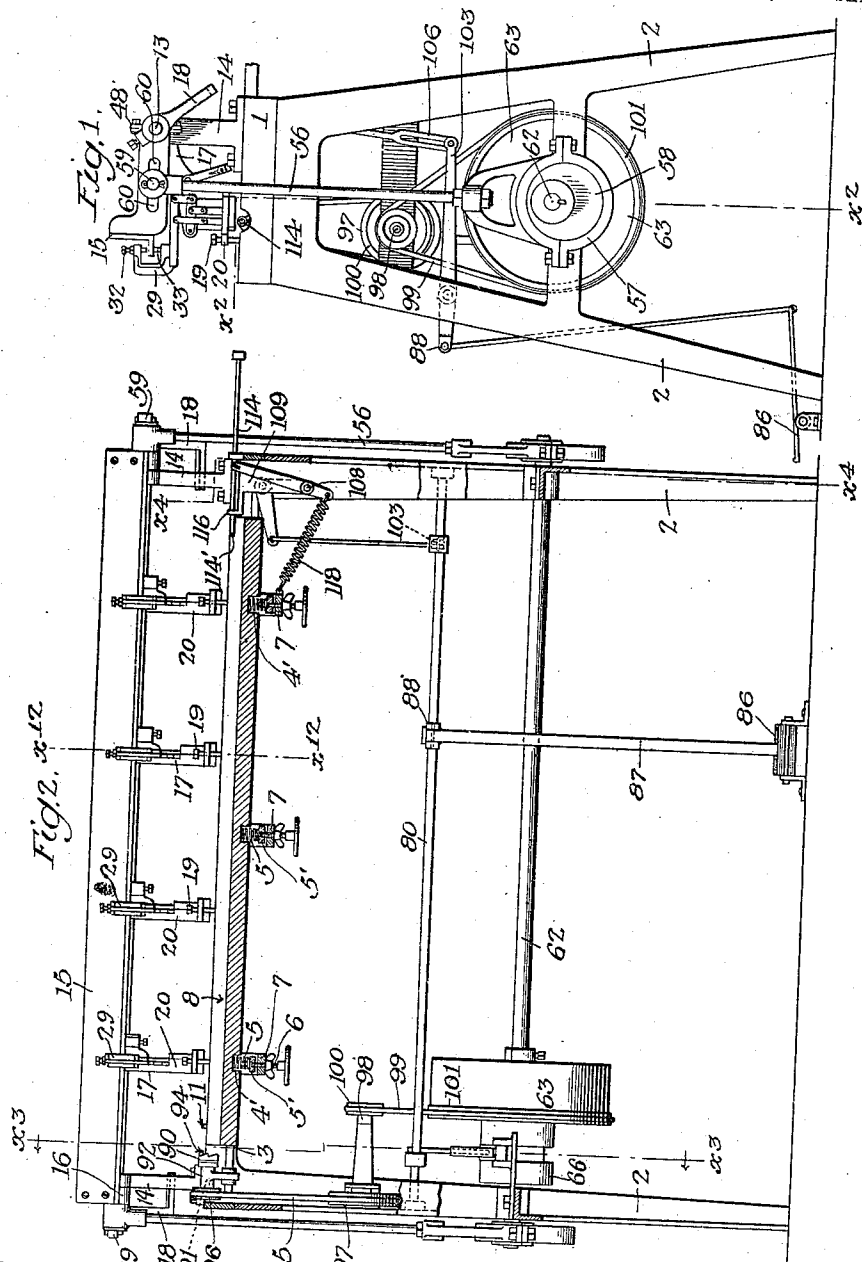


976,356.

3 SHEETS—SHEET 1.

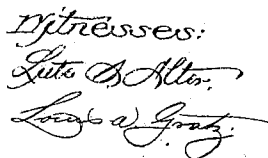


Witnesses:
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976,356.

3 SHEETS-SHEET 2.



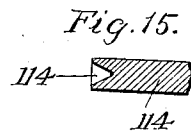
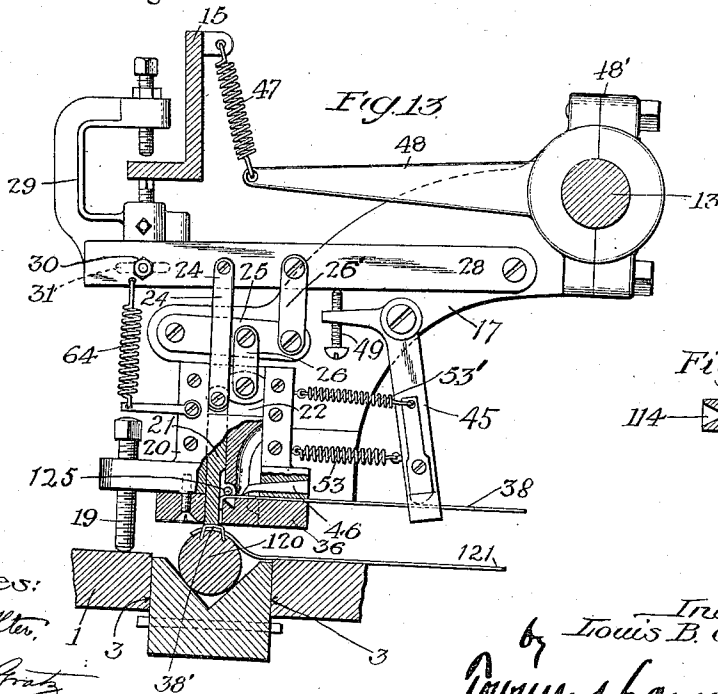
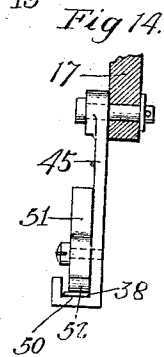
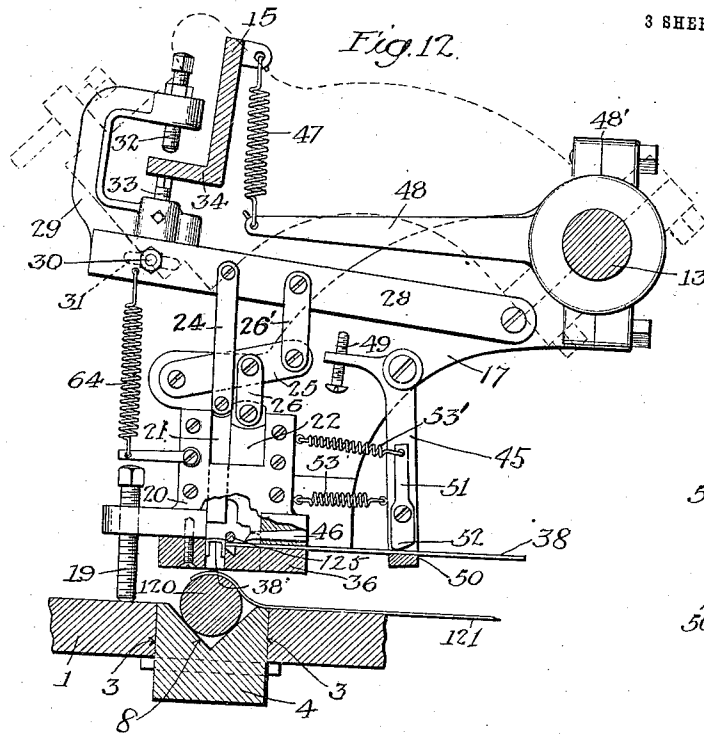
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L. B. GIRARD.
MACHINE FOR FASTENING SHADES ON ROLLERS.
APPLICATION FILED MAY 9, 1910.

976,356.

Patented Nov. 22, 1910.

3 SHEETS-SHEET 3.



Witnesses:

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Patented for Machine
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UNITED STATES PATENT OFFICE.

LOUIS B. GIRARD, OF LOS ANGELES, CALIFORNIA, ASSIGNOR TO THE GIRARD MANUFACTURING COMPANY, OF LOS ANGELES, CALIFORNIA, A CORPORATION OF CALIFORNIA.

MACHINE FOR FASTENING SHADES ON ROLLERS.

976,356.

Specification of Letters Patent.

Patented Nov. 22, 1910.

Application filed May 9, 1910. Serial No. 560,352.

To all whom it may concern:

Be it known that I, LOUIS B. GIRARD, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Machine for Fastening Shades on Rollers, of which the following is a specification.

This invention relates to a machine of the type shown and described in my application Serial No. 510,923, filed August 2, 1909, wherein mechanism is provided for forming fasteners and for driving them into the shade roller for fastening the shade to the roller.

One object of the present invention is to provide in such a machine improved means for feeding the strip of fastener forming material through the die mechanism in such manner that there is no back movement of the feeding means such as would result in clipping or cutting short the rear end of the fastener.

Another object of the invention is to provide improved stripping means for the die mechanism.

Other objects of the invention will appear hereinafter.

Referring to the accompanying drawings illustrating the invention: Figure 1 is an end elevation of the machine. Fig. 2 is a section thereof on the line x^2-x^2 in Fig. 1. Fig. 3 is a transverse section on the line x^3-x^3 in Fig. 2. Fig. 4 is a transverse section on the line x^4-x^4 in Fig. 2. Fig. 5 is a horizontal section of the clutch and throw-out for the operating mechanism. Fig. 6 is a section on line x^6-x^6 in Fig. 5. Fig. 7 is a plan of the die. Fig. 8 is a transverse section on the line x^8-x^8 in Fig. 7. Fig. 9 is a horizontal section on the line x^9-x^9 in Fig. 13. Fig. 10 is an end elevation of the staple. Fig. 11 is a perspective of the strip or ribbon of which the staples are formed showing a partly formed staple at the forward end thereof. Fig. 12 is a transverse section on the line $x^{12}-x^{12}$ in Fig. 2, showing the die and staple driving mechanism brought down to the roller, but the dies not operated. Fig. 13 is a similar view showing the dies in operated position. Fig. 14 is an end view of the feeding mechanism. Fig. 15 is a detail section of the pressure bar for the roller.

The frame of the machine comprises a

table 1 and legs or standards 2. The table 1 is provided with a longitudinal slot or channel 3 to receive the roller support 4 which is movable vertically in said slot and is normally sustained in position by coil springs 5 engaging in seats 4' in the bottom of the roller support, the pressure of such coil springs being adjusted by screws 6 engaging with plugs 5' entering within said springs, said screws working in yokes 7 depending from the table 1. By thus yieldingly supporting the roller support, it is enabled to adjust itself for small variations in the size of the roller during the operation of the die mechanism. The adjustability of the support by the means 6 provides for operation with different sizes of rollers. Roller support 4 is provided in its upper face with a longitudinal groove or channel 8 preferably V-shaped, to receive and hold the shade roller during the operation. A table extension or platform 9 extends rearwardly from the table 1 to receive and support a pack or pile of shades in position to enable them to be drawn quickly over the shade roller. A gage or guide 11 may be provided on this table serving as a limit to the lateral movement of the shades, so that they can easily be brought to or maintained in proper position with respect to the length of the roller.

Means are provided for forming staples or fasteners and for driving said staples or fasteners into the roll to attach the shade thereto by one and the same operation, said means comprising a shaft 13 mounted in bearings or standards 14, sets of die mechanism mounted on said shaft and means for intermittently operating the die mechanisms to perform the forming and driving operation. A rocking frame or member 15 is mounted to rock freely on the shaft 13 by a bearing 16, this rocking frame being the operating member for the die mechanisms, being connected to suitable operating means and to the die mechanisms, as hereinafter described. A series of arms 17 are mounted on and fastened to said shaft 13, said arms carrying the heads 20 for the die mechanisms.

In the operation of the machine, as will be hereinafter described, the frame 15 and the arms 17 swing upward together through a limited angle and stop means are provided for arresting the shaft 13 and the arms 17 after they have been moved through a cer-

tain angle, the frame 15 being permitted to continue its upward movement. Said stop means consists of an arm 18 on the shaft 13, said arm engaging with a standard 14 to limit the upward movement of the arm 17. A screw 19 on head 20 on each arm 17 engages the table 1 to limit the downward movement of the arms 17 and of the die mechanisms carried thereby. The relative movement of the rocking frame 15 and the arms 17 carrying the die mechanism which ensues on such arrest of the die mechanisms effects the operation of the die mechanisms. The head 20 is formed with the matrix 36 of the die mechanism, said die mechanism further comprising two movable or male dies 21, 22 slidable vertically in the matrix 36 and connected to be operated by the frame 15 in the said relative movement. For this purpose said dies are connected respectively by link 24 and by lever 25 and links 26, 26' with an operating lever 28, pivoted to arm 17 and having a yoke 29 slidably mounted by bolt 30 in a slot 31 in the yoke, said yoke having upper and lower screws 32, 33 to engage a flange 34 on rocking frame 15, these screws serving for adjustment of the die operation.

While any suitable die mechanism may be employed, I prefer to use that shown in Patent No. 953,416, granted to me March 29, 1910, the die mechanism herein shown being similar to that described and claimed in said application, except for the changes hereinafter specified. The matrix 36 of said die mechanism is formed on its upper face with a longitudinal channel 37 of sufficient depth and width to receive the strip or ribbon 38 of which the staples or fastening devices are to be formed, and said matrix is further provided with two vertical passages or channels 39, 40 for the passage, respectively, of the dies 21, 22 and with a bridge or wall 41 between said channels 39, 40.

The rear wall of the passage 40 is provided with a forward projection 42 tapering toward the front and terminating in a pointed or V-shaped tongue 43, the top of this projecting portion and tongue being in the plane of the bottom of the way or channel 37 and the top of the bridge 41 being somewhat below this level for the purpose hereinafter set forth. The top of the bridge 41 is rearwardly and downwardly inclined and at each side the bridge is cut away at its top to form a channel 41', said channel being downwardly tapering or convergent. Rear die 22 is provided with flanges 61 to work in the space at each side of the projection 42.

Ribbon or strip feeding means is provided for each die mechanism, each feeding means comprising a lever 45 pivoted to the arm 17 and normally drawn forwardly by a spring 53, said lever being provided with a friction

grip lever 51 pivoted thereto and having a cam face 52 to pinch the ribbon or strip 38 between said face and the shoulder 50 of the lever 45, a spring 53' being connected to said lever 51 and to the head 20 to tend to hold this friction grip lever in contact with the ribbon. Lever 28 operates lever 45 by engaging a screw 49 thereon, said lever 45 with its operating devices and the grip means carried by said lever constituting oscillatory means connected to the die operating means to feed a strip over the matrix. A spring 64 is connected to lever 28 and the head 20 on the arm 17 to cause the rear die 22 to be held in engagement with the fastener strip 38 until said rear die is lifted by the positive operation of the die after arrest of the arm 17, thereby dispensing with mechanism for holding the fastener strip against back movement and absolutely eliminating such back movement. With mechanism of this character, friction means has been provided operated by the initiation of back movement of the fastener strip to arrest such back movement and as operation of such means involves an inception of the movement before it can be arrested, there is always a certain amount of back motion which is liable to result in clipping or cutting short the fastener at the rear end thereof in the next operation of the dies. Where the fasteners are bent down as in the present case at the rear end to form prongs and the fastener strip is extremely thin, said prongs are liable to be cut off by reason of such back movement. By providing the spring 64 firmly holding the fastener strip from back movement by operation through the lever 28, link 24, lever 25, links 26', 26 and die 22, such injury to the fasteners is avoided.

A counterbalance means for the die carrying heads is provided consisting of a spring 47 connected to the rocking frame 15 and to an arm 48 adjustably secured by clamping means 48' on the rock shaft 13, this spring serving to normally hold the arms 17 up when the frame 15 is elevated. As the rocking frame descends, arm 48 and the arms 17 are held stationary for a moment by the tension of said spring, but in the further descent of said rocking frame, the arms 48 and 17 are allowed to descend until the stop means 19 arrests the movement of the arms 17. As the rocking frame 15 reaches its highest point it strikes screw 32 and lifts the dies to strip them from the matrix. But when the machine starts on the next operation and frame 15 begins to descend, the flange 34 moves immediately out of engagement with screw 32, the spring 47 sustaining the die mechanism during this time with sufficient force to enable the spring 64 to force the rear die down on to the fastener strip.

The rocking frame 15 serves as the oper-

ating member for the above described die mechanisms and is operated by bars or links 56 whose lower ends are connected to the straps 57 of eccentrics 58 and whose upper ends are provided with bolts 59 which are adjustable in slots 60 in the ends of the rocking frame 15, this adjustment being radial with respect to the shaft 13 to provide for variation of the stroke of the rocking frame 15. Eccentrics 58 are carried by a shaft 62 journaled in the standards 2, a driving pulley 63 being loosely mounted on the shaft and clutching means being provided to clutch the driving pulley to the shaft when it is desired to perform the forming and driving operation. Said clutching means (see Figs. 3 and 6) comprises a collar 66 fast on the shaft 62 and a bolt or catch member 67 longitudinally slidable in said collar to move into or out of engaging relation with radial slots or notches 68 in the hub of the pulley 63, a spring 69 being provided tending to press the bolt 67 into such engagement. Said bolt has a lateral stud 70 extending through a slot 71 in the collar 66 and into an annular neck 72 around said collar and an arm 73 pivoted at 74 to one of the standards 2 is adapted to extend in said neck, said arm 73 being provided with a beveled end 75 for engaging a correspondingly beveled face 76 of the projection 70 and said arm being provided back of said beveled head with a notch or recess 77 to receive and retain said projection, the inner shoulder 78 thereof forming a stop engaging said projection.

The controlling means (see Figs. 3 and 4) for the clutch comprises a shaft 80 mounted to rock in the standards 2 and having an arm 81 to which is pivoted a depending bar 82 extending through a slot 83 in the arm 73, said bar 82 having a shoulder 85 for engaging under the arm 73 at the rearward end of said slot; a treadle or controlling lever 86 being connected by a rod 87 to an arm 88 on the shaft 80 for operation thereof. A spring 89 is provided on lever 73 to press bar 82 toward the outer end of slot 83.

The means for winding the shade on the roller after it is fastened thereto comprises a rotary head 90 carried by a shaft 91 mounted to rotate in a bearing 92 supported at one end of the groove 8 in the roller support 4, means for rotation of said shaft and head, and means at the other end of the said groove to serve as an abutment or pressure applying means for the other end of the roller to hold the roller against the head. The head 90 is preferably provided with oblique teeth 94 to engage the end of the roller and insure rotation of the roller with the head, the central portion of said head being recessed for the reception of the bearing pin or journal of the roller. The shaft 91 of the head 90 is rotated by a belt 95 running over pulleys 96, 97 on the shaft 91 and on a counter-shaft 98,

said shaft 98 being journaled in bearings on one of the standards 2 and being driven by a belt 99 running over a pulley 100 on said shaft and over a grooved portion 101 on the main driving pulley 63, said driving pulley 70 being continually in rotation by the operation of suitable driving belt not shown. In the normal position of the head 90 the belt 95 is so loose as not to transmit power to the head 90 and means are provided for raising this head when it is desired to tighten said belt and cause rotation of the head. For this purpose an arm 103 on the shaft 80 engages by pin 104 in a slot 105 in a link or bar 106 whose upper end is pivoted to an arm 107 on a shaft 108 journaled in a rocking frame constituted by arms 109 and a rock shaft 110 carrying said arms and extending from end to end of the machine, said rocking frame being provided with bearings 92 for the head 90. The aforesaid shaft 108 carries a lever 113 pivotally connected to a bar 114 sliding in guides 116 on the rocking frame 109, said bar being provided with a recess or socket 114' adapted to engage the journal pin at one end of the shade roller to form an abutment and holder therefor. A spring 118 connected to said lever 113 and to one of the yokes 7 on the table 1, serves for retraction of the bar to normal position.

The operation is as follows: In normal position the arms 17 and head 20 are in elevated position, as shown in dotted lines in Fig. 12, so that the die mechanisms are raised clear of the table 1. Operating pulley 63 is under rotation by its driving means, and pulley 100 is rotated by a belt 99 but the shaft 62 and eccentric 58 are at rest, the clutch bolt 67 being retracted as shown in Fig. 5, so as to disconnect the shaft from the driving pulley 63 and the roller driving head 90 is at rest, as the belt 95 is loose. The operator places a shade roller, indicated at 120, in the groove 8 in support 4 and draws a shade indicated at 121 forward from the pile until its front portion rests on top of the roller. He then depresses the toe portion of the treadle 86, causing the shaft 80 to turn forwardly and lift the release bar 82, the shoulder 85 of said bar engaging the lever 73 to raise the hook 78 of said lever clear of the pin or projection 70 on bolt 68. Said bolt is then shot by its spring 69, into engagement with one of the notches 68 in the pulley 63, and collar 66 and shaft 62 are thereby caused to rotate with pulley 63. In the rotation of the collar 66, the pin or projection 70 comes into engagement with release bar 82, pushing it forward so that its shoulder 85 is disengaged from lever 73 and the latter drops into the groove 72, so that on completion of the rotation of the collar the beveled faces 75, 76 engage to cause the bolt 68 to be withdrawn from the driving member 63 and the collar then comes to rest with its pin 70 engaging the shoulder

78 of the lever 73. By this means I insure that when the treadle has been operated the shaft 62 will make one and only one complete rotation, irrespective of any failure of the operator to keep the treadle in proper position, or to restore it to proper position.

In the rotation of the shaft 62 the eccentric 58 operates through bar 56, to lower the frame 15 and by the frictional connections 16 to rock the shaft 13, so as to bring the die mechanism directly over and adjacent to the shade roller, the movement of the arms 17 carrying the die mechanism being arrested by stop screws 19 striking the table 1. In the continued movement of the rocking frame 15, by the eccentric means, the relative movement of the frame with respect to arms 17, causes operation of lever 28 by engagement of screws 32, 33 with said lever, and by the connections 24, 25, 26, said lever 28 forces the dies 21, 22 downwardly on the matrix 36. The end of each sheet metal strip or ribbon 38 extends normally within and under the matrix, its end portion having been formed by the preceding operation as shown in Fig. 11 with downward projections or tongues, mainly a front projection 123 which rests against the front wall of the channel 39 in the matrix, and two rear projections 124 which rest against the front of the bridge wall 41 of the matrix. The operating means 24, 25, 26 for the dies 21, 22 causes said die 21 to move downwardly more rapidly than the rear die, and when the front die strikes the front portion of the strip 38, it bends the front end thereof down, the depression of bridge 41 below the level of the strip supporting channel allowing the metal to bend directly in front of the tongue 43, so that the finished fastener will be bent at the top, as shown in Fig. 10. Further downward movement of the forward die 21 severs the fastener at the rear edge of the front die 21 and drives the fastener down through the channel 39 in the matrix. The severing operation takes place along the line between the already marked-out or partially severed V-shaped prong 123 and the cuts left by cutting the prongs 124. The shade roller with the shade therein being directly below the matrix, the fastener is driven thereonto, and the tongues 123, 124 of the fasteners are caused to penetrate the shade and roller so that the top of the fastener engages the shade and clenches it to the roller, the bending of said top, as above described, enabling it to conform more closely to the curvature of the roller. In this movement of the front die the forward tongue 123 which has precedently been marked or partially cut from the rear end of the severed portion of the strip, is bent down by the rear face of the front die 21. The rear die, as it descends, cuts two tongues 124 from the sides of the metal strip by the

side flanges 61 of the die descending on each side of the projection 42 from the rear wall of the matrix, these flanges being higher in front so as to leave these tongues attached to the metal strip. At the same time, the V-shaped notch 64 of the rear die coöperates with the corresponding tongue 43 of the matrix to mark or partly cut the forward tongue 123 from the next fastener. In this downward movement of lever 28, at the latter part of the stroke, said lever strikes screw 49 and causes arm 45 to move rearwardly, the friction grip 51 slipping on the metal strip in this movement, and the stationary friction of the die 22 preventing back movement of the metal strip. These operations take place in the downward stroke of the eccentric rods.

As the eccentric begins to move the rods 56 and the frame 15 upwardly, the friction between the male and female members of the dies causes them to stick together which causes the arms 17 and shaft 13, and the die mechanism to also move upwardly until the arm 18 on shaft 13 is arrested by engagement of arm 18 with standard 14. This stops further rotation of the shaft 13 and thus prevents further upward movement of arms 17. The eccentric rods, however, continue to rock the frame 15 upwardly. Further upward movement of the frame 15 overcomes the friction between the dies and matrix and causes the dies 21, 22 to be withdrawn from the matrix and as the lever 28 passes away from screw 49, thus stripping the dies, the spring 53 acts to move lever 45 and friction grip means 51 forwardly to advance the metal strip until its forward end abuts against the front wall of matrix channel 39. Thus at the completion of rotation of the eccentric, the die mechanism and the metal strip are left in the original condition and in this rotation one set of fasteners has been severed from the strip and driven into the roller and another set has been formed ready for the next severing and driving operation and the front tongue of still another set has been marked out on the strip 38. Having by this operation fastened the shade to the roller, the operator sets in motion the winding mechanism by depressing the heel portion of treadle 86. In the depression of the toe portion of the treadle the pin 104 of arm 103 slides freely in slot 105 in bar 106, but when the heel portion of the treadle is depressed, said pin 104 engages with the lower end of said slot to pull down bar 106 and arm 107, thereby rocking shaft 108 and sliding bar 114 longitudinally toward the roller until the socket 114' in said bar reaches the journal pin of the shade roller and pushes the roller endwise so that it is gripped between the bar 114 and the head 90. As arm 107 can turn no further relatively to the arm 109, the further down-

ward movement of the bar 106 turns the frame constituted by arms 109 and shaft 110 along with the arm 107, raising the bar 114 and the head 90 so that the roller is lifted clear of its support and is sustained wholly by its end bearing on the head 90 and the pivot bar 114. The last part of the upward movement of the frame 109 causes the belt 95 to be tightened on its pulleys and sets the head 90 in rotation, turning the roll so as to wind the shade thereon. When the pressure on the treadle heel is removed the parts drop back to their normal position and the members 90 and 114 move clear of the roller, allowing it to fall on to its support.

The strip 38 is held down onto the matrix by the portion of head 20 overlying the channel 37. The rear prongs 124 of the fastener, when formed by the downstroke of die 22, do not extend down far enough to prevent their forward passage through channels 41' in the feeding operation, but when the fastener is bent by the next operation of the die 21, then the prongs are further depressed so as to catch against the front face of bridge 41 and prevent retraction of the strip in the rear movement of the friction feed.

A pin 125, extending over the strip 38 between the dies 21, 22, serves as a stripper to hold the strip from following the dies in their upward motion. Bridge 41 is cut away at its middle, as shown at 127, so that the severing action of the front die does not extend to the front prong 123 of the next fastener. Another stripper 46 formed as a wedge driven through the head 20 at the upper portion of the matrix extends over the metal strip 38 in position to overlie the partially severed prong 123, thereby holding down the rear portion of the partially severed fastener and preventing the said metal strip from being buckled or bent by catching on the rear die 22 when the front portion is stripped by the main stripper 125.

What I claim is:—

1. In a machine for fastening shades on rollers, the combination with a roller support, of matrix means mounted to move to and from the support, means for arresting the movement of the matrix means toward the support, means for arresting the movement of the matrix means away from the support, die mechanism mounted to move toward and from the support, and an operating member connected to said die mechanism to operate the same, the aforesaid die mechanism being movable with the said matrix means by frictional engagement, to move therewith until the matrix means is arrested by the aforesaid stop means, and the said die mechanism being operated relatively to said matrix means by the operation of said operating means subsequently to such arresting

of the matrix means, to perform the forming and driving of the fasteners, in the operative movement of the die mechanism, and to perform the stripping operation in the retractive movement of the die mechanism.

2. In a machine for fastening shades on rollers, the combination of a roller support, a shaft, arms carried by said shaft, a rocking frame mounted on said shaft to move relatively thereto, operating means for rocking said rocking frame, matrices carried by said arms, dies mounted to move in said matrices, connections between said rocking frame and said dies, and stop means for arresting the movement of said shaft and arms in each direction, whereby the dies move with the matrices in the operation of the rocking frame by said operating means by frictional engagement until the arrest of the shaft and arms and subsequent operation of the rocking frame causes relative movement of the dies in the matrix.

3. In a machine for fastening shades on rollers, the combination of a roller support, a shaft, arms carried by said shaft, a rocking frame mounted on said shaft to move relatively thereto, operating means for rocking said rocking frame, matrices carried by said arms, dies mounted to move in said matrices, connections between said rocking frame and said dies, and adjustable stop means for arresting the movement of said shaft and arms in each direction, whereby the dies move with the matrices in the operation of the rocking frame by said operating means by frictional engagement until the arrest of the shaft and arms, and subsequent operation of the rocking frame causes relative movement of the dies in the matrix.

4. In a machine for fastening shades on rollers, the combination of a roller support, a shaft, arms carried by said shaft, a rocking frame mounted on said shaft to move relatively thereto, operating means for rocking said rocking frame, matrices carried by said arms, dies mounted to move in said matrices, adjustable connections between said rocking frame and said dies, and stop means for arresting the movement of said shaft and arms in each direction, whereby the dies move with the matrices in the operation of the rocking frame by said operating means by frictional engagement until the arrest of the shaft and arms, and subsequent operation of the rocking frame causes relative movement of the dies in the matrix.

5. In a machine for fastening shades on rollers, the combination with a roller support of die mechanism for forming and driving fasteners and mounted to move toward and from the roller support and provided with matrices and dies movable therein, a rocking frame, a connection between the rocking frame and the dies, the dies moving frictionally with matrices to cause

the die mechanism to move bodily with the rocking frame during a portion of the movement of the latter, means for arresting the bodily movement of the die mechanism, and means connecting the rocking frame with the dies of the die mechanism to operate the dies by the relative movement ensuing on the arrest of the die mechanism.

6. A machine for fastening shades on rollers comprising a roller support, a shaft mounted to rock with relation to the roller support, a plurality of arms carried by said shaft, die means in each of said arms for forming and driving fasteners, a rocking frame mounted to rock on said shaft, said die means comprising matrices and dies mounted to move frictionally therein, whereby the shaft and the die carrying arms are caused to move with the rocking frame during a portion of its movement in either direction, means for arresting the movement of the shaft in each direction of movement, and intermediate means connected to the rocking frame and to each of the die means to operate the die means in the relative movement of the rocking frame and the rock shaft.

7. A machine for fastening shades on rollers comprising a roller support, a shaft mounted to rock with relation to the roller support, a plurality of arms carried by said shaft, die means in each of said arms for forming and driving fasteners, a rocking frame mounted to rock on said shaft, said die means comprising matrices and dies mounted to move frictionally therein, whereby the shaft and the die carrying arms are caused to move with the rocking frame during a portion of its movement in either direction, means for arresting the movement of the shaft in each direction of movement, and intermediate means connected to the rocking frame and to each of the die means to operate the die means in the relative movement of the rocking frame and the rock shaft, in combination with means for feeding a strip to each die mechanism, said strip feeding means being connected to the aforesaid intermediate means to be operated by the said relative movement.

8. In a machine for forming and driving shade fasteners, a matrix, die means working in said matrix, die operating means for forcing the dies into said matrix, oscillatory means connected to the die operating means to feed a strip over the matrix, and spring means acting on the die operating means to press said die means on to the strip to hold the strip from back movement during the back movement of the feed means.

9. In a machine for forming and driving shade fasteners, a table, a matrix, a supporting member therefor, mounted to move up and down above said table, means for arresting such movement of said supporting

member, die means movably mounted on said supporting member, die operating means movably mounted on said supporting member, means engaging said die operating means to raise or lower the supporting member through friction of the dies in the matrix, and to operate the dies on arrest of the supporting member, oscillatory means provided with a friction device for engaging and feeding a strip over said matrix, and a spring operating on said die operating means to press the die means yielding against said strip, to hold the strip from back movement during the back movement of the feeding means.

10. In a machine for forming and driving shade fasteners, a matrix, two dies working therewith, means for feeding a strip over the matrix, and a stripper extending within the rear die and over the matrix, to hold the strip flat onto the matrix.

11. In a machine for forming and driving shade fasteners, a matrix provided with two passages, an intervening bridge and a seat for the fastener strip at the rear of the rear passage, said bridge being below said seat, and dies working respectively in said passages, the forward die having a portion for engaging the fastener strip to bend the fasteners over said depressed bridge.

12. In a machine for forming and driving shade fasteners, a matrix provided with two passages, an intervening bridge, means for feeding a fastener strip over said matrix, dies working respectively in said passages, said dies being recessed, and stripper means extending into said recess over said strip.

13. In a machine for forming and driving shade fasteners, a roller support, a shaft, arms carried thereby, die mechanism carried by said arms, means for limiting the movement of said arms, a rocking member having operating relation to said die mechanism, to move the die mechanism toward or from the roller support until the shaft is arrested, and to operate the die mechanism on such arrest and spring means connecting said rocking member with said shaft.

14. In a machine for forming and driving shade fasteners, a table, a matrix, a supporting member therefor, mounted to move up and down above said table, means for arresting such movement of said supporting member, die means movably mounted on said supporting member, die operating means movably mounted on said supporting member, means engaging said die operating means to raise or lower the supporting member through friction of the dies in the matrix, and to operate the dies on arrest of the supporting member, oscillatory means provided with a friction device for engaging and feeding a strip over said matrix, and a spring operating on said die operating means to press the die means yielding

against said strip to hold the strip from back movement during the back movement of the feeding means, and spring means acting on the matrix supporting member to sustain it against the downward pressure due to said strip holding spring.

15. In a machine for forming and driving shade fasteners, a table a matrix, a supporting member therefor, mounted to move up and down above said table, means for arresting such movement of said supporting member, die means movably mounted on said supporting member, die operating means movably mounted on said supporting member, means engaging said die operating means to raise or lower the supporting member through friction of the dies in the matrix, and to operate the dies on arrest of the supporting member, oscillatory means provided with a friction device for engag-

ing and feeding a strip over said matrix, a spring operating on said die operating means to press the die means yielding against said strip to hold the strip from back movement during the back movement of the feeding means, and spring means acting on the matrix supporting member to sustain it against the downward pressure due to said strip holding spring, said spring means being connected to the actuating means for the die operating means so as to sustain the die mechanism from said actuating means.

In testimony whereof, I have hereunto set my hand at Los Angeles, California, this 24th day of March 1910.

LOUIS B. GIRARD.

In presence of—

ARTHUR P. KNIGHT,
FRANK L. A. GRAHAM.