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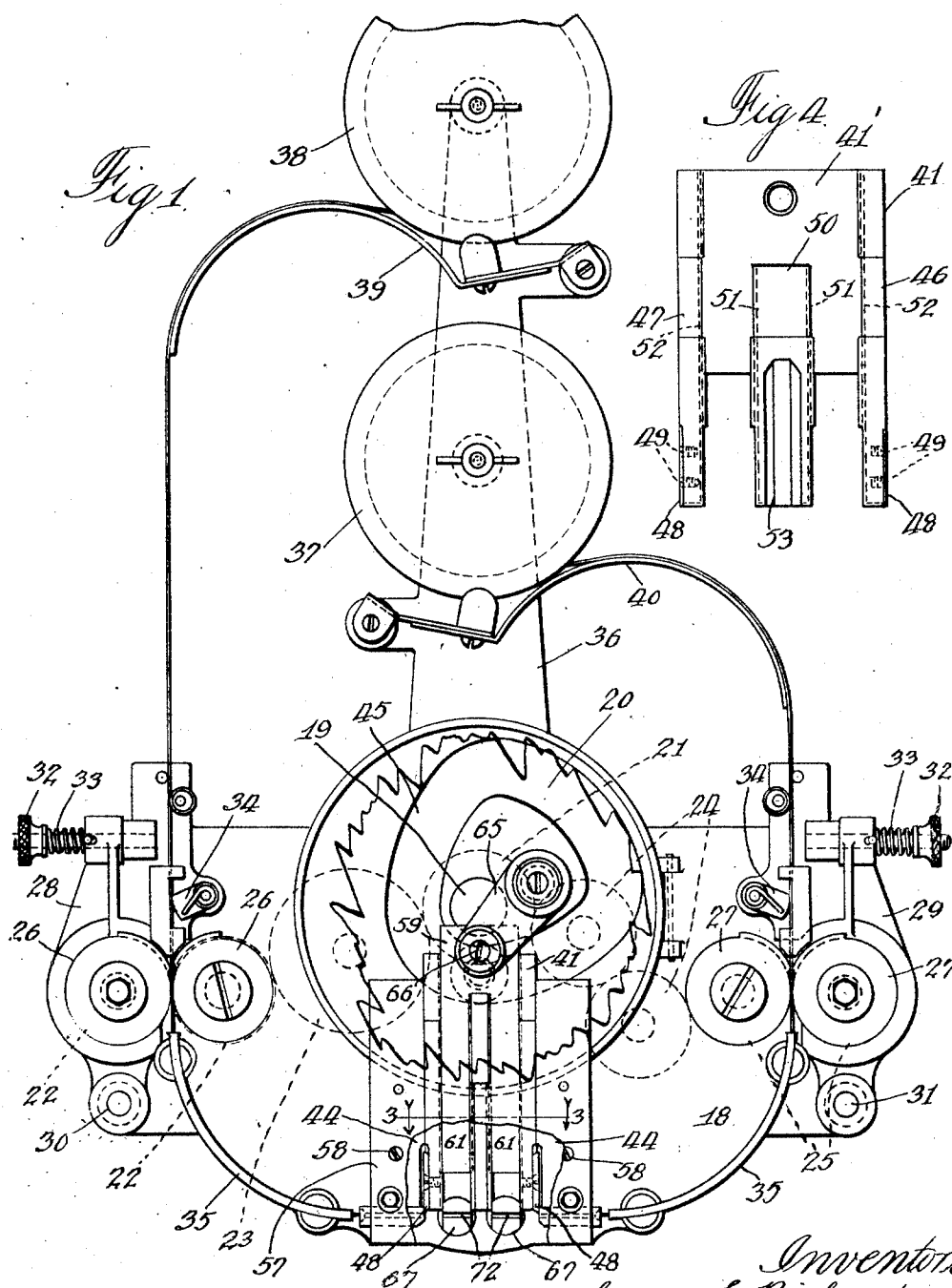
G. L. RICHARDSON ET AL

1,712,843

STITCHING MACHINE

Filed Jan. 7, 1927

2 Sheets-Sheet 1



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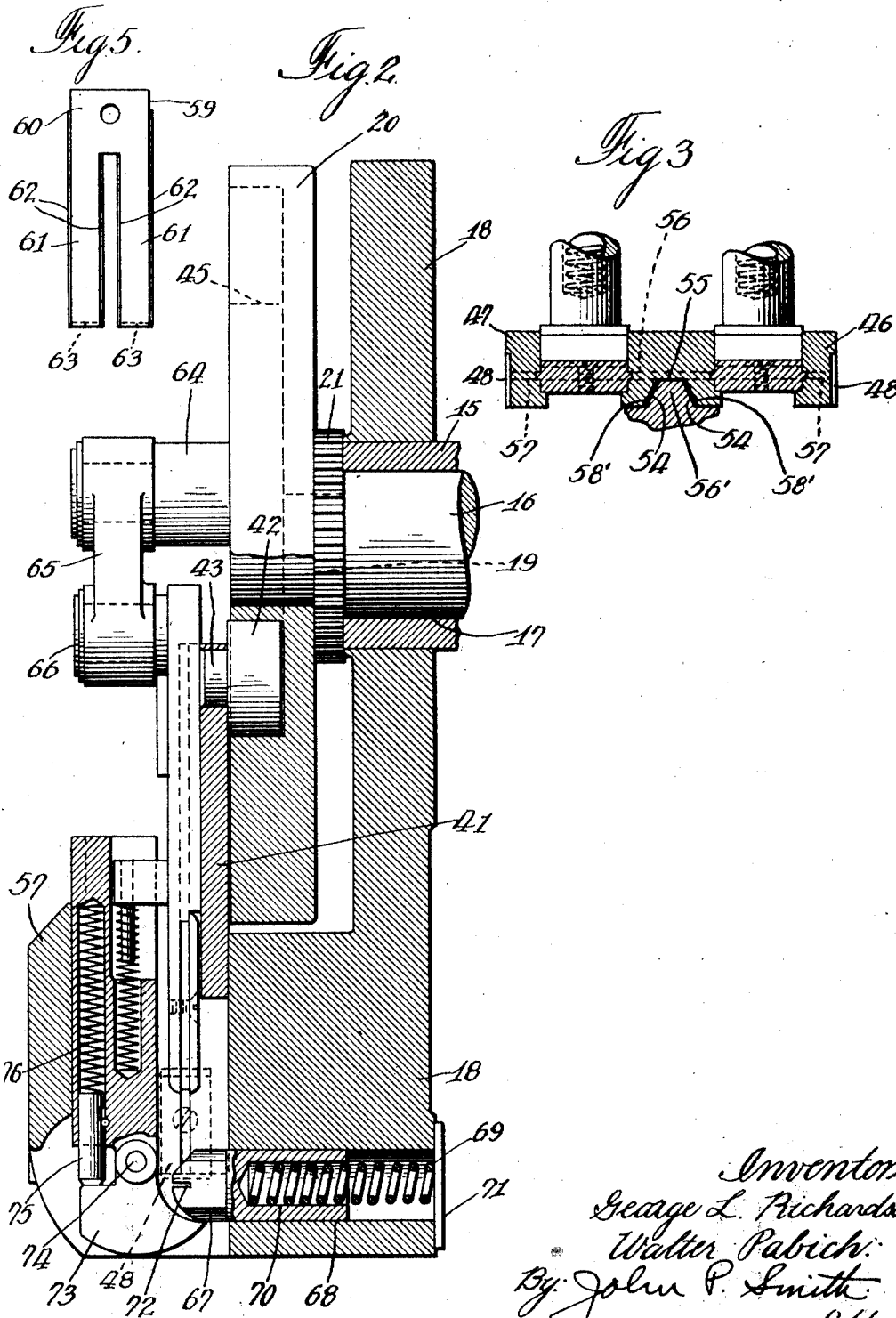
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## UNITED STATES PATENT OFFICE.

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TO LATHAM MACHINERY COMPANY, A CORPORATION OF ILLINOIS.

## STITCHING MACHINE.

Application filed January 7, 1927. Serial No. 159,615.

This invention relates to a wire stitching machine.

One of the objects of the present invention is to provide a simplified and improved machine which is adapted to stitch a plurality of staples in relatively close proximity in respect to each other.

A further object of the invention is to provide a novel construction of a staple former and driving mechanism in which the plurality of formers is made up of a single integral part and the plurality of staple drivers is made up of a single integral part.

A still further object of the invention is to provide a novel form of staple former in which the plurality of staple formers is made of a single integral part and is constructed in such a manner that the face plate or joining part extends into the former for properly guiding the wire in its proper course.

These and other objects are accomplished by providing construction and an arrangement of the various parts in the manner hereinafter described and particularly pointed out in the appended claims.

The invention in the present instance is an improvement over the patent issued in the name of Ernest Leschhorn, No. 1,583,935 granted May 11th 1926.

Referring to the drawings:

Figure 1 is a front elevational view of a wire stitching machine showing our novel form of staple forming and driving mechanism mounted therein;

Figure 2 is a vertical cross-sectional view of the same;

Figure 3 is a cross-sectional view taken on the line 3—3 in Figure 1;

Figure 4 is a front elevational view of our improved staple former; and

Figure 5 is a front elevational view of our improved form of staple driver.

The present invention is applied to wire stitching machines of a character well known in the art and only that portion of the machine is shown in the drawings to sufficiently illustrate the present invention and its relative parts.

The whole stitching mechanism which con-

stitutes the head is supported on a horizontally disposed arm 15 which rotatably supports a shaft 16 in a horizontal bore 17 of the arm. Secured to the forward end of the arm 15 and forming a portion of the head is a vertically disposed plate 18 upon which the operative parts of the stitcher are mounted. A reduced portion of the shaft 16 indicated at 19 extends past the plate 18 and has secured thereto by means of a key (not shown) and cam 20. Securely mounted in any well known manner on the reduced portion 19 of the shaft 16 is a gear 21 which in turn is operatively connected or geared to a pair of wire feeding rollers gears 22 by means of an intermediate gear 23 on one side of the shaft. Geared to a second train of gears, as indicated at 24, is another pair of wire feeding gears 25 located on the other side of the shaft. Each of these pairs of feeding gears is provided with the conventional form of wire feeding cams 26 and 27 respectively. The movable wire feeding cams are journaled in the pivoted brackets 28 and 29 which in turn are pivoted as shown at 30 and 31 respectively to the frame or plate 18 of the head. Each of these brackets is provided with the usual spring tension nut 32 and spring 33 for varying the spring pressure between the feeding cams. Each of the wire feeding mechanisms is also provided with the usual conventional form of wire check 34 and wire guide tubes 35, which in turn curve inwardly toward the staple forming and driving mechanism. Formed integrally with the plate 18 is an upwardly extending arm 36 which forms a support for wire reels 37 and 38. Each of these reels is provided with the usual form of spring tension 39 and 40, which also form the guides for conveying the wire into the wire feeding mechanism. The mechanism above described is essentially similar to the construction described and claimed in the U. S. Patent No. 1,583,935 granted May 11, 1926, above referred to.

The essential feature of the present invention is the provision of a novel form of staple driving and forming mechanism in which a plurality of staple formers is con-

structed of an integral piece of material whereby the staples formed by the staple former are driven into the material in close proximity to each other. By thus having the two staple formers formed of an integral piece, the possibility of having one former advance previous to the other is eliminated and the possibility of cramping is prevented.

These same advantages, it will readily be seen, are true of the staple driver.

Our improved form of staple former 41 consists essentially of a transverse web portion 41' which is provided on its rearward side with a roller 42 journalled on a pin 43. The former is reciprocally mounted between two guiding plates 44 which in turn are secured to the frame or plate 18 in any well known manner. The former is operatively driven by the cam 20 which in turn is provided with an eccentric groove 45 in which the roller 42 travels. The former 41 is provided with two outside flange portions 46 and 47 which are formed integrally with the web portion of the former and have supported on their opposite faces the usual wire cutting knives 48 which in turn are secured thereto by machine screws 49. Mounted in the longitudinal center of the former 41 is a vertically extending portion 50 which extends on the front side of the transverse web portion 41' of the former. Formed on the opposite side of the vertically extending portion 50 are two vertically extending grooves 51 which co-operate with vertically extending grooves 52 in each of the flanges 46 and 47 respectively for forming the guides for the reciprocating driver. The lower portion of the vertically extending portion 50 is provided with a substantially V-shaped recess 53 so as to form bevelled surfaces 54. The V-shaped groove 53 has its bottom side thereof, as shown at 55, in line with one side of the transverse groove 56 formed in the bottom of the vertically extending portion 50. This groove 56 forms the path through which the wire is fed just previous to being formed into the staple. The transverse groove 56 is in alignment with the transverse grooves 57 formed in the lower ends of the flange portions 46 and 47 of the staple former 41. Mounted in the V-shaped groove 53 of the vertically extending portion 50 of the staple former 41 is a V-shaped projection 56' which is formed integrally with the face plate 57 which in turn is secured to guide members 44 by means of screws 58. This V-shaped projection is also provided with bevelled surfaces 58' which extend parallel with corresponding surfaces 54 of the V-shaped recess 53 so that when each of the wires is fed through the transverse groove 56 they will be guided into proper position in the groove 56 by the bevelled surfaces of the V-shaped projection 56'.

Another essential feature of the present in-

vention is the provision of a novel form of staple driver in which two drivers are formed in one integral piece of material adapted to be reciprocally mounted in the former. This novel form of driver is generally indicated by the reference character 59 and consists of a transverse upper web portion 60 and two vertically extending-leg portions 61. The leg portions of the former 59 are provided with laterally extending guiding ribs 62 which are adapted to be mounted in the grooves 51 and 52 of the vertically extending portions 50 and flanges 46 and 47 respectively of the former. The lower ends of the legs 61 of the driver 59 are provided with transverse wire grooves 63 which are in transverse alignment with the grooves 56 and 57 of the vertically extending portion 50 and flanges 46 and 47 respectively. These grooves 63 normally engage the upper portion of the loops of the staples when the staples are being driven into the material in a manner well understood in the art. The driver 59 is operatively driven by a crank pin 64 mounted eccentrically on the cam 20 and operatively connected by means of a pitman connection 65 to a pin or stud 66 secured to the upper end of the driver. Co-operating with each of the staple former and driver mechanisms are the usual anvils 67 mounted in the bores 68 formed in the frame or plate 18. The anvils 67 are normally pressed forwardly by compression springs 69 which have one of their ends engaging sockets 70 formed in the rear sides of the anvils and the other ends thereof engaging plates 71 secured to the rear side of the frame 18. Each anvil is provided with the usual transverse slot 72 through which the wire is fed and formed into a staple previous to being driven into the material. Co-operating with the anvil and staple driver is the usual staple supporter 73 pivoted to the face plate 57 as shown at 74. The staple supporter 73 is actuated by the usual form of spring plunger 75 and spring 76, both of which are mounted in the face plate 57 and operated in a manner well understood in the art.

In the operation of our improved form of stapling machine it will of course be understood that the wires are fed from both wire reels 36 and 37 through the feeding rolls 26 and 27 respectively, through the guide tubes 35, from which they are fed into the grooves 72 of the anvils 67.

It will be noted that by reason of the V-shaped portion 56' extending into the V-shaped recess 53 of the vertically extending portion, should the wire be misguided from the grooves 56 in the lower end of the vertically extending portion 50, the bevel edges of this V-shaped projection 56' will properly guide the wire in the groove 56 and thereby prevent the wire from becoming distorted and improperly driven into the material. After

the wire has thus been fed the staple former is then moved downwardly by the action of the cam 20 through the roller 42 and the wire severed by the cutting knives 48. Following the cutting operation the lower end of the flanges 46 and 47 and the vertically extending portion 50 of the former form the wire into staples, after which the staple drivers are then actuated by the pitman 65 downwardly to drive the staples thus formed into the material.

From the above description it will be seen that in addition to providing a stitching machine in which two staple formers are made of one integral piece of material, as well as two staple drivers, we have also provided an arrangement whereby the wire is positively guided into its proper grooves in the staple formers to positively insure the correct forming of the staple and thereby preventing the staples from being improperly driven into the material; at the same time providing a construction in which the staples are driven in parallel alignment in relatively close proximity.

While in the above specification we have described one embodiment which our invention may assume in practice, it will of course be understood that the same is capable of modification and that modification may be employed without departing from the spirit and scope of the invention as expressed in the following claims.

What we claim as our invention and desire to secure by Letters Patent is:

1. A wire stitching machine comprising a frame, a plurality of wire feeding mechanisms mounted on said frame, a plurality of staple formers formed integrally with each other, a plurality of staple drivers formed integrally with each other and operatively driven by said shaft, said staple formers having a recess therebetween, and a face plate having a bevelled projection extending into the recess between said formers for properly guiding the wires as they are being fed by said feeding mechanisms.

2. A wire stitching machine comprising a frame, a drive shaft mounted thereon, a plurality of feeding mechanisms mounted on said frame and operatively driven by said shaft, a plurality of staple formers formed integrally with each other and operatively driven by said shaft, a plurality of drivers formed integrally with each other and operatively driven by said shaft, and a face plate secured to said frame and having a projection extending into the path of the wires fed to each of said staple formers for properly guiding the wires in position for said formers.

3. A wire stitching machine comprising a frame, a drive shaft mounted thereon, a plurality of feeding mechanisms mounted on said frame and operatively driven by said shaft, a plurality of staple forming mechanisms

formed integrally with each other and having a recess therebetween, a plurality of driving mechanisms formed integrally with each other and reciprocally mounted in said staple formers, and means secured to said frame and extending into the recess between said staple formers for properly guiding the wires to said staple formers.

4. A wire stitching machine comprising a frame, a drive shaft mounted thereon, a plurality of oppositely positioned feeding mechanisms mounted on said frame and operatively driven by said shaft, a plurality of staple forming mechanisms formed integrally with each other and located in relatively close position with respect to each other, there being a V-shaped recess formed between the adjacent staple formers, a plurality of staple drivers reciprocally mounted in said staple formers and formed integrally with each other and operatively driven by said shaft, and a face plate secured to said frame and having a V-shaped projection extending into the recess between said staple formers for properly guiding the wires in position for said staple formers.

5. A wire stitching machine comprising a frame, a drive shaft located centrally in said frame, wire feeding mechanisms located on the opposite sides of said shaft and operatively connected therewith, a pair of staple formers arranged in lineal alignment and formed integrally with each other and operatively driven by said shaft, a pair of staple drivers arranged in lineal alignment and formed integrally with each other and operatively driven by said shaft, and means secured to said frame and extending adjacent the path of the wires for engagement with said wires for properly guiding said wires in position for said staple formers.

6. A wire stitching machine comprising a frame, a drive shaft mounted thereon, a plurality of wire feeding mechanisms operatively driven by said drive shaft, a cam fixed to said shaft, a pair of staple formers formed integrally with each other and operatively connected to said cam, a pair of staple drivers formed integrally with each other and operatively connected to said cam, and an immovable guiding means extending into the recess formed in said staple formers for properly guiding the inner ends of said wires in proper position for said formers.

7. A wire stitching machine comprising a frame, a drive shaft mounted thereon, a pair of wire feeding mechanisms operatively driven by said shaft, a cam fixed to said shaft, a pair of staple formers comprising a transverse web portion and two vertically extending flange members, a vertically extending portion formed integrally with said web portion and positioned between said flange portions, a V-shaped recess formed in said vertically extending portion, a pair of staple drivers

ers comprising a transverse web portion and  
two vertically extending legs reciprocally  
mounted in said formers and operatively con-  
nected to said shaft, and a face plate secured  
5 to said frame and having a V-shaped projec-  
tion extending into the recess formed in the  
vertically extending portion of said formers

for properly guiding the wires in position for  
said formers.

In testimony whereof we have signed our 10  
names to this specification, on this 28th day  
of December A. D. 1926.

GEORGE L. RICHARDSON.  
WALTER PABICH.