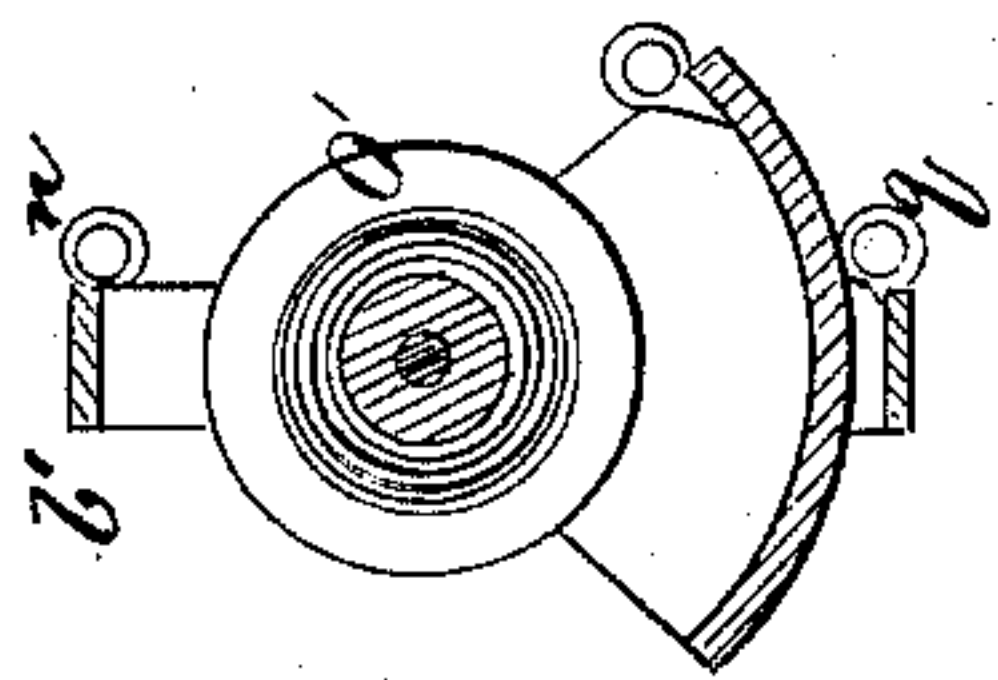


*G. W. Pitman,  
Rope Machine.*

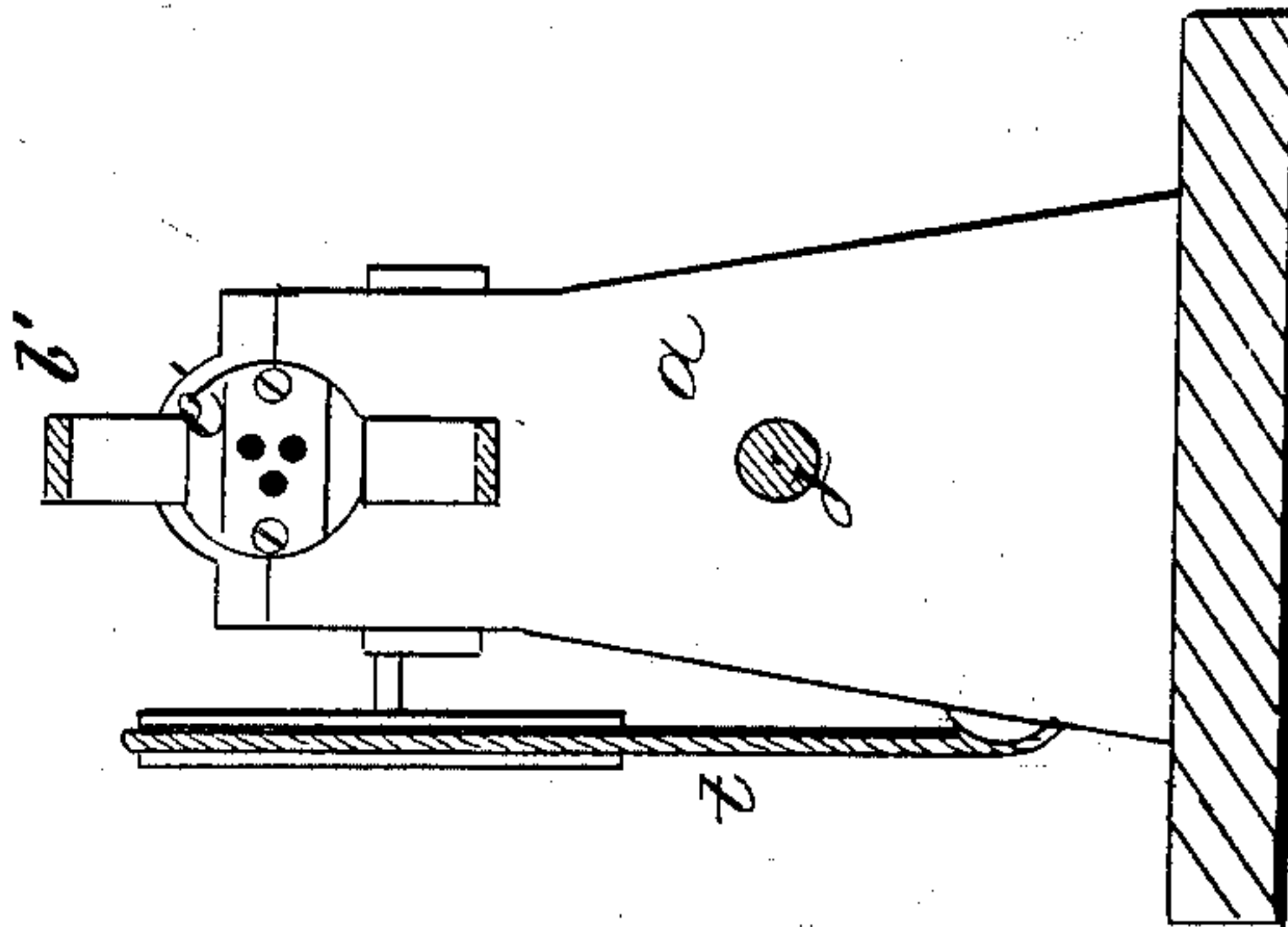
*No. 26,894.*

*Patented Jan. 24, 1888.*

*Fig: 3. B, b,*



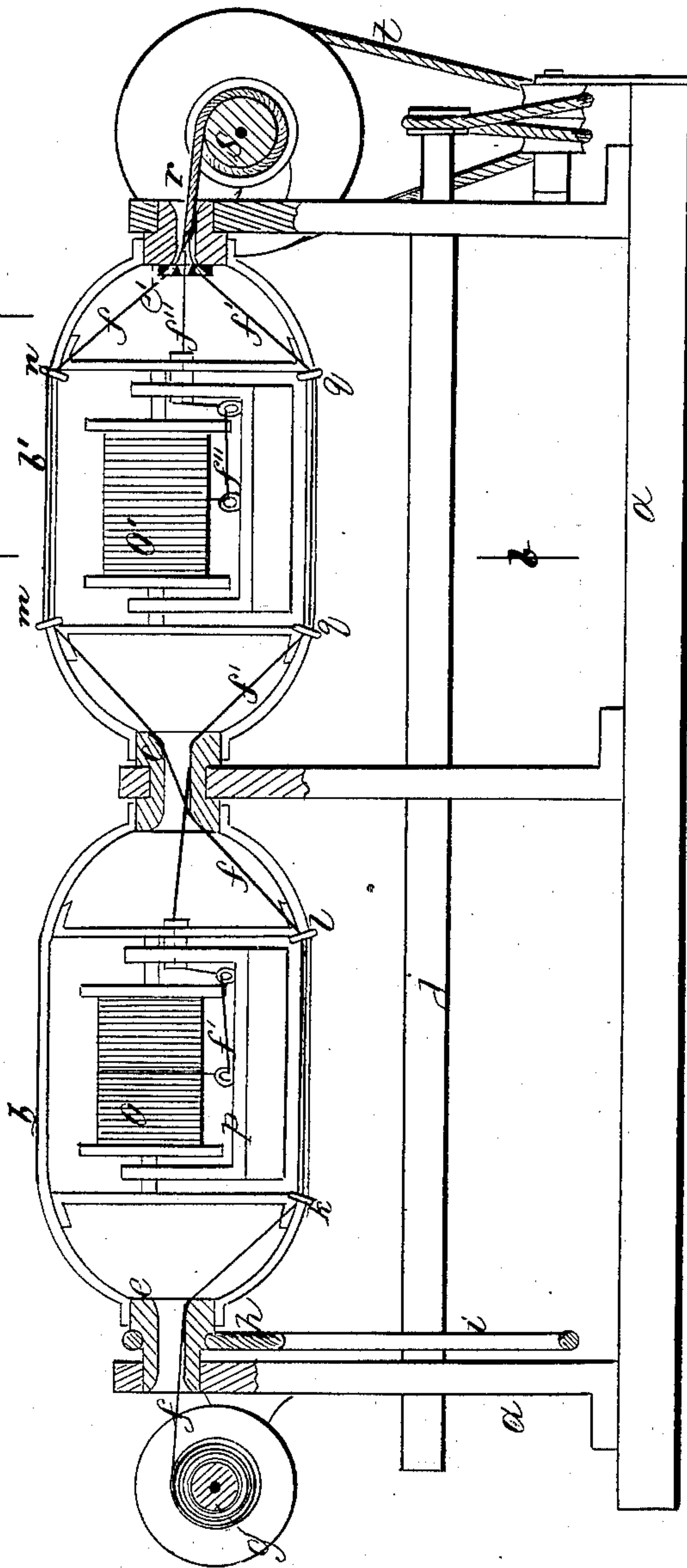
*Fig: 2. A, a,*



*A*

*B*

*Fig: 1.*



*Witnesses*  
*Andrew DeLacy*  
*Peter DeLacy*

*G. W. Pitman*



# UNITED STATES PATENT OFFICE.

GEORGE W. PITTMAN, OF BUSHWICK, NEW YORK, ASSIGNOR TO HIMSELF  
AND WILLIAM C. BOONE, OF SAME PLACE.

## IMPROVEMENT IN MACHINERY FOR LAYING ROPE.

Specification forming part of Letters Patent No. 26,894, dated January 24, 1860.

*To all whom it may concern:*

Be it known that I, GEORGE W. PITTMAN, of Bushwick, county of Kings, and State of New York, have invented a new and useful Improvement in Machinery for Laying Rope; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a longitudinal vertical section; and Figs. 2 and 3 are cross vertical sections, taken at the lines A *a* and B *b* of Fig. 1.

The same letters indicate like parts in all the figures.

In Letters Patent granted to myself jointly with William C. Boone for a rope-laying machine, and bearing date the 5th day of April, 1859, we have described and represented two fliers connected in line by intermediate journals and a pulley-arbor between, by which the two are driven, the said journals and pulley-arbor being hollow for the passage of the first and second strands from the first to the second flier, and in that machine, although we obtained the advantage of supporting the combined fliers midway between the two ends to avoid the tremulous motion consequent upon the use of one flier of the length required to carry the two cradles and spools, as formerly used, and which prevented the running of such fliers at a high velocity, yet the tube formed by the hollow journals and pulley-arbor connecting the two fliers was so long that the twist put into the strand from the outside spool by the first flier could not pass through without impeding the passage of the twist by reason of the two bends given in the strand in passing from the guide of the first flier into this tube, and from this tube to the guides of the second flier, which caused the strand to bear with so much force against the said tube at the two points of bearing as to prevent the twist from passing through, and to avoid this evil, which would have caused the strand to kink, we were compelled so to arrange the guides on the two fliers as to lay the two strands—that is, the one from the outside spool and the one from the spool in the cradle of the first flier—while passing through the tube connecting the two fliers as the only means of carrying the twist

through to the second flier, thus requiring the two strands to be laid and unlaid in passing through; but I have found that this has a tendency to “rough up the strands,” as it is termed, and that even by this means the twist is not effectually carried through.

The object of my invention is to avoid these difficulties; and to these ends my said invention consists in connecting the inner end of the two fliers by a short hollow journal, through which the two strands pass from the first to the second flier when the said compound fliers are driven by power applied to the outer end of one of the said fliers, in combination with an arrangement of the guides on the said fliers, so that the strand from the outside spool shall pass from the guide on one wing of the first flier diagonally through the hollow connecting-journal to the guide on the wing of the second flier on the opposite side of the axis, whereby I avoid all serious impediment to the travel of the twist on the two first strands in their passage from the first to the second flier, so that the three strands shall reach the top at the outer end of the second flier with an equal amount of twist.

In the accompanying drawings, *a* represents a suitable frame, and *b b'* two fliers connected together in line by a short tubular journal *c*, fitted to turn in a box in the middle standard of the frame, the bore of the said journal flaring out of a conical shape at each end. The outer ends of the two fliers are formed in the usual manner of forming the two ends of an ordinary flier for laying rope—that is, with the outside to form journals fitted to suitable boxes in the two end standards of the frame, the end *e* of the first flier *b* being hollow and suitably formed for the passage of the first strand *f* from the outside spool *g*, mounted in the usual manner, and the outer end *e'* of the second flier *b'* being the usual top of a rope-laying machine, with three holes to receive the three strands separately and uniting in one hole to lay the rope. The end *e* of the first flier is pulley-formed on the outside to receive the driving-band *h* from a wheel *i* on the driving-shaft *j* below to rotate the compound flier. The first strand *f* passes diagonally from the end of the flier to and through a guide *k* on one of the wings, thence



to and through another guide *l* on the same wing, and from that diagonally through the hollow central journal *c* to a guide *m* on the second flier *b'*, which is on the opposite side of the axis, and then the strand passes through another guide *n* on the same wing to the top. The second strand *f'* is on a spool *o*, mounted in a cradle *p*, suspended by journals in the first flier, in manner heretofore practiced in rope-laying machines, so that the flier may rotate without rotating the cradle and spool. From the said spool this second strand passes through the forward journal of its cradle, which is in the line of the axis of the flier, and thence through the hollow central journal *c* to and through two guides *q q* on the second flier and then to the top, and the third strand *f''* is carried by a spool *o'*, mounted in a cradle in the second flier, in the same manner as the spool of the second strand, above described, and thence passes directly to the top, the three strands being laid together in the top to form the rope *r*, which is received on and passes around a roller *s*, receiving motion from the driving-shaft by a band *t*, passing around suitable pulleys. In this way it will be seen that, instead of having one continuous flier of sufficient length to carry the second and third spools, and which if rotated beyond a given velocity would tremble and become practically defective, by the union of two fliers in line connected by a central hollow journal the length of each of the fliers between the bearings is so short that they can be turned practically at a much higher velocity, and by the form of the bore of this central journal and the arrangement of the guides on the two fliers for the passage of the

first strand from the outside pulleys the twist imparted to this first strand at the outer end of the first flier can travel along freely, so that the three strands will reach the top with an equal amount of twist, which is a result very essential to making good ropes.

I do not claim as of my present invention coupling two fliers in line so as to rotate together, as this has heretofore been done in machines for twisting strands in which the several spools carrying the threads rotate with the fliers, and therefore not adapted to laying rope. Nor do I claim connecting in line two fliers by a tube to form two journals and carry the driving-pulley between the two journals, as this is described and represented in Letters Patent granted to myself and William C. Boone, as before stated, but not under a combination such as herein described, or capable of producing the results obtained by my said invention.

What I do claim as my invention, and desire to secure by Letters Patent, in machinery for laying rope, is—

Connecting two fliers in line by a central hollow journal, substantially as herein described, in combination with an arrangement of guides substantially such as herein described, so as to carry the first strand from the first to the second flier in a diagonal line, crossing the axis of rotation, whereby the several strands can be carried to the top with equal twist, as set forth.

GEO. W. PITTMAN.

Witnesses:

ANDREW DE LACY,  
HORACE ANDREWS.