

F. Meyer.
Grain Binder.

N^o 24945

Patented Aug. 2, 1859.

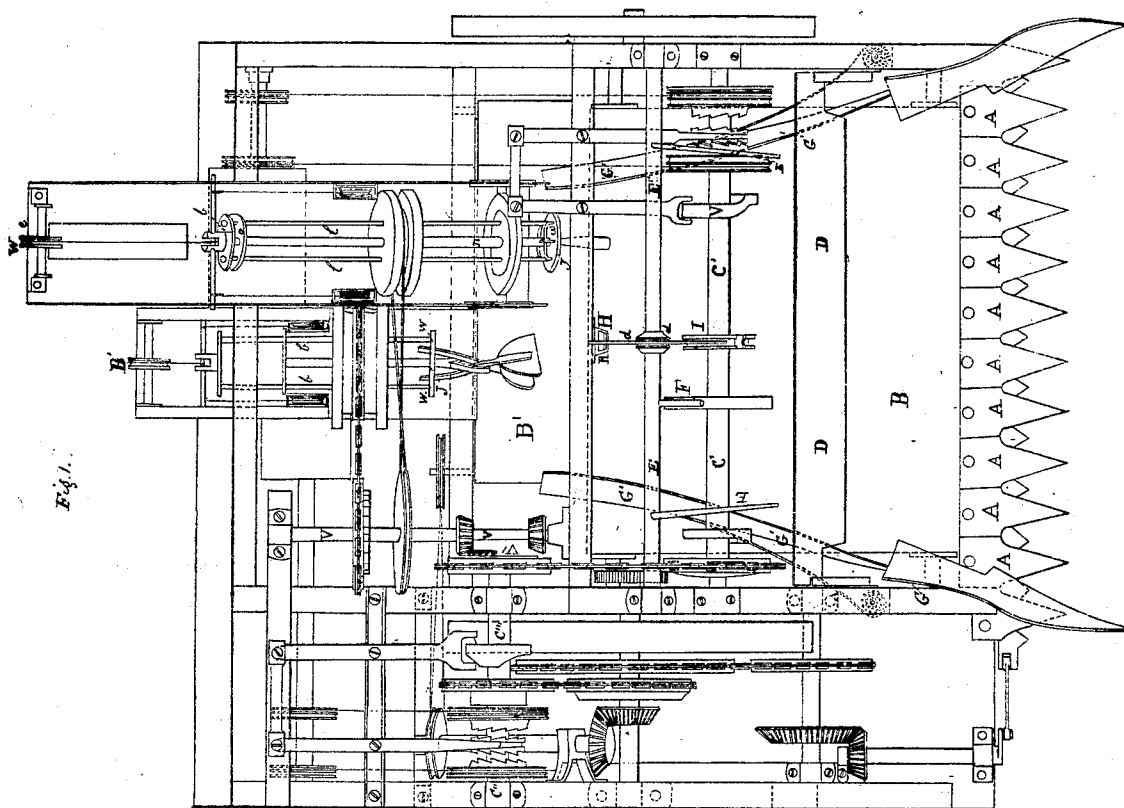


Fig. 1.



Fig. 2.

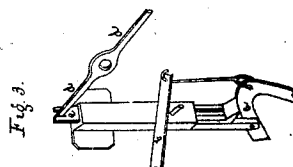


Fig. 3.

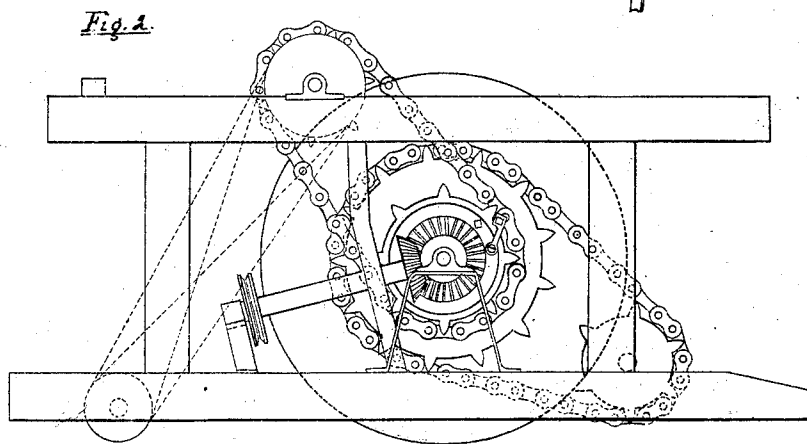


Fig. 4.

Witnesses

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FREDERICK MEYER, OF NAPERVILLE, ILLINOIS.

IMPROVEMENT IN MACHINE FOR CUTTING AND BINDING GRAIN.

Specification forming part of Letters Patent No. 24,945, dated August 2, 1859.

To all whom it may concern:

Be it known that I, FREDERICK MEYER, of Naperville, in the county of Du Page and State of Illinois, have invented an Improved Machine for Cutting and Binding Grain, Grass, &c.; and I do hereby declare the following to be a full and exact description thereof, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a top view of my improved machine. Fig. 2 is a side view. Fig. 3 is a view of the tucker H. Fig. 4 is a view of the tongs, hereafter described.

My machine consists of an ordinary reaping-machine. Attached to this reaping-machine is an apparatus for bundling the grain as it is cut. This is operated by being connected with the motive power of the reaping-machine.

A A A, &c., the ordinary sickle commonly employed in reaping-machines. On the under side of the finger a small hole should be left, in order that any dirt which may be collected may fall through. B is the movable platform, consisting of an apron of leather, or any other suitable material, passing over two rollers, which rollers are moved by being connected with the motive power of the reaping-machine by cog-wheels or pulleys, or other suitable contrivances.

C C' is an axle supporting several wheels, hereafter described.

C'' C''' is an axle, moved by means of a pulley placed upon it and connected with one of the wheels supporting the machine. The axle C C' is moved by being connected by means of pulley-wheels and bands with the axle C'' C'''.

D D is a sliding divider. This is operated by means of two projecting levers E E, which are on the axle E' E'. F, on this axle, is a short stem which rests upon a wheel, G, on the axle C C'. One side of this wheel has a notch cut upon its edge. This wheel, revolving with the axle C C', permits the stem F to rest upon it; consequently, when the stem falls in the notch, the divider D falls by its own gravity and divides the grain into suitable-sized bundles. Then, when the stem is raised out of the notch, the divider is raised. G' G' G'' and G' G' G''' are two doors or gates, hinged at G'' and G'''. These are so formed that they will close when the divider D is up and open

when it is down; that is, they will close when a sufficient quantity of grain is upon the apron to form a bundle. They are opened by means of a spring, and closed by a lever having a wheel attached to its end pushing against their extremity. This lever is attached to an upright axle, which is moved at the proper time, and to the proper extent, by means of an arrangement of partly teeth wheels. At H is a tucker, which is also shown, detached, in Fig. 3. It consists of a curved hook, and fastened by one end to an upright piece firmly attached to the cross-piece above. The middle of the hook is attached by a rod to a spring, b. Sliding down along the side of the upright piece is a rod, c, moved by a lever, d d, to one end of which it is fastened. This lever is attached by its center to the axle E' E'. The other end of the lever rests upon an eccentric, I, placed on the axle C C'. The operation of this tucker is as follows: As the eccentric revolves, the end of the lever resting upon it is elevated, and consequently the other end is depressed, which pushes the rod c downward, which in its turn presses upon the hook between the point where it is attached to the upright and the point where it is attached to the spring. The free point of the hook is, therefore, moved in the direction of the arrow, Fig. 3. As the eccentric lowers the end of the lever the reverse effect is produced, the hook being drawn back by the power of the spring.

B' is a similar movable platform to the platform B, moving at right angles to the latter. J J' are two pairs of tongs. They are shown in Fig. 4. The tongs J is opened and closed by an arrangement consisting of two rods, l l, firmly attached to a plate, m, a third rod, n, passing through this plate. These two rods, l l, pass through a plate, o, and are fastened to a plate, p. The rod n is fastened to the plate o. The rod n is also fastened to the tongs at their center, the two handles of the tongs passing through holes in the plate m. On pulling up the rod n the jaws of the tongs are opened, and on pushing the rod down they are closed. The plate p is connected with a cross-piece, which slides up and down in grooves made for the purpose. To this cross-piece are attached, on each end, bands which, passing over small pulleys, are attached to a

drum or pulley, which is beneath, on the axle C'''. To the center of the cross-piece is attached another band, which passes over a small pulley, *w*, and is also attached to the same drum, but so that it will be wound in an opposite direction. The object of this is, that if the drum be turned, one band, or set of bands, will be wound while the other will be unbound, and thus draw the tongs upward or downward. While they are being drawn downward, the cross-piece pushes the two rods *ll* downward, which is equivalent to drawing the rod *n* upward, thus opening the tongs. In drawing them up the reverse effect takes place.

The drum is made to rotate alternately in opposite directions by being connected with two pulleys on the axle C' in such a manner that one of these pulleys will move it in one direction and the other in the opposite direction. These pulleys are thrown into gear alternately by means of a wheel, *k*, being attached to the axle C C'. This wheel has teeth upon its two sides corresponding to teeth upon the side of the pulley. Its edge is provided with a groove in which an arm of a compound lever rests, which lever is connected with a double eccentric on the axle C C', by which means the wheel *k* may be pushed against either pulley and thus throw them into gear.

The tongs J' is similar in its construction and mode of operation. The jaws of the tongs are made broader. The drum, by means of which it is drawn up and down, being connected in a similar manner with pulleys on the axle C'' C'''. V V is an axle carrying two small beveled cog-wheels at a distance apart corresponding to the diameter of the wheel V' on the end of the axle C'' C'''. This wheel V' has only a section of its circumference provided with teeth. The consequence is, that the axle *vv* is only in motion during a portion of the revolution of the wheel V'. The tongs J and J' are provided with pulley-wheels, through which the rods may slide; which wheels, in turning, will twist the forks around. These pulleys are made to revolve in boxes, having friction-rollers placed around their circumference. These are connected by means of bands with the wheels on the axle V V.

All the wheels connecting the reaping-machine with the binding apparatus are so formed that they can only be moved while the machine is going forward. At all other times the axles move without causing the wheels to move.

In practice, chains constructed as shown in Fig. 2 will be found preferable to wire ropes or leather bands, giving greater accuracy in the movements of the different parts.

The mode of operation is as follows: The grain is cut by the sickle and gathered by a reel upon the platform B, when at intervals the divider D slides down and divides the grain upon the platform. The platform, passing back, carries the grain back to the tongs

J and J'. The tongs J takes about twenty or thirty straws and draws them back, and at the same time twists them into a band, one end of which remains in the bundle of grain, which meanwhile has been pressed into a bundle by the closing of the two gates.

The tongs J', its jaws having been distended by the means formerly described, is then pulled toward the bundle of grain, which is held compressed between the folding gates.

The end of the bundle is therefore immediately in front of the distended jaws. The jaws, as they pass forward, encompass the end of the bundle, and, closing tightly around it as they are drawn back, pull the bundle from between the folding gates, which at this moment open.

While the bundle is drawn back, it is caused to revolve by means of the tongs, which hold it, revolving. These tongs are made to revolve by being connected by a band with a pulley on shaft V V, as before described. At this moment the tongs J release the end of the band which they have been forming, which, by the revolution of the bundle, is wound around it.

When this has been done, the tucker H is depressed by means of the eccentric on the shaft C C', and, operating in the manner described, tucks the free end of the band into the bundle.

One end of the band being fast within the bundle and the other passing through the tongs J as the bundle is revolved and the tongs J loosened, the band must necessarily wind around the bundle directly opposite the tongs J. The tucker H is placed at the point where this line and a line drawn through the axis of the tongs J' would intersect each other. The consequence of this arrangement is, that when the tucker H is depressed, it must push against some portion of the band and tuck it into the center of the bundle. The band, passing around the bundle and its two ends being fastened within the bundle, must necessarily render the bundle firm.

The bundling is now finished, the tongs let go their hold, and the bundle falls upon the platform B', which carries it laterally and drops it upon the ground in the track of the horses, so that they may pass clear in the next circuit. By this time another portion of the grain is ready to undergo a similar operation.

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

1. The combination of the movable gates, the sliding divider, and the movable platform, as described.

2. The construction of the tongs, and the mode of operating them, as described.

3. The tucker H, for the purpose of fastening the free end of the band, substantially as above described.

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Witnesses:

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