2 Sheets—Sheet 1.

J. HALL.

Machine for Making Cordage.

No. 226,309. **Patented April 6, 1880.**

Fig. 1.

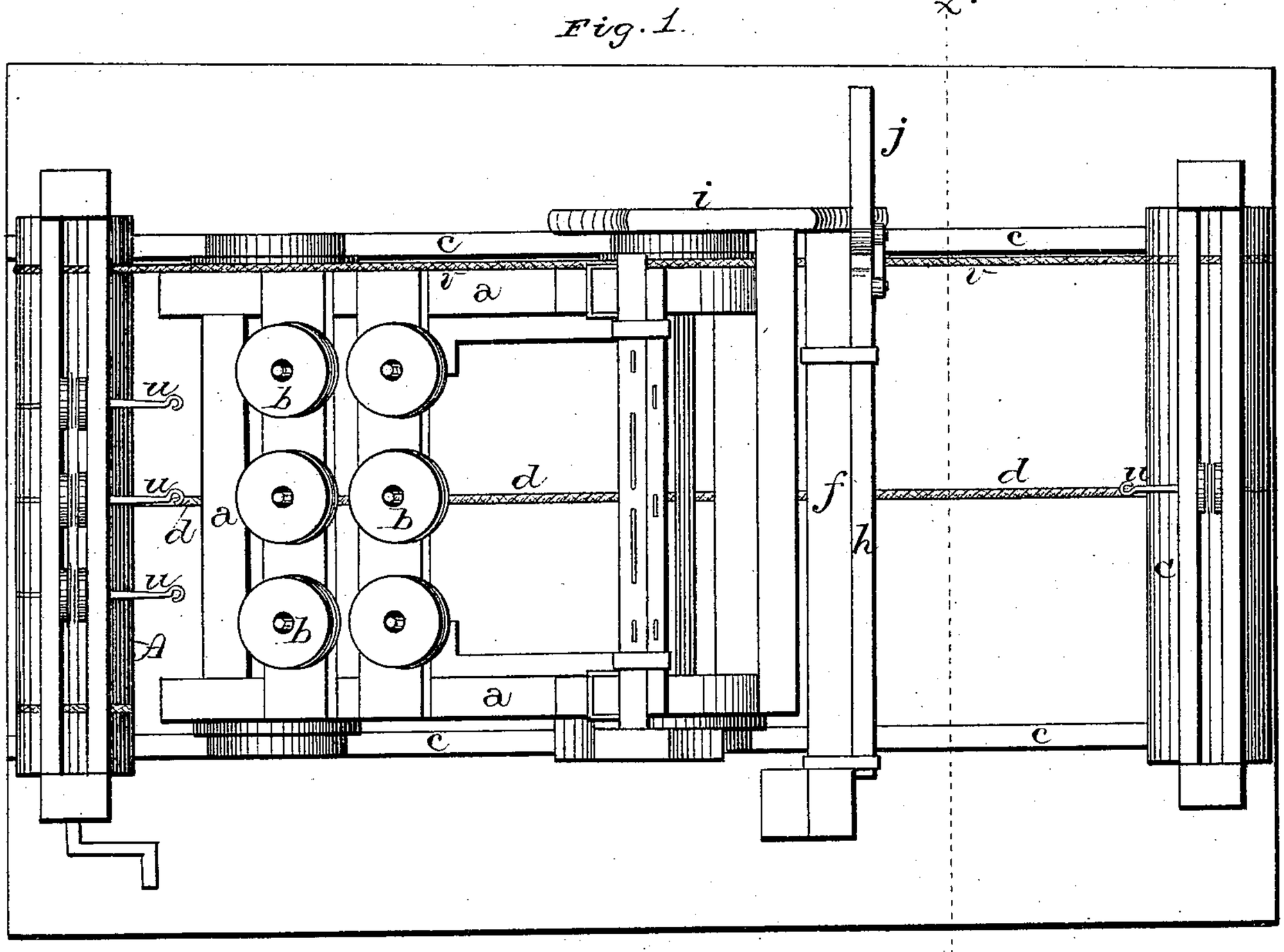
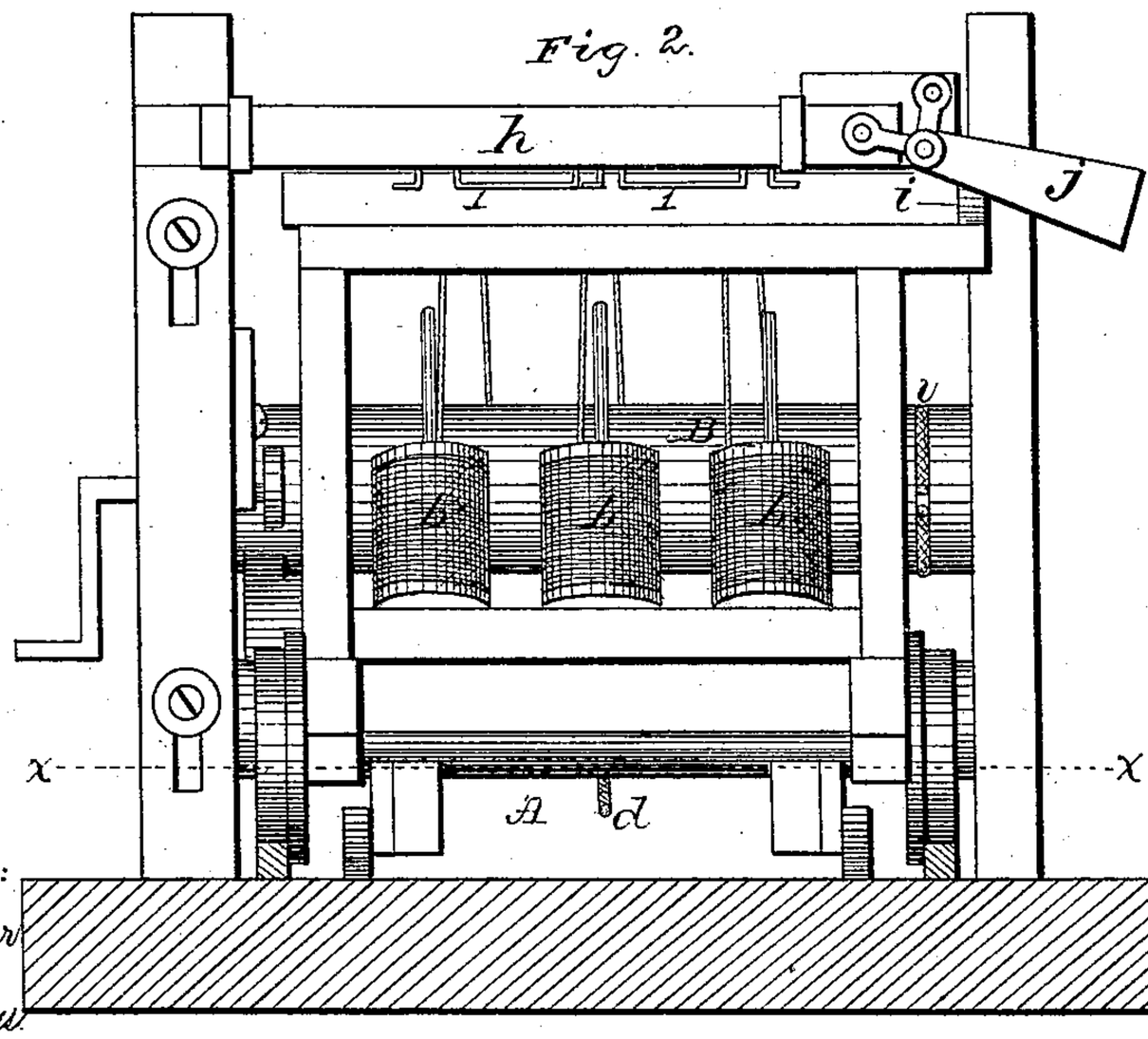


Fig. 2.



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2 Sheets—Sheet 2.

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Fig. 3

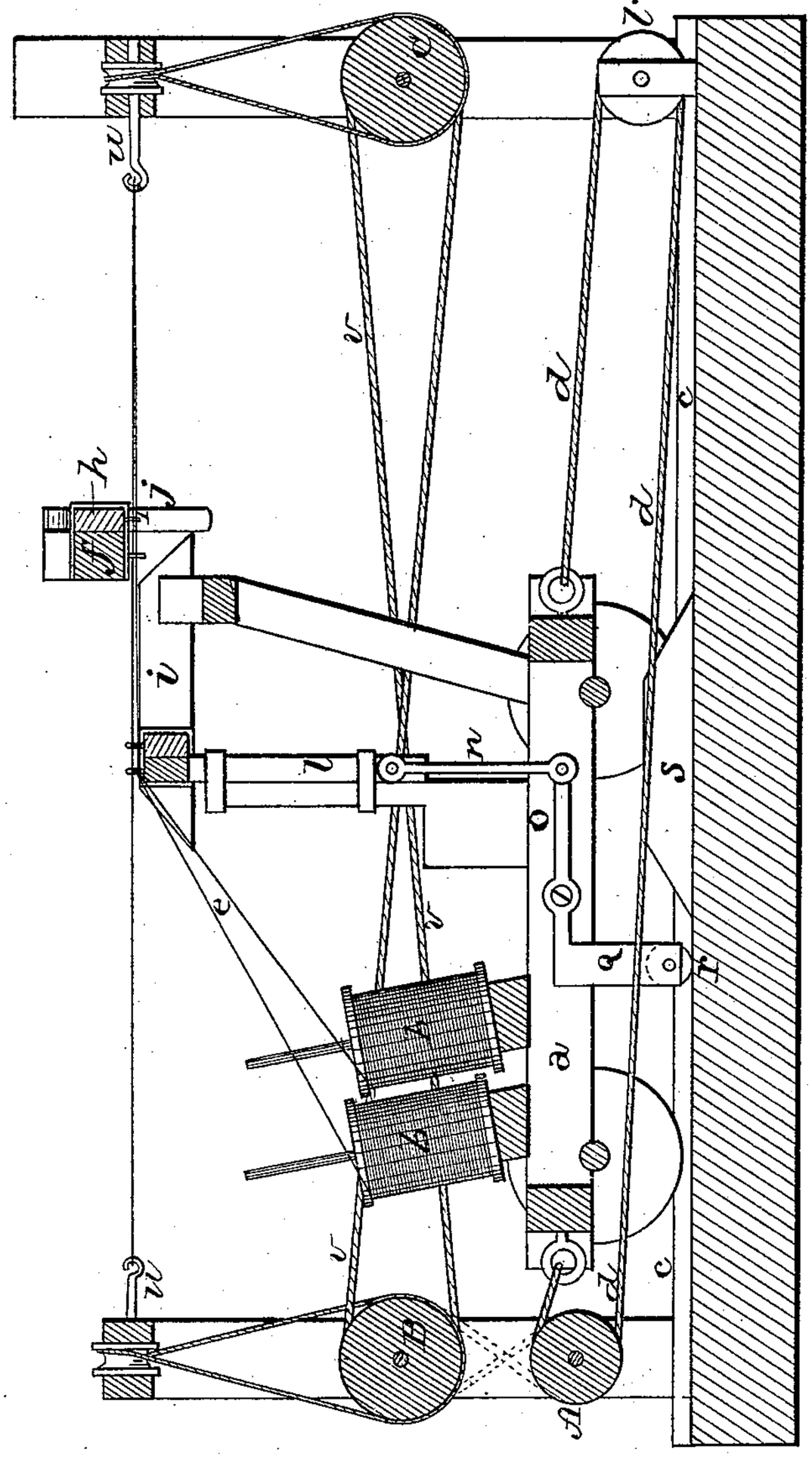
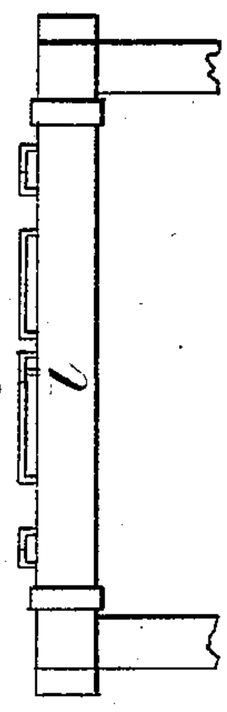


Fig. 4.



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UNITED STATES PATENT OFFICE.

JAMES HALL, OF HIGHLAND MILLS, NEW YORK.

MACHINE FOR MAKING CORDAGE.

SPECIFICATION forming part of Letters Patent No. 226,309, dated April 6, 1880.

Application filed December 16, 1878.

To all whom it may concern:

Be it known that I, JAMES HALL, of Highland Mills, in the county of Orange and State of New York, have invented certain new and useful Improvements in Machines for Making Cordage; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to improvements in machines for making cordage; and it consists in the combination of a number of stationary thread-guides placed at suitable distances apart along the track upon which the truck moves, a vertically-movable guide upon the truck operated by weighted levers pivoted on the truck and cams placed along the inside of the track, an incline upon the truck, and a weighted lever for moving a sliding bar for opening the stationary guides, all of which will be more fully described hereinafter.

Figure 1 is a plan view of my invention. Fig. 2 is an end view of the same with the mechanism at the end of the track removed. Fig. 3 is a vertical section of the complete mechanism, and Fig. 4 is a detached view of the movable guides carried by the truck.

a represents the truck or carriage which carries the spools *b*, and *c* is the track upon which the truck moves as it is drawn back and forth by the rope, chain, or band *d*. This rope is fastened to one end of the truck, is wrapped one or more times around the drum A, passes along under the truck to the opposite end of the track, where it is passed around a roller, *t*, and has its other end fastened to the opposite end of the truck from that to which the first end is fastened.

The drum A is operated by means of a band from the drum B just above it, and is made to move the truck toward either end of the track, according to the direction in which the drums are made to revolve.

The threads *e* are drawn from the spools *b* and fastened to either of the two series of revolving spindles *u*, placed at opposite ends of the track and operated by drums B and C, which drums are connected together by a crossed endless band or rope, *v*, so as to cause them to revolve in opposite directions. These threads pass through a number of stationary guides on bars *f*, which are arranged about twenty-five feet apart along the track and project out over the track, so that the truck will pass back and forth under them. Upon one side of each of these guide-bars *f* is arranged a sliding bar or rod, *h*, which is connected at one end, by a suitable connecting-link, with the L-shaped weighted lever *j*, so that whenever the truck passes, or is about to pass, under the bars *f* the lever *j* is raised upward by the inclined ends of the board *i*, that is secured to the truck. Upon the under side of this rod or bar *h* are suitable bent wires or rods 1, which serve to hold the threads *e* in position, while the outer end of the lever *j* hangs downward; but when the rod or bar *h* is moved endwise, by the board *i* passing under and raising up the outer end of the lever *j*, the threads can be readily freed from the guides on the bar *f*. The guides on the bars *f* simply serve to hold the threads in line, while those on the sliding bar *h* serve to catch under the threads and hold them upward against the bar *f* while the truck is not passing under. While the truck is passing under the bars *f* the endwise movement of the rod *h* causes the supporting-guides to move from under the threads, when they drop down until after the truck has passed under and raised the threads upward again, when the end of the lever *j* again drops down, moving the rod *h* back into position, and causing its supporting-guides to again catch under the threads as they are held between the guides on the bar *f*.

Upon the truck is placed a vertically-moving guide-bar, *l*, provided with suitable guides for the threads, and which has its lower ends connected by the rods *n* with the bent weighted levers *o*, pivoted upon the inside of the carriage. The lower ends, *q*, of the weighted levers are provided with the rollers *r*, which enable the weights to rise up over the projections *s*, placed on the inside of the track a suitable distance from each stationary guide-bar. As the weighted ends of the levers are raised upward by these projections the vertically-moving guide-bar *l* is drawn downward,

so as to pull the threads out of the stationary guides on the bar *f* at the same time that the bar *h* is moved by the board *i* and lever *j*.

The board *i* is made long enough to keep the lever *j* raised and the supporting-guides moved from under the threads while the truck is passing under the bars *f*, and while the lever is raised the weighted ends of the levers *o* are raised by the projections *s*, so as to depress the bar *l* until it has passed under the bar *f*, when the bar *l* is raised upward by the weighted levers passing beyond the projections, and then as the lever *j* drops from the board *i* the bar *h* moves the guides under the threads again. This operation is repeated each time the truck passes under one of the stationary guides.

The most advantageous length of the track is about three hundred feet, and the guide-bars *f* are placed about twenty-five feet apart, so as to prevent the cordage from sagging down or twisting together. Upon the truck should be placed from fifty to ninety-six spools, each one containing from eighteen hundred to thirty-six hundred yards of thread. Two or more of these threads form a strand, and three strands a cord. A full set of spools having been put on the truck, the threads are picked up, two or more together, and passed through the movable thread-guides on the truck. The ends of the threads are tied on the hooked spindles, the machine started, and the truck moves along the track, drawing the threads off the spools.

Simultaneous with the movement of the truck the threads are twisted by the spindles at one end, which are driven by the drum, as shown. As the truck travels along, forming the strands, the threads catch in the stationary guides, by which they are held steady and kept from fouling with each other. At the opposite end of the track there is a second drum, which drives spindles in the same manner as at the other end. When the truck reaches the outer end of the track the threads are cut from the spools and fastened on the spindles, three strands being placed together, so as to form a cord. The truck is then started back toward the other end, the spindles twisting as the truck moves along, those at the first end keeping the strands twisted, and those at the outer end twisting the cord of three strands. As the truck moves along, the guide on the truck keeps the strands clear and separate in front of the truck, while in the rear the three strands are being formed into a cord. When the truck arrives at the first end the cords are removed and placed on a reel, and the above movements are repeated.

The stationary guide-posts having the stationary guides fastened thereto are placed just above the level of the line of threads, thereby requiring but a very slight movement of the movable guide to lift the threads into the guides, where they are held, as already described. The lifting movement being short, an almost absolute certainty is obtained, and as the truck passes under the stationary guides the motion is direct and positive, thus insuring rapidity of operation.

As here shown, the guide on the truck is moved vertically, and the guides along the track are stationary; but, if so desired, the guide on the truck may be stationary, and the guides along the track movable. The operation and effect produced will be the same.

Having thus described my invention, I claim—

1. In a machine for making cordage, the combination, with a truck, guides for the threads carried by the truck, a series of guides along the track, and a mechanism for raising and lowering the guides on the truck as they pass the stationary guides along the track, of mechanism for operating the truck and releasing the threads from the stationary guides as the truck passes along, substantially as shown.

2. The combination, with the truck and means for operating the same, of the board *i*, carried by said truck, the stationary guide-bar *f*, lever *j*, connecting-link, and endwise-moving rod *h*, provided with bent wires for releasing the threads, substantially as set forth.

3. In a machine for making cordage, the stationary guide-bars *f*, and the endwise-moving rod *h*, supported by said bars *f*, and provided with the bent wires 1, in combination with mechanism for releasing the threads as the truck approaches said guide-bars and then raising them into the guides again, substantially as described.

4. The combination of the truck *a* and means for actuating the same, vertically-movable guide *l*, rods *n*, lever *o q*, and projections *s* along the track, substantially as shown.

In testimony that I claim the foregoing I have hereunto set my hand this 30th day of November, 1878.

JAMES HALL.

Witnesses:

ARTHUR WILSON,

JNO. K. MASTER.