(No Model.) 3 Sheets—Sheet 1.

J. R. SEVERANCE.

BUNDLE DISCHARGER FOR GRAIN BINDERS.

No. 277,356. Patented May 8, 1883.

Fig. 1.

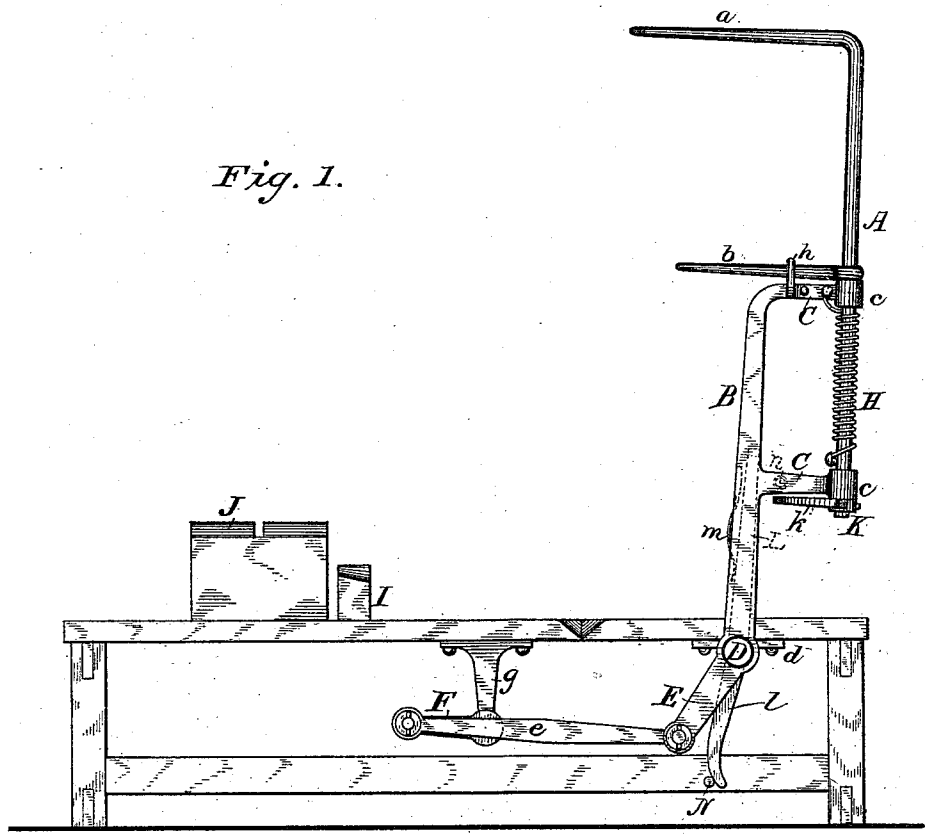
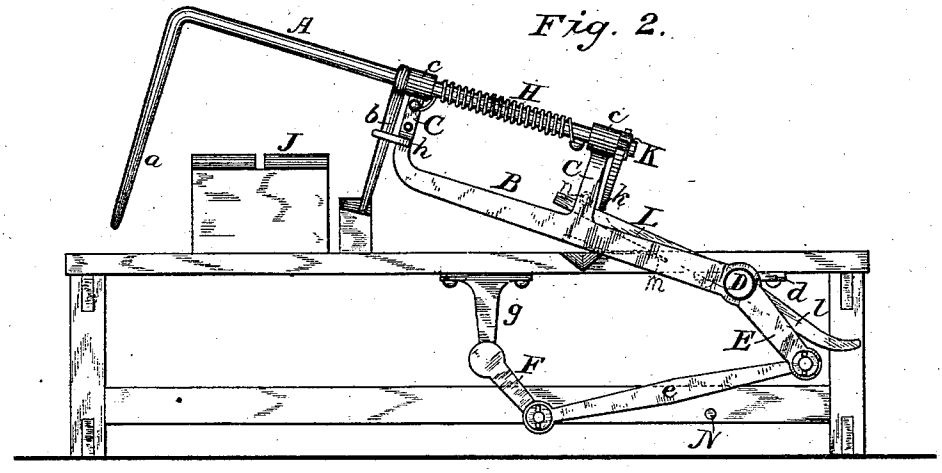


Fig. 2.



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Fig. 3.

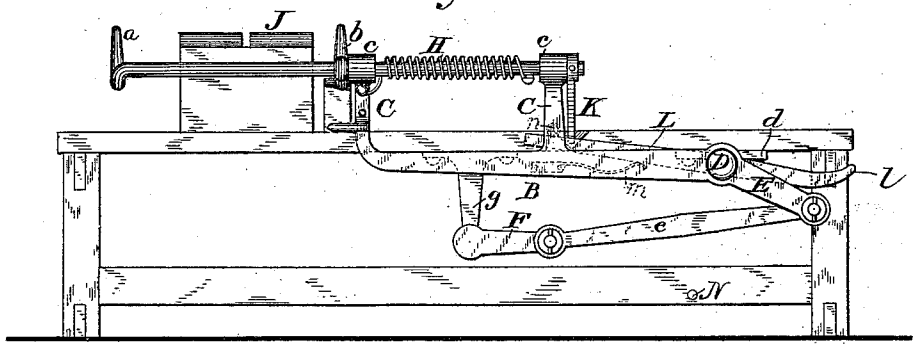
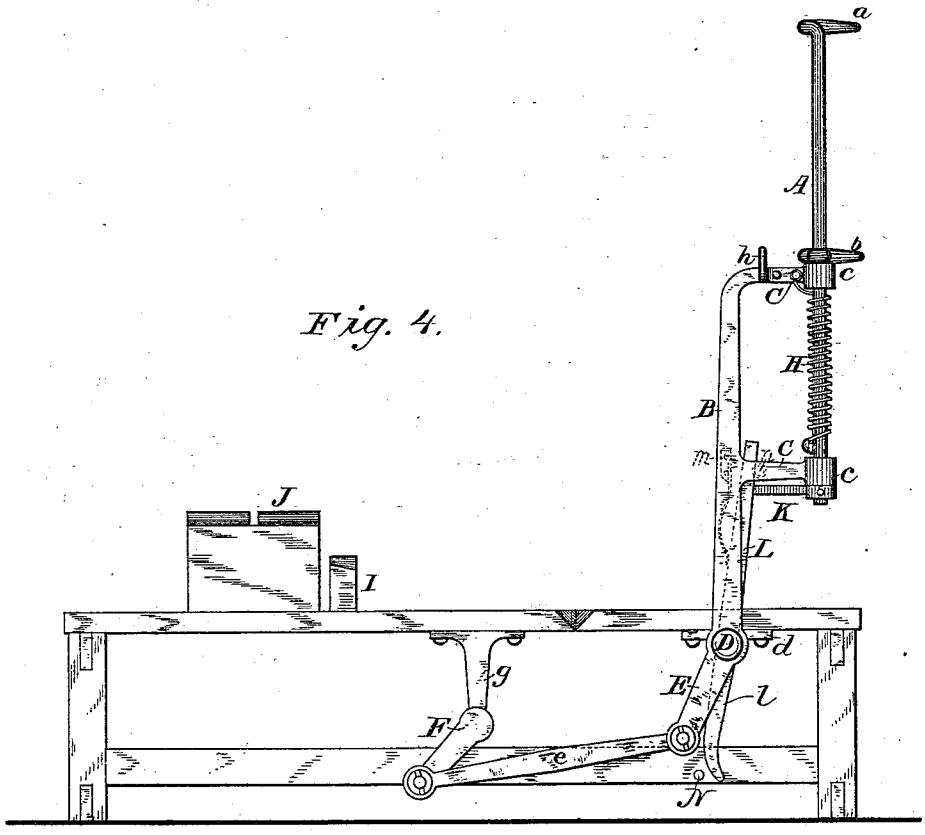


Fig. 4.



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Fig. 5.

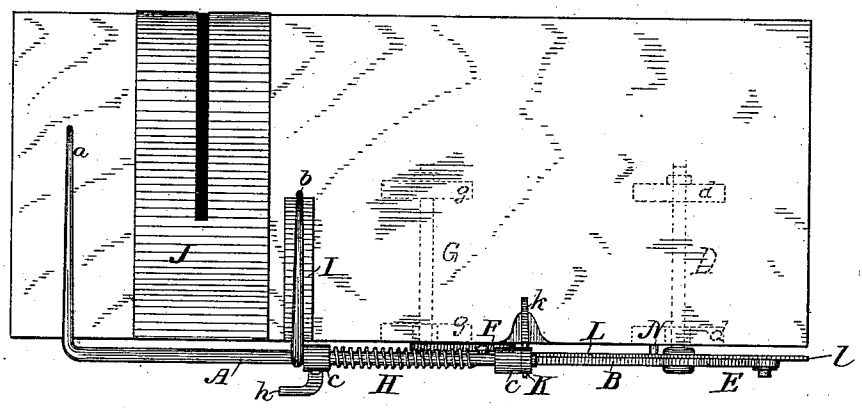


Fig. 6.

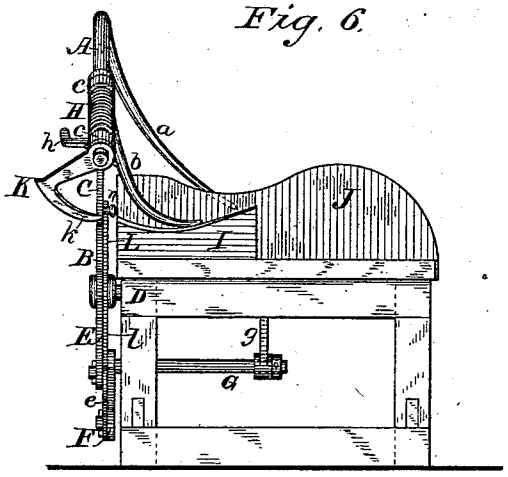
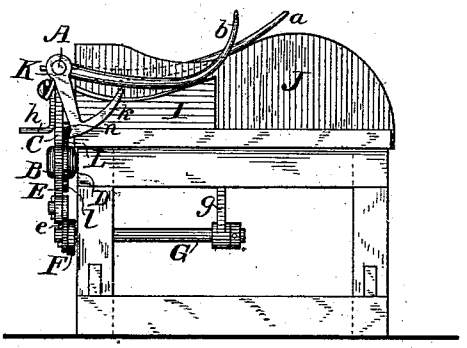


Fig. 7.



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UNITED STATES PATENT OFFICE.

JAMES R. SEVERANCE, OF FREMONT, OHIO.

BUNDLE-DISCHARGER FOR GRAIN-BINDERS.

SPECIFICATION forming part of Letters Patent No. 277,356, dated May 8, 1883.

Application filed January 15, 1883. (No model.)

To all whom it may concern:

Be it known that I, JAMES R. SEVERANCE, of Fremont, in the county of Sandusky and State of Ohio, have invented certain new and useful Improvements in Bundle-Dischargers for Grain-Binders, of which the following is a specification.

My invention relates to bundle-discharging mechanism applicable to low-down or platform binders—that is to say, binders of the class by which the grain is delivered from grain-platforms to binder-tables or grain-receptacles at the inner ends of said platforms, and bound at or but slightly above the levels of the grain-platforms, inside of and close to the driving-wheels of the machines.

My object mainly is to provide a simply-constructed, easily-operated, strong, and durable bundle-discharger, by which bundles of grain, as bound, are lifted from the place of binding and tossed to the rear of the machine, each bundle as acted upon by the discharger being turned end for end or half over, so as to cause the butts of the stalks to first come in contact with the ground as the bundles are in turn deposited behind the machine and out of its way when making the next round of the field.

The accompanying drawings show those parts only of a binder illustration of which is thought to be required to show an adaptation of my invention to a low-down binder in which the binder-table or grain-receptacle is arranged at about one foot above the level of the grain-platform.

Figure 1 is a view in side elevation, showing the parts as occupying the position assumed just after the discharge of a bundle, this position being also the normal or stationary position of the mechanism. Fig. 2 is a view in side elevation, showing the parts as in the position assumed by them shortly before a bundle is acted on. Fig. 3 is a view in side elevation, showing the parts in the position assumed by them when about to lift a bundle. Fig. 4 is a view in side elevation, showing the parts in the position assumed at the time of tossing or discharging a bundle. Fig. 5 is a plan or top view with the parts in the position in which they are shown in Fig. 3. Fig. 6 is a rear elevation with the parts in the position in which they are shown in Fig. 2. Fig. 7 is a rear elevation, the position of the parts being as in Figs. 3 and 5.

A vertically vibrating, rocking, or turning tossing-fork is shown as composed of a shank, A, and two curved teeth, *a b*, which serve to engage and sustain the bundles while being lifted and directed toward the rear of the machine. The teeth are formed with or rigidly connected to the shank, and the shank is mounted to rock in a vertically-vibrating carrier or arm, B, pivoted near one end and supporting the fork at its opposite end. This arm vibrates in a plane parallel or nearly parallel with the path of the machine. The fork-shank A is shown as mounted in bearings *c c* in short arms or lugs C C of the supporting-arm B. The pivot of the arm B is formed by a shaft, D, rocking in bearings *d d*. The arm is fast to its pivot-shaft, and is bent at its rear end, so as to form a crank, E, which is connected by a rod or link, *e*, with another crank, F, on a driving-shaft, G. This shaft G is shown as mounted in hanger-bearings *g g*. It is intermittingly actuated in a suitable way and makes one revolution at each actuation. It will be understood that at each revolution of the driving-crank F the fork will be vibrating vertically, as the arm B vibrates about its pivot D, at or near the rear end of the binder-table or grain-receptacle, first rocking downward, and then upward to the starting or normal position, in which it is shown in Fig. 1. The rocking or turning movement is imparted to the tossing-fork by means now to be described.

A spring, H, coiled about the fork-shank, acts with a tendency to hold the fork in its normal position or else to move it into this position. The rocking movement of the fork in the direction in which its spring turns it is limited by a stop-lug, *h*, against which the tooth *b* strikes. (See Fig. 1.) The fork is rocked against the force of the spring H by means of a cam or inclined block, I, against which the tooth *b* strikes when the fork is vibrated forwardly and downwardly. The cam I is at the side of the knotter-box or slotted cover J of ordinary knotting mechanism, upon which the grain rests, as bound, in usual well-known way.

Dogging and tripping mechanism, by which to temporarily lock the teeth in their bundle-supporting position, and to release them from

such position after discharging a bundle, consists of a bent dog or curved-ended arm, K *k*, fast to the end of the fork-shank, outside its rear bearing, and a tripper bar or latch, L *l*, mounted loosely on the pivot D and acted upon by a spring, *m*. A stop, *n*, on one of the lugs C, serves to limit the movement in one direction of the latch, and the spring *m* acts with a tendency to hold the latch against the stop or else move it toward the stop. A stop, N, is struck at the proper time by the heel end *l* of the latch-bar, thus moving the latch away from the stop *n*, for a purpose presently to be made apparent.

In operation, when a bundle is to be discharged, the driving-shaft is set in motion to vibrate the fork, the fork descends, a tooth passes on each side of the knotter-box, (the center of the bundle,) and the teeth are turned by the contact of one of them with the cam until they pass beneath the bundle and are locked in the position in which they are shown in Figs. 3, 5, and 7. The locking of the teeth in position to lift the bundle results from the inward swing of the curved-ended dog, and the depression by it of the spring-latch, until, when the dog has swung entirely across the latch, this latch springs up behind the dog and prevents its reverse swing. (See Fig. 7.) The quick elevation of the bundle by the rapid movement of the fork upwardly and toward the rear of the machine next takes place until the position represented in Fig. 4 is reached, by which time the bundle, having been brought over or somewhat in rear of the pivot of the supporting-arm, is tossed from the fork with a motion of revolution about the center of vibration of the fork, such as to turn the bundle end over and cause the butt-end of the bundle—the end farthest from said center—to first come in contact with the ground behind the machine, so avoiding injury to the heads of the grain. After the discharge of a bundle the heel end of the latch strikes the stop N, thus vibrating the latch against its spring and releasing the dog. Immediately upon the release of the dog the spring of the fork-shank acts to restore the fork-teeth to their position of rest—the starting-point—as shown in Fig. 1. The above-described operation is repeated as often as bundles are to be discharged.

Obviously the details of construction and precise arrangement of parts as herein described may be modified in various respects without departure from my invention. For instance, more than two teeth for the fork may be provided, and instead of one of the teeth being made to act on the fork-turning cam, a separate device may be provided for this purpose.

I claim as of my own invention—

1. The combination, substantially as hereinbefore set forth, of the binder-table, the vertically-vibrating arm, pivotally supported at or near the rear end of the binder-table, means rocking about and supported by the arm for engaging and sustaining the bundles, and means for vibrating the arm upwardly and rearwardly to discharge the bundles butts first upon the ground in the rear of the machine.

2. The combination, substantially as hereinbefore set forth, of the vertically-vibrating supporting-arm, the rocking fork carried thereby, means for turning the fork to present its teeth beneath a bundle, dogging mechanism by which the teeth are locked against turning while lifting and tossing a bundle, and means by which the supporting-arm is moved upwardly and rearwardly in discharging a bundle, for the purpose described.

3. The combination of the binder-table, the vertically-vibrating arm, the rocking fork supported thereby, and the cam for turning the fork to present its teeth beneath a bundle, substantially as and for the purpose hereinbefore set forth.

4. The combination of the vertically-vibrating arm, the rocking bundle-tossing fork supported thereby, the pivot of the arm, the crank thereon, the connecting-rod, and the driving-crank, substantially as and for the purpose hereinbefore set forth.

5. The combination of the vertically-vibrating arm, the rocking fork supported thereby, the spring by which the fork-teeth are turned in one direction, and the cam by which the teeth are turned in the opposite direction, substantially as and for the purpose hereinbefore set forth.

6. The combination of the vertically-vibrating arm, the rocking fork supported thereby, the spring by which the fork-teeth are turned in one direction, the stop for limiting the movement imparted to the teeth by the spring, the cam acting to turn the fork-teeth against the force of their spring, and the fork dogging and tripping mechanism, substantially as and for the purpose hereinbefore set forth.

7. The combination of the vertically-vibrating arm, the spring-actuated rocking fork supported thereby, the dog secured to the fork-shank, the spring-latch acted upon by the dog, and serving, in connection with it, to lock the fork-teeth while acting on the bundle, and the stop against which the end of the latch strikes to free the fork-teeth, substantially as and for the purpose hereinbefore set forth.

8. The combination of the driving-crank, the vertically-vibrating fork-supporting arm, its pivot, the crank thereon, the connecting-rod, the spring-latch vibrating about the pivot of the fork-supporting arm, the stop against which the end of the latch strikes, the spring-actuated rocking fork, and its dog, substantially as and for the purpose hereinbefore set forth.

In testimony whereof I have hereunto subscribed my name.

JAMES R. SEVERANCE.

Witnesses:

WM. E. HAYNES,

W. P. HAYNES.