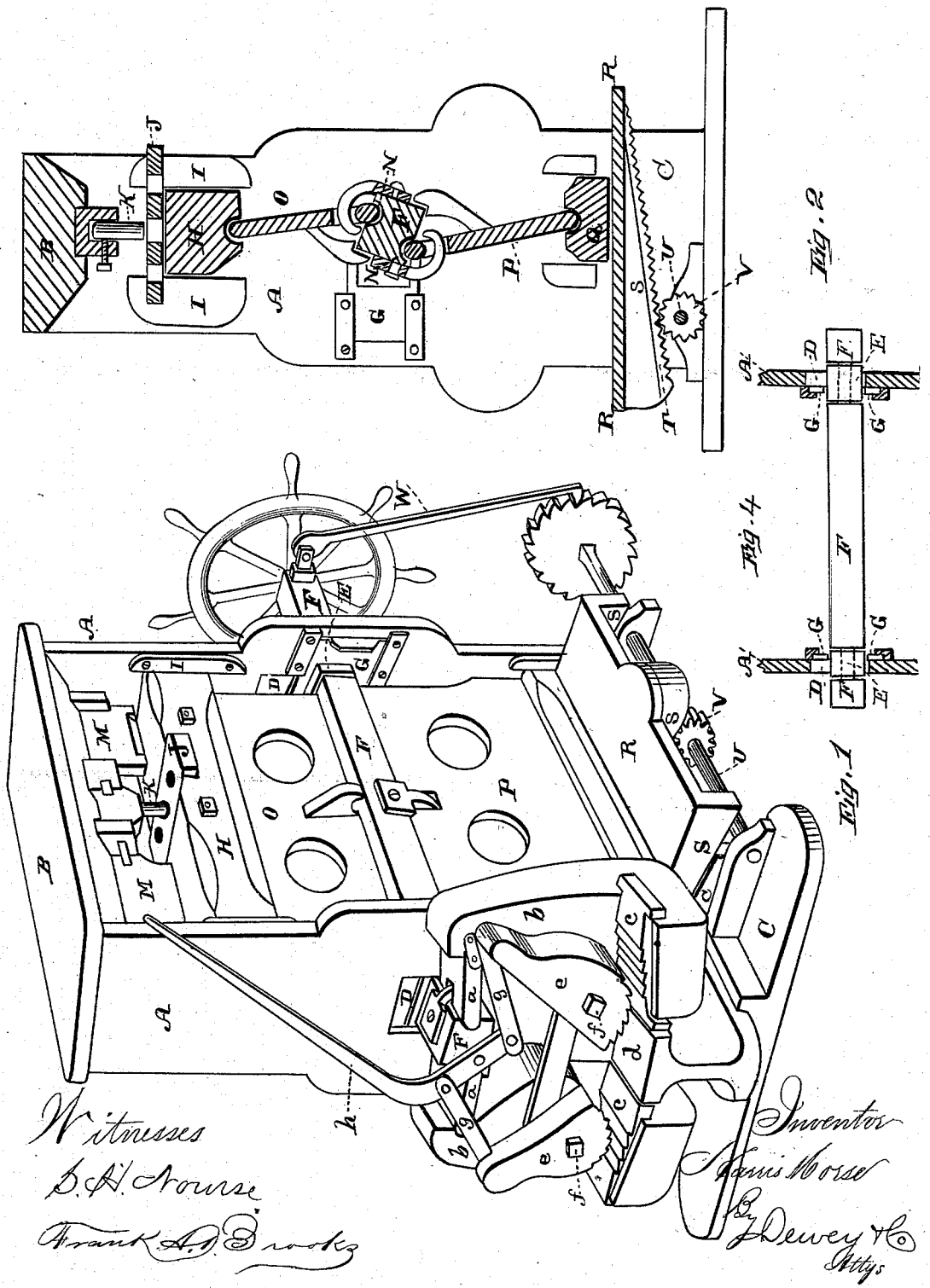
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H. MORSE.

COMBINED CUTTING, PUNCHING, AND TIRE UPSETTING MACHINE.

No. 274,216. Patented Mar. 20, 1883.



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Fig. 3

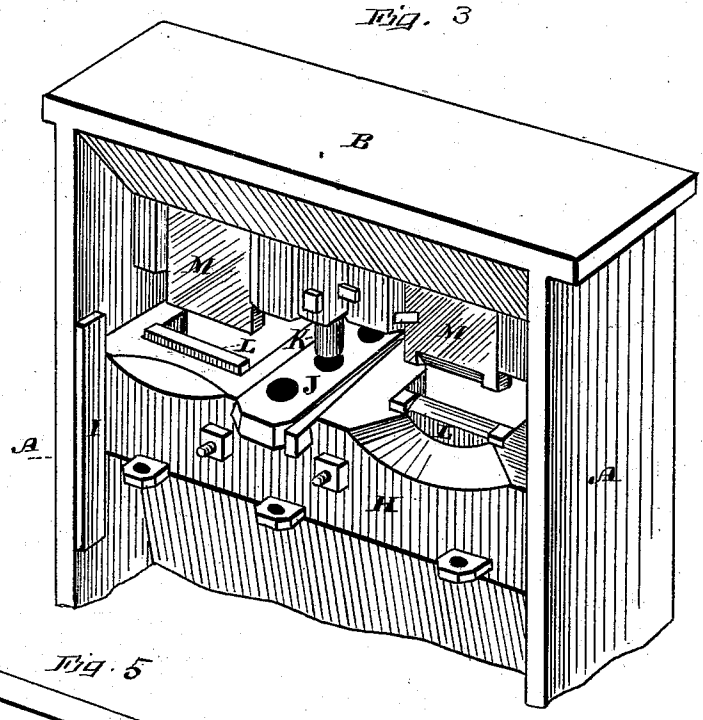


Fig. 5

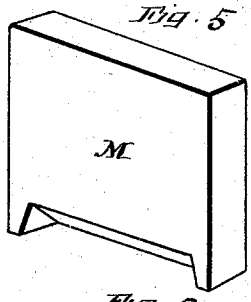


Fig. 6

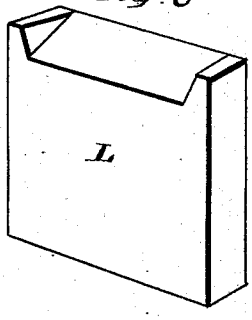
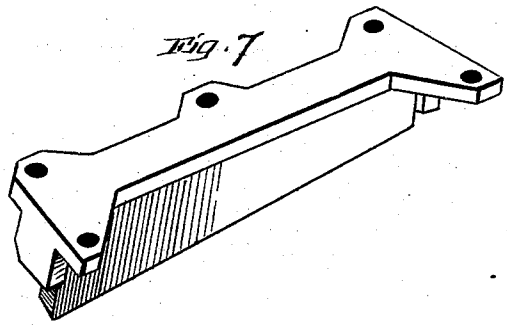


Fig. 7



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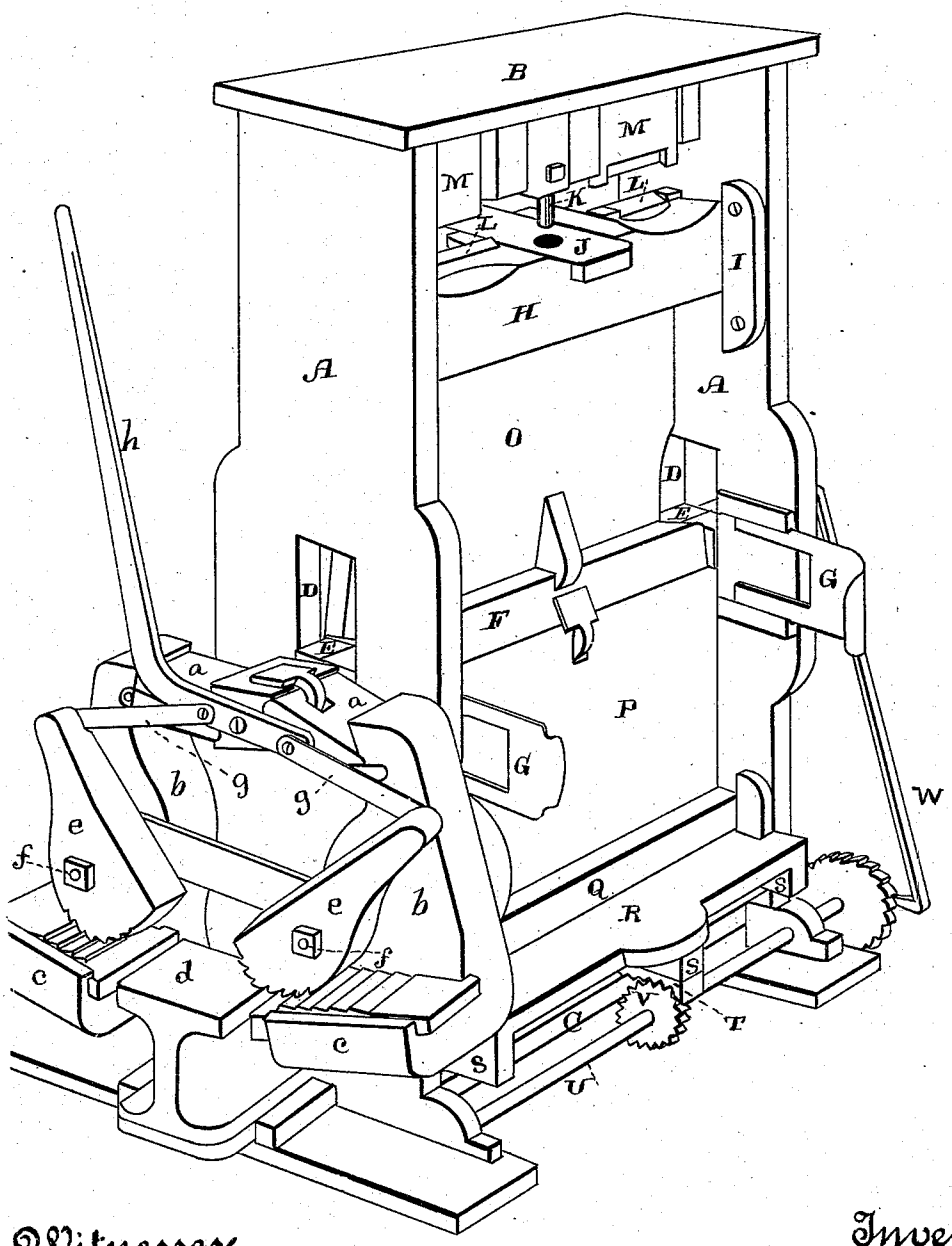
(No Model.) 3 Sheets—Sheet 3.

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Fig. 8.



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UNITED STATES PATENT OFFICE.

HARRIS MORSE, OF TUTTLETOWN, CALIFORNIA.

COMBINED CUTTING, PUNCHING, AND TIRE-UPSETTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 274,216, dated March 20, 1883.

Application filed January 18, 1882. (No model.)

To all whom it may concern:

Be it known that I, HARRIS MORSE, of Tuttletown, county of Tuolumne, State of California, have invented a Combination Cutting, Punching, and Upsetting Apparatus; and I hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to a novel apparatus for use in blacksmiths' and other iron-working shops; and it consists in a combination, within a single frame, of a tire-upsetting device, a cutting or shearing and a punching device, and a drill-sharpening device. The whole of these devices are actuated by an oscillating or rocking shaft forming a double lever, and having movable boxes, by which it may be elevated or depressed. In combination with this movable shaft I employ a wedge-shaped sliding base, with rack and pinion for moving the same, so that the fulcrum may be raised or lowered and thick plates cut or punched by successive movements.

Referring to the accompanying drawings, Figure 1 is a perspective view of my apparatus. Fig. 2 is a vertical sectional view through the machine. Fig. 3 is an enlarged view of the cutting, punching, and sharpening devices. Figs. 4, 5, 6, and 7 are details; and Fig. 8 is another and enlarged perspective view, showing some of the parts to better advantage.

A A are the sides, B the top, and C the bottom plate, of the frame of my machine, made sufficiently strong to resist any strain which may be brought upon them. The sides are slotted vertically, as shown at D, and the journal-boxes E (in which the shaft F is journaled) are fitted into these slots, being held in position and steadied by the sliding plates G, which are slotted to clasp the boxes, and are fitted to move in horizontal guides upon the vertical side posts, as shown. When these slides are withdrawn the boxes will be free to move vertically in the slots, so that the shaft F may be also moved up or down. Near the top a strong beam, H, extends transversely between the sides A A, and its ends fit between guides I, so that it may be moved up and down. Upon the top of this beam are formed seats to hold the cutting-jaws or punching-plates, and also a drill-sharpener consisting of two beveled opposing jaws, as shown. In the present case I have shown the punching-die J fitted into a dovetailed slot on the top of the beam, where it may be adjusted and locked, so as to move up and down beneath the punch K, which is secured to the upper cross-bar of the frame. The lower cutting-jaws, L, of the shears are also fixed to the movable beam, and the upper jaws, M, are fixed to the top bar of the frame. The jaws may either be fixed parallel or transversely to the beam; or each jaw may be secured to a bed, which is so fixed that it may be turned to any angle with the beam, and the other similarly turned upon the top bar of the frame.

The shaft F is made square, and has grooves N formed in two opposite sides, near the edges, as shown. A plate, O, is made of a width equal to the distance between the uprights A, and its lower edge is rounded to fit the groove N in the upper side of the shaft F. The upper edge fits a slot made in the lower side of the beam H, so that when the shaft F is turned in one direction it forces the plate and beam upward, so as to actuate the cutting-jaws and the punch-die. In order to relieve the shaft F and its journals from the strain which severe pressure would bring upon it, another plate, P, has its upper edge fitted into the opposite slot N in the lower side of the shaft F, while its lower edge fits a slot in the transverse beam Q, near the bottom of the frame. It will be seen that when the shaft is rotated the pressure upon the upper movable beam is resisted through the plates O and P from the beam Q. This beam is mounted upon a table, R, which has beveled bars S running transversely beneath it. These bars rest upon the broad base-plate C of the frame, which has also an inclined upper surface, as shown, so that as the table R is moved to and fro across it the table will be raised or lowered. The central bar S of the table has a rack, T, formed within it. A shaft, U, extends across the front of the main frame, and carries a pinion, V, which engages with the teeth of the rack. When this shaft and pinion are revolved, the table will be moved across the base C to one side or the other, and will be correspondingly elevated or depressed. When this is done the sliding plates G, which hold and steady the boxes E, are withdrawn, so that the boxes may be moved up or down in the slots in the sides of the frame. This is done when it is desired to cut or punch through

a thick plate of iron, and to rotate the shaft F but a short distance, so as to give the greatest power. In such a case the shaft and plates O P and the beam H, upon which the cutting-jaws and punch-dies are mounted, are lowered by the depression of the table R until the plate to be operated upon can be introduced between the jaws of the cutter or plates of the punch. A movement of the shaft F is then made by its lever, gear-wheel, pulley, or other means for applying power, suitably attached to shaft F, as seen in Fig. 1, and a cut or hole made to a corresponding depth. The shaft is then rotated backward and the jaws withdrawn, after which the table R is moved forward up the incline of the base C by a partial rotation of the pinion V, and this brings the cutting or punching jaws up against the bottom of the former cut or hole, when the shaft may be again rotated, and so on until the cut or hole is finished.

In order to operate the shaft U and pinion V from the shaft F so as to move the table R forward at the proper time, the two are connected together by the intermediate mechanism, as shown at W.

Upon the outside of the frame A, and opposite to the operating end of the shaft F, is fixed a tire-upsetting device, which is also operated by the shaft F by means of plates *a a*, which are fitted between the end of the shaft and the two lever-arms *b* of the jaws *c* of the tightener, in a manner similar to the working of the plates O P, which operate the cutting and punching jaws. The jaws *c* are thus moved toward the anvil *d* by the action of the shaft F. These jaws have serrated dies fixed within them, and the tire, when heated, is laid upon them and the anvil, the curve or angle being about right for ordinary tires. Any adjustment to suit larger or smaller ones may be made by changing the angle of the dies within the jaws. Above these dies two lever-arms, *e*, have their fulcrums at *f* on the same pin with the levers *b*. The lower ends of the levers *e* are serrated, and their shape is such that when turned in one direction they will compress the tire between themselves and the jaws *c*. The upper ends of the arms *e* are connected by rods *g* with a lever, *h*, by which they are operated to clamp or release the tire. The partial rotation of the shaft F produces the power by which the tire is upset. The whole apparatus is compact, and is useful for a great variety of work in blacksmith and other iron-working shops.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a cutting and punching machine, the slotted sides A of the frame, having the journal-boxes E of the shaft F fitted to move vertically in the slots, so that the shaft may be adjusted up or down, and the sliding plates G, moving in guides upon the frame to clasp or release the boxes E, substantially as herein described.

2. The horizontal shaft F, turning in boxes E, which are vertically adjustable in the frame A, in combination with the plates O and P, having their adjacent edges fitting in grooves on opposite sides of the shaft, as shown, while their opposite edges fit respectively into grooves in the punch and cutter actuating beam H, and the thrust-bearing Q, substantially as herein described.

3. The horizontal shaft turning in the vertically-movable boxes E, and having grooves formed on opposite edges of its opposite sides to receive the adjacent edges of the plates O P, and the beams H and Q, against which the remote edges of said plates act, in combination with the table R, having the inclined or beveled ribs or supporting-surface, said table being movable transversely beneath the beam Q, so as to elevate or depress it, substantially as herein described.

4. The rocking shaft F, plates O P, beams H and Q, horizontally-adjustable beveled table R, and rack and pinion T and V, in combination with the mechanism W, to connect the shafts F and U, substantially as herein described.

5. The rocking shaft F, supported in boxes adjustable in the uprights A, in combination with the levers *b* and *e*, with their jaws, as shown, the plates *a a*, rods *g g*, and the lever *h*, substantially as and for the purpose herein described.

In witness whereof I have hereunto set my hand.

HARRIS MORSE.

Witnesses:
S. H. NOURSE,
FRANK A. BROOKS.