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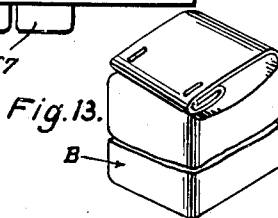
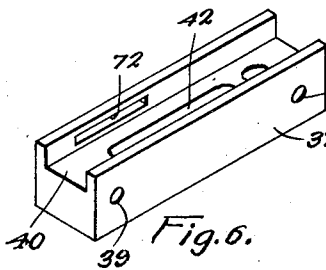
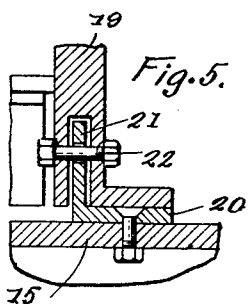
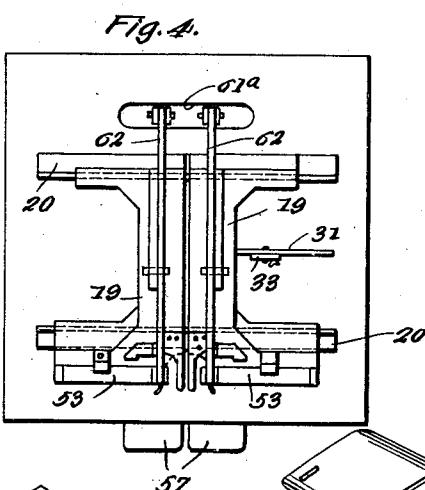
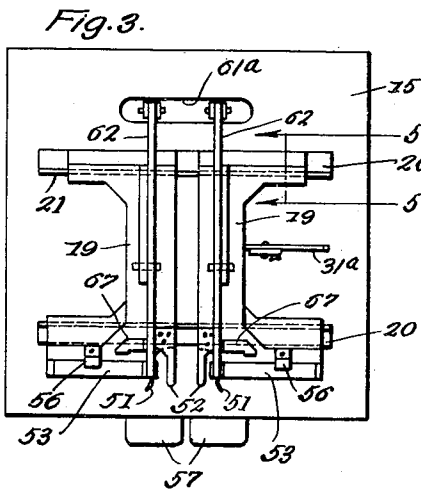
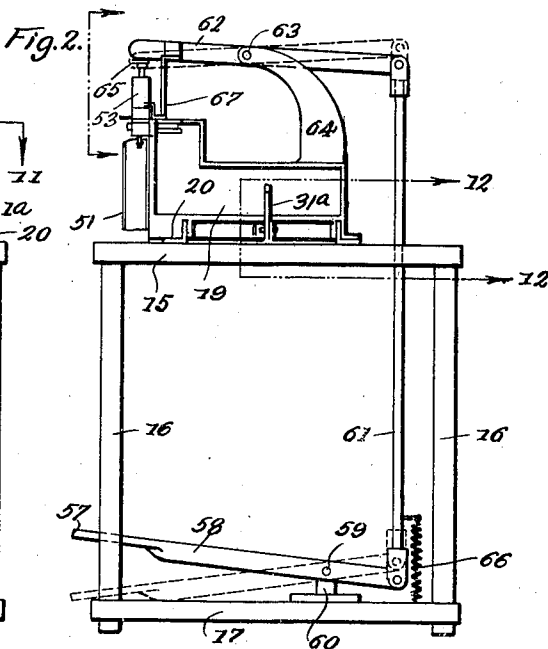
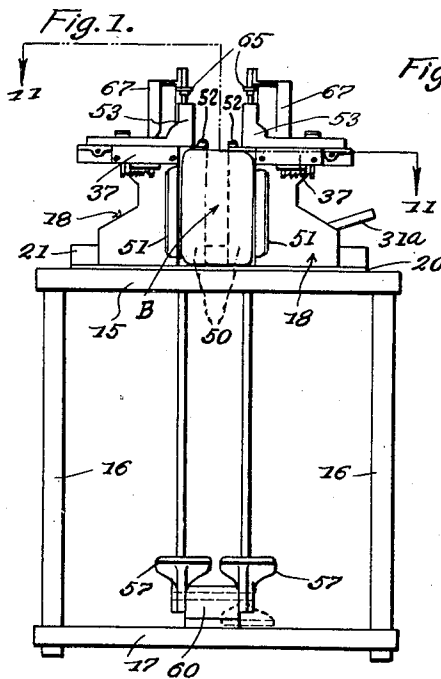
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2,260,267

BAG STAPLING MACHINE

Filed July 15, 1940

2 Sheets-Sheet 1



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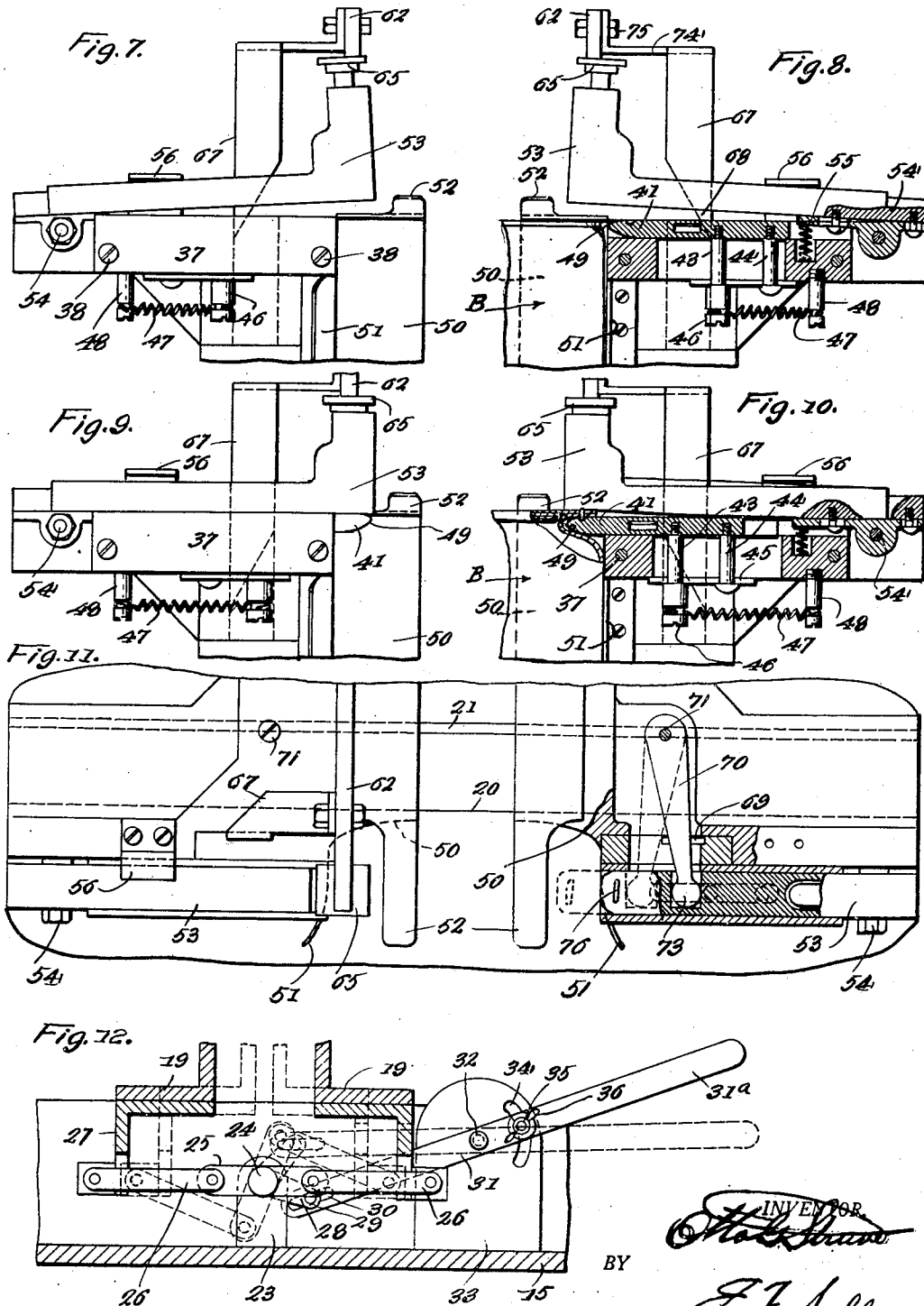
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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

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BAG STAPLING MACHINE

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Application July 15, 1940, Serial No. 345,644

8 Claims. (Cl. 1—3)

This invention relates to the art of stapling, and in particular to stapling machines for sealing bag closures and the like.

An object of the invention is to provide a stapling machine having a pair of stapling units selectively operative either independently or in unison to fasten closed either or both ends of the folded top of a bag or similar container after the same has been filled.

Another object is to provide such a machine having means adjustable to dispose the stapling units at various positions of spaced relation whereby to accommodate bags of different widths.

Still another object is to provide in such a machine an assembly of stapling head and anvil in which the anvil is reciprocable relative to the head to engage beneath an end of a folded bag top when in stapling position and to disengage therefrom when stapling is accomplished, there being operating means common to both head and anvil.

Other objects will be apparent to those skilled in the art.

It is to be understood that the instant disclosure constitutes an embodiment by which the invention is practiced, and that within the scope of the invention as claimed the structure may be varied as desired.

In the accompanying drawings, wherein like characters of reference designate like parts throughout the several views:

Figure 1 is a front elevation of the machine with a bag positioned for stapling.

Figure 2 is a side elevation thereof.

Figure 3 is a top plan view of the machine with the stapling units in the position of adjustment shown in Figure 1.

Figure 4 is also a top plan view, but with the stapling units shown in another position of adjustment.

Figure 5 is a section taken on the line 5—5 of Figure 3.

Figure 6 is a perspective view of a structural element comprising an anvil mounting block.

Figure 7 is a fragmentary front elevation, on an enlarged scale, of the left hand stapling unit.

Figure 8 is a similar elevation, partly in section, of the right hand stapling unit with a bag positioned for stapling.

Figure 9 is a view similar to Figure 7, but showing the disposition of the parts when in staple clinching position.

Figure 10 is a view similar to Figure 8, but

showing the disposition of the parts when in staple clinching position.

Figure 11 is a horizontal section taken on the line 11—11 of Figure 1, and illustrates in dotted lines the position of the right hand anvil when advanced to staple clinching position.

Figure 12 is a section taken on the line 12—12 of Figure 2, and illustrated in dotted lines the range of adjustment of the stapling units.

Figure 13 is a fragmentary perspective view of a filled and stapled bag.

The machine comprises a support such as a table or stand having a flat top 15, legs 16, and a bottom platform 17, having a pair of stapling units generally indicated as 18 mounted on the top. Each unit consists of a relatively heavy base casting 19 having a wide frontal portion perpendicular to the table top, a central web-like portion extending rearwardly with respect to the machine, and a rear portion directed laterally from the central portion. The castings are disposed with their central webs in parallel relation, and with their frontal and rear portions extending oppositely. The stapling units are identical in construction, and differ only in that their component parts are relatively reversed in position. A description of one will, therefore, suffice for both.

The top 15 of the support has secured thereon a pair of angle iron rails 20 extending transversely in parallel spaced relation and with the vertical flange 21 of each received in a registering slot provided, respectively, in the front and rear portions of the stapling unit castings. The castings are thus supported upon the rails and are capable of movement horizontally thereon into various positions of adjustment toward or away from each other to vary the spacing therebetween. The rail flanges 21 are apertured at suitable intervals to receive securing bolts 22 passed through contiguous portions of the castings and which provide means by which the castings may be rigidly anchored in desired positions of adjustment.

The castings of the right and left hand stapling units are adjustable toward or away from one another by means of the operating mechanism illustrated in Figure 12. The support 15 has secured thereto, slightly to the left of the center line running from front to rear of the machine, an upstanding bracket 23 which provides a bearing for a shaft 24. On the near side of the bracket the end of the shaft has rigidly secured thereon a cross bar 25 which has at each end a pivotal connection with the adjacent end

of a push-pull link 26 which has its other end pivotally connected to a depending bracket 27 carried by and rigidly secured to the adjacent casting 19. The far end of the shaft 24 has rigidly secured thereon a crank lever 28 provided at its outer end with a stud 29 that plays in a longitudinal closed end slot 30 in the inner end portion of an operating lever 31. The lever 31 is pivoted intermediate its ends, as at 32, to an upstanding post 33 that is secured to the support top 15. The outer end 31a of the lever extends well to one side of the right hand casting and constitutes a handle by which the mechanism is operated. The post 33 is provided with an arcuate slot 34 to accommodate the shank of a bolt 35 passed therethrough and through the lever 31. The near end of the bolt has a wing nut 36 threaded thereon which provides a means by which the lever may be clamped against the post to anchor the operating lever in a fixed position of adjustment.

When the nut 36 is loosened, the operating lever may be moved within the range permitted by the length of the slot 34. In the full line position of the parts as shown in Figure 12 the stapling units are at their position of maximum separation. When the handle 31a is depressed the units are moved toward each other through the medium of the operating linkage as described. The dotted line showing of Figure 12 indicates the position of the parts at minimum separation of the stapling units.

An anvil bar housing block 37, Fig. 6, is attached to the upper part of the front face of each casting 19 by means of securing elements 38, such as bolts, passed through bolt holes 39 in the body of the block and threaded into sockets in the casting. The block is provided in its top face with an open ended longitudinal channel 40 which receives and guides a sliding anvil bar 41, see Figs. 8, 10 and 11. The block is further provided with a longitudinal slot 42 opening from the channel bottom to the bottom face of the block and which is adapted to receive and guide a pair of depending studs 43 and 44 threaded at their upper ends into the under face of the anvil bar and headed at their lower ends beneath a bronze bearing plate 45 which bears in sliding engagement against the under face of the block 37. The studs are disposed in spaced relation to define stops which engage the respective ends of the slot 42 to limit movement of the anvil bar.

One stud, preferably the inner one 43, is longer than the other and has an enlarged head 46 to which is connected one end of a contraction spring 47. The other end of the spring is attached to an anchor stud 48 secured in and depending from the housing block. Tension of the spring 47 normally holds the anvil bar 41 fully retracted within the housing block, in the position shown in Figure 8, in which position the wedge shaped tip or nose 49 of the anvil bar lies flush with the adjacent end face of the block.

The inner edge portion of the front face of each casting 19 is formed from top to bottom with an arcuate recess 50, which recesses cooperate to provide in effect a bag receiving pocket, best illustrated in Figure 11. Polished metal guide flanges 51 are secured to the front face of each casting as continuations of the pocket recesses 50, and these flanges are flared outwardly to facilitate entry therebetween of a bag B when positioned on the support top 15 and slid inwardly thereon into the pocket recesses.

A forwardly and upwardly extending guide finger 52 is secured to the top of each casting at the inner edge of its recess 50. The fingers are resilient, and they function to press down upon the folded top of a bag when engaged thereunder as shown in Figures 1 and 8. It will be seen that the table 15, arcuate recesses 50, side flanges 51 and top-fingers 52 cooperate to define a pocket within which a folded bag, as shown in Figure 13, may be inserted.

A stapling head 53 of the magazine type is mounted on each casting to operate directly above the anvil bar. The head overlies the anvil bar and its housing block and has a pivotal connection 54 to the body of the casting. An expansion spring 55 housed in a recess in the block 37 and bearing against the under face of the stapling head shank serves normally to hold the head in slightly elevated position at its stapling end. Upward movement of the head is restrained by a limiting stop member 56 secured to the casting and extending over the shank of the head.

Both the stapling head and anvil bar are operated by actuator means common to both. Two foot pedals 57, one for each stapling unit, are disposed at the front of the standard on levers 58 that are pivoted intermediate their ends as at 59 to a post 60 secured to the bottom platform 17. The levers 58 are disposed in parallel relation and at their rear ends are pivotally connected to parallel push rods 61 which extend upwardly through a slot 61a in the top 15. The upper ends of the push rods extend well above the top 15 and are pivotally connected to the rear ends of rock levers 62 that are, in turn, pivoted intermediate their ends, as at 63, to upstanding brackets 64 extending from the castings 19. At their forward ends the rock levers overlie and loosely engage the actuator plungers 65 of the stapling heads in such manner that when the forward ends of the rock levers are depressed the stapling heads will be forced down into the positions shown in Figures 9 and 10 and will be caused to operate. A retraction spring 66 is connected between each push rod 61 and the bottom platform 17 and functions normally to draw down the push rods to maintain the foot pedals 57 and the forward ends of the rock levers 62 in raised position.

The means for actuating the sliding anvil bars 41 comprises a vertical plunger 67 having a wedge shaped lower end 68 guided and operative within a vertical slot 69, see Figure 11, in the body of the casting. The point of the wedge 68 engages behind the shank of a horizontal lever 70 pivoted at its inner end as at 71 to oscillate within a housing recess provided therefor in the body of the casting, and when the plunger 67 is moved down the lever 70 is cammed in the direction of the space between the stapling units. The forward end of the lever 70 plays in and through a horizontal slot 72 provided in the rear wall of the housing block channel 37, and has a ball and socket connection 73 with the anvil bar 41. The upper end of the plunger 67 has a lateral extension 74 which is rigidly connected to the rock lever 62 by securing bolt means 75.

The upper face of the nose portion of the anvil bar has a shallow transverse staple clinching groove 76 therein which, when the anvil bar is fully projected, registers with the staple discharge port (not shown) of the stapling head. In the operation of the machine, when a bag is positioned for closing, its folded top lies beneath

the presser fingers 52 in alignment with the anvil bars 41, and the anvil bars are projected to engage beneath the fold in position to receive and clinch the ends of the staples.

It is a feature of the invention that the pedals 57 are so positioned that they may be simultaneously operated by the foot of an operator pressing down upon a portion of each, or they may be operated singly to actuate either stapling unit independently of the other if so desired. The length of the slot 61a is sufficient to permit full separation between the push rods 61 when the stapling units are moved apart by the adjusting mechanism previously described.

In operating the machine, a bag is entered between the guide flanges 51 and seated against the walls of the pocket formed by the casting recesses 50. If necessary, the castings are moved apart or toward one another until the bag fits substantially snugly in the receiving pocket, and the pedals 57 are then depressed. This operation elevates the push rods 61 and correspondingly lowers the forward ends of the rock levers 62 and the anvil bar actuating plungers 67. As these elements move down the anvil bars are projected beneath the top fold of the bag and reach fully projected position in time to receive and clinch the prongs of staples discharged from the stapling heads by operation of their plungers 65 under the descending movement of the ends of the rock levers. Upon release of foot pressure the various springs previously described return the parts to their normal positions ready to be again operated.

I claim:

1. A bag stapling machine comprising a support, a pair of castings mounted thereon in spaced relation to receive a bag therebetween, a stapling head on each casting, an anvil member in each casting reciprocable therein to and from stapling position, means normally retaining said anvil members out of stapling position, manually operable actuator means on said support, operating means for each stapling head, operating means for moving said anvil members into stapling position, and a positive driving connection between said actuator means and operating means.

2. A bag stapling machine comprising a support, a pair of castings mounted thereon in spaced relation to receive a bag therebetween, a stapling head on each casting, an anvil member in each casting and reciprocable therein to and from stapling position, a rock lever fulcrumed on each casting in operative engagement with the stapling head, means on each lever for actuating the associated anvil member to stapling position, and manually operable means on said support in positive connection with each rock lever for operating its associated stapling head and anvil member in unison.

3. A bag stapling machine comprising a support, a pair of stapling units mounted thereon in spaced relation to receive a bag therebetween, a pair of pedal levers fulcrumed in said support in close proximity for simultaneous or independent operation, an operating connection be-

tween each lever and the adjacent stapling unit for actuation of said stapling units, and means for varying the spacing between said stapling units and levers to accommodate bags of different sizes between the stapling units.

4. In a stapling machine having a base casting, a stapling head thereon, and means for operating the head; an anvil bar mounted in said casting for reciprocation to and from stapling position beneath said head, spring means in connection with said bar and normally retaining same out of stapling position, a driving lever engaging said anvil bar and fulcrumed in the casting, and cam means carried by said head operating means and operatively engaging said driving lever to actuate same for moving the anvil bar to stapling position on operation of the stapling head.

5. In a stapling machine having a base casting, a stapling head thereon, and means for operating the head; an anvil bar reciprocable in the casting to and from stapling position, a lever fulcrumed at one end in the casting and having a ball and socket connection with the anvil bar at its other end, a plunger carried by said head operating means, and cam means on the plunger engageable with said lever to rock same on its fulcrum to move the anvil bar to stapling position.

6. In a stapling machine having a base casting, a stapling head thereon, and means for operating the head; an anvil bar housing block secured to the casting beneath said head, an anvil bar slidable in said block, means carried by the head operating means for projecting said bar from the block into stapling position on actuation of the head operating means, and spring means for retracting said anvil bar within the housing block following a stapling operation.

7. In a stapling machine having a base casting, a stapling head thereon, and means for operating the head; an anvil bar housing block secured to the casting beneath the head, said block having a channel therein, an anvil bar slidable in said channel to and from stapling position, one wall of said channel being apertured, a lever pivoted at one end within said casting and extending at its other end through said block wall aperture into operative engagement with said anvil bar, a plunger fixed to and movable with said head operating means, and cooperative cam means on said plunger and lever for actuating said lever to move the anvil bar into stapling position upon operation of the stapling head.

8. In a bag stapling machine, a flat support, a pair of castings adjustable thereon into various positions of spaced relation, stapling means on each casting, said castings having opposed pockets for receiving a bag therein, a bag fold retaining finger on each casting and extending over its pocket, and a guide flange on each casting cooperating with the retaining finger to position a bag received in the pocket between said castings.

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