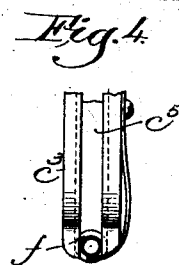
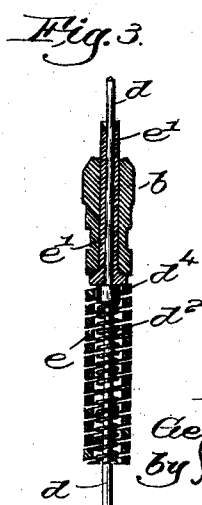
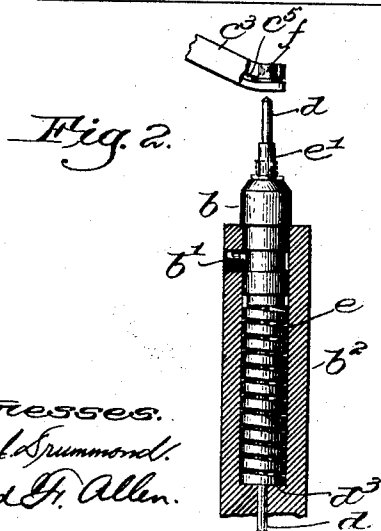
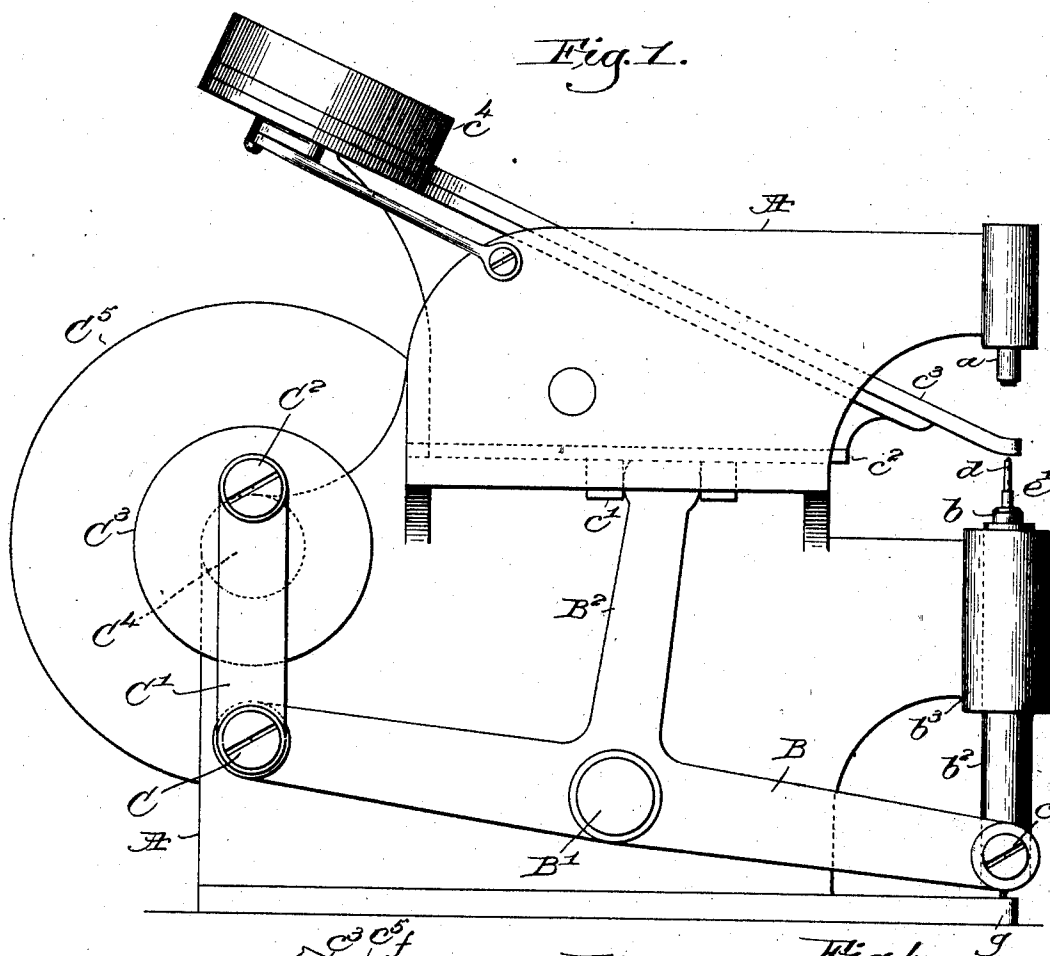


No. 719,475.

PATENTED FEB. 3, 1903.

G. KNIGHT.
EYELETING MACHINE.
APPLICATION FILED FEB. 12, 1902.

NO MODEL.



Witnesses.
Thomas J. Drummond.
Edward F. Allen.

Inverton
George Knight,
By Henry Gregory

UNITED STATES PATENT OFFICE.

GEORGE KNIGHT, OF BROCKTON, MASSACHUSETTS.

EYELETING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 719,475, dated February 3, 1903.

Application filed February 12, 1902. Serial No. 93,683. (No model.)

To all whom it may concern:

Be it known that I, GEORGE KNIGHT, a citizen of the United States, residing at Brockton, in the county of Plymouth and State of Massachusetts, have invented an Improvement in Eyeletting-Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention in eyeletting-machines has for its object the production of a novel machine for this class of work wherein as the two sets are made to approach each other to set an eyelet in stock a plunger moving with one set enters and picks from the raceway the eyelet next to be set, said eyelet being made to embrace the end of a punch, and in the continued movement of the set the punch acts to punch a hole through the stock and the set causes the eyelet to enter the hole made in the stock by the punch, the eyelet being then upset or flanged to retain the same in the stock. In this way it is possible to pick off an eyelet, punch a hole in the stock, and set the eyelet in the stock at one and the same movement of the sets. As the sets are returned to their inoperative or starting position the punch is moved faster than the plunger, so that the plunger acts to force the chip from the punch.

The particular features in which my invention consists will be hereinafter more fully described, and set forth in the claims at the end of the specification.

Figure 1, in side elevation, represents a sufficient portion of an eyeletting-machine with my improvements applied thereto to enable my invention to be understood. Fig. 2 is a detail showing part of the raceway with the plunger, punch, and one set, herein the under set. Fig. 3 is a sectional view of the parts shown in Fig. 2, the bar carrying the set being omitted and one of the two springs being shown in section; and Fig. 4 is a plan view of the end of the raceway, showing an eyelet in position to be entered by the plunger.

The framework A is and may be of any usual or suitable shape, it having, as herein represented, a stationary set *a* and a movable set *b*. The movable set is represented as con-

nected by a screw *b'* with a bar *b*², free to move in suitable bearings *b*³, sustained by the framework. The bar *b*² has jointed to it in usual manner by set-screws *c* one end of a lever B, mounted upon a suitable stud or fulcrum *B'*. The lever B is shown as having three arms, one arm *B*² being rounded and fitted between suitable ears *c'* of a carrier or bracket *c*², sustaining the raceway *c*³, having at its upper end a suitable feed-box *c*⁴, that may be supplied with eyelets, the box containing any usual devices for stirring the eyelets, so that they may follow down the channel *c*⁵ of the raceway. The raceway is slid to and fro, it being moved to the left, viewing Fig. 1, after the plunger *d*, to be described, has entered the endmost eyelet, such movement of the raceway leaving the eyelet on the plunger, thereby detaching or picking off the eyelets singly as they are to be set. The raceway and the feed-box and actuating parts are and may be as usual in eyeletting-machines.

The left-hand end of the lever B has joined to it at C a link *C'*, in turn connected with a crank *C*², carried by a disk *C*³, connected with the main shaft *C*⁴ of the machine, said shaft being sustained in suitable bearings in the framework and having a driving-pulley *C*⁵, which may be actuated in any usual manner. The bar *b*² is hollow and receives the plunger *d*, sustained by a spring *d*². The lower end of the plunger is represented as projecting below the lower end of the bar *b*². The cavity in the bar *b*² is sufficiently large to receive a second stronger spring *e*, that is sustained on the shoulder *d*³, the upper end of said spring acting against the lower end of a punch *e'*, represented as surrounding the plunger and taking its bearing movably in the under set *b*.

Assuming that the raceway is provided with eyelets and that the stock has been placed against the under side of the top set *a*, now the machine will be started and the bar *b*² will be lifted, and as the said bar ascends from its position Fig. 2 the plunger *d* enters the eyelet *f*, and immediately thereafter the raceway is moved to the left, thus enabling the plunger to retain the endmost eyelet. The eyelet so detained by the plunger immediately moves longitudinally thereof and

comes into position, as represented by dotted lines in Fig. 2, surrounding the upper end of the punch e' , the flanged end of the eyelet resting on the outer end, as herein shown, of the under set. As the bar b^2 continues to rise, the raceway being out of the way, the plunger d meets the stock resting against the set a and further upward movement of the plunger is prevented, the spring d^2 , sustaining it, being compressed. As the bar b^2 rises the stronger spring e , acting on the punch, causes it to rise in unison with the bar until the punch having the eyelet surrounding its free end meets the stock, and as the upward movement of the bar b^2 is continued the punch is made to cut a hole in the stock for the reception of the eyelet f , then on its shank, and this done the set b in its continued movement acting on the flanged end of the eyelet forces the eyelet from the punch through the hole made thereby in the stock and causes the small end of the eyelet to meet the opposite set a , and the eyelet is flanged in usual manner and secured in the stock. Now as the lever B is reversed in its movement the bar b^2 is caused to descend, and with it descends the set b and the punch, and as the punch descends its lower end contacts with the collar d^4 , and during this movement the plunger sustained by the spring d^2 acts to eject the chip from the punch.

I believe that I am the first to provide an eyeletting-machine having a plunger surrounded by a punch and the punch surrounded by a set, so that as the set moves in one direction the plunger will first act to supply itself with an eyelet, the eyelet moving onto the punch, and the punch thereafter acting to punch a hole in the stock that the set surrounding the punch may act to force the eyelet from the punch and longitudinally of the plunger into the stock, and I desire to claim this feature broadly irrespective of the particular mechanical construction.

I have herein shown the punch and plunger as moving longitudinally with relation to the under set; but my invention would not be departed from if the plunger and punch were movable longitudinally with relation to the upper set, and with my invention embodied in connection with the upper set usual provisions would be made for retaining the eyelet on the punch.

The punch acts to cut a hole in the material, while the eyelet surrounds the punch, and a chip is left in the open mouth of the punch, and as the punch acts the stock, acting upon the end of the plunger, forces the plunger back into the punch somewhat, thereby compressing the spring d^2 . As the set b and the punch and the plunger descend the upper end of the plunger may be acted upon by the chip with sufficient force to compress the spring; but finally or just before the rod b^2 completes its descent the lower end of the plunger meets the framework at g , causing the plunger to be moved longitudinally of the

set to thereby eject the chip from the punch if the chip has not been ejected by the spring.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In an eyeletting-machine, a raceway to contain eyelets, two sets, means to move one set, a plunger and a punch longitudinally movable with relation to the longitudinal axis of one set, and means to actuate the said parts whereby the plunger first enters an eyelet in the raceway and takes an eyelet from the raceway, the punch thereafter entering the eyelet and punching the stock, the sets then co-acting to force the eyelet from the punch through the stock and clench the eyelet in the stock.

2. In a machine of the class described, two sets, means to move one of the sets to clench an eyelet sustained between them, a punch sustaining the eyelet to be set, and a plunger movable longitudinally within the punch, the plunger acting not only to receive the eyelet to be set before the punch is operated to punch the stock, but also to eject the chip from the punch.

3. In an eyeletting-machine, a movable bar, a set sustained at one end thereof, a spring-sustained plunger movable within said bar, a spring-sustained punch surrounding said plunger inside said bar, and means to move the set and punch away from the stock, the springs sustaining the plunger while the punch moves longitudinally thereof sufficiently to enable the plunger to eject the chip from the punch.

4. In an eyeletting-machine, a set, a movable punch contained within the set, and a movable plunger contained within the punch, the plunger entering the punch as the punch acts to cut a hole in the stock, and means to move the plunger longitudinally in the punch to eject the chip from the punch.

5. In an eyeletting-machine, a set, a movable punch contained within the set, and a movable plunger contained within the punch, the plunger entering the punch as the punch acts to cut a hole in the stock, and a spring to effect the movement of the plunger in the punch to remove the chip from the punch.

6. In an eyeletting-machine, a hollow bar, a set contained therein, a punch surrounded by said set, a plunger surrounded by the punch, said plunger entering the punch as the latter acts to cut the stock, the lower end of the plunger which is extended through the bar as the latter comes into its starting or in-operative position meeting a stop to move the plunger to eject the chip from the punch.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEORGE KNIGHT.

Witnesses:

GEO. W. GREGORY,
EDITH M. STODDARD.