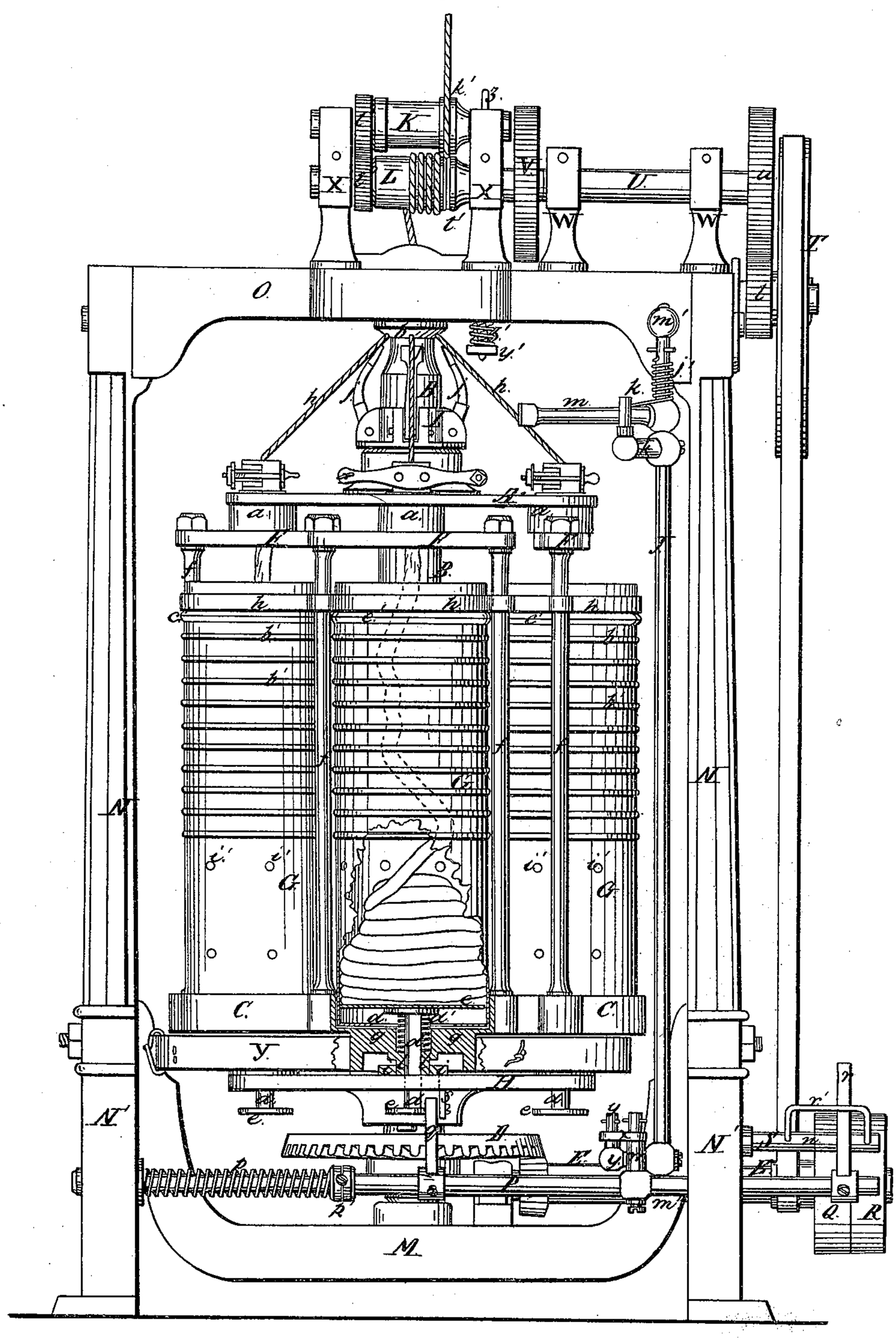
Sheet 1. 2 Sheets.

# D. Perry.

# Rope Mach.

No. 9040. Patented Jun. 15, 1852.

Fig: 1.



Sheet 2. 2 Sheets.

# D. Perry.
# Rope Mach.

No. 9,040. Patented Jun. 15, 1852.

Fig: 2.

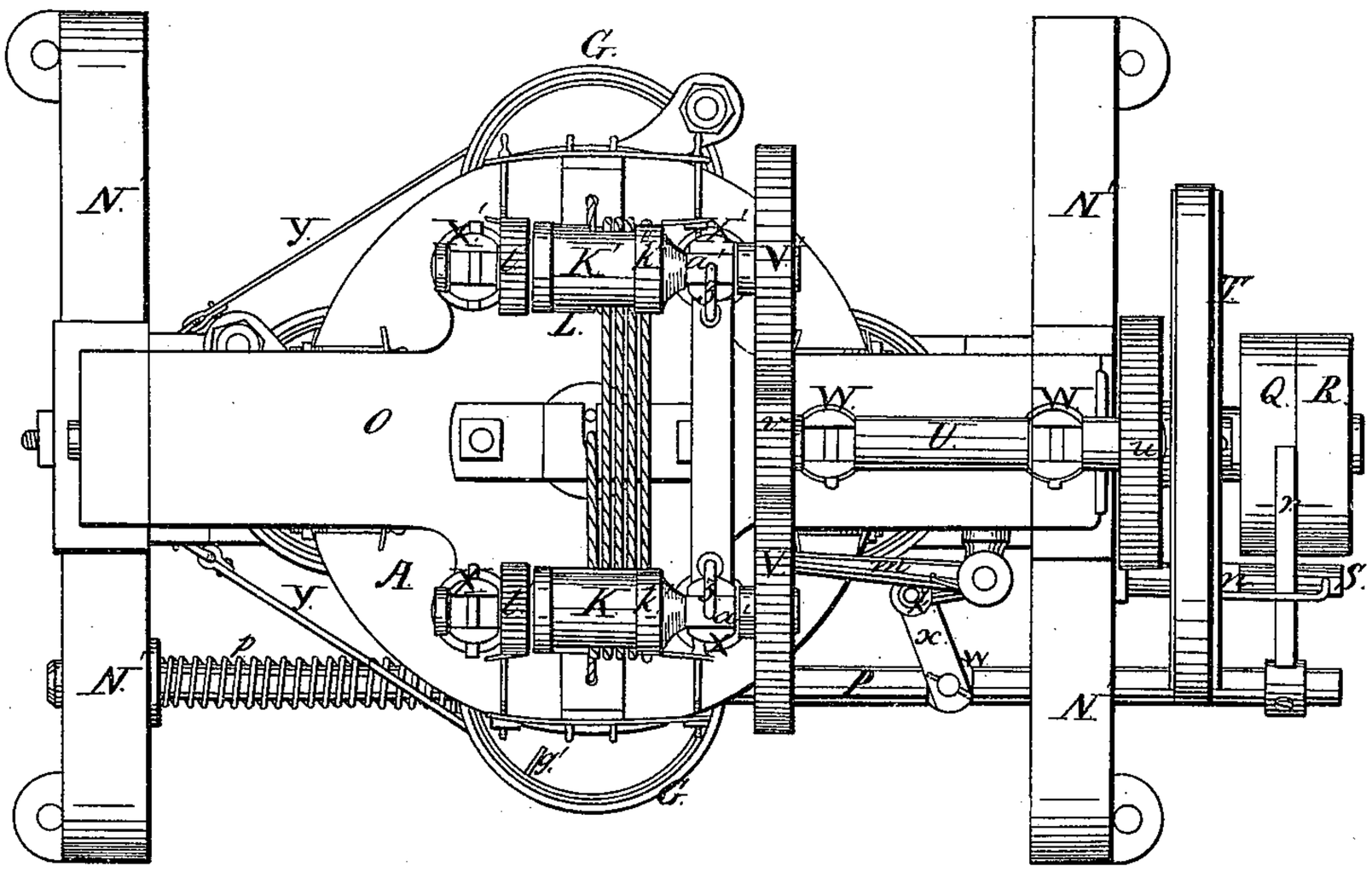



Fig: 3.

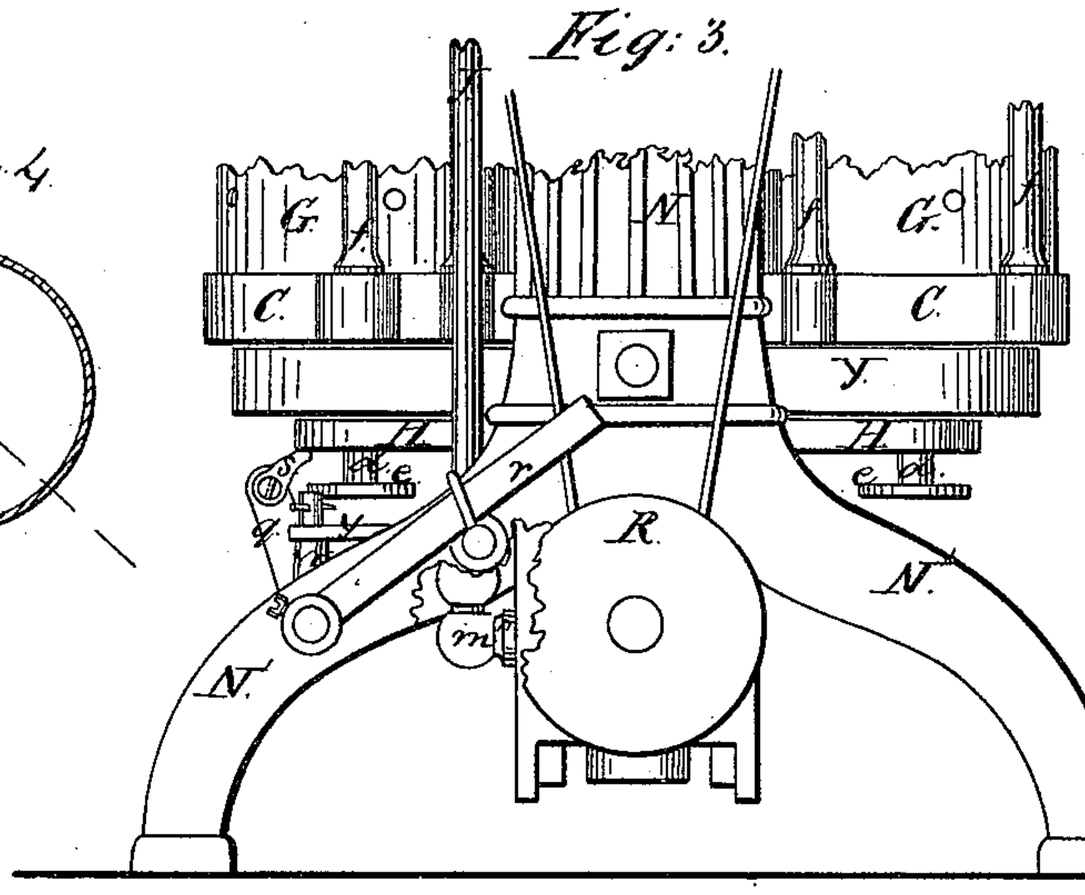



Fig: 4.

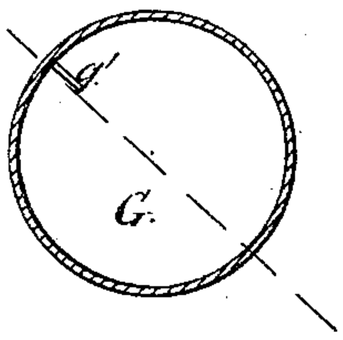
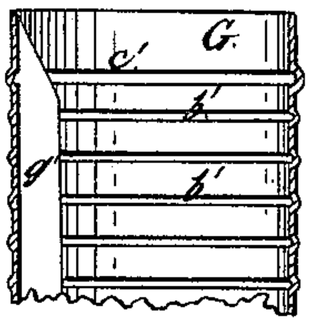



Fig: 5.



# UNITED STATES PATENT OFFICE.

DAVID PERRY, OF FREDERICKSBURG, VIRGINIA, ASSIGNOR TO FRANKLIN SLAUGHTER AND J. W. SLAUGHTER.

## IMPROVEMENT IN MACHINES FOR MAKING CORDAGE.

Specification forming part of Letters Patent No. **9,040**, dated June 15, 1852.

*To all whom it may concern:*

Be it known that I, DAVID PERRY, of Fredericksburg, in the county of Spottsylvania and State of Virginia, have invented a new and Improved Machine for Making Rope and other Kind of Cordage Directly from the Sliver; and I do hereby declare that the following is a full, and exact description of the respective parts thereof that distinguish it from all other rope making machines before known, reference being had to the accompanying drawings, making a part of this specification.

Figure 1 is a side elevation of my improved rope-making machine with a portion of one of the cans broken out and shown sectionally; Fig. 2, a top view; Fig. 3, a side elevation of a portion of the base of the machine, and Figs. 4 and 5 are views showing certain improvements in the cans.

The improvements which I desire to secure by Letters Patent consist, first, of an arrangement which enables the machine to stop itself in case one of the strands should break; second, of an arrangement by which the machine will stop itself when the sliver gives out in either of the cans; third, of an improvement in the cans which enables a much larger quantity of sliver to be placed in them than can be placed in cans of the same size of the usual construction; fourth, of an improvement in the cans by which the sliver is prevented from kinking as it is drawn out, and fifth, of an improvement in the drawing apparatus which enables the rope to be drawn from the machine with uniform tension.

The supporting-frame of my improved rope-making machine is composed of the standards N N′ N N′, which are forked at their lower extremities, and which are united to each other by the base-connecting bar M and the cap-piece O, as represented in the drawings. The said supporting-frame may, however, be constructed in any other manner that may be deemed expedient.

The improvement in the nippers and nipper-heads and the improved compressing forming-block which I shall use in my improved rope-making machine, and which are in part represented in the accompanying drawings, were secured by a patent granted to Franklin Slaughter and myself which bears date January, 1, 1850; and the improved nipper-springs which I shall also make use of in my improved rope-making machine, and which are represented in the accompanying drawings, are secured by a patent granted to Franklin Slaughter and myself dated January 8, 1850. I will therefore refer to those patents for descriptions of the said improvements in rope-making machinery therein set forth.

The sliver-cans G G are situated between the disks A and H, which are secured to the main vertical shaft B, and are arranged in such a manner that the rotation of the central shaft B upon its axis will impart an annular motion to the series of cans around the said shaft B, which annular motion of the series of cans will have the effect of imparting a rotary motion of each can upon its own axis. Each can is placed in a frame composed of a cup C and two vertical rods *f f*, which rise from opposite sides thereof to a cross-head F, to which they are connected, substantially as shown in Fig. 1 of the accompanying drawings.

The cup C of each can-frame has a hollow pulley *g*, descending from its under side, and within the said pulley a tubular journal *l* is formed, which journal fits into a bearing-box *i*, that is secured to and rises above the upper side of the disk H, as shown in Fig. 1. The opening in the said tubular journal *l* of the can-frame is of such a form as to receive a rod *d* and an inclosing spiral spring *d′*. A movable inner bottom *c* is placed in the can and rests upon the head of the rod *d*. The spiral spring *d′* rests upon an offset and presses upward against the head of the rod *d* with sufficient force to raise the rod and the movable bottom *c* of the can as soon as the weight of the sliver is removed therefrom. When the movable bottom *c* of the can is made to rise in consequence of the exhaustion of the sliver from the can, it will cause a stoppage of the machine in a manner that will be hereinafter set forth. Tubular journals rise from the centers of the cross-heads F of the can-frames and pass through bearings *a a*, which are secured to and descend below the lower surface of the disk A. The improved nipper-heads, which I have before referred to, are let into and secured to the said tubular journals of the cam-frames, substan-

tially in the manner described in the patents of Slaughter and Perry, before referred to. From the lower extremity of the upper journal of the central shaft B a flange *b* projects, through which flange perforations are made that extend obliquely upward through the journal of the said shaft and unite at its center under the opening in the compressing forming-block, before referred to, as described in Slaughter and Perry's patent of July 1, 1850. A collar I is placed upon the shaft B near its upper end, to the sides of which a series of arms *j j* are jointed and so arranged as to have a tendency to fall outward when the machine is in motion. The said arms *j j* correspond in number with the number of perforations in the flange *b* of the shaft B, and are placed immediately under the said perforations. Consequently when the machine is in motion the extremities of the arms *j j* will bear lightly against the strands *h h*, formed by the twisting of the sliver between the nipper-heads and the flange *b* of the central shaft. Therefore should one of the said strands break when the machine is in motion the arm *j*, that bears against it, will be thrown outward into a horizontal position, the effect of which will be to stop the machine in a manner that will be hereinafter set forth.

D is a bevel-wheel on the lower end of the central shaft B, which gears into a pinion on the driving-shaft E.

Power is applied to the machine by means of a band acting upon the fixed pulley Q on the driving-shaft E, and the machine is stopped whenever it may be necessary to supply the cans with slivers or to remove the finished rope or whenever an accident occurs, by running the driving-band off the fixed pulley Q onto the loose pulley R.

A vertical shaft J is placed between the rotating series of cans and the right-hand side of the frame of the machine, and is held by the supports *m' m''*, which project from the parts O and M of the said frame. Near the top of the said shaft J an adjustable angular arm *k* is secured, and above the said arm *k* and resting upon it an arm *m* is placed upon J, and is so acted upon by a spring *j'* as to cause it to bear against the vertical portion of the arm *k*, and also permit of its being turned with but little effort in an opposite direction.

A horizontal shaft P is placed in bearings located in the front legs N' N' of the frame of the machine in such a manner that it can slide longitudinally therein. A spiral spring *p* embraces a portion of the left-hand end of the said shaft P between the adjustable stop *p'* and the left side of the machine, and presses outward. The right-hand end of the shaft P projects some distance beyond the frame of the machine. A short distance above and beyond the projecting end of the shaft P an arm S projects from the side of the machine in close proximity to the pulley Q on the driving-shaft E, which arm S has a notch *n* formed in its front side, and has an oblong loop *r'* connected to its upper side, which embraces an arm *r*, that projects from the shaft P. When the shaft P is moved to the left a sufficient distance, its arm *r* will fall into the notch *n* in the arm S and retain the shaft in that position until the said arm is thrown out of its said retaining-notch. When the shaft P is retained in the aforesaid position, the outer side of the arm *r* will be about parallel with the inner side of the driving-pulley Q, and when the arm *r* is thrown out of the notch *n* in the arm S the spring *p* will drive the shaft P to the right with sufficient force to cause its arm *r* to remove the driving-band from the fixed pulley Q to the loose pulley R, and thereby stop the machine.

About the center of the shaft P an arm *q* is fixed thereto, which arm has a tooth *s* projecting from its extremity, as shown in Fig. 3. When, as the machine is operated, a can becomes exhausted of its supply of sliver, and the movable bottom *c* is caused to rise by the action of the spring *k'*, as before set forth, it will bring the button *e* on the lower end of the rod *d* in contact with the tooth *s* on the arm *q*, and thereby produce a sufficient amount of motion of the shaft P to throw its arm *r* out of the retaining-notch *n* and cause it to shift the driving-band from the fixed pulley Q to the loose pulley R and stop the machine, as above set forth, which stoppage gives notice to the attendant of what is wanted, and prevents the production of imperfect cord or rope.

The vertical shaft J is connected to the horizontal shaft P by means of the angular arm *y*, projecting from J, the vertical arm *w*, rising from P, and the bar *x*, which connects the two together. It will therefore be perceived that the breakage of one of the strands *h* will produce a stoppage of the machine by causing one of the arms *j* to be thrown outward into a position to strike against the arm *m* on the shaft J, and thereby impart such a degree of motion to the shafts J and P as will detach the arm *r* from the retaining-notch, and cause it to shift the driving-band from the fixed to the loose pulley on the driving-shaft in the manner hereinbefore set forth.

All the pulleys *g g* of the series of can-frames are connected together by an endless band Y, which is held in a stationary position by its being confined by flaps to the frame of the machine, as shown in the drawings. Consequently, when an annular motion is imparted to the series of cans around the axis of the shaft B, that motion of the can-frames will cause the band Y to impart a rotary motion to each of them upon its own axis.

My improvements in the cans G G, by which I am enabled to place a larger quantity of sliver in them than can be placed in cans of ordinary construction, consist, in the first place, of making a series of corrugations *b' b'* in

the sides of the cans which serve when the sliver is pressed into them to prevent it from rising therein in consequence of its buoyant nature, and in connection with the above in making openings *i' i'* in the sides of the cans to allow the air to escape as the sliver is pressed into the cans. I prevent the movement of the cans from producing a rotary vibration of the sliver as it ascends therein and the twisting and kinking that is produced thereby by an inwardly-projecting wing *g'*, secured to the inner side of each can, substantially as represented in Figs. 4 and 5. The said gyrations of the sliver within a can will be arrested as soon as it is brought in contact with the wing within the same.

The cans G G are secured within their frames by means of the metallic bands *h h*, which are so combined with the rods *f f* as to slide freely up and down on the same. By raising one of these said bands a can can be placed within its frame, and the said band is then allowed to fall down upon the bead *c'* near the top of the can and thereby securely retain it in its place.

The cord or rope is drawn from the machine by means of the double pairs of drawing-rollers K L and K' L', which are placed in bearings in the standards X X X' X', which rise from the top O of the frame of the machine. Each pair of the said drawing-rollers are geared to each other by cog-wheels *l' l''*, and the whole four are connected together and also connected to the driving-shaft U by means of the cog-wheels V V', placed on the journals of the rollers L and L' and gearing into the pinion *v* on the shaft U. The lower roller of each pair of the said drawing-rollers has grooves *t'* formed in it, which receive the rope from the compressing forming-block of the machine. One of the said grooves receives the rope from the compressing forming-block and thence it is carried to a corresponding groove in the opposite roller, and thence back and forth until all the said grooves are filled. Shoulders *k' k''* project from the upper rollers K K' and bear upon the rope in the outermost grooves of the rollers below. The remaining portions of the surfaces of the upper rollers do not bear at all upon the rope upon the lower pair of rollers. The journals of the upper rollers K K' nearest to the shoulders *k' k''* have pressure-boxes *a' a'* placed upon them, which are acted upon by the curved rods *z z*, the springs *z'*, and the set-screws *y'*, as shown in the drawings. It is found in practice, that this arrangement of the drawing-rollers, by which the rope passes in grooves from one roller to another, which is geared to it and moves with the same speed, and is then acted upon by pressure while passing through the last groove of each roller, produces in all cases a perfectly-uniform tension of the rope, which no other arrangement of drawing-rollers known to me ever has perfectly accomplished. Motion is imparted to the shaft U by means of the cog-wheel *u* upon the same, which gears into the pinion *t*, placed upon the same arbor as the pulley T, which pulley T is banded to the driving-shaft E, as shown in Fig. 1.

The herein-described arrangements by which the machine is enabled to stop itself in certain cases may be made to throw cog-wheels out of gear, instead of transferring a band from a fixed to a loose pulley should gearing be employed for driving my improved rope-making machines.

Having thus fully described my improved rope-and-cordage-making machine, what I claim therein as new, and desire to secure by Letters Patent, is--

1. The arrangement and combination of the parts by which the machine is enabled to stop itself when the sliver becomes exhausted, or nearly so, in any one of the cans, viz., by means of the movable bottoms *c* within the cans connected to the rods *d*, which pass through the tubular journals of the can-frames and descend below the disk H, the arm *q*, fixed near the center of the spring-shaft P, and the arm *r*, fixed near the projecting end of the said shaft, and the arm S, projecting from the side of the machine, or the respective equivalents of the said parts, when arranged, combined, and operating with each other and fixed pulley Q and the loose pulley R on the shaft E, substantially in the manner herein set forth.

2. The corrugating of the sides of the cans to prevent the sliver from rising therein when it is pressed into the same, by which a much larger quantity of sliver can be placed in them than can be placed in cans of the usual form.

3. In combination with the said corrugations in the sides of the cans, the perforating of the sides of the same for the purpose of allowing the air to escape therefrom when the sliver is compactly pressed into the cans.

4. The inserting of a wing or wings into each of the cans for the purpose of preventing the combined annular and rotary motion which is imparted to the cans from twisting and kinking the slivers as they rise therein to the upper tubular journals of the can-frames, substantially as herein set forth.

The above specification of my improved rope-and-cordage-making machine signed this 10th day of April, 1852.

DAVID PERRY.

Witnesses:
Z. C. ROBBINS,
J. S. BROWN.