

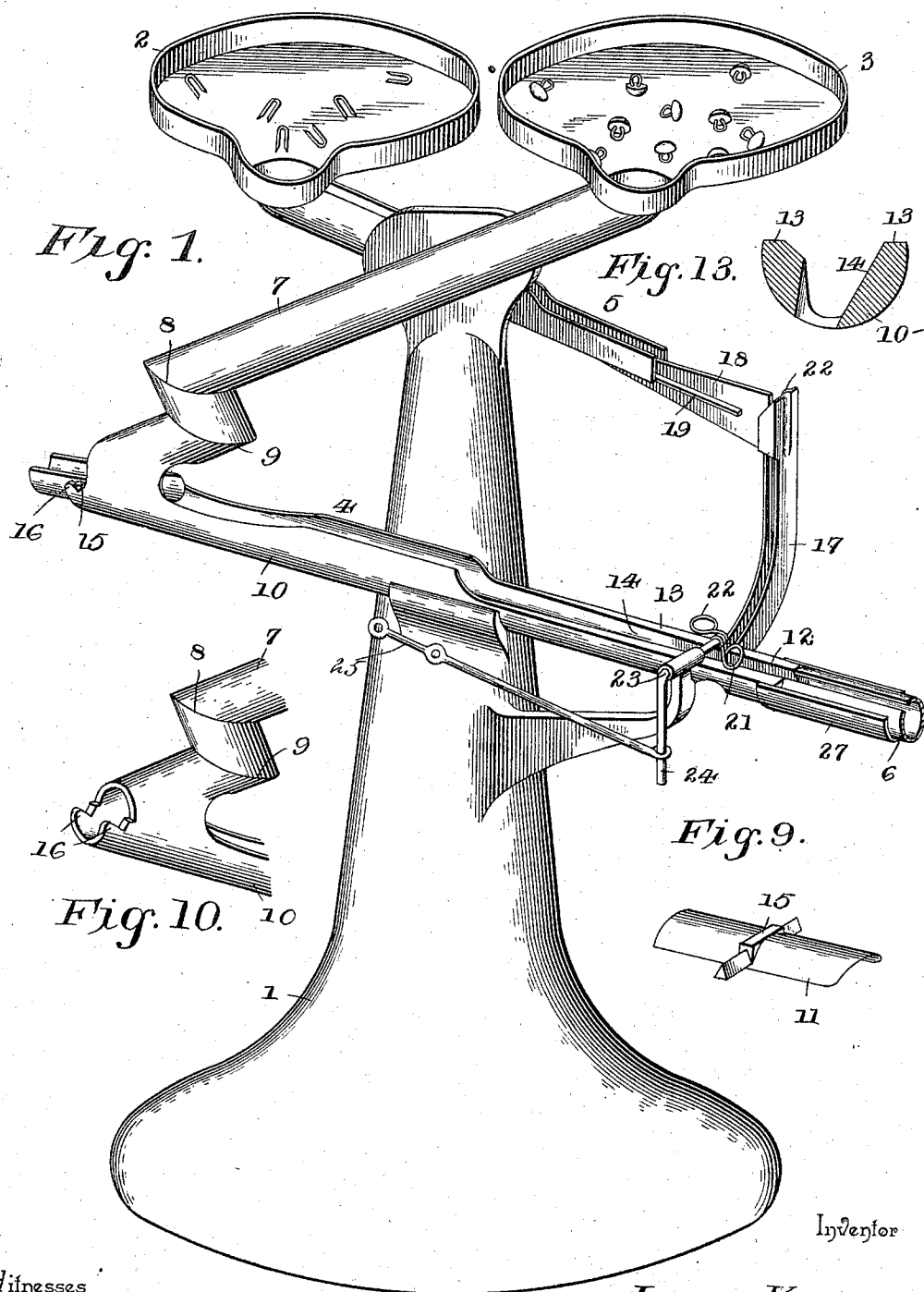
(No Model.)

2 Sheets—Sheet 1.

J. KYDD.
BUTTON TUBE LOADER.

No. 577,821.

Patented Feb. 23, 1897.



Inventor

Witnesses
Chas. A. Ford.
V. B. Hillyard.

By his Attorneys,

James Kydd,
C. A. Snow & Co.

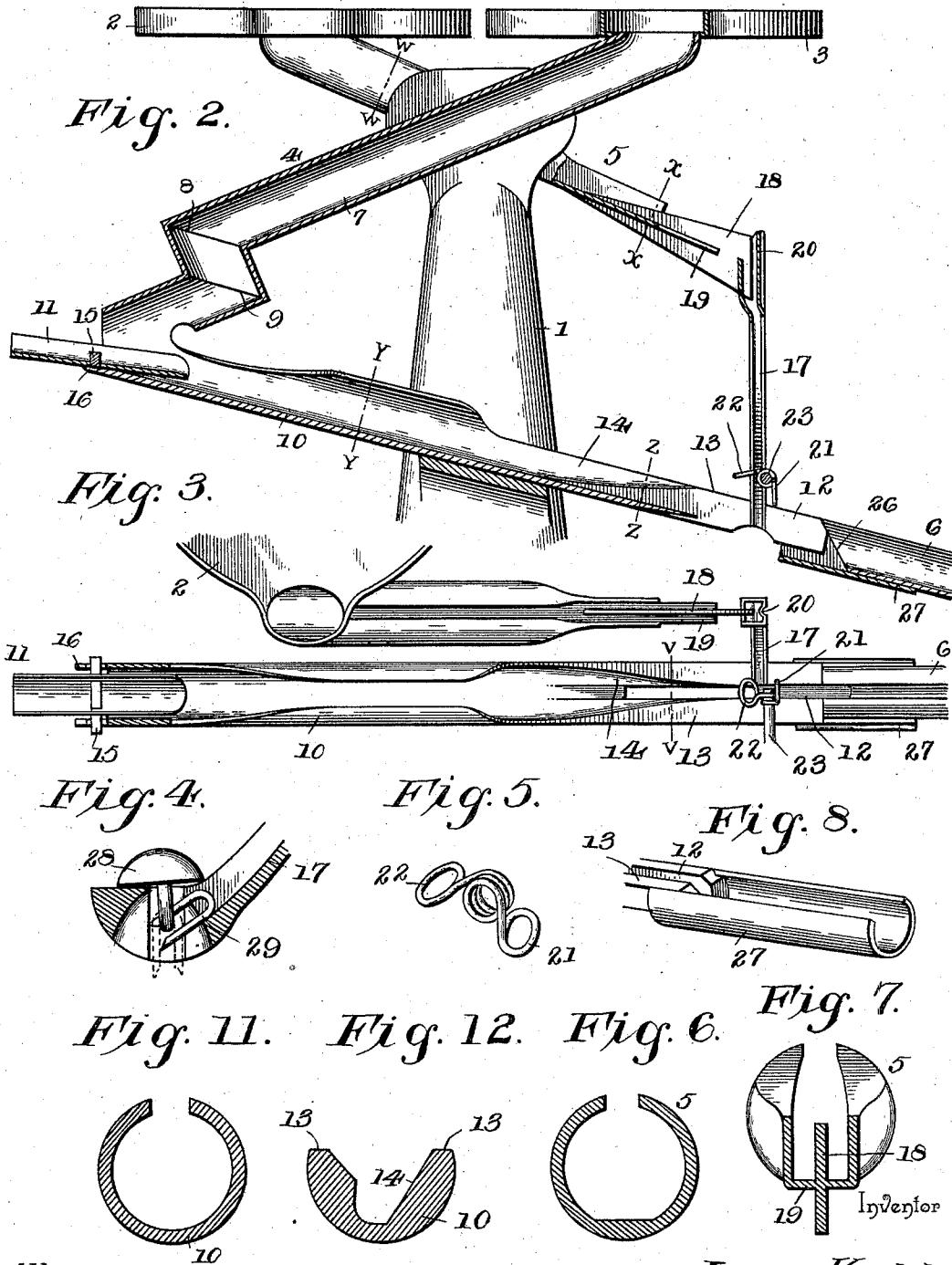
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UNITED STATES PATENT OFFICE.

JAMES KYDD, OF EL RENO, OKLAHOMA TERRITORY.

BUTTON-TUBE LOADER.

SPECIFICATION forming part of Letters Patent No. 577,821, dated February 23, 1897.

Application filed September 19, 1895. Serial No. 563,032. (No model.)

To all whom it may concern:

Be it known that I, JAMES KYDD, a citizen of the United States, residing at El Reno, in the county of Canadian and Territory of Oklahoma, have invented a new and useful Button-Tube Loader, of which the following is a specification.

This invention relates to mechanical appliances for threading the staple-fastenings through the eyes of buttons and loading the latter into tubes to be used in connection with button-fastening machines of any desired make; and the object is to facilitate the attachment of the staple-fastenings with the buttons and the loading of the latter into the button-tubes.

Other objects and advantages are contemplated; and to this end the invention consists in certain novel features of construction and combinations of parts, substantially as herein illustrated, described, and specifically claimed.

In the accompanying drawings is illustrated an embodiment of the invention, although slight changes in the details and arrangement of the parts may be made without departing from the spirit of the invention, and in said drawings—

Figure 1 is a perspective view of a machine constructed in accordance with this invention. Fig. 2 is a side elevation thereof, parts being broken away and showing a vertical central section of the button race or chute. Fig. 3 is a detail plan view of the two races or chutes, the upper portion of the button-race being broken away. Fig. 4 is a detail view showing the juncture of the two chutes and the manner of passing the staple-fastening through the eye of the button. Fig. 5 is a detail view of the combined button detent and ejector. Fig. 6 is a cross-section of the staple race or chute on the line W W of Fig. 2. Fig. 7 is a cross-section of the staple-race on the line X X of Fig. 2. Fig. 8 is a detail view of the lower end of the button race or chute. Fig. 9 is a detail view of the button-retarder. Fig. 10 is a detail view of that portion of the button race or chute which receives the retarder. Fig. 11 is a section of the button-race on the line Y Y of Fig. 2. Fig. 12 is a section of the button-race on the

line Z Z of Fig. 2. Fig. 13 is a section of the button-race on the line V V of Fig. 3.

Referring to the drawings, in which the same numerals denote corresponding parts in all the figures, 1 designates a support or standard, to which are attached the operating parts; 2, the hopper for the staple-fastenings; 3, the hopper for the buttons; 4, the button-race; 5, the staple-race, and 6 the button-tube to be loaded and which is used in connection with a button-fastening machine.

The button-race comprises an upper tubular portion 7, which inclines to the horizontal, an elbow 8 at the lower end of the part 7, a second elbow 9, and a return portion 10, which inclines in an opposite direction to the tubular portion 7 and is located below the latter and the elbows 8 and 9. The elbows 8 and 9 serve to check the momentum of the button in its travel through the race, and the speed of the said button is further diminished by the retarder 11, which is located at the juncture of the elbow 9 and the return portion 10. The lower end portion of the race gradually contracts, so as to cause the eye of the button to assume a position parallel with the length of the race and with the movement of the button, thereby bringing the said eye in proper position to receive the staple. The edge portion of the race is flattened or expanded upon opposite sides of the contracted passage 12 to attain an up-bearing surface for the button upon each side of its eye, as shown at 13, and this up-bearing surface 13 maintains the button in such position, so that its eye will project squarely across the path of the staple and receive a member thereof. That portion of the wall at the upper or receiving end of the passage 12 is gradually deflected inward to turn the eye of the button and bring it into the passage 12 without causing any binding or tendency of the said eye to sit crosswise of the said passage 12 and choke the latter. This inwardly-deflected wall is shown at 14. While the passage 12 is narrow at its upper side, the lower portion enlarges from the juncture of the staple-race therewith to the delivery end of the button-race to give proper clearance for the button and the staple connected therewith.

The retarder 11 is semitubular and is pro-

vided about midway of its ends with a cross-bar 15, whose end portions project a short distance beyond the sides of the retarder and are beveled to a knife-edge at their lower edge to provide bearings for the retarder to tilt upon. The cross-bar 15 is fitted into a transverse kerf or slot formed in the retarder and extends vertically a short distance above the lower side of the retarder, so as to be engaged by the button, whereby the latter is deflected in its travel. The outer end portion of the retarder is slightly heavier than the inner end portion, so that the latter normally occupies a position above the lower side of the contiguous part of the return portion 10. This retarder operates through an opening formed at the juncture of the elbow 9 and the return portion 10, and is supported upon lugs 16 at the upper end of the return portion 10, said lugs being notched in their upper edges to receive the knife-edged bearings at the ends of the cross-bar 15.

The staple-race inclines in an opposite direction to the tubular portion 7 of the button-race, and its lower portion is formed with a curved lateral branch 17, which connects with one side of the button-race a short distance from the delivery end of the latter. This lateral branch forms a guide, and its sides are flattened and brought together sufficiently close to hold the staple so that its members will be practically in vertical alinement, whereby the upper member of the staple will engage with and pass through the eye of the button when the staple reaches the lower end of its race. The bottom portion of the staple-race is flattened, so as to prevent the staples from getting crosswise of the race and lodging therein. A vertical blade 18 extends longitudinally of the race and is placed about midway between the sides thereof, and the upper portion of the blade merges into the bottom of the race and gradually recedes from the plane of the said bottom from the receiving to the delivery end thereof. Ribs 19 project laterally from the sides of the blade and form prolongations of the bottom of the upper portion of the race and are intended to support the lower ends of the staple as the latter is traveling over the lower portion of the blade. The upper end of the lateral branch or guide 17 is attached to the lower portion of the blade 18, and a space is left between the end of the blade and the opposingside of the lateral branch adjacent thereto. This side is formed with an inwardly-extending rib 20, which is obtained by creasing the said side, and this rib 20 alines with the blade 18 and comes directly opposite the lower end thereof, and its purpose is to prevent the turning of the staple and to cause the latter to descend in proper position through the lateral branch or guide 17.

The combined button detent and ejector is located opposite the juncture of the staple-race with the button-race and comprises the similarly-constructed detent 21 and ejector

22, which are disposed at approximately right angles, and which are formed of a single length of wire secured midway of its ends to a rock-shaft 23, and which has its end portions bent to form loops or eyes which engage with the button and either detain or urge the same forward, as required. The rock-shaft 23 has a crank-arm 24, which is operated to actuate the detent and ejector when required. For convenience in operating the crank-arm a lever 25 is provided and is fulcrumed between its ends to the standard 1, and its lower end is formed into an eye, through which the crank-arm 24 passes. Obviously by depressing the upper end of the lever 25 the lower end thereof will be correspondingly elevated and will effect a rocking of the shaft 23 in its bearings. The lever 25 may be operated in any convenient manner, or, if preferred, may be dispensed with. The rock-shaft and crank-arm form parts of a stout wire, which latter is right-angularly bent between its ends substantially in the manner shown.

The button-tube 6 may be of any desired pattern according to the style of machine with which it is to be used, and its open end is beveled, as shown at 26, to enable a close fit to be had between the delivery end of the button-race and the open end of the button-tube, so that the buttons, after receiving the staples, will pass from the button-race into the button-tube without any possible hitch or hanging at the joint. A holder 27 is provided at the lower end of the button-race and provides for the detachable connection of the button-tube with the machine, so that the said button-tube can be quickly placed in position for loading and easily removed after being properly charged. This holder is tubular and is slotted in its upper side and secures the button-tube in proper relation by frictional engagement.

The hoppers 2 and 3 are of like construction and are shallow pans, and one side of each is formed with an offset, to which is connected the respective race. The bottoms of the hoppers are flat and are surrounded by means of a narrow rim which serves to retain the buttons and the staples from lateral displacement.

The operation of the device is as follows: The buttons 28 are supplied to the hopper 3 and the staple-fastenings 29 to the hopper 2, and the button-tube 6 to be charged or loaded is properly positioned in the manner described. The parts being in operative relation a button is fed by hand to the button-race and gravitates to a position directly opposite the intersection of the button and staple races and is held in position by the detent 21. A staple is next fed by hand to the staple-race and gravitates and engages with the eye of the button, which is placed opposite the delivery end of the staple-race and extends across the path of the staple. The rock-shaft 23 is actuated so as to withdraw the detent 21 from the path of the button, and at

the same time the ejector 22 engages with the said button and urges it forward, when it will gravitate into the button-tube in the manner set forth. The rock-shaft being released, the weight of the crank-arm 24 will return it to a normal position and bring the detent 21 in operative relation to engage with the next button so as to properly position it opposite the delivery end of the staple-race, when the operation just described is repeated. The buttons and the staples are fed singly and one at a time and alternately, so that the desired end may be attained.

It makes no difference which portion of the button goes foremost when the button is traveling through the upper portion 7 of the race, because when the button engages with or strikes the retarder it will gravitate through the return portion 10 with its eye in the advance, and the eye is brought into proper position by the inwardly-deflected wall 14 and the contracted passage 12. The slant of the return portion 10, combined with the rounded head of the buttons, will cause the latter to assume and maintain a position with their shanks foremost, said shanks serving to prevent the buttons from rolling over and over, which they would do if the shanks were not provided. It is also immaterial which end or portion of the staple-fastening is fed into the staple-race, because the flat side or bottom will cause the staple to travel lengthwise, and as the staple reaches the upper end of the blade 18 it will straddle the latter and the terminal ends of the staple will trail upon the lateral ribs 19 and permit the staple to gradually assume a vertical position, and the instant the terminal ends leave the ribs 19 the staple will swing into a vertical position and enter the lateral branch or guide 17 and gravitate through the latter to the button-race. The curving of the lateral branch or guide 17 causes the staple to incline to the vertical and brings it into such a position so that one member will pass through the eye of the button located opposite the delivery end of the staple-race.

It is not absolutely necessary that the button and staple races be provided in the manner shown, as the same results may be had by providing the parts of each race in a single length and arranging them so that the staple-race will intersect the button-race at right angles. However, for compactness of arrangement the construction herein shown and described is preferred. If desired, the mechanism can be attached directly to any button-fastening machine, but for general use it is desired to construct the same as a machine or appliance for loading button-tubes to be used in connection with any style or make of button-fastening machine. Therefore in the embodiment of the invention for any special or particular requirement it is to be understood that various changes in the form, proportion, and the minor details of construction may be resorted to without de-

parting from the principle or sacrificing any of the advantages of this invention.

Having thus described the invention, what is claimed as new is—

1. In a mechanism for applying the staple-fastenings to the eyes of buttons, the combination with a race, of a combined detent and ejector comprising connected parts, the one holding the button in position to receive the fastening, the other urging the button forward after the fastening has been applied thereto, substantially as set forth for the purpose described.

2. In a mechanism for applying staple-fastenings to the eyes of buttons, the combination with a race, of a shaft, and portions extending at different relative angles therefrom to extend across the path of the button in the race and provide means for retaining the button in proper position to receive the fastening and releasing and urging the said button forward after the fastening has been applied, substantially as specified.

3. In a mechanism for applying staple-fastenings to the eyes of buttons, the combination with inclined races for the buttons and the fastenings intersecting, of a combined detent and ejector located opposite the point of intersection of the inclined races and comprising oppositely-disposed parts for alternately engaging with and retaining the buttons to properly position them for receiving the staples and urging the buttons forward after the staples have been applied, substantially as set forth.

4. In a mechanism for applying staple-fastenings to the eyes of buttons, an inclined race provided in its length with elbows or offsets to check the momentum of the gravitating part, and a movable retarder to supplement the action of the offsets or elbows, substantially as set forth.

5. In a mechanism for applying staple-fastenings to the eyes of buttons, the combination with the button-race, of a movable retarder adapted to have the buttons travel thereon and located in the length of the race and extending across the path of the button and operated automatically by the impact of the button, substantially in the manner set forth for the purpose described.

6. In a mechanism for applying staple-fastenings to the eyes of buttons, the combination with the button-race, of a pivotally-supported retarder adapted to have the buttons travel thereon and arranged in the length of the race and having an end portion normally obstructing the path of the button and overbalanced and pushed aside by the superior force and mass of the button in the travel of the latter thereover, substantially in the manner set forth for the purpose described.

7. In a mechanism for applying staple-fastenings to the eyes of buttons, the combination with the button-race having a return portion, and having an opening and supporting-lugs at the angle formed between the two

parts, of a retarder adapted to have the buttons travel thereon and located in the said opening and having knife-edged bearings placed upon the said supporting-lugs, substantially as and for the purpose set forth.

8. In a mechanism for applying staple-fastenings to the eyes of buttons, the combination with the button-race having a return portion, and having an opening and supporting-lugs at the angle formed between the two parts, of a retarder adapted to have the buttons travel thereon, and a cross-bar located about midway between the ends of the retarder and having its ends projected and beveled to form knife-edged bearings which are mounted upon the said supporting-lugs, substantially as and for the purpose set forth.

9. A staple-race comprising a flat bottom and straight parallel sides, and a vertically-disposed blade extending parallel with and located midway between the sides of the race and having its upper portion merging into the bottom of the race and gradually increasing in height or inclining from the bottom of the race toward the delivery end thereof, and extending beyond the said race, substantially as and for the purpose set forth.

10. A staple-race having a vertically-disposed blade located midway between its sides and gradually widening toward the delivery end of the race, the upper portion of the blade merging into the bottom of the race, and laterally-extending ribs at the sides of the blade and terminating short of the lower end of the said blade, substantially as and for the purpose set forth.

11. A staple-race having a lateral branch or guide at its lower end and formed with a vertically-disposed blade, the latter terminating short of the opposing side of the said

lateral branch or guide, and the said side having an inwardly-extending rib in line with the blade, substantially as set forth for the purpose described.

12. In combination, an inclined button-race, a vertically-disposed guide having a rib at its upper end and having its sides flattened and brought close together, and having the lower portion of the guide curving laterally and intersecting with the button-race to automatically shoot the staples through the eyes of the buttons, and an inclined staple-race communicating with the said guide and having a blade to aline with the aforesaid rib, substantially as set forth for the purpose described.

13. The herein-described mechanism for applying staple-fastenings to the eyes of buttons and loading the latter into button-tubes, the same comprising a button-race having a return portion and provided with provisions for checking the momentum of the button, a staple-race having a curved lateral branch or guide which intersects with the button-race, a combined detent and ejector located opposite the point of intersection between the staple and button races, a holder for detachably connecting the button-tubes with the lower end of the button-race, and shallow hoppers having flat bottoms for receiving the buttons and the staple-fastenings and applied to the respective races, substantially as specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JAMES KYDD.

Witnesses:

B. F. STILL,

J. B. ALLISON.