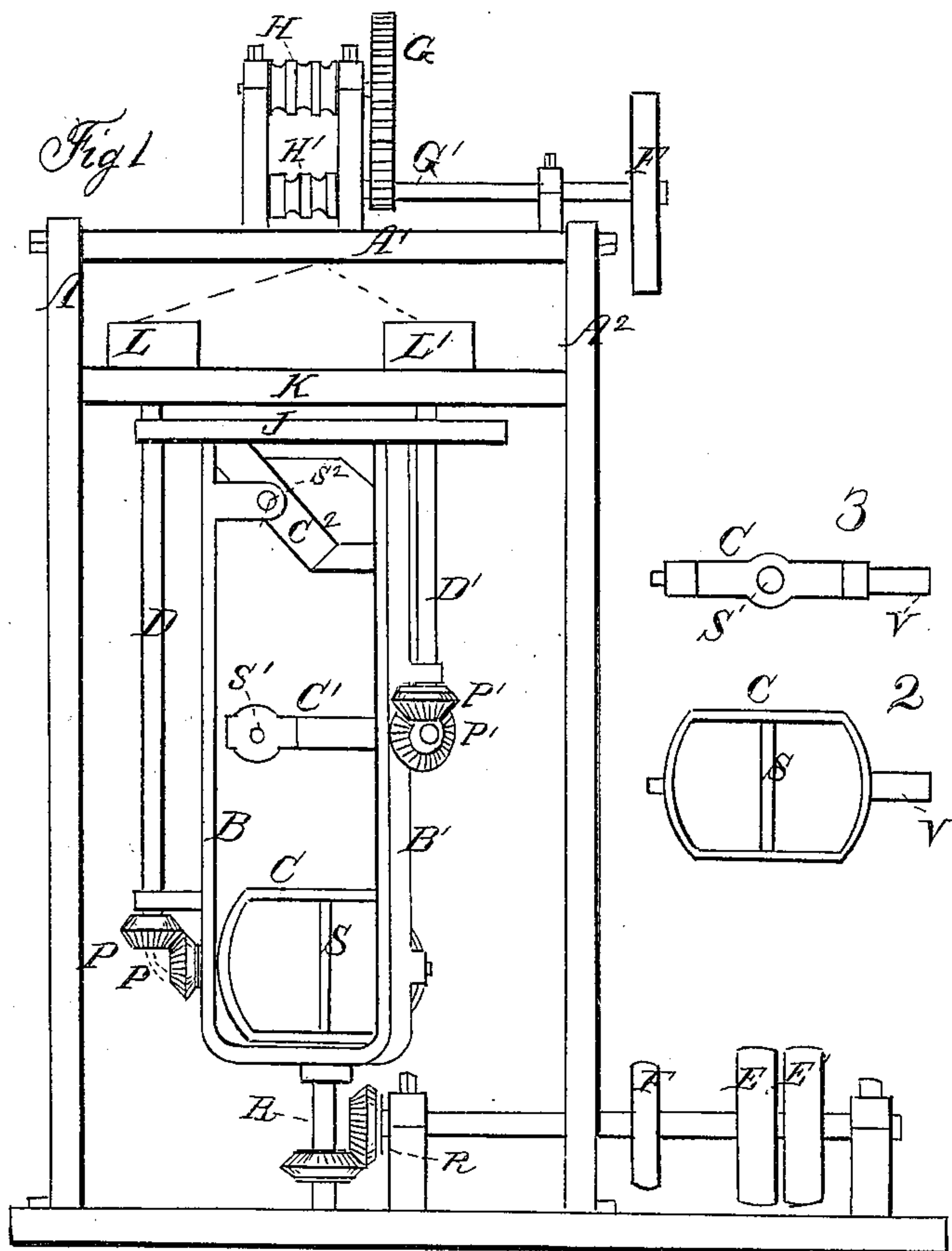
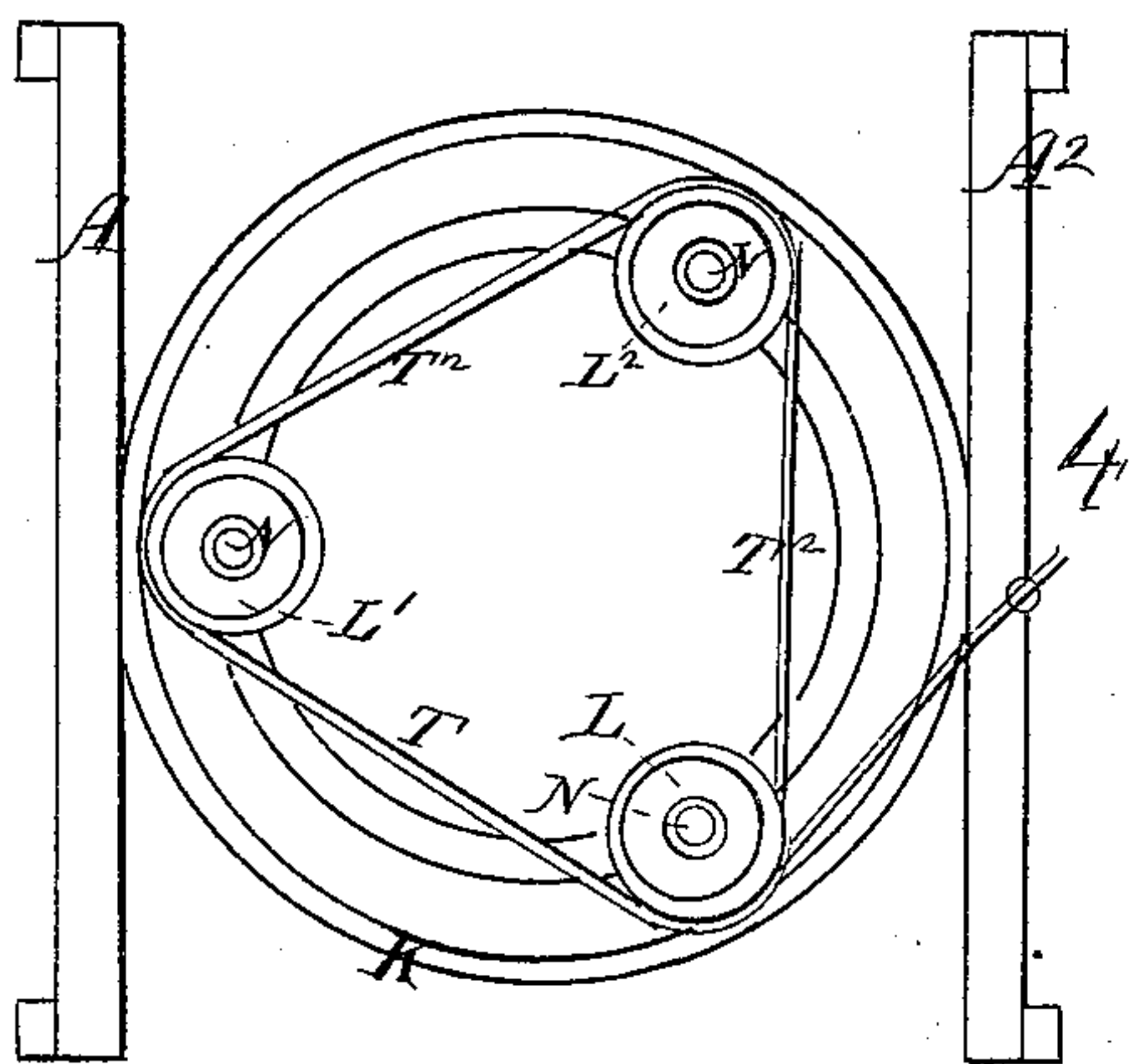


W. Countie
Rope Machine.

No. 19133.

Patented Jan. 19. 1858.



UNITED STATES PATENT OFFICE.

WILLIAM COUTIE, OF TROY, NEW YORK.

ROPE-MACHINE.

Specification of Letters Patent No. 19,133, dated January 19, 1858.

To all whom it may concern:

Be it known that I, WILLIAM COUTIE, of Troy, in the county of Rensselaer, in the State of New York, have invented certain
5 new and useful Improvements in Rope-Making Machinery; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings,
10 forming part of this specification, in which—

Figure 1, is an elevation of a machine constructed according to my invention. Figs. 2 and 3, are longitudinal views, taken at
15 right angles to each other, of one of the strand fliers. Fig. 4 is a plan of the top part of the machine.

Similar letters of reference indicate corresponding parts in the several figures.

20 This invention consists chiefly in certain arrangements of the well known parts of the "sun and planet" rope machine, one object of which arrangement is to prevent the great development of centrifugal force
25 which is at high speeds so injurious to the common "sun and planet" rope-machine, and thereby to enable the machine to be driven with safety at a higher velocity.

Another object is to keep the machine
30 always in balance and to prevent the injurious action which, in the common "sun and planet" machine, results from the machine getting out of balance by reason of unequal quantities of strand in the several
35 fliers.

To enable others to make and use my invention, I will proceed to describe its construction and operation.

40 A A¹ A², is the stationary framing of the machine.

B B¹, is an upright rotating frame composed of a ring or plate at the top connected by two or more upright bars with a shaft at the bottom which is supported
45 in a suitable bearing; said frame constituting the laying spindle of the machine and carrying the bearings for the strand spindles D, D¹, D². These spindles have a similar arrangement to the strand spindles of the
50 ordinary "sun and planet" rope-machine, though they differ from the laying spindle of that machine in not carrying their fliers and bobbins, and consist simply of tubes with nipper or other contrivances at their
55 upper ends to bite the strands.

C, C, C, are the fliers whose axes are

arranged to intersect the axis of the laying spindle at right angles, with their journals working in bearings in the side-pieces B B¹, of the laying spindle. These fliers simply
60 carry the strand bobbins, and (unlike the fliers of all other rope-machines known to me) have nothing to do with the operation of putting into the strands the twist that is taken out or lost in the laying operation.
65 The spindles S, S, upon which the bobbins rotate are arranged transversely to the axes of the fliers. One of the journals V, V¹, V², of each flier is made hollow and large enough for the strand to pass freely through,
70 and this journal stands in proper relation to the respective strand-spindle of each flier to be geared with it by a pair of miter gears, one on the strand-spindle and one on the hollow flier journal, as shown in
75 Fig. 1. It will be observed that the strand spindles must be of unequal lengths, as the fliers are arranged one above another. The laying spindle derives its rotary motion through a pair of bevel gears R, R, from
80 a horizontal driving shaft F, at the bottom of the machine. The strand spindles derive the necessary motion on their axes to put in the lost twist, or as it is termed the "forehard," through the agency of a sta-
85 tionary band T T¹ T², surrounded by a stationary ring K, that is secured to the stationary framing, and pulleys L, L¹, L², fast on the upper parts of the spindles; said pulleys being caused by the rotation of the
90 spindle to run around the interior of the band and ring, and thus severally to receive a rotary motion on their own axes. The strands pass from the flier bobbins through the hollow journals V, V¹, V², of
95 the fliers and from thence through the strand spindles to the top of the laying spindle in the usual manner.

The laying of the rope is performed as in the ordinary "sun and planet" machine
100 by the rotation of the laying spindle, and the rope is taken up as fast as it is laid by the ordinary arrangement of capstans H, H, or any suitable contrivance at the top of the machine. The lost twist is put in
105 by the rotation of the laying spindles on their axes, but not till the strands arrive at the upper end of the laying spindles, which is the same place as it is put in in the ordinary "sun and planet" machine,
110 and it is to prevent the twist being put in before the strands arrive there, that the

fliers are geared with the laying spindles by the miter gears shown in Fig. 1, and caused to rotate with them.

It will be seen by the above description that my machine differs from the ordinary "sun and planet" machine principally in having the strand bobbins removed from the laying spindles and placed in detached fliers whose weight is brought near the center of the machine, where centrifugal force is not developed in such a way by their revolution as to injuriously affect the machine; while the ordinary arrangement of the strand spindles is preserved.

As my machine resembles in its appearance the machine patented to Thomas G. Boone, July 15th, 1856, I will point out in what respects that machine differs from mine. In that machine the strand fliers, though arranged in the center of the machine, are still the strand spindles and the additional twist to make up for the loss of twist in laying is put in as the strands leave these fliers; and the tubes which are arranged like my strand spindles serve merely to guide the strands to the laying point, and to carry up to the laying point the said additional twist put in between the fliers or strand spindles and said tubes (see Boone's specification); and this operation of the fliers and guide tubes is the same in effect as putting in the twist where the strands leave the fliers, taking it out again as it passes through the guide tubes, and putting it in again between the guide tubes and the laying point, thus injuring the quality and compactness of the strands, though in the end it effects the same result, so far as the degree of twist of the strands is considered, as does my machine, in which, as before stated, the operation is the same as that of the ordinary "sun and planet" machine. Besides this difference of operation, there is an important difference in the arrangement of the fliers in Boone's machine and mine;

viz., in Boone's machine, the journals of the fliers being arranged in line with the axis of the laying spindle involve the necessity of the strands taking several short bends on their way from the fliers to the laying point, which, though perhaps not of much importance in the manufacture of small cord for which Boone's machines seem to be principally intended, is very objectionable in the manufacture of rope, owing to the great resistance caused to the draft of the strands by such bends; but in my machine there are but two bends, viz., one at right angles between the hollow journal of the flier and the bottom of the strand spindle, and one at a much greater angle between the top of the strand spindle and the laying point, and the first of these bands is very gradual. In addition to the above advantages in the operation of my machine, it is very much simpler in its construction, as is obvious by a comparison between the two machines; the complex train of gearing of Boone's machine being dispensed with in mine.

What I claim as my invention, and desire to secure by Letters-Patent, is:

Arranging the strand fliers apart from the strand spindles, with their axes in the same planes as the axis of the laying spindle but intersecting the latter axis at right angles, and with their journals in bearings in the sides of a frame constituting part of the laying spindle; and gearing said fliers with the strand spindles, the planetary arrangement of which is retained, by miter gears or their equivalents by which the said fliers are caused to rotate with the laying spindles so as to cause no twist but what is produced by the planetary strand spindles, in the same manner as in the ordinary "sun and planet" machine, substantially as herein described.

WILLIAM COUTIE.

Witnesses:

A. D. SPOOR,
C. H. RANSFORD.