Jan. 18, 1944. C. A. GARNIER 2,339,693

WIRE STRAIGHTENING MACHINE

Filed Oct. 30, 1942 3 Sheets-Sheet 1

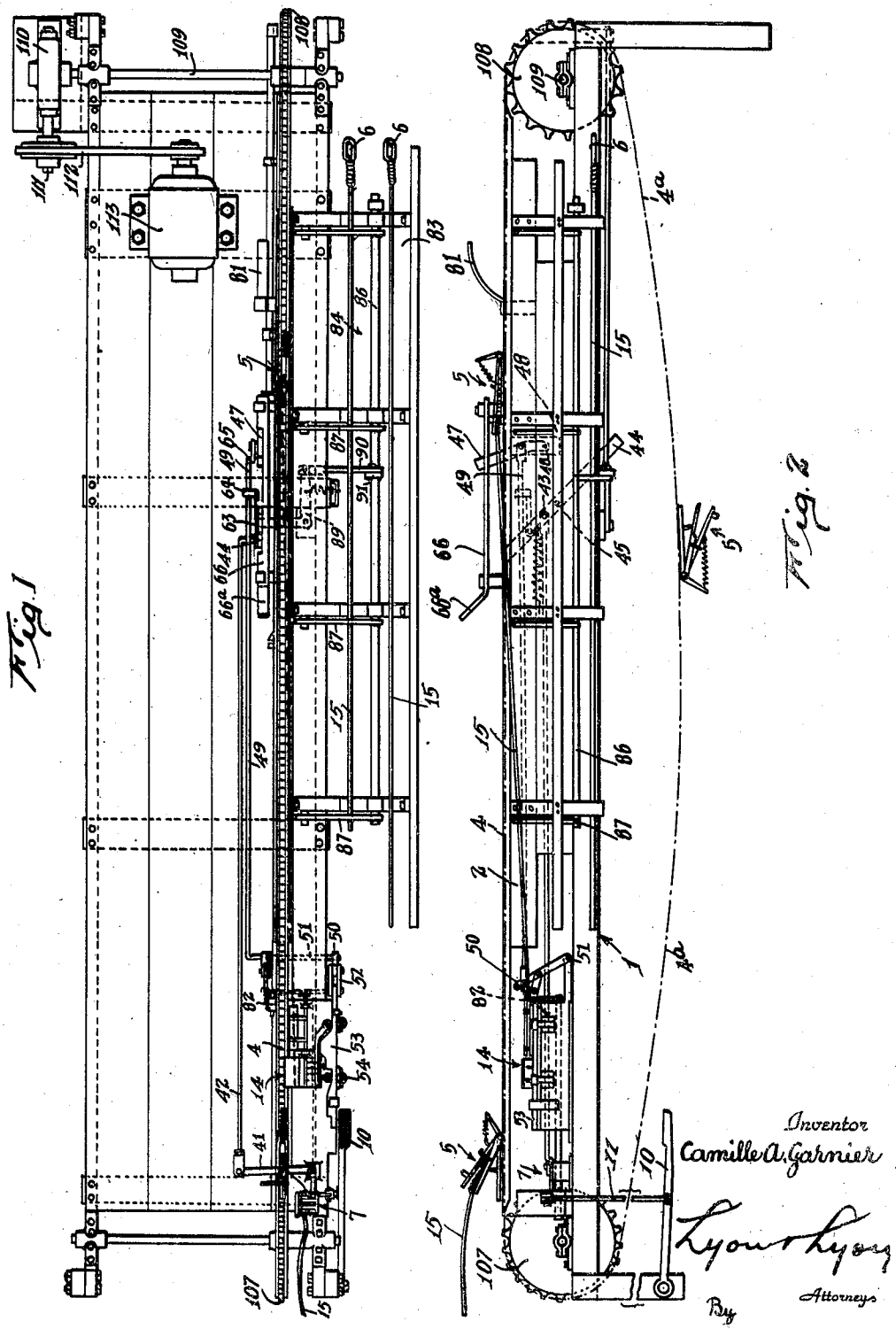


Fig. 1

Fig. 2

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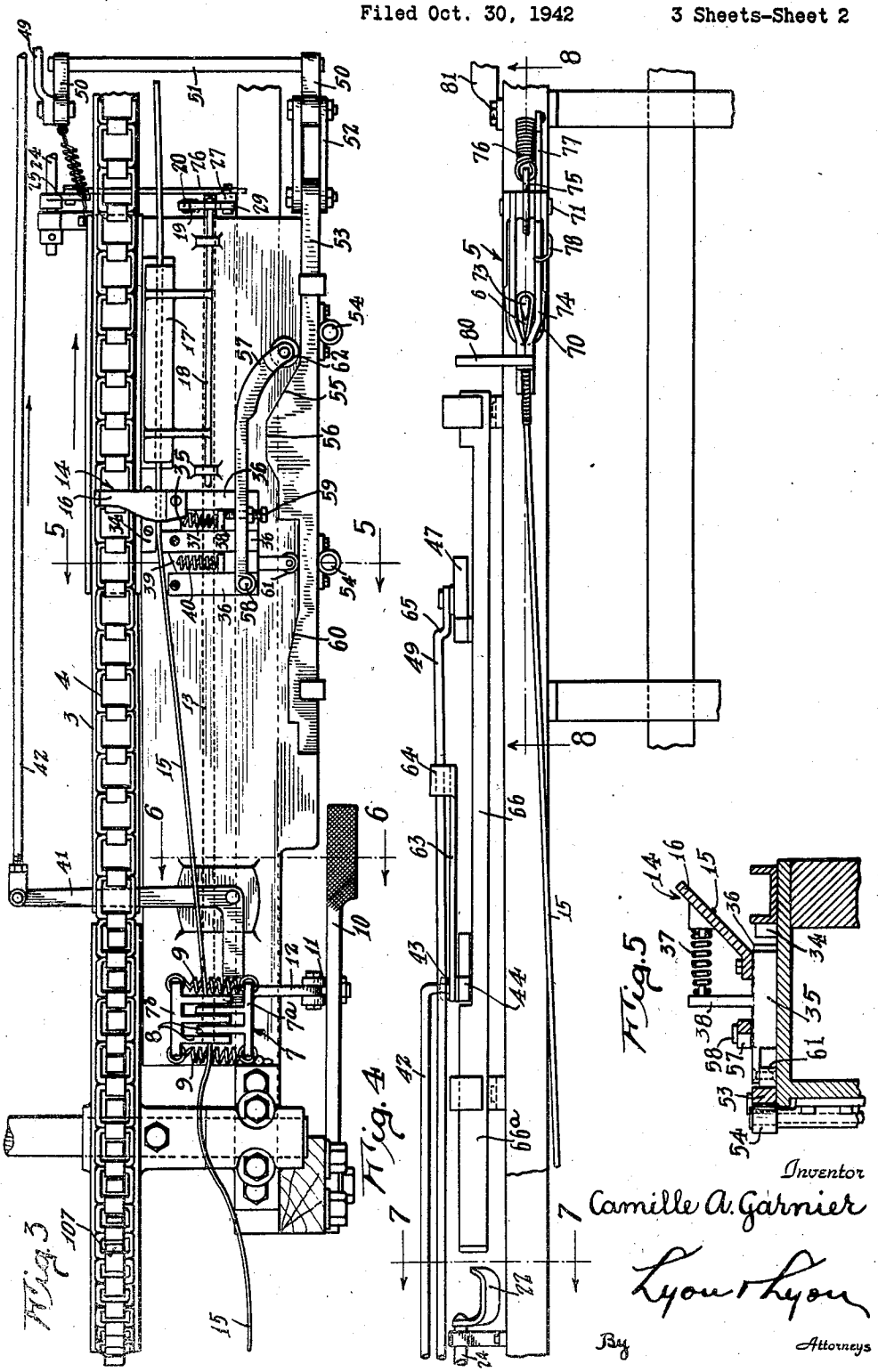


Fig. 3

Fig. 4

Fig. 5

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Fig. 6

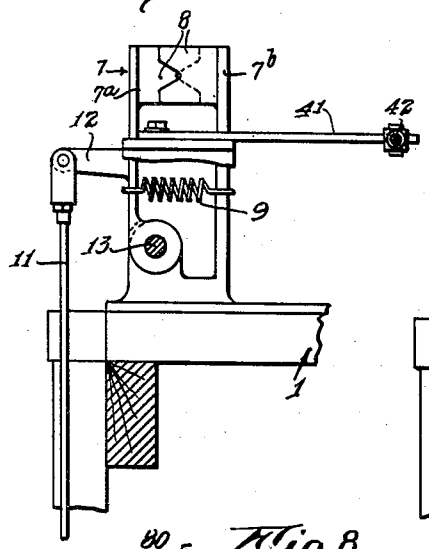


Fig. 7

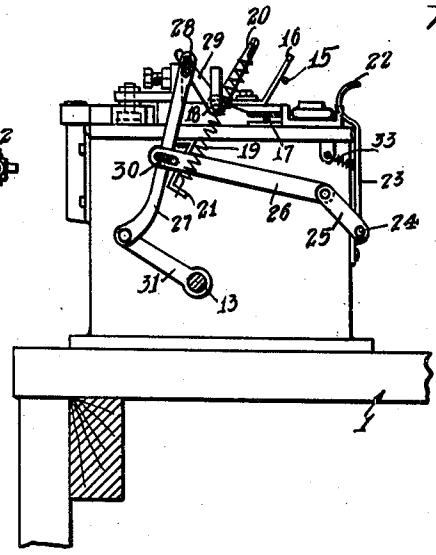


Fig. 8

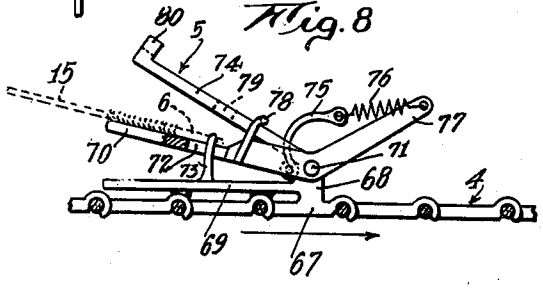
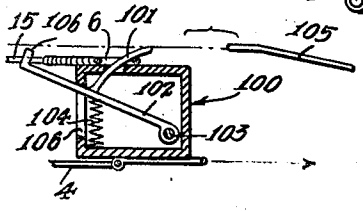


Fig. 9

Fig. 10



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WIRE STRAIGHTENING MACHINE

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Application October 30, 1942, Serial No. 463,891

19 Claims. (Cl. 140—147)

This invention relates to a machine for straightening wire, and while the invention is capable of use in general for straightening wire by stretching the same, it is believed that it has its greatest usefulness when applied to the straightening of baling wires. Heretofore it has been the custom to discard used baling wires as scrap metal, principally for the reason that the wire has kinks and crooked portions in it that prevent its being used without some kind of treatment, again as a baling wire.

One of the objects of this invention is to provide simple means for reclaiming kinked and crooked baling wire so as to straighten the same and adapt it for use a second time, as baling wire.

The discarded baling wire upon which this machine operates, usually comes in two lengths, or at least one might say that most of the wires have a certain limit of length, while a number of the wires are shorter than this; and accordingly, one of the objects of my invention is to provide a machine of this kind that can operate equally well upon wires of different length, and to construct the machine so that it will operate to straighten the wires of either length and cut the same off to a predetermined length.

A further object of the invention is to provide simple means for stretching the wires to remove their kinks, and after cutting the same off automatically, to collect the wires of short lengths in a different station, or rack, from the wires of the other length.

In the preferred embodiment of the invention, the machine includes means for pulling the wire along a path while subjecting the same to a yielding pull which will operate to maintain the wire taut, but without subjecting the wire to the stretching strain that will remove the kinks and straighten the wire. The machine also includes a stretching clamp that receives the wire as it is being extended, and is prepared to close so as to subject the wire to the stretching force; and one of the objects of the invention is to provide simple means for determining the moment at which the stretching clamp closes, and in such a way that this will depend upon the length of the wire being pulled through the yielding or tautening clamp that keeps the wire taut as it is being pulled forward.

A further object of the invention is to provide automatic means for cutting off the wire, and releasing it from the clamp after it has been stretched.

Further objects of the invention will appear hereinafter.

The invention consists in the novel parts and combination of parts to be described hereinafter, all of which contribute to produce an efficient wire straightening machine.

A preferred embodiment of the invention is described in the following specification, while the broad scope of the invention is pointed out in the appended claims.

In the drawings:

Fig. 1 is a plan of a machine embodying my invention, and illustrating a wire hooked onto one of the carriers that will extend the wire in the operation of the machine. This view shows the wire held in the tautening clamp through which it slips as it is being extended.

Fig. 2 is a side elevation of the mechanism shown in Fig. 1, and illustrates the forward end of the wire inserted into the hook device that holds the wire by its point, and pulls the same forward. This view shows the hook device in its open position, that is, before it has been closed to latch the wire in place.

Fig. 3 is a plan of the receiving end of the machine upon a greatly enlarged scale, the right end of the mechanism being broken away.

Fig. 4 is a plan of the right end of the machine as viewed in Fig. 3, and represents the portion of the machine that is broken away at the right of Fig. 3. In this view certain parts are broken away.

Fig. 5 is a vertical section taken about on the line 5—5 of Fig. 3, and particularly illustrating features of construction of the stretching machine, and means associated therewith, guiding the wire down into the clamp before the clamp is closed upon the wire. The lower portion of this view is broken away.

Fig. 6 is a vertical section taken in the plane of the line 6—6 of Fig. 3, and particularly illustrating the tautening device and parts immediately associated therewith. In this view certain parts are broken away.

Fig. 7 is a vertical section taken at about the middle of the machine, that is to say, at the left end of Fig. 4. This view illustrates a flapper, or flapper plate, and automatic means for operating the same to move the wire down into the stretching clamp.

Fig. 8 is a detail view upon an enlarged scale, showing the hook device in side elevation and partial section, and showing a portion of the chain to which these hook devices are attached for extending and stretching the wire. This view shows a portion of the chain broken away, and indicates the position of the wire in dotted lines

when the same is being placed in the hook device. It is taken on line 8—8 of Fig. 4.

Fig. 9 is an end view of the right end of the machine as shown in Fig. 1, and particularly illustrates the racks for supporting the wires of different length, and a switch which is automatically controlled for guiding a wire of a certain length into its proper rack.

Fig. 10 is a view similar to Fig. 8, but illustrating another type of hook device that I may employ instead of the one illustrated in Fig. 8.

The machine preferably includes a long horizontal frame 1, which includes a longitudinally extending stringer 2 which consists of a heavy timber (see Fig. 9). This timber runs the full length of the machine, and its upper face carries a wear strip 3 of metal which operates as a guide for the under side of the upper run of a chain 4. This chain is composed of short links, and spaced equidistant on these links I provide hook devices such as the hook device 5. This chain and the hook devices 5 operate as a carrier for engaging the forward end of the wire in pulling it forward to extend it longitudinally of the machine. Each of these wires has an eye 6 at its forward end (see Fig. 1), and in operating the machine, the attendant who stands at the left end of the machine (as illustrated in Figs. 1 to 4), applies the eye 6 of the wire to a hook device 5. The hook device 5 is then closed, and as the chain moves along from left to right as indicated by the arrow in Fig. 3, the wire is pulled past a tautening device 7. In Fig. 3 this tautening device is shown in a closed position that enables it to clamp the wire, but only in a yielding manner so that the wire will be pulled through by the chain. This tautening device includes two jaws 7*a* and 7*b* with interlocking fingers 8 between which the wire is clamped. Resilient means is provided urging one of these jaws toward its closed position, and in the present instance this consists of two coil springs 9 located on opposite sides of this clamp. When the operator hooks the eye 6 in the hook device 5, he operates means for separating the jaws 7*a* and 7*b*. For this purpose I have illustrated a treadle 10 (see Fig. 2) mounted near the floor and attached to a long link 11 that extends up and attaches at its upper end to an arm 12 (see Fig. 6) that extends outwardly from the jaws 7*a*. The jaw 7*a* is mounted for rotation about a horizontal shaft 13 mounted in the base of the jaw 7*b* that is fixed to the frame of the machine.

Near the receiving end of the machine I provide a tensioning clamp or stretcher clamp 14 (see Fig. 3) and as the wire 15 is pulled along by the chain, the extending of the wire tends to pull it into this clamp. This operation is facilitated by providing an inclined guide preferably in the form of a plate 16 (see Figs. 3 and 7). The body of this plate extends up in an inclined direction in position to be engaged by the wire 15, and naturally tends to pull the wire down as the wire pulls across the forward face of this plate. This operation is enhanced by having the stretcher clamp 14 located about as illustrated in Fig. 3, so that it is nearly in line with the forward end of the wire as it is pulled along the chain and the tautening clamp 7. However, in order to insure that the wire 15 will pass down into the clamp, I prefer to provide a flapper, or pusher plate 17, that is mounted on a shaft 18 so that when the shaft 18 rotates on its axis, the pusher plate 17 can come down over the wire and push it down into position. This pusher plate is preferably provided with resilient means for holding it either in its open position, or in its closed position. This is accomplished through the agency of a long coil spring 19 (see Fig. 7) the upper end of which is attached to an arm 20 rigid with the shaft 18, and the other end of which is attached to an anchor bracket 21. This spring is located so that when the pusher plate is elevated, the pull of the spring will be in a direction to hold the pusher plate up. In other words, the arm 20 operates as a toggle and spring arm so that the arm passes its dead center in swinging from one position to the other. This pusher plate is closed automatically by the hook device 5 when it has arrived at the proper point in its travel with the chain 4. For this purpose along the path of travel a cam 22 is provided (see Figs. 4 and 7) which is formed on the upper end of a lever or arm 23 carried on a rock shaft 24 mounted at a depressed point on the frame 1. This rock shaft carries rigidly an arm 25 connected by a link 26 to a link 27 that extends upwardly to a point near the pusher plate where it is attached with a pin-and-slot connection 28 to a lever 29 that is rigid with the shaft 18 of the pusher plate. The connection between the link 26 and the link 27 is a pin-and-slot connection 30 for a purpose which will appear hereinafter. When the hook device 5 operates the lever 23, the arm 25 will swing down and the link 26 will swing the link 27 toward the left as viewed in Fig. 7. This will swing the arm 29 toward the left, and this will rotate the shaft 18 so as to swing up the pusher plate. The arm 20 will then swing over to a position located to the left of the position as indicated in Fig. 7, that is, it will move over past its dead center so that the spring 19 will then pull up the pusher plate.

This pusher plate is opened automatically by the operation of the treadle 10. For this purpose the shaft 13 that is rigid with the movable jaw 7*a* of the tautening clamp, is extended longitudinally of the machine as indicated in dotted lines in Fig. 3, and a coil spring 33 is provided as a return spring for the lever 23. When the wire pulls out of the tautening clamp, the spring 9 rotates shaft 13 clockwise as viewed in Figs. 6 and 7; this swings lever 31 and pushes lever 29 toward the right which closes the pusher plate.

The pulling of the trailing end, or tail, of the wire 15 out of the tautening clamp 7, automatically sets mechanism for effecting the closing of the stretcher clamp 14. This stretcher clamp includes a fixed jaw 34 (see Fig. 3) and a movable jaw 35 guided to slide between two guide members 36 (see Figs. 3 and 5). This movable jaw 35 is normally held in a retracted position by a coil spring 37, as illustrated in Fig. 5. The forward end of this spring may thrust against a boss on the back of the inclined plate 16, and thrust at its other end against a lug 38 that extends up from the upper side of the sliding jaw 35; and associated with the stretcher clamp 14 but to the rear of the same with respect to the direction of movement of the wire, a sliding shear 39 is provided that is guided in the same manner as the movable jaw 35, and this shear is normally held in a retracted position by a coil spring 40 similar to the spring 37, and similarly mounted. When the trailing end of the wire 15 pulls clear of the jaws 7*a* and 7*b*, the spring 9 (see Fig. 6) which is in tension, pulls the jaw 7*a* toward the right as viewed in Fig. 6, and when this occurs this jaw moves the short arm of a bellcrank lever 41 that lies in its path, so as to swing this bell-

crank lever toward the right. The long arm of this bellcrank lever is pivotally attached to a push rod 42, and extends longitudinally of the machine, the far end of this rod being attached by a pivot pin 43 to a control member, or lever 44 (see Figs. 2 and 4). The middle portion of this lever is pivoted at 45 on a bracket 46 of the frame (see Fig. 9) and its upper end extends up to a point near the location of the chain, so that it can be swung up by the push rod into a position to be engaged by the hook device 5 when it arrives at the location of this control member 44. This lever, or control member 44, corresponds to a relatively short wire, that is to say, it will be operated through the agency of a short wire when it pulls out of the tautening clamp 7, but it will not function unless the hook device is located back of this control device 44 with respect to the direction of movement of the chain; in other words, if the hook device has already passed the location of this lever 44, the stretcher clamp 14 will not be closed through the operation of the lever 44, but it will be closed through the operation of a second control member or lever 47 which is located further along toward the rear end of the machine. This control member, or lever 47, is always in a raised position so that it will be struck and operated by the hook device to close the stretcher clamp 14. The control member 47 is pivotally mounted at 48 on a bracket similar to the bracket 46 (see Fig. 2) and above the pivot point is pivotally attached to a long link 49 that extends back to a point near the forward end of the machine where it is attached to a lever 50 of the second class, the lower end of which is supported on a pivot pin 51. At an intermediate point this lever is connected by links 52 to a cam bar 53. This cam bar is shown on a large scale in Fig. 3. It is guided to slide longitudinally of the machine with its back edge running on anti-friction rollers 54. This cam bar has an inclined cam face 55 with a dwell 56 beyond the same to cooperate with an actuating lever 57 that actuates the movable jaw 35 of the stretcher clamp 14 already referred to. The actuating lever 57 for this jaw 35, is pivotally mounted at the left side of the stretcher clamp 14, on a vertical pivot pin 58, and the clamping force is applied to the jaw 35 through an adjustable set screw 59.

The cam bar 53 has a second cam face 60 that operates while the cam arm 57 is on the dwell 56 to advance the shear 39 to cut off the tail end of the wire 15. The cam 60 applies its force to the cutter or shear 39 through a roller 61 on a rearward extension from the shear, somewhat as illustrated, and the lever 57 preferably has a bent end as shown, that extends laterally toward the cam bar, and carries a roller 62 similar to the roller 61.

If the wire is a short wire, means projecting laterally from the hook device 5, will operate the lever 44. In doing this, it simply forces this lever in the direction in which the hook device is traveling, and this movement will be imparted to the lever 47 through the agency of a push rod 63 that is mounted on the pivot pin 43, and has a collar 64 at its right end (see Fig. 4) that slides on the link 49 already described. This link 49 has an offset near its point of connection to the lever 47, thereby providing a shoulder 65 that acts as a stop for the collar 64. As soon as this collar 64 strikes the stop 65, of course it will exert a pulling force in the link 49 and operate the cam bar in the same manner as it would be operated when the control member 47 is actuated directly by the hook device. When the hook device is passing the control members 44 and 47, it rides along under a keeper bar 66 that I may employ with a certain type of hook device, such as the hook device 5. This keeper bar is simply a horizontal rail that lies over the outer leaves or movable parts of the hook device 5, to prevent them from accidentally being swung loose under the pulling stress that stretches the wire when the stretcher clamp 14 becomes closed.

After the wire has been stretched and cut off, then the hook device that is carrying it along, is automatically opened, and the wire then falls off into either one of two racks, namely, a rack for relatively short wires, or a rack for relatively long wires. One type of hook device 5 will now be described. This hook device is shown in detail in Fig. 8. It is supported on a special link 67 of the chain 4. This special link has a post 68 that projects up from it and carries an integral hook plate 69 that extends rearwardly from the post with respect to the direction of movement of the chain. On this post an eye plate 70 is pivotally mounted on a horizontal pivot pin 71. This eye plate has an elongated slot or eye 72 in it, through which a long hook 73 extends upwardly from the hook plate 69. When the hook device is in its open position ready to receive the eye 6 of the wire 15, the tip of the hook 73 is projecting slightly above the upper face of the plate 70. Above the eye plate a keeper plate, or keeper leaf 74 is provided, which is also hinged on hinge pin 71, and this keeper plate has a spring associated with it on a toggle lever, so that the spring can hold the hook device either in the open position shown in Fig. 8, or else in a closed position in which the keeper leaf 74 is held down by a spring against the upper face of the eye plate 70, so as to hold the eye 6 of the wire 15 securely on the hook 73. For this purpose the post 68 rigidly supports a curved spring anchor 75, in which one end of a coil spring 76 is attached, the other end of this spring being attached to a toggle lever 77 that is rigid with the keeper plate 74. In order to enable the keeper plate 74 when it moves upwardly, to pull up the eye plate 70, the side edge of the eye plate 70 is provided with a stem having a bend or hook 78 on its end that extends over the side edge of the keeper plate 74.

After the eye 6 of the wire is placed on the hook 73 as indicated in Fig. 8, the keeper 74 is swung down onto it, pushing it down to the hook-plate 69. This swings the lever 77 toward an upright position and past the anchorage for the coil spring 76. The spring will now hold the keeper plate down, thereby maintaining the device closed. The keeper-plate 74 has a clearance hole 79 for the upper end of the hook. The rear end of the keeper-plate 74 has a laterally projecting dog 80, (see Fig. 4) and this dog travels along under the keeper-rail 66 at the time it is engaging either of the levers 44 or 47 to effect the closing of the stretcher clamp 35. This keeper-rail holds down the keeper-plate 74 and insures that it will not open up accidentally under the pull exerted by the stretched wire. The inner end of the keeper-rail 66 has an upwardly bent end 66*a* to assist in guiding the dog 80 under the rail 66.

When the hook-device has moved a short distance after the stretcher clamp has closed, it is opened up automatically. For this purpose I prefer to employ a cam 81 (see Figs. 1 and 2). The dog 80 rides over the upper side of this cam which raises it and moves the lever 77 beyond its "dead

center." The spring 76 then pulls it all the way over to the open position shown in Fig. 8.

When the dog is operating either of the levers 44 or 47, it pushes the lever forward with it until the upper end of the lever passes below the under face of the rail 66; the dog then passes the upper end of the lever and the lever is returned by coil spring 82 attached to the upper end of the lever 50 (see Fig. 2).

When the cam 81 opens the hook-device, the tail end of the wire will have been already cut off, and the wire then falls over toward the side of the machine because the stretcher clamp is located in a lateral position with respect to the chain. The wire may be a short one or a long one. In either case it is guided automatically into the proper rack to receive it. This mechanism is illustrated in Figs. 1, 2 and 9. It includes two skeleton bins or racks 83 and 84 with a skeleton dividing wall 85 between them that supports a rock shaft 86 with a plurality of guide bars 87 normally in the position shown in Fig. 9, being held in that position by a coil spring 88 attached to a bell-crank lever 89, one arm of which is connected to a link 90 leading over to a lever 91 rigid with the rock shaft 86. These guide bars 87 constitute a switch.

If lever 44 is not operated, as would be the case with a short wire, then the switch bars 87 will remain in their normal position and the wire will slide down into rack 83 for the long wires. But if a short wire has just been cut off, then the tail end 44*a* of lever 44 will swing arm 89*a* of bell-crank 89 and give a pull to link 90, which will swing the switch bars 87 over as indicated by the arrow in Fig. 9, thereby enabling the short wire to slide down into the short wire rack 84. The two racks with the "wall" 85 between them have substantially the form of the letter W. When the link 90 is pulled to the left, a notch 92 in its under side is caught by a spring-pressed latch 93 that locks the switch bars in this "short wire" position. This latch is formed as an arm rigid with a rock-shaft 94 pivoted in a bracket 95 and having a short arm 96 to which coil spring 97 is attached. The latch is presently released by the actuation of a lever 98 having a cam end 99 engaged by the hook device as it moves along with the lower run 4*a* of the chain 4.

In Fig. 10 I illustrate another embodiment for the hook device that is constructed in such a way as to avoid the necessity for employing the keeper rail 66. This hook device has a box-form body 100 with a cover wall through which a hook 101 extends upwardly, said hook being carried by a lever 102 pivoted at 103 within the body and normally pressed up into its operative position by a coil spring 104. The eye 6 of the wire cannot pull loose from this hook because the hook inclines forward where it comes up through the cover wall of the body. This hook is released by a fixed cam 105 lying in the path of a dog 106 that extends laterally from the hook device. The dog 106 simply rides on the under side of this cam to pull the lever 102 and the hook 101 down. The rear wall of the body 100 is provided with a clearance slot 106 through which the lever 102 extends.

The endless chain 4 is in the form of a sprocket chain running over sprocket wheels 107 and 108, the latter of which is carried on a shaft 109 driven through a reduction gear 110 from a shaft 111. The shaft 111 may be driven as illustrated by a belt 112 from an electric motor 113.

In the operation of the machine, of course the chain 4 is continuously driven. The operator depresses pedal 10 which pulls the tautening jaw 7*a* to its open position. Depressing this pedal also automatically raises the flapper plate 17. The operator then hooks the eye 6 of a wire 15 into the hook-device as indicated in Fig. 8, and manually forces down the keeper-plate 74. As the wire pulls away he drops its trailing body down between the jaws 7*a* and 7*b* and releases the pedal 10. The tautening clamp 7 then exerts a yielding pull on the wire, maintaining it taut as the chain pulls the wire away. As this occurs the guide plate 16 assists in guiding the wire down toward the open stretcher clamp 14.

When the tail end of the wire 15 pulls clear of the tautening clamp, the jaw 7*a* is pulled over by the spring 9, toward the right as viewed in Fig. 6. This rotates shaft 13 in a direction to push link 27 upward, which closes pusher plate 17. This also operates bell-crank lever 41 and exerts a thrust in push rod 42. This swings lever 44 up into its elevated position where it would be in the path of dog 80 of the hook-device if the dog has not already passed. If the wire is a short one the dog 80 will not have passed, and it will then operate this lever 44 swinging it toward the right as viewed in Fig. 4. Through link 63 (Fig. 4) this pushes collar 64 along link 49 and against shoulder 65 which gives a pull to link 49. Link 49 actuates rock-shaft 51 to pull on links 52 that operate cam bar 53. The movement of cam bar 53 swings lever 57 to close jaw 35 of the stretcher clamp 14, and this stops the movement of the tail end of the wire and subjects the wire to the stretching tension. While the wire is being stretched by the moving hook device on the chain 4, the cam bar operates the shear 39 (Fig. 3) to cut the wire.

The hook device then passes out from under the keeper rail 66 and becomes released by the cam 81. The wire then falls down toward the racks 83 and 84. As the switch bars 87 will have been swung out as indicated by the arrow in Fig. 9, the wire will pass down into the "short-wire" rack 84. This shifting of the switch is occasioned through the agency of lever 44 and bell-crank lever 89 (see Fig. 9).

If the wire being pulled is a long wire, then the hook-device will have passed the control lever 44 but will operate lever 47 to actuate link 49 which will effect the same operations as though the link had been actuated by control lever 44.

When the switch 87 is set in position for guiding a short wire to rack 84, the latch 93 (see Fig. 9) holds it there, but this latch is released automatically when the hook-device 5 operates cam lever 98.

Many other embodiments of the invention may be resorted to without departing from the spirit of the invention.

What I claim is:

1. In a machine for stretching used wire to straighten the same, the combination of a carrier for engaging the wire adjacent one end to pull it forward, a tautening clamp for engaging the trailing portion of the wire through which the wire slips while it is being pulled forward, and operating to maintain the wire taut, a stretcher-clamp for engaging the trailing portion of the wire, and automatic means for actuating the stretcher-clamp to clamp the wire brought into action by the passing of the wire out of the tautening clamp.

2. In a machine for stretching used wire to

straighten the same, the combination of a carrier for engaging the wire adjacent one end to pull it forward, a tautening clamp for engaging the trailing portion of the wire through which the wire slips while it is being pulled forward, and operating to maintain the wire taut, a stretcher-clamp for engaging the trailing portion of the wire, automatic means for actuating the stretcher-clamp to clamp the wire brought into action by the passing of the wire out of the tautening clamp, and means for severing the tail end of the wire back of the stretcher-clamp.

3. In a machine for stretching used wire to straighten the same, the combination of a carrier for engaging the wire adjacent one end to pull it forward, a tautening clamp for engaging the trailing portion of the wire through which the wire slips while it is being pulled forward, and operating to maintain the wire taut, a stretcher-clamp for engaging the trailing portion of the wire, automatic means for actuating the stretcher-clamp to clamp the wire brought into action by the passing of the wire out of the tautening clamp, means for severing the tail end of the wire back of the stretcher-clamp, and means located in the path of the said carrier for controlling the moment of actuation of said severing means.

4. In a machine for stretching used wire to straighten the same, the combination of a carrier for engaging the wire adjacent one end to pull it forward, a tautening clamp for engaging the trailing portion of the wire through which the wire slips while it is being pulled forward, and operating to maintain the wire taut, a stretcher-clamp for engaging the trailing portion of the wire, automatic means for actuating the stretcher-clamp to clamp the wire brought into action by the passing of the wire out of the tautening clamp, means for severing the tail end of the wire back of the stretcher-clamp, and means for controlling the moment of operating the severing means to cut the wire to different lengths.

5. In a machine for stretching used wire to straighten the same, the combination of a carrier for engaging the wire adjacent one end to pull it forward, a tautening clamp for engaging the trailing portion of the wire to maintain the wire taut, a stretcher-clamp for engaging the trailing portion of the wire, automatic means for actuating the stretcher-clamp to clamp the wire brought into action by the passing of the wire out of the tautening clamp, means for severing the tail end of the wire back of the stretcher-clamp, means for controlling the moment of operating the severing means to cut the wire to different lengths, and automatic means for segregating the wires of different length from each other, and collecting the same in separate bundles.

6. In a machine for stretching used wire to straighten the same, the combination of a carrier for engaging the wire adjacent one end to pull it forward, a tautening clamp for engaging the trailing portion of the wire to maintain the wire taut as it is pulled away, said tautening clamp including a movable jaw with resilient means associated therewith for urging the jaw against the wire, a stretcher-clamp for engaging the trailing portion of the wire, and mechanism set for action by the movement of said jaw by said resilient means when the wire pulls out of the tautening clamp, for effecting the actuation of the stretcher-clamp to clamp the wire.

7. In a machine for stretching used wire to straighten the same, the combination of a tautening clamp, means for pulling the wire through the tautening clamp to pull the wire taut, a stretcher-clamp in an open condition and in line with the wire as the same becomes taut so that the taut wire can move laterally into the opened stretcher-clamp through the action of the tension in the wire, and means for effecting the closing of the stretcher-clamp thereafter to subject the wire to the straightening tension.

8. In a machine for stretching used wire to straighten the same, the combination of means for engaging the wire adjacent one end and for advancing the same along a substantially straight line of travel, a tautening clamp through which the wire slips when being drawn forward, disposed laterally to the said line of travel to cooperate with the advancing wire to pull the wire taut, a stretcher-clamp in an open condition and disposed near the wire as the same becomes taut, all of said parts located so that the taut wire as it becomes taut, will move laterally into the open stretcher-clamp, and automatic means for effecting the closing of the stretcher-clamp thereafter and for severing the wire back of the stretcher-clamp with respect to the direction of advance of the wire.

9. In a machine for stretching used wire to straighten the same, the combination of means for engaging the wire adjacent one end and for advancing the same along a substantially straight line of travel, a tautening clamp through which the wire slips as the same is being pulled forward disposed laterally to the said line of travel to cooperate with the advancing wire to pull the wire taut, a stretcher-clamp in an open condition and disposed near the wire as the same becomes taut, all of said parts located so that the taut wire as it becomes taut, will move laterally into the open stretcher-clamp, automatic means for effecting the closing of the stretcher-clamp thereafter and for severing the wire back of the stretcher-clamp with respect to the direction of advance of the wire, and a guide associated with the stretcher-clamp for guiding the wire into the same.

10. In a machine for stretching used wire to straighten the same, the combination of means for engaging the wire adjacent one end and for advancing the same along a substantially straight line of travel, a tautening clamp disposed laterally to the said line of travel to cooperate with the advancing wire to pull the wire taut, a stretcher-clamp in an open condition and disposed near the wire as the same becomes taut, all of said parts located so that the taut wire as it becomes taut, will move laterally into the open stretcher-clamp, automatic means for effecting the closing of the stretcher-clamp thereafter and for severing the wire back of the stretcher-clamp with respect to the direction of advance of the wire, and a movable pusher located near the stretcher-clamp and operating when moved to push the wire laterally into the open stretcher-clamp.

11. In a machine for stretching used bailing wire to straighten the same, the combination of a carrier for engaging the wire adjacent one end, means for moving the carrier to travel along a path, a tautening clamp for engaging the trailing portion of the wire to maintain the wire taut, a stretcher-clamp also for engaging the

trailing portion of the wire and capable of assuming an open position to receive the wire, a control member lying adjacent the path of the carrier, automatic means brought into action when the taut wire pulls out of the tautening clamp for projecting the control member into the path of the said carrier, and means controlled by the said control member for actuating the stretcher-clamp to clamp the wire and stretch the same.

12. In a machine for stretching used baling wires of different lengths to straighten the same, the combination of a carrier for engaging the wire adjacent one end for pulling the same along a path, a tautening clamp for engaging the trailing portion of the wire to maintain the wire taut, a stretcher-clamp also for engaging the trailing portion of the wire and capable of assuming an open position to receive the wire, a control member corresponding to the relatively short wires, lying adjacent the path of the carrier, automatic means brought into action when the taut wire pulls out of the tautening clamp for projecting the control member into the path of the said carrier and in front of the carrier, to enable the carrier to actuate the same, and means controlled by the said control member for actuating the stretcher-clamp to clamp the wire for stretching the same.

13. In a machine for stretching used baling wires of different lengths to straighten the same, the combination of a carrier for engaging the wire adjacent one end for pulling the same along a path, a tautening clamp for engaging the trailing portion of the wire to maintain the wire taut, a stretcher-clamp also for engaging the trailing portion of the wire and capable of assuming an open position to receive the wire, a control member corresponding to the relatively short wires, lying adjacent the path of the carrier, automatic means brought into action when the taut wire pulls out of the tautening clamp for projecting the control member into the path of the said carrier and in front of the carrier, to enable the carrier to actuate the same, and means controlled by the said control-member for actuating the stretcher-clamp to clamp the wire for stretching the same; a second control member also lying in the path of the carrier, located further from the stretcher-clamp than the first-named control member corresponding to the long baling wires, with means actuated thereby for actuating the stretcher-clamp to clamp the wire for stretching the same.

14. In a machine for stretching used baling wires of different lengths to straighten the same, the combination of a carrier for engaging the wire adjacent one end, for pulling the same along a path, a tautening clamp for engaging the trailing portion of the wire to maintain the wire taut, a stretcher-clamp also for engaging the trailing portion of the wire and capable of assuming an open position to receive the wire, a control member corresponding to the relatively short wires, lying adjacent the path of the carrier, automatic means brought into action when the taut wire pulls out of the tautening clamp for projecting the control member into the path of the said carrier and in front of the carrier, to enable the carrier to actuate the same, means controlled by the said control member for actuating the stretcher-clamp to clamp the wire for stretching the same, and means actuated through the movement of said control member for severing the pulled wire thereafter.

15. In a machine for stretching used baling wires, the combination of a carrier for engaging the wire adjacent one end for pulling the same along a path, a stretcher-clamp for engaging the trailing portion of the wire and capable of assuming an open position to receive the wire, a control member lying adjacent the path of the carrier, automatic means for projecting the control member into the path of the said carrier and in front of the same, means controlled by the said control member for closing the stretcher-clamp on the wire for stretching the same and for cutting off the wire back of the stretcher-clamp; and means for opening the stretcher-clamp thereafter.

16. In a machine of the class described, the combination of a carrier body, means for advancing the same along a path, said carrier body having a movable hook projecting above the upper face thereof, for attaching a wire to be stretched, means for clamping the trailing portion of the wire to stretch the same, and means located adjacent the path of the carrier body for moving the hook down to release the wire from it.

17. A wire stretching machine constructed as described in claim 1, and including automatic means for moving the wire laterally into the open stretcher clamp.

18. A wire stretching machine constructed as described in claim 1, and including a member for moving the wire laterally into the stretcher clamp, means for automatically operating the same to move the wire into the clamp, and automatic means for withdrawing said member.

19. A machine for stretching baling wires of different lengths constructed as described in claim 15, having means for supporting a bundle of the relatively short wires after the same have been stretched, and means for supporting a bundle of the relatively long wires after the same have been stretched, movable guide means associated with said two last-named means for guiding the cut wire into one or the other of the same; and means controlled by the control member for controlling the position of said guiding means.

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