

No. 778,150.

PATENTED DEC. 20, 1904.

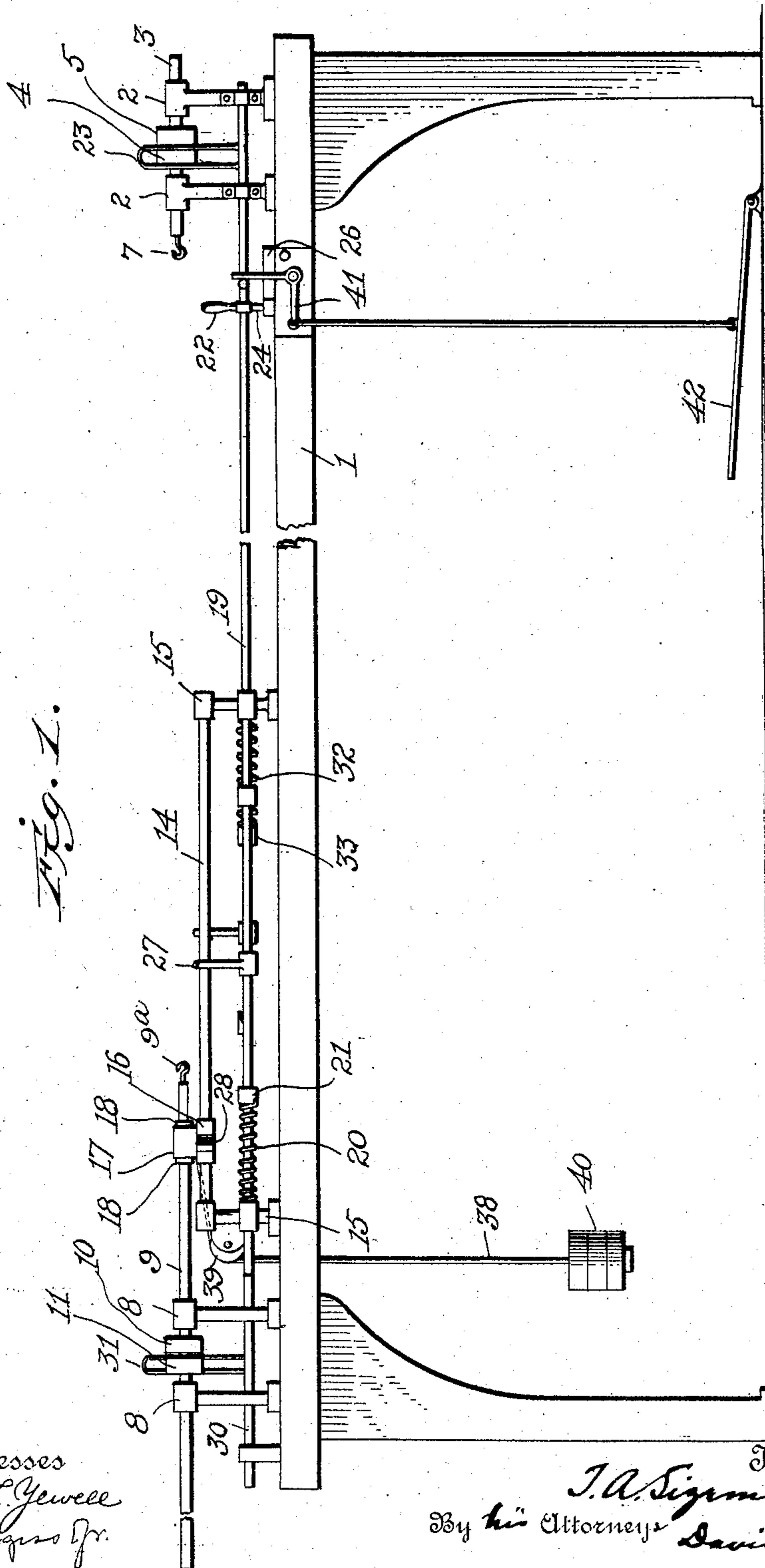
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APPLICATION FILED JUNE 13, 1904.

NO MODEL.

2 SHEETS—SHEET 1.



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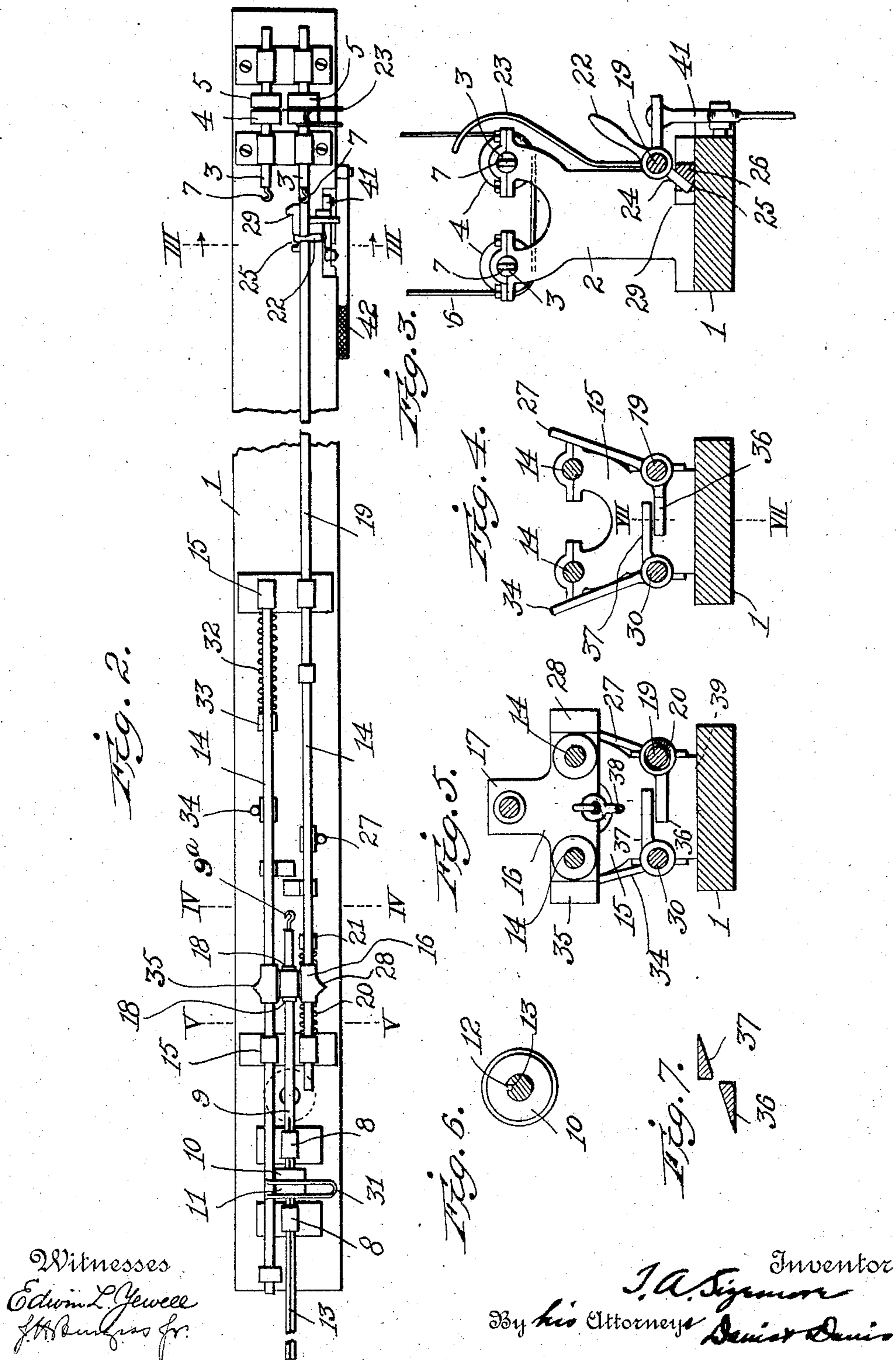
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# UNITED STATES PATENT OFFICE.

THOMAS A. SIZEMORE, OF GREENVILLE, SOUTH CAROLINA.

MACHINE FOR MAKING BANDS FOR SPINNING AND TWISTING MACHINES.

SPECIFICATION forming part of Letters Patent No. 778,150, dated December 20, 1904.

Application filed June 13, 1904. Serial No. 212,346.

*To all whom it may concern:*

Be it known that I, THOMAS A. SIZEMORE, a citizen of the United States, residing at Greenville, in the county of Greenville, State of South Carolina, have invented certain new and useful Improvements in Machines for Making Bands for Spinning and Twisting Machines, of which the following is a specification, reference being had therein to the accompanying drawings, in which—

Figure 1 is a side elevation of the machine; Fig. 2, a plan view thereof; Fig. 3, a transverse vertical sectional view on the line III III of Fig. 2; Fig. 4, a similar view on the line IV IV of Fig. 2; Fig. 5, a similar view on the line V V of Fig. 2, and Figs. 6 and 7 detail views of detached parts which will be hereinafter referred to.

One of the objects of this invention is to provide a machine which is automatic in its operation for twisting the two strands of the band separately and then twisting said strands together to form a complete band and to maintain the band under a uniform tension throughout the twisting operation.

Another object of the invention is to provide means whereby when sufficient twist has been given to the single strands mechanism will be automatically actuated to bring into operation the means for twisting the two strands together, other mechanism being provided to automatically throw out of operation the entire twisting mechanism when sufficient twist has been given to the doubled strand.

Other important objects and advantages of the invention will appear hereinafter.

Referring to the various parts by numerals, 1 designates the table or support on which the mechanism is mounted, said table being of any desirable length and provided with suitable supporting-legs. On this table, near its right-hand end as viewed in the drawings, are mounted two standards or supports 2, said standards being located a short distance from each other and carrying two horizontal parallel initial twister-shafts 3. On each of these shafts, between the standards 2, are mounted a fast pulley 4 and a loose pulley 5. A belt 6 passes around these pulleys, as shown in Fig. 3, and drives them simultaneously in the same di-

rection. To the left-hand ends of these shafts hooks 7 are rigidly secured. On the table 1, near its left-hand end, are mounted two standards 8, which are located at the longitudinal center of the table and carry a final twister-shaft 9, said shaft being located in the same horizontal plane as the shafts 3, the vertical plane of this shaft being midway between the shafts 3, as clearly shown in Fig. 2. The right-hand end of this shaft 9 is provided with a hook 9<sup>a</sup>. The initial twisting-shafts 3 are held in their bearings against longitudinal movement, while the final twisting-shaft 9 is adapted to slide through its bearings for a purpose which will be hereinafter described. On this shaft 9, between the supports 8, are mounted a fast pulley 10 and a loose pulley 11, the fast pulley being provided with a rib 12, which fits and slides in a long keyway or groove 13, formed in said shaft.

On each side of the twister-shaft 9 and slightly below the same is a horizontal parallel guide-rod 14, rigidly mounted in suitable supports 15, carried by the table. Mounted to slide on these rods is a transverse shifter-block 16, said block carrying a suitable sleeve 17, through which extends the twister-shaft 9. The shifter-block 16 is caused to slide back and forth with the twister-shaft 9 by collars 18, which are rigidly secured to said shaft on either side of the sleeve part 17 of said block.

Mounted on the standards 2 and the supports 15 is a rotatable and slidable shifter-rod 19, which is normally pressed toward the right-hand end of the machine by a strong coil-spring 20, which surrounds said rod near its left-hand end and is confined between one of the bearings 15 and the collar 21 on said rod. Near its right-hand end this rod is provided with a handle or lever 22 and a belt-shifter 23, so that by moving the shifter-rod against the tension of the spring 20 the belt-shifter will move the belt from the loose pulleys 5 to the fast pulleys 4, thereby causing the initial twister-shafts 3 to be rotated simultaneously and in the same direction. To hold said rod in this position against the tension of the spring 20, the handle 22 is formed with a toe 24, which is adapted to enter a notch 25 in a block 26, secured to the top of the table. On

the shifter-rod, near its left-hand end, is rigidly secured an upward-extending operating-arm 27, said arm extending slightly above the adjacent guide-rod 14. Formed on the edge 5 of the shifter-block is an outward and rearward inclined cam 28, which is adapted to contact with the arm 27 and force it outward, thereby partially rotating the shifter-rod 19 and releasing the toe 24 of the lever 22 from the block 26 and permitting the spring 20 to move the shifter-rod to return the belt to the loose pulleys 5. To hold the shifter-operating arm 27 in its outward-turned position until said rod has been again moved to the left 10 to shift the belt from the loose to the fast pulleys, the locking-surface 29 is provided on the inner edge of the block 26, said locking-surface extending to the right from the notch 25, as is clearly shown in Fig. 2 of the drawings. This shift-rod controls the rotation of 20 the initial twisting mechanism.

To control the final twisting mechanism, a second shifter-rod 30 is mounted parallel with the rod 19 in substantially the same horizontal plane and on the opposite side of the machine. This rod carries a belt-shifter 31, which is adapted to move a belt from the loose pulley 11 to the fast pulley 10. It also carries at its right-hand end a coil-spring 32, 30 which is confined between a collar 33 and the adjacent support 15. This spring 32 is considerably weaker than the spring 20, mounted on the rod 19, for a purpose which will be hereinafter described. On this shifter-rod 30, 35 slightly forward of the arm 27 of the rod 19, is an operating-arm 34, and the shifter-block 16 is provided with a cam 35, which is adapted to engage said arm 34 and force it outward, thereby partly rotating the shifter-rod 30, the 40 spring 32 being connected at one end to said rod and at its other end to the standard 15 in such manner as to yieldingly hold the arm 34 against the action of the cam 35, the action of the cam being to rotate the rod 30 and to tighten the coils of said spring. Secured rigidly to the rod 19 is an inward-extending arm 45 36, which is adapted to engage a similar arm 37, rigidly secured to the rod 30 to force this shifter-rod forward, and thereby shift the belt 50 to the fast pulley 10 at the proper time. These arms 36 and 37 are properly beveled, as shown in Fig. 7, so that they may pass each other when moving in one direction, as will be hereinafter described. The spring 32 is so tensioned and arranged that when at rest it holds 55 the arm 34 free of the rod 14, as shown in Fig. 4.

Connected to the rear end of the shifter-block 16 is a cord 38, which passes over a 60 pulley 39, supported on one of the standards 15 of the guide-rods, a weight 40 being connected to the free end of said cord.

The operation of the machine may be briefly described as follows: The cord or strand from 65 which the band is to be made is first engaged

over one of the hooks 7 and is then passed through the hook 9<sup>a</sup> of the sliding shaft 9 and is then connected to the other hook 7. The shifter-rod is then moved, by means of the handle 22 or other suitable means, to 70 transfer the driving-belt from the loose pulleys 5 to the fast pulleys 4. The spring 20 is connected rigidly to one end of the rod 19 and at its other end to the support or standard 15 and is so tensioned as to cause the rod 75 19 to rotate in its bearings. The object of this is that when the belt has been shifted to the fast pulleys 4 said rod will be slightly rotated by the spring 20 to cause the toe 24 of the handle to drop into the slot 25 in the 80 block 26 and to hold it therein until it is forcibly disengaged therefrom. The rotation of the shafts 3 will give the initial twist to the single strands or cords while said strands are separated. As these strands are twisted 85 they are shortened and will draw forward the sliding shaft 9, and with it the shifter-block 16. When the strands have been twisted to the proper degree, the cam 28 will contact with the operating-arm 27 of the shifter-rod 90 and partially rotate said rod against the spring 20, thereby releasing the toe 24 of the lever from the slot 25 and permitting the spring 20 to slide said rod and return the driving-belt to the loose pulleys, and thereby stop the 95 twister-shafts 3. When the twister-rod 19 is partially rotated by means of cam 28 and the operating-arm 27, the arm 36 is raised in position to engage the arm 37 of the rod 30, so that when said rod 19 is moved by the spring 100 20 the rod 30 is also moved longitudinally against the tension of the spring 32 and shifts the driving-belt from the loose pulley 11 to the fast pulley 10. This will bring into operation the final twisting mechanism and cause 105 the two strands of the band to be twisted together. As the two strands of the band are twisted together the shaft 9 and the shifter-block will be drawn forward, and when sufficient twist has been given to the doubled 110 band the cam 35 will contact with the arm 34 and release the arm 37 from the arm 36 and permit the spring 32 to return the shifter-rod 30 to its normal position and carry the belt from the fast pulley 10 to the loose pulley 11, 115 thereby stopping the rotation of the shaft 9. The band has now received its final twist and may be disconnected from the hooks 7 and 9<sup>a</sup>.

It will be readily seen that the band during the entire operation is under tension by reason of the weight 40 being connected to the 120 shifter-block 16. This weight also serves to return the shaft 9 and shifter-block to their normal positions when the band is disconnected from the hook 9<sup>a</sup>. Instead of shifting the 125 rod 19 by means of the handle 22 to start the machine this may be accomplished by means of the angle-lever 41 and the foot-lever 42, the angle-lever engaging a pin on rod 19. The arms 36 and 37 are beveled, as shown in 130

Fig. 7, in order that when the arm 36 is moved past the arm 37 in starting the machine said arms may pass each other.

From the foregoing it will be readily seen that I provide a machine which is automatic in its operation and which will twist the separate strands until the tension thereon reaches a certain degree and will be then automatically operated to twist said strands together until the strain on the united strands reaches a certain point, when the machine will be automatically stopped. It is evident, therefore, that bands of a uniform length and having a uniform twist will be produced.

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

1. A banding-machine comprising, a support, a pair of parallel initial twister-shafts, means for driving said shafts simultaneously, a slidable final twister-shaft, means for driving said shaft, means carried by the slidable twister-shaft for automatically stopping the initial twister-shafts and throwing into operation means for rotating the final twister-shaft, and means operated by a further movement of the slidable twister-shaft to throw out of operation the means for rotating said shaft.

2. A banding-machine comprising, a support, a pair of parallel initial twister-shafts, means for driving said shafts simultaneously, a slidable final twister-shaft, means for driving said shaft, means carried by the slidable twister-shaft for simultaneously stopping the initial twister-shafts and throwing into operation means for rotating the final twister-shaft, and means operated by a further movement of the slidable twister-shaft to throw out of operation the means for rotating said shaft, and means for maintaining the tension on the band during the twisting operation.

3. A banding-machine comprising, a support, a pair of parallel twister-shafts, a single slidable twister-shaft located at a distance from the parallel shafts, means whereby the strand may be connected to the ends of said shafts, means for rotating the pair of shafts simultaneously, means operated by the movement of the slidable shaft for stopping the rotation of the pair of shafts and causing the rotation of the slidable shaft, and means operated by a further movement of the slidable shaft to stop the rotation of said shaft, and means yieldingly opposing the sliding movement of said shaft in one direction.

4. A banding-machine comprising, a support, a pair of parallel initial twister-shafts carrying means adapted to hold the ends of the strand, a longitudinal shifter-rod, means operated by the movement of said rod to govern the rotation of said shafts, a slidable final twister-shaft, a shifter-rod therefor, means operated by said rod to control the rotation of said shaft, means operated by the move-

ment of the slidable final twister-shaft toward the initial twister-shafts to move the shifter-rod and stop the rotation of the initial twister-shafts, means operated by said movement of the final twister-shaft to cause the rotation of said shaft, and means operated by a further movement of said shaft to move the second-named shifter-rod and stop the rotation of the final twister-shaft.

5. A banding-machine comprising, a support, a pair of parallel initial twister-shafts carrying means adapted to hold the ends of the strand, a longitudinal shifter-rod, means operated by the movement of said rod to govern the rotation of said shafts, a slidable final twister-shaft, a shifter-rod therefor, means operated by said rod to control the rotation of said shaft, means operated by the movement of the slidable final twister-shaft toward the initial twister-shafts to move the shifter-rod and stop the rotation of the initial twister-shafts and means operated by said sliding movement of the final twister-shaft to cause the rotation of said shaft, means operated by a further movement of said shaft to move the second-named shifter-rod and stop the rotation of the final twister, and means for maintaining a tension on the band during the twisting operation.

6. A banding-machine comprising a support, a pair of parallel initial twister-shafts carrying means adapted to hold the ends of the strand, a rotatable and longitudinally-slidable shifter-rod, means operated by the longitudinal movement of said rod to control the rotation of the initial twister-shafts, a longitudinally-movable final twister-shaft, a horizontal movable and rotatable shifter-rod therefor, means operated by the longitudinal movement of said rod to control the rotation of said shaft, means for holding the shifter-rod for the initial twister-shafts in position to cause the rotation of said shafts, means carried by the slidable twister-shaft to release said shifter-rod, means to automatically move said shifter-rod longitudinally to stop the initial twister-shafts, means to cause the two shifter-rods to move together longitudinally to start the final twister-shaft when the initial twister-shafts are stopped, means operated by a movement of the slidable twister-shaft to disconnect the two shifter-rods, and means operating automatically to return the shifter-rod controlling the final twister-shaft to its normal position to stop the rotation of said shaft.

7. A banding-machine comprising a support, a pair of parallel initial twister-shafts carrying fixed and loose pulleys, band-engaging hooks on the ends of said shafts, a slidable and rotatable shifter-rod for said shafts and carrying a belt-shifter, a lever secured to said rod and formed with a toe 24, the support being provided with a recess to receive said toe, a spring surrounding said shifter-rod and normally holding said toe in said re-

cess and adapted to move said rod longitudi-  
nally when said toe is removed from said re-  
cess, an upward-extending arm carried by said  
shifter-rod, a slidable final twister-shaft car-  
5 rying fixed and loose pulleys and a shifter-  
rod therefor, arms carried by the shifter-rods  
which are adapted to interlock, an upward-ex-  
tending arm on the shifter-rod controlling the  
final twister-shaft, a pair of cams carried by  
10 the final twister-shaft, a weight connected to  
said final twister-shaft and a spring surround-

ing the shifter - rod controlling the final  
twister-shaft, said spring normally holding  
the belt-shifter in position to retain the belt  
on the loose pulley.

In testimony whereof I hereunto affix my  
signature, in the presence of two witnesses, this  
11th day of June, 1904.

THOMAS A. SIZEMORE.

Witnesses:

H. M. PICKETT,

W. B. BOYD.