Sept. 20, 1955 M. J. NELSON ET AL 2,718,314

STACKER MECHANISM FOR COIL SPRINGS

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Fig. 1.

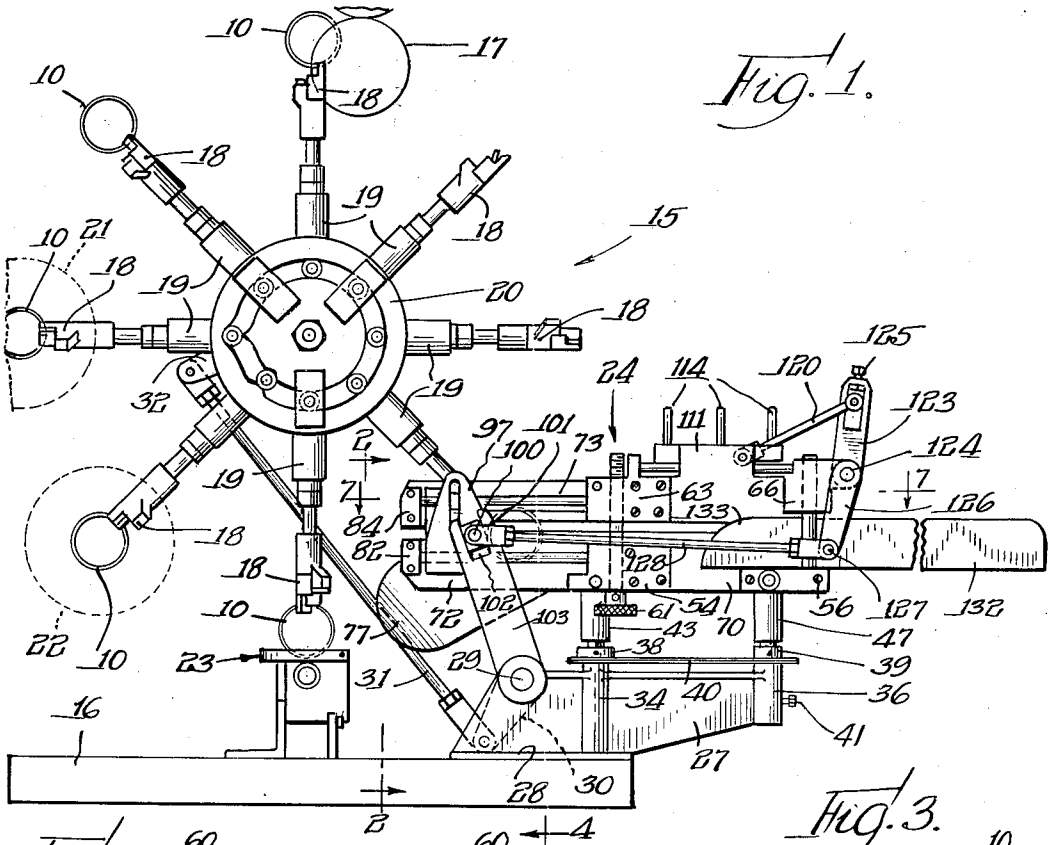


Fig. 2.

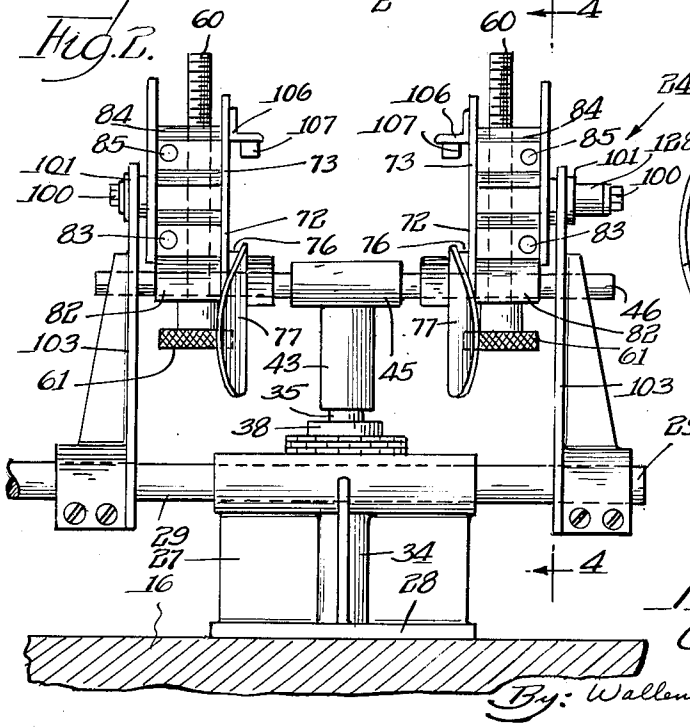
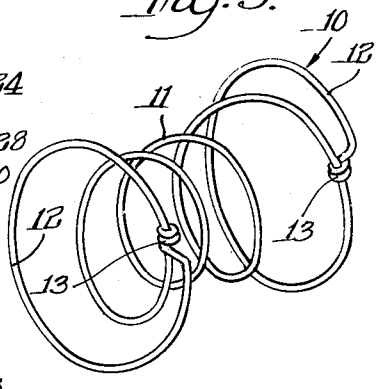


Fig. 3.



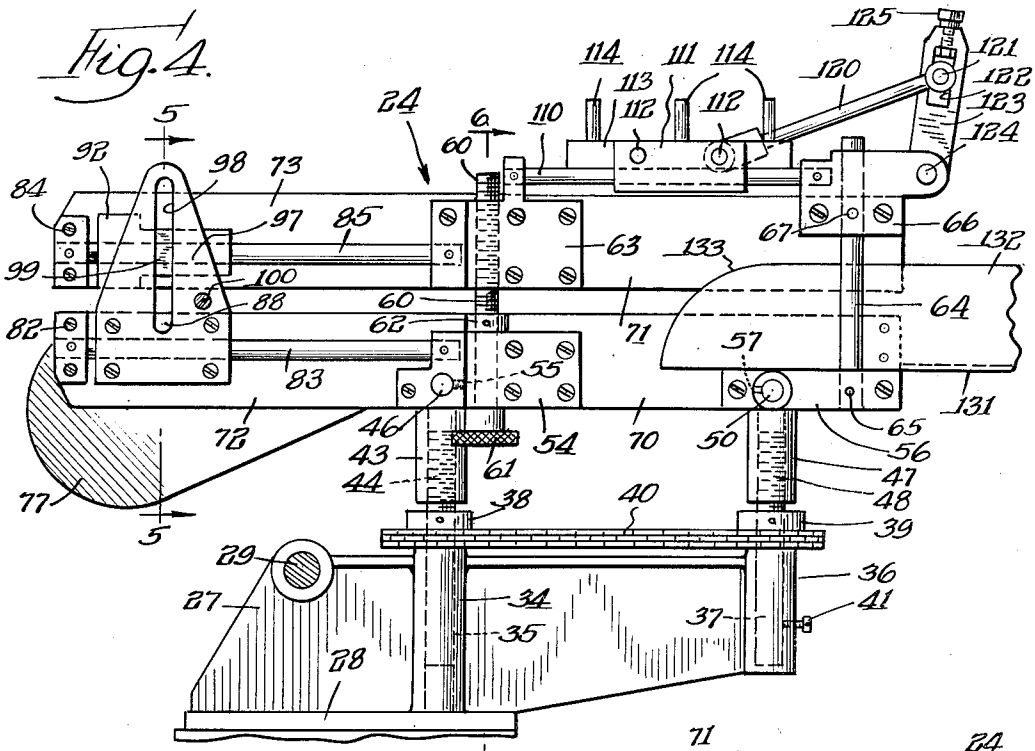
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STACKER MECHANISM FOR COIL SPRINGS

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Fig. 4.



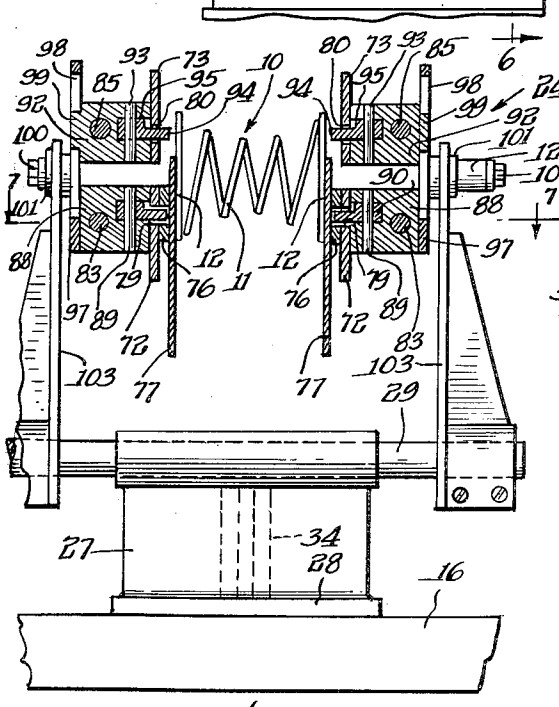


Fig. 5.

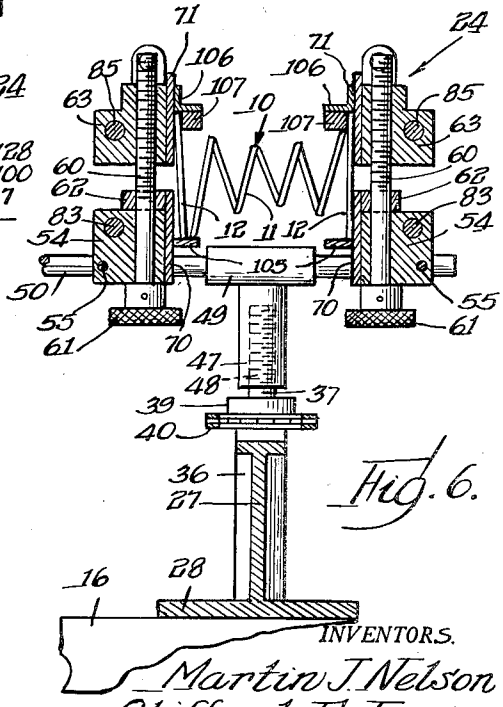


Fig. 6.

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STACKER MECHANISM FOR COIL SPRINGS

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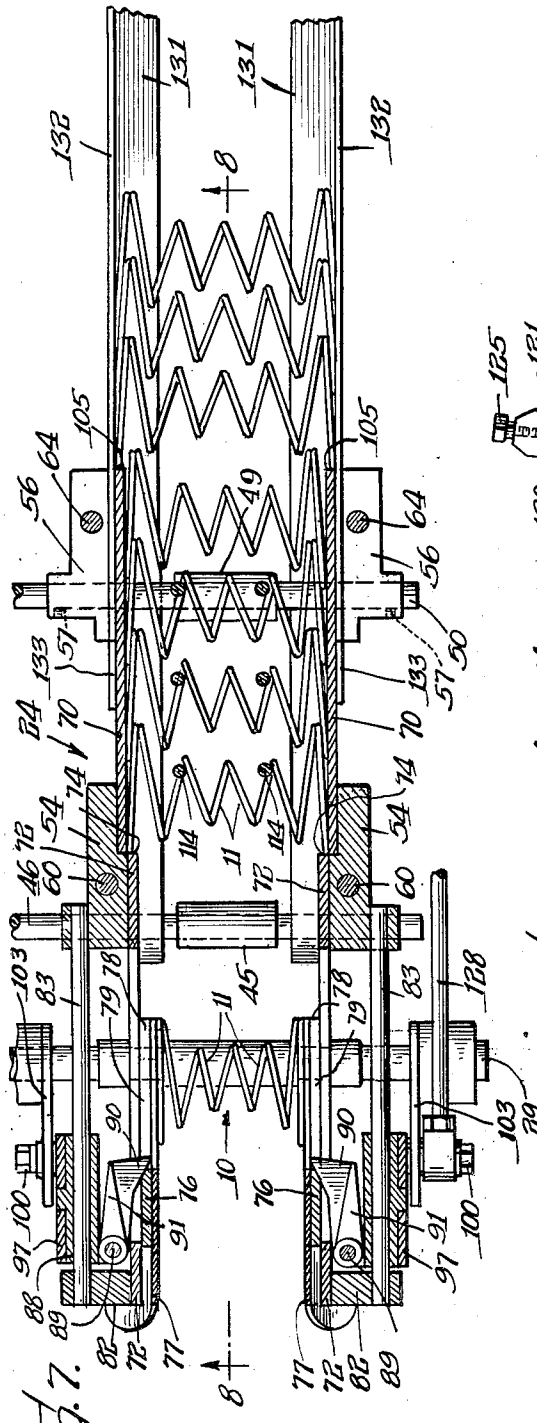


Fig. 7.

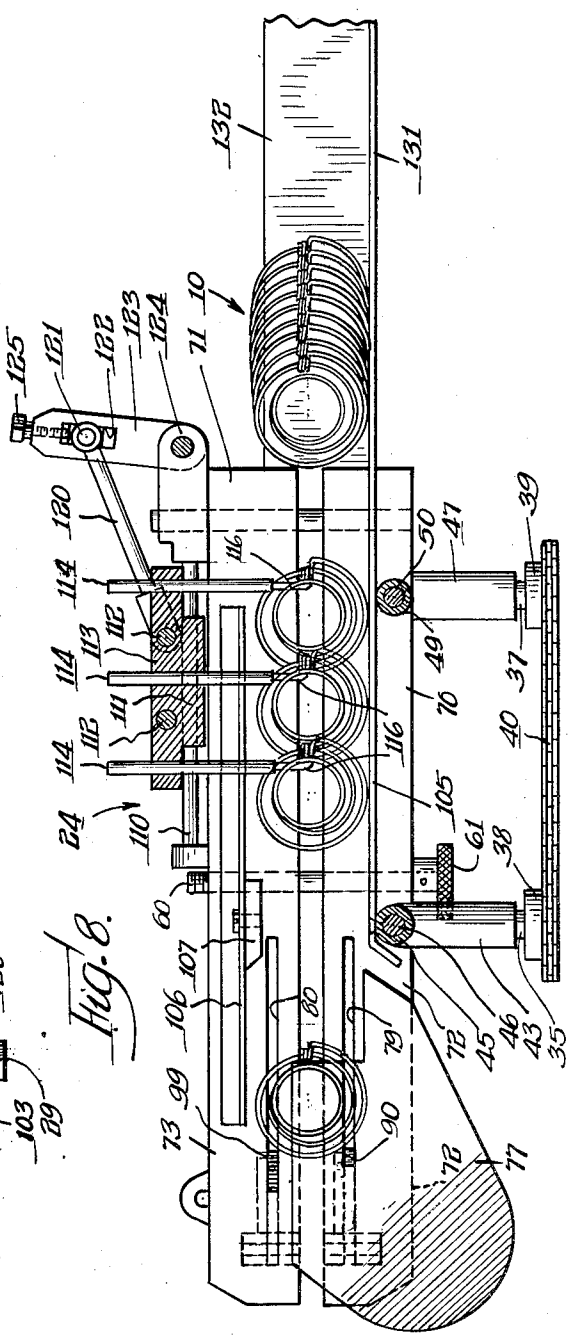


Fig. 8.

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STACKER MECHANISM FOR COIL SPRINGS

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Fig. 9.

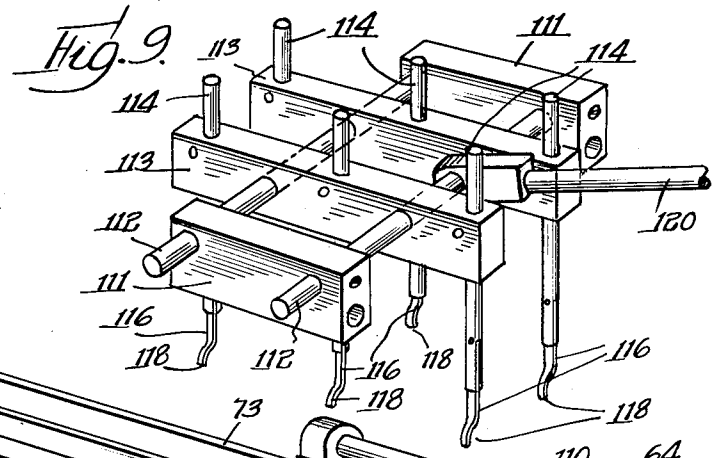


Fig. 10.

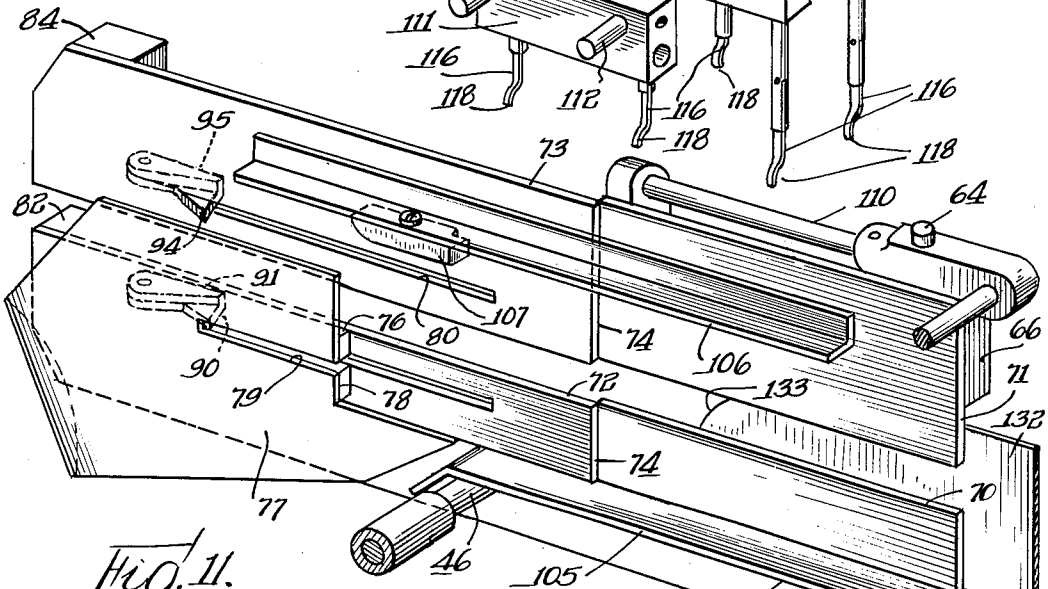


Fig. 11.

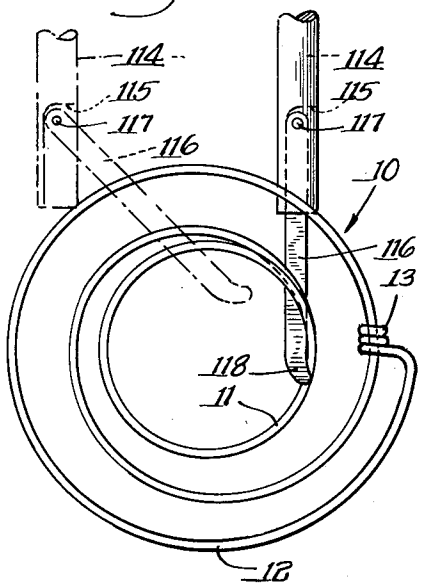
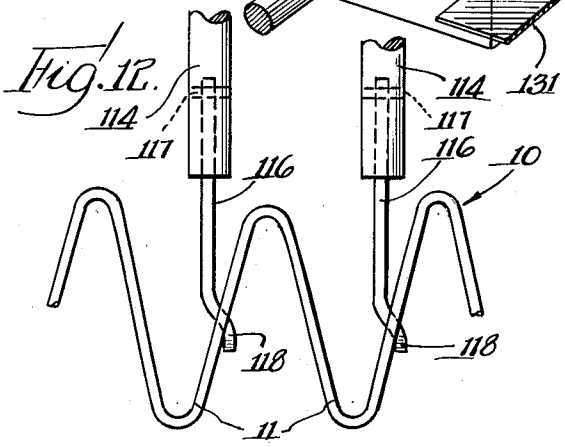


Fig. 12.



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United States Patent Office 2,718,314 Patented Sept. 20, 1955

2,718,314

STACKER MECHANISM FOR COIL SPRINGS

Martin J. Nelson, Chicago, and Clifford E. Ives, Wilmette, Ill., assignors to Wunderlich Spring Machinery Company, a corporation of Illinois

Application August 24, 1951, Serial No. 243,524

16 Claims. (Cl. 214—6)

This invention relates to stacker mechanism for coil spring producing machines. The stacker mechanism of this invention, while generally applicable to various types of coil spring producing machines, is particularly adaptable for use with the coil spring producing machine shown and described in William E. Wunderlich application Serial No. 700,197, filed September 30, 1946, and now Patent No. 2,604,202.

Coil spring producing machines, such, for example, as the one disclosed in the aforementioned application, usually include a coiling mechanism, knotting mechanisms, a stacker mechanism, and a transfer mechanism for advancing the coil springs from the coiling mechanism through the knotter mechanisms to the stacker mechanism. The stacker mechanism receives the coil springs from the transfer mechanism and stacks the same in conveniently handled bundles. In so stacking each coil spring is telescopically received within each previously stacked coil spring. Considerable difficulty has been encountered in such stacker mechanisms in accurately nesting the coil springs in a stack and in advancing the stacked coil springs into and along the stacking channel.

The principal object of this invention is to provide an improved stacker mechanism for coil springs, which accurately nests coil springs in uniform stacks, which uniformly advances stacked coil springs into and along a stacking channel, which is fully adjustable for handling coil springs of different diameters and different lengths, which is foolproof in operation, which is simple and straightforward in construction, and which may be readily and inexpensively manufactured and serviced.

Other objects and advantages of this invention will become apparent to those skilled in the art upon reference to the accompanying specification, claims and drawings in which:

Fig. 1 is an illustration of a coil spring producing machine with the stacker mechanism of this invention applied thereto;

Fig. 2 is a front elevational view of the stacker mechanism taken substantially along the line 2—2 of Fig. 1;

Fig. 3 is a perspective view of a coil spring which is adapted to be nested in stacks by the stacker mechanism of this invention;

Fig. 4 is a side elevational view of the stacker mechanism partly in section and taken substantially along the line 4—4 of Fig. 2;

Fig. 5 is a vertical sectional view through the stacker mechanism taken substantially along the line 5—5 of Fig. 4;

Fig. 6 is a vertical sectional view taken substantially along the line 6—6 of Fig. 4;

Fig. 7 is a horizontal sectional view taken substantially along the line 7—7 of Fig. 5, but showing the levers 103 and pins 100 in plan view;

Fig. 8 is a vertical sectional view taken substantially along the line 8—8 of Fig. 7;

Fig. 9 is a perspective view of a frame for advancing stacked coil springs into and along the stacking channel;

Fig. 10 is a perspective view illustrating the inside surface of one of the side plate members utilized in the stacking mechanism;

Figs. 11 and 12 are views illustrating the manner in which the stacked coil springs are advanced into and along the stacking channel.

Referring first to Fig. 3, a coil spring to be stacked by the stacking mechanism is generally designated at 10. It includes a plurality of inner convolutions or turns 11 and a pair of end turns 12. The end turns 12 terminate in knots 13. The coil spring may be plain, as illustrated, or the end turns thereof may be crimped or offset, if so desired. As will be noted, the knots 13 are in substantial alignment.

Any suitable machine may be utilized for the purpose of fabricating the coil spring 10 and for purposes of illustration in this application Fig. 1 discloses a coil spring producing machine generally designated at 15 which may be of the type disclosed in the aforementioned William E. Wunderlich application. The machine 15 includes a base or standard 16 and a coiling mechanism 17 for coiling wire into the double ended coil spring 10. When the coil spring 10 is thus formed it is grasped by fingers 18 carried by radial arms 19 of a transfer mechanism 20, which is intermittently rotated in a counterclockwise direction, as illustrated in Fig. 1. The coil springs 10 thus formed and grasped by the fingers 18 are advanced to a knotting mechanism 21 wherein one end of the coil spring 10 is knotted as at 13 and, if desired, crimped into an offset. The coil springs 10 are then advanced to a second knotting mechanism 22 where the other end of the coil spring is knotted and may also be crimped into an offset if so desired. The knotted coil springs 10 are then advanced by the transfer mechanism 20 to a heat treating mechanism generally designated at 23 and which may take the form disclosed in our copending application Serial No. 235,154, filed July 5, 1951. After the coil springs 10 are heat treated, they are advanced by the transfer mechanism to the stacker mechanism of this invention, generally designated at 24, wherein the coil springs are stacked in nested form. Since the coil spring producing machine illustrated in Fig. 1 is fully disclosed in the aforementioned William E. Wunderlich application, a further description thereof is not considered necessary.

The stacker mechanism 24 of this invention includes a supporting base 27 having an attaching flange 28 for mounting the same on the base or standard 16 of the coil spring producing machine. It is provided with a suitable transversely located journal for rotatively journalling a shaft 29, one end of which is provided with a crank arm 30. The crank arm 30 is connected by a link 31 to a crank arm 32 operated by the coil spring producing machine 15. Thus, as the coil spring producing machine 15 operates to form coils and advance the same, the shaft 29 is oscillated through the link 31 in timed relation with the operation of the coil spring producing machine.

The supporting base 27 is provided with a vertically extending hollow boss 34 for rotatively journalling a screw stud 35 and is also provided with another vertically extending hollow boss 36 for rotatively journalling another screw stud 37. The screw studs 35 and 37 are provided with sprocket wheels 38 and 39, respectively, which in turn are connected together by a sprocket chain 40. By manipulating the sprocket chain 40 the screw studs 35 and 37 are simultaneously rotated and they may be locked in desired rotative positions by means of a set-screw 41 engaging the screw stud 37.

The screw stud 35 engages screw threads 44 in a bracket 43 having a transverse portion 45 which in turn carries a rod 46. Likewise, the screw stud 37 engages screw threads 48 in a bracket 47 having a transverse portion 49, which in turn carries a rod 50. The vertical

positions of the brackets 43 and 47 and, hence, the vertical position of the stacker mechanism of this invention are adjusted by manipulating the sprocket wheels 38 and 39.

The rod 46 carried by the bracket 43 adjustably carries a pair of supporting members 54 which are held in adjusted position on the rod 50 by means of setscrews 55. Likewise, the rod 50 adjustably carries a pair of supporting members 56 which are adjustably secured in position thereon by means of setscrews 57. Each supporting members 54 rotatively carries a vertically arranged screw 60 which is held in place by an adjusting knob 61 and a collar 62. The screw 60 screw-threadedly engages and supports a supporting member 63. The supporting members 63 may be vertically positioned with respect to the supporting members 54 by manually manipulating the adjusting knobs 61. In a similar manner the supporting members 56 carry vertically extending pins 64 which in turn carry supporting members 66. The pins 64 may be fixedly secured to the supporting members 56 by setscrews 65 and may be secured to the supporting members 66 by setscrews 67. By manipulating the setscrews 67 the upper supporting members 66 may be vertically positioned with respect to the lower supporting members 56.

The lower supporting members 54 and 56 carry side plates 70 and the upper supporting members 63 and 66 carry side plates 71. The lower supporting members 54 also carry forwardly extending side plates 72 and, likewise, the upper supporting members 63 carry forwardly extending side plates 73. The side plates 72 and 73 are offset with respect to the side plates 70 and 71 to form a step 74 therebetween, as illustrated in more detail in Figs. 7 and 10. The spacing between the pair of side plates 72 and 73 is less than the spacing between the side plates 70 and 71 by the amount of the step 74.

The forwardly extending portions of the side plates 72 are provided with blocks 76 which in turn carry converging guides 77. The guides 77 are offset inwardly from the plates 72 to form a step 78, as illustrated in more detail in Figs. 7 and 10. The spacing between the guides 77 is less than the spacing between the side plates 72 by the amount of the step 78. The guides 77, blocks 76 and side plates 72 are each provided with a longitudinally extending slot 79 and, likewise, the upper side plates 73 are also each provided with a longitudinally extending slot 80. There is thus provided a pair of elongated spaced side plate members each having a pair of steps to make the spacing between the forward portions of the side plate members less than that between the center portions thereof and to make the spacing between the rear portions of the side plate members greater than that between the center portions thereof. The forward portions of the side plate members form a coil spring receiving portion for receiving coil springs under compression, the center portions forming a coil spring stacking portion and the rear portions forming a portion communicating with a stacking channel for advancing stacked coil springs into the stacking channel. Each side plate member is composed of upper and lower side plates wherein the upper side plates are adjustable with respect to the lower side plates for accommodating coil springs of different diameters. The spacing between the spaced side plate members may be adjusted for accommodating coil springs of different lengths. The converging guides 77 operate to receive coil springs and place the same in compression therebetween.

The forward end of each lower side plate 72 is provided with a bracket 82 and a rod 83 is secured in this bracket 82 and in the supporting member 54 by means of setscrews, or the like, Likewise, each upper side plate 73 is also provided on its forward end with a bracket 84 and a rod 85 extends between the bracket 84 and the upper supporting member 63. The rods 83 and 85 slidably carry a crosshead member consisting of lower and upper crossheads 88 and 92. Each lower crosshead 88 is provided with a pin 89 for pivotally mounting a retractable

dog 90 which extends through the lower slot 79. The dog 90 is spring pressed inwardly and the inward movement is limited by a projection 91 on the dog engaging the outer surface of the lower side plate 72. Likewise, each upper crosshead 92 is provided with a pin 93 for pivotally mounting a retractable dog 94 extending through the upper slot 80. This dog 94 is also spring pressed inwardly and the inward movement is limited by a projection 95 engaging the outer surface of the upper guide plate 73. Each lower crosshead 88 carries a plate 97 having a vertical slot 98 which receives a projection 99 on the upper crosshead 92. Each plate 97 carries a pin 100 which in turn carries a block 101 slidably mounted in a bifurcated end 102 of a lever 103 secured on the shaft 29.

As the shaft 29 is oscillated the levers 103 reciprocate the plates 97 which in turn reciprocates the crossheads 88 and 92 along the rods 83 and 85. When the crosshead members, including the plate 97 and the crossheads 88 and 92, are in the forward position as illustrated in Fig. 7, the dogs 90 and 94 are retracted, the dogs being retracted by the camming action of the forward ends of the slots 79 and 80. When the crosshead members are moved inwardly, the dogs 90 and 94 project through the slots 79 and 80 for the purpose of advancing a coil spring which has been interposed in the path of said dogs. When the crosshead members are moved in the opposite direction the dogs are then retracted by the camming action of the forward ends of the slots to repeat the cycle of operation. The upper crossheads 92 and, hence, the upper dogs 94 carried thereby are vertically adjusted by vertical adjustment of the upper side plates 73, this adjustment being permitted by the vertical slot 98 in the plates 97. In this way uniform engagement of the end turns of the coil springs by the dogs 90 and 94 is assured regardless of the diameters of the coil springs. The lower side plates 70 are provided with lower internal flanges 105 for supporting coil springs received between the side plates 70 and 72 and, likewise, the upper side plates 73 are provided with upper flanges 106 for confining the coil springs received between the upper side plates 73 and 71. Depending from the upper flanges 106 are guide blocks 107 located adjacent the steps 73 from positively urging the end turns of the coil spring against the side plates 72 and 73 as the coil springs are passed over the steps 78.

The upper supporting members 63 and 66 carry rods 110 for slidably receiving blocks 111 which in turn are connected together by transverse rods 112. The blocks 111 and the transverse rods 112 form a slidable carriage which in turn adjustably carry blocks 113, which in turn adjustably carry vertical posts 114. The lower ends of the vertical posts 114 are slotted at 115 for receiving fingers 116 which are pivoted therein by suitable pivot pins 117. The lower ends of the fingers 116 are offset as indicated at 118 so that as the carriage is advanced the offset ends of the fingers 116 engage the intermediate turns of the coil springs for pulling the same rearwardly in the portion between the side plates 70 and 71. As the carriage is retracted the fingers 116 pivot about their pivots 117 to bring the fingers 116 in alignment with other coil springs for the purpose of advancing the same. Thus, as the carriage is reciprocated along the rods 110 the pivoted fingers 116 operate to advance the stacked coil springs along the side plates 70 and 71 into a stacking channel. The carriage is completely adjustable to fit any desired adjustment in the spacing between the side plate members.

The carriage is reciprocated by a link 120 which has one end pivoted to one of the rods 112 of the carriage and which has the other end pivoted to a block 121 adjustably mounted in a slot 122 in a lever 123 which is secured to a transverse shaft 124 journalled in the supporting members 66. The position of the block 121 in the slot 122 is determined by an adjusting screw 125. The shaft 124 also carries a crank arm 126 which is con-

nected at **127** to one end of a link **128**, the other end of which is secured to the pin **100**. Thus, as the crosshead members are reciprocated by the levers **103** the carriage for the pivoted fingers **116** is also reciprocated in timed relation therewith. The amount of reciprocation imparted to the carriage with respect to the amount of reciprocation of the crosshead members is adjusted by means of the adjusting screw **125**.

The rear portion of the stacking mechanism between the side plates **70** and **71** communicates with a stacking channel having bottom guide surfaces **131** and side members **132**. The bottom guide surfaces **131** abut the stacking mechanism and the side members **132** extend forwardly, as indicated at **133**, over the side plates **70** and **71**, the stacking channel being supported by the lower supporting members **56**.

In operation coil springs are intermittently supplied to the stacking mechanism by the carrier **20** of the coil spring forming machine. In this respect, the coil springs are individually inserted under compression between the converging guides **77**. The dogs **90** and **94** then engage the end turns of the coil spring and advance the same over the step **78** to the intermediate portion of the stacker mechanism between the side plates **72** and **73**. As further coil springs are thus advanced by the dogs **90** and **94**, the coil springs are nested in stacked form between the side plates **72** and **73** and are advanced along this intermediate portion of the stacker mechanism by the pivoted dogs. In the particular construction here illustrated approximately six nested coil springs are located at a time between the steps **78** and **74**. As the coil springs are so advanced they ride over the steps **74** to a point between the side plates **70** and **71**. Here the pivoted fingers **116** engage the intermediate turns of the coil springs for advancing the stacked coil springs along and into the stacking channel **131**. Thus the pivoted retractable dogs **90** and **94** operate primarily to stack the coil springs in nested form and the pivoted fingers **116** operated by the carriage operate to advance the stacked coil springs into and along the stacking channel. The pivoted fingers **116** of the carriage, therefore, take the load of advancing the stacked coil springs away from the pivoted retractable dogs **90** and **94** and greatly assist in the proper and foolproof operation of the stacker mechanism. The steps **78** and **74** between the forward, intermediate and rear portions of the stacker mechanism operate to control the advance of the coil springs through the stacker mechanism and to prevent reverse movement thereof. The stacker mechanism is completely adjustable for accommodating coil springs of different lengths and diameters.

In nesting the coil springs into stacks it is desirable to have the knots **13** of the coil springs in the lead position, as illustrated in Fig. 11, and this positioning of the coil spring is assured by the construction and operation of the stacker mechanism of this invention. In this respect, both lower and upper dogs **90** and **94** are utilized for pushing an inserted coil spring into nesting relation with the other coil springs and these upper and lower dogs prevent turning of the coil springs during this operation. Also, the pivoted fingers **116** engage the intermediate turns of the coil springs and operate to pull the same forward rather than push the same and this pulling action further tends to maintain the coil springs in proper position as they are advanced.

While for purposes of illustration one form of this invention has been disclosed, other forms thereof may become apparent to those skilled in the art upon reference to this disclosure and, therefore, this invention is to be limited only by the scope of the appended claims.

We claim as our invention:

1. A stacker mechanism for coil springs comprising, a pair of elongated spaced side plate members, each having a pair of steps to make the spacing between the forward portions of the side plate members less than

that between the center portions thereof and to make the spacing between the rear portions of the side plate members greater than that between the center portions thereof, the forward portions of the side plate members receiving coil springs under compression and the rear portions thereof communicating with a stacking channel, slots in the side plate members extending from a point in the forward portions of the side plate members to a point in the center portions thereof, a pair of crosshead members longitudinally slidably mounted on the outside of the side plate member, retractable dogs carried by the crosshead members and extending through the slots for engaging the end turns of the coil springs and individually advancing the coil springs from between the forward portions of the side plate members to stacked condition between the center portions of the side plate members and for advancing stacked coil springs from between the center portions of the side plate members to the rear portions thereof, a frame longitudinally slidably mounted above the rear portions of the side plate members, and a plurality of downwardly extending pivoted fingers carried by the frame for engaging the intermediate turns of the stacked coil springs between the rear portions of the side plate members for advancing stacked coil springs therefrom into the communicating stacking channel.

2. A stacker mechanism for coil springs comprising, a pair of elongated spaced side plate members, each having a step to form a forward coil spring receiving portion for receiving coil springs under compression and a subsequent wider coil spring stacking portion, slots in the side plate members extending from a point in the coil spring receiving portion to a point in the coil spring stacking portion, a pair of crosshead members longitudinally slidably mounted on the outside of the side plate members and retractable dogs carried by the crosshead members and extending through the slots for engaging the end turns of the coil springs and individually advancing the coil springs from the coil spring receiving portion to the stacking portion for stacking the coil springs therein and for advancing stacked coil springs along the stacking portion.

3. A stacker mechanism for coil springs comprising, a pair of elongated spaced side plate members, each having a step to form a forward coil spring receiving portion for receiving coil springs under compression and a subsequent wider coil spring stacking portion, slots in the side plate members extending from a point in the coil spring receiving portion to a point in the coil spring stacking portion, a pair of crosshead members longitudinally slidably mounted on the outside of the side plate members, retractable dogs carried by the crosshead members and extending through the slots for engaging the end turns of the coil springs and individually advancing the coil springs from the coil spring receiving portion to the stacking portion for stacking the coil springs therein and for advancing stacked coil springs along the stacking portion, and guide means carried by the side plate members in the stacking portion adjacent the steps for assisting in the stacking of the coil spring advanced into the stacking portion.

4. A stacker mechanism for coil springs comprising, a pair of elongated spaced side plate members, each having a step to form a forward coil spring receiving portion for receiving coil springs under compression and a subsequent wider coil spring stacking portion, slots in the side plate members extending from a point in the coil spring receiving portion to a point in the coil spring stacking portion, a pair of crosshead members longitudinally slidably mounted on the outside of the side plate members, retractable dogs carried by the crosshead members and extending through the slots for engaging the end turns of the coil springs and individually advancing the coil springs from the coil spring receiving portion to the stacking portion for stacking the coil springs

therein and for advancing stacked coil springs along the stacking portion, and adjustable mounting means for the side plate members for adjusting the spacing therebetween for accommodating coil springs of different lengths.

5. A stacker mechanism for coil springs comprising, a pair of elongated spaced side plate members, each having a step to form a forward coil spring receiving portion for receiving coil springs under compression and a subsequent wider coil spring stacking portion, each side plate member also including an upper and a lower side plate, means for adjustably mounting the upper side plates with respect to the lower side plates for accommodating coil springs of different diameters, a slot in each side plate extending from a point in the coil spring receiving portion to a point in the coil spring stacking portion, a pair of crosshead members longitudinally slidably mounted on the outside of the side plate members, and retractable dogs carried by the crosshead members and extending through the slots for engaging the end turns of the coil springs and individually advancing the coil springs from the coil spring receiving portion to the stacking portion for stacking the coil springs therein and for advancing stacked coil springs along the stacking portion.

6. A stacker mechanism for coil springs comprising, a pair of elongated spaced side plate members, each having a step to form a forward coil spring receiving portion for receiving coil springs under compression and a subsequent wider coil spring stacking portion, each side plate member also including an upper and a lower side plate, means for adjustably mounting the upper side plates with respect to the lower side plates for accommodating coil springs of different diameters, a slot in each side plate extending from a point in the coil spring receiving portion to a point in the coil spring stacking portion, a pair of crosshead members longitudinally slidably mounted on the outside of the side plate members, retractable dogs carried by the cross head members and extending through the slots for engaging the end turns of the coil springs and individually advancing the coil springs from the coil spring receiving portion to the stacking portion for stacking the coil springs therein and for advancing stacked coil springs along the stacking portion, and adjustable mounting means for the side plate members for adjusting the spacing therebetween for accommodating coil springs of different lengths.

7. A stacker mechanism for coil springs comprising, a pair of elongated spaced side plate members, each having a step to form a forward coil spring receiving portion for receiving coil springs under compression and a subsequent wider coil spring stacking portion, each side plate member also including an upper and a lower side plate, means for adjustably mounting the upper side plates with respect to the lower side plates for accommodating coil springs of different diameters, a slot in each side plate extending from a point in the coil spring receiving portion to a point in the coil spring stacking portion, a pair of crosshead members longitudinally slidably mounted on the outside of the side plate members, retractable dogs carried by the crosshead members and extending through the slots for engaging the end turns of the coil springs and individually advancing the coil springs from the coil spring receiving portion to the stacking portion for stacking the coil springs therein and for advancing stacked coil springs along the stacking portion, and guide means carried by the upper side plates in the stacking portion adjacent the steps for assisting in the stacking of the coil springs advanced into the stacking portion.

8. A stacker mechanism for coil springs comprising, a pair of elongated spaced side plate members, each having a pair of steps to make the spacing between the forward portions of the side plate members less than that between the center portions thereof and to make the spacing between the rear portions of the side plate members greater than that between the center portions thereof, the forward portions of the side plate members receiving coil springs under compression and the rear portions thereof communicating with a stacking channel, slots in the side plate members extending from a point in the forward portions of the side plate members to a point in the center portions thereof, a pair of crosshead members longitudinally slidably mounted on the outside of the side plate members, retractable dogs carried by the crosshead members and extending through the slots for engaging the end turns of the coil springs and individually advancing the coil springs from between the forward portions of the side plate members to stacked condition between the center portions of the side plate members and for advancing stacked coil springs from between the center portions of the side plate members to the rear portions thereof, a frame longitudinally slidably mounted above the rear portions of the side plate members, a plurality of downwardly extending pivoted fingers carried by the frame for engaging the intermediate turns of the stacked coil springs between the rear portions of the side plate members for advancing stacked coil springs therefrom into the communicating stacking channel, and adjustable mounting means for the side plate members for adjusting the spacing therebetween for accommodating coil springs of different lengths.

9. A stacker mechanism for coil springs comprising, a pair of elongated spaced side plate members, each having a pair of steps to make the spacing between the forward portions of the side plate members less than that between the center portions thereof and to make the spacing between the rear portions of the side plate members greater than that between the center portions thereof, the forward portions of the side plate members receiving coil springs under compression and the rear portions thereof communicating with a stacking channel, each side plate member also including an upper and a lower side plate, means for adjustably mounting the upper side plates with respect to the lower side plates for accommodating coil springs of different diameters, a slot in each side plate extending from a point in the forward portions of the side plate members to a point in the center portions thereof, a pair of crosshead members longitudinally slidably mounted on the outside of the side plate members, retractable dogs carried by the crosshead members and extending through the slots for engaging the end turns of the coil springs and individually advancing the coil springs from between the forward portions of the side plate members to stacked condition between the center portions of the side plate members and for advancing stacked coil springs from between the center portions of the side plate members to the rear portions thereof, a frame longitudinally slidably mounted above the rear portions of the side plate members, a plurality of downwardly extending pivoted fingers carried by the frame for engaging the intermediate turns of the stacked coil springs between the rear portions of the side plate members for advancing stacked coil springs therefrom into the communicating stacking channel.

10. A stacker mechanism for coil springs comprising, a pair of elongated spaced side plate members, each having a pair of steps to make the spacing between the forward portions of the side plate members less than that between the center portions thereof and to make the spacing between the rear portions of the side plate members greater than that between the center portions thereof, the forward portions of the side plate members receiving coil springs under compression and the rear portions thereof communicating with a stacking channel, each side plate members also including an upper and a lower side plate, means for adjustably mounting the upper side plates with respect to the lower side plates for accommodating coil springs of different diameters, a slot in each side plate extending from a point in the forward portions of the side plate members to a point in the center portions thereof, a pair of crosshead members longitudinally slidably mounted on the outside of the side

plate members, retractable dogs carried by the crosshead members and extending through the slots for engaging the end turns of the coil springs and individually advancing the coil springs from between the forward portions of the side plate members to stacked condition between the center portions of the side plate members and for advancing stacked coil springs from between the center portions of the side plate members to the rear portions thereof, a frame longitudinally slidably mounted above the rear portions of the side plate members, a plurality of downwardly extending pivoted fingers carried by the frame for engaging the intermediate turns of the stacked coil springs between the rear portions of the side plate members for advancing stacked coil springs therefrom into the communicating stacking channel, and adjustable mounting means for the side plate members for adjusting the spacing therebetween for accommodating coil springs of different lengths.

11. A stacker mechanism for coil springs comprising, a pair of elongated spaced side plate members, each having a step to form a forward coil spring receiving portion for receiving coil springs under compression and a subsequent wider coil spring stacking portion, slots in the side plate members extending from a point in the coil spring receiving portion to a point in the coil spring stacking portion, a pair of crosshead members longitudinally slidably mounted on the outside of the side plate members, and spring engaging members carried by the crosshead members and extending through the slots for engaging the end turns of the coil springs and individually advancing the coil springs from the coil spring receiving portion to the stacking portion for stacking the coil springs therein and for advancing coil springs along the stacking portion.

12. A stacker mechanism for coil springs comprising, a pair of elongated spaced side plate members, each having a step to form a forward coil spring receiving portion for receiving coil springs under compression and a subsequent wider coil spring stacking portion, slots in the side plate members extending from a point in the coil spring receiving portion to a point in the coil spring stacking portion, a pair of members longitudinally slidably mounted in the side plate members and having spring engaging members extending through the slots for engaging the end turns of the coil springs and individually advancing the coil springs from the coil spring receiving portion to the stacking portion for stacking the coil springs therein and for advancing coil springs along the stacking portion.

13. A stacker mechanism for coil springs comprising, a pair of elongated spaced side plate members, each having a step to form a forward coil spring receiving portion for receiving coil springs under compression and a subsequent wider coil spring stacking portion, slots in the side plate members extending from a point in the coil spring receiving portion to a point in the coil spring stacking portion, a pair of members longitudinally slidably mounted on the side plate members and having spring engaging members extending through the slots for engaging the end turns of the coil springs and individually advancing the coil springs from the coil spring receiving portion to the stacking portion for stacking the coil springs therein and for advancing coil springs along the stacking portion, and adjustable mounting means for the side plate members for adjusting the spacing therebetween for accommodating coil springs of different lengths.

14. A stacker mechanism for coil springs comprising, a pair of elongated spaced side plate members, each having a step to form a forward coil spring receiving portion for receiving coil springs under compression and a subsequent wider coil spring stacking portion, slots in the side plate members extending from a point in the coil spring receiving portion to a point in the coil spring stacking portion, a pair of members longitudinally slidably mounted in the side plate members and having spring engaging members extending through the slots for engaging the end turns of the coil springs and individually advancing the coil springs from the coil spring receiving portion to the stacking portion for stacking the coil springs therein and for advancing coil springs along the stacking portion, and intermittently operating means adjacent the stacking portion of the side plate members for engaging the stacked coil springs for also advancing the stacked coil springs.

15. A stacker mechanism for coil springs comprising, a pair of elongated spaced side plate members, each having a step to form a forward coil spring receiving portion for receiving coil springs under compression and a subsequent wider coil spring stacking portion, slots in the side plate members extending from a point in the coil spring receiving portion to a point in the coil spring stacking portion, a pair of members longitudinally slidably mounted in the side plate members and having spring engaging members extending through the slots for engaging the end turns of the coil springs and individually advancing the coil springs from the coil spring receiving portion to the stacking portion for stacking the coil springs therein and for advancing coil springs along the stacking portion, a frame longitudinally slidably mounted above the side plate members adjacent the stacking portion thereof, and a plurality of downwardly extending pivoted fingers carried by the frame for engaging the intermediate turns of the stacked coil springs for also advancing the stacked coil springs.

16. A stacker mechanism for coil springs comprising, a pair of elongated spaced side plate members, each having a step to form a forward coil spring receiving portion for receiving coil springs under compression and a subsequent wider coil spring stacking portion, slots in the side plate members extending from a point in the coil spring receiving portion to a point in the coil spring stacking portion, a pair of members longitudinally slidably mounted in the side plate members and having spring engaging members extending through the slots for engaging the end turns of the coil springs and individually advancing the coil springs from the coil spring receiving portion to the stacking portion for stacking the coil springs therein and for advancing coil springs along the stacking portion, and intermittently operating means adjacent the stacking portion of the side plate members for engaging the stacked coil springs for also advancing the stacked coil springs, and adjustable mounting means for the side plate members for adjusting the spacing therebetween for accommodating coil springs of different lengths.

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