M. Wallwork.
Rope Machine.

No. 17,005. Patented Apr. 7, 1857.

Fig. 1.

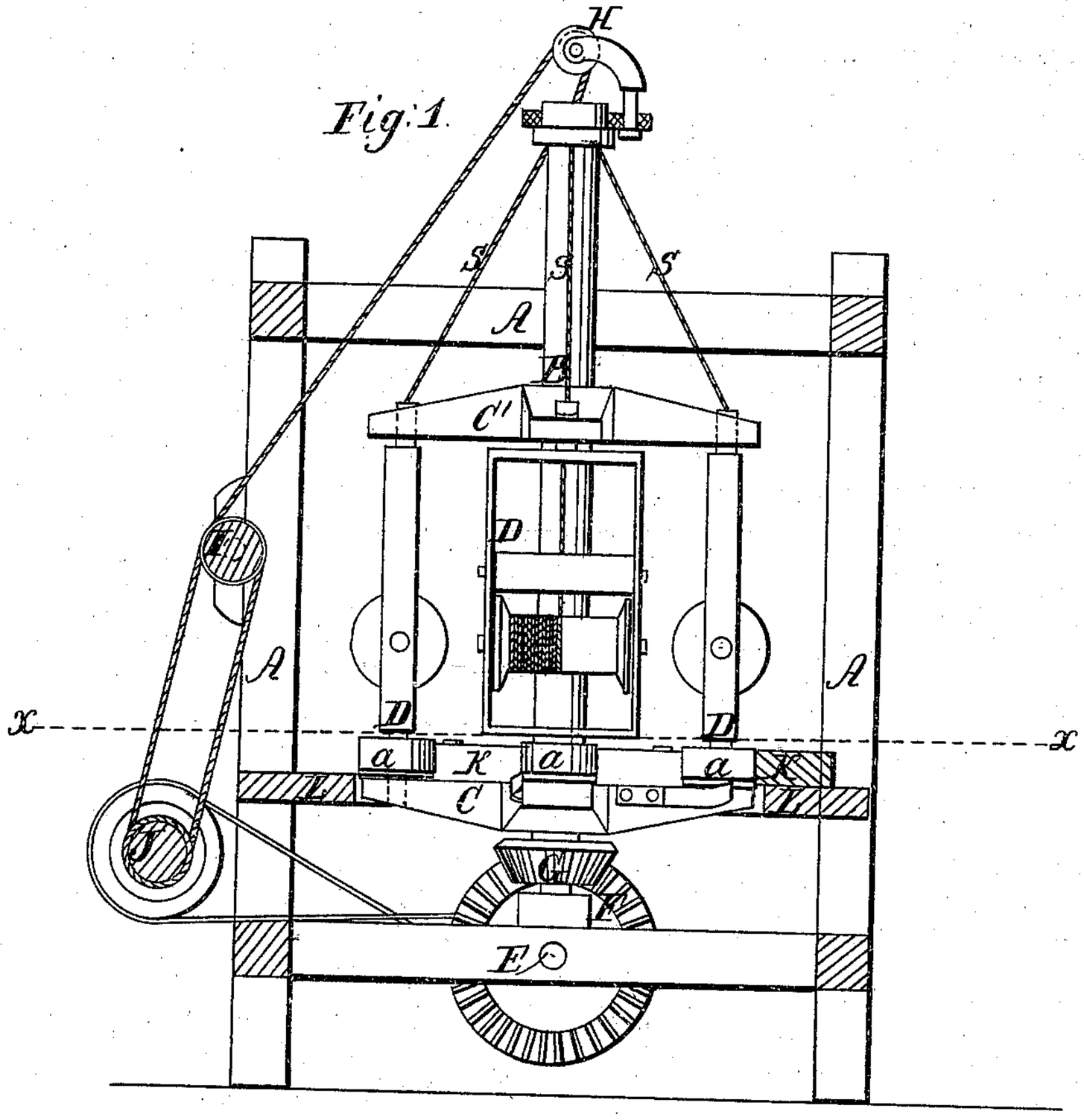


Fig. 2.

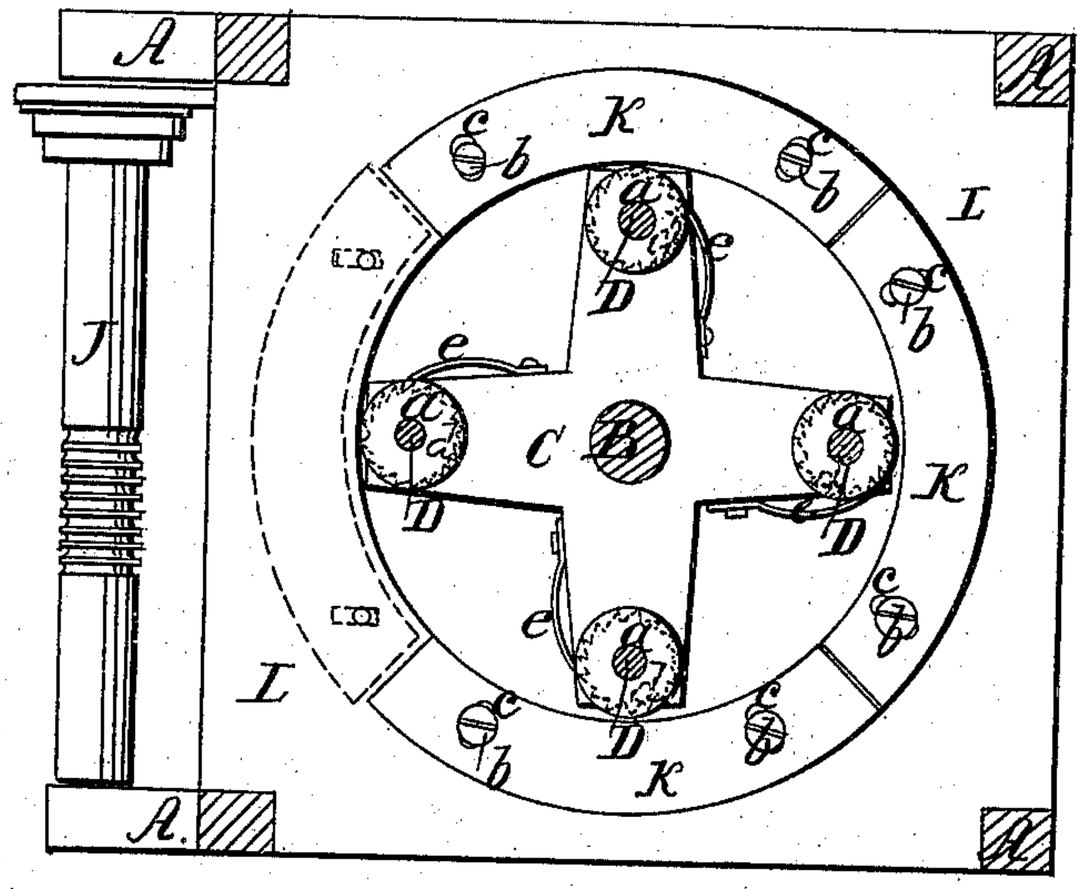
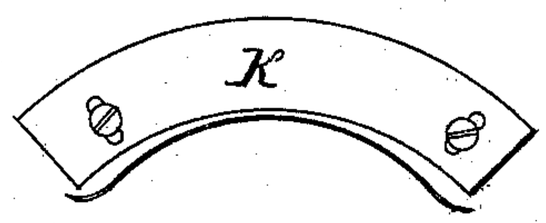


Fig. 3.



UNITED STATES PATENT OFFICE.

MILTON WALLWORK, OF HOOSICK FALLS, NEW YORK.

IMPROVEMENT IN MACHINERY FOR MAKING ROPE.

Specification forming part of Letters Patent No. **17,005**, dated April 7, 1857.

To all whom it may concern:

Be it known that I, MILTON WALLWORK, of Hoosick Falls, in the county of Rensselaer and State of New York, have invented a new and useful Improvement 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, forming part of this specification, in which—

Figure 1 is an elevation of a rope-making machine with my improvement, the former being shown in section to expose the working parts. Fig. 2 is a horizontal section of the same in the line *x x* of Fig. 1. Fig. 3 is a detail view of a portion of the machine, which will be hereinafter explained.

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

This invention relates to that description of rope-making machine generally known as the "sun-and-planet" machine; and it consists in certain means of controlling the speed of the strand-fliers for the purpose of enabling the twist of the strands to be varied with facility.

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

A is the framing of the machine.

B is the upright main or laying spindle, arranged to rotate in suitable bearings in the framing A and carrying the two spiders C C′, which contain the bearings for the journals of the strand-fliers D D.

E is a horizontal driving-shaft geared with the main or laying spindle by a pair of bevel-gears F G.

H is a guide-pulley arranged above the main spindle to conduct the rope *r* from the laying top to the capstan-rolls I J, by which the rope is taken up as fast as laid.

The construction and arrangement of the several parts of the machine above referred to are or may be substantially the same as that of many other machines in use for the same purpose. The strand-fliers D D are represented as what are known as "bobbin-fliers;" but cans may be used instead of bobbins to carry the strands.

The fliers D D are furnished just above their lower journals each with a roller *a* of cylindrical or barrel form. Just below the level of these pulleys the framing A has secured to it a horizontal table L, which has a circular opening in it large enough for the rotating portion of the machine to work in, said table being for the purpose of supporting a series of segments K, of metal or wood, which form portions of a stationary ring, with the interior of which the rollers *a a* are intended to run in contact when caused to revolve around the axis of the main spindle B. The revolution of the rollers, as above mentioned, in contact with the segments causes them to receive by the friction of the segments a rotary motion on their own axis, and thus to impart to the fliers the necessary motion to produce the twist of the strands. The segments are secured to the table L by screw-bolts *b b*, passing through slots *c c* in such a manner as to admit of their being all arranged to form a complete ring or circle concentric with the main spindle, or to allow one or more of them to be taken away altogether or moved outward from the center, as illustrated in Fig. 2, where one of the segments is shown in red color withdrawn from the ring or circle so far that the roller will not touch it. When the segments are arranged to form a complete ring or circle, the fliers receive a motion on their axes during the whole of their revolution round the main spindle and give the maximum of twist to the strands; but by the withdrawal of one or more segments from the ring or circle there is a less or greater portion of the revolution of the several fliers takes place without any twist of the strands being produced, and consequently the strand-twist is diminished to a less or greater extent, the smaller the continuous portion of the ring or circle formed by the segments the less being the twist produced. In order to prevent the untwisting of the strands when the rollers *a a* are passing that portion of the ring or circle of segments where a segment is withdrawn, each segment is furnished below its roller *a* with a ratchet-wheel *d*, which is engaged by a pawl *e*, attached to the lower spider C, said pawls and ratchet-wheels only allowing the fliers to rotate in the direction to give a twist to the strands—viz., the direction in which they are caused to rotate by the friction between the rollers *a a* and the ring or circle of segments.

I propose to attach to the face of each seg-

ment an arc-formed spring *f*, as shown in Fig. 3, which is a plan of one of the segments K, the roller to run against the spring, which by its elasticity is caused to bear against the roller and produce the necessary friction from one end of the segment to the other. In this manner the rollers may, if desirable, run against an elastic ring or a ring composed of segments having elastic faces.

In the patent granted to John Harris, July, 1855, the strand-fliers are provided with cone-pulleys, and rotary motion is given to them by means of a driving ring or belt, against which the cones are pressed by springs. A variation of the speed of the fliers is obtained by raising or lowering the driver-ring, so that different portions of the cones are brought in contact therewith.

My improvement is different and superior to that just described for the following reasons:

In Harris's machine there is no method of wholly governing the speed of the fliers, because the cones are always in contact with the driver. If the driver and cones are made of the smallest practicable size or diameter, the cones, when in contact at their smallest ends, will make two and one-half turns for every revolution of the driver. This speed of the fliers is too great for ropes that exceed one-half an inch in diameter; but my improvement is not limited to ropes of a given size, for by removing one or more segments of the ring the rotations of the fliers will be correspondingly reduced. It matters not, therefore, how large the rope, for the motion of the fliers may be gaged accordingly.

In my improvement the motion of the fliers may be governed so that they will make any desired fraction of a turn for each revolution of the driver. My machine is thus adapted to the production of large and small ropes, the speed of the fliers being gaged to suit the diameter of the rope.

In Harris's machine the motion of the fliers cannot be controlled, except down to about two and one-half turns for each revolution of the driver. Hence the machine is unfitted for a large and important class of work.

Making the driving-ring in segments, which are movable so as to vary at pleasure, the amount of ring-surface exposed to contact with the rollers is a new feature in rope-machines and productive of new and useful results.

I do not claim pressing the rollers outward into contact with the ring by means of springs, as in Harris's patent aforesaid, neither do I make any such use of springs in my machine.

I do not claim the giving to the strand-fliers a rotary motion on their own axes to produce a twist of the strands by means of rollers on the axes of the fliers running in contact with the inner face of a stationary ring; but

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

The construction of the stationary circle or ring with which the rollers on the fliers run in contact to produce the rotary motion that gives the twist, and a series of segments, one or more of which may be removed or withdrawn from the ring or circle or replaced therein at pleasure, for the purpose of varying the twist, substantially as herein set forth.

MILTON WALLWORK.

Witnesses:

GEORGE CHACE,

A. H. DOWNER.