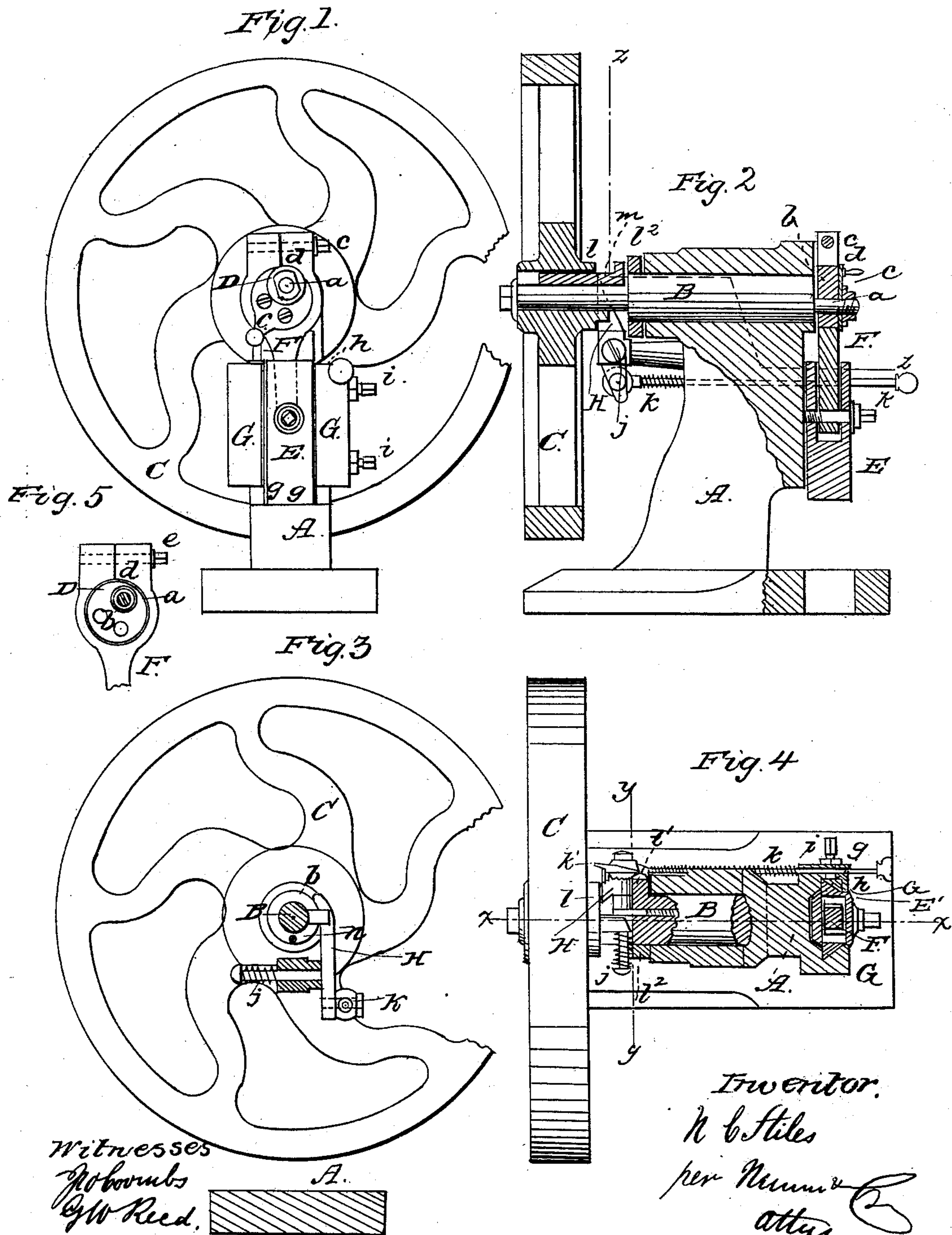


N. C. STILES.
Metal Punch.

No. 41,403.

Patented Jan. 26, 1864.



UNITED STATES PATENT OFFICE.

N. C. STILES, OF WEST MERIDEN, CONNECTICUT.

IMPROVED PUNCHING-PRESS.

Specification forming part of Letters Patent No. 41,403, dated January 26, 1864.

To all whom it may concern:

Be it known that I, N. C. STILES, of West Meriden, in the county of New Haven and State of Connecticut, have invented a new and Improved Punching-Press; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 represents a front elevation of this invention. Fig. 2 is a longitudinal vertical section of the same, the line *x x*, Fig. 4, indicating the plane of section. Fig. 3 is a transverse vertical section of the same, taken in the plane indicated by the line *y y*, Fig. 4. Fig. 4 is a horizontal section of the same, the plane of section being indicated by the line *z z*, Fig. 2. Fig. 5 is a detached sectional view of the clamp and eccentric disk for adjusting the position of the punch or cutter.

Similar letters of reference in the several views indicate corresponding parts.

This invention consists in the combination, with the rod or pitman which connects the main shaft of the press with the slide carrying the punch or cutter, of an adjustable eccentric and clamp in such a manner that by rotating said eccentric the position of the punch or cutter in relation to the work can be adjusted with the greatest facility and with perfect accuracy. It consists, further, in the arrangement of a slide with triangular guides operating in two jaws cast solid with the stock of the press, and held in place by a triangular gib or gibs, in such a manner that all the bearing points or surfaces of the jaws and of the carriage can be planed off by one operation, and without changing the position of the piece to be planed on the bed of the planing-machine; and consequently all these surfaces must be perfectly parallel; and, furthermore, the set-screws used to adjust the gib or gibs bear square on a flat surface, so as to allow of setting and retaining said gib or gibs with the greatest accuracy. It consists, also, in a touch-off motion of peculiar construction, whereby the clutch-pin is moved by the direct action of the cam farther in the use of a loose clutch-pin, the position of which is entirely controlled by the direct action of the cam, and is not made dependent upon springs or other mechanical devices; also, in the application of a yielding coupling-pin, in combination with

the clutch-pin and cam, in such a manner that if the clutch-pin is pushed out when it stands opposite to the coupling-pin the latter will yield, and injury to the working parts of the press will be prevented. Finally, in attaching the cam motion to a yielding pin to prevent an accident in turning the press back.

To enable those skilled in the art to fully understand and use my invention, I will proceed to describe it.

A represents the stock of my press, which is cast of iron or other suitable material, and the upper part of which forms the bearing for the shaft B. One end of this shaft carries the band-wheel C, which rotates freely on it, and its other end carries the compound eccentric D, through which the motion of the shaft is transmitted to the slide E.

The eccentric D consists of two distinct parts, one the eccentric wrist-pin *a*, and the other the disk *b*, which is perforated with an eccentric hole to fit on the wrist-pin *a*. This disk fits nicely into the upper end of the pitman F, and a handle, *c*, is connected with it in such a manner that it can be freely rotated on the wrist-pin *a*. By this operation the pitman F, and consequently the slide E, are raised or lowered, and the position of the punch, cutter, or tool which is intended to be inserted in the slide can be set to any desired position in relation to the work to be punched or cut.

The upper end of the pitman forms a clamp, *d*, and by screwing up the clamp-screw *e* the disk is rendered rigid with the pitman, and the motion of the eccentric wrist-pin *a* is transmitted to the slide E. It is obvious that instead of the clamp-screw *e* other means might be employed to render the disk *b* rigid with the pitman—such, for instance, as a pin passing through a hole in the pitman and catching in corresponding holes in the disk, or a key or wedge inserted between said disk and its bearing, or the clamp-screw might be used in combination with such a pin or key, but in most cases said clamp-screw will be the best and handiest way of securing the disk in the desired position.

The slide E moves up and down between two jaws, G, which are cast solid with the stock A, and the faces *g*, which form the bearings of the slide, are triangular. By this shape of the slide and its bearing-faces, and by having the jaws

cast solid with the stock of the press, I am enabled to plane the various sliding surfaces on each piece at one operation and without changing its position on the bed of the planing-machine. The slide is put on the bed of the planing-machine with its front side down, and it will be easily understood by practical machinists how all the bearing or working faces can then be planed in one operation, and consequently they will all be perfectly parallel. In the same manner the stock of the press is fastened on the planing-machine with the front side of the jaws G up, and all their working-faces can be planed without changing the position of the work.

For the purpose of setting up the slide and causing it to move steady in its ways, I use a triangular gib, *h*, which is set up by set-screws *i*. This gib offers a square bearing to the set-screws, as will be readily understood by referring to Fig. 4, and the slide can be adjusted with perfect accuracy.

The touch-off motion consists of a cam, H, which is pivoted to a pin, *j*, and connects with a spring-bar, *k*. By pulling the spring-bar the point of the cam is forced up against the inner surface of the hub *l* of the band-wheel C, and as this wheel rotates the clutch-pin *m* comes in contact with the cam H, and by the action of said cam is caused to slide out and to come in contact with the coupling-pin *n*, so as to impart motion to the shaft B. The clutch-pin slides loosely in a recess in the hub of the wheel C, and it is moved in and out entirely by the action of the cam.

On pulling the spring-bar *k* the cam drops behind the spring-catch *k'*, and is retained in that position until the knob or button *l'*, projecting from a collar, *l*, which is secured to the shaft B, comes in contact with said catch and releases the cam.

The coupling-pin *n*, which by the action of the clutch-pin *m* transmits the motion of the band-wheel C to the shaft B, is set upon a spring, so that it can yield or recede in case the cam is brought in such a position that the clutch-pin is thrown out at that moment when it stands opposite the coupling-pin. In this case, if the coupling-pin were rigid, some part of the machine would break or its motion would be stopped; but with my yielding coupling-pin no such accident can take place. If the clutch-pin strikes the point of the coupling-pin, the latter recedes and the motion of the band-wheel continues uninterrupted, causing the clutch-pin to be pushed out, and on the next revolution the motion of the band-wheel is transmitted to the shaft B.

The fulcrum-pin *j* of the cam H is also rendered yielding, so that in turning the machine back when the clutch-pin happens to

be out the cam is allowed to give way and to let the clutch-pin pass without causing an accident.

If desired, however, the clutch-pin, and also the cam, might be made with two points, so that said cam would be enabled to govern the position of the clutch-pin in either direction, and in this case the yielding fulcrum could be dispensed with.

By this invention a punching-press is produced which allows of adjusting the position of the punch or cutter in relation to the work with ease and facility, which is provided with a slide and ways, the working faces of which are perfectly parallel and which can be adjusted to work with perfect accuracy. Furthermore, the motion of the press and of the punch can be regulated and governed at pleasure, and all the parts are so constructed that no accident can happen, however careless the operator having charge of the press.

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

1. The compound eccentric D, consisting of an eccentric wrist-pin, *a*, adjustable disk *b*, and clamp *d*, or its equivalent, in combination with the pitman F, constructed and operating in the manner and for the purpose substantially as set forth.

2. The V-shaped faces *g* on the slide E, in combination with the jaws G, cast solid with the stock A, and with the triangular gib *h*, all as and for the purpose specified.

3. The touch-off device *k* H, arranged in combination with the clutch-pin *m*, substantially as shown and described, so that said clutch-pin is thrown in either direction by the direct action of the cam.

4. The loose clutch-pin *m*, applied in combination with the band-wheel C and shaft B, in the manner and for the purpose substantially as specified.

5. The button *l'* on the shaft B, in combination with the spring-catch *k'*, clutch-pin *m* and coupling-pin *n*, and cam H, arranged substantially as described, so that the cam is released automatically after the punch or cutter has completed its stroke.

6. The yielding coupling-pin *n*, in combination with the clutch-pin *m* and touch-off device *k* H, constructed and operating in the manner and for the purpose substantially as specified.

7. The yielding fulcrum-pin *j*, arranged in combination with the cam H, clutch-pin *m*, and band-wheel C, substantially as and for the purpose set forth.

NORMAN C. STILES.

Witnesses:

GEORGE W. SMITH,
HENRY C. BUTLER.