

(No Model.)

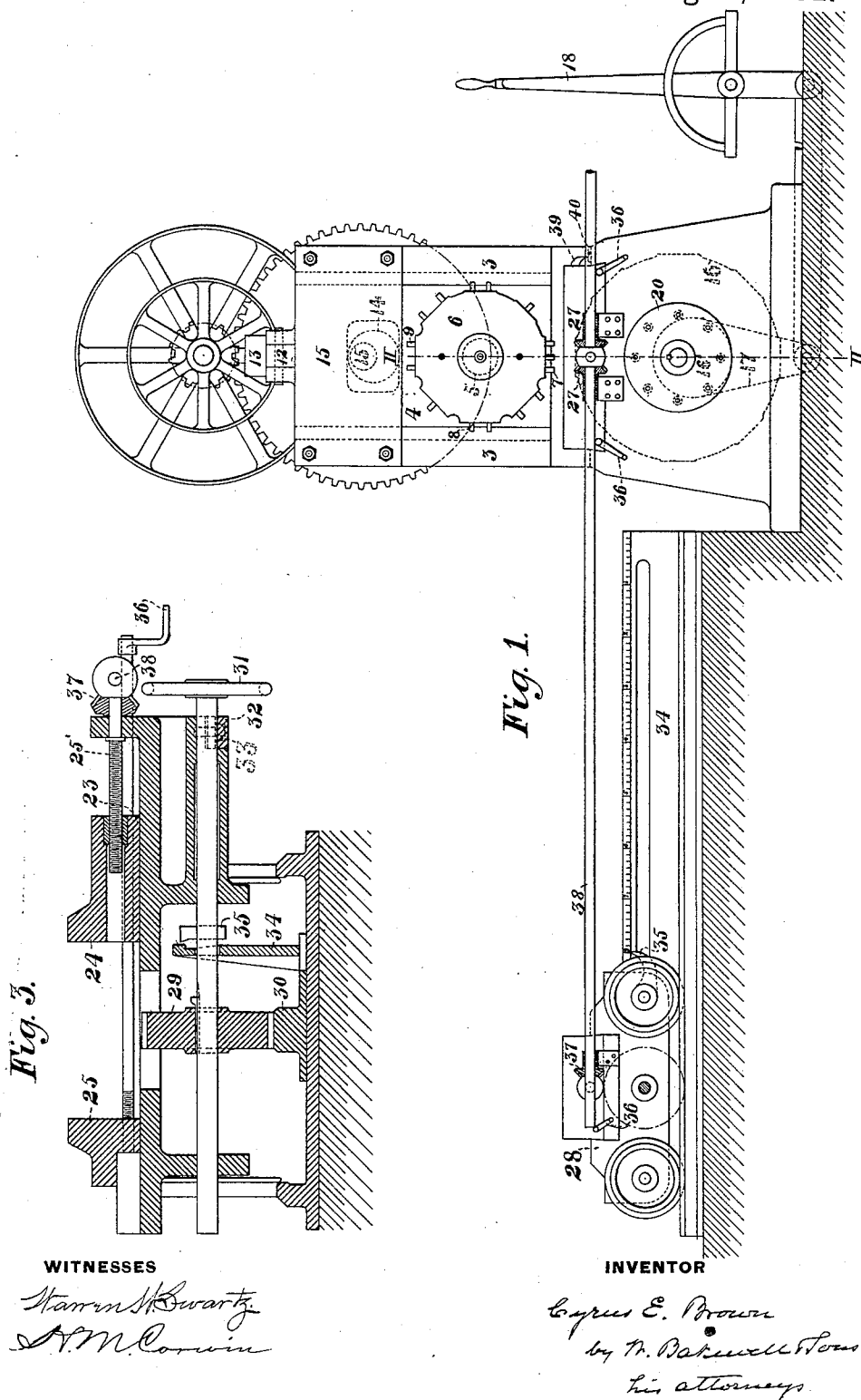
2 Sheets—Sheet 1.

C. E. BROWN.

MULTIPLE PUNCH AND LAYING OUT MACHINE.

No. 480,557.

Patented Aug. 9, 1892.



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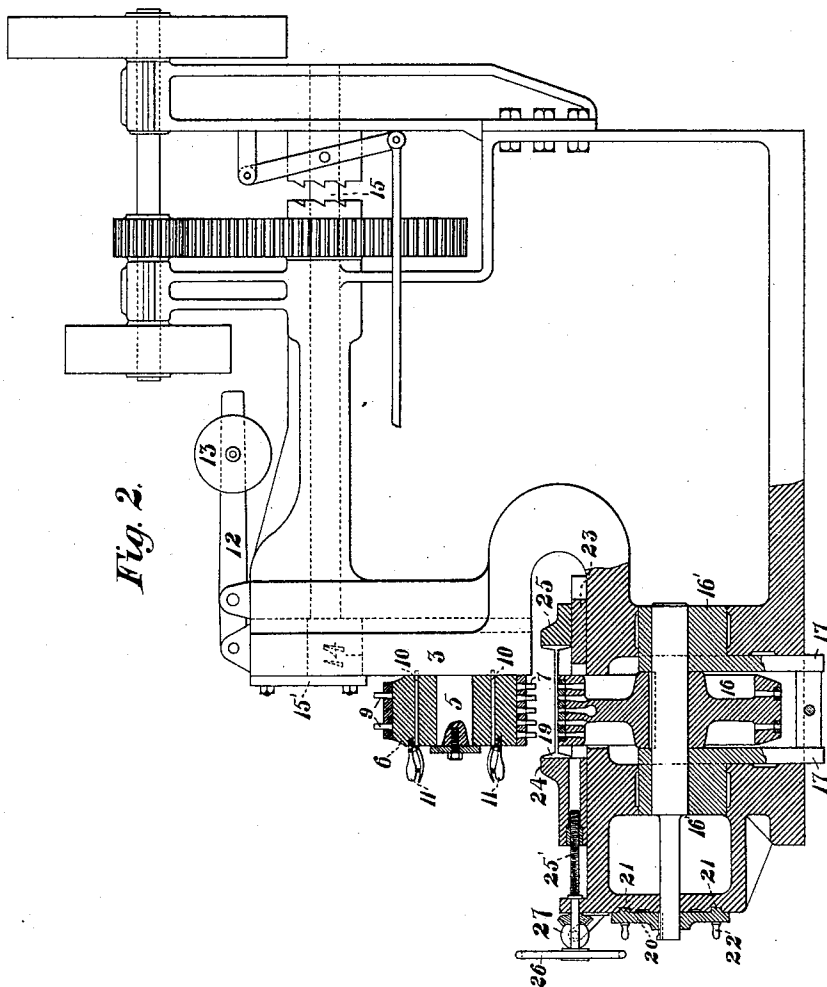
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WITNESSES

Harmon B. Swartz
H. M. Cowan

INVENTOR

Cyrus E. Brown
by N. B. Bakewell & Sons
his attorneys

UNITED STATES PATENT OFFICE.

CYRUS E. BROWN, OF HOMESTEAD, PENNSYLVANIA.

MULTIPLE-PUNCH AND LAYING-OUT MACHINE.

SPECIFICATION forming part of Letters Patent No. 480,557, dated August 9, 1892.

Application filed April 7, 1892. Serial No. 423,129. (No model.)

To all whom it may concern:

Be it known that I, CYRUS E. BROWN, of Homestead, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Multiple-Punch and Laying-Out Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a front elevation of my improved punching-machine, partly broken away. Fig. 2 is a vertical sectional view of the same on the line II II of Fig. 1, and Fig. 3 is a vertical sectional view through the carriage.

My invention relates to machines employed for punching holes in metal bars and beams and is designed to greatly facilitate and cheapen this class of work.

To such end it consists in a wheel having upon its periphery sets of punches of various gages, this wheel being mounted so as to reciprocate as a whole.

It also consists in improved means for carrying the beam to be punched and fixing it in its various positions, as well as in the construction and arrangement of the parts, as hereinafter more fully described, and set forth in the claims.

In the drawings, in which similar numerals indicate corresponding parts, 2 indicates a frame having vertical guideways 3 3, between which moves the slide 4, which carries the shaft 5 of the punching-wheel 6. This wheel carries upon its periphery sets of punches 7 8 9, &c., of different gages, and is held in various adjusted positions by rods 10, passing through the wheel-body and taking into recesses in the slide, as shown, these rods being connected at their outer ends to pivoted handles 11, having springs normally holding the rods in their seats in the slide. A lever 12 is pivoted to the upper end of the slide and carries a counter-weight 13, and the slide is actuated by a cam 14, carried upon the shaft 15, having the usual clutch and actuating connections, as shown. A plate 15' is secured to the upper ends of the guides and covers the face of the cam, as shown.

Immediately beneath the punch-wheel is supported a second wheel 16, which is perforated upon its periphery, the holes being

gaged to correspond with the various punches. This wheel is mounted upon a shaft which carries loosely thereon a cam 16', provided with a lever 17, having a link connection to the hand-lever 18, whereby the wheel may be raised or lowered a small amount, it being thereby contacted with the I-beam 19 shown or withdrawn therefrom. A circular plate 20, which is splined upon the outer end of the cam-shaft, is provided on its inner face with projecting bosses 21, which take into suitable recesses in a stationary portion of the machine, and upon its outer face with handles 22, by which the plate may be pushed in and out and the shaft revolved.

In suitable guideways upon the bed-former in the U-shaped portion of the frame moves a broad plate 23, having rigidly connected thereto at its outer portion a vise-jaw 24, the movable jaw 25 resting upon its inner portion. This plate 23 is provided with a slot or aperture through which the lower wheel passes and is actuated by the screw-threaded shaft 25', which is rotated by the hand-wheel 26 through bevel-gear 27.

Upon the movable plate 23 is a pointer 39, which moves over a suitable scale 40 upon the bed-plate and indicates when the beam is brought into the proper position.

In line with the wheel 16 and extending on each side of the machine are tracks upon which move the carriage 28, only one of which is shown in the figure.

Upon the car is supported a second vise similar to the one previously described and actuated in the same way, as shown in Fig. 3, corresponding numerals being applied thereto.

Carried upon a shaft mounted upon the car is a pinion 29, engaging a rack 30, the car being moved by a hand-wheel 31 at the end of this shaft. A yoke 32, having thumb-screw 33, serves to secure the shaft and hold the car in its various positions. The axles of the supporting-wheels and the pinion-axle pass through a long slot in a plate 34, having thereon a scale, as shown in Fig. 1, a pointer 35, secured to the car, moving along the scale. The pinion 29 is so keyed to its shaft that it may be loosened and pushed longitudinally upon its shaft to disengage it from the rack, so that the car may be pushed back rapidly by hand. Small handles 36 upon the vises protrude from

shafts arranged to reciprocate the movable jaws of the vises in the usual manner.

The shaft 25' upon the carriage is provided at its outer end with bevel-gear 37, and the outer bevel-wheel of this gear is splined to a shaft 38, which passes through the outer bevel-wheel of gear 27 and is rigid therewith.

The operation of the device is as follows: A beam being laid in position and resting upon the plates 23 of the bed and carriages, the jaws 25 are moved to clamp the beam in the vise. Then by hand-wheel 26 the bevel-gears are actuated, causing the vises to move as a whole in their guides until the beam is brought to its proper position, as indicated by the scale 40. The lower wheel then being rotated to its proper position, is raised by the cam and forced against the under side of the web of the beam. The punch-wheel being also rotated till the proper punches are brought into position, the clutch is applied and the wheel forced down. The punch-wheel then rises, and the lower wheel being disengaged with the beam the carriages are moved along to the proper place, as indicated by the scale upon the plate 34, when the punching-wheels are again reciprocated.

The advantages of the device are obvious. The entire handling of the beam is done by machinery. Punches of any desired size may be used, and the shifting and moving of the beam are easily accomplished through the vises and carriages.

Many changes may be made in the form and arrangement of the parts without departing from my invention, since I state in each of my claims a broad combination which may be used irrespective of other combinations of separate claims.

I claim—

1. In a punching-machine, a reciprocatory pivoted wheel carrying a series of punches upon its periphery, a second reciprocatory wheel having a corresponding peripheral series of apertures, and means for turning the apertured wheel to any desired position and retaining it in such position while the punch-wheel reciprocates, substantially as and for the purposes described.

2. In a punching-machine, a reciprocating pivoted wheel carrying the punches, a vertically-movable wheel having an apertured periphery, means for retaining said wheel in the different positions to which it may be turned, and a bed-plate having a vise mounted thereon, substantially as and for the purposes described.

3. In a punching-machine, a reciprocating wheel carrying punches, a bed-plate, a wheel having apertures in its periphery, movable in a slot in the bed-plate, and a movable carriage carrying a vise in line with the bed-plate, substantially as and for the purposes described.

4. In a punching-machine, the combination of a reciprocating punch or punches, a piv-

oted wheel having a series of apertures in its periphery, means for retaining said wheel in the various positions to which it may be turned, and a cam-shaft arranged to raise and lower said wheel, substantially as and for the purposes described.

5. The combination, with a punching-machine, of two carriages in line with the bed-plate of the machine, a vise upon the bed-plate, vises upon the carriages, and means for adjusting the vises in the direction of their length, substantially as described.

6. The combination, with a punching-machine, of a movable carriage in line with the bed-plate of the machine, a vise upon the carriage, and a stationary scale along which the carriage moves, substantially as described.

7. The combination, with a punching-machine whose bed-plate is provided with a vise, of a movable carriage carrying a vise in line with the bed-plate of the machine and a rack-and-pinion connection for moving the same, substantially as and for the purposes described.

8. The combination, with the plate having a rigid vise-jaw therein, of a jaw movably mounted thereon and a hand-wheel arranged to cause the vise to reciprocate as a whole, substantially as and for the purposes described.

9. The combination, with the bed-plate provided with a movable vise, of a movable carriage provided with a similar vise and a shaft arranged to reciprocate both vises simultaneously, substantially as and for the purposes described.

10. The combination, with the bed-plate and movable vise thereon, of a pointer attached to the vise and movable over a scale upon the bed-plate, substantially as described.

11. The combination, with the movable carriage, of a pointer mounted thereon, a scale arranged to be traversed by the pointer, a rack-and-pinion connection for the carriage, and a strap arranged to secure the carriage in its adjusted positions, substantially as and for purposes described.

12. The combination, with a punching-machine, of two carriages in line with its bed-plate, vises upon the carriages, and means for simultaneously adjusting said vises in the direction of their length, substantially as and for the purposes described.

13. The combination, with a punching-machine, of two carriages in line with its bed-plate, vises upon the carriages and bed-plate, and means for simultaneously adjusting said vises in the direction of their length, substantially as and for the purposes described.

In testimony whereof I have hereunto set my hand this 26th day of March, A. D. 1892.

CYRUS E. BROWN.

Witnesses:

W. B. CORWIN,
C. BYRNES.