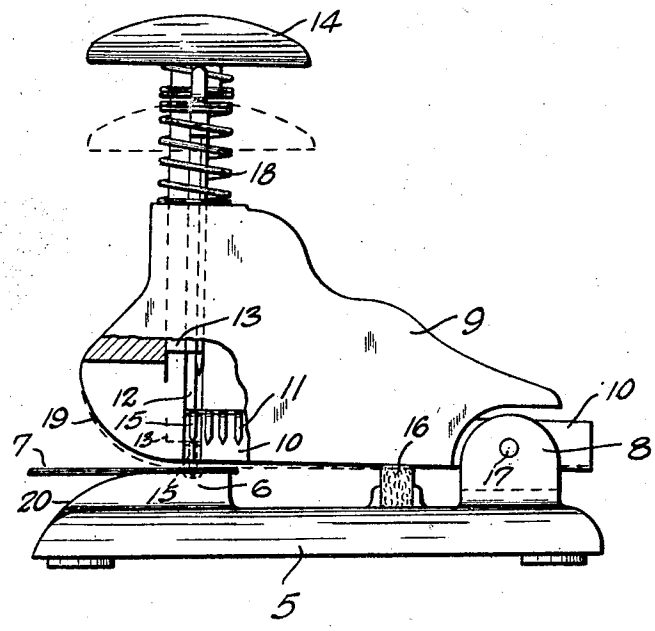
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STAPLING MACHINE

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Inventor

Charles F. Kuch Jr.

By Wooster & Davis

Attorneys

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CHARLES F. KUCH, JR., OF NORWALK, CONNECTICUT.

STAPLING MACHINE.

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This invention relates to stapling machines, particularly of the type where substantially U-shaped staples, either wire or flat metal, are forced through one or more sheets of paper or similar articles and the ends of the prongs bent over on the under sides thereof.

In a construction commonly used in this type of machine there is a base carrying an anvil, and pivoted to the base is a housing carrying guide means for the staples, means for feeding the staples to driving position, and a reciprocable plunger which cooperates with the anvil to drive and set the staple, the plunger being ordinarily driven by a hand knob at the upper end thereof which may be pressed downwardly or operated by a blow of the hand to operate the plunger to set the staples. In these machines it is common practice for the housing to merely rest on the top of the anvil when the machine is not in use and then when desired to staple articles together the forward end of the housing is lifted from the anvil, usually by means of the knob, to permit insertion of the sheets of paper or other objects between the plunger and the housing in position for the staple driving operation. The housing is then allowed to come down on the top of the paper sheets and the plunger operated to drive the staple. It will be obvious that this arrangement requires a separate and distinct hand operation, namely that of lifting the housing from the anvil prior to the insertion of the articles to be stapled.

To overcome this objection means have been provided, usually a spring, to hold the forward end of the housing away from the anvil the limit of the movement permitted by the construction. In other words the forward end of the housing is normally supported above the anvil by this spring the greatest distance to which it is permitted to be lifted. This distance is considerable in that it must be sufficient to permit of easy insertion of any of the articles it is desired to staple. It has been found that in this arrangement if a blow is struck on the operating knob for the plunger the staple will be forced out of its guideway in the housing before the housing has been moved downwardly to its proper stapling position on top of the articles to be stapled, and therefore, the staple will not be driven or properly set. This is particularly true where loose staples are used or where wire staples in strips are used, but it is also true where the staples are cut from the strips.

To overcome these objections I have devised simple and effective means for normally supporting the housing a sufficient distance above the anvil to permit easy insertion of the articles to be stapled without the necessity of first raising the housing from the anvil, and it supports the housing in such a position that even though a blow is struck on the plunger operating knob the prongs of the staple are forced into the article before the staple is forced from the guideway in the housing, and therefore, the staple will be properly driven and clinched.

With these and other objects in view, I have devised a construction the preferred form of which is illustrated in the accompanying drawing forming a part of this specification.

In this drawing, the figure is a side elevation of a stapling maching provided with my improvement, a portion of the housing being broken away to more clearly show the construction.

The stapling machine illustrated comprises a base 5 carrying an anvil 6 usually located adjacent the front end thereof to cooperate with the staple driving means to clinch the prongs of the staples on the under side of the sheets of paper or other articles 7 to be secured together. This base has upwardly extending ears 8 located rearwardly of the anvil and pivoted in these ears at 17 is a housing 9. This housing carries the usual guide bar 10 for the staples 11 to be driven, which in the form shown are the usual U-shaped staples, and mounted for vertical reciprocation in suitable guideways 12 in the housing is a plunger 13. This plunger projects above the top of the housing where it carries a hand knob 14 which may be pressed downwardly or hit with a blow of the hand to force the plunger downwardly to sever the forward staple from the strip and force the prongs thereof through the papers 7 and cooperate with the anvil to clinch these prongs on the under side of the articles.

Ordinarily the lower edge of this housing in prior constructions is allowed to rest on top of the anvil, and therefore, it is necessary to lift the forward end of the housing before inserting the papers on the anvil, or if the housing was held to its uppermost position and a blow was struck on the knob the staple would be forced from its guideway before it could be driven into the articles to be stapled

because of the inertia of the housing. That is the staple was forced from the housing before the inertia of the housing was overcome to permit the housing to move downwardly to the top of the articles 7 to hold the staple in proper position for driving. I have overcome these objections by supporting the forward end of the housing a relatively short distance above the top of the anvil, which distance should be less than the length or height of the staple 15 to be driven. A simple and effective support is a rubber block 16 located between the anvil and the pivot 17 for the housing. This block is yieldable and resilient so that although it normally supports the housing at the proper distance above the anvil it will yield when a blow or pressure is applied to the knob 14 for operating the plunger and will permit the housing to move down to its proper position on top of the articles to be stapled as indicated in dotted lines. But it will be apparent that as the space between the anvil and the housing is less than the length or height of the staple, the staple prongs will be forced into the articles 7 while the staple is still in its guideway in the housing, and therefore, while it is held in proper position for driving.

As is usual in these types of machines the plunger is normally held in its upper position by a spring 18, and therefore, as soon as pressure is removed from the knob 14 the plunger will be shifted by this spring to its upper position ready for the next stapling operation, and the resilient support 16 will raise the forward end of the plunger to its proper position above the anvil as indicated in full lines, and which as stated above, should be less than the height or the length of the staple.

I am, of course, not limited to a rubber block as any other suitable material may be used, such for instance as a spring of proper length and tension to support the housing at its proper distance above the anvil but will yield to permit it to move downwardly during the stapling operation. It will be noted that the lower edge of the housing merely rests on the top of this support so that the support in no way interferes with the lifting of the forward end of the housing at any distance desired within the limits of the construction.

To facilitate insertion of the papers or other articles 7 in the space between the housing and the anvil, guide walls are provided forwardly of the entrance to this space. In the form shown in the drawing the front wall of the housing is curved outwardly and upwardly as shown at 19, while the front wall of the anvil and base are curved downwardly and outwardly as shown at 20. It is, therefore, merely necessary to move the edge of the article 7 horizontally against either one of these walls and it will be guided and directed so that it will properly enter into the space over the anvil for the stapling operation. If the articles should be thicker than the normal space between the housing and the anvil the articles will merely lift the housing to permit them to pass into the proper position between the anvil and the housing. This would be true with most articles if they have a fair amount of stiffness even though the housing should be touching the top of the anvil.

Having thus set forth the nature of my invention, what I claim is:

1. In a stapling machine, a base, an anvil carried by the base, a housing hinged to the base rearwardly of the anvil, a plunger mounted in the housing for vertical reciprocation and adapted to cooperate with said anvil to drive and clinch a staple, means for operating the plunger, a yieldable resilient support for the housing arranged to normally support the housing spaced above the anvil a distance less than the length of the staple to be driven, and guiding means arranged for directing the edges of articles to be stapled to the space between the anvil and the housing as they are shifted toward stapling position and allow them to be easily inserted in this space.

2. In a stapling machine, a base, an anvil carried by the base, a housing hinged to the base rearwardly of the anvil, a plunger mounted in the housing for vertical reciprocation and adapted to cooperate with said anvil to drive and clinch a staple, a knob on top of the plunger adapted to receive a blow for operating it, yieldable resilient means for holding the housing spaced above the anvil a distance less than the length of the staple to be driven, and the housing and base having inclined surfaces at the upper and lower sides of the space between the housing and anvil and at the front thereof of such extent as to form guides for articles to be stapled and allow them to be easily inserted in the space between the anvil and housing.

3. In a stapling machine, a base, an anvil carried by the base, a housing hinged to the base rearwardly of the anvil, a plunger mounted in the housing for vertical reciprocation and adapted to cooperate with said anvil to drive and clinch a staple, yieldable resilient means for holding the housing spaced above the anvil a distance less than the length of the staple to be driven, and the housing and base having inclined surfaces at the upper and lower sides of the space between the housing and anvil of such extent as to form guides for articles to be stapled and allow them to be easily inserted in the space between the anvil and housing.

4. In a stapling machine, a base, an anvil carried by the base, a housing hinged to the base rearwardly of the anvil, a plunger mounted in the housing for vertical reciprocation and adapted to cooperate with said anvil to drive and clinch a staple, a holding

means carried by the base, a support comprising a block of yieldable resilient rubber mounted in said holding means in position to normally support the housing spaced above the anvil a distance less than the length of the staple to be driven, and the housing and base having inclined surfaces at the upper and lower sides of the space between the housing and anvil at one side thereof of such extent as to form guides for the articles to be stapled and allow them to be easily inserted in the space between the anvil and housing.

In testimony whereof I affix my signature.

CHARLES F. KUCH, JR.