G. M. PATTEN.

Machine for Making Clinch Rings.

No. 10,864. Patented May 2, 1854.

Fig. 3.

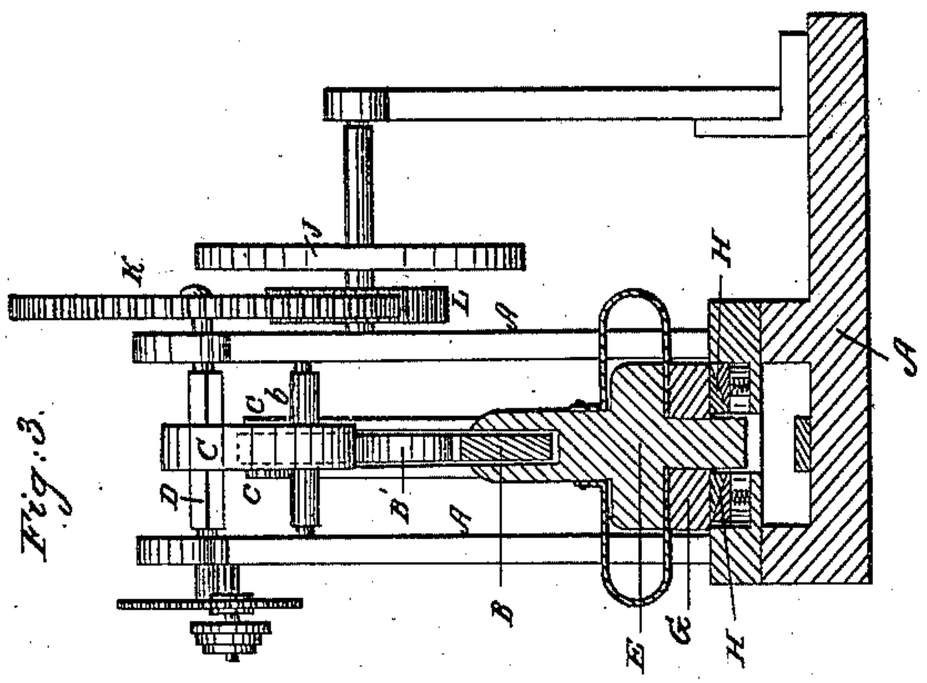


Fig. 1.

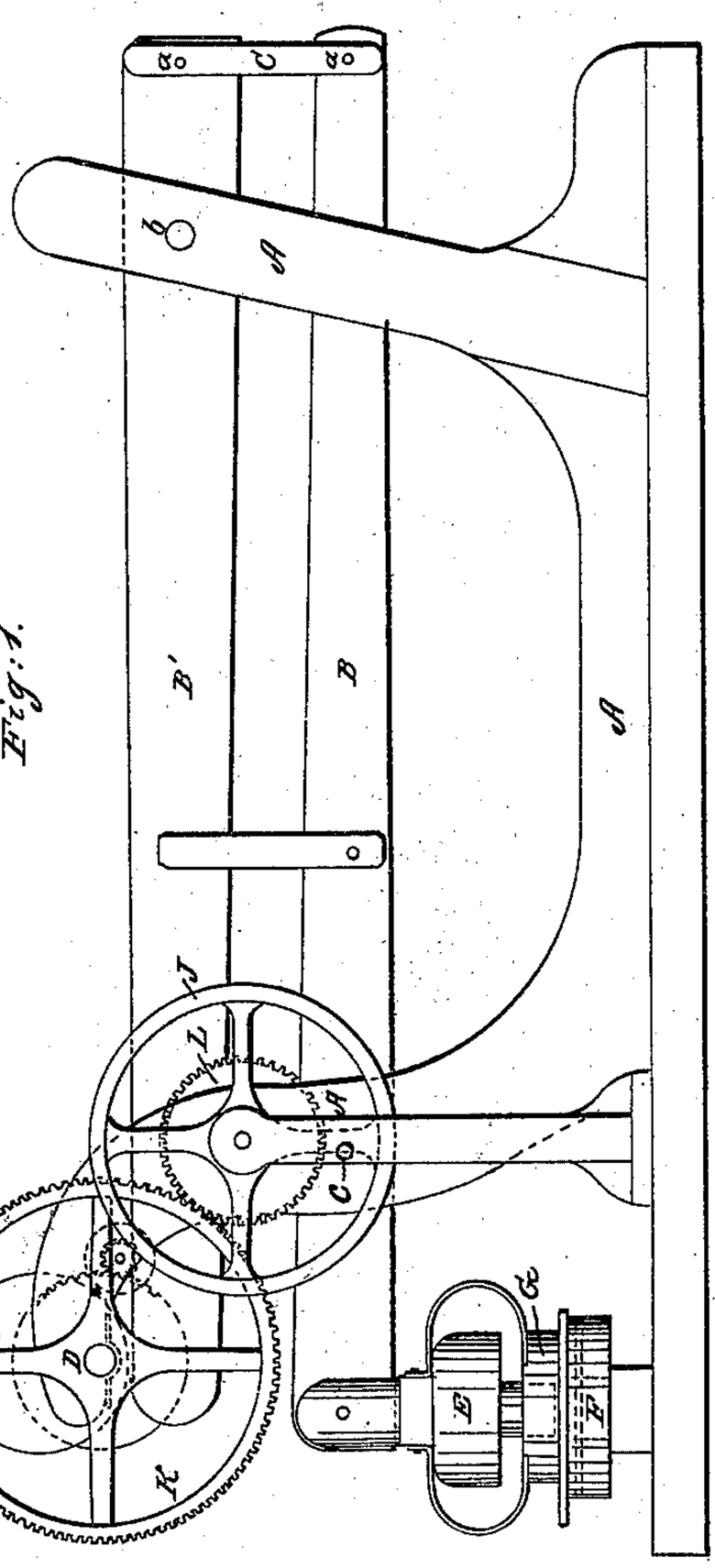
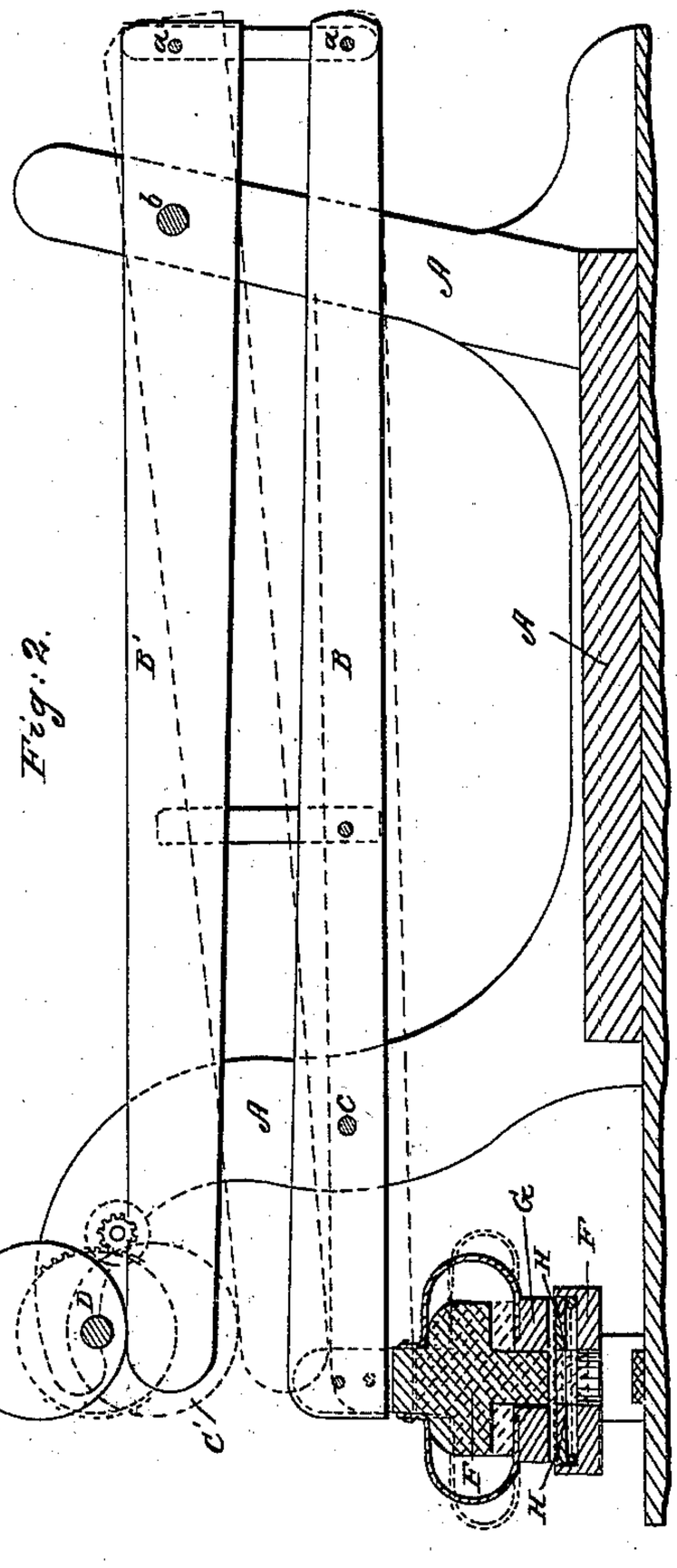


Fig. 2.



UNITED STATES PATENT OFFICE.

G. M. PATTEN, OF BATH, MAINE.

ARRANGEMENT OF SPRING-DIES IN MACHINES FOR MAKING CLENCH-RINGS.

Specification forming part of Letters Patent No. 10,864, dated May 2, 1854; Reissued January 1, 1867, No. 2,444.

To all whom it may concern:

Be it known that I, G. M. PATTEN, of Bath, in the county of Lincoln and State of Maine, have invented a new and useful Improvement in the Machine for Forming and Punching Clench-Rings; 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 part of this specification, in which—

Figure 1, is an external side elevation of my improved machine, as ready to commence operating. Fig. 2, is a vertical longitudinal section of the same, it being shown in red as it appears when in operation; and in black as it appears after the ring has been formed, punched and discharged. Fig. 3, is a vertical transverse section through the dies; the machine being in operation, a clench ring is shown formed and punched ready to be discharged.

Similar letters of reference in each of the several figures indicate corresponding parts.

This invention relates to a new and useful improvement in machinery for forming and punching clench rings, which are generally used as washers in ship building.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

A, represents the cast iron frame of the machine—it may be constructed after the plan shown in the drawing, or any other more suitable.

B, B′, are two levers connected together at their extreme back ends by the strips, C, C. The pins, *a*, *a*, which secure the links *c*, to the levers, pass loosely through the levers, so that the hind ends of said levers may adjust themselves to the movement of the forward ends of the levers. The upper lever, B′, has a fulcrum at *b*, in back standards of the frame, A, as shown in Figs. 1, 2, and 3, and the lower lever, B, has a fulcrum at *c*, in the front standards of the frame, A.

C′, is a cam arranged on the driving shaft, D, which is hung in the top of the front standards of the frame, A. This cam serves to give action to the levers, it being arranged so as to bear upon the extreme front end of the top lever, B. By thus arranging the levers, great power can be secured at the point desired.

E, is the top die, and F, is the lower die, which are made of such shape that they, in combination, will produce a clench ring of the form desired—both these dies are arranged so that they may be removed, and others of smaller or larger size, substituted for them.

G, is the sliding or spring collar, which allows of the punch passing into the lower die, as shown in red lines in Fig. 2, and black lines in Fig. 3, and then, as the punch is withdrawn from the lower die, with the ring hanging to it, serves to disconnect said ring from the upper die, and cause it to fall upon the elastic seat of the lower die.

H, is the elastic seat of the lower die; it serves for preventing the ring, after being finished, falling into the chamber of the lower die—said seat moves up even with the top of the lower die when the punch is withdrawn, and as the ring falls from the punch or upper die, catches it, and prevents it falling into the female die, and holds it thus until the bar is fed in to form another ring, and the pressure applied, when it yields and allows the metal to be forced into the chamber of the lower die. It should be remembered that the end of the bar discharges the finished ring. If this ring is not thus prevented from falling into the lower die, there is danger of the discharge not being readily effected, and consequently, the machine is liable to be broken.

This machine may be set in action by gearing, similar to that represented, if found advisable, which consists of a driving pulley, fly wheels, J, spur wheel, K, and pinion, L.

The operation is as follows:—The machine is set in motion, and the bar fed in the required distance, as shown in Fig. 1. The cam forces the end of the lever, B, down to the position shown in red in Fig. 2, and thereby causes the back end of the lever, B′, to rise, and consequently its front end, to which the die is attached, to descend, as shown in red lines, and to exert sufficient pressure to cause the dies to punch and form the die. The cam continues to revolve, and allows the levers to rise; as this takes place the finished ring is drawn out of the lower die by the upper die, and is disconnected from said die by the sliding spring collar, G, and falls upon the elastic seat of the lower die, which prevents it passing into the chamber of said die. The ring thus fin-

ished, is discharged as the bar is fed in to form another ring—said discharge being effected by the bar itself. And by the specified arrangement and operation of the spring clearer (G) round the punch or top die, in combination with the elastic lower die, it will be observed that the clench ring as formed is restrained from all possibility of falling or resting only partially in the lower die or of tipping upward on the one side partially out of the lower die as liable to be caused by shake, slight deviation from the vertical position in the lift of the punch or by the clench ring slipping freer and sooner off the one side of the punch than the other and by which displacement of the ring, should the punch again descend before the ring is cleared from the machine, breakage of some of the parts would be apt to occur. This liability by my arrangement is obviated, as the clearer (G), which has a broad bearing surface over the entire top of the clench ring, always exerts a tendency, by the spring pressing it downward both during the up and down stroke of the punch, to detach or clear off the clench ring from the punch and to hold or keep the ring steady in its seat in the lower die, but still not to hold it so hard or grip it as that any difficulty will be felt in removing it by the feed of the bar forward to make another ring as specified, the grip of the clench ring, when made, between the top and bottom dies being that of two elastic cushions, as if it were. And in feeding in the bar, it will be observed that the clearer (G) by its position, holding the finished ring in the lower die, will act as an elastic guide to the introduction of the bar and will readily give or yield to any inequality in the thickness of the bar so as to ensure an easy feed, but at the same time will press the bar down flat on its bearing or bed and restrain the forward end from turning or jumping as is apt to be the case in feeding by hand, so that the punch cannot fail to strike the bar flat or "fair" as it is termed which is better for the punch and makes a "cleaner" ring. The clearer also, by bearing down on the bar during the punching of the ring, steadies it and facilitates the operation. And thus the springing lower die and clearer acting in concert in the manner described, forming a soft but sufficient double grip and elastic guide to the bar, forms an arrangement having many practicable important advantages in the manufacture of clench rings.

I am aware that a lower die having a spring seat for discharging the manufactured article has before been used, also that a spring clearer, differently arranged or operating in combination, has been employed in various eyelet machines for removing the eyelets from the punch or upper die as it ascends; such therefore I do not claim. But what

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

The spring seat (H) of the lower die (F) and elastic clearer (G) when arranged and operating together as specified, so that, not only is the finished clench ring forced upward out of the lower die and detached from the upper one to permit of its easy removal by the bar in feeding forward, but, also whereby the spring seat (H) and clearer (G) are made to act as elastic grippers to the ring to hold or keep it in its seat till removed by the bar to avoid breakage of the machine, and whereby the clearer (G) serves as an elastic guide to the bar to facilitate the entry or feed of the bar and to keep it in a "fair" or flat position for the operation of the punch upon it, as specified; the said clearer (G) and spring seat (H) being hung and operated so as to exert a continual tendency to approach each other both during the up and down stroke of the punch, as herein set forth.

GEO. M. PATTEN.

Witnesses:
SILAS S. SHAW,
RICHARD B. BARRON.

[FIRST PRINTED 1913.]