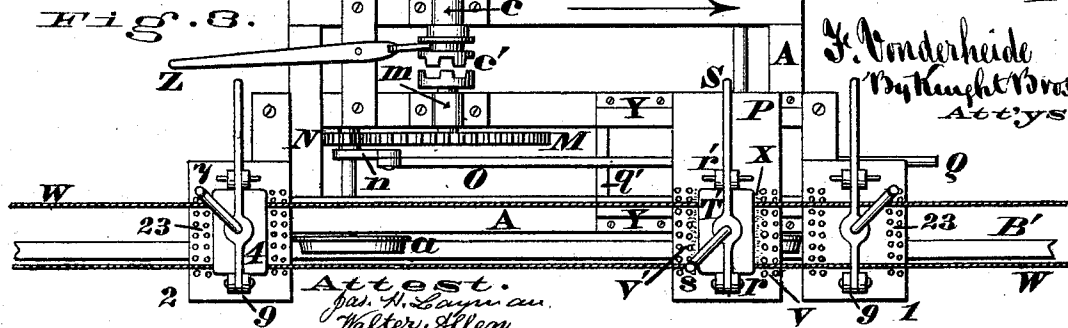
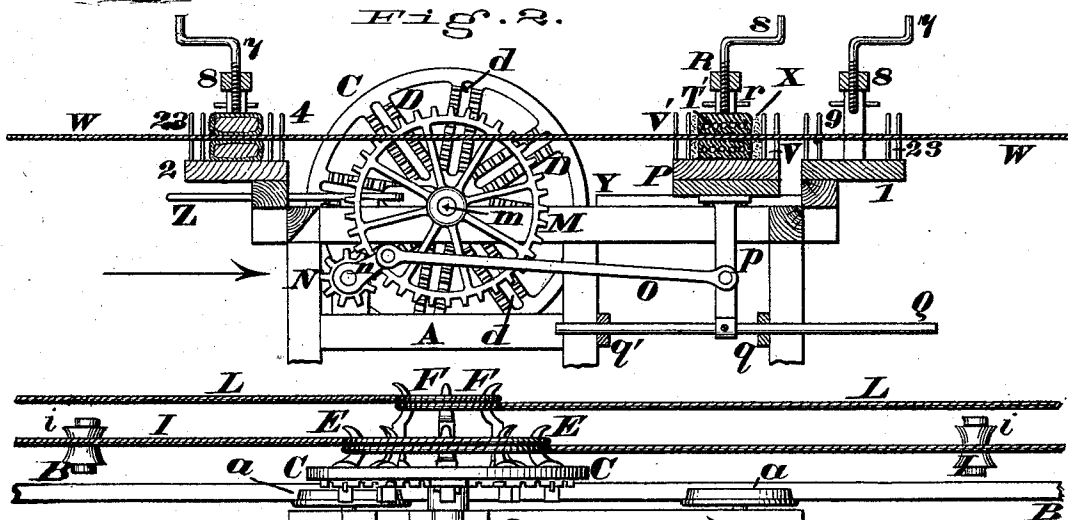
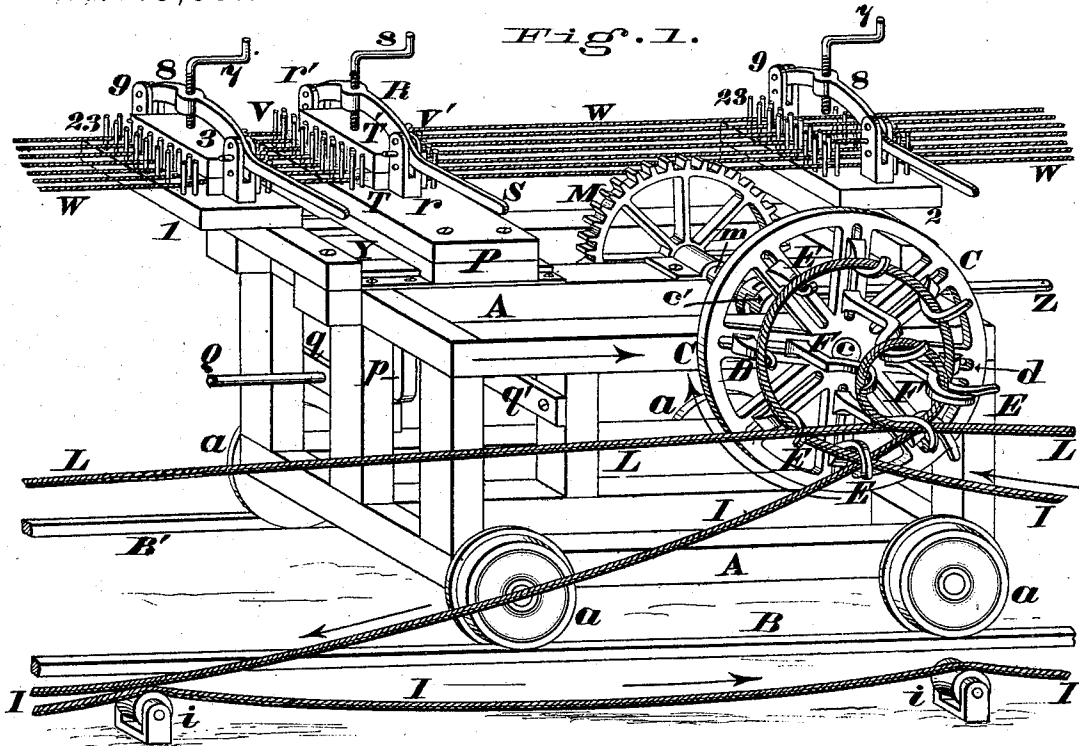


F. VONDERHEIDE.
Cordage Slicking-Machines.

No. 149,551.

Patented April 7, 1874.



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Fig. 9.

Fig. 4.

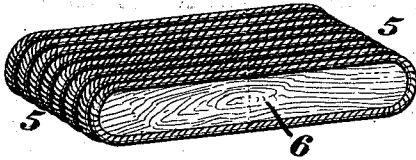


Fig. 5.

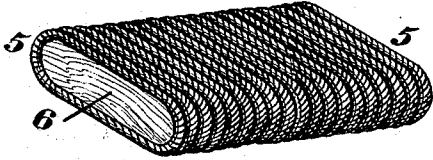


Fig. 6.

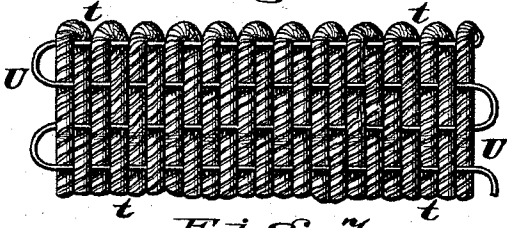
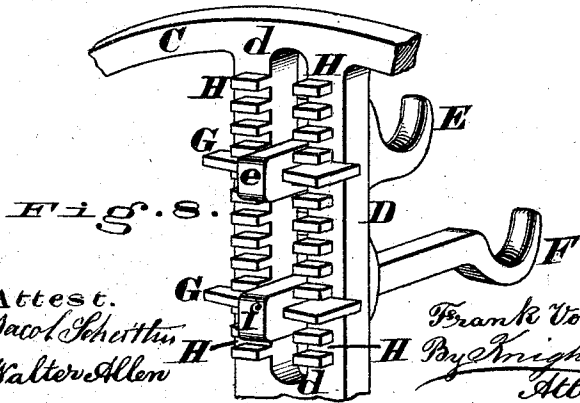
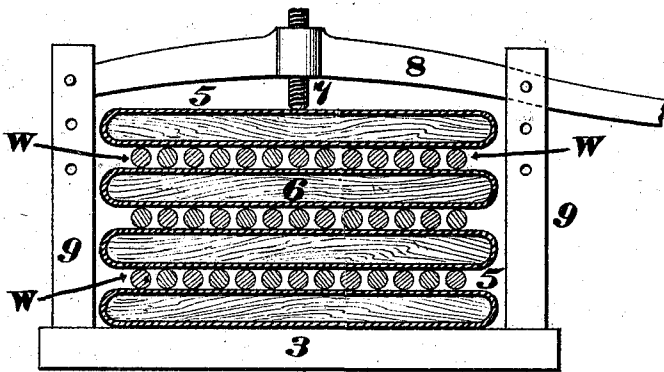
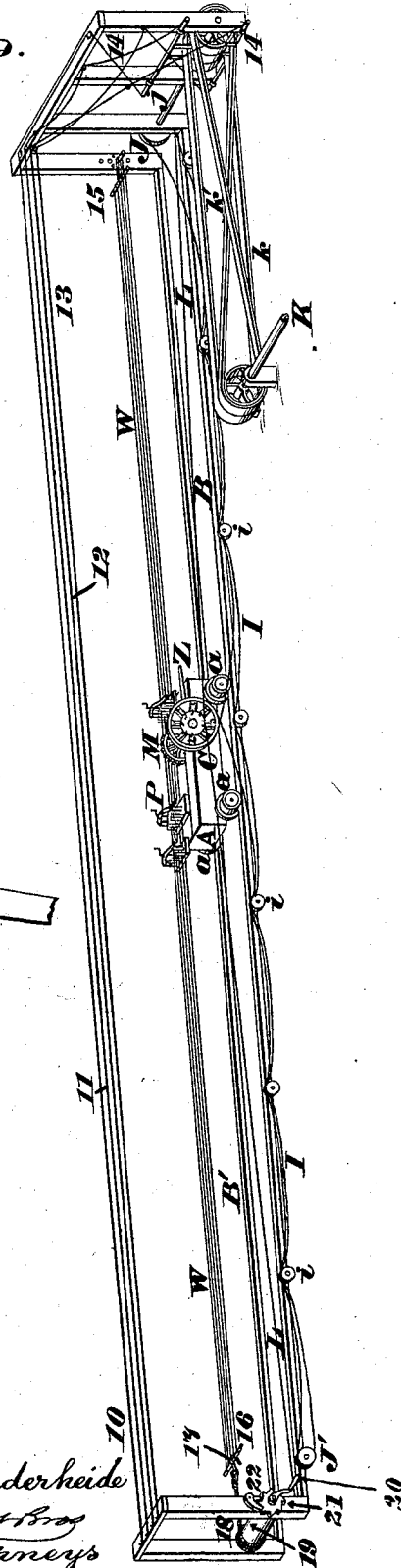


Fig. 7.



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UNITED STATES PATENT OFFICE.

FRANK VONDERHEIDE, OF CINCINNATI, OHIO.

IMPROVEMENT IN CORDAGE-SLICKING MACHINES.

Specification forming part of Letters Patent No. **149,551**, dated April 7, 1874; application filed July 18, 1873.

To all whom it may concern:

Be it known that I, FRANK VONDERHEIDE, of Cincinnati, Hamilton county, Ohio, have invented a new and useful Cordage-Slicking Machine, of which the following is a specification:

My invention relates to certain improvements in machines for slicking or finishing twine and cordage, in which a series of stationary and reciprocating rubbers are adapted for use in both the forward and backward directions of the traversing frame or carriage, and in which the relative speeds of the reciprocating rubbers and of the frame's movement, whether onward or retrograde, are governable by means of an arrangement of two sets of radially-adjustable whelps or hooks for the ground-rope and endless driving-rope, respectively.

Figure 1 is a perspective view of my machine. Fig. 2 is a vertical section through the upper portion of the same. Fig. 3 is a plan of the machine. Fig. 4 is a perspective view of one of the rubbers employed in the "snuggers." Fig. 5 is a perspective view of another form of such rubbers. Fig. 6 is a plan of the combined wire and hair-cloth rope-rubber, such as are applied to the reciprocating cross-head. Fig. 7 represents one of the snuggers with three layers of cord clamped within it. Fig. 8 is a perspective view of one of the slotted arms of the driving-wheel, with the whelps keyed therein; and Fig. 9 is a perspective view of a rope-walk provided with my cordage-slicking machine and its accessories.

Figs. 4 to 8, inclusive, are on an enlarged, and Fig. 9 on a reduced, scale.

The various operative parts of the machine are mounted upon a frame, A, which is supported upon flanged wheels *a* that are adapted to run upon tracks B B', the latter being laid the entire length of the rope-walk. Journaled transversely of the frame A is a shaft, *c*, whose outer end carries a driving whelp-wheel, C, while the inner end of said shaft is provided with a clutch, *c'*, for a purpose which will presently appear. The wheel C is provided with arms D, slotted at *d*, for the reception of two concentric sets of hook-shaped

lugs or whelps, E and F, having, respectively, shanks *e f*, which pass through the aforesaid slots, and are secured therein by keys G. These keys engage within notches H that are cast upon the inner surfaces of the arms D of the driving-wheel. This arrangement of keys and notches permits the two sets of whelps to be adjusted toward or away from each other for the purpose of varying the speed of the machine, or altering the number of reciprocations of the rubber, for purposes which will be hereinafter explained. The outer set of whelps E have coiled around them an endless rope, chain, or band, I, which also passes around two pulleys, J J', that are situated at opposite ends of the rope-walk. Of the above-described pulleys the one J is the driver, being secured to a shaft, *j*, which is actuated from the main shaft K by either the straight belt *k* or the crossed belt *k'*. The driving-shaft K can be impelled by a steam-engine or other motor. The endless-rope I is supported at suitable intervals along the rope-walk upon grooved rollers *i*. The inner set of whelps F are somewhat longer than the outer set, in order that the rope L may not come in contact with the whelps E. This rope L, after passing around the whelps F, has its two ends secured to posts or other fixed objects situated at opposite extremities of the rope-walk, as shown in Fig. 9. The clutch *c'* is adapted to communicate motion from the shaft *c* to another one, *m*, which carries a spur-wheel, M, that engages with a pinion, N, the latter being provided with a crank, *n*. O is a pitman, one end of which is connected to the crank *n*, while its other end takes hold of a lug, *p*, that projects from the under side of a reciprocating cross-head, P. This lug may have secured to it a guide-rod, Q, passing through perforations in the bars *q q'*, so as to assist in steadying the cross-head P. Projecting upwardly from this cross-head are standards *r r'*, for the reception of a yoke, R, which is provided with a lever, S, and a clamping or compressing screw, *s*. This clamping-screw serves to compress closely together two rubbers, T T', which are composed of hair-cloth ropes *t*, woven around a flexible wire, U, bent into the represented flattened serpentine form, (see Fig. 6.) Projecting up-

wardly from the cross-head P, and arranged parallel with both sides of the rubbers T T', are two rows of pins, V V', between which are inserted the ropes or cords W, which are to be finished. The spaces between the inner row of pins V and the rubbers T are charged with a fibrous filling, X, which collects any superfluous sizing that may adhere to the ropes W. Y are guides which confine the cross-head P to a rectilinear path. Z is a lever, wherewith the clutch *c'* is operated. Secured to opposite end of the machine, in line with the cross-head P, are two fixed bed-plates, 1 and 2, which support what are technically called the "snuggers" 3 and 4. These snuggers are composed of hair, or manila rope, or other suitable material, 5, which may be coiled around wooden blocks 6, or interlaced about a wire, as in *t* U, Fig. 6, or otherwise secured, and said snuggers are maintained in contact with the rope to be slicked by means of the screws 7. These screws are tapped into clamps 8, which are adjusted in standards 9, in the same manner as the clamps and standards are applied to the cross-head previously described. 10, 11, 12, and 13 are overhead cords, which extend from one end to the other of the rope-walk, and communicate with any approved form of belt-shifting mechanism, 14. As these overhead ropes are at all times convenient to the operator who attends the machine, he is thereby enabled to advance or retract it by simply pulling the proper cord, and without leaving his position. The ends of the ropes or cords W are secured to rods 15 and 16, of which the rod 15 is coupled to one of the posts that supports the belt-shifting mechanism or other fixed object, while the rod 16 has a hook, 17, engaged with it. This hook is secured to a rope, 18, that is coiled around a windlass, 19, having a crank, 20, wherewith it is rotated. A ratchet, 21, and pawl 22, prevent accidental uncoiling of rope 18 from the aforesaid windlass. The object of this rope and windlass is to take up any slack that may be occasioned in the cords W by the rubbing action of the machine. 23 are pins upon the snuggers, which correspond with the ones V of the rubber.

My machine is arranged within the rope-walk, and operated therein in the following manner: It is first mounted upon the tracks B B', and the endless rope I is passed around the outer set of whelps E, and also around the pulleys J J', and made sufficiently taut to insure a positive rotation of the driving-wheel C. The other rope, L, is then coiled around the inner set of whelps F, and, after being drawn tight, its ends are secured to some fixed objects within the rope-walk. The cords W are then inserted between the rubbers T T', pins V V', and the parts of one of the snuggers 3 or 4, according to the direction in which the machine is to move, it being understood that these cords are not to be inserted in the snuggers—that is, in advance of the rubbers

attached to the cross-head P—but only in the one that is, for the time being, in rear of said cross-head. The cords W, being sufficiently tightened, are sized by hand, in the usual manner, and these preliminaries having been attended to, the operator then pulls one of the overhead ropes, so as to set the shaft *j* rotating in such a way as to propel the machine toward the remote end of the rope-walk. As the machine is thus propelled along the track a rapid reciprocating motion is imparted to the rubber T T', which serves to distribute the sizing equally around the rope, and at the same time it assists in bringing said rope to a circular shape and uniform thickness. The reciprocating action of the rubber has a tendency, however, to work up the fibers of the hemp, and thereby leave the rope in a fuzzy condition, which defect is remedied by the snigger. As this snigger is in the rear of the rubber, and moves only in the direction in which the machine is traveling, it will be readily understood that said snigger acts to lay the fibers all in one direction, and the result is that the rope, after passing through this part of the machine, presents a perfectly smooth and uniform appearance. This rubbing and slicking operation is carried on continuously during the time the machine is being propelled the entire length of the rope-walk, the filling X serving to wipe off any superfluous sizing that may adhere to the cord which is being finished. As soon as the machine has reached the limit of the track, the attendant grasps one of the overhead cords and pulls it, so as to operate the belt-shifter in such a manner as to instantly stop any further movement of the apparatus. The machine having reached the end of the track, the ropes are relieved from the pressure of the snigger between which they were previously engaged, and are clamped within the other snigger. The attendant then pulls another one of the overhead cords for the purpose of imparting such a rotation to the shaft *j* as will compel the machine to return along the tracks to the place from whence it started, and during this retraction of the machine, the sizing is distributed, the rope rubbed in opposite directions, and the fibers afterwards laid uniformly, as previously explained. These alternate trips of the machine from one end to the other of the rope-walk are repeated as often as may be deemed necessary, in order to impart the requisite finish to the twine, rope, or cord being operated on, after which they are disengaged from the rubber and snuggers and new cord, twine, or rope inserted, when the operation is repeated.

From the above description it will be seen that the machine is automatic in all its movements, with the exception of changing its course, and such attention as is necessary to supply it with cords, and to throw the snuggers in and out of action at the end of each trip. In case any accident should occur, the attendant can instantly arrest the motion

of the machine by pulling the proper overhead rope in whatever part of the walk he may be, and in the meantime will have abundant leisure to prepare the next batch of material to be operated on.

If it should be desired at any time to use the rubber in a direct manner and without reciprocating it, the result can be accomplished by shifting the lever *Z* so as to disengage the clutch *c'*, after which no motion will be communicated from the shaft *c* to the shaft *m*, and, consequently, no rotation of the crank *n* will occur.

The combined hair-rope and wire-rubbers used in connection with the reciprocating cross-head or carriage add materially to the efficiency of the machine, as they hug or surround the cordage on all sides, and thereby act to distribute the sizing equally upon the same, and they also insure the uniform rubbing of said cordage and its reduction to a cylindrical form.

In the principal illustrations only one horizontal layer or set of cords is shown, but it is evident that as many of these layers may be finished at once as can be readily inserted between the rubber and snuggers, as clearly shown in Fig. 7.

The speed with which the machine travels can be regulated by adjusting the whelps toward or away from the shaft *c*.

It is evident that the whelp-wheel *C* might be arranged in the center of the machine, instead of being located at the side of the same, but this would be objectionable, as the driving-ropes would necessarily take up the space between the rails.

The snuggers may be dispensed with in some cases and their duties performed by dry-rubbers that can be inserted in the place of the ones *T T'* at every alternate trip of the machine, but this arrangement would not be an expeditious one, although it might answer well enough for a small rope-walk. When the machine is arranged in this manner it would be necessary to throw the shafts *c* and *m* out of gear during the snugging or dry-rubbing of the ropes, so as not to raise the fibers by a reciprocating movement of the cross-head *P* and its accessories.

Instead of the overhead ropes being arranged to operate a belt-shifter, they can be adapted to reverse the steam-engine or other motor.

It will be seen that my compound whelp-wheel, by enabling both the tight and slack driving ropes to be located on one side, leaves the other side of the machine freely accessible to the attendant at all times, and at whatever part of the walk he may be located, and leaves

abundant room for the cordage without danger of entanglement.

In forming the rubbers that are to be used in the snuggers, the rope 5 may be coiled longitudinally around the wooden block 6, as shown in Fig. 4, or the rope may be wrapped transversely around said block, as represented in Fig. 5; or the upper rubber may be of one of said forms and the lower rubber of the other of said forms, or of wire covered with such hair-rope, as in Fig. 6, before stated.

The form of rubber preferred by me and believed to be new is clearly shown in Fig. 6. In this form the interlaced wire, while effectually holding the hair-rope in the represented close mat-like shape is at the same time capable of yielding at every part, so as to intimately hug and press the cordage equally on every side without opposing the passage of knots.

I am aware that cordage-slicking machines, both stationary and traveling with stretched rope and take-up motion and reciprocating and other rubbers of felt, hair-rope, cloth, and other fibrous materials, with means for connecting and disconnecting, so as to traverse without reciprocation or to reciprocate without traversing, at the option of the operator, are public property; the aforesaid and other features being clearly set forth in English patents Nos. 3,145, of 1808; 6,562, of 1813; 1,796 and 2,151, of 1854; 1,442, of 1856; 3,195, of 1857; 2,705 and 2,788, of 1860; 3,258, of 1861; 936, of 1866; 1,286 and 3,521, of 1868, and others; and French patent to Rolan Carbour, of 1856, which patent shows substantially the form and arrangement of snugging-rubbers shown at 5 6, Figs. 4, 5, and 7, and which, therefore, are not claimed. I therefore disclaim novelty in such devices, broadly considered.

I claim as new and of my invention—

1. The elastic slicking-rubber, constructed, as herein described, with hair-rope, *t*, interlaced in serpentine lines upon a yielding and resilient wire-frame, *U*, of flattened serpentine form, as shown, for the purposes stated.

2. The whelp wheel or pulley having two sets of whelps independently adjustable and of unequal lengths, as described, for the purposes set forth.

3. The combination of the slotted and notched driving-wheel *C D d H*, keys *G*, and adjustable whelps *E e F f*, as and for the purpose set forth.

In testimony of which invention I hereunto set my hand.

FRANK VONDERHEIDE.

Attest:

GEO. H. KNIGHT,
JAS. H. LAYMAN.