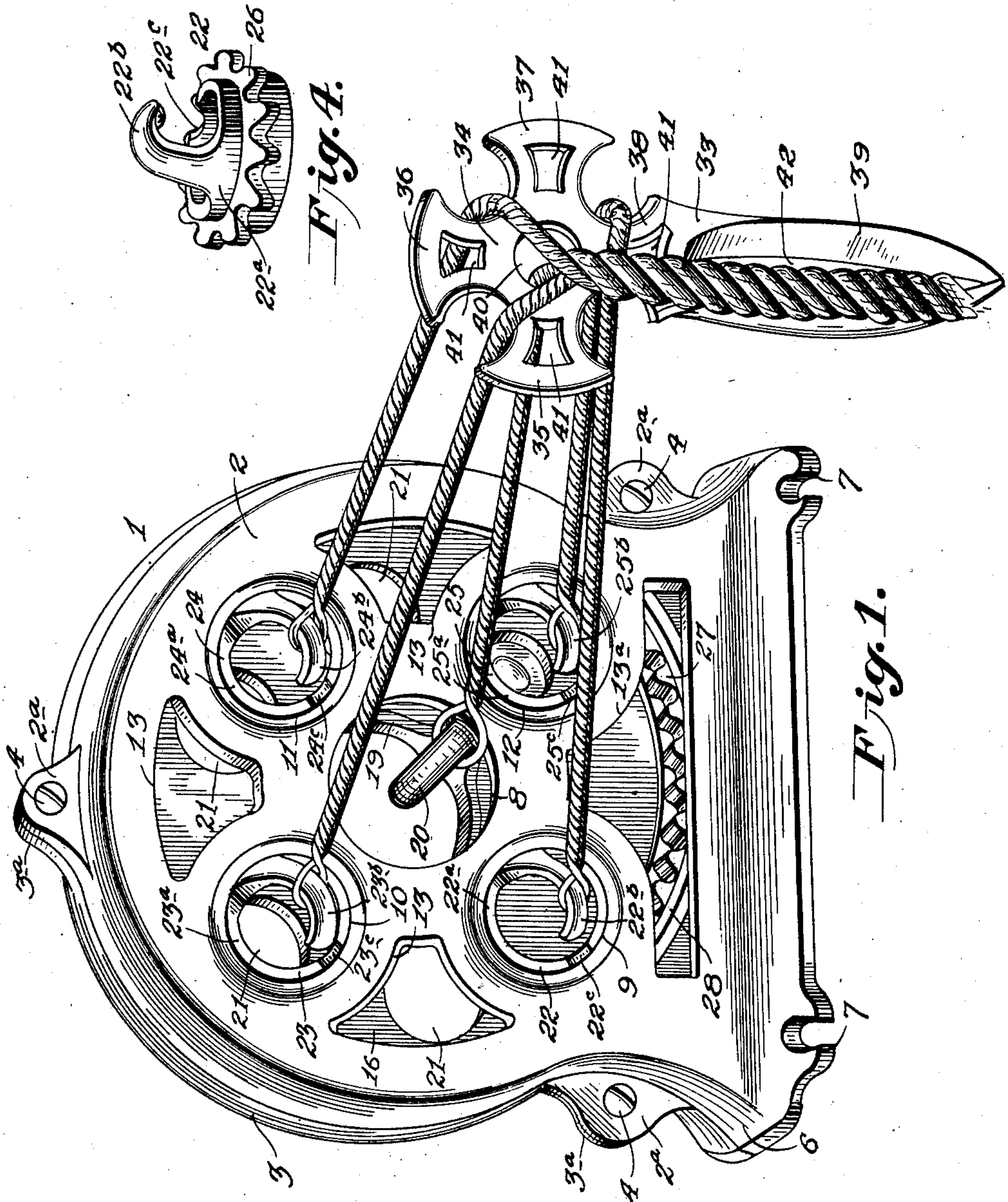


A. D. LONG.  
 ROPE MAKING MACHINE.  
 APPLICATION FILED NOV. 22, 1909.

998,360.

Patented July 18, 1911.

2 SHEETS—SHEET 1.



Witnesses  
 Everett Lancaster.  
 Stewart Rice.

Inventor  
 Arthur D. Long.

By E. D. Crooman,  
 Attorney.

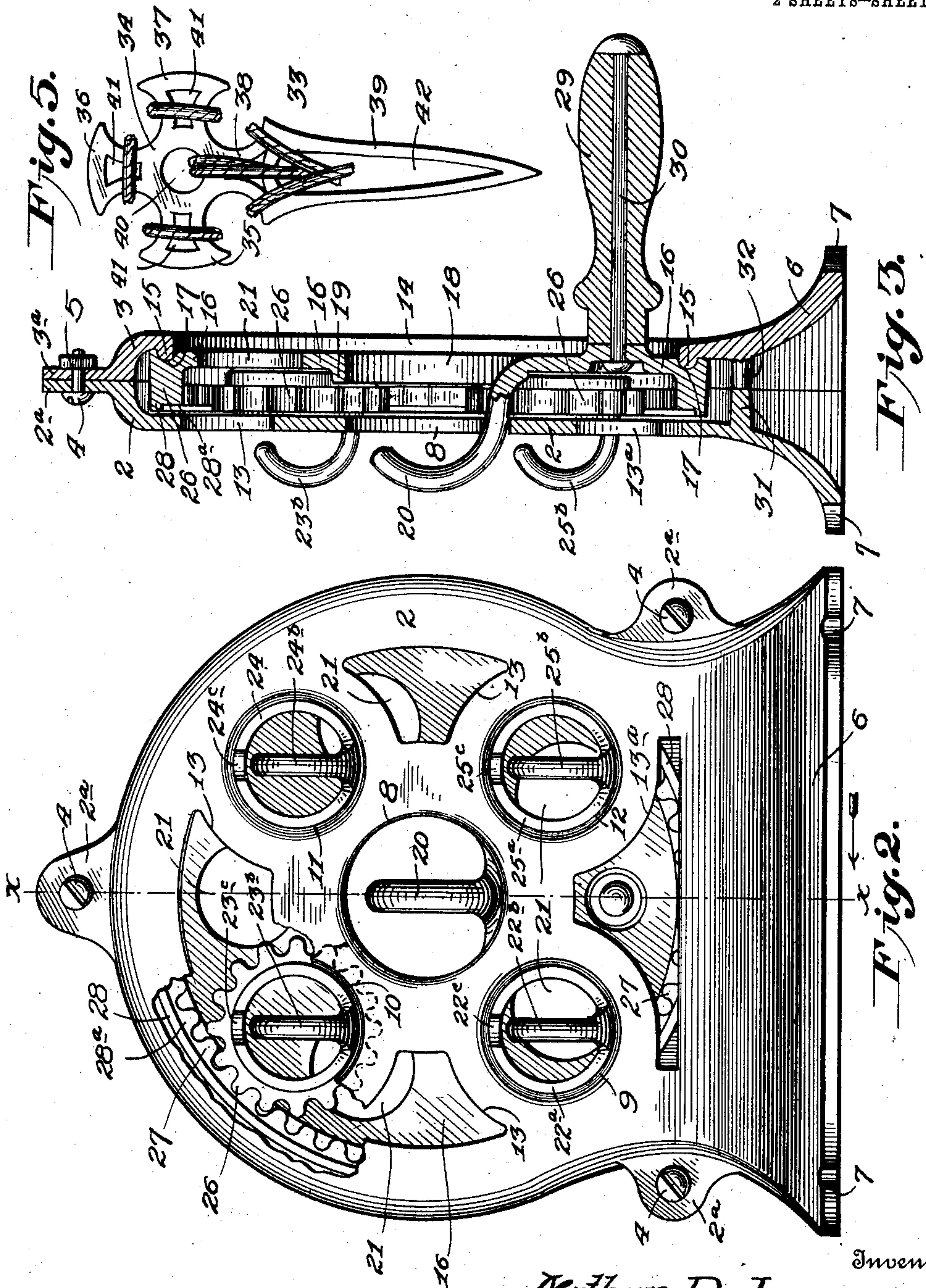


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By *E. O. Sprooman,*  
 Attorney.



# UNITED STATES PATENT OFFICE.

ARTHUR D. LONG, OF FAIRFIELD, IOWA.

ROPE-MAKING MACHINE.

998,360.

Specification of Letters Patent.

Patented July 18, 1911.

Application filed November 22, 1909. Serial No. 529,420.

*To all whom it may concern:*

Be it known that I, ARTHUR D. LONG, a citizen of the United States of America, residing at Fairfield, in the county of Jefferson and State of Iowa, have invented certain new and useful Improvements in Rope-Making Machines, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention relates to improvements in rope making machines, and has for its object to produce a machine by means of which rope can be easily and expeditiously manufactured from cord, twine and other similar material.

Other objects and advantages of my invention will appear in the course of the following specification.

In the accompanying drawings: Figure 1 is a perspective view of my improved rope making machine, together with the strand guide employed in connection therewith, the method of employing the same in making rope being illustrated. Fig. 2 is a front elevation of my rope making machine with portions thereof broken away. Fig. 3 is a cross sectional view on the line  $x-x$  of Fig. 2, looking in the direction of the arrow. Fig. 4 is a perspective view of one of the hook carrying members. Fig. 5 is a front elevation of the strand guide in connection with which is illustrated the method of securing the cord or strands.

Referring to the drawings, which illustrate the preferred embodiment of my invention, 1 designates the casing of the machine, which comprises a front 2 and a back 3. The front 2 and the back 3 are separate with respect to each other and each at its outer edge is provided with a plurality of oppositely disposed lugs or ears 2<sup>a</sup> and 3<sup>a</sup> respectively. The lugs 2<sup>a</sup> and 3<sup>a</sup> are each provided with a perforation which registers with the perforation in the opposite lug and through these perforations are positioned headed bolts 4 provided with nuts 5 for clamping them in position. The bottom or base of the front 2 and the back 3 are preferably inclined outwardly in opposite directions to form a substantially oblong supporting base 6 for the machine. At each corner the base 6 is provided with an outwardly projecting bifurcated lug 7 in which securing means can be positioned to secure the machine to a suitable support.

The front 2 of the casing 1 is provided

with a centrally arranged circular aperture 8 about which are arranged four preferably smaller circular apertures designated 9, 10, 11 and 12, respectively, provided with inwardly beveled edges. Between the smaller circular apertures are located apertures 13, 13 and 13<sup>a</sup>, respectively, for the purpose of lightening the casting, etc. The lower aperture 13<sup>a</sup>, it will be noted, is somewhat larger than the apertures 13, 13.

The back 3 is provided with a large, centrally-arranged, circular aperture 14 located above the base 6. The inner circumferential edge of the back around the circular aperture 14 is provided with a circular flange or rib 15. A disk or circular plate 16 is provided with a circular groove 17 in its back, near its outer edge, and into which groove fits the flange 15 of the back 2. The disk 16 is provided with a central aperture 18, the circumferential edge of which is turned inwardly to form a flange or rim 19 for a purpose to be hereinafter explained. Extending outwardly from the circular flange 19 is a hook 20, which projects through the central aperture 8 in the front 2 of the casing 1. The disk 16 is provided with five circular apertures, each designated 21, which are of a diameter somewhat less than the circular apertures 9, 10, 11 and 12 in the front 2.

Positioned one in each of the apertures 9, 10, 11 and 12 is the front end of a hook carrying member 22, 23, 24 and 25, respectively, each having a short, hollow cylindrical body portion 22<sup>a</sup>, 23<sup>a</sup>, 24<sup>a</sup> and 25<sup>a</sup> from the forward end of which projects a curved, overhanging hook 22<sup>b</sup>, 23<sup>b</sup>, 24<sup>b</sup> and 25<sup>b</sup>. Below the end of each hook, the end of the body portion of each hook carrying member is cut out, as at 22<sup>c</sup>, 23<sup>c</sup>, 24<sup>c</sup> and 25<sup>c</sup>. Intermediate the ends of the body portions 22<sup>a</sup>, 23<sup>a</sup>, 24<sup>a</sup> and 25<sup>a</sup>, of each of the hook carrying members 22, 23, 24 and 25 is a circular row of gear teeth 26, which prevent the hook carrying members from falling out through the apertures 9, 10, 11 and 12, while the disk 16 holds them in position at the rear. As previously stated, the apertures 21 in the disk 16 are of a diameter less than that of the hook carrying members and hence the latter cannot enter them. The gear teeth 26 of each hook carrying member 22, 23, 24 and 25 are in mesh with a circular rack 27 formed on the inner side of a circular flange or rim 28 formed at the circumference of the disk



16. The outer face of the flange 28 is set back as at 28<sup>a</sup> in order to reduce the width of the bearing on the front 2, as shown. The flange 19 of the disk 16 tends to maintain the gear teeth 26 of the hook carrying members in engagement with the circular rack 27 of the disk 16. The disk 16 at its back and near its circumference is provided with an operating handle 29, which is secured in position by means of a rivet 30 passing through the handle and disk.

Just below the bottom of the disk 16, the front 2 is provided with an inwardly projecting lug 31 which abuts against an inwardly projecting lug 32 on the back 3, the purpose of the lugs being to aid in preventing the front and back of the casing from being drawn too close together by the bolts 4.

By means of the handle 29, the disk 16 is rotated and consequently the central hook 20, which is somewhat larger than the other hooks. The rotating of the disk 16 causes the circular hook carrying members 22, 23, 24 and 25, which are in mesh with the circular rack 27 of the disk 16 to revolve also. The central hook 20 will revolve somewhat slower than the hooks 22<sup>b</sup>, 23<sup>b</sup>, 24<sup>b</sup> and 25<sup>b</sup> carried by the hook carrying members since their diameter is considerably less than that of the disk 16.

In conjunction with my rope making machine, I employ a strand guide 33 comprising a body portion 34 from which radiate at equi-distant points four arms 35, 36, 37 and 38. The opposite sides of the arms are inwardly curved so that the ends of the arms are closer together than the centers of their sides, as illustrated. From the arm 38 a depending handle 39 is provided. The sides of the handle are of sufficient width to afford a firm grip for the hand and are tapered to a point. The body portion 34 is provided with a circular aperture 40, each of the arms with an aperture 41, and the handle with an elongated aperture 42, as shown.

The method of employing my improved rope making machine is as follows: A piece of cord or other suitable material is held, near its end, by the thumb against the handle of the strand guide 33, the cord is then passed through the lower right hand cut-out portion, or space between the arms 37 and 38, and passed over the lower right hand hook 25<sup>b</sup>, and then is brought back and passed through the same cut-out portion between the arms 37 and 38, across the arm 37 and through the cut-out portion between the arms 36 and 37 to and around the hook 24<sup>b</sup>, then back through the space between the arms 36 and 37, then across the arm 36 through the cut-out portion between the arms 35 and 36 over the hook 23<sup>b</sup>, thence back through the cut-out portion between the arms 35 and 36, then across the arm 35 and through the cut-out portion between

the arms 35 and 38 to and over the hook 22<sup>b</sup>, then back through the cut-out portion between the arms 35 and 38 and then allowed to extend down back of the handle 39 of the strand guide, as shown, where it can be conveniently held. An independent cord, or strand is secured to the large center hook 20 and passed through the circular aperture 40 in the body portion 34, of the strand guide and its ends are suitably held. When measuring off the cord necessary to make a rope of a specified length, it is necessary to allow additional length to compensate for what will be taken up in the twisting. The handle 29 of the machine is now turned and the rotating hooks, 20, 22<sup>b</sup>, 23<sup>b</sup>, 24<sup>b</sup> and 25<sup>b</sup> will independently twist the strands of cord. The center strand will not be twisted as much as the other strands as the central hook will not revolve as fast as the smaller hooks. When the strands of cord have been twisted to a sufficient tension, the ends of the strands are grasped and on moving the strand guide forward, they will immediately begin to form themselves into a rope. As the strand guide is moved toward the machine, the handle 29 is at the same time turned to rotate the hooks 20, 22<sup>b</sup>, 23<sup>b</sup>, 24<sup>b</sup> and 25<sup>b</sup> with the result that the twisted strands will form themselves into a rope behind the advancing strand guide, as illustrated in Fig. 1 of the drawings. When the strand guide has been brought as close to the machine as possible, the loop ends of the strands are removed from the hooks, except the one on the center hook 20, and are slipped over the center hook, when with a few backward turns of the center hook the rope will be finished with a suitable loop.

While I have illustrated and described the using of a single piece of cord for the hooks 22<sup>b</sup>, 23<sup>b</sup>, 24<sup>b</sup> and 25<sup>b</sup>, it is evident that a separate piece of cord could be used on each hook or any number of the hooks. A rope of four strands could be made, that is without employing the center strand or it could be made of a less number of strands with or without the center strand, as desired.

While I have shown my machine constructed with a center hook and four smaller hooks, it is obvious that I could employ a greater or less number of hooks, and that the strand guide could be made with a greater or less number of arms to handle the desired number of strands. The strand twisted on the center hook 20 will run through the center of the rope and for this reason, it is not twisted as tightly as the others, but it is obvious that the center hook 20 could be arranged to rotate at any desired speed with respect to the other hooks.

While I have illustrated and described the employment of the strand guide 33 for holding the strands during the preliminary independent twisting of the strands, it is evi-



dent that the strands could be secured to any suitable means during the preliminary twisting and the strand guide applied to them after they had been twisted, thereby only using the strand guide to form the rope upon.

What I claim is:

1. A machine of the character described comprising a hollow body portion formed of a plurality of parts, a plate within said body portion, said plate being provided with a flange having a series of teeth formed in its inner surface, one portion of said plate being bent at an angle and curved outwardly through an aperture in the front of said body portion and forming a cord-engaging hook, a plurality of cord-engaging members mounted within said casing, and projecting through openings formed in the front thereof and provided with teeth meshing with the teeth of said plate to revolve said members, and a means for turning said plate.

2. A rope making machine comprising a body-portion formed of front and back members, means for securing said members together, said front member being provided with a plurality of openings, said back member having an enlarged centrally-located opening, the walls of said opening being provided with an inturned flange, a plate mounted within said body and provided with a recess adapted to register with said flange, and cord-twisting means connected with said plate.

3. A machine of the character described comprising a hollow body portion, a plate within said body portion, one portion of said plate being bent at an angle and curved outwardly through an aperture in the front of said body portion and forming a cord-engaging hook, a plurality of cord-engaging members rotatably mounted within said cas-

ing and projecting through openings formed in the front thereof, the inner portion of said cord engaging members contacting with the said plate, and rotated thereby, and means for rotating said plate.

4. A rope making machine comprising a body-portion, a plate rotatably mounted within said body, said body being provided with a plurality of openings a plurality of hook carrying members mounted within said body and operated by said plate, each hook-carrying member comprising a cylindrical body, a hook formed integral with said cylindrical body and curved upward and over said body, a series of teeth formed around each of said hook-carrying members and adapted to register with teeth formed upon said plate, and means for operating said rope making means.

5. A rope making machine comprising a casing, a central cord-holding and twisting means rotatably mounted within said casing, a plurality of cord-twisting means mounted in said casing and around said central twisting means, and means for operating said twisting means.

6. A rope making machine comprising a casing, a plate rotatably mounted within said casing, twisting means centrally located upon said plate, a plurality of twisting means rotatably mounted within the front wall of said casing and surrounding said central twisting means, a flange formed upon said plate and surrounding said twisting means to rotate the outer ones, and means for rotating said plate.

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

ARTHUR D. LONG.

Witnesses:

C. E. CARLSON,  
U. B. ROGERS.