

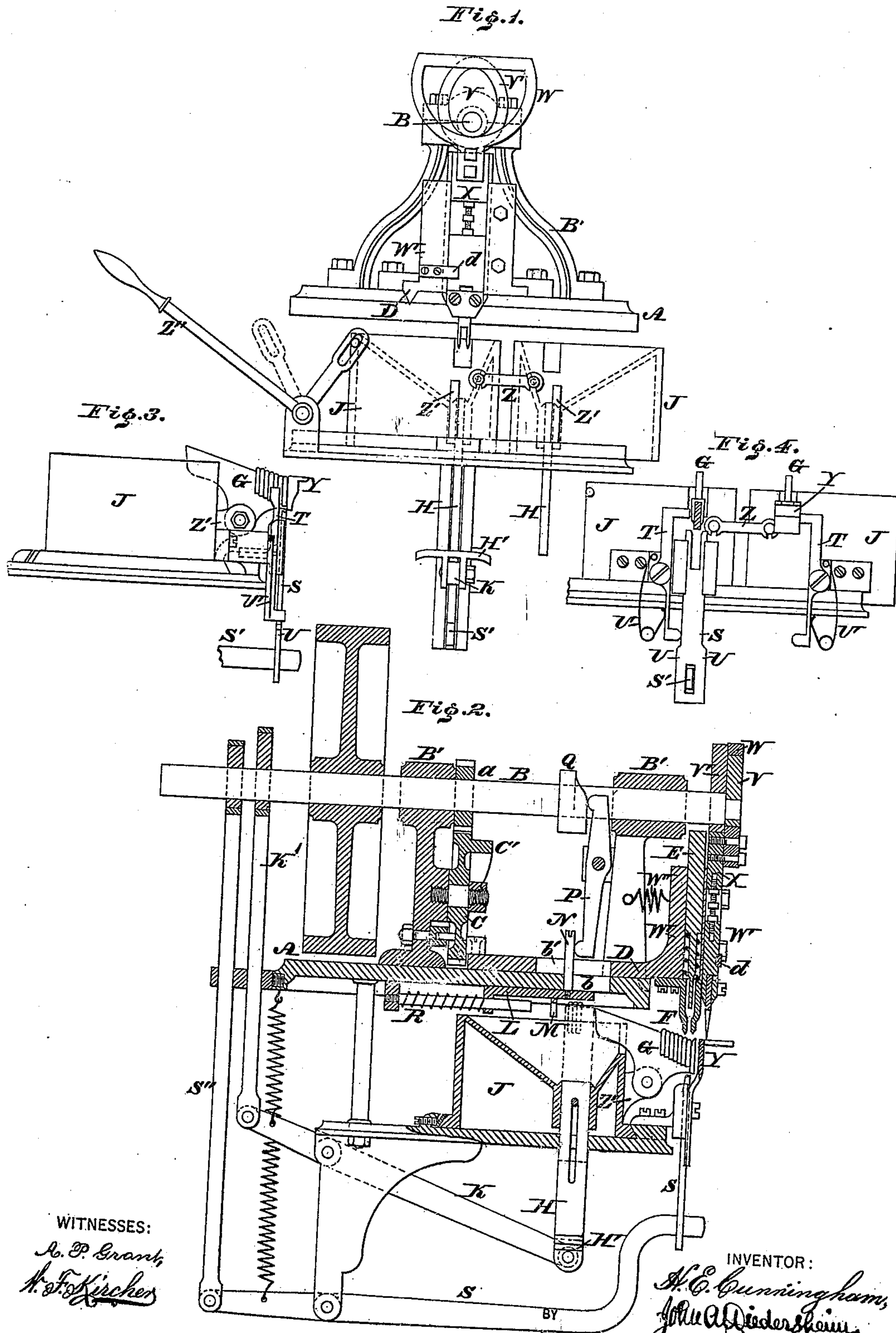
(No Model.)

H. E. CUNNINGHAM.

MACHINE FOR INSERTING AND CLINCHING STAPLES IN SHOES.

No. 333,284.

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MACHINE FOR INSERTING AND CLINCHING STAPLES IN SHOES.

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To all whom it may concern:

Be it known that I, HERMON E. CUNNINGHAM, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in a Machine for Inserting and Clinching Staples in Shoes, &c., which improvement is fully set forth in the following specification and accompanying drawings, in which—

Figure 1 is a front view of the machine embodying my invention, certain parts thereof being removed. Fig. 2 is a central vertical section thereof. Fig. 3 is a side elevation of a detached portion. Fig. 4 is a view of a detached portion of Fig. 1, partly sectional.

Similar letters of reference indicate corresponding parts in the several figures.

My invention relates to improvements in machines for inserting and clinching staples in shoes, &c.; and it consists of feeding, retaining, piercing, grasping, and driving devices, as will be hereinafter fully set forth.

It also consists of means for supplying staples of different lengths and thicknesses to the feed-chute, and operating the machine without changing the devices for lifting, piercing, clinching, &c.

Referring to the drawings, A represents the frame of the machine, and B represents the driving-shaft, which is suitably mounted on standards B' of said frame.

C represents a spur-wheel, which is supported on one of the standards B' and geared with a pinion, a, which is keyed or otherwise secured to the shaft B, said wheel C having secured to or formed with it on one side a cam, C', which is adapted to bear against a sliding carriage, D, which is sustained on the frame A beneath the shaft B, the end of said carriage opposite to the cam C' being formed into a head, within which is fitted a vertically-arranged staple-driver, E, and to the lower end of which is secured a pair of vertically-arranged fingers, F, between which the working end of the driver E is located, said fingers being sufficiently elastic to receive and hold a staple inserted from below.

G represents the feed-chute of the machine, the same being secured in position beneath

the head of the slide or carrier D, and extending in an inclined direction, so that staples placed on the chute will move down the same by gravity to the lowest point, which is just beneath the fingers F.

H represents a feed-bar, which is passed vertically through the lower part of the frame A, and guided in an opening in a supply box or cup, J, which is supported on the frame below the carrier D, said bar being attached to a lever, K, which is pivoted to the frame A and connected with an arm, K', the upper end of which is fitted on an eccentric on the shaft B, whereby rising and falling motions are imparted to the bar, it being noticed that the location of said bar is such that when it is raised to full extent its upper end is adjacent to the highest part of the feed-chute G. (See dotted lines, Fig. 2.)

To the frame below the carrier D is connected a horizontally-arranged slide, L, from which depends a stripper, M, of bifurcated shape, so located that when the bar H is at its highest point said stripper advances along the same and forces the staple which rests on the top thereof from its position and places it on the feed-chute G. Motion in one direction is imparted to the slide L by means of a pin or post, N, which passes vertically through a longitudinal slot, b, in the frame A, and a slot, b', in the carrier D, and is engaged by a lever or arm, P, which is pivoted to one of the standards B' of the frame, said arm being operated by a cam, Q, which is fixed to the driving-shaft B, whereby by the rotation of said shaft B the cam Q and arm P force back the slide L, and consequently the stripper M, ready for the advance motion of said stripper occasioned by a spring, R, which bears against the frame A and slide, or may be otherwise suitably applied.

S represents a staple-lifting bar whose upper end is bifurcated and so disposed as to straddle the feed-chute at the lower end thereof, the same being mounted on the frame A and operated by levers S' S'', through the medium of an eccentric on the driving-shaft.

To the box or cup J is pivoted a staple-holder, T, which extends parallel with the lifting-bar S at the side thereof, and has its

upper end or nose turned inwardly toward the feed-chute G at or about the position occupied by the second staple, so that at a proper time said nose presses said staple, thus holding the same and all other staples above it, the first or lowermost staple being left free to be removed. The pressing motion of the staple-holder is occasioned by a swell or cam, U, formed on the side of the lifting-bar S, the lower end of the holder being adapted to come in contact with said swell or cam, the relieving or returning motion of the holder being occasioned by a spring, U', suitably applied.

To the end of the driving-shaft above the staple-driver E is secured a cam, V, and another cam, V', which are placed side by side, the cam V being fitted in a yoke, W, which is attached to the upper end of an awl or piercer, X, which has two prongs to form the openings for the legs of the staple as the awl being vertically guided in the head W', which is mounted on the adjacent part of the frame or bed of the machine, and adapted to slide thereon in the longitudinal direction thereof as a part or connected piece of the carrier D.

Attached to the frame W' is a spring-catch, d, which is adapted to drop into a notch in the head or holder of the awl, said catch serving to sustain the awl when elevated, when the yoke W is relieved of the cam V by the motion of the carrier D, as will be hereinafter set forth, said catch, however, being overcome when the awl is depressed.

Y represents a bed or anvil for holding the shoe or other article while the staples are being driven thereinto and clinched, the same being secured to the frame of the machine or to the feed-chute, and in either case occupying a position adjacent to the lower end of the feed-chute.

The box or cup J has a depressed top, so as to direct the staples to the center over the feed-bar H. In order to provide means for feeding staples of different sizes, I employ an additional box or boxes and connect them by a coupling, Z, and fit the boxes to the frame or bed so as to slide in the transverse direction of the machine.

Each box or cup has connected to it, as at Z', a feed-chute, G, and a holder, T, the lifting-bar S having a swell or cam, U, on each side, so as to be engaged by either holder. Furthermore, each box or cup has a connected feed-bar, H, and the end of the lever K under the box or cup has pivoted to it a saddle, H', which is adapted to have the lower end of either feed-bar placed upon it, whereby when the lever K is raised the relative feed-bar will also be raised, it being noticed that the feed-bar is not fixed to the saddle.

Z'' represents a lever, which is pivoted to the frame or bed of the machine and connected with one of the boxes or cups, whereby the coupled boxes or cups may be conveniently moved as one and shifted in proper position over the lever K, whereby the feed-bar may

be operated and the desired size of staples raised and presented for the action of the stripper.

The box or cup is supplied with staples, power applied to the driving-shaft, and the shoe or other article to be stapled placed on the bed or anvil Y. The bar H rises and works its way through the staples, taking such by the head or crown as is in its path and raising it or them to the top of the box or cup. The stripper advances and clears the bar of the staples and moves them toward and on the feed-chute, down which they ride to full extent. The awl descends and pierces the shoe, and then rises to its normal position, the catch d then engaging with the awl head or holder. The lifting-bar S now rises and forces the first staple into the fingers F, which grasp the same, the second and remaining staples being stationary, controlled by the holder, as has been stated. The carrier D then advances and forces ahead of it the awl with its connected yoke, the latter leaving its cam and remaining suspended by the spring-catch d, and the staple-driver and fingers being placed above the bed or anvil Y, with the legs of the staple in position to enter the perforations made by the awl.

It will now be seen that the cam V' is directly above the head of the staple-driver, and it is evident that the rotation of said cam depresses the staple-driver, thus forcing the staple into the shoe or other article, the legs being clinched thereon by the action of the bed or anvil. The stripper returns to its normal position, the staple-driver rises, and the head W' is carried back, thus restoring the awl, staple-driver, and fingers to their normal position, the yoke W again encircling the cam V, the return motion of the head being accomplished by the action of a spring, W'', suitably applied, or by the cam C, which may be constructed to accomplish the same. The feed-bar rises and the stripper advances, so that the feed-chute is further supplied with staples, the lifting-bar is elevated, the awl pierces the article, and the subsequent operations, similar to those stated, are repeated.

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

1. In a staple-driving machine, a box or cup for staples and a single staple-feeding bar working up through the same, in combination with the slide L, moving longitudinally across the top of said cup, a stripper, M, carried by said slide, and a chute to which said stripper delivers the staples after removing them from said staple-feeding bar, substantially as and for the purpose set forth.

2. A feed-chute, in combination with a pair of elastic fingers arranged to receive staples therefrom, and a staple-lifting bar which forces them one by one from said chute into said fingers, substantially as set forth.

3. A pair of elastic fingers, in combination with a staple-lifter which forces each staple up

between said fingers, and a staple-driver operating down through said fingers, substantially as set forth.

4. A driving-shaft and cam actuated thereby, in combination with a sliding carriage advanced by said cam, a pair of staple-holding fingers, and a staple-driver mounted on said carriage, and devices for feeding the staples singly to said fingers, to be driven substantially as described.

5. The chute, in combination with the staple-holder T and the staple-lifter formed with a swell or cam, V, substantially as and for the purpose set forth.

6. A carriage, D, sliding horizontally and adapted to present the staple-driver in the position previously occupied by the awl, in combination with the staple-driver and awl carried by said sliding carriage and driving-shaft, and intermediate mechanism whereby the foregoing devices are operated.

7. Two or more boxes for holding staples, each provided with a feed-bar which works through the box, in combination with the

chutes G, supplied from said boxes by the feed-bars, the single lifter S, which receives the staples from all of said chutes, and a single staple holding and driving device, substantially as and for the purpose set forth.

8. Sliding supply boxes or cups, each with a feed-bar, in combination with an elevating-lever provided with a saddle, H', adapted to lift either one of two of said feed-bars when brought into proper position therefor, substantially as and for the purpose set forth.

9. The carriage D, with slot b', frame A, with slot b, in combination with the stripper-slide L, the pin N, arm P, and cam Q, substantially as and for the purpose set forth.

10. The feed-chute staple-lifter, awl, and holding and driving device, in combination with the bed or anvil Y, substantially as and for the purpose set forth.

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Witnesses:

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