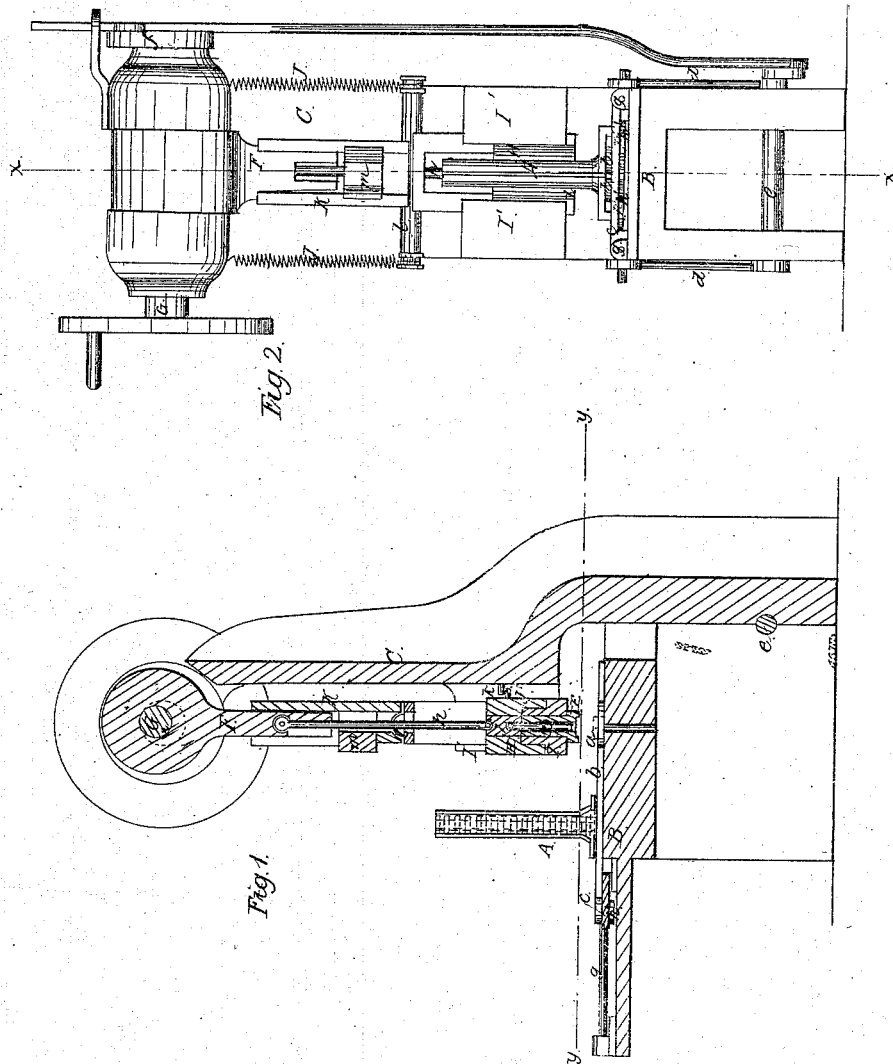


J. A. Coleman.

Making Clinch-Rings.

N^o 48,157.

Patented Jun. 13, 1865.



Witnesses:

Henry Morris
C. L. Popliff

Inventor:

J. A. Coleman
per Wm. T. Co.
attorney

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Fig. 4.

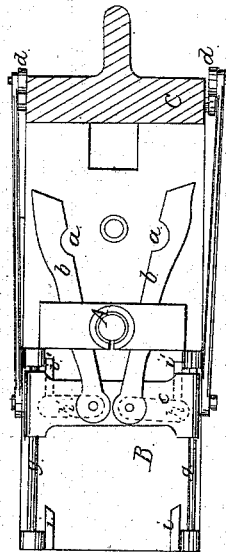
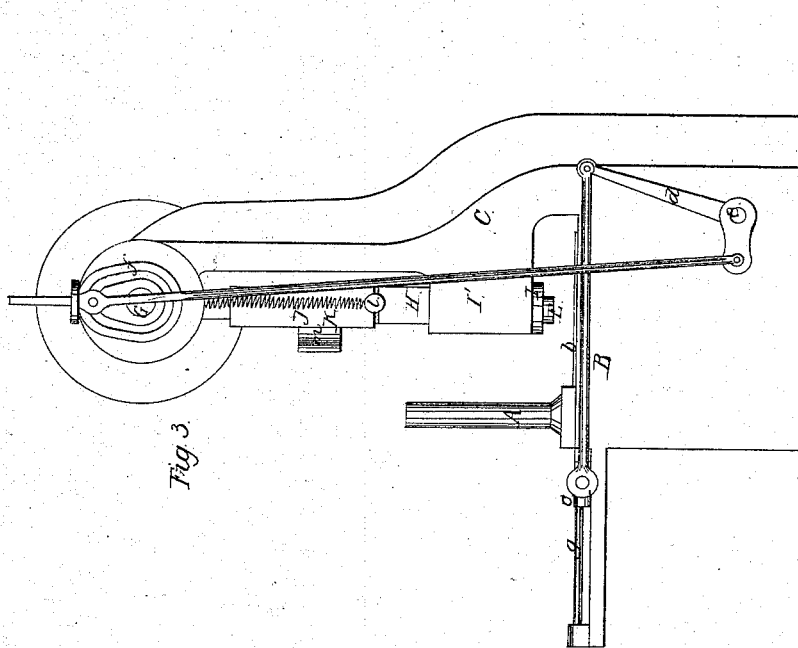


Fig. 3.



Witnesses:

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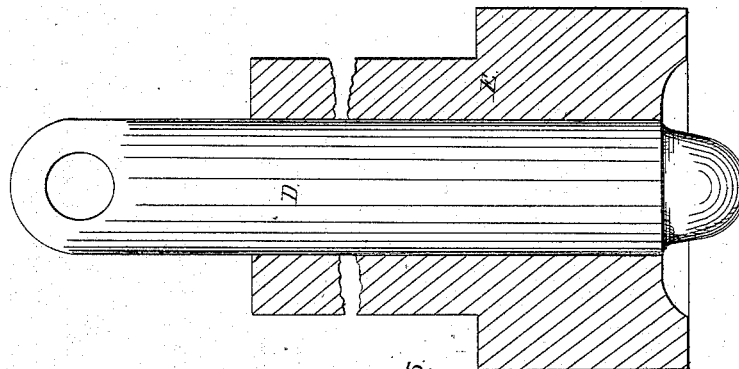
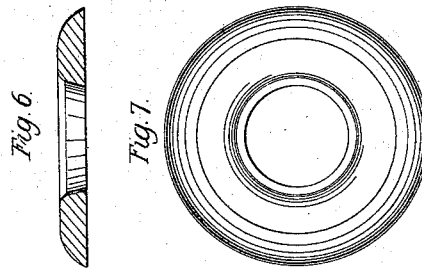
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Witnesses:

W. H. Coleman

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Inventor

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UNITED STATES PATENT OFFICE.

J. A. COLEMAN, OF PROVIDENCE, RHODE ISLAND.

MACHINE FOR MAKING CLINCH-RINGS.

Specification forming part of Letters Patent No. 48,157, dated June 13, 1865.

To all whom it may concern:

Be it known that I, JOHN A. COLEMAN, of Providence, of the county of Providence and State of Rhode Island, have invented a new and Improved Machine for Pressing Clinch-Rings, &c.; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a longitudinal vertical section of this invention, the plane of section being indicated by the line *x x*, Fig. 2. Fig. 2 is a front elevation of the same. Fig. 3 is a side elevation of the same. Fig. 4 is a horizontal section of the same, taken in the plane indicated by the line *y y*, Fig. 1. Fig. 5 is a vertical section of the die and pin or mandrel. Fig. 6 is a section of a clinch-ring. Fig. 7 is a horizontal view of the same.

Similar letters of reference indicate like parts.

The manufacture of a clinch-ring, as ordinarily conducted, consists in subjecting a punched washer, or a circular thin piece of iron having a hole in the center, to a pressure while hot, to give to its surfaces a certain form suited best to its particular use. The form generally used is represented by Figs. 6 and 7 of the accompanying drawings. The shape of these rings has been usually obtained by the following process: A movable die provided with a central pin receives the washer or blank upon its upper surface, the pin projecting through the washer. The die is placed upon the bed of the press directly beneath the plunger, and the latter descends upon the washer, causing it to conform to the shape of the die and surface of the die-pin by the pressure of the plunger upon it, and the plunger is then raised and the die is withdrawn. The pin, being a separate piece from the die, is forced back through the die by inverting and striking it upon a block, thus liberating the ring, which, by contraction in cooling, had closely adhered to the pin. It will be readily seen that this is necessarily a very slow process, as time must be allowed to place the die and to withdraw it without accident to the machinery. Two men are required to properly conduct the operation—

one at the furnace to put the heated articles upon the die, the other in placing the die in the machine, withdrawing it, and disengaging the finished ring from the die. Between the time of the removal of the die and its replacement beneath the plunger a number of strokes of the plunger intervene, which, of course, are not available to produce any useful result.

My improvement is intended to obviate all danger to the machinery resulting from improper placement or withdrawal of the die, as in the old process, to greatly increase the production, and to dispense with much of the labor and skill heretofore required.

The invention consists in a new mode of using the pin and die, whereby an automatic and continuous motion is given to them, by which they act simultaneously upon the article to be prepared, after which they have a motion independent of each other in order to release the pressed article, which motion is also automatic.

The detachment of the finished article from the die may be accomplished either by the withdrawal of the pin within the die or by the advance of the die toward or beyond the point of the pin, as the case may be. In the present instance the invention is represented as attached to the kind of press now in use for pressing clinch-rings. The die and pin are placed within the plunger of the press, and the pin recedes within the die, after its action upon the ring, by means of the mechanism shown in the accompanying drawings.

The blanks from which the rings are to be formed are placed in the tube A, which rises from the platform B of the frame C, as clearly shown in the accompanying drawings. From this tube the blanks drop down, one after another, into a recess, *a*, cut out of the feeding-jaws *b*, which are hinged to a carriage, *c*, and by the action of these jaws they are carried in under the pin and die. A reciprocating motion is imparted to the carriage *c* by means of the arms *d*, which rise from a rock-shaft, *e*, to which an oscillating motion is imparted by the action of a cam, *f*, on one end of the driving-shaft. The carriage moves on ways *g*, and the pivots which carry the feeding-jaws pass clear through said carriage and bear cranks *h*, which, by coming in contact with stationary

abutments *i i* at either end of the stroke of the carriage, cause the jaws to open and close at the proper intervals.

D is the pin, and E the die. The pin is inserted in a head, *j*, which is suspended, by means of a rod, *h*, from a strap, F, which encircles an eccentric attached to or formed by the driving-shaft G. The die E is inserted in the head H, which is strengthened by a collet, I, and which moves in the ways L. It is drawn up by a pair of springs, J, or any other suitable means, until the stop *j*, projecting from the inside surface of the sliding head H, strikes a rib or projection, *k*, which is rigidly secured to or cast solid with the frame C. In order to depress the head at the proper time, the shank of the eccentric-strap F is fitted into a sleeve, K, which rests upon the semi-cylindrical knuckle *l* on the top edge of the head H. A slide, *m*, is fitted transversely into the sleeve K, and the slide straddles the rod *h*, connecting the eccentric-strap with the head *j*, carrying the pin D, and it (the slide) is so proportioned that the shank of the eccentric-strap has to move a certain distance within the sleeve K before it strikes said slide and depresses the head H with the die E.

The mode of operation is as follows: After one of the blanks has been deposited under the plunger by the jaws *b* or other suitable means the pin is depressed by the eccentric-strap F, or an equivalent device, to such a point in relation to the die that the pin and die together form a completed die, as it were, or a die with a projecting former for the hole in the washer. Then the die is also depressed, in this case by the eccentric-strap coming in contact with the block *m*. The die and pin thus advance as one piece upon the washer or other article—the die to press the exterior and the pin to give the required bevel, countersink, or other shape to the hole in the article, all at the same instant of time. Then, by the action of the eccentric and springs, or their equivalents, the die and pin ascend as one piece, with the ring adhering to the pin, until the further upward motion of the die is arrested. This is effected in this case by the stop on the head H, which carries the die, striking the pro-

jection K, while the pin ascends still farther, so that its point rises within the die and the pressed article is forced off and drops upon the bed. The removal of the article from the bed is effected in this machine by the ends of the feed-jaws as they advance to deposit another washer. The operation of pressing can thus be continued without interruption, and the press requires no attention, provided it is furnished with a proper supply of blanks.

The improvement is applicable to hot and cold presses, and to presses in which the die and pin move in a vertical, horizontal, or oblique direction, or on which the pin is stationary and the die moved over it to strip the ring from the pin; and I wish it to be distinctly understood that the invention is not restricted to this particular form of machine shown, for any mere change in the shape of the machine or position of the die would still embody my invention so long as my mode of operation could be found existing.

The object of my invention may be finally stated as follows: to be able to dispense with much of the labor and skill heretofore required in the manufacture of clinch-rings and other articles, to insure safety to the machinery, and to increase the production by making its action more rapid and continuous, every stroke, however quickly made, producing a ring; also, giving it perfect adaptability for combination with an automatic feed; but it is obvious that the addition of an automatic feed is not absolutely essential to the success of the invention, as the blanks could be fed by hand and with much greater rapidity to a machine combining my mode of operation than was possible by the old method.

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

The method of forming clinch-rings or other similar articles by the use of a pin, in combination with a die, both acting in the manner substantially as and for the purpose set forth.

JOHN A. COLEMAN.

Witnesses:

W. H. COLEMAN,
J. B. RUSSELL.