C. H. MACEY.

Butt Hinge.

No. 966. Patented Oct. 5, 1838.

Fig. 3.

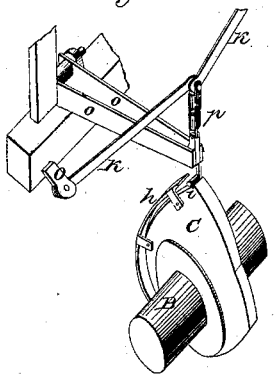

Fig. 4.

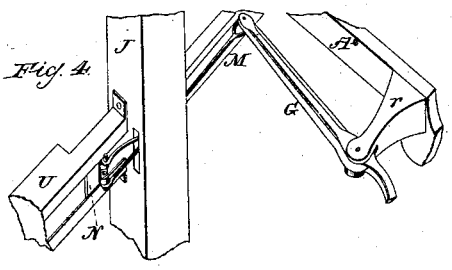

Fig. 1.

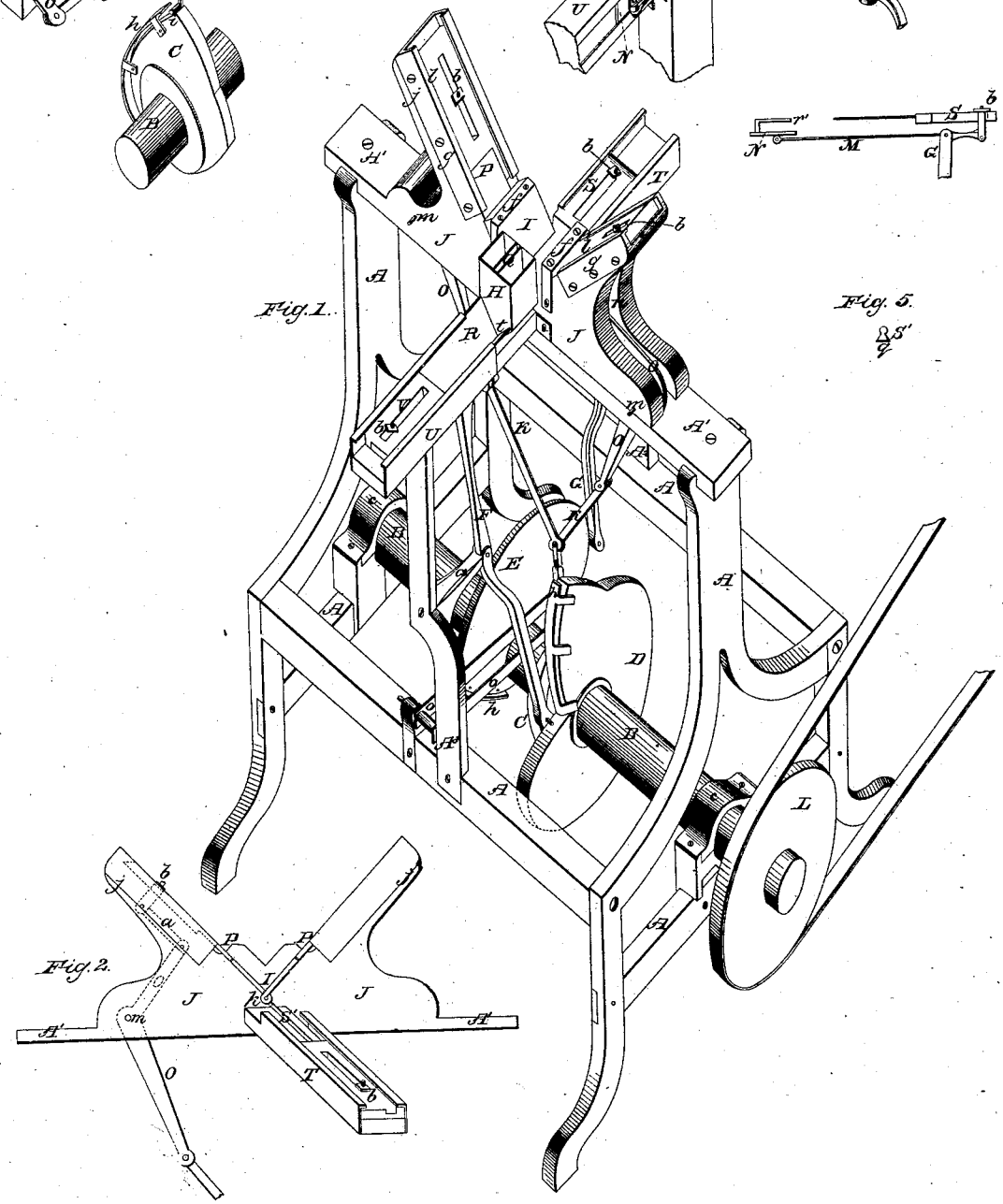

Fig. 5.

Fig. 2.

UNITED STATES PATENT OFFICE.

CHARLES R. MACY, OF HYDE PARK, NEW YORK.

MACHINE FOR MANUFACTURING BUTT AND OTHER KINDS OF HINGES.

Specification of Letters Patent No. 966, dated October 5, 1838.

To all whom it may concern:

Be it known that I, CHARLES R. MACY, of Hyde Park, Dutchess county, in the State of New York, have invented certain improvements in the machinery for manufacturing butt-hinges, table-hinges, and hinges of other descriptions from rolled iron, brass or other metals; and I do hereby declare that the following is a full and exact description thereof.

I take hoop or rolled iron of any suitable kind, or sheet brass, or other metal cut into strips of a width corresponding with that of the hinges to be manufactured; and with a screw, or other cutting press, of the ordinary construction, and furnished with suitable dies, I cut the said strips into pieces each of which is to form one half of a hinge, the dies being so constructed that the portion of each half, which when bent is to form the knuckles of the joint, shall be cut from its corresponding half, so that there shall not be any loss of stuff, or any fitting required.

So far the process does not present anything to which I lay claim as invention; and the same remark will apply to the drilling and countersinking of the requisite holes, as well as to certain other well known things in the finishing of the hinge; my improvement consisting in the peculiar construction of the machine by which the joint is formed, and by means of which the knuckles of each half of the hinge are simultaneously formed, and interlocked with each other.

In the accompanying drawing Figure 1, represents the machine in perspective, and the other figures such parts thereof in detail as were deemed necessary to clearness of description. A A, A, is the frame work of the machine, which is best made of iron. B, B, is the main shaft, which carries three cams, by means of which the respective slides, and other operating parts of the machine are actuated. The main shaft has its berings in the plumber blocker *c*, *c*, and is turned by means of a band and pulley L, or in any other convenient way. Upon this shaft there are three cams, C, D, and E, so formed as to give the required motion to the rods and levers upon which they operate. The upper cross bar of the frame A, Figs. 1 and 2 sustains the pressing pistons and their seats by means of which the knuckles of the hinge are formed together with the apparatus for feeding the respective halves of the hinge, and discharging the same after it has been formed. J, J, is the seat or bed of the forming mold, in which the pressing and bending of the knuckles is effected; this seat is extended upward forming two arms *j*, *j*, the planes of which stand at an angle of forty five degrees with each other, or nearly so, these planes would meet together at a point below the letter I; but instead of an angular line at what would be their point of meeting, a curve *k*, is formed, as will be seen by inspecting the drawing Fig. 2, which gives a side view of the seat, divested of every thing by which it might be obscured; in the curve *k*, the joints of the hinge are to be bent. The rectangular piece of steel, I which constitutes the upper portion of the forming mold is sustained in its place by the straps *f*, *f*, Fig. 1, omitted in Fig. 2. Between this angular piece and the seat J, J, there is a space equal to the thickness of the hinge.

P, P, are pistons, consisting of flat plates of steel, by which the parts of the hinge are to be forced into the forming mold; these are attached to slides *l*, *l*, held in place and regulated by nuts and screws *b*, *b*. These slides and pistons are worked by the elbow levers O O, Figs. 1 and 2 these levers having their fulcra at *m m* and work in slots *n n*, in the seat J, *j* being connected to the slides *l*, *l*, by the shackle bar *a*, shown by dotted lines in Fig. 2.

The cam C, on the shaft B, B, is that which works the pressing pistons; this cam with its appendages, is shown separately at Fig. 3. K, K, are two arms which work the levers O, O.

The pin *i* bears upon the periphery of the cam C; *h*, on this and the other cams, being back straps to embrace the pin, and return the levers, in a manner well known in machinery; *o*, *o*, are guide levers attached to the shackle bar *p*, to keep it in its due direction. Such a form and position must be given to the cam C, as well as to the other cams, as will work the slides on which they are to operate, at the time and in the manner intended; a thing which every competent machinist knows how to regulate.

Two slide arms T, and U, placed horizontally stand at right angles with the upper cross bar A′, A′, of the frame, opposite to the forming mold. The arm T, contains a slide S, which carries a steel forming pin S′ Fig. 2 into the forming mold, just before the pressing pistons begin to act. A cross section of this pin is shown at Fig.

5. When in the forming mold, the bottom part of it, *q*, rests upon the bottom of this mold, its rounded part occupying the center of the circle, its office being to aid in giving the proper curvature to the knuckles; it is withdrawn before this bent part comes into contact with the bottom, *q*, of the forming pin. The slide S, is operated by means of the cam E, on the main shaft, which acts on the lever G, which has its fulcrum on a stud *r*, Fig. 4, on the vertical piece of the frame A^2, standing as the lever F, does on the stud *d*, projecting from A^3; and as shown separately in Fig. 4, the lever G, being connected with the slide by means of the shackle bar, *e*.

H, is a receiving box, which is divided into three compartments by two partitions Q. Into the side compartments the two halves of the hinge are to be dropped; the bottom of this receiver slopes downward from each side so as to meet at a right angle in the center; its two ends have openings seen at *t*, *t*, in one end, which openings coincide with those between the pieces, I, and J, of the forming mold, into which the pieces are to be fed from the receiving box.

The slide V, carries what is called the conducting piston R, which is in a form something like the letter V, consisting of two pieces, or plates of steel, standing at right angles to each other, so as to pass into the openings *t*, *t*, in the receiving box H. The slide V, and piston R, are worked by the cam D, and the lever F, in the same way with the slide S, already described.

The knuckles of the hinge may be formed, and interlocked, and the hinge may then be discharged from the forming mold, the joint pin being subsequently inserted. I sometimes, however, employ an apparatus for inserting the joint pin, as the forming pin is withdrawn. When this is to be done the joint pin is to be dropped into the space under the letter Q, between the partitions of the receiving box, and a driver, or piston *r'*, is adapted to carry it forward by the withdrawal of the forming pin.

M, Fig. 4, is a rod or bridle attached by one end to the lever G, on the under side of the arm T; this rod passes through an opening in the piece J, J, as shown in the drawing, (Fig. 4,) and has its other end attached to a slide N, on the under side of U; to this slide is affixed the piston, or driver which passes through the chamber Q, introducing the joint pin into the center of the mold, by the same motion that serves to withdraw the forming pin. The piston R, is in this case divided into two parts, thus, by removing the angle formed by the two plates, thus allowing a space for connecting the slide N, with the driver of the joint pin.

Having thus fully described the construction of my machine, and the use of its respective parts, its general operation will be readily seen. The halves of the hinges having been prepared by the cutting press, as above stated are to be placed in the receiving box H, the joint ends meeting in the bottom of the receiver; a joint wire, if thought proper, being placed in the chamber Q; the angular piston R, drives the two parts into the forming mold, in which the forming pin is situated; the cam C, then brings the pressing pistons P, P, down to the proper position, where they rest while the cam E, retracts the forming pin, and may at the same time draw in the joint pin into the partly formed joint; the cam C, then finishes the pressing and completes the joint; the pressing pistons then rise, and the cam D, causes the piston R, to advance against the finished hinge, pushing it out of the forming mold on the side opposite to that on which it entered. This piston is then withdrawn by the cam D, and the cam E, returns the forming pin into the mold, and the operation is then to be recommended.

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

1. The employment of two pressing pistons, operating simultaneously upon the two halves of a hinge, so as to interlock them, and form the joint complete, in a machine constructed substantially in the manner above set forth.

2. I also claim in combination with the said pressing apparatus, that for operating the steel forming pin, and for feeding the pieces to, and delivering the hinge from the forming mold in the way set forth.

CHARLES R. MACY.

Witnesses:

JAMES WILLIAMS,

JOHN W. ALBERTSON.