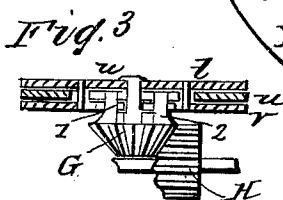
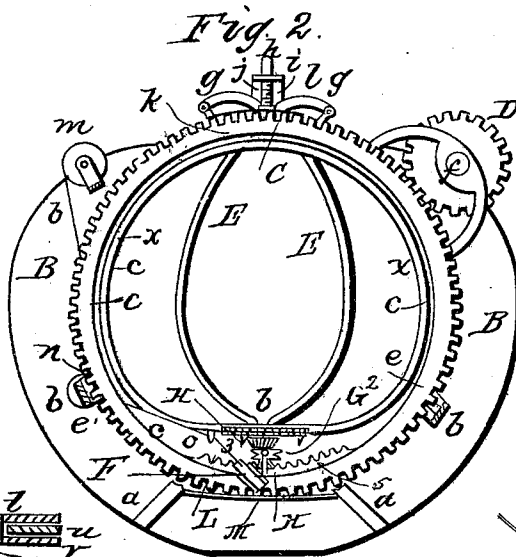
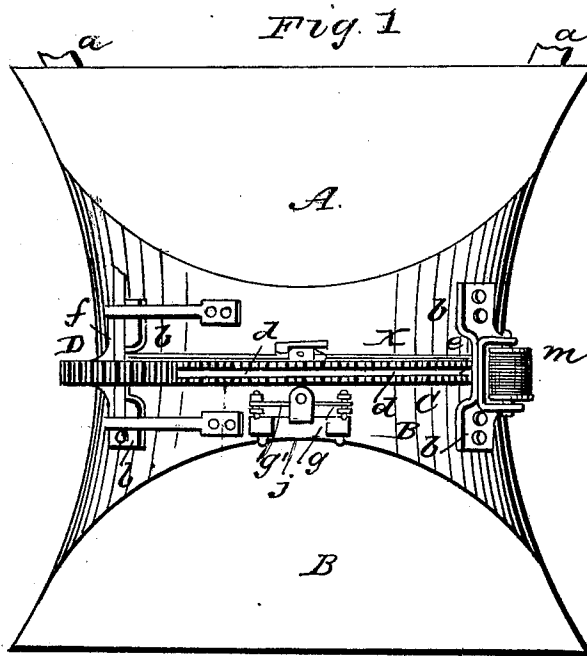


C. L. BEAMER.

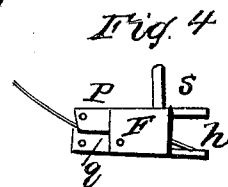
Grain Binder.

No. 91,202.

Patented June 15, 1869.



witnesses
W. J. Chamberlain
J. A. Drake



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UNITED STATES PATENT OFFICE.

CHARLES L. BEAMER, OF CAMBRIA, NEW YORK.

IMPROVEMENT IN GRAIN-BINDERS.

Specification forming part of Letters Patent No. 91,202, dated June 15, 1869.

To all whom it may concern:

Be it known that I, CHARLES L. BEAMER, of Cambria, in the county of Niagara and State of New York, have invented certain new and useful Improvements in Grain-Binders; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a plan; Fig. 2, an elevation of one-half of the shell, showing the operating parts; and Figs. 3, 4, and 5, detail views.

Like letters of reference indicate corresponding parts in all the figures.

My invention is intended to form an attachment to a reaper or rake; and consists in providing a shell made in two parts, the sides of elliptic form and flattened at the bottom, encircled by a revolving grooved cog wheel; also, in the arrangement of two spring-arms or binders; also, in the device for holding, twisting, and cutting the wire which binds the sheaves, all to be hereinafter fully described.

In the drawings, A B represent the two parts of the shell, hollowing in on their sides and bottom, with elongated bars *a a* to help hold their weight, and to attach them to the table of a reaping-machine, the shells being formed in this peculiar shape to admit and discharge the grain as it comes from the reaper.

The shell B is wider-mouthed than A, and is fastened by braces *b b b b* to the inner end of the shell A, but leaving a space (shown at *x x*) for admitting the binding-wire, as will be hereinafter fully explained.

Encircling shell B, and leaving a space, (shown by letters *c c c*), is a large cog-wheel, C, the cogs divided in the center, forming a slot or groove *d*. (Shown at Fig. 1.) Fastened to and depending from the center of each of these braces *b b b b* are points or guides *e e*, protruding into slot *d*, thus keeping the cog-wheel C in the same place and position as it turns around the shell. Motion is given to the cog-wheel by pinion D and shaft *f*, the latter to receive its motion from the reaper to which it is attached.

E E' represent the two compressors or binders, which, when open or separated, lie close to and conform in shape to the inside of the shell till they are brought into play to com-

press the wire around the grain when it has entered the binder. To perform this the upper ends of these arms are fastened to short toggle-arms *g g'* pivoted to an upright shaft, *h*, encircled by a spiral spring, *i*, held in frame *j*. Fig. 2 shows the compressors in position while holding the wire around the grain. To work these compressors I form on a segment or portion of the side of the cog-wheel C a graduated cam, *k*, which, in every revolution of the said wheel, comes in contact with a projecting piece, *l*, on upright shaft *h*, gradually raising piece *l*, which bends downwardly the arms *g g'* and forces nearer and nearer together the compressors E E'.

As soon as the end of cam *k* has passed, the arms are thrown back in place by spring *i*, ready for the next revolution of the cog-wheel C.

As hereinbefore stated, the shell is made in two pieces, and attached by braces, leaving a space for the admission of the binding-wire. On top of one of the connecting-braces *b* is arranged a spool, *m*, of wire. An end of said wire is carried down and around a small grooved tension-wheel, *n*, to regulate the strain and make it equal. From this the wire passes through the eye of guide *o* to nipper and cutter F. (See Figs 2 and 4.) This nipper is made of two pieces, the inner edges *p q* being supplied with cutting-edges like shears, and the nipping part holding the wire tightly by the arrangement of a spring, *r*. (See Fig. 4.) The inner side of this nipper is provided with a pivot, *s*, which sets in a corresponding hole in cog wheel C, allowing the nipper to move up or down, as required. As the cog-wheel moves around it carries along with it the nippers holding the wire. After having gone around, carrying the wire through the opening *x*, and therefore encircling the grain in the shell, the cam *k* on the outside of cog-wheel C comes in play, as shown in Fig. 2, bringing the "following-arms" or binders E E' tightly around the grain, and holding it while the wire is being twisted and cut by the following devices: A circular space is left in the bottom of the shell, into which three disks or twistors, *t u v*, are placed flat, the top one, *t*, being flush with the bottom of the shell. On the periphery of each of these, notches or teeth are cut, the edges beveled to catch the wire as it

comes into them. The upper and lower ones are fastened together with pins, so that they may move together. The center one, *u*, has slots where these pins pass through, which allow it to move independently. They all set loosely around a shaft, *w*, its lower ends provided with a beveled gear, *g*. Arranged on the top of this are two projecting points, 1 2, which pass through slots in twister *v*, into twister *u*, moving this a short distance independently of the upper and lower twist-ers. This is to aid in holding the wire, as when it comes into the notches the middle disk *u* is moved around a trifle, bringing the teeth in position. (Shown at Fig. 5.) To give this motion of the disks and make them twist the wire, I arrange on the inner side of the cog-wheel C a short series of cogs, 3 4 5, &c., which come at each revolution of the cog-wheel in contact with a beveled and spur gear, H, which moves a beveled gear, G, and operates the twist-ers or disks *t u v*, as before stated. When the end of the series of cogs 3 4 5, &c., is reached, the motion of the twister is stopped. The grain now being bound and the wire twisted so as to hold it, the cutting of the wire is the next operation, which is done by the cutter or nipper F. I accomplish this by arranging a cam, L, on the cross-piece M, fastened to the bottom braces *a a'*. As the nipper F, holding the wire, comes underneath the twist-ers, its lower end strikes the cam L, which raises it to an up-right position and presses open the cutter, which, as soon as the cam is passed, shuts with a snap by means of spring *r*, cutting one end of the wire that comes through the twister, and catching the other end of the wire in the nipping part, and continuing on its next revolution, and so on.

By the arrangement of the cam *k* and cogs 3 4 5, &c., on cog-wheel C, the binding-arms E E', twist-ers *t u v*, and cutter F act con-jointly.

This machine is also intended to be used as an attachment to either the reel or sweep-rake, as well as a reaping-machine.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The shell formed in two parts, A and B, the grooved cog-wheel C having cam *k* on its outside, and cogs 3 4 5, &c., on a segment of its inner side, in combination with the com-pressors E E', arms *g g'*, shaft *h*, spring *i*, and frame *j*, constructed and operating as herein set forth.

2. Three disks or twist-ers, *t u v*, beveled gear G, and spur-gear H, in combination with the shell A B and cog-wheel C, arranged and operating as herein described.

3. The nipper and cutter F, in combination with the cog-wheel C, cam L, and brace M, as herein set forth.

4. The construction of the machine as a whole, consisting of shell A B, braces *a a b b*, arms E E' *g g'*, cog-wheel C, provided with groove *d*, the twist-ers *t u v*, beveled and spur gears G H, and nipper and cutter F, all ar-ranged and operating in the manner and for the purpose herein specified.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

CHAS. L. BEAMER.

Witnesses:

J. R. DRAKE,

W. J. CHAMBERLAIN.