(No Model.)

S. MILLER.

BUNDLE CARRIER.

No. 336,251. Patented Feb. 16, 1886.

Fig. 1.

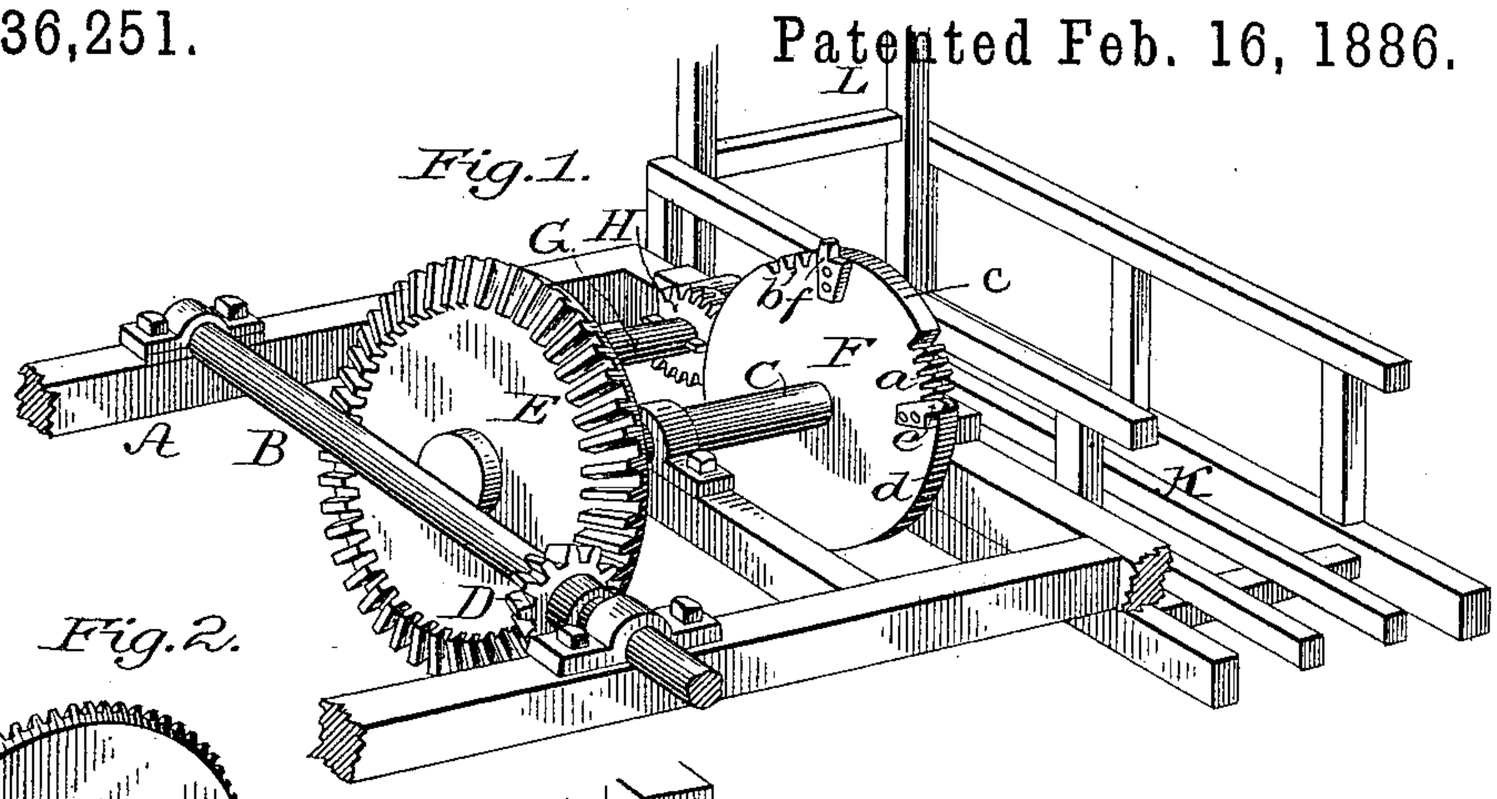


Fig. 2.

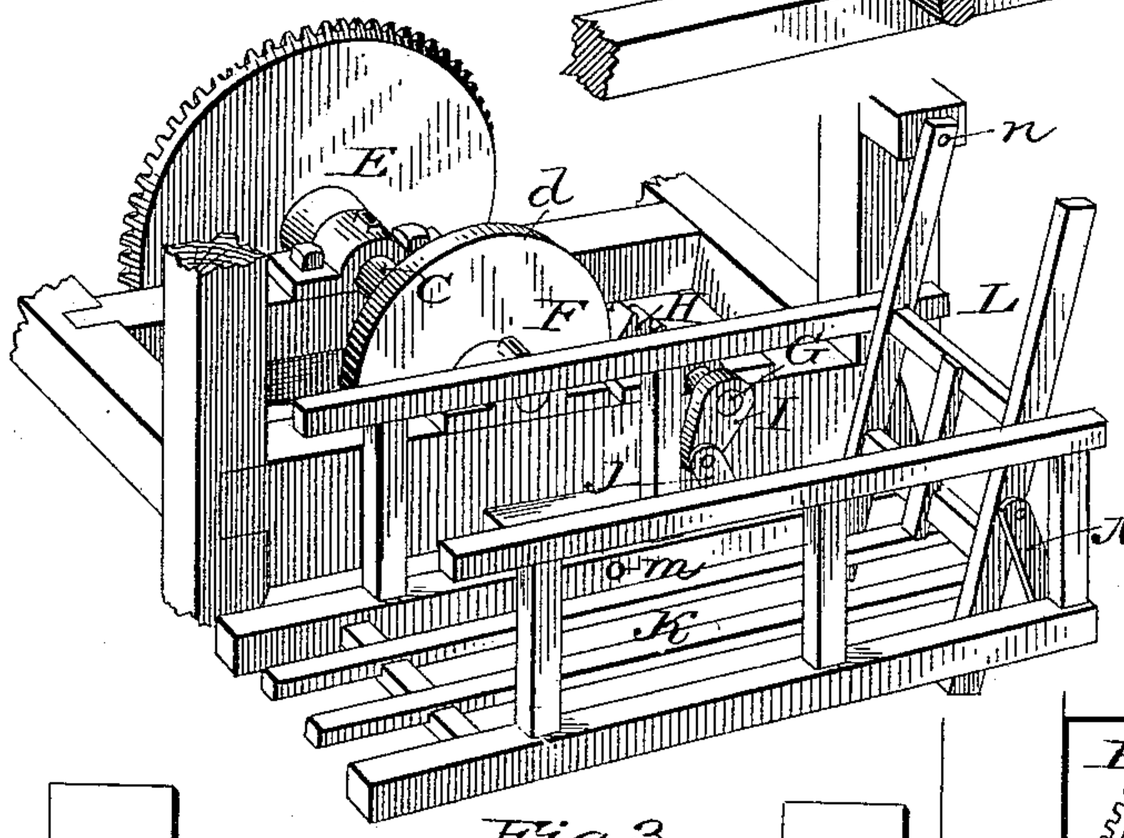


Fig. 3.

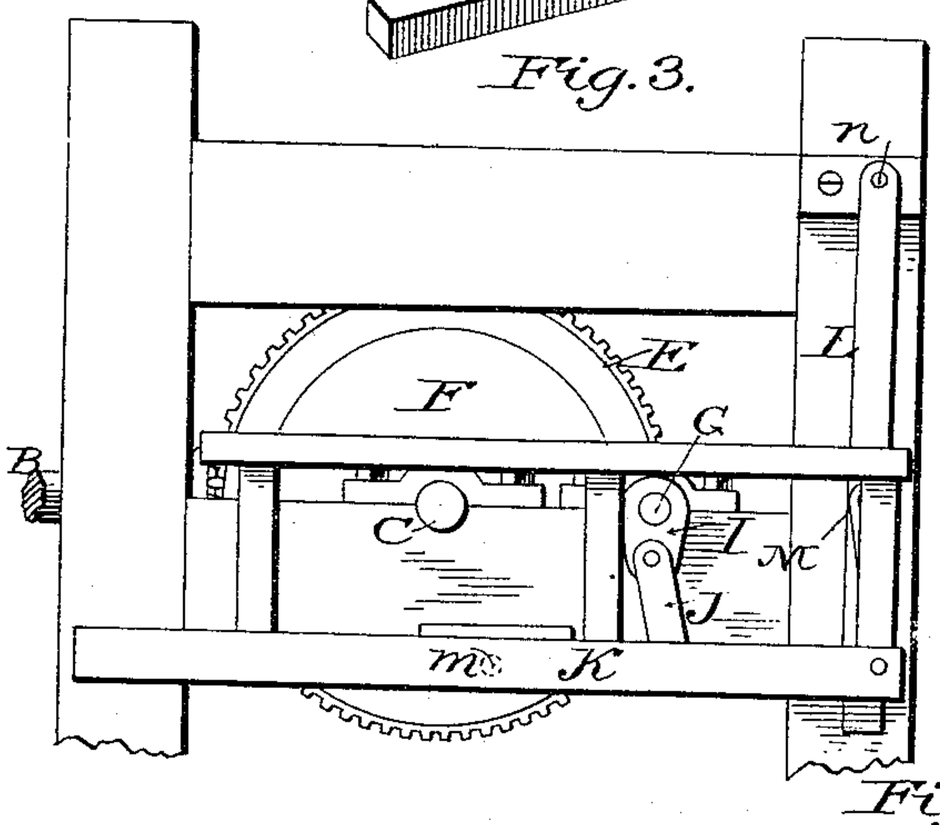


Fig. 4.

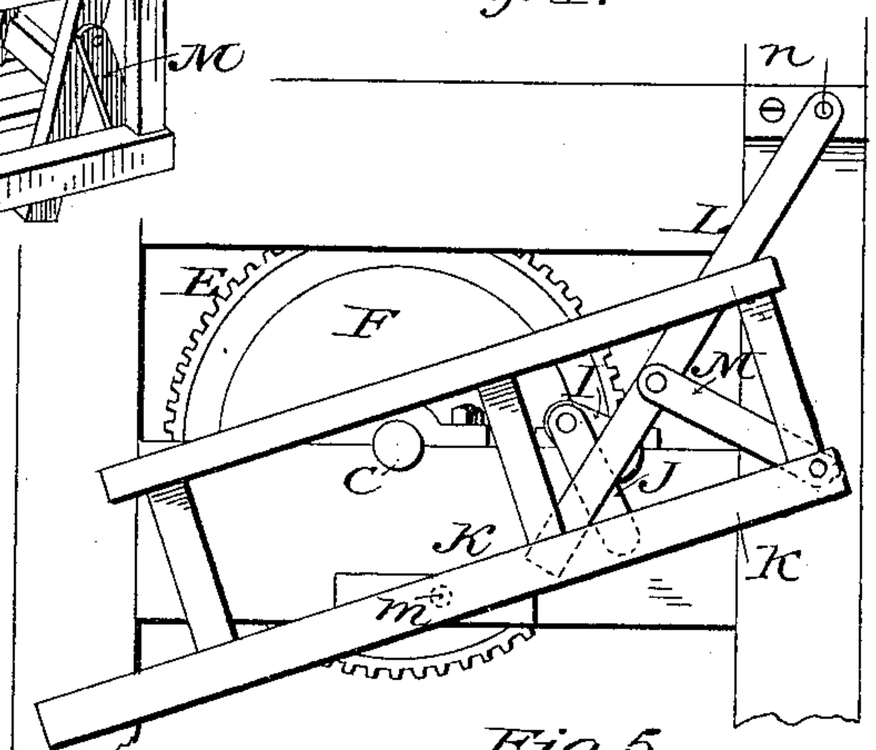
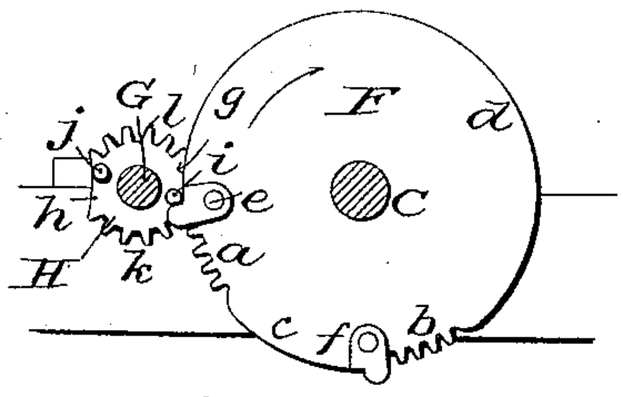


Fig. 5.

Fig. 6.



Witnesses:

Jas. P. Duffamel

Walter S. Dodge.

Inventor:

Samuel Miller,

by Dodger & Son,

his Attys.

UNITED STATES PATENT OFFICE.

SAMUEL MILLER, OF PIERRE, DAKOTA TERRITORY.

BUNDLE-CARRIER.

SPECIFICATION forming part of Letters Patent No. 336,251, dated February 16, 1886.

Application filed April 22, 1885. Serial No. 163,056. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL MILLER, of Pierre, in the county of Hughes, Dakota Territory, have invented certain new and useful Improvements in Bundle-Carriers, of which the following is a specification.

My invention relates to bundle-carriers for grain-binding machines; and it consists in a novel construction and arrangement of parts, whereby the carrier is caused to tip positively at predetermined intervals, and to remain at rest in a tilted or inclined position for a sufficient period of time to insure the complete discharge of the bundles.

The invention further consists in a bundle-discharger for insuring the delivery of the bundles from the carrier.

Figure 1 is a perspective view of my improved carrier, showing the gearing by which it is actuated. Fig. 2 is a perspective view from the rear outer corner of the carrier, showing the latter in the act of tipping. Fig. 3 is a side view of the carrier, showing it in position to receive the bundles. Fig. 4 is a similar view showing the carrier fully tipped and at rest. Figs. 5 and 6 are views illustrating the action of the gear by which the tipping is effected.

Heretofore bundle-carriers have been arranged to tip automatically and means have been provided whereby the intervals of tipping might be varied and controlled as desired; hence neither of these features is broadly claimed. In some prior devices of which I have knowledge, however, the carrier has been arranged to tip and move back to place as one continuing movement, and as a consequence it has frequently happened that the carrier resumed its horizontal position before the bundles could be entirely discharged. This difficulty has resulted either in an unequal number of bundles in a shock, or, more commonly and more seriously, in the dragging of the bundles over the ground, and the consequent thrashing out of grain. From careful observation of the machine in action I have found that two things are necessary: first, that a delay period or interval of rest be allowed when the carrier is fully tipped, so that the bundles may have time to pass from the carrier; and, second, that an ejector be provided to insure the discharge of the bundles. The first of these I deem essential, the second advantageous and important, but not absolutely requisite.

The drawings illustrate a convenient form of mechanism for the purpose stated; but various modifications as to details will readily suggest themselves to the skilled mechanic.

A indicates a portion of the framing of a harvester and binder, which may be of any desired type, and B a shaft which rotates continuously or otherwise during the travel and operation of the machine.

In practice any convenient shaft that makes one revolution for every bound bundle may be selected from which to drive the bundle-carrier automatically, and motion may be imparted therefrom to the operating-shaft C of the carrier by gearing, belt, or chain, or any other common means of transmitting power and motion. Under the arrangement here shown the shaft B is furnished with a pinion, D, which meshes with and gives motion to a gear-wheel, E, secured upon shaft C, the relative sizes of the pinion and the gear-wheel being such that the shaft B makes four revolutions to one of the shaft C, and in practice it must make a revolution for each bundle in the shock. Shaft C is suitably journaled or supported in the framing A and carries at its outer end a mutilated gear-wheel, F, which may be described as a circular disk having a smooth periphery, with the exception of two short toothed portions, *a* and *b*, separated by a short toothless space, *c*, and a long toothless space, *d*. The wheel or disk F rotates in the direction indicated by arrows in the several figures, and at the forward end of the toothed sections are placed projecting lugs or fingers *e* and *f*, which are formed upon or secured to the face of the disk.

G indicates a shaft suitably journaled in framing A and carrying at one end a stop-pinion, H, having two stop-faces, *g* and *h*, curved to conform to the smooth periphery of wheel or disk F, and two pins or studs, *i* and *j*, against which the fingers *e* and *f* strike to throw the toothed portions of the pinion into mesh with the toothed portions of the disk or wheel F. This form of mechanism for securing an intermittent motion or rotation of a

shaft is common in binding machinery and well understood; hence its principle of operation need not further be explained.

As the disk or wheel F rotates with its smooth face *d* in contact with its stop-face *g* of pinion H, said pinion and the shaft G, to which it is keyed fast, remain at rest; but when finger *e* strikes pin *i* it turns the pinion far enough to cause its teeth *k* to mesh with teeth *a* of wheel or disk F, the teeth insuring equal surface-speeds of the two and the exact turning of the smooth faces to effect their proper meeting.

The pinion H, actuated by the finger *e* and gear-teeth *a*, makes one half-revolution. Then the stop-face *g* and the smooth portion *c* of wheel of disk F comes into contact and the pinion remains at rest, firmly locked against further movement, until finger *f* strikes pin *j* (which is brought into the path of said finger by the semi-rotation of the pinion) and brings teeth *l* of the pinion and teeth *b* of the wheel or disk F into mesh. When this occurs, the pinion makes one half-revolution and comes to rest with its face *h* in contact with face *d* of the disk.

The smooth face *d* extends about two-thirds the way around the disk F, and the pinion therefore remains at rest for quite a long period, during which several bundles are bound and delivered into the carrier, while the face *c* is much shorter and affords a dwell or delay sufficient only to give the bundles adequate time to leave the carrier. The shaft G carries at its outer end a crank-arm, I, which is connected by a link, J, to the tipping carrier K, which latter consists of a flooring and suitable sides, the rear end being entirely open and unobstructed and the front end closed by a swinging gate or ejector, L. The carrier is pivoted at *m* upon a rod or other support, suitably sustained to carry the weight of the carrier and its load. The forward end of the carrier is sustained by links M, connected at their lower ends to the carrier, and at their upper ends to the side beams or bars of the swinging ejector L, which latter is suspended from its upper end and swings upon its pivot *n*, as indicated. The bars or slats of the ejector are extended down between the bars of the floor of the carrier, so that their lower ends rise above the floor only as the ejector reaches the limit of its movement, if at all. Being thus constructed, the operation is as follows:

Motion being imparted to shaft B through the advance of the machine, said shaft, through its pinion D and the gear-wheel E, gives motion to shaft C. As said shaft C rotates it carries with it the disk or wheel F, which rotates without affecting other parts until finger *e* encounters pin *i*, whereupon the shaft G is caused by said pin and finger and by the teeth *a* and *k* to make a half-revolution, carrying crank-arm I from a point vertically below to a point vertically above shaft G, and thereby tipping the carrier *k* upon its pivot *m*. As the carrier thus tips the links M, which have their upper ends thrown somewhat out of the vertical position and toward pivot *m*, throw the lower end of ejector or gate L toward the rear end of the carrier, as plainly shown in Figs. 2 and 4, thus forcing the bundles toward the delivery end of the carrier. Faces *c* and *h* of the disk F and pinion H come into contact as soon as the teeth *a* and *k* pass out of mesh, and while face *c* is traveling over face *h* the shaft C remains at rest and gives the required dwell or interval to insure the certain discharge of the bundles.

Any form of variable gear may be employed to cause the discharge of a greater or a less number of bundles at a time, this feature being, however, quite old, and therefore not specifically described and shown.

Having thus described my invention, what I claim is—

1. In combination with a tipping bundle-carrier, gearing, substantially such as shown, adapted to positively tip the carrier, hold it at rest for a short period, and bring it back positively to receiving position, substantially as explained.

2. The combination, substantially as described and shown, of a pivoted carrying-frame, a rotary shaft provided with a crank-arm and stop-pinion, a link connecting the carrying-frame and crank-arm, and a mutilated gear wheel or disk adapted to partially rotate the stop-pinion, then to hold the same at rest for a short period, and to complete the revolution of the shaft and hold the pinion at rest while the bundles are collected in the carrier.

3. In combination with shaft C and mutilated gear-wheel F, secured thereon, shaft G, provided with stop-pinion H and crank-arm I, tipping carrier K, and link J, connecting the crank-arm and the carrier, substantially as described and shown.

4. In combination with a tipping bundle-carrier and an ejector therefor, gearing, substantially as shown, connected to the carrier, adapted to tip the latter, hold it at rest for a short period, and bring it back to receiving position, the carrier and ejector being actuated positively by the gearing, as described.

5. In combination with a tipping carrier having its sides closed and open at one end, a swinging end gate or ejector pivoted to the frame, occupying the other end of the carrier, and adapted to swing into the latter toward the delivery end as the carrier tips to discharge its load.

6. In combination with tipping carrier K, gate or ejector L, suspended, substantially as shown, and link M, connecting said carrier and gate, whereby the gate is caused to swing inward into the carrier as the latter tips.

7. In combination with tipping carrier K, mechanism, substantially such as shown, for tipping said carrier, holding it at rest and returning it to its normal position, the end gate or ejector, L, pivoted at its upper end to the frame of the machine, extending into the end

of the carrier, and connected to the latter at its rear end by a link, M, as shown.

8. The combination, substantially as described and shown, of rotary shaft C, provided with disk F, having toothed portions *a b*, smoothed portions *c d*, and fingers *e f*, shaft G, provided with crank-arm I, and with pinion H, having smooth faces *g h*, toothed spaces *k l*, and pins *i j*, tipping carrier K, link J, connecting crank-arm I, and carrier K, swinging ejector L, and link M, connecting the ejector and carrier.

SAMUEL MILLER.

Witnesses:
HARRIS S. MILLER,
HERBERT O. FISHBACK.