

Dec. 23, 1930.

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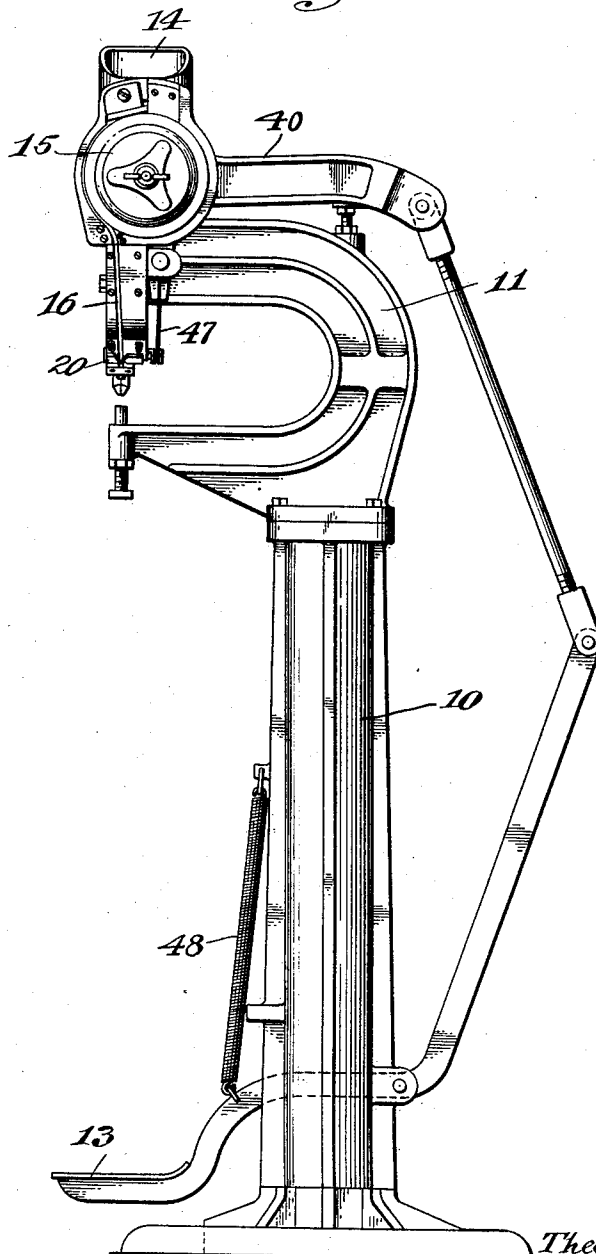
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FASTENER SETTING MACHINE

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3 Sheets-Sheet. 1

Fig. 1.



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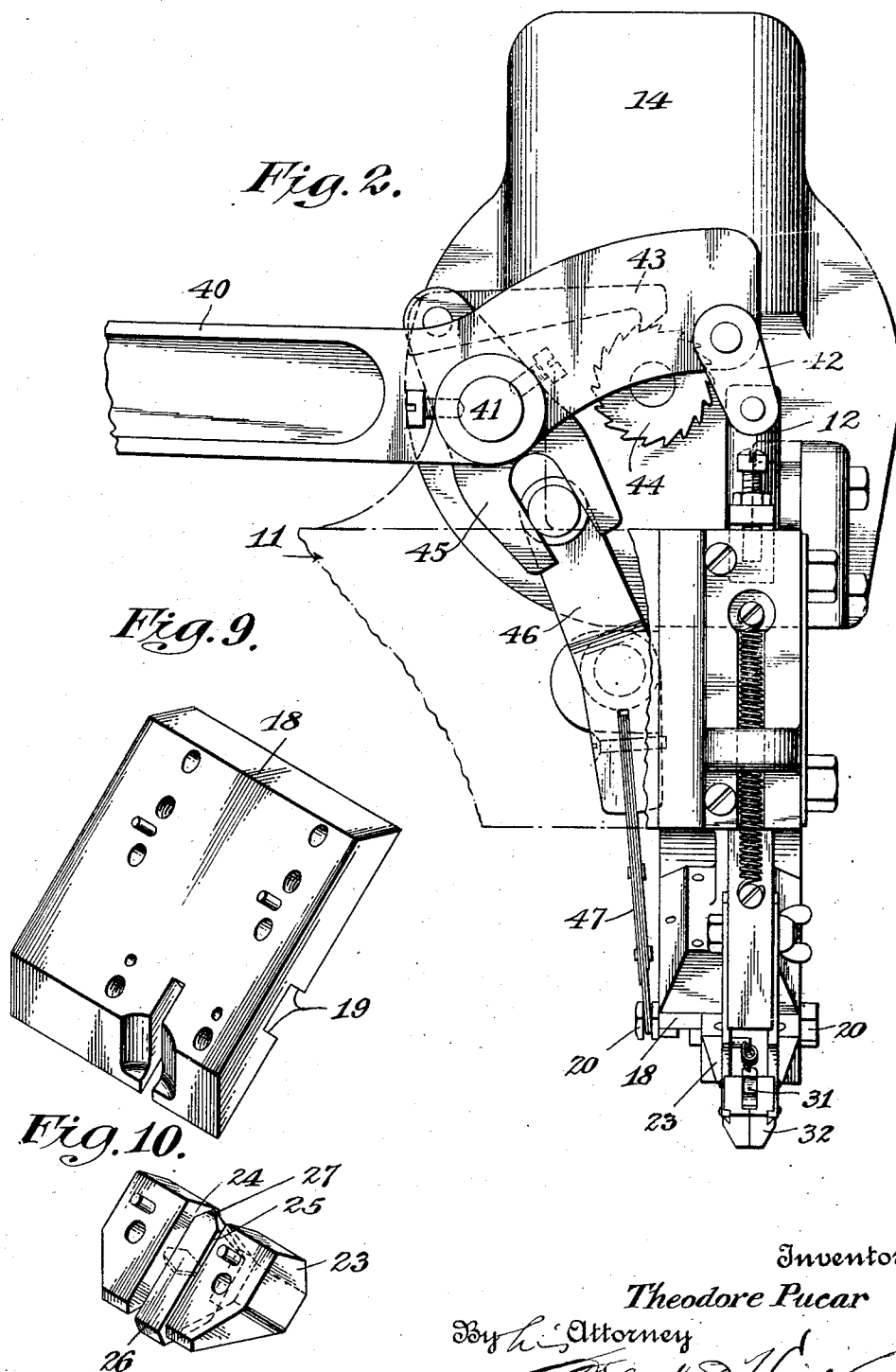
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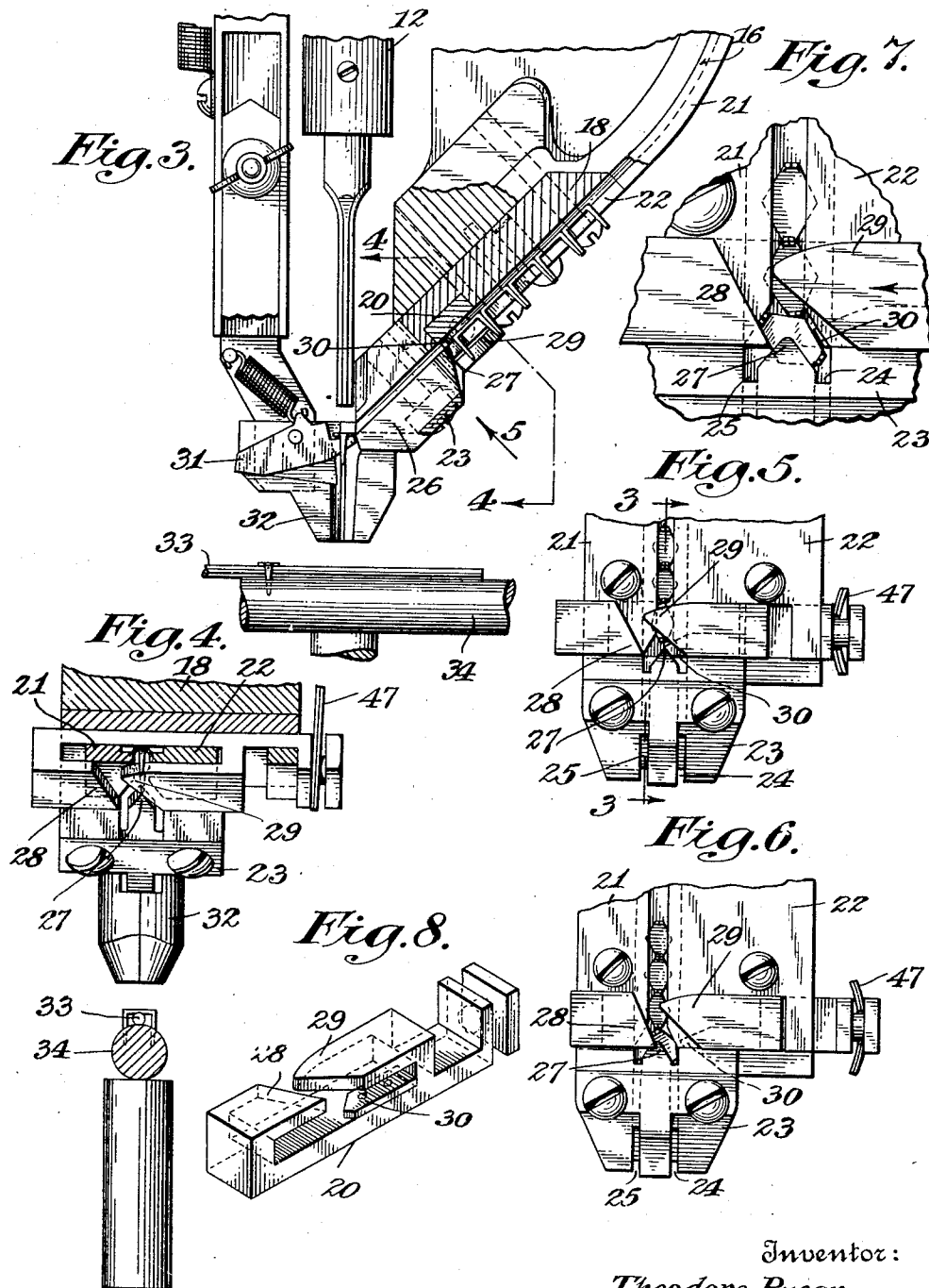
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FASTENER SETTING MACHINE

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FASTENER-SETTING MACHINE

Application filed April 15, 1929. Serial No. 355,238.

This invention relates to machines for driving double-pronged fasteners, such as staples, and provides certain novel features of construction and operation of such machines.

5 In stapling machines heretofore known the driving plunger has been mounted on a U-shaped head, and the staples have been fed so that they arrive at the driving pocket in a position at right angles to the U-shaped
10 head. Such an arrangement is satisfactory for many types of work, but when it is desired to set the staples in a long pole transversely to the axis of the pole, it is necessary to feed the pole in a direction parallel to the
15 U-shaped head and the free space provided by the head is often insufficient to permit the required feeding movement.

A primary object of the present invention is to provide a machine in which the staples
20 are fed in such a way that they arrive at the driving pocket in a position parallel to the U-shaped head. With this arrangement a pole or similar long article can be fed at right angles to the U-shaped head, and staples
25 can easily be inserted transversely to the axis of the pole at any point along its length.

Other objects and advantages of the invention will become apparent as the description proceeds.

30 While a preferred form of the invention has been disclosed for purposes of illustration, it should be understood that various changes may be made in the structure and arrangement of parts without departing from the spirit and scope of the invention as hereinafter set forth and claimed.

In the drawings:

Fig. 1 is a side elevation of a machine embodying the invention.

40 Fig. 2 is an enlarged detail of part of the operating mechanism.

Fig. 3 is an enlarged detail showing the mechanism for feeding the rivets to the plunger.

45 Fig. 4 is a section on line 4—4 of Fig. 3.

Fig. 5 is a fragmentary view looking in the direction of the arrow 5 of Fig. 3.

Fig. 6 is a view similar to Fig. 5 but showing the parts in another position.

50 Fig. 7 is an enlarged view similar to Fig. 5

but showing a still different position of the parts.

Fig. 8 is a perspective view of the cut-off slide.

Fig. 9 is a perspective view of the block
55 attached to the lower end of the feed arm.

Fig. 10 is a perspective view of the nose-piece.

Referring to the drawings more particularly the numeral 10 indicates the pedestal of the machine, which supports a U-shaped head
60 11. A driving plunger 12 is mounted on the head for vertical reciprocation and is operated from the pedal 13 by suitable lever mechanism.

The staples are placed in the hopper 14
65 and are fed by the rotatable drum 15 to the guideway 16, from which the cut-off slide 20 permits them to drop one at a time to the driving position under the driving plunger. Suitable connections are provided to operate
70 the drum 15 and cut-off slide 20 at proper timed intervals in the sequence of operations of the machine.

Arm 40 is pivoted at 41 and, when pedal
75 13 is depressed, this arm swings in a clockwise direction (Fig. 2). This movement of arm 40 effects the operation of several parts, viz: driver 12 is depressed through the action of connecting link 42; pawl 43 is advanced on ratchet wheel 44; and slide 20 is
80 moved to the right, viewed as in Fig. 2 (to the left viewed as in Figs. 4-7). The operation of slide 20 is through rocker arm 45, rocker arm 46, and spring connecting member 47. When pedal 13 is released it is moved
85 upwardly by spring 48 (Fig. 1), and arm 40 swings in a counter-clockwise direction (Fig. 2). This movement restores driver 12 to its uppermost position, returns slide 20 to its
90 left-hand position (Fig. 2), and causes pawl 43 to rotate ratchet wheel 44 and drum 15. Drum 15 operates in a manner well known in the art to arrange the staples deposited in
95 hopper 14 and deliver them in regular order to guideway 16.

As the staples leave the drum 15 they pass down the guideway with their heads retained in the guideway and the long axis of the staples parallel to the guideway, and the present
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invention relates particularly to means for turning the staples so that they arrive in driving position at right angles to the guideway, or parallel to the U-shaped head of the machine. This turning of the staples is accomplished by the co-operation of the cut-off slide and the nose-piece of the guideway in a manner that will now be described.

At the lower end of the guideway a block 18, shown in perspective in Fig. 9, is attached to the feed arm of the machine. This block 18 is formed on its under side with a channel 19 in which the cut-off slide 20 is slidably mounted. Plates 21 and 22 are attached to the under side of block 18 and assist in keeping the cut-off slide in position, while the spaced-apart, undercut edges of these plates form a continuation of the guideway 16 and guide the staples to the cut-off slide.

Below the cut-off slide the nose-piece 23 is attached to the lower side of the block 18. This nose-piece, as shown in Fig. 10 is provided with deep slots 24 and 25 which define between them a slide 26. The slide 26 is cut down so that its upper surface is spaced below the upper surface of the remainder of the nose-piece, and one end of the slide is formed into a point 27. These parts are so arranged that when the nose-piece is properly secured in its place the point 27 is alined with the center of the guideway 16, and the slide 26 is spaced from plate 18 a sufficient distance to permit the head of the staple to ride over the slide while the prongs of the staple extend into the slots 24 and 25.

The cut-off slide 20 is provided with fingers 28 and 29 which travel over the outside of plates 21 and 22 and operate on the prongs of the staples, and the slide also carries a turning lug 30 which travels inside plate 22 and operates on the heads of the staples.

As the cut-off slide 20 reciprocates it permits the staples to drop one at a time from the guideway 16, and rotates them through an angle of 90° so that they can ride down the slide 26 to the driving position, in which position they are at right angles to the guideway 16. The details of this turning operation will be clear from an inspection of Figs. 3 to 7 inclusive.

When the driving plunger 12 is in depressed position, the cut off slide is in the extreme left hand position as shown in Figs. 4 and 5, with the finger 29 extending between the prongs of a staple and retaining the staple in a preliminary position.

As the cut-off slide moves to the right-hand end of its stroke, approximately illustrated in Fig. 6, the finger 29 is removed from its retaining position between the prongs of the lowermost staple, and this staple falls under the weight of the column of staples above it.

When the cut-off slide is in its right-hand position the sloping face of the finger 28 com-

bines with a side of the point 27 to positively guide the lower prong of the staple into the slot 24.

The cut-off slide next moves toward the left and operates on the staples in the manner shown in Fig. 7. During this movement the finger 28 recedes permitting the upper end of the staple to tilt toward the left under the weight of the column of rivets, and this tilting movement is completed by the turning lug 30 engaging the head of the staple. The lowermost staple is now free from the cut-off slide and has been turned at right angles to the guideway 16, and being alined with the slide 26, it passes down over the slide to the driving position.

Meanwhile the finger 29 has engaged between the prongs of the next staple, and the parts have once more resumed the position of Figs. 3 and 5.

After the staple leaves the slide 26 it falls onto the movable support 31, which engages under the head of the rivet and maintains it in a vertical position during the first part of the driving operation. As the driving plunger descends it engages the staple, removes it from the support 31 and drives it through the split holding pocket 32 and into the work.

The advantages of this new machine become apparent when performing such work as attaching branches 33 to the trunk of an artificial Christmas tree 34. In this case the trunk is a long pole and the staples must be set transversely of the trunk. With the present machine the trunk 34 can be fed parallel to the guideway for the staples, which means that the trunk is fed transversely to the U-shaped head and is therefore entirely free from any limitations of movement due to contact with parts of the machine.

The machine can be used for setting any double-pronged fasteners, the fasteners being fed down the main guideway with the fasteners so positioned that a line passing through both prongs of a fastener is parallel to the guideway. The operating mechanism turns the fastener through 90° to a position in which the line passing through both prongs of the fastener is transverse to the guideway.

I claim:

1. A fastener-setting machine comprising a head having upper and lower horizontal branches; an anvil mounted on the lower horizontal branch; a driving plunger mounted on the upper horizontal branch; a fastener-receiving device for receiving double pronged staple-like fasteners; a guideway adapted to guide the fasteners from the fastener-receiving device with a line passing through both prongs of a fastener parallel to the guideway, said line being perpendicular to each of the fastener prongs; a slide adapted to carry the fasteners to the driving position with said line transverse to the guideway; and means

for turning the fasteners and transferring them from the guideway to the slide.

2. A fastener-setting machine comprising a head having upper and lower horizontal branches, an anvil mounted on the lower horizontal branch, a driving plunger mounted on the upper horizontal branch, a fastener-receiving device, a guideway adapted to guide the fasteners from the fastener-receiving device with a line passing through both prongs of a fastener parallel to the guideway, a slide adapted to carry the fasteners to the driving position with said line transverse to the guideway, and a cut-off slide for transferring the fasteners from the guideway to the slide.

3. A fastener-setting machine comprising a head, a driving plunger mounted on the head, a sorting drum, a feed arm mounted on the head, the feed arm being formed with a guideway adapted to receive double-pronged fasteners from the drum with a line passing through both prongs of a fastener parallel to the guideway, a nosepiece attached to the feed arm and formed with a slide adapted to support the fasteners with said line transverse to the axis of the guideway and to guide them to driving position, a cut-off slide reciprocable between the guideway and the slide, the cut-off slide being adapted to feed the fasteners one at a time from the guideway to the slide and to assist in turning the fasteners.

4. A fastener-setting machine comprising a head; a driving plunger mounted on the head; a holding device adapted to hold the fasteners in driving position under the plunger; a fastener-receiving device for receiving double pronged staple-like fasteners; a guideway adapted to guide the fasteners from the fastener-receiving device with a line passing through both prongs of a fastener parallel to the guideway, said line being perpendicular to each of the fastener prongs; a slide adapted to carry the fasteners to the holding device with said line transverse to the guideway; and means for feeding fasteners from the guideway to the slide.

5. A fastener-setting machine comprising a head, a driving plunger mounted on the head, a holding device adapted to hold the fasteners in driving position under the plunger, a fastener-receiving device, a guideway adapted to guide the fasteners from the fastener-receiving device with a line passing through both prongs of a fastener parallel to the guideway, a slide adapted to carry the fasteners to the holding device with said line transverse to the guideway, and a cut-off slide for transferring fasteners from the guideway to the slide.

6. A fastener-setting machine comprising a head having upper and lower horizontal branches, a driving plunger mounted on the head, a holding device adapted to hold the fasteners in driving position under the

plunger with a line passing through both prongs of a fastener parallel to the horizontal branches of the machine head, a fastener-receiving device, a guideway adapted to guide the fasteners from the fastener-receiving device with said line transverse to the horizontal branches of the machine head, a slide adapted to guide the fasteners from the guideway to the holding device with said line parallel to the horizontal branches of the machine, and means for feeding fasteners from the guideway to the slide.

7. A staple-setting machine comprising a head having upper and lower horizontal branches, a driving plunger mounted on the head, a holding device adapted to hold the staples in driving position under the plunger with the long axis of the staple heads parallel to the horizontal branches of the machine head, a staple-receiving device, a guideway adapted to guide the staples from the staple-receiving device with the long axis of the staple-heads transverse to the horizontal branches of the machine head, a slide adapted to guide the staples from the guideway to the holding device with the long axis of the staple heads parallel to the horizontal branches of the machine, and a cut-off slide for transferring staples from the guideway to the slide.

8. A staple-setting machine comprising a head having upper and lower horizontal branches, a driving plunger mounted on the head, a holding device adapted to hold the staples in driving position under the plunger with the long axis of the staple heads parallel to the horizontal branches of the machine head, a staple-receiving device, a guideway adapted to guide the staples from the staple-receiving device with the long axis of the staple-heads transverse to the horizontal branches of the machine head, a slide adapted to guide the staples from the guideway to the holding device with the long axis of the staple heads parallel to the horizontal branches of the machine, and a cut-off slide reciprocable between the guideway and the slide, the cut-off slide being adapted to feed the staples one at a time from the guideway to the slide and to assist in turning the staples.

9. A machine for handling double pronged fasteners comprising a first guideway for guiding the fasteners in the direction of a line passing through both prongs of a fastener, a second guideway for guiding the fasteners in a direction transverse to a line passing through both prongs of a fastener, and means comprising a reciprocating slide for turning the fasteners and transferring them from the first guideway to the second guideway.

10. A machine for handling double pronged headed fasteners comprising a first guideway for suspending the fasteners by

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their heads and guiding them in the direction of a line passing through both prongs of a fastener, a second guideway comprising a slide adapted to be straddled by the fasteners and guide them in a direction
5 transverse to a line passing through both prongs of a fastener, and means to turn the fasteners one at a time and transfer them from the first guideway to the second guideway.

10 11. A machine for handling double pronged fasteners comprising a first gravity guideway for guiding the fasteners in the direction of a line passing both prongs of a fastener, a second gravity guideway for
15 guiding fasteners in a direction transverse to a line passing through both prongs of a fastener, and means presenting a cam surface to engage the fasteners at the lower end of said first guideway and turn the same as
20 they descend under the action of gravity to thereby start them into said second guideway.

12. A machine for handling double pronged fasteners comprising a first gravity
25 guideway for guiding the fasteners in the direction of a line passing through both prongs of a fastener, a second gravity guideway for guiding fasteners in a direction transverse to a line passing through both
30 prongs of a fastener, means presenting a cam surface to engage each fastener at the lower end of said first guideway and turn the same as it descends under the action of gravity to thereby start the fastener into the second
35 guideway, and means to arrest the descent of fasteners in the first guideway while a fastener is being transferred from said first guideway to said second guideway.

40 In testimony whereof I affix my signature.
THEODORE PUCAR.

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