June 22, 1926. 1,589,381

L. J. FORESTER

MACHINE FOR MAKING A WIRE CLOTHESLINE

Filed Dec. 19, 1925 2 Sheets-Sheet 1

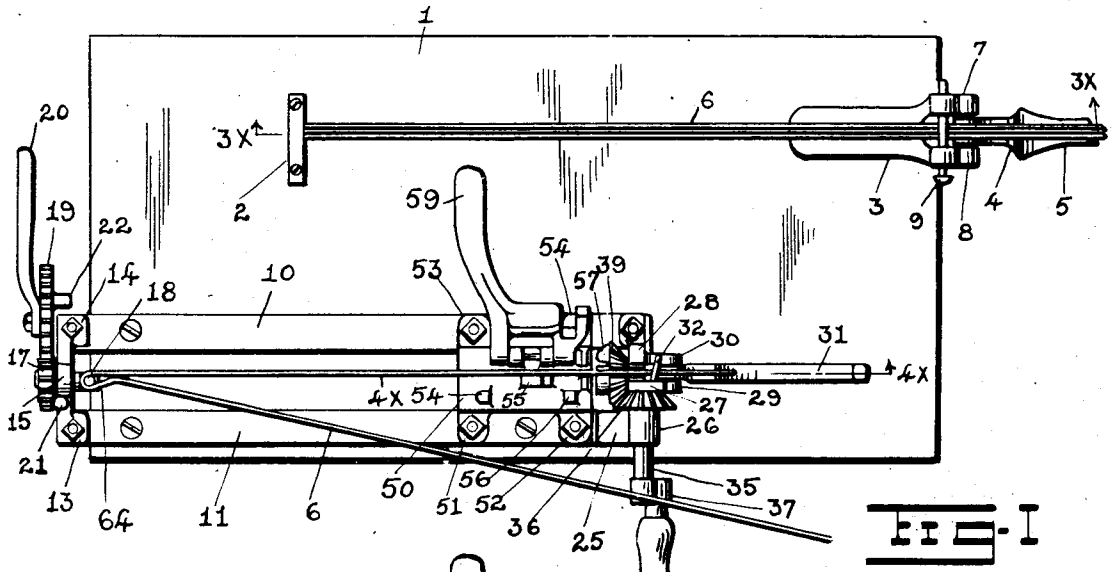


Fig-1

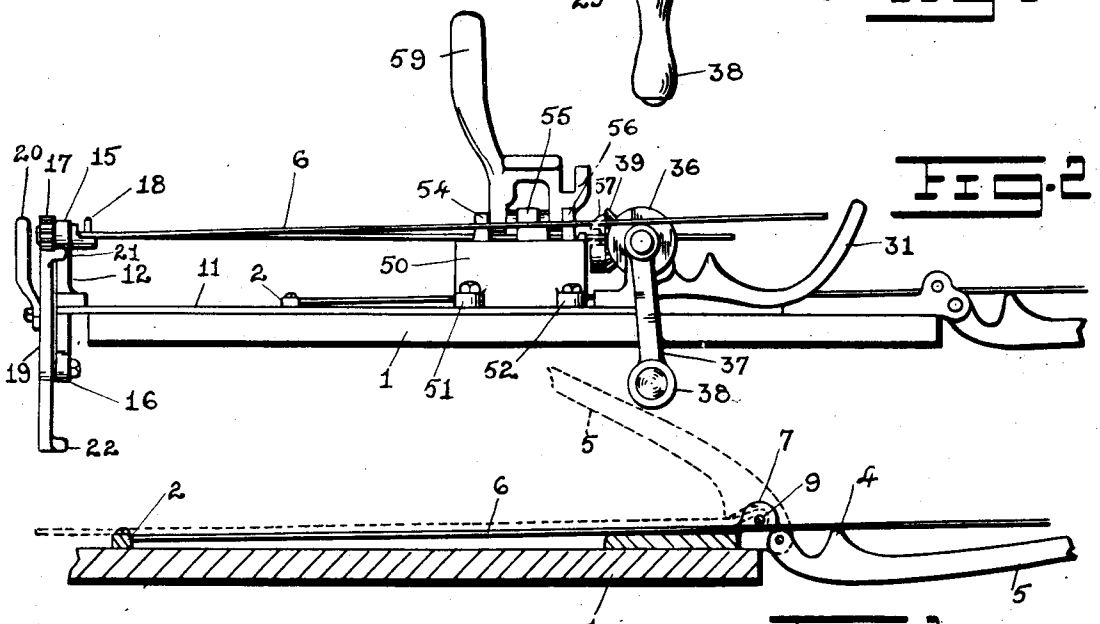


Fig-2

Fig-3

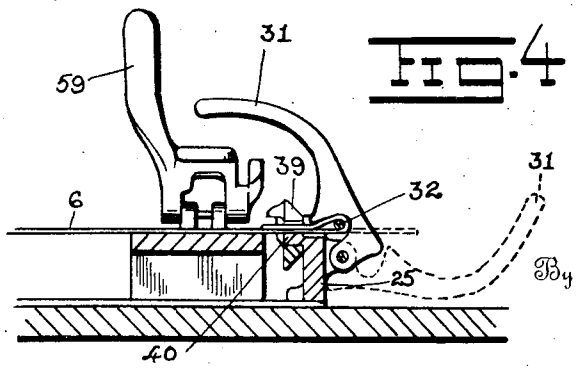


Fig-4

Inventor

Lester J. Forester

By Frank Keifer

Attorney

June 22, 1926. 1,589,381

L. J. FORESTER

MACHINE FOR MAKING A WIRE CLOTHESLINE

Filed Dec. 19, 1925 2 Sheets-Sheet 2

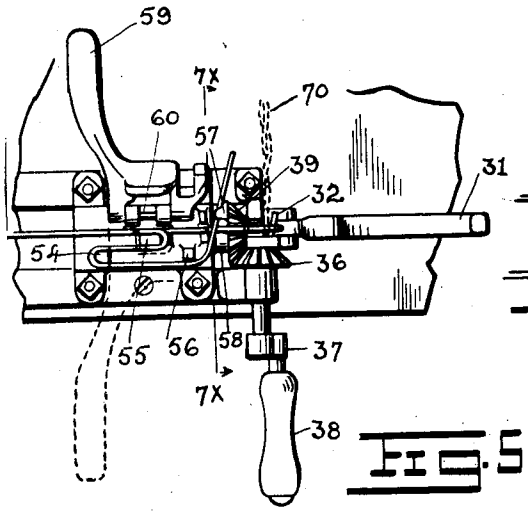


Fig. 5

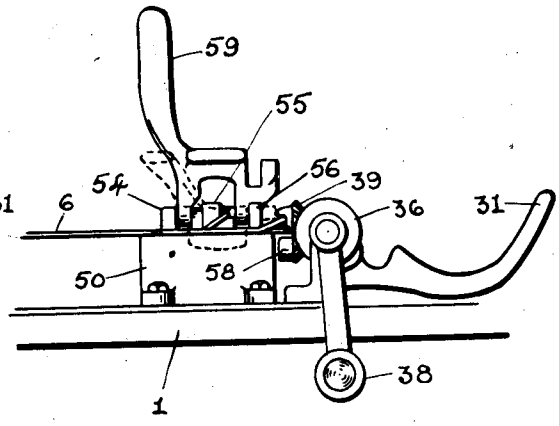


Fig. 6

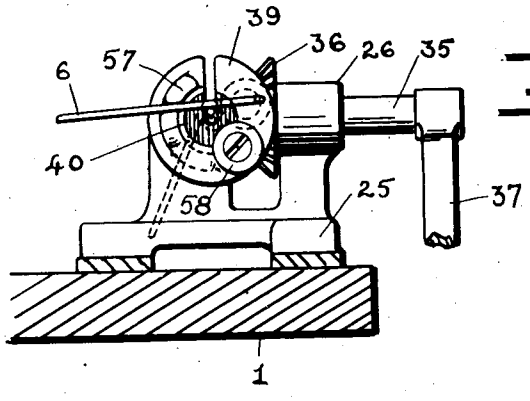


Fig. 7

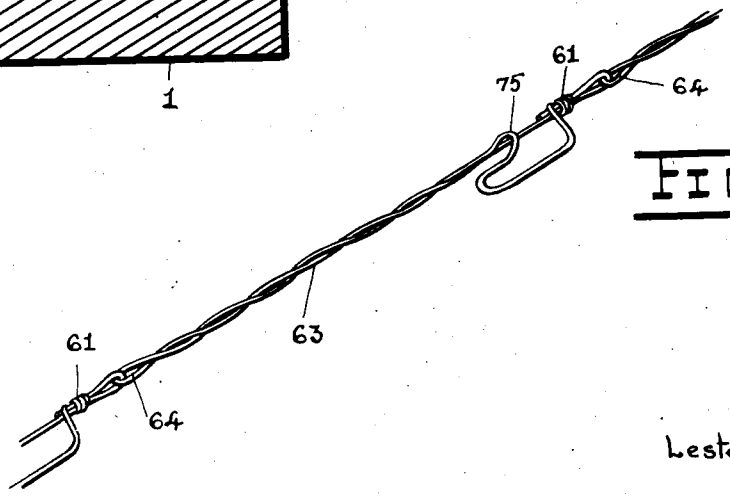


Fig. 8

Inventor
Lester J. Forester

By Frank Kuipler

Attorney

Patented June 22, 1926. 1,589,381

UNITED STATES PATENT OFFICE.

LESTER J. FORESTER, OF TUSCARORA, NEW YORK.

MACHINE FOR MAKING A WIRE CLOTHESLINE.

Application filed December 19, 1925. Serial No. 76,462.

The object of this invention is to provide a new and improved form of wire clothesline made in the form of links which is capable of supporting the clothes thereon without the use of clothes pins.

Another object of my invention is to provide a machine for bending these wire links so that they may be correctly, accurately, rapidly and cheaply formed and properly linked together.

Another object is to provide a process of feeding and bending the wire by which the link is formed.

This and other objects of the invention will be illustrated in the drawings, described in the specification and pointed out in the claims at the end thereof.

In the drawings:

Figure 1 is a top plan view of the machine for forming the links.

Figure 2 is a side elevation of the machine.

Figure 3 is a vertical sectional elevation, the section being taken on the line $3^{\times}$, $3^{\times}$ of Figure 1.

Figure 4 is a sectional elevation on the line $4^{\times}$, $4^{\times}$ of Figure 1, the machine being shown partly broken away.

Figure 5 is a top plan view of a part of the wire bending apparatus shown in Figure 1, the link being shown partially formed.

Figure 6 is a side elevation of the part of the machine shown in Figure 5 with the wire link in position therein.

Figure 7 is a vertical section on the line $7^{\times}$, $7^{\times}$ of Figure 5.

Figure 8 is a perspective view of the link formed by this machine.

In the drawings like reference numerals indicate like parts.

In the drawings, reference numeral 1 indicates the bed or platform to which the machine or parts thereof is attached, it being understood that this bed is preferably made of wood, but it may also be made of any other suitable material. On this bed is mounted a stop or gauge 2 and a stationary jaw 3 and a moving jaw 4 which is operated by the lever 5. The wire blank that would be used in forming the clothes line link is preferably about 40 inches in length. This blank is indicated by the reference numeral 6 and is placed in the machine at the start by putting one end of it against the gauge or stop 2. The blank is also laid between the knuckles 7 and 8 which are perforated to carry a pin 9. The pin is withdrawn so that the blank of wire can be laid between the knuckles and then the pin is put over the wire blank to complete the stationary bending jaw. It will be understood that several wire blanks may be laid side by side in this part of the machine and all of them can be bent at the same time, that is, by one movement of the lever. When the wire blank is in the position as shown, the operator takes hold of the lever 5 and moves the jaw 4 to the position shown by dotted lines in Figure 3 thus bending one or more blanks around the pin 9 forming each blank into the shape of a hair pin having a long and a short arm therein, as shown by the blank shown in position in the left hand side of the machine illustrated in Figure 1. It will also be noticed that at the bend the wire is formed with a re-entrant bent somewhat similar to a shepherd's crook forming a loop 64 and that the long and short arms diverge from each other. This is the first bending operation.

After being bent by the lever 5, the wire blank 6 is then placed in the bending and twisting apparatus shown in Figure 1.

This comprises two bars or sills 10 and 11 which are fastened to the base or platform. At one end of these bars is placed a bracket 12 which is formed in the shape of a cross. It has two lugs thereon 13 and 14 by which it is bolted to the bars 10 and 11, and it has two bearings provided therein at the top and bottom thereof as indicated at 15 and 16. In the upper bearing 15 is mounted a short shaft which has a pinion 17 on one end thereof. The other end thereof is enlarged to form a cylindrical shoulder between which and the pinion the bearing is engaged on both sides thereof. The enlarged end is cut away for a little more than half its diameter leaving a segmental extension flat on one side integral with the cylindrical shoulder. On this extension is

mounted the pin 18 which is placed radially thereon. Mounted to rock on the lower bearing 16 is a segmental rack 19 which is operated by a lever or handle 20. On each end of this segmental rack is a shoulder 21 and 22 which engages the upright member of the bracket 12 and by which the movement of the segmental rack in either direction is limited. In this way the rack is held in engagement with the pinion 17 so that the pinion and pin 18 will be rotated forward and back thereby.

The wire blank after being first bent or formed up by the jaws 3 and 4 is placed in the machine shown in the lower half of Figure 1 with the small loop at the end thereof engaging the pin 18. It will be noticed that the two arms of the blank are not parallel but are divergent. This is a convenience or a necessity in manipulating the wire so that the short end and the long end can be separately and differently treated, the one being bent after the other.

On the right hand end of the sills 10 and 11 is provided the following: A cast iron frame 25 is provided having the uprights 26, 27 and 28 thereon. Between the uprights 27 and 28 is provided a slot which is adapted to receive the wire blank. Two lugs are provided 29 and 30 extending forwardly from these uprights on which is pivoted the lever 31. On the upright 27 is provided a stationary pin 32. When the wire blank is placed in position the short end of it is passed through the slot referred to and under this pin and then the loop on the rear end of the blank is placed in engagement with the pin 18 as shown in Figure 1. While in this position the lever 31 is swung from the dotted line position to the full line position in Figure 4 thereby bending over that part of the end of the blank that projects beyond the pin 32, as shown in Figure 4. This is the second bending operation or the second step of the process.

In the bearing 26 is provided a shaft 35 having a beveled pinion 36 on the inner end thereof and a crank 37 and handle 38 on the other end thereof. Meshing with the pinion 36 is a pinion 39 which is rotated thereby for a purpose that will now be described. This pinion rotates on a boss 40 which is formed integral with the uprights 27 and 28. Both the pinion and the boss are slotted as shown in Figures 4 and 7 to receive the wire so that the wire will rest in the bottom of the slot in the stationary boss and will be approximately central to the boss 40 and the pinion 39. This is the position of it when the lever 31 is moved from the dotted line position to the full line position in Figure 4. By the movement of the lever 31 the loop shown in Figure 4 is formed.

Next to the frame 25 is fastened the pedestal 50 which is provided with lugs 51, 52, 53, and 54 by which it is attached to the sills 10 and 11. On top of this pedestal are formed integral therewith the lugs 54, 55 and 56 which lugs extend upwardly therefrom. The long end of the wire is bent around these three lugs to form the reverse bend shown in Figure 5 and the free end of the wire is bent to the position shown in Figure 5 so as to engage with a lug 57 formed on the rear side of the pinion 39. This is the third bending operation, or the third step in the process.

Diametrically opposite this lug the roller 58 is mounted on the back of the pinion 39. After the wire is bent to the form shown in Figure 5 it is clamped in place by the lever 59 which is pivoted at 60 and holds the curved portions firmly in position when the lever is placed in the dotted line position. The pinions 36 and 39 are then rotated by the handle 38 and crank 37 and this causes the free end of one arm of the wire shown in Figure 5 to be wrapped around the bent end of the other arm of the wire shown in Figure 4 forming a helical coil 61 around it and firmly holding the loop closed. This is the fourth bending operation or the fourth step in the process of forming the wire link.

After the coil 61 has been formed it is necessary to twist the wire together as indicated at 63 and for this purpose while the wire is still clamped in place by the lever 59, the segmental rack 19 is oscillated causing the pin 18 to rotate with the horizontal axis of the pinion 15. The segmental rack is long enough to cause the pinion to turn a little more than two complete revolutions and puts 720 degrees of twist into the wire. The loop 64 is then disengaged from the pin 18 and the segmental rack is turned back to the starting point after which the loop 64 is again engaged with the pin 18 and two more complete turns are twisted into the wires. This is the fifth step in the process of forming the link. This completes the twisting of the wires together and finishes the link.

It is desirable to form a series of links each of which will positively engage the links on either side of it. How this is done will now be described. The finished link is put in the dotted line position indicated by the reference numeral 70 in Figure 5, and the end of the short arm of the wire for the second link is passed through it when the blank is placed in the machine as shown in the lower side of Figure 1. When the loop is formed on the short arm of the blank it positively engages the preceding link. The preceding link being in this position does not interfere with the operations necessary to form the second link, and when the second link is removed from the machine, it is positively fastened to the first link. In like

manner the third link may be fastened to the second link, and so on indefinitely.

As shown in Figure 8 the link has been finished and removed from the machine and when a series of these have been formed, that is long enough, they can be used in combination as a clothesline. The hem of any article of clothing can be inserted in the links between the two wires thereof at the point indicated at 75 and moved to the left until it is firmly engaged between the two wires and it will be found to be held thereby strongly enough so that it is not necessary to use a clothes pin. By moving it to the right or in the reverse direction, it can be detached from the line. In this manner a sheet can be fastened to several links or smaller articles of the wash can be fastened to one, two or more links as may be desired, and several small articles may even be fastened to a single link so that they will be firmly engaged thereby with no probability of becoming detached therefrom, and in each case the need of clothes pins is entirely dispensed with.

I claim:

1. The process of bending a link for a clothesline which consists in first cutting the wire into suitable straight blanks, second bending it into two diverging arms of unequal length, third bending the end of the short wire back on itself to form a loop on the end thereof, fourth bending the end of the long arm to form an inserting throat or hook and then coiling the end of the latter arm around the loop on the free end of the short arm to close the loop, fifth and then twisting the two arms together from the throat to the first bend with several complete turns.

2. A wire bending machine adapted to receive a wire bent into two arms, a fixed jaw adapted to receive and hold one of said arms near the end thereof, a moving jaw adapted to bend the outer end of said latter arm back on itself to form a loop, means for twisting the free end of the other arm around the loop to lock it.

3. A wire bending machine adapted to receive a wire bent into two arms, a fixed jaw adapted to receive and hold one of said arms near the end thereof, a moving jaw adapted to bend the outer end of said latter arm back on itself to form a loop, stationary lugs around which the other arm can be bent to form an inserting throat, means to engage the free end of said wire and twist it around the loop to form a coil thereon and lock the loop.

4. A wire bending machine comprising a stationary boss having a slot therein extending past the center thereof and adapted to receive both sides of a wire loop and hold it against rotation, a wheel mounted on said boss to rotate thereon said wheel having a slot therein adapted to register with the slot in said boss, a lug and a roller mounted on said wheel diametrically opposite to each other and adapted to engage a second wire and wrap it around the loop on the first named wire.

5. A wire bending machine comprising a stationary boss having a slot therein extending past the center thereof and adapted to receive both sides of a wire loop and hold it against rotation, a wheel mounted on said boss to rotate thereon, said wheel having a slot therein adapted to register with the slot in said boss, a lug and a roller mounted on said wheel diametrically opposite to each other and adapted to engage a second wire and wrap it around the loop on the first named wire, means for twisting the opposite ends of the wire together into a unit.

6. A wire bending machine comprising a stationary boss having a slot therein extending past the center thereof and adapted to receive both sides of a wire loop formed on the end of a wire and hold it against rotation, a pin mounted to rotate at the other end of the machine, said pin being adapted to engage said wire as it extends backward and forward in the machine around said pin, a wheel mounted on said boss and adapted to rotate thereon, said wheel having a slot therein adapted to register with the slot in the boss, a lug and roller mounted on said wheel opposite to each other and adapted to engage the second end of the wire and wrap it around the loop on the first named end of the wire and lock the loop, means for rotating the pin to twist the doubled portion of wire together.

7. A wire bending machine comprising a frame, a boss mounted thereon, a slot therein extending past the center thereof, a wheel mounted to rotate on said boss and having a slot extending across the rim thereof from the periphery to the boss, a bevel gear on one side of said wheel, a bending lug and a bending roller mounted on the other side of said wheel diametrically opposite to each other.

8. A wire bending machine comprising a frame, a boss mounted thereon, a slot therein extending past the center thereof, a wheel mounted to rotate on said boss and having a slot extending across the rim thereof from the periphery to the boss, a bevel gear on one side of said wheel, a bending lug and a bending roller mounted on the other side of said wheel diametrically opposite to each other, a clamp mounted in line with the axis of said boss for holding the wire operated while the wheel is being turned.

9. A wire bending machine comprising a frame, a boss mounted thereon, a slot therein extending past the center thereof, a wheel mounted to rotate on said boss and having a slot extending across the rim thereof from

the periphrey of the boss, a bevel gear on one side of said wheel, a bending lug and a bending roller mounted on the other side of said wheel diametrically opposite to each other, a clamp mounted in line with the axis of said boss for holding the wire operated while the wheel is being turned, a twisting device mounted on the other side of the clamp to twist a part of the wire while it is held by the clamp.

In testimony whereof I affix my signature.

LESTER J. FORESTER.