Jan. 5, 1926. 1,568,260

J. G. BATES

STAPLING MACHINE

Filed Jan. 9, 1925 2 Sheets-Sheet 1

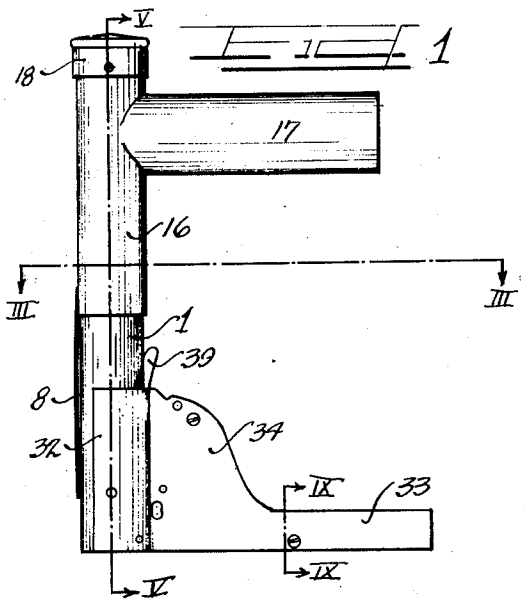


FIG. 1

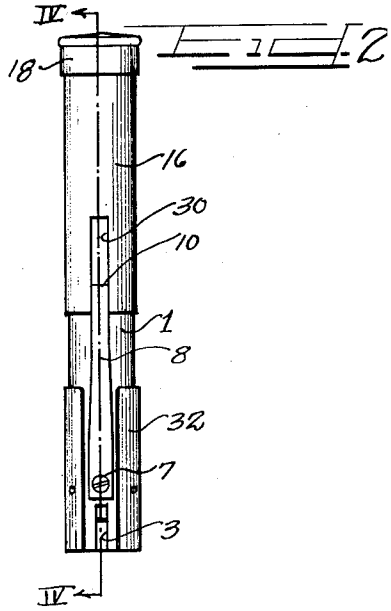


FIG. 2

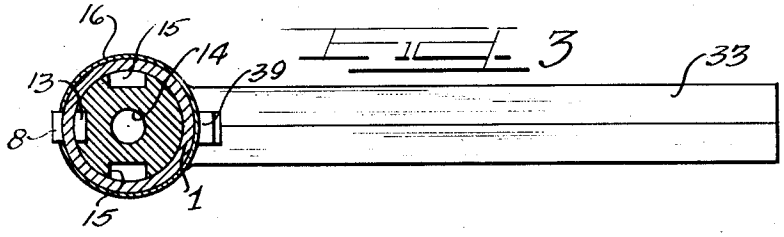


FIG. 3

FIG. 7

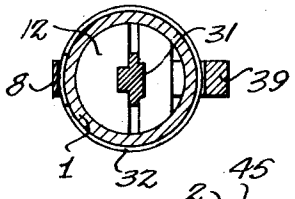


FIG. 8

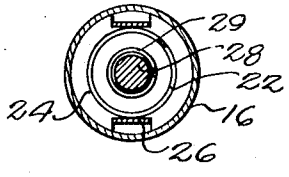


FIG. 9

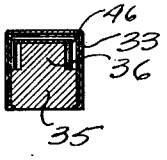
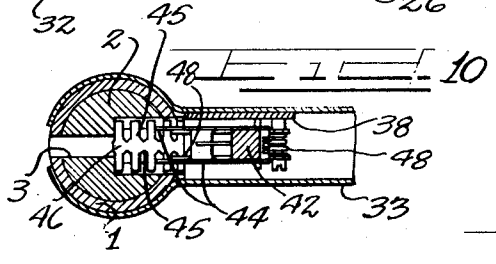


FIG. 10



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FIG. 4

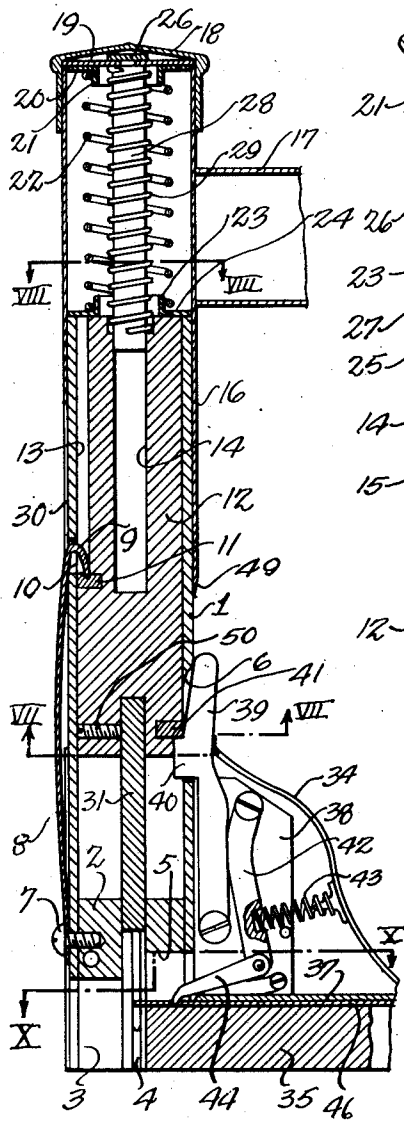


FIG. 5

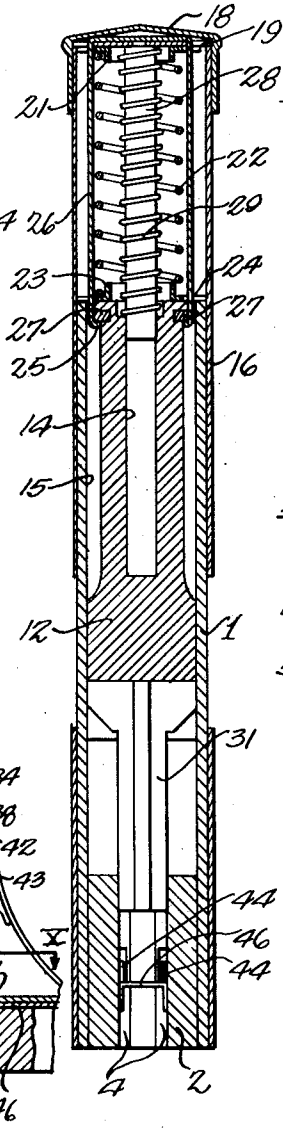
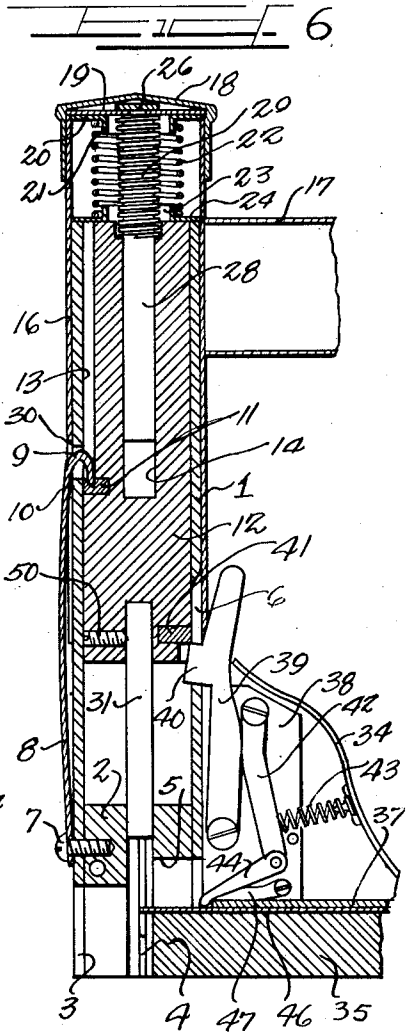


FIG. 6



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By Attys

Patented Jan. 5, 1926. 1,568,260

UNITED STATES PATENT OFFICE.

JESSE G. BATES, OF CHICAGO, ILLINOIS.

STAPLING MACHINE.

Application filed January 9, 1925. Serial No. 1,354.

To all whom it may concern:

Be it known that I, JESSE G. BATES, a citizen of the United States, and a resident of the city of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in a Stapling Machine; 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, and to the numerals of reference marked thereon, which form a part of this specification.

This invention relates to an improved stapling machine adapted to be manually operated to cause staples to be automatically discharged one at a time and forced into engagement with one of the walls or sides of a wooden box for the purpose of supplying a means whereby address cards or labels of any description may be easily secured in place on a wooden container.

It is an object of this invention to provide a stapler adapted to be manually operated to first cause a staple to be cut from a staple strip and then cause the prongs of the severed staple to be forced through the card and into the material of the container for the purpose of holding the card securely in place.

It is also an object of this invention to provide a stapler which when manually operated causes a staple to be cut from a material strip and then rammed into the material on which the stapler is applied.

It is a further object of this invention to provide a stapler for fastening address cards on wooden shipping crates and the like, said stapler having a spring controlled handle mechanism which when operated causes a ram device to first automatically cut off a staple from a staple strip and then ram the prongs of said cut off staple through the material which is to be secured in place without bending said prongs.

It is a still further object of this invention to provide a stapler wherein a strip of integrally connected staples is adapted to be automatically fed beneath the ram each time the machine is operated by a spring controlled handle for the purpose of permitting the ram to cut off the innermost staple from said staple strip and ram the prongs of said cut off strip through the material and into a support to hold the material secured in place thereon.

It is an important object of this invention to provide an improved stapler of simple, light and effective construction adapted to be readily operated by one hand and applied for the purpose of securing shipping tags or cards to wooden shipping crates, containers, supporting walls, etc., by individually causing staples to be cut from a staple strip and then causing the prongs of the cut off staple to be automatically forced through the material and into the support without bending the staple prongs.

Other and further important objects of this invention will be apparent from the disclosures in the specification and the accompanying drawings.

This invention (in a preferred form) is illustrated in the drawings and hereinafter more fully described.

On the drawings:

Figure 1 is a side elevation of a stapler embodying the principles of this invention.

Figure 2 is a front elevation thereof.

Figure 3 is an enlarged sectional view taken on line III—III of Figure 1.

Figure 4 is an enlarged vertical section taken on line IV—IV of Figure 2 with parts broken away and with parts shown in elevation.

Figure 5 is a vertical section taken on line V—V of Figure 1 with parts shown in elevation.

Figure 6 is a sectional view similar to Figure 4 showing the control springs compressed and the ram parts in position ready to be released by the control lever to cause a staple to be cut off from a staple strip and then rammed into a wooden board or the like.

Figure 7 is a transverse detail section taken on line VII—VII of Figure 4.

Figure 8 is a transverse detail section taken on line VIII—VIII of Figure 4.

Figure 9 is a vertical detail section taken on line IX—IX of Figure 1.

Figure 10 is a fragmentary detail section taken on line X—X of Figure 4.

As shown on the drawings:

Reference numeral 1 indicates a cylindrical casing or housing having a cylindrical steel plug or block 2 rigidly secured

in the lower end thereof by any suitable means. The casing sleeve 1 and the block 2 are radially reamed out or cut to afford a longitudinally directed slot 3 which opens through the bottom of said casing 1 and said plug 2 as illustrated in Figures 4 and 10. The plug 2 is also ground out or cut at right angles to the slot to afford a pair of oppositely disposed staple guide grooves 4. The plug 2 also has provided therein a radial recess or chamber 5 which communicates with a slot in the casing 2, said slot forming a part of the chamber 5 as illustrated in Figure 6. The chamber 5 is disposed in the same plane as the slot 3 and is wider than said slot. The casing 1 is also provided with a longitudinal slot 6 a short distance from the lower end of said casing as illustrated in Figures 4 and 6. Removably secured to the casing 1 above the slot 3 and projecting through the plug 2 is a mounting screw 7 which serves to rigidly hold the lower end of a strap spring 8 secured on the exterior of the casing 1. The upper end of the strap spring 8 is provided with a stop hook 9 (Figure 4) which is also positioned so that the stop hook is permitted to project through an opening 10 in the casing 1.

The stop hook 9 affords a stop against which a hardened steel plate or lug 11 (Figure 4) is adapted to contact to limit the upward movement of a cylindrical plunger or ram 12 which is slidably mounted within the casing 1. The plate or lug 11 is rigidly seated in a recess provided in the ram 12. The ram 12 is provided with a longitudinal slot 13 to permit sliding movement of said ram. The ram 12 is also provided with an axial bore or passage 14 and with a pair of oppositely disposed longitudinal grooves or slots 15 (Figure 5).

Slidably mounted on the exterior of the upper end of the casing 1 is a sleeve 16 having rigidly secured at right angles thereto an arm or handle 17 to permit manual downward sliding of said sleeve 16 when it is desired to operate the stapler. The upper end of the sleeve 16 is closed by a cap 18. A notch or slotted disk 19 is held in place upon the upper end of the sleeve 16 by means of said cap 18. Rigidly secured on the under side of the plate 19 is a disk or ring member 20 the middle portion of which is provided with an integral collar 21. Engaged around the collar 21 is the upper end of an outer control spring 22 which is disposed within the sleeve 16 and has the lower end thereof engaged around a collar 23 which is integrally formed on the middle portion of a plate or disk 24. The plate 24 is rigidly secured on the upper end of the casing 1. The control spring 22 normally acts to hold the sleeve 16 in its upper position as illustrated in Figure 4. The upward movement of the sleeve 16 is limited by means of a pair of hooks 25 (Figure 5) which are formed on the lower end of the arms of a U-shaped strap 26 the bight of which is seated upon the plate 19 with the arms of said strap extended through notches in said plate 19 downwardly through the upper portion of the sleeve 16 and through notches in the plate 24 permitting the lower hooked ends 25 of said U-shaped member 26 to project into the ram guide grooves or slots 15. The hooks 25 are positioned to engage beneath hardened steel plates or plugs 27 which are rigidly secured in the sides of the upper end of said ram 12 (Figure 5). The control spring 22 thus acts to hold the slidable sleeve in its upper normal position with the hooks 25 contacting the hardened steel plates 27 thereby limiting the upward movement of the sleeve 16 on the casing 1.

Rigidly secured to the middle portion of the upper plate 19 within the cap 18 is the upper end of a plunger rod 28. The plunger rod 28 extends downwardly through the collar 23 of the lower plate 24 and projects into the upper end of the axial passage 14 provided for the purpose in the ram 12.

Engaged around the plunger rod 28 is an inner control spring 29 the upper end of which seats against the upper plate 19 while the lower end of the spring 29 seats in a notch provided for the purposes in the upper end of the middle portion of the ram 12. The spring 29 is provided for the purpose of actuating the ram when the same is released as hereinafter described.

To permit the sleeve to slide downwardly on the casing 1 said sleeve 16 is provided with a longitudinal slot 30 (Figure 2) to permit the sleeve to pass the upper end of the strap spring 8.

The lower end of the ram 12 is provided with a transverse slot within which the upper enlarged end of a ram rod 31 is seated. The ram rod is held in place by means of a set screw 50 or other suitable means. The ram rod 31 is shaped to permit the same to slide in the guide grooves 4 and is also provided with guide ribs or flanges which are adapted to slidably engage in guide grooves provided in the plug 2.

A staple strip feed mechanism is provided on the lower end of the casing 1 and comprises a split sleeve or collar 32 which is rigidly secured around the exterior of the lower end of the casing 1. Integrally formed on the mounting sleeve 32 in a plane with the handle 17 is a staple strip feed channel or housing 33 having an enlarged portion 34 where the housing joins the mounting sleeve 32. Rigidly secured within the lower portion of the staple feed housing 33 is a closure block 35 which extends into the chamber 5 provided in the lower end of the plug 2. The closure block 35 stops short

of the staple guide grooves 4 so that the outlet for a cut off staple is not obstructed. The closure block has a longitudinal rib 36 (Figure 9) integrally formed on the top thereof to afford a guide for the strip of staples as they are fed through the housing 33 and into the field of operation of the ram rod 31. Mounted within the housing section 34 above the block 35 is a guide plate 37 (Figure 4) below which the strip of staples is adapted to be advanced to have the individual staples cut therefrom. The end of the block 35 which projects into the plug 2 serves as a die member with which the lower end of the ram rod 31 coacts to afford a means for cutting off staples one at a time.

Rigidly secured within the casing section 34 of the housing 33 is a mounting plate 38 (Figure 6). Pivotally mounted on the mounting plate 38 is the lower end of a control lever 39 having a tongue or finger 40 integrally formed thereon and normally positioned to project through the casing slot 6 and into engagement with a notch formed in the lower end of the ram 12. The finger 40 coacts with a hardened steel plate 41 which is seated in the ram 12 directly above the recess or notch 42 just described. The lever 39 is held in normal latching position with the finger 40 engaged beneath the hardened steel plate 41 of the ram 12 to hold the ram and the ram rod 31 in elevated position until the said lever is released by a downward movement of the sleeve 16. The lever is held in latching position by means of a pivoted arm 42 which is pivotally supported on the plate 38 within the housing 34. A spring 43 is mounted within the housing 34 and contacts the arm 42 thereby resiliently holding the said arm 42 in contact with one edge of the lever 39 as illustrated in Figures 4 and 5. Pivoted on the lower end of the arm 42 is a two arm staple strip feed pawl 44 (Figure 10) with the ends of said pawl members positioned to engage in a pair of notches 45 formed in the longitudinal edges of a strip of integrally connected staples 46. Each time the control lever 39 is moved back into latching position beneath the ram 12 by means of the control spring 43 and the arm 42, said arm 42 causes the double pawl members 44 to move forwardly thereby causing the staple strip 46 to be advanced a distance sufficient to move the innermost staple into a position within the field of operation of the ram rod 31. A pair of stop pawls 47 are pivotally supported on the mounting plate 38 within the housing 34. The stop pawls are controlled by a spring 48 and serve to engage in the notches 45 of the staple strip 46 to prevent the staple strip 46 from moving outwardly away from the plug 2 when the control lever 39 and the arm 42 are actuated to cause retraction of the said pawls 44 due to the downward movement of the sleeve 16 on the ram 12. As shown in Figure 10 the stop pawls 47 are connected by a transverse strip of material and are positioned between the feed pawls 44.

The operation is as follows:

It very often becomes necessary to secure shipping tags and the like on wooden containers, therefore making it necessary to either paste the shipping tags in place or nail the same on the side of the box or crate. The stapler of this invention has been devised for the specific purpose of providing a ready and easy, single hand operated device whereby shipping tags may be securely fastened upon wooden containers or whereby sheet material may be secured to supports. The stapler is adapted to cut off staples from a staple strip and then ram the pointed prongs of the staple straight into the wooden sides of the container for the purpose of securing a shipping tag or card in place.

When it is desired to use the stapler a strip consisting of a plurality of integrally connected staples 46 is inserted through the open end of the staple feed housing 33 over the longitudinal rib 36 of the die block 35 as illustrated in Figure 9. The inner end of the staple strip projects beyond the inner end of the closure or die block 35 and into the recess 3 directly in the path of travel of the ram rod 31. Normally the parts of the stapler are positioned as illustrated in Figure 4 wherein the outer control spring 22 serves to hold the sleeve 16 and its handle 17 in elevated position ready for use. When the spring 22 holds the sleeve 16 in its elevated position the U-shaped strap 26 holds the ram or plunger 12 in its upper position so that the ram rod 31 is held in its raised position ready for operation.

To use the device a shipping card or tag which is to be secured on a wooden crate or container is held in position and the stapler is then placed over one corner of the shipping card in a position ready for use. When the ram 12 is in its elevated position the control lever 39 is engaged beneath the hardened steel plate 41 as shown in Figure 4 thereby holding the ram 12 latched in its upper position. The spring 43 holds the cam arm 42 pressed against the lever 39 and at the same time serves to hold the feed pawls 44 in a position wherein the strip of staples is held in an advanced position with the innermost staple properly positioned below the ram rod 31. A person using the stapler holds the device by one hand by means of the handle 17 and has only to push downwardly on said handle thereby causing the sleeve 16 to slide downwardly on the casing 1 to simultaneously compress both the outer control spring 22 and the inner control spring 29 into the compressed positions illus-

trated in Figure 6. When the sleeve 16 reaches a position wherein a bevelled portion 49 (Figure 4) reaches the upper rounded end of the control lever 39, said sleeve 16 acts to automatically throw the lever 39 outwardly thereby retracting the tongue 40 from beneath the hardened steel plate 41 of the ram 12. At the moment the finger 40 of the lever 39 releases the ram 12 the compressed spring 29 acts automatically on the plunger to rapidly force the ram and the ram rod 31 downwardly in the casing 1 causing the lower end of the ram rod to ram against the projecting staple thereby cutting off the staple from the staple strip against the cutting edge of the die block 35. As the staple is severed from the strip the operation of the ram rod continues so that the ram rod forcibly pushes the staple downwardly out of the lower end of the closure plug 2 with the pointed ends of the staple legs or prongs emerging from the stapler through the ends of the guide grooves 4 thereby permitting the staple prongs to be rammed directly through the shipping card or material to be held in place. The staple prongs pierce straight into the wood wall or siding of the shipping crate or supporting wall on which the material is to be fastened. The ejection and ramming of a staple by the stapler is done almost instantaneously with the operation of the handle 17. After a staple has been rammed in position to hold one corner of the card in place the pressure on the handle 17 is released thereby permitting the compressed spring 22 to act to automatically return the sleeve 16 into its normal raised position until the hooked ends 25 of the strap 26 come into contact with the hardened steel plates 27 of the ram 12. The ram is thereby also returned to its normal position toward the plate 24 thereby causing retraction of the ram rod 31. The upward movement of the ram 12 is limited by means of the stop hook 9 which is integrally formed on the upper end of the strap spring 8. The stop hook 9 is adapted to be contacted by the hardened steel plate 11 which is inserted in a recess in the ram 12.

As the sleeve 16 and the ram 12 are returned to their normal positions the lower notched end of the ram 12 passes the latching edge of the finger 40 on the lever 39. When this occurs the control spring 43 acting against the cam arm 42 swings said cam arm about its pivot toward the casing 1, thereby forcing the control lever 39 back into the latching position illustrated in Figure 4 with the tongue 40 engaging in the notch beneath the hardened steel plate 41. As the spring 43 operates the cam arm 42 the lower end of said cam arm 42 operates the feed pawls 44 thereby causing said pawls to push the staple strip inwardly a predetermined distance to slide the next staple into position within the slot 3 with the pointed prongs of the end staple positioned in the guide grooves 4 as shown in Figure 5.

When the handle 17 is operated to slide the sleeve 16 downwardly on the casing 1 to cause release of the control lever 39 and operation of the ram rod 31 to cut off and ram a staple through a card and into the material forming the container, the control lever 39 swings outwardly and causes the cam arm 42 to swing outwardly thereby drawing the feed pawls 44 outwardly over the staple strip to engage in the next set of notches ready for the next feeding operation. To hold the staple strip in position against sliding outwardly when the feed pawls are moved outwardly the spring controlled stop pawls 47 are provided to act as stops to hold the staple strip in place so that the same cannot slide outwardly over the rib 36 as the feed pawls are retracted into a position to engage in another set of notches of said staple strip ready for the next feeding operation.

It will be noted that the device is simple in construction and may be easily used by an inexperienced person to rapidly cut off and ram staples through the corners of a shipping tag and into a wooden box or crate to hold the shipping tag or card rigidly secured in place. It will, of course, be understood that any number of staples may be inserted through a shipping card, or that the stapler may be used for securing cards or sheet material on walls or other supporting means.

Attention is called to the fact that when a staple is cut off from a staple strip and is rammed through a card, that the prongs or legs of the staple are rammed straight through the card and into the wooden material of the box or crate. This method of attaching shipping cards by ramming the prongs of the staples into the wood without bending the said prongs affords a means whereby the staples may be readily removed to take off the card from a crate or box after the same has reached its destination.

I am aware that many changes may be made and numerous details of construction may be varied through a wide range without departing from the principles of this invention, and I therefore do not purpose limiting the patent granted hereon, otherwise than necessitated by the prior art.

I claim as my invention:

1. A stapler comprising a casing, a spring controlled ram therein, latching means for holding the ram in retracted position, a spring controlled sleeve on said casing adapted to be manually operated to cause retraction of said latching means and automatic operation of said ram to cause a staple to be cut off from a staple strip

and forced out of said casing, and means for returning the latching means to normal position and at the same time causing automatic feeding of the staple strip a predetermined distance.

2. A stapler comprising a casing, means for automatically feeding a staple strip a predetermined distance, a ram mechanism within said casing, a latching lever for holding the ram mechanism in retracted position, means movable on said casing to cause retraction of said lever, and spring means for automatically operating said ram when the lever is released to cause a staple to be automatically cut off from the staple strip and forcibly ejected from the casing.

3. A stapler comprising a casing, means for automatically feeding a staple strip a predetermined distance each time the stapler is operated, ram means within said stapler adapted to cut a staple from said staple strip and eject the same from the stapler and at the same time ram the prongs of the staple through a card and into the material on which the card is to be secured, and a pivoted lever operated by the feed means for holding the ram means in a latched position.

4. A stapler comprising a casing, a ram slidably mounted therein, a spring for operating said ram, a sleeve slidably mounted on said casing, a spring controlling the operation of said sleeve, a handle formed on said sleeve to permit manual operation of said sleeve, a ram rod carried by said ram, a slotted plug in one end of said casing to afford a guide for said ram rod, a die block in said casing projecting into said plug in a position for coaction with the ram rod, means for feeding a staple strip over said die block into said plug, a lever controlling the operation of said ram and ram rod, said feed means also serving to return the latching lever to normal latching position, and stop pawls in said casing adapted to hold the staple strip against movement in one direction when the lever is retracted by the operation of said sleeve, and the feed means are moved over the staple strip into a position ready for the next feeding operation.

5. A stapler comprising a casing, a ram mechanism therein, a latch for controlling said ram mechanism, a staple strip feed mechanism for advancing a staple strip into the casing and also serving to hold the latch in locking engagement with said ram mechanism, and manually operated means for releasing the latch to permit the ram mechanism to automatically cut off a staple from said staple strip and forcibly eject the same from said casing.

6. A stapler comprising a casing, ram mechanism therein, resilient means for operating said ram mechanism, a staple strip feed mechanism for advancing a staple strip into the field of operation of said ram mechanism, pawl means for holding the staple strip against movement in one direction when the feed mechanism is retracted, a lever contacted by the feed mechanism and normally serving to hold the ram mechanism in retracted position, a spring controlled sleeve on said casing, and a handle for operating said sleeve to cause the sleeve to retract said lever to permit the ram mechanism to automatically cut off a staple from the staple strip and forcibly eject said staple from the casing, forcing the staple prongs straight into the material on which the stapler is applied.

7. A stapler comprising a casing, a spring controlled sleeve slidably mounted thereon, a handle for operating said sleeve, a spring operated ram device in said casing, a lever for holding said ram device in retracted position, a spring controlled staple strip feed device engaging said lever for holding the same in latching position, stop pawls for preventing outward movement of the staple strip, and stop means for limiting the upward movement of said ram device in said casing.

8. A stapler comprising a casing, a spring operated ram mechanism therein, a lever for holding said ram mechanism in retracted position, and a spring controlled staple strip feed mechanism engaging said lever for holding the same in a latching position to lock the ram mechanism in retracted position.

9. A stapler comprising a casing, a ram mechanism therein, a lever mounted in said casing, a spring controlled staple strip feed mechanism in said casing engaging said lever to hold the same in a latching position to lock the ram mechanism in retracted position, and a spring controlled pawl mechanism in said casing for holding the staple strip against outward movement when the spring controlled feed mechanism is retracted into a position ready for the next feeding operation of the staple strip.

10. A stapler comprising a casing, a spring operated ram mechanism therein, a spring controlled sleeve, a latch lever adapted to be released by said spring controlled sleeve to permit automatic operation of the ram mechanism, a pivoted cam arm in said casing, a spring for holding said cam arm in engagement with the lever to hold the lever in latching position, feed pawls connected with said cam arm and adapted to be operated thereby to cause a staple strip to be fed a predetermined distance with each operation of said sleeve, and stop pawls within said casing for engaging the staple strip to hold the same against movement in one direction when the feed pawls are drawn over the staple strip into a posi-

tion to permit the staple strip to be again advanced.

11. A stapler comprising a casing, a ram mechanism therein, adapted when operated to cause a staple to be cut from a staple strip and forcibly ejected from the casing, means for automatically feeding the staple strip into the casing each time a staple is cut from the end of said staple strip, and a control lever for the ram mechanism adapted to be returned into latching position by said feed means.

12. In a stapler of the class described the combination with a slotted casing, of a ram mechanism slidably mounted therein, a spring for operating said ram mechanism, spring means for returning the ram mechanism into normal position after an operation thereof, and a hooked strap spring projecting into said casing adapted to be engaged by said ram mechanism to limit the movement of said ram mechanism in one direction.

13. In a stapler the combination of a casing, of a ram mechanism mounted therein, a spring for operating said ram mechanism, a second spring for returning said ram mechanism to normal position after an operation thereof, a latch device for holding said ram mechanism in a retracted position, and a manually operated means adapted to cause compression of the ram actuating spring and release of said lever to permit said compressed ram operating spring to operate the ram mechanism to cause a staple to be cut off of a staple strip and forcibly ejected from the machine with the prongs of the staple rammed straight through a material and into a support on which the material is to be secured.

14. A stapler comprising a casing, a spring controlled ram therein, a ram rod carried by said ram, a slotted guide plug in said casing for said ram rod, a latching lever for holding said ram and ram rod in retracted position, a manually operated spring controlled sleeve on said casing for retracting the lever to permit the ram rod to first cut a staple from a staple strip and then ram the prongs of said cut off staple straight through a member and into a support on which the member is to be secured, a spring controlled feed mechanism for the staple strip adapted to engage said lever to hold the same in latching position, and means for holding the staple strip against movement in one direction when the feed mechanism is moved into a new position of engagement with said staple strip.

In testimony whereof I have hereunto subscribed my name.

JESSE G. BATES.