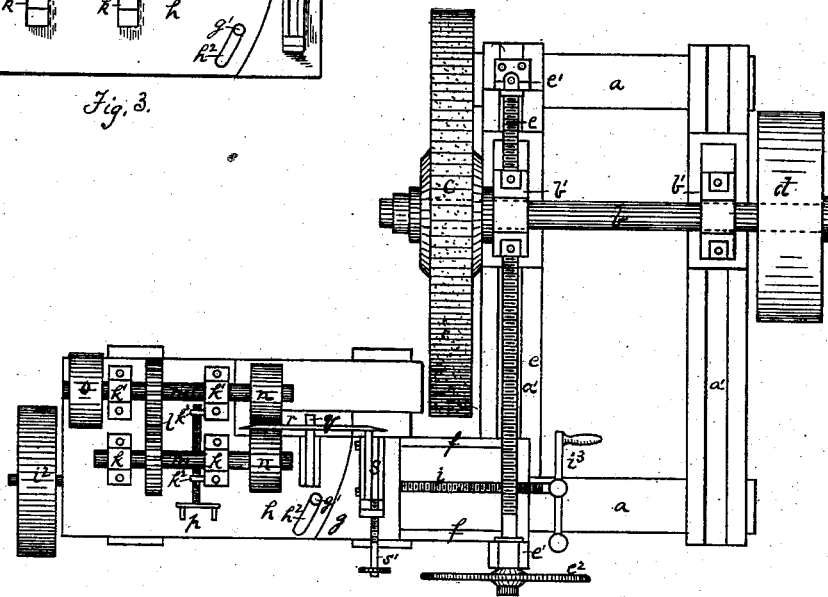


Fig. 2.

Witnesses
R. W. French
Jno. K. Smith.

Inventor

Charles M. French
by his attys
Bakewell & Kerr

UNITED STATES PATENT OFFICE.

CHARLES M. FRENCH, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO
BROWN & CO., OF SAME PLACE.

MACHINE FOR GRINDING CIRCULAR KNIVES AND PLOW-COLTERS.

SPECIFICATION forming part of Letters Patent No. 260,560, dated July 4, 1882.

Application filed March 28, 1882. (No model.)

To all whom it may concern:

Be it known that I, CHARLES M. FRENCH, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Machines for Grinding Circular Knives and Plow-Colters; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, in
10 which—

Figure 1 is a side elevation of my improved machine. Fig. 2 is a plan view. Fig. 3 is a detached view of one of the parts.

Like letters of reference indicate like parts
15 in each.

Upon a suitable frame, *a*, are longitudinal timbers *a'*, having tongues or dovetailed projections at the top, upon which are placed sliding boxes *b'*, which sustain a shaft, *b*. At
20 one end of the shaft *b* is the grindstone *c*, and at the other end is a pulley, *d*, by which power is applied to the shaft to turn the stone. The stone and its shaft are moved upon the ways *a'* by means of the screw *e*, journaled in bearings
25 *e'* and extending through the box *b'* below the shaft *b*. This screw *e* is operated by means of a wheel, *e''*.

In front of the grindstone *c* is a pair of ways, *f*, upon which is a sliding table, *g*. Below the
30 table *g* is a screw, *i*, which is journaled in bearings in the end pieces of the ways *f*. The screw *i* extends through a nut or nuts placed on the under side of the table *g* and properly threaded, so that when the screw is turned the
35 table will be moved upon the ways *f*. At one end of the screw *i* is a pulley, *i''*, by which power is applied to turn the screw, and thereby to move the table *g*. This pulley is ordinarily used only while the grindstone is acting upon
40 the colter. At the opposite end of the screw *i* is a crank, *i''*, which is used to turn the screw *i* when bringing the colter in the position to be operated on by the grindstone or otherwise adjusting it. Pivoted to the table *g*, as at *h'*,
45 is the plate *h*, which carries the colter when being ground. In the plate *h* is a curved slot, *h''*, which may be described as the arc of a circle struck from the point *h'*. A pin, *g'*, on the table *g* extends up through the slot *h''* and limits
50 the movement of the pivoted plate *h*.

Mounted in bearings *k* on the plate *h* are two parallel shafts, *M M'*, upon the end of each of which is a smooth-faced friction pulley or roller, *n*. These shafts are geared together at *l*
by suitable pinions, and are driven by means
55 of a pulley, *o*, placed upon either one of them.

The bearings *k' k'* have stems which extend down through the plate *h* into the slots *h''*, and the front bearing, *k'*, and its contiguous bearing, *k*, are each supplied with screw-lugs *k''*,
60 through which extends an adjusting-screw, *p*. The bearings *k* being stationary, the bearings *k'* will be caused to advance or recede therefrom whenever the screw *p* is turned, such movement being permitted by the slots *h''* in
65 the plate *h*. The purpose of this construction is to enable the rolls *n n* to be thrown apart to permit the insertion or removal of the colter *r*. The table *g* and plate *h* are cut away at one
70 side, and upon a block mounted on the plate *h* is a pin, *q*, upon which the colter is placed and centered for grinding. The outer roll *n* is placed upon the end of shaft *m'*, projecting
75 over the edge of the plate *h*, and the other roll *n* also projects over the edge of the plate *h*, and the rolls are so arranged that when the colter *r* is placed upon the pin *q* it shall extend between the faces of the two rolls *n n*, so that
80 when the rolls are brought near together they shall bite upon the opposite sides of the colter and cause its rotation upon the pin *q*.

On the upper face of the table *g* is an adjustable support, *s*, operated by a screw, *s'*, which, when screwed out, presses the pivoted
85 plate *h* outward and causes it to assume a position angling to the edge of the table *g*. The support *s* operates against the under side of the colter.

The operation of my improvement is as follows: The table *g*, being in the position shown
90 in Fig. 2, with the colter in place, is drawn to the grindstone *c* by means of the crank *i''* until the pin comes nearly into contact with the edge of the stone *c*. Then the shafts *m m'* are set in motion. This causes the rolls *n n* to
95 turn the colter *r* upon *q* as an axis. The stone *c* is then drawn forward into grinding contact with the outer face of the colter *r* by means of the screw *e*. Then the pulley *i''* is set in motion. This causes the screw *i*, acting on
100

the nut on the under side of the table *g* to slowly and gradually retract the table, and with it the colter *r* across the face of the stone *c*, the stone acting first near the center of the colter *r*, and gradually outward to the edge as the table *g* is retracted. When it is desired to form the bevel *r'* on the edge of the colter for the purpose of sharpening it, the plate *h* is turned on its pivot *h'* until the desired angle is obtained, and the screw *s'* is turned in, forcing the support *s* out against the inner side of the colter *r* to sustain it against the action of the grindstone and prevent its springing. Then the table *g* is advanced in front of the stone *c*, the latter being screwed back sufficiently for that purpose, and the parts are brought together into grinding contact. The colter *r* revolves while being acted upon by the stone *c*. The table *g* is then retracted, the colter reversed on the pin *q*, and the operation of grinding and beveling the other side is performed in the same manner as that just described.

The belts for the pulleys *d* and *o* are arranged to permit the movement of these pulleys in the manner described.

If preferred, the plate *h* may be dispensed with, and the friction-rollers *n*, with their shafts and bearings, mounted on the table *g*. In this case the support *s* is made use of to give the proper angle to the colter *r* and present it to the stone for beveling. The pin *q* is made smaller than the central hole of the colter, so as to permit the colter to be placed in an angling position thereon. It is, however, necessary to change the form of the friction-rollers *n* when the machine is used in this way. I do this by making them with narrow convex faces, so that when the colter *r* is forced into an angling position it will not be bound and prevented from assuming such a position by the faces of the friction-rollers. It will be plain, however, that in such a construction the colter will stand in a tangential line to the convex faces of the friction-rollers, and there will be only a very small point of contact between the two. The objection to this construction is that the power of the friction-rollers to rotate the colter will be much less than in the construction shown in the drawings, where, the axes of the shafts *m m'* being always parallel with the colter *r*, the faces of the rolls *n n* can be made wide, and so obtain a very powerful bite upon the colter. Considerable power is required to rotate the colter against the action

of the stone *c*, and this is better obtained in the construction shown in the drawings, where the faces of the friction-rolls *n* are from three to four inches wide, while the convex form mentioned has only a very narrow bearing on the colter *r*.

Instead of the screw *p*, other well-known devices for moving the shaft *m'* in its sliding bearings may be used.

The advantages of my improvement consist mainly in the ease and quickness of the adjustment of the colter *r*, the ability to grind a bevel of any degree of inclination upon its edge, simplicity of construction, great rapidity, and economy of operation.

If desired, the plate *h* may be secured in its adjusted position by means of a set-screw or similar device.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, in a machine for grinding and sharpening colters, of a sliding table for moving the colter across the face of the stone, a pivoted plate on said table, carrying the colter and power-driven friction-wheels for revolving the colter, and a device for supporting the colter against the stone, substantially as and for the purposes described.

2. The combination, in a machine for grinding and sharpening colters, of a sliding table, a plate pivoted thereon, power-driven friction-rolls for rotating the colter mounted on the pivoted plate, and an adjustable support for holding the colter against the action of the stone, substantially as and for the purposes described.

3. In a machine for grinding and sharpening colters, a pivoted plate mounted on the sliding table and carrying the colter and power-driven friction-wheels for rotating the same, substantially as and for the purposes described.

4. The combination, in a machine for grinding and sharpening colters, of a grindstone, a colter-support adjustable to, from, and across the face of the stone, power-driven friction-rolls for rotating the colter, and adjusting-screws whereby the friction-rolls may be caused to bite or bind on the colter, substantially as and for the purpose specified.

In testimony whereof I have hereunto set my hand this 21st day of March, A. D. 1882.

CHARLES M. FRENCH.

Witnesses:

JNO. K. SMITH,
JOHN S. KENNEDY.