No. 626,722. Patented June 13, 1899.

J. PUSEY.

EYELETING MACHINE.

(Application filed Mar. 22, 1898.)

(No Model.)

Fig. 1.

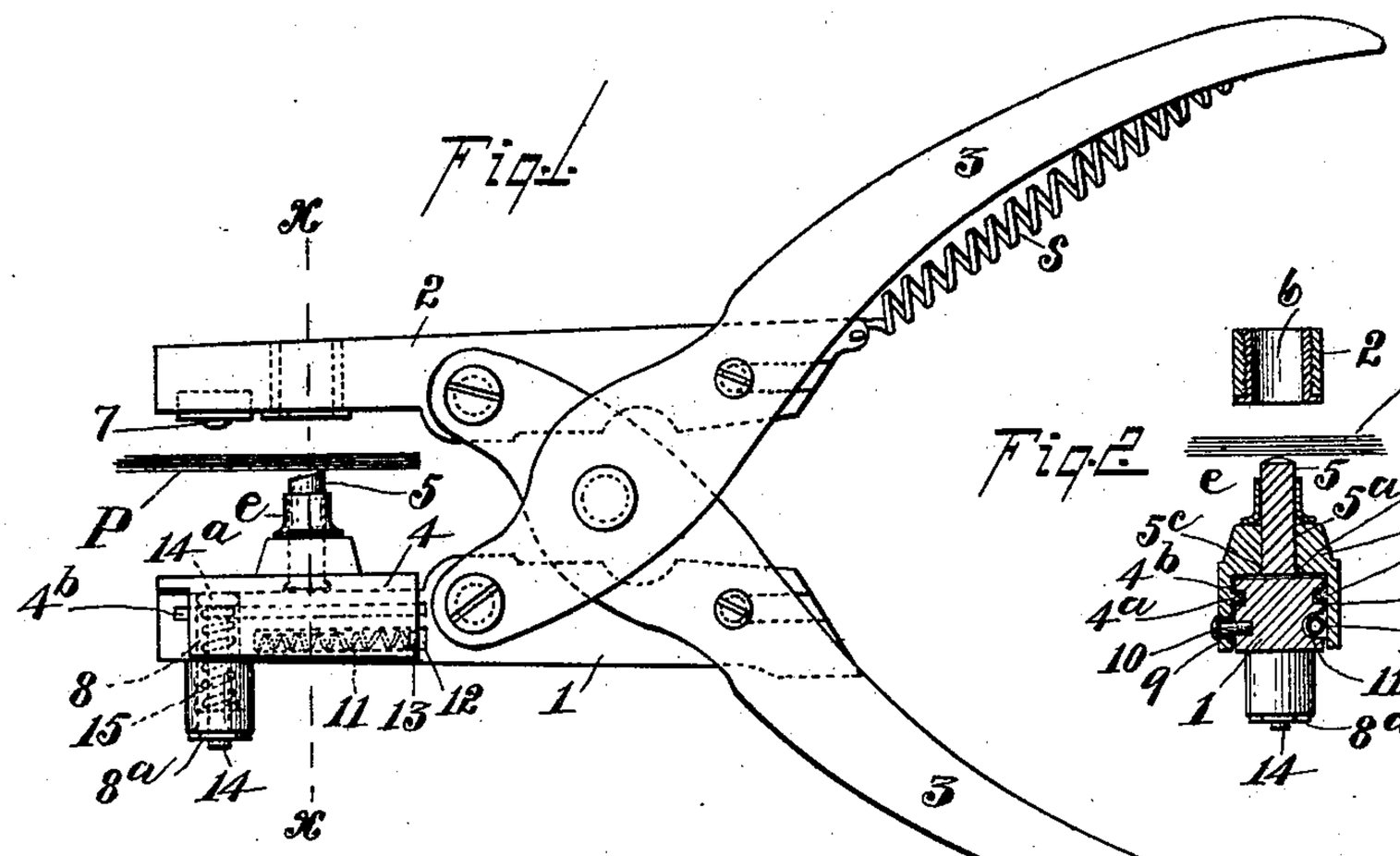


Fig. 2.

Fig. 3.

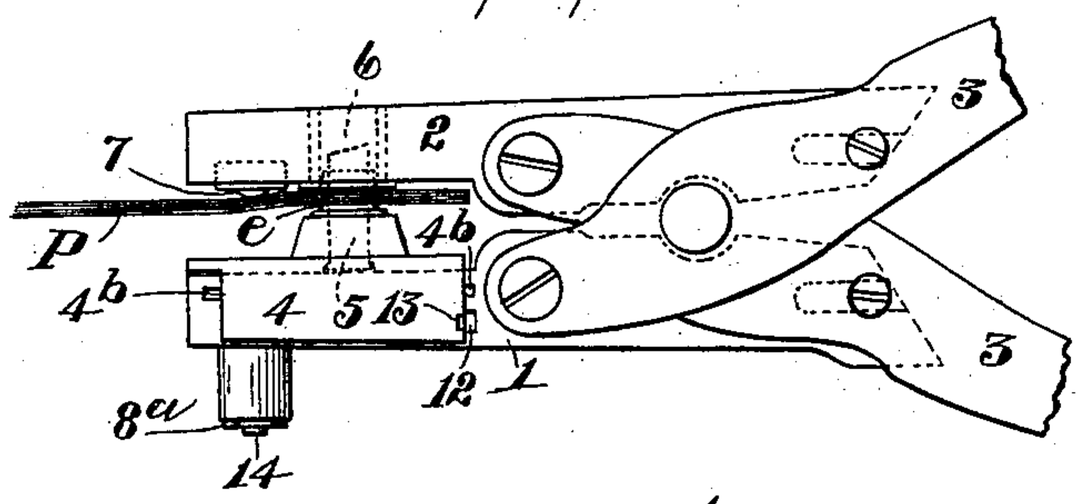


Fig. 4.

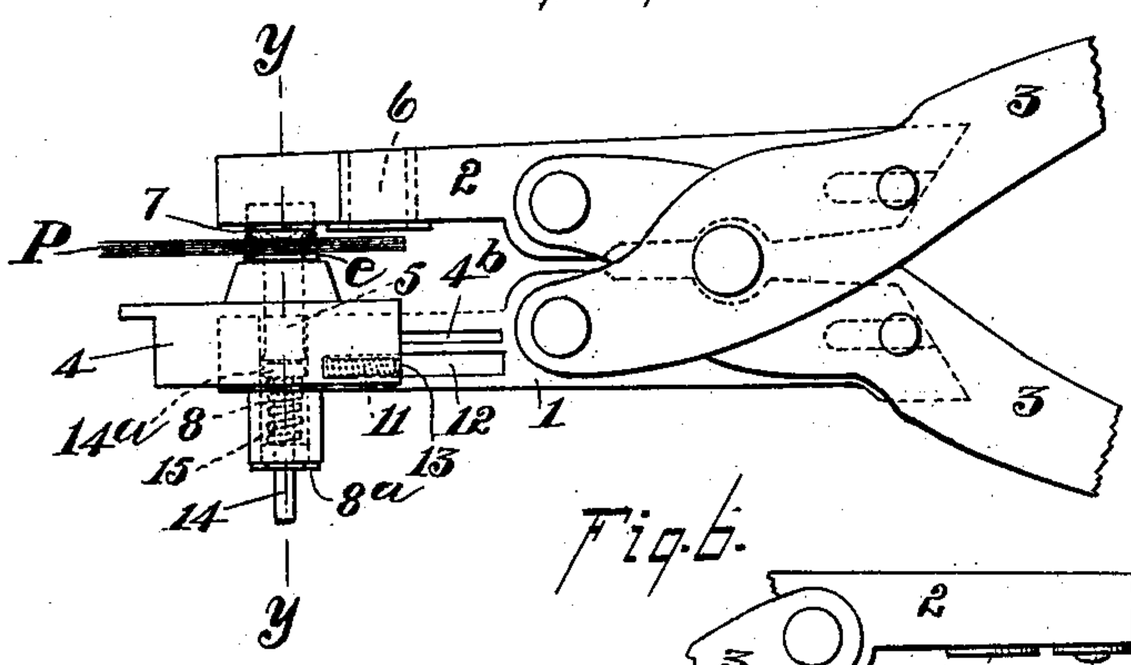


Fig. 5.

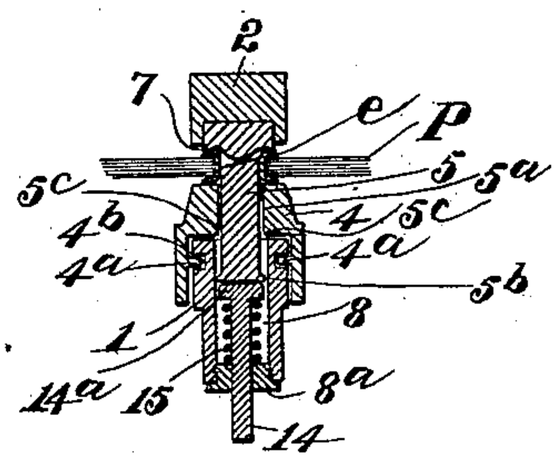
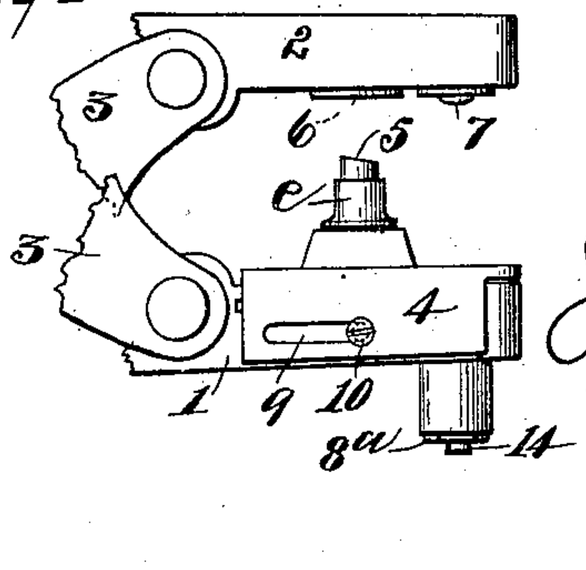


Fig. 6.



Witnesses.

Walter C. Pusey.

A. V. Grouse

Inventor.

Joshua Pusey.

UNITED STATES PATENT OFFICE.

JOSHUA PUSEY, OF MIDDLETOWN, PENNSYLVANIA.

EYELETING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 626,722, dated June 13, 1899.

Application filed March 22, 1898. Serial No. 674,730. (No model.)

To all whom it may concern:

Be it known that I, JOSHUA PUSEY, a citizen of the United States, residing near Lima, Middletown township, county of Delaware, and State of Pennsylvania, have invented certain new and useful Improvements in Eyeleting-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, of which—

Figure 1 is a side elevation showing the parts in the normal position for the perforating or punching operation; Fig. 2, a section on line *x x*, Fig. 1; Fig. 3, a side elevation showing the position of the parts at the completion of said operation, part of the handles being broken off; Fig. 4, a similar elevation showing the position at the completion of the setting operation; Fig. 5, a section on line *y y*, Fig. 4; Fig. 6, an elevation of the side opposite to that shown in Figs. 1, 3, and 4, showing the stop device for limiting the movement of the sliding pin-carrier.

The main purpose of my invention is to provide a machine or implement for the use of lawyers, conveyancers, &c., for fastening together sheets of paper or the like by means of ordinary eyelets in a more expeditious and convenient manner than heretofore.

The leading feature of the invention comprises the combination of two jaws, one of which is adapted to be reciprocated to and from the other or both simultaneously, one of said jaws being provided with a pin or punch adapted to receive thereon an eyelet, such as is generally used with eyeleting-machines, and the other jaw having a die-aperture or female counter-die registering with said pin, but of such diameter that when the jaws are brought together, the eyelet being placed upon the pin, the end of the eyelet, in conjunction with the pin, will perforate papers or the like placed between the jaws and the end of the eyelet and pin projected beyond the perforation will pass into said aperture, and while the eyelet remains in the perforation so made it may be set or clenched by a suitable device for turning outwardly its protruding end, as hereinafter described.

Another feature of the invention comprises devices or mechanism whereby the setting of the eyelet may be readily and quickly effected without removing the papers from the jaws of the machine and while the eyelet yet remains upon the pin.

Other features of the invention relate to certain combinations and details of mechanism designed to render the construction and operation of the machine as simple, convenient, and perfect as possible.

The precise nature and *modus operandi* of the invention and machine will clearly appear from the following description, reference being had to the accompanying drawings, which illustrate a machine in which my improvements are fully embodied and which I have put into practical use.

Referring now to the drawings, which represent my invention in the form of or applied to parallel pliers of well-known construction, 1 and 2 designate the respective jaws, which are reciprocated by working the handles 3 in the usual way.

The jaw 1 has mounted thereon a part 4, hereinafter termed the "pin-carrier" and sometimes the "carrier," which is adapted to slide longitudinally upon said jaw and is maintained in place thereon by suitable guides, as in the present instance by tongues 4^a of the sides of the carrier embracing the sides of the jaw, in connection with corresponding grooves 4^b in the latter. The carrier has a projecting pin or punch 5, that is loosely but neatly fitted into a through guide-hole 5^a in the carrier, so as to be capable of a certain retractile movement, as and for a purpose hereinafter explained. The inner, or in the position of the drawings the lower, end of the pin rests normally upon and so is rigidly supported by the inner face of the jaw, as seen in Fig. 2 and indicated by dotted lines in Figs. 1 and 3. The pin is prevented from accidental escape outwardly from its guide-hole by a suitable stop device—as, for example, an enlargement 5^b of the inner end fitting a corresponding enlargement 5^c of that end of the guide-hole.

In the jaw 2 is a female counter-die 6, hereinafter referred to as the "die-aperture," whose center is in line or registry with the center of the pin 5 and whose diameter is substantially equal to, or, rather, slightly in excess of, that of the eyelet designed or adapted to be used with the machine. The jaw 2 is also provided with a suitable clenching or setting

device 7, hereinafter termed the "setting-head," for turning outwardly the end of the eyelet. Devices for this purpose being well known do not require particular description.

In the jaw 1 in line or registry with the setting-head is a socket or opening 8, Fig. 5, and indicated by dotted lines in Figs. 1 and 4, whose diameter is at least equal to that of pin 5, or, rather, in this instance the enlargement 5^b of the pin. In the construction shown this opening is normally covered by the forward part of the pin-carrier, it being thus covered in Figs. 1, 2, 3, and 6. The extent of possible movement or sliding of the carrier is limited by a suitable stop—such, for illustration, as a longitudinal slot 9, Fig. 6, in the side of the carrier and a screw or pin 10 in the jaw, extending into said slot—whereby at one limit pin 5 shall be in registry with the die-aperture 6, as in Figs. 1, 2, 3, and 6, and at the other limit in registry with the setting-head 7 and also with the socket 8.

It is desirable that pin 5 shall be maintained normally in registry with the die-aperture, (in position for the punching operation,) and to this end I employ a suitable spring, acting upon the pin-carrier to tend to keep it at the first-mentioned limit, yet permitting it (the carrier) to be moved forward to the second limit. Such a spring (marked 11) is shown in the section Fig. 2 and indicated by dotted lines in Figs. 1 and 4, the same being a helical compression-spring lying in a groove 12, sunk in the side of jaw 1, one end of the spring abutting against the forward end wall of the groove and the other end against an inturned projection (indicated at 13) of the pin-carrier.

Within the socket 8 is a plunger 14, whose end or head 14^a rests upon a compression-spring 15, which is seated in the socket and tends to maintain the head of the plunger about on a level with the top of the jaw 1, or in the present instance, what is practically the same, against the under side of the pin-carrier, as shown in Fig. 2 and indicated by dotted lines in Fig. 1.

Having now described the construction, I shall proceed to explain the operation of the invention as follows: The jaws being separated to the full extent by the hand or, preferably, by a suitable spring, such as *s*, Fig. 1, and the pin 5 being in registry with the die-aperture 6, an eyelet *e*, whose external diameter is slightly less than that of said aperture and whose internal diameter is about that of the pin is slipped upon the latter, its flanged end resting upon the pin-carrier, as seen in Fig. 1. The sheets of paper P or the like to be eyeleted are now introduced between the jaws. The latter are then brought forcibly together and so cause the compound punch, composed of eyelet and pin, to pass through the papers, as in Fig. 3, the punched-out portion being forced out through the die-aperture or by the punchings of a succeeding operation.

I here remark that it might be presupposed that as eyelets for uniting papers and the like are made of thin and comparatively soft or yielding metal the eyelet, instead of doing its part of the punching out, would crush down, (unless the body of papers were comparatively thin;) but I found by numerous trials that this difficulty did not occur. I was, in fact, surprised at the ease and certainty with which the ordinary eyelets perforated papers as much as a quarter of an inch in thickness with the machine shown in the drawings.

Returning to the description of the operation of the machine, the jaws are now opened, leaving the eyelet upon the pin, its end projecting through the papers, and the pin-carrier is advanced against the slight resistance of spring 11 to the limit of its forward movement, thus bringing the eyelet and pin into registry with the setting-head 7 and also with the socket or opening 8. This movement of the carrier is most conveniently made in the form of the machine shown by drawing forward the papers P by one hand, while the handles 3 are held in the grasp of the other hand. The jaws are now again forced together, whereupon pin 5 will, by the contact therewith of the setting-head, be retracted against the stress of spring 15 a certain distance (depending upon the length of the particular eyelet and the thickness of the papers) into the socket 8 and the eyelet will be finally clenched by the setting-head, as seen in Figs. 4 and 5. This accomplished the jaws are again opened or permitted to be opened by the action of the spring *s*, when pin 5 being freed from socket 8 by reaction of spring 15 upon plunger 14 and the eyeleted papers being then removed the carrier will be retracted by spring 11 to the original normal position of Fig. 1, ready for a repetition of the foregoing-described operations. As it is desirable that the parts apt to become dull from frequent use should be capable of ready removal when necessary, I prefer to make the counter-die or die-aperture part and the setting-head each a separate piece socketed in or otherwise detachably secured to the jaw 2, as suggested by the drawings, and I also provide for removal of pin 5 when required by making the bottom part (marked 8^a) of the socket 8 detachable—as, for instance, by screwing in the same, as also indicated in the drawings. Thus, first removing the part 8^a, the spring 15 and plunger 14 may be taken out, and then by bringing pin 5 into line with the opening it may be removed or allowed to drop out, when a new pin may be inserted in lieu thereof.

It is not essential, although usually much preferable, that a spring or other automatically-operating device shall be employed to return the pin 5 to the elevated position after completion of the setting operation, as that may be done by hand, or by a positively-actuated device, or by gravity, in which latter case the upper jaw would carry the pin.

The machine may be made in various forms,

either as parallel pliers or as a lever-press, wherein the lower one of the jaws would be stationary, each form, however, having embodied therein not less than the essential feature of the two jaws, one thereof provided with the eyelet-receiving pin and the other with the die-aperture of suitably greater diameter than that of the pin, as hereinbefore described, and in registry with the latter.

In lieu of using the movable pin-carrier pin 5 may be mounted directly in a guide-hole in jaw 1, and the socket and spring or other suitable device for returning the pin to the normal or elevated position may be connected to a part attached to said jaw and adapted to be slid or shifted into the two positions, the one giving a rigid support for the pin during the perforating operation and the other permitting the retractile movement of said pin during the setting operation. In such converse arrangement the other jaw 2 would be provided with a suitable sliding or movable part or carrier having a setting-head, whereby the latter could be brought into position over the die-aperture when the setting of the eyelet is to be done and shifted out of the way in order to leave the aperture free for the passage of pin 5 and the eyelet thereon when the papers are to be perforated; or the said part or carrier may be provided with both die-aperture and setting-head, either of which, as required, may be brought into registry with the pin.

I remark that it is not necessary that the free end of pin 5 shall be beveled, as shown, as it might be made flat. Nor is it necessary that it shall be of greater length than the eyelet, the function of the pin being to maintain the eyelet in place and to afford it internal support when being forced through the papers, &c. I may further remark as an obvious advantage of my device that the eyelet constitutes, so to say, a new punch or cutter each time the perforating operation is performed.

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

1. In an eyeleting-machine, the combination of two jaws, one or both adapted to reciprocate, an eyelet-receiving pin secured to one of said jaws; the other jaw having an unobstructed die-aperture therethrough in registry with said pin and adapted to receive the pin, and an eyelet placed thereon when the jaws are brought together, substantially as and for the purpose set forth.

2. In an eyeleting-machine, the combination of two jaws, one or both adapted to reciprocate, the die-aperture in one of said jaws, the pin on the other jaw in registry with, and of less diameter than that of, said aperture, and the cutting or perforative eyelet fitted upon said pin, the diameter of the body of which eyelet is less than that of said aperture; whereby when said jaws are brought forcibly together, the eyelet will be caused to perforate papers, or other suitable material, suitably placed between the jaws, and its perforating end to enter said die-aperture, substantially as set forth.

3. In an eyeleting-machine, the combination of two jaws, one or both adapted to reciprocate, an eyelet-receiving pin connected to one of said jaws; the other jaw having an unobstructed die-aperture therethrough adapted to receive said pin and an eyelet placed thereon; the setting-head; means whereby said pin may be caused to register with either said die-aperture or with the setting-head, as required; and means whereby said pin is rigidly supported when in registry with the die-aperture and is permitted to retract in a direction away from the setting-head when in registry therewith, substantially as and for the purpose set forth.

4. In an eyeleting-machine, the combination of two jaws, one or both adapted to reciprocate, the pin secured to one of said jaws, the eyelet fitted upon said pin; the other jaw having the die-aperture therein adapted to receive said pin and eyelet thereon, the setting-head upon the jaw having said aperture; means whereby said pin and eyelet may be caused to register with either the aperture or the setting-head as required; and means whereby the pin is rigidly supported when in registry with the die-aperture and is permitted to retract in a direction away from the setting-head when in registry therewith, substantially as and for the purpose set forth.

5. In an eyeleting-machine, the combination of the jaws, one or both adapted to reciprocate, the pin-carrier connected to, and adapted to move upon, one of said jaws; the retractable pin mounted above said jaw in a guide-hole in the pin-carrier, and adapted to receive an eyelet thereon; the other jaw having the die-aperture adapted to receive the eyelet and pin when the jaws are brought together; the setting-head upon the last-mentioned jaw, and there being an opening or passage-way in the first-mentioned jaw into which opening said pin is adapted to retract when the pin-carrier is moved into position to bring the pin into registry with the setting-head, substantially as and for the purpose set forth.

6. In an eyeleting-machine, the combination of the jaws, one or both adapted to reciprocate, the movable pin-carrier connected to one of said jaws, the retractable pin mounted in said carrier and adapted to receive an eyelet thereon; said jaw having the socket or opening therein; the other jaw having the die-aperture adapted to receive said pin and eyelet placed thereon, when the jaws are brought together; the setting-head upon the last-mentioned jaw opposite to said socket into which latter said pin is adapted to retract when the pin-carrier is moved into position to bring the pin in line with the setting-head,

and means for ejecting said pin from the socket, substantially as and for the purpose set forth.

7. In an eyeleting-machine, the combination of the jaws, one or both adapted to reciprocate, the movable pin-carrier connected to one of said jaws, the retractable eyelet-receiving pin mounted in said carrier, said jaw having the socket or opening therein; the other jaw having the die-aperture adapted to receive said pin and an eyelet placed thereon when the jaws are brought together; the setting-head on the last-mentioned jaw opposite to said socket, into which latter said pin is adapted to retract when the pin-carrier is moved into position to bring the pin into registry with the setting-head and the jaws are brought together, and a spring device adapted to force the pin from said socket, substantially as and for the purpose set forth.

8. In an eyeleting-machine, the combination of the jaws, one or both adapted to reciprocate, the pin-carrier movably connected to one of said jaws; the retractable eyelet-receiving pin mounted in said carrier; the other jaw having the die-aperture adapted to receive the pin and eyelet placed thereon, when the jaws are brought together; the setting-head on the last-mentioned jaw, and a stop device for limiting the movement of the pin-carrier to insure registry of said pin either with said die-aperture or setting-head as required, substantially as and for the purpose set forth.

9. In an eyeleting-machine, the combination of the jaws, one or both adapted to reciprocate, the pin-carrier movably connected to one of said jaws; the retractable eyelet-receiving pin mounted in said carrier; the other jaw having the die-aperture adapted to receive the pin and eyelet placed thereon, when the jaws are brought together; the setting-head on the last-mentioned jaw, and a stop device for limiting the movement of the pin-carrier to insure registry of said pin, together with the spring for maintaining the said pin normally in registry with the die-aperture, substantially as and for the purpose set forth.

10. In an eyeleting-machine, the combination of the jaws, one or both adapted to reciprocate, the pin-carrier adapted to slide upon one of said jaws, the retractable eyelet-receiving pin mounted in said carrier; the other jaw having the die-aperture in registry with said pin; the setting-head on the last-mentioned jaw; the stop for limiting the movements of the pin-carrier, and the spring adapted to maintain the latter normally in position for the pin to register with the die-aperture, substantially as and for the purpose set forth.

11. In an eyeleting-machine, the combination of the jaws, one or both adapted to reciprocate, the pin-carrier slidably mounted on one of said jaws, the retractable eyelet-receiving pin mounted in a guide-hole extending through said carrier, whereby the inner end of the pin is adapted to rest upon the jaw; the socket in said jaw; the spring-controlled plunger in said socket; the die-aperture in the second jaw adapted to receive said pin and an eyelet thereon; the setting-head on the latter jaw opposite to said socket; the stop for limiting the movements of the pin-carrier; and the retracting-spring for the latter, all constructed and adapted to operate substantially as and for the purpose recited.

12. In an eyeleting-machine, the combination of two jaws, one or both adapted to reciprocate, an eyelet-receiving pin connected to one of said jaws; the other jaw having a die-aperture adapted to receive said pin and an eyelet placed thereon; the setting-head, means whereby said pin may be caused to register with either said die-aperture or with the setting-head; means whereby said pin is rigidly supported when in registry with the die-aperture, and is permitted to retract in a direction away from the setting-head when in registry therewith, and a spring for returning the pin to the normal or elevated position, substantially as described.

In testimony whereof I have hereunto affixed my signature this 21st day of March, A. D. 1898.

JOSHUA PUSEY.

Witnesses:
JOHN R. NOLAN,
ANDREW V. GROUPE.