

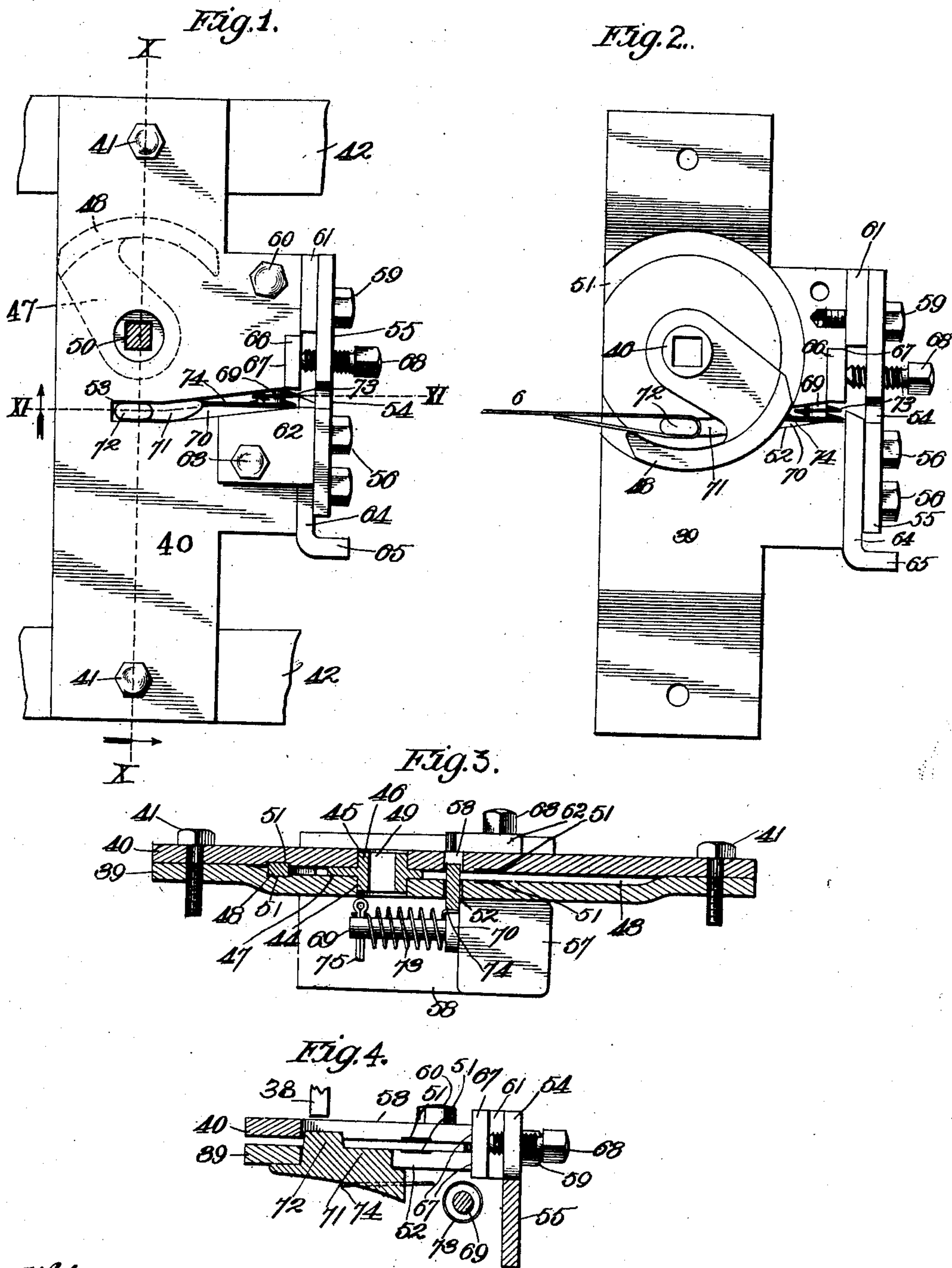
No. 827,065.

PATENTED JULY 24, 1906.

A. M. GRIFFIN.

LOOP FORMING MECHANISM FOR BALE TIE MACHINES.

APPLICATION FILED MAY 20, 1906.



Witnesses  
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# UNITED STATES PATENT OFFICE.

ALVAH M. GRIFFIN, OF KANSAS CITY, MISSOURI.

## LOOP-FORMING MECHANISM FOR BALE-TIE MACHINES.

No. 827,065.

Specification of Letters Patent.

Patented July 24, 1906.

Application filed May 20, 1905. Serial No. 261,449.

*To all whom it may concern:*

Be it known that I, ALVAH M. GRIFFIN, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Loop-Forming Mechanism for Bale-Tie Machines, of which the following is a specification.

This invention relates to bale-tie machines, and more especially to the mechanism thereof for making a loop in the end of the bale-tie wire and cutting the wire to complete the bale-tie; and my object is to produce mechanism of this character which operates efficiently and reliably.

A further object is to produce loop forming and holding elements of such construction and organization that it is impossible for the catch-pin to fail to engage the loop and effect the feed of the wire immediately after each loop is completed.

With these objects in view the invention consists in certain novel and peculiar features of construction and combinations of parts, as hereinafter described and claimed, and in order that it may be fully understood reference is to be had to the accompanying drawings, in which—

Figure 1 is a top plan view of the loop-forming mechanism. Fig. 2 is a similar view with the top plate of said mechanism omitted. Fig. 3 is a vertical section taken on the line X X of Fig. 1. Fig. 4 is a vertical section on line XI XI of Fig. 1.

Referring to Figs. 1, 2, 3, and 4, inclusive, 39 and 40 indicate superposed plates adapted to be secured by bolts 41 to portions 42 of the frame of a bale-tie machine, the lower plate 39 having its central portion depressed to provide a narrow space 43 between it and the upper plate.

44 and 45 indicate vertically-alined circular journal-openings in said plates for the hub 46 of the hook-shaped folder, comprising the shank 47 and the segmental arm 48, the hub 46 being preferably provided with the rectangular passage 49 for engagement with the rectangular shaft 50, (shown only in Fig. 1,) said shaft being adapted to be oscillated by any suitable mechanism. (Not shown.) The segmental arm 48 of the folder is preferably of greater thickness than the space 43 and occupies the superposed segmental grooves 51, formed in the proximate faces of said plates concentrically of the journal-openings

44 and 45. Said grooves intersect the vertically-alined slots 52 and 53, formed in plates 39 and 40, respectively, and extending from a point rearwardly of the plane of the axis of the folder to the front edges of said plates. The slots incline slightly to the left as viewed from the rear for the greater portion of their length, their open ends being longitudinally alined with a notch 54 in the upper edge of a transversely-extending bar 55, secured by bolts 56 to the lug 57 and plate 58, depending from and rigid with plate 39. The opposite end of said bar is mounted on a bolt 59, screwed into and between the plates 39 and 40, the plates being held rigidly together to reliably receive said bolt by the vertical cap-screw 60.

61 is a spacing-block fitting upon bolt 59 between said plates 39 and 40 and bar 55, and 62 is a plate secured by cap-screws 63 to plate 40 and projecting forwardly beyond the latter to afford a bearing for bar 55 and provide a space between said bar and plates 39 and 40, within which the knife 64 is reciprocally mounted, said knife having an arm 65 for engagement by any suitable means forming a part of a bale-tie machine.

66 is a stationary knife occupying recesses 67 in the rear edges of plates 39 and 40 to cooperate with the reciprocatory knife, a clamping-screw 68, mounted in cross-bar 55, holding said stationary knife reliably in position.

69 is a stub-shaft underlying the forward ends of plates 39 and 40 and projecting from lug 57, and pivoted on said stub-shaft for vertical operation is a rearwardly-projecting "former" 70, said former having an upwardly-projecting lug step-shaped in side view and consisting of the lower step 71 to project upward in slot 52 to the plane of the upper side of plate 39, and the upper step 72 to occupy the rear end of and project up into the slot 53, so as to intersect the space 43, the former being pressed yieldingly upward in this position by means of a spring 73, mounted on stub-shaft 69 and having an arm 74 pressing upwardly against the former and its opposite end engaging a cross-pin or cotter 75, secured in the stub-shaft.

The bale-tie wire 6 extends through space 43 between the former and the folder and likewise through notch 54 between the knives. Immediately after the reciprocatory knife is caused to cut the wire by coöperation with the stationary knife the folder swings from



the position shown in dotted lines, Fig. 1, to the position shown in full lines, Fig. 2. In such action the front end of the folder engages the wire and bends the same around the upper step of the lug of the former, as shown clearly, and it will be noticed in this connection that by reason of the fact that the segmental arm of the folder is of greater thickness than the space 43, in which the wire is confined, and which gives the latter no room for vertical movement, the bending of the wire, as explained, is inevitable, as it is absolutely impossible for it to move upward or downward out of the path of the folder, it being noticed that the lower step 71 of the lug of the former forms a closure for the lower slot 52 at the point where the wire is bent around the upper step of said lug, so as to guard against the wire springing down into said lower slot. Immediately after the folder bends the wire, as explained, the body portion and end of the latter is gripped by a suitable twisting mechanism (not shown) and twisted tightly together, so as to complete the eye formed at the front end of the wire when the latter is bent around the former by the folder. While this twisting operation is in progress the folder swings back to its original position and immediately after the twisting operation is completed the forwardly-moving catch-pin of any common and well-known type, as indicated in Fig. 4, descends upon step 72 of the lug of the former and pushes the same downward until it is totally withdrawn from the eye in the end of the wire, the pin obviously replacing it in said eye, because the latter cannot turn within the narrow space 43, within which it is confined. As the catch-pin moves forward it follows the inclination of the slot, and thereby imposes a lateral as well as a tensile strain on the tie-wire, with the result that the wire is drawn to one side of the rear ends of slots 52 and 53, so as to be out of the way of and permit the lug of the former to be reprojected into said slots without coming into engagement with the wire, it being obvious that if the wire was not so deflected the lug of the former in rising would strike the wire instead of assuming a position at the opposite side of the same from the folder, and as a result the folder could not bend the wire around the former, and thereby produce the loop or eye in the end of the wire. In fact, without some means for positively and reliably drawing the wire toward the folder and out of the vertical plane of the end of said slots the machine would be impracticable. The oblique slots for deflecting the catch-pin, for the reason explained, are further important, in that the direction which they compel said pin to follow results in bending the twisted portion of the wire slightly to dispose the center of its eye about in longitudinal alinement with the body of the wire and not slightly to one side

of the plane of said wire, as has heretofore been the case with bale-ties manufactured by machines of this general character. By bending the wire as described a more symmetrical and at the same time stronger bale-tie is produced. All future operations are repetitions of those described.

It will thus be seen that I have produced a mechanism of the character described which operates efficiently and reliably and which combines the advantageous features of simplicity, strength, and durability in a high degree.

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

1. In a bale-tie machine, a pair of superposed elements between which the bale-tie wire extends, a vertically-movable "former" having a lug, means yieldingly holding said "former" with its lug intersecting the space between said superposed elements at one side of the wire, and an oscillatory folder adapted to operate between said superposed elements and to engage and bend the end of the bale-tie wire around the lug of the "former" between said elements.

2. In a bale-tie machine, a pair of superposed elements between which the bale-tie wire extends, a vertically-movable "former" having a lug, means yieldingly holding said "former" with its lug intersecting the space between said superposed elements at one side of the wire, a suitable cutting mechanism for cutting said wire forward of said lug, and an oscillatory folder adapted to operate between said superposed elements and to engage and bend the end of the bale-tie wire around the lug of the "former" between said elements.

3. In a bale-tie machine, a pair of superposed elements between which the bale-tie wire extends, having vertically-alined slots extending from the front ends of said elements rearwardly a suitable distance, a vertically-movable former having a lug, means yieldingly holding said "former" with its lug occupying the rear ends of said slots and intersecting the space between said elements, and an oscillatory folder adapted to operate between said superposed elements and to engage and bend the end of the bale-tie wire around the lug of the "former" between said elements.

4. In a bale-tie machine, a pair of superposed elements between which the bale-tie wire extends and provided in their proximate faces with vertically-alined segmental grooves which intersect the longitudinal plane of the wire above and below the latter, a vertically-movable "former" having a lug, means yieldingly holding said "former" with its lug intersecting the space between said superposed elements at one side of the wire, and a folder pivoted to and between said superposed elements and comprising a shank with-



in the space in which the wire is confined and  
a segmental arm of greater thickness than the  
depth of such space and occupying said seg-  
mental grooves, said arm being adapted in  
5 the operation of the folder to engage the end  
of the wire and bend it back around the lug of  
the "former."

In testimony whereof I affix my signature  
in the presence of two witnesses.

ALVAH M. GRIFFIN.

Witnesses:

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