To all whom it may concern:

Be it known that I, Albert J. Bubolz, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Machines for Making or Covering Cord, of which the following is a full, clear, and exact specification.

My invention relates more particularly to that class of cord-making machines which are employed for applying the outer wrapping or covering—such, for example, as winding silk strands around an inner cotton strand or a plurality of such strands; and the invention has for its primary object to provide an improved and simple means whereby the machine may be operated by contact with the floor while being advanced during the winding operation.

Another object of my invention is to provide an improved and simple means for readily threading the eyes through which the strands of the outer wrapping pass, and to pass the strands through such eyes endwise.

With these ends in view my invention consists in certain features of novelty in the construction, combination, and arrangement of parts by which the said objects and certain other objects hereinafter appearing are attained, all as fully described with reference to the accompanying drawings, and more particularly pointed out in the claims.

In the said drawings, Figure 1 is a side elevation of my improved machine partly in vertical section. Fig. 2 is an elevation thereof looking from the right, Fig. 1. Fig. 3 is a detail vertical sectional view of the spool-holding reel and connected parts. Fig. 4 is a detail rear elevation of the detachable connection for transmitting power from the floor-wheel to the reel. Fig. 5 is a detail plan view of the tension device and spool-holding rack hereinafter described; and Fig. 6 is an enlarged perspective view of the twisting-head, showing the same in connection with one of the spools.

My improved machine is designed to be pushed along the floor by the operator during the operation of winding the silk or other covering on the cotton strands or other material of which the core is formed and to transmit the power from the floor-wheels to the winding mechanism, and to that end the machine comprises a suitable carriage which is provided with a plurality of floor-wheels 1 2 3, three of such wheels being shown and arranged tricycle fashion and suitably journalled on a body 4, which they support, and which body may be utilized for carrying an extra supply of the spools or material during the operation of the machine.

At the front side of the body is supported a frame comprising two standards 5 6, which, together with a number of removable cross-bars or spindles 7, constitute a rack on which to support the spools of thread 8, these being usually the cotton-spool. For convenience in removing these spindles 7 when it is desired to replace the empty spools with new ones holes or perforations in which the ends of the spindles 7 are mounted in the standards 5 6 are carried entirely through the standard 5, so that they may be withdrawn endwise; but in order that they may not work out of place a retaining-bar 9 is secured to the side of the standard 5 over the ends of the spindles 7 by means of screws 10, which pass through slots 11 in bar 9, so that the bar may be raised to bring corresponding perforations 12 there in opposite the shafts or spindles 7, thereby permitting the spindles to be withdrawn endwise. At the opposite side of the body 4 is mounted a standard 13, and in a suitable bearing-sleeve 14, supported in this standard, is journaled a tube 15, which constitutes the shaft for a reel-plate 16 and a twisting head or device which will be presently described, the spindles 17 for the silk or outer covering of the cord being mounted on plate 16 and the shaft or tube 15 being inclined so as to prevent the spools on the spindles 17 from running off during the operation of the machine. The tube or shaft 15 constitutes a passage for the strands of cotton or other thread 18 from the spools 8 through the said twisting-head, the twisting-head being composed of a shell 19, secured to the plate 16 in any suitable way, as by means of arms 20, and carrying an eye 21 of a size suitable for the passage of the
threads 18. This eye 21 is preferably made detachable from the twisting-head by being formed with a screw-threaded end 22, which is screwed into a collar 23, supported in any suitable way on the twisting-head, so that eyes 21 of different sizes may be used with the collar 23 interchangeably. A similar eye 21 is mounted in the opposite end of tube 15. The collar 23 is shown as supported by arms 24 upon a thread-retaining ring 25, which surrounds the shell 19 and is detachably locked thereon by any suitable means, such as a bayonet-joint 26, and serves to prevent the strands 27 coming from the spools 28 on the spindles 17 from pulling outwardly through slots 29, formed from the outer edge or end inwardly to the eyes 30, provided in the shell 19 for the passage of the covering-threads 27, the obvious purpose of the slots 29 being to facilitate the threading of the thread through the eyes 30 without the necessity of passing the threads therethrough endwise, it being apparent that after all of the threads 27 are placed in their respective slots 29 the retaining-ring 25 may be replaced, and thereby force the threads down into position in their eyes, after which the ends of all the threads may be drawn through the eye 21 along with the cotton and hitched or secured to a hook 31, secured to the wall or other suitable support, as usual.

With some sizes of thread 18 it is desirable to provide the same with more or less tension before passing through the tube 15 to the twisting-head, and to that end I provide a tension device comprising a coil or loop 32 and a pair of idlers or pulleys 33 34, which are mounted on a bracket 35, secured to the inner end of the bearing-sleeve 14, the pulleys 33 being journaled in a vertical arm 36, adjustably secured to bracket 35 by screw 37 passing through slot 38.

The reel 16 17 is driven by a belt connection, preferably with the single wheel 3, and to that end the shaft 15 is provided with a sprocket-wheel 39, and one or more additional sprocket-wheels 40 being also employed, if desired, and graduated in size, so as to provide for different speeds. These sprocket-wheels 39 40 may be connected by chain or belt 41 with either of a pair of idlers 42 43, which are mounted on a stud-shaft 44, secured in standard 13 in a transverse slot 45, formed in the standard, so that the shaft 44 may be adjusted vertically for tightening the chain 46, which transmits motion to the wheels 42 43, the latter being secured together. The stud-shaft 44 may be held in place by any suitable means, as by a nut 47, and the bearings-sleeve 14 is mounted in a slot 48, also in the standard, so that it may be adjusted vertically for taking up the slack in chain 41, the inner end of sleeve 14 being threaded and provided at one end with shoulder 14 and at the other with a nut 49 for clamping it in place. The single wheel 3 is splined on a shaft 50, journaled in suitable bearings 51, situated at both sides of the wheel and which limit the lateral movement of wheel 3, while permitting the shaft 50 to be moved longitudinally. On each end of the shaft 50 is rigidly secured a bevel-gear 52, and at right angles to the shaft 50 is mounted a stud-shaft 53, which is secured in place by a suitable bracket 54 on the side of the body 4, and on this stud-shaft is journaled loosely a sleeve 56, which carries a pinion 57, held in engagement with one of the gears 52, so that the motion of gear 52 will be imparted to the sleeve 56 and thence to the chain 46 through the intermediary of one of a number of graduated sprockets 58 59, secured rigidly on the sleeve 56. The sleeve 56, with its pinion 57 and sprockets 58 59, is held removably on the shaft 53 by a head-nut 60, whereby it may be readily removed when desired and inserted on a similar shaft 61, mounted on the opposite side of body 4, so that the pinion 57 may be made to engage with the other bevel-gear 52, and thus cause the reel 16 to rotate in the opposite direction from that in which it is driven by the other one of the bevel-gears without changing the direction of travel of the machine.

The machine being operated only while moving in one direction, or away from the book 31, it is desirable to disconnect the operating mechanism from the reel when going backward, and to this end the shaft of the wheel 50 is provided with a shifting-lever 62, pivoted in bracket 63 on the side of the body 4, and connected to the shaft in any suitable way so that when moved the gears 52 would be alternately thrown in or out and when moving inward will engage with the pinion 57 on whichever side it may be placed.

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

1. In a machine for the purpose described, the combination of a wheel carriage, a twisting-reel mounted thereon, and an operative connection between said reel and one of the wheels of said carriage whereby the reel will be rotated by the motion of the carriage.

2. In a machine for the purpose described, the combination of a wheel carriage, means provided on said carriage for carrying the thread to compose the inner part of the cord, a twisting-reel mounted on said carriage for winding the covering on the cord and an operative connection between one of the wheels of the carriage and said reel for rotating the reel by the motion of the carriage.

3. In a machine for the purpose described, the combination of a wheel carriage, a spool-rack mounted thereon, a twisting-reel having means for supporting spools and comprising a hollow shaft journaled upon said carriage and a twisting-head opposite the end of said shaft, having eyes for the thread on said reel.
and an operative connection between said reel and one of the wheels of the carriage for rotating the reel.

4. In a machine for the purpose described, the combination of a wheeled carriage, an inclined shaft journaled upon said carriage, a twisting-reel mounted on said shaft and having spool-spindles also inclined in the same direction as the shaft, whereby the spools will be prevented from slipping off the reel, and an operative connection between said reel and one of the wheels of the carriage for rotating the reel.

5. In a machine for the purpose described, the combination of a wheeled carriage, a spool-rack mounted on said carriage and comprising two uprights, one of which is perforated, and spindles for spools having their ends inserted in said perforations, a vertically-adjustable retaining-bar slidably secured to the side of said perforated standard for covering said perforations and having passages adapted to register with said spindles for permitting the latter to be withdrawn, a twisting-reel mounted on said carriage and an operative connection between said reel and one of the wheels of the carriage.

6. In a machine for the purpose described, the combination of a wheeled carriage, a twisting-reel journaled thereon and operatively connected with one of the wheels of the carriage, a spool-rack mounted on said carriage and a tension device contained between said spool-rack and reel and comprising a loop for the passage of the thread and a pair of idlers arranged one above the other around which the thread may be passed in advance of passing through the reel.

7. In a machine for the purpose described, the combination of a wheeled carriage, a twisting-reel journaled thereon, an operative connection between one of the wheels of the carriage and said reel for rotating the reel when the carriage moves in one direction, and means for detaching said connection for rendering the reel inoperative during the motion of the carriage.

8. In a machine for the purpose described, the combination of a wheeled carriage, a twisting-reel journaled thereon, and means for rotating said reel in either direction by the rotation of one of the wheels of the carriage in a single direction.

9. In a machine for the purpose described, the combination of a wheeled carriage, a twisting-reel journaled thereon, means operatively connected with one of the wheels of the carriage for rotating said reel, comprising reversing mechanism whereby the rotation of the reel may be reversed regardless of the direction of travel of the carriage.

10. In a machine for the purpose described, the combination of a twisting-reel, a shell mounted thereon and provided with eyes slotted through the edge of the shell for the passage of the thread on the said reel, means for retaining the thread in said eyes and means for rotating the reel.

11. In a machine for the purpose described, the combination of a twisting-reel, a twisting-head mounted thereon and having eyes slotted entirely through the edge of the head and a ring inserted over said head for preventing the withdrawal of the threads.

12. In a machine for the purpose described, the combination of a twisting-reel, a hollow annular twisting-head mounted thereon and having eyes slotted through the edge of the head, and a collar detachably secured on said head for preventing the withdrawal of the thread through said slots.

13. In a machine for the purpose described, the combination of a twisting-reel, a hollow twisting-head mounted thereon, and having eyes slotted through the edge of the head, and a collar having bayonet-joint connection with said head for preventing the withdrawal of the thread through said slots.

14. In a machine for the purpose described, the combination of a twisting-reel, a hollow twisting-head mounted thereon and having slots for the passage of the thread, an apertured collar arranged opposite the end of said head and an eye for the cord detachably secured in said apertured collar.

15. In a machine for the purpose described, the combination of a twisting-reel, a hollow shaft on which said reel is mounted, an eye detachably secured in one end of said shaft, a twisting-head mounted on said reel opposite the other end of said shaft and having eyes for the passage of the thread, and a detachable eye for the passage of the cord arranged opposite said head.

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Witnesses:

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