

E. H. Stearns,

Log Turner.

No. 110,398.

Patented Dec. 20, 1870.

Fig. 1.

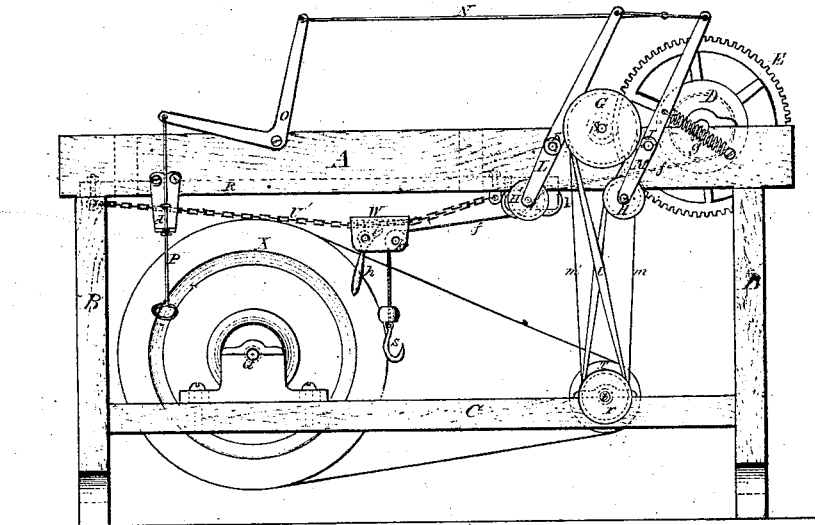


Fig. 2.

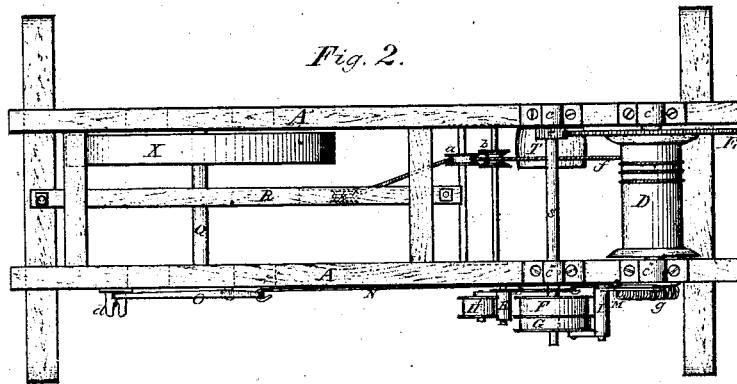
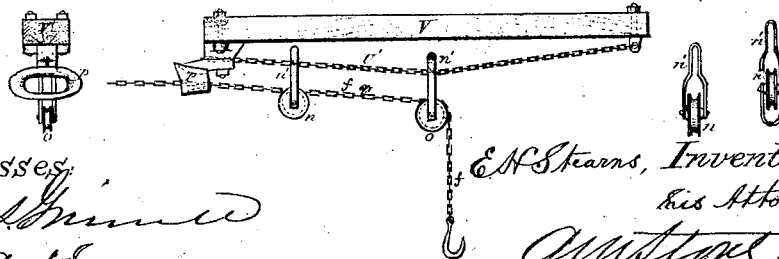


Fig. 4.

Fig. 3.



Witnesses:

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EDWARD H. STEARNS, OF ERIE, PENNSYLVANIA.

IMPROVEMENT IN MACHINES FOR TURNING LOGS.

Specification forming part of Letters Patent No. **110,398**, dated December 20, 1870.

To all whom it may concern:

Be it known that I, EDWARD H. STEARNS, of Erie, in the county of Erie and State of Pennsylvania, have invented an Improved Log-Turning Machine, of which the following is a specification.

The nature and object of my invention are to provide a machine by which the power that actuates a saw-mill shall also be applied to the turning of saw-logs therein in such a manner as to act conveniently in whatever direction the saw-log may lie, and to turn such log by a gradually-increasing force, and after it has been turned to gradually release the hold of the machine upon it in such a manner as to avoid any violent jerking or jumping motion of the log or the machine.

The first part of my invention relates to the construction of a device composed of a straight beam and an ordinary chain, each end of which is attached to an extremity of the beam, in order that one or more traveling pulleys provided with grab-links may be mounted upon such chain to furnish adjustable vertical points of support for the chain by which the log is turned.

The second part of my invention relates to the construction and operation of a new device composed of the grab-link and the ordinary loose pulley, the use of which device, in my machine, is that while the grab-link locks with the chain at any point desired in such a manner as to stop longitudinal motion or travel upon the chain the pulley will furnish an anti-frictional bearing for the chain by which the log is turned.

The third part of my invention relates to a new and useful combination of a hawse-hole with the device last described to increase its efficiency.

The fourth part of my invention relates to the arrangement and operation of certain pulleys and belts in such a manner that by operating a simple lever the spool of the windlass may be made to wind or unwind the cord or chain without stopping or changing the direction of the driving-wheel of the machine. All the devices and parts before mentioned may be framed together just under the roof of the mill-house, out of the way of the sawing apparatus, or otherwise.

In the accompanying drawings, Figure 1

represents a side elevation of my machine as independent of the mill-house; Fig. 2, a plan view of the same; Fig. 3, an elevation of a beam-chain, the device composed of grab-link and traveling pulley and a hawse-hole; Fig. 4, a cross-sectional view of the beam, the hawse-hole, and pulley.

A A, B B, and C C constitute a frame to sustain the operative parts.

The spool D and spur-wheel E, pinion e, and pulleys F and G revolve upon suitable bearings on the side pieces, A A, as shown.

The power actuating the machine is transmitted by a band passing over the pulley T, which revolves it and its shaft t, which has bearings upon the lower side pieces, C C. Now, upon the near end of the shaft t are two fast pulleys with flanges upon their sides to confine their bands upon their peripheries, and upon the near end of the shaft S are two exactly similar pulleys, except that they are larger. An open band passes over the inner pulley on the lower shaft, t, and the inner pulley on the upper shaft, S, but fits so loosely that when the lower shaft, t, is revolved such band will not turn the pulley F, and in a similar manner a cross-belt, l, passes over the outer lower and upper pulleys, fitting loosely in like manner.

By means of the bell-crank lever O, the rod N, and the two levers L and M, with their pivot-bearings I and K upon the side of the frame, the tightening-pulleys H and H' are mounted and operated as shown in the drawings. Now, when these pulleys are in the position shown in Fig. 1 the crossed belt is taut, so that when the pulley T is revolved the shaft S will be revolved in an opposite direction; but by simply pulling the rod P downward the pulley H is made to tighten the band m, which will then turn the shaft in the same direction, and thus the spool D may be turned so as to wind or unwind the rope or chain f without stopping or changing the direction of the revolving pulley T.

Any log-turning machine operated by a tight belt is objectionable, because so long as the machine is in motion the band will turn the machine at a uniform rate of speed, whereas by the use of these loose bands L and M, in connection with the tightening-pulleys H and H', the speed of motion may be graduated to a nicety, for by means of these tightening-pul-

leys a very slight force may be applied to the pulleys which they turn, so that they will slip upon them a little and at the same time turn them a little, or, when desired, hold the log poised in the exact position desired until it can be fastened by the dogs and held so.

The lack of suitable devices to effect graduated application of the power has resulted, to a great extent, in the rejection in saw-mills of all log-turners heretofore known. Sudden action and cessation of power have proved dangerous and damaging to the machinery, and inconvenient in adjusting the log. The spiral spring *g* is seated as shown in the drawings, and holds the levers in the position shown in Fig. 1, and holds the crossed belt *l* taut, and they are changed into an opposite direction by an application of sufficient force to pull downward the rod *P*, which may be fastened down by the simple device shown at *d*. The box *W*, Fig. 1, contains the grooved pulley *K*, the handle *h*, and catch *i*, and moves along freely over the chain *U'*. The chain *U'* merely suspends and allows free motion to the box, and the handle *h* and catch *i* are intended to lock the box at any point desired, and over the anti-friction roller *K* the rope or chain *f* runs while the machine is in operation.

The device affords an easy movement lengthwise over the chain, where the two anti-friction pulleys *a* and *b*, before mentioned, and shown in the drawings, afford transverse adjustability to the rope or chain.

In Figs. 3 and 4 are shown better devices to effect the same object.

The beam *V* should be properly located in the frame and the chain *U'* attached to it, as shown, and the traveling pulleys *n* and *o*, having grab-links, are mounted upon it, and the chain *U'*, as shown in Fig. 3. One end of that chain passes through the hawse-hole *P* and terminates in a hook at the outer end to hold the log while the other is fastened to the spool *D* and is wound and unwound, as before described.

I do not, however, confine myself to a straight beam; but a stretched chain, in a nearly horizontal position for the passage of the traveling pulley, is the important feature in this part of my invention. The chain may be attached at each end to any suitable supports.

My principal object is to get rid of the cumbersome, expensive, and inconvenient apparatus heretofore in use—such as cars and railways and the like—which required heavy timbers for support.

The grab-links *n'* upon the pulleys *n* and *o* act as locks by which the point of draft may be held at any point desired along the length of the chain.

The peculiarity in the construction of grab-link *n* is, that it is made so narrow at the top of the opening that while a vertical link of the chain will pass freely up into it and through it a horizontal link cannot do so, while its central portion is so large that the chain will pass freely through it, and there is no danger that the chain will slip out of the link and fall, as would be the case if any ordinary hook were used. Such an accident would not only be inconvenient, but dangerous, as the chain is intended to be stretched above the machinery of the saw-mill proper, and where it would be difficult to hold the chain and pulley with safety.

In small and cheap machines the anti-friction pulleys *a* and *b* may be dispensed with, and the hawse-hole *P*, which is simple and inexpensive, used in its stead.

The use of both devices is to avoid friction as much as possible and to prevent the chain or rope from getting off the spool *D*.

The hawse-hole, as shown, has its horizontal diameter nearly twice as great as its vertical diameter, so as to allow lateral but little or no vertical play for the chain.

The use of both devices in a machine is not necessary. The anti-friction pulleys are appropriate to larger and more expensive machines.

I claim as my invention—

1. The beam provided with the hawse-hole *P*, in combination with the fixed chain *U'* and turning-chain *f*, substantially in the manner and for the purpose described.

2. The combination, with the upper pulleys, *G* and *H*, and the lower pulleys on the shaft *t*, the tightening-pulleys *H* and *H'*, the crossed belt *l*, an open belt, *m*, operated by the rods *P* and *N*, levers *L* and *M*, and bell-crank lever *O*, and spiral spring *g*, all substantially as and for the purpose described.

3. The device composed of the traveling pulley *o* and the grab-link *n'*, combined with the chain *U'*, constructed and operated substantially in the manner and for the purpose set forth.

4. The chain *U'*, stretched and fastened at each end thereof to a beam, or otherwise supported in a horizontal position, as a track or way for a traveling pulley, when constructed and arranged substantially as and for the purpose described.

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Witnesses:

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