

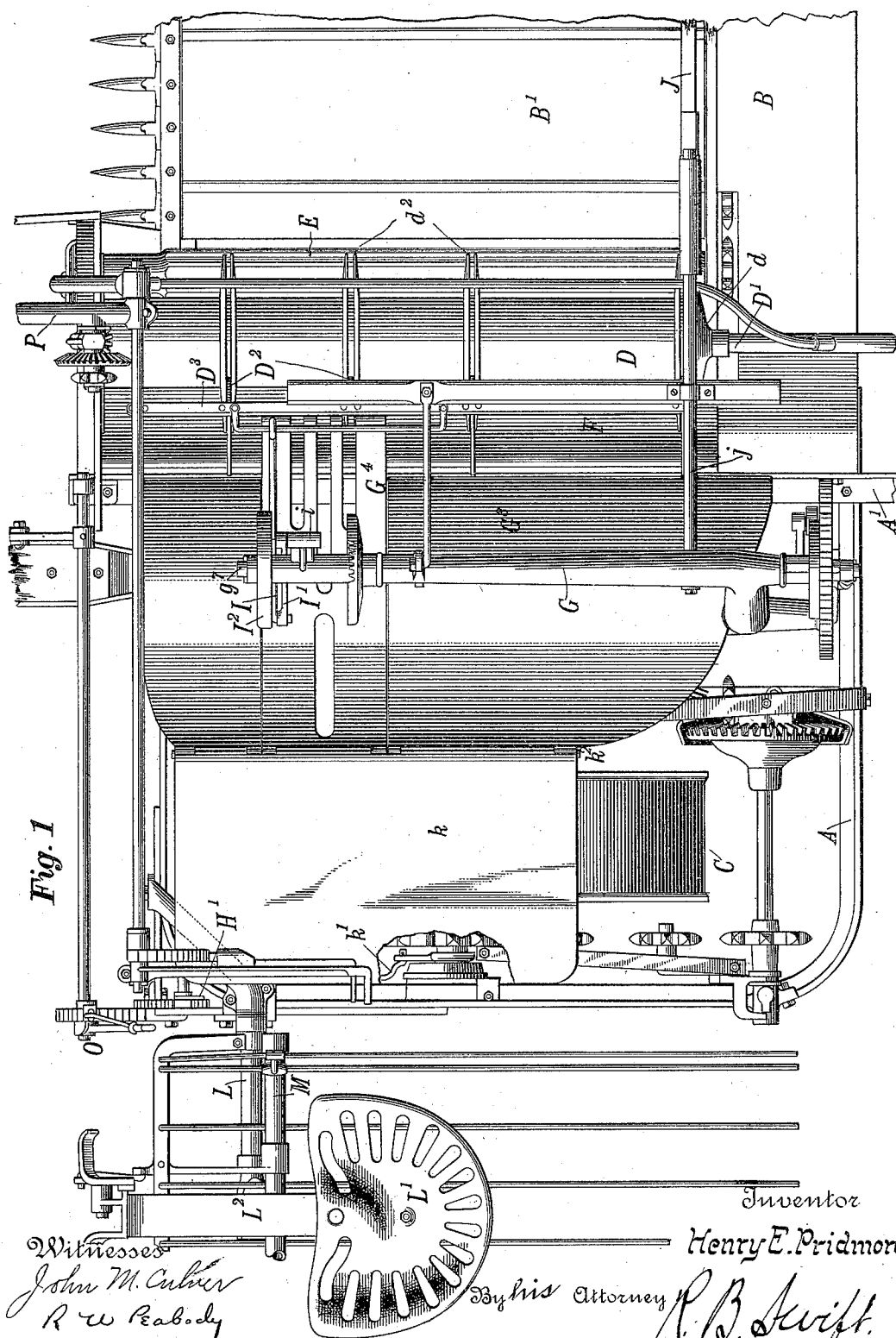
(No Model.)

4 Sheets—Sheet 1.

H. E. PRIDMORE.
SELF BINDING HARVESTER.

No. 561,517.

Patented June 2, 1896.



(No Model.)

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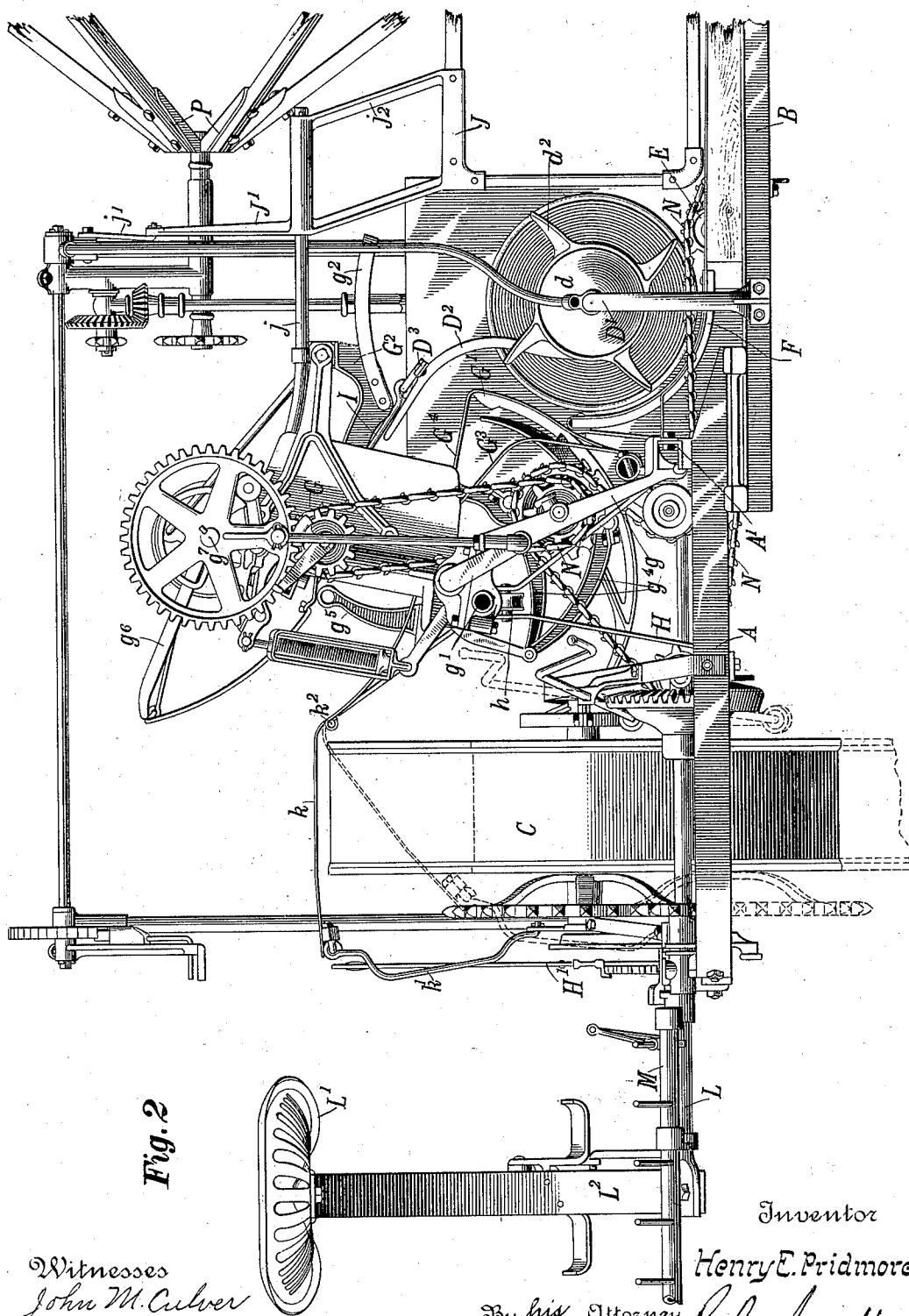


Fig. 2

Witnesses
John M. Culver
R. W. Reabody

Inventor
Henry E. Pridmore
By his Attorney
R. B. Swift.

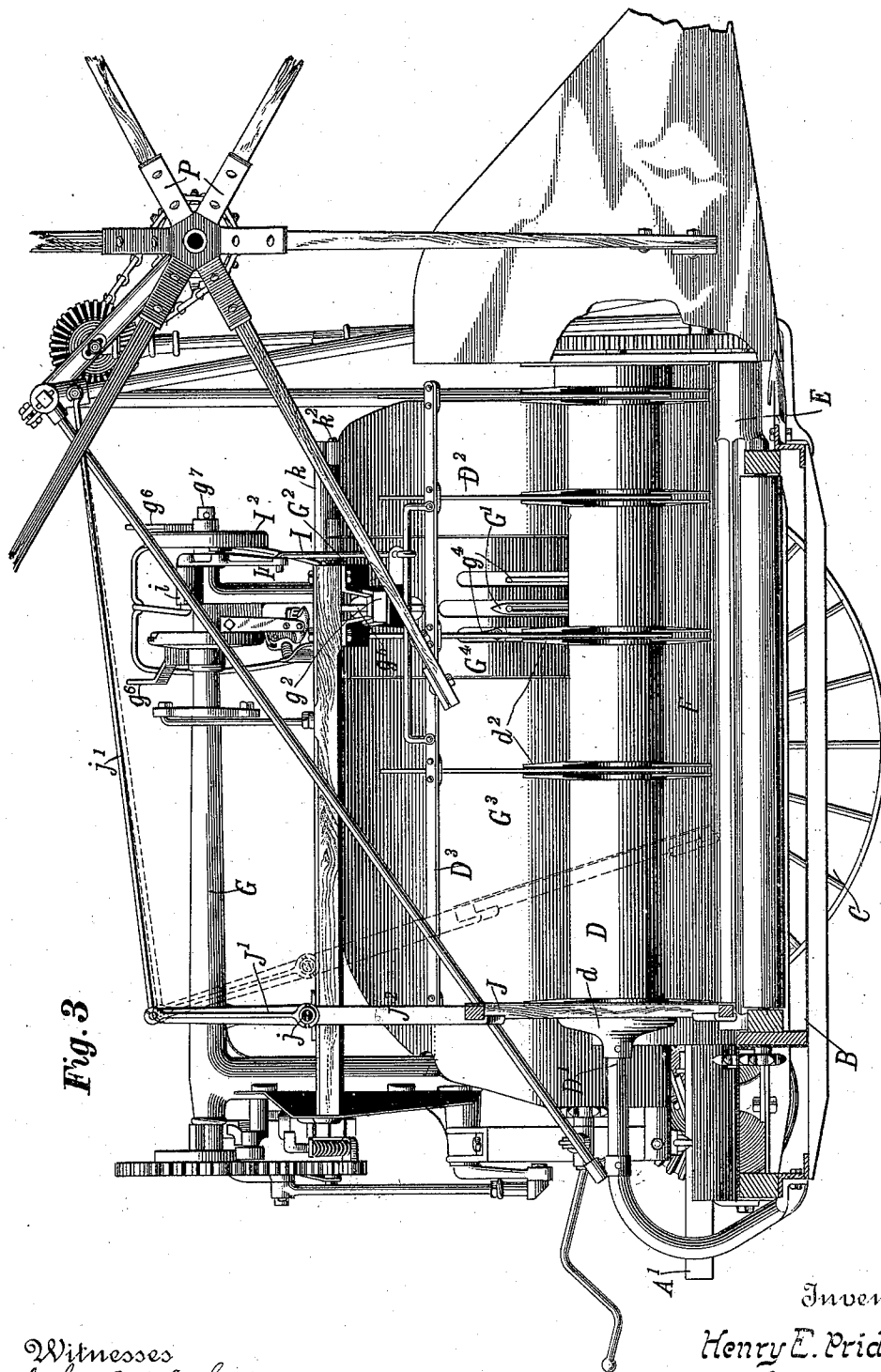
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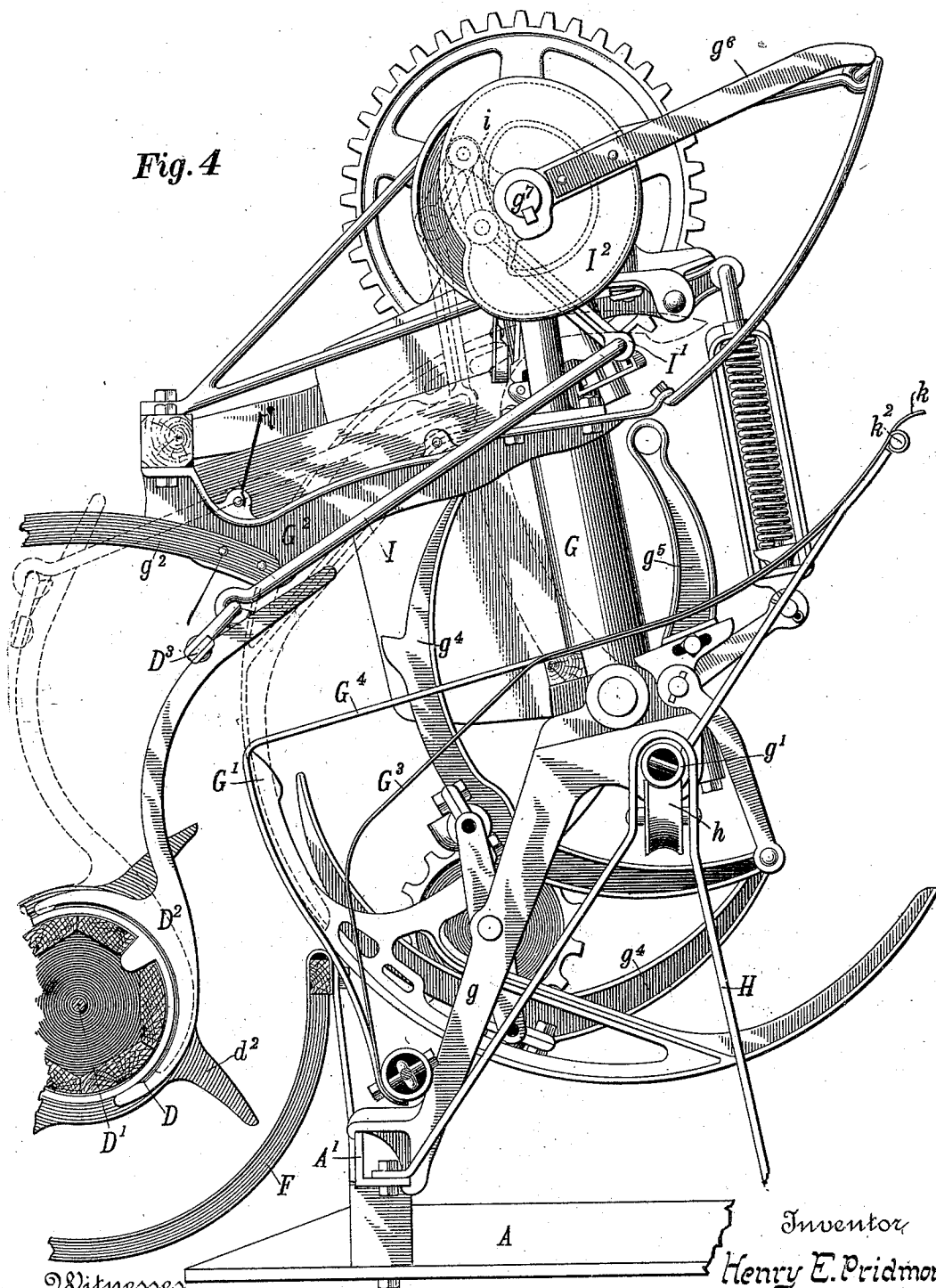
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Fig. 4



Witnesses
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UNITED STATES PATENT OFFICE.

HENRY E. PRIDMORE, OF CHICAGO, ILLINOIS.

SELF-BINDING HARVESTER.

SPECIFICATION forming part of Letters Patent No. 561,517, dated June 2, 1896.

Application filed February 7, 1893. Serial No. 461,324. (No model.)

To all whom it may concern:

Be it known that I, HENRY E. PRIDMORE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Machine for Harvesting and Binding Grain, of which the following is a specification.

My invention relates to improvements in the mechanism of self-binding harvesters of the low-binding type, in which the grain is forcibly carried from the platform of the harvester to a binder which is located between the platform and the main wheel of the machine, and has more particular reference to the devices which form the grain passage-way and move the grain onwardly therein and which open to form a receptacle for the accumulation of grain while the binder is in operation, and also to the position of the binder in reference to this passage-way.

I have embodied my ideas in the machine which is illustrated in the accompanying drawings, in which—

Figure 1 is a top or plan view of so much of a harvesting-machine as is necessary to illustrate my invention, the breastplate and other parts being removed. Fig. 2 is a rear elevation, a part of the platform, flag, and reel having been broken off that a larger view of the balance of the machine might be had. Fig. 3 is a side elevation made from the platform side of the machine, the platform being shown in section. Fig. 4 is a front elevation of the binder with the feed-drum partly in cross-section.

I have mounted my improvements upon the frame A and platform B of a harvesting-machine. The main wheel C not only supports, but also gives power to the different mechanisms.

At the delivery end of the platform-apron B', which is of the usual kind on harvesters, I place a feed-drum D, that revolves on the shaft D', the forward end of which shaft has a bearing in the framework of the harvester, and its rear end is continued backwardly and curved downwardly and inwardly and fastened to the sill of the framework A. A circular plate d is slipped onto the shaft D' and pinned so as to form a guide to the rear end of the feed-drum D and confine it in its proper position. At suitable intervals along the

feed-drum D are positioned feeding-teeth d². There should be sufficient of these teeth, so that the grain can be suitably caught and lifted as the feed-drum D revolves, and I have found in practice that the teeth should be sufficiently close together at the front end of the feed-cylinder to receive and support short grain, while at the rear end of the cylinder they need not be so close. The feed-teeth d² are in pairs, and between them are mounted clearer-bars D², which at their lower ends encircle the feed-cylinder sufficiently so they will not separate from it as the grain is forced up against them, and at their upper ends they are attached to the connecting-bar D³. The grain is taken from the platform-canvas by the clearer-roller E, which is preferably made somewhat aggressive and to act somewhat as a feeder by leaving it in its central or body portion octagonal in form and rounding it to a circle at its ends, so that it will not have any tendency to wrap as the grain passes over it. The feed-drum D is driven by a spur-gear from the forward end of this roller. As the grain leaves the clearer-roller E it is caught by the feed-teeth d² and carried inward and upward and held upon these teeth by a curved cover F, fastened to the platform B and cross-girth A'. This grain guide or cover F is practically concentric with the center of the feed-drum.

Positioned above the feed-drum D and between it and the main wheel C of the machine is placed a binding attachment G of the form heretofore invented by me and well known on the elevator type of McCormick self-binding harvesters. The sills g of the binder have been bent downwardly and their lower extremities formed with hooked feet, which clasp the cross-girth A' of the main frame A, while the main binder pipe or girth g' is mounted in the bracket H and is moved back and forth upon the roller h, mounted in this bracket. By means of the lever H' the binder is adjusted for long and short grain backwardly and forwardly along the feed-drum, so that grain of any length may be centrally bound. The position of the binder is such that its deck G⁴ is but slightly inclined toward the platform, while the breastplate G² somewhat overhangs the feed-drum D and forms with its projection g² the upper or roof portion of

a grain-receptacle when the clearer-bars are opened and the binder in operation. The needle G' in its position of rest drops behind the binder-deck G^4 , and both the deck and the needle slightly overhang the feed-cover F and approach the feed-drum, so that the grain is held on the teeth of the feed-drum as long as possible and only sufficient room remains for the upward passage of the stream of grain.

10 As the grain is lifted by the feed-drum and guided by the clearer-bars into the binder it is caught by the packers g^4 and forced forward against the trip g^5 , when the binder is put in operation and the bundle bound and thrown

15 out by the revolution of the discharge-arms g^6 . That there may not be too much friction by the passage of the grain along the binder-deck G^4 and that the grain need not be compressed at its extremities as much as in the center of its length, where it is encircled by the needle, the binder-deck G^4 is not carried upwardly into the grain-passage throughout its whole length as much as in the center.

20 On both sides of the center the deck is more curved, as shown as G^3 .

If the grain passage-way was always clear and the bundle could be formed and tied, moving outwardly with the same rapidity with which the stream is entering, the difficulties attending the successful binding of grain would be very materially lessened. The successfully-operating cord-binders, however, are those which at some part of the knotting operation leave the bundle stationary and close the grain passage-way, this necessitating that the incoming stream have room in which to accumulate or that it become more closely packed in the grain-receptacle if the feeding devices are kept in motion. To un-

40 ship the feeding devices and to form cut-offs has been attended with much trouble, and to obviate the necessity for any of the various expedients that have been devised (and all have been attended with more or less faults)

45 I form a receptacle for the accumulating grain that cannot pass into the binder at the time the needle G' is encircling a bundle by rocking the clearer-bars outwardly, as shown in dotted lines in Fig. 4, and thus give the grain

50 room in which to flow while the bundle is being bound. At once upon the recession of the needle and the opening of the passage-way into the binder the grain in the receptacle is moved forward by the clearer-bars D^2

55 toward the binder and caught and forced forward by the packers g^4 . I find an easy way of accomplishing this movement of the clearer-bars in proper time and this formation of a receptacle by connecting the receptacle-bar D^3 or a supplemental rod thereon by a pitman I with a lever I' , that is given motion by a suitable cam I^2 on the knottershaft g^7 of the binder. The lever I' is pivoted in the binder-frame at i and has positioned

60 on it a roller that runs in the cam-track on the cam I^2 . The clearer-bars in this way are thrown open at the proper time and closed

again into the grain passage-way as the bundle is discharged. As the binder is adjusted forwardly and backwardly, the receptacle- 70 pitman I slips on the bar D^3 , and whatever the position of the binder the receptacle is opened and closed without hindering the adjustment.

It has been found that to practically bind 75 grain in the best manner it is necessary that the binding attachment shall be bodily adjustable on the machine. This alone, however, will not always give the best results, and especially is this so in the class of low elevator binding-machines, where the bringing 80 of all the grain centrally to the binder appears to be of more importance than in the elevator type of harvesters. Any loose straws that are not closed in the band on a low elevator-harvester are more noticeable than on an elevator-binder, and the operator will thus find much fault with the binding his machine is doing, because the scatterings are the more easily noticeable. 85 90

To keep the grain together and maintain the evenness of the swath, and to prevent the reel from carrying the scattering straws to the rear, a flag that can be properly placed is of very great use. The operator being upon 95 the outside of the machine, in order to balance as much as possible the weight of the binder, which is inside, the wheel is removed some distance from the platform, and so is not as conveniently situated for adjusting a 100 flag as on other types of machines. I have noticed that when a flag is moved with the binder (a construction with which I experimented in one of my earlier patented machines) it does not have sufficient movement 105 to insure the best results.

I discovered that the binder need move only about one-half of the distance of the flag in the adjustment for long and short grain, as the movement of the binder is to reach a central position on the grain, while the flag should move about the full distance the length of the grain has changed. That this movement may be accomplished I have pivoted the flag J to an arm j , that is rigidly attached 110 to the rear of the binder-frame G and which partakes of the movements of the binder during its adjustment. That the flag may have the added movement which is necessary I extend an arm J' upwardly from it and connect this arm by a pitman j' to any part of the machine that does not move—in this instance to the post of the reel P . The swath 115 of grain now being in the best shape, and carried to and through the binding attachment, is bitten off into bundles, bound and discharged over the wheel into the bundle-carrier to be left in suitable piles for handy shocking. The discharging of the grain over the main wheel, especially when it is large, heavy, and badly 120 tangled, is a difficult operation. In such conditions of grain the machine is usually raised by the operator, so that it cuts at some height from the ground. This of course lowers the 125 130

main wheel in the frame, and to enable the bundle to be pushed over it with greater ease I have attached the cover *k* to the axle of the wheel, so that it partakes of the wheel's adjustment. The cover is pivoted to the binder-deck at *k*², and a connecting-rod *k'* extends to a washer carried on the main-wheel axle. In difficult grain when the machine is raised the cover *k* is dropped, and the angle formed allows the bundle to slide more readily into the bundle-carrier. A seat-supporting bar *L* extends from the front and outward corner of the main frame toward the stubble, to which the seat *L'* is attached by means of a curved spring *L*². Upon the seat-support *L* is pivoted a bundle-carrier *M*, that rocks on the seat-support and is controlled by means of a foot-treadle and suitable connecting-rod attached to the seat-spring. The spring is suitably curved, so that the operator is positioned near the discharge-line of the machine and somewhat over the bundle-carrier, which rocks on the seat-support beneath him. This plan of supporting the seat and carrier balances the machine and places the operator where he can observe its work.

The binder, the clearer-roll, and the platform-roller are operated by a single chain *N* in the rear of the machine. The machine is tilted in the usual means by a tilting-lever *O* and connecting mechanism, while the reel *P* is controlled and driven by ordinary well-known means.

Having now described my invention, what I claim is—

1. In a self-binding harvester, the combination with a feed-drum of clearer-bars which form one side of the grain passage-way and which wipe the grain from the feed-drum, and means actuating the clearer-bars to open and close at their delivery ends, substantially as and for the purpose specified.

2. In a self-binding harvester, the combination with the feed-drum of clearer-bars pivoted thereon, means connecting the clearer-bars at their delivery ends to form a grain-

receptacle, and a suitably-arranged device connecting the clearer-bars with movable parts of the binder and adapted to open and close the receptacle, substantially as and for the purpose specified.

3. In a self-binding harvester, the combination with the feed-drum and its teeth, of clearer-bars pivoted on the feed-drum at their receiving end, and connected together at their discharge ends, a connecting-rod attached thereto, and adapted to slide thereon when the binder is adjusted, a cam on the knotter-shaft, a lever working therein, one end of which is attached to the connecting-rod, substantially as and for the purpose specified.

4. In a self-binding harvester, the combination of a feed-drum at the discharge end of the platform-apron, a binder between it and the main wheel, and in a plane above the feed-drum, the needle and packers of the binder projecting into the grain passage-way, and shielded by the deck, the breastplate overhanging the grain passage-way, and the vibrating clearer-bars, substantially as and for the purpose described.

5. In a self-binding harvester, in combination with a positive grain-feeding device located at the end of the platform-apron, a binder positioned between the feeding device and the main wheel of the machine and located in a horizontal plane above the feeding device, a grain passage-way extending from the feeding device to the binder, which passage-way is narrowed at its central point by a projecting part of the binder-deck, vibrating clearer-bars forming the opposite wall of the grain passage-way, a binder-breastplate overhanging the feeding device and forming the upper wall of the grain-receptacle when the binder is in operation, substantially as and for the purpose described.

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Witnesses:

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JOHN M. CULVER.