CHARLES E. DONNELLAN.

Improvement in Machines for Making Straw-Rope.

No. 114,535. Patented May 9, 1871.

Fig. 1

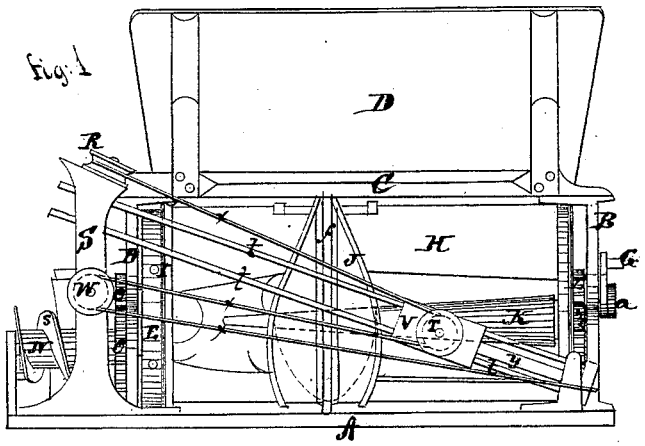


Fig. 2

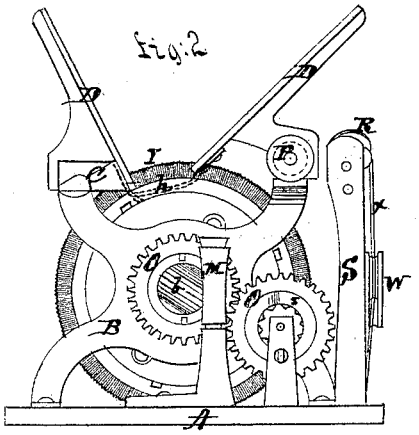


Fig. 4

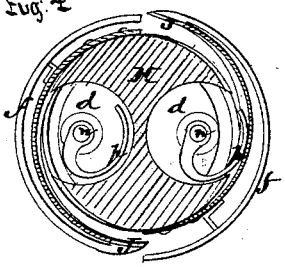
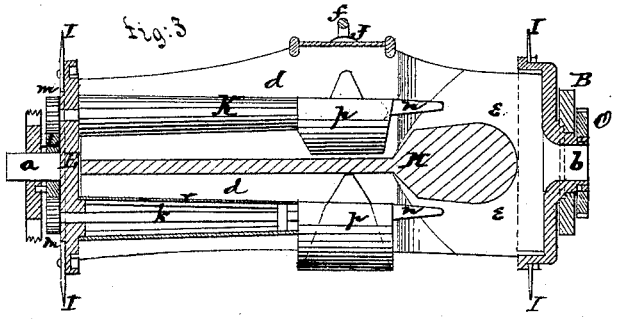


Fig. 3



Witnesses.

C. L. Ouert.

Jas. E. Hutchinson

Inventor.

Chas. E. Donnellan

per Alexander Mason

Attys.

UNITED STATES PATENT OFFICE.

CHARLES E. DONNELLAN, OF INDIANAPOLIS, INDIANA, ASSIGNOR TO HIMSELF AND McCORD & WHEATLEY, OF SAME PLACE.

IMPROVEMENT IN MACHINES FOR MAKING STRAW ROPE.

Specification forming part of Letters Patent No. **114,535**, dated May 9, 1871.

To all whom it may concern:

Be it known that I, CHARLES E. DONNELLAN, of Indianapolis, in the county of Marion, and in the State of Indiana, have invented certain new and useful Improvements in Machines for Making Straw Rope; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing, and to the letters of reference marked thereon, making a part of this specification.

The nature of my invention consists in the construction and arrangement of a machine for making a rope of straw for binding grain, or for any other purpose for which such a rope may be used, and the machine is intended to sit in any convenient place on the reaper.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawing, in which—

Figure 1 is a side elevation, and Fig. 2 is an end view, of the entire machine. Fig. 3 is a longitudinal vertical, and Fig. 4 a transverse vertical, section of the revolving cylinder, showing the position of the gatherers and twisters.

A represents the bed-plate or frame, upon which are secured two end pieces, B B, connected by bars C C at their upper ends, one on each side. To the bars C C is attached a rack, D, in which the straw is first put.

On the inner side of each end piece B is placed a circular head, E, having suitable journal-bearings in their respective end pieces, the journal *a* for one of said heads being solid, and in the drawing represented as provided with a crank, G, for turning, while the journal for the other head is hollow, or rather provided with a hole, *b*, as shown in Fig. 3.

The two heads E E are connected by means of a cylindrical piece, H, provided with longitudinal circular recesses *d d*, in which the twisters are placed and work, and from said recesses passages *e e* lead to the hollow journal *b*.

Upon each of the heads E is attached a circular saw, I, for the purpose of cutting the ends of the straws, the butts falling on the ground, and the heads being intended to slide through a chute and fall on the grain-table, so that they may be raked off and bound with the sheaf. On the outside of the cylinder H, in the center, are secured gatherers J J, provided with adjustable wires *f f*.

The free ends of the wires just in front of the points of the gatherers may be bent up or down to regulate the number of straws taken by the gatherers.

The saws I I are to be higher than the points of the gatherers, and strips *h h*, attached at either end of the rack D, are to be lower than the points of the gatherers, so that there will always be plenty of cut straw for the gatherers to take.

In each of the recesses *d* is placed a twister, K, which consists of a rod or shaft, *k*, passing through the head E with the solid journal, and having on its outer end a pinion, *m*, which gears with a cog-wheel, L, secured to the end piece B. Upon or to the inner end of the shaft *k* is attached a point, *n*, with twisted or curved lip *p*, as shown in Fig. 4. To said point is also attached a conical tube, *r*, inclosing the entire shaft, as shown in Fig. 3.

The twisters K K are set so that they take the straws from the gatherers, pulling the ends of the strips *h h*, and the front ends of the straws are caught by the rope that is already started. The free end is carried around with the twister, thus twisting the straws together, making two separate strands, both coming out of the hole *b*, and are twisted into one. It then passes around a vertical wheel, M, then onto a reel, N, which is provided with a spiral, *s*. This reel obtains its motion through gear-wheels O O, one attached to the reel and the other to the hollow journal *b*. This reel serves to pull the rope out of the machine, and is to be made of proper size to regulate the twisting of the two strands together. The spiral *s* is to push the rope along on the reel, to keep it from lapping or catching. The rope *x* passes from the reel over a wheel, P, mounted on the end of one of the connecting-bars C, thence around another wheel, R, placed in an inclined position on the upper end of a post or standard, S, which is attached to the bed-plate A. From the wheel R the rope *x* passes around a pulley or wheel, T, mounted on the side of a slide or head, V, which moves on inclined

guide-rods *t t;* and from said sliding wheel the rope passes back around a wheel, W, on the side of the post S, and to the binder. This machine is intended to be run by a belt or chain on a wheel put on where the crank G is represented to be.

The sliding wheel T takes the rope from the reel as fast as it is made, and has a rubber band, *y*, (weight or spring may be substituted,) to keep it taut at all times. When the binder pulls on the rope it takes just enough to go around the sheaf, let it be any size it may, and while one sheaf is being bound the rope is being made for the next.

The rope may be made without the gatherers J J, by arranging the twisters K K to gather as they revolve around. I may make a one-strand rope by having only one twister, or I may make two or more.

The saws I I may be dispensed with by setting the machine perpendicular or on an angle, and inclose the front end of the rack, so that the straw will settle with the ends to the right place. I may do away with the front saw and use the other to cut the heads off, and I may do away with the lips of the twisters, and use three-cornered twisters tapering from the heel to the free point.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The relative arrangement of the saws II, gatherers J J, and strips *h h* on the rack D—that is to say, the edges of saws above and the strips below the points of the gatherers, substantially as and for the purposes herein set forth.

2. The saws I I, attached to the heads of the revolving cylinder E E, for the purpose of cutting off the ends of the straws, substantially as herein set forth.

3. The gatherers J J, provided with adjustable wires *f f*, and attached to the revolving cylinder H, substantially as and for the purposes herein set forth.

4. The twister K, composed of the shaft *k*, point *n*, lip *p*, and tube *r*, and revolving within the recess *d* of the revolving cylinder H, substantially as and for the purposes herein set forth.

5. The within-described cylinder, composed of the heads E E and body H, one of said heads having a solid journal, *a*, and the other a hollow journal, *b*, and the body provided with one or more recesses, *d*, and passages *e*, all substantially as and for the purposes herein set forth.

6. The reel N, provided with a spiral, *s*, and arranged as described for pulling the rope out of the machine, as herein set forth.

7. The arrangement of the wheels P, R, and W and the sliding wheel T, moving on an inclined plane, and provided with a rubber band, spring, or weight, substantially for the purposes herein set forth.

8. The within-described machine for making straw rope, when its parts are constructed and arranged substantially as and for the purposes herein set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 23d day of March, 1871.

CHARLES E. DONNELLAN.

Witnesses:

JOHN M. WHEATLEY,

CHARLIE D. SHILLING.