

C. A. A. RAND.
HARVESTER.

No. 555,883.

Patented Mar. 3, 1896.

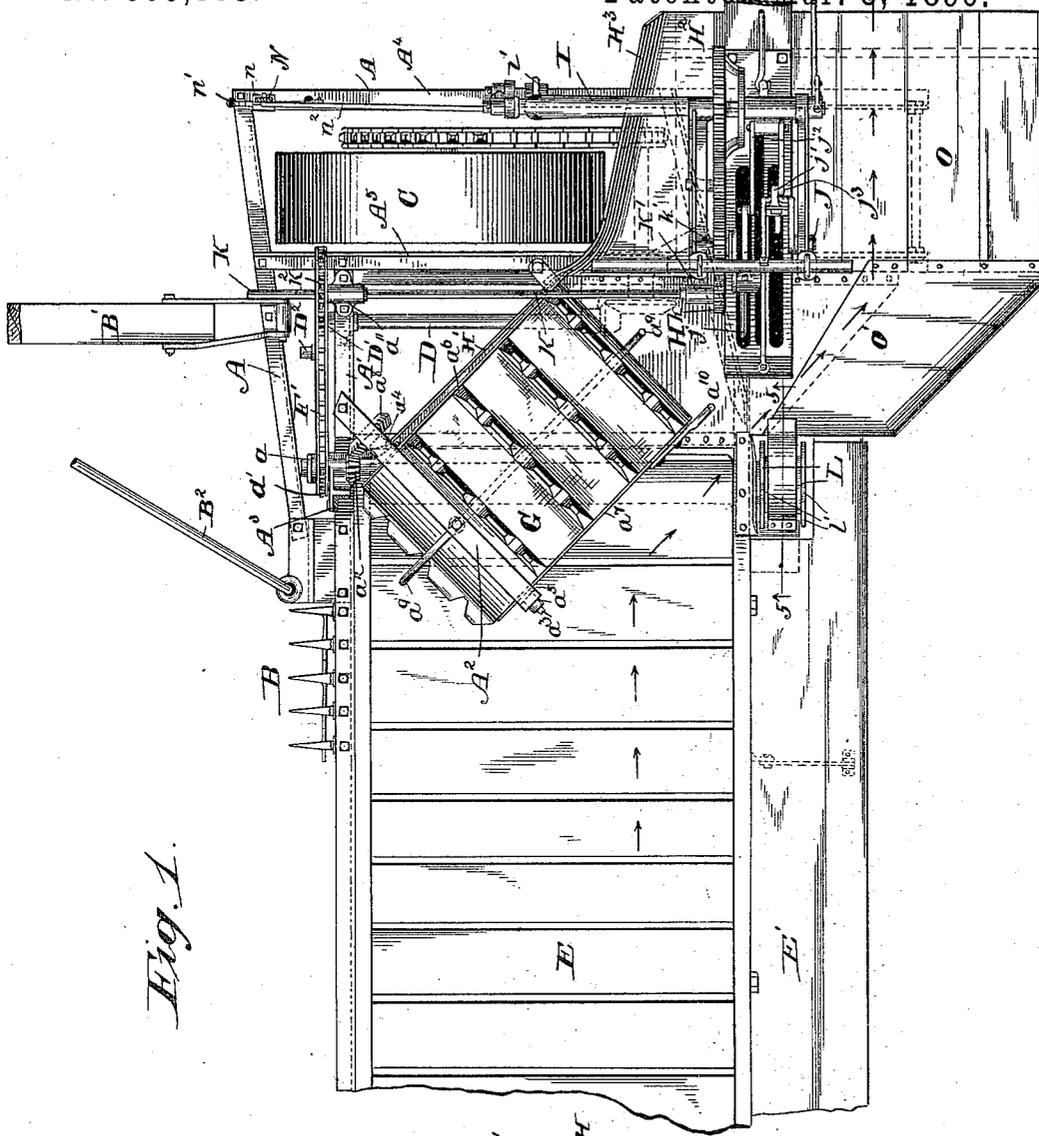


Fig. 1.

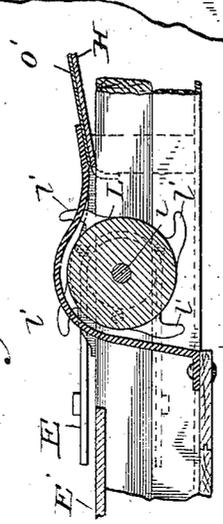


Fig. 5.

Witnesses.

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(No Model.)

3 Sheets—Sheet 3.

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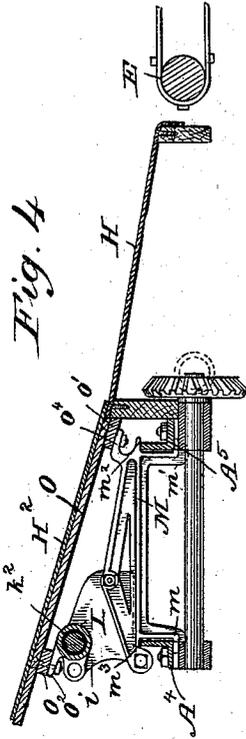


Fig. 4

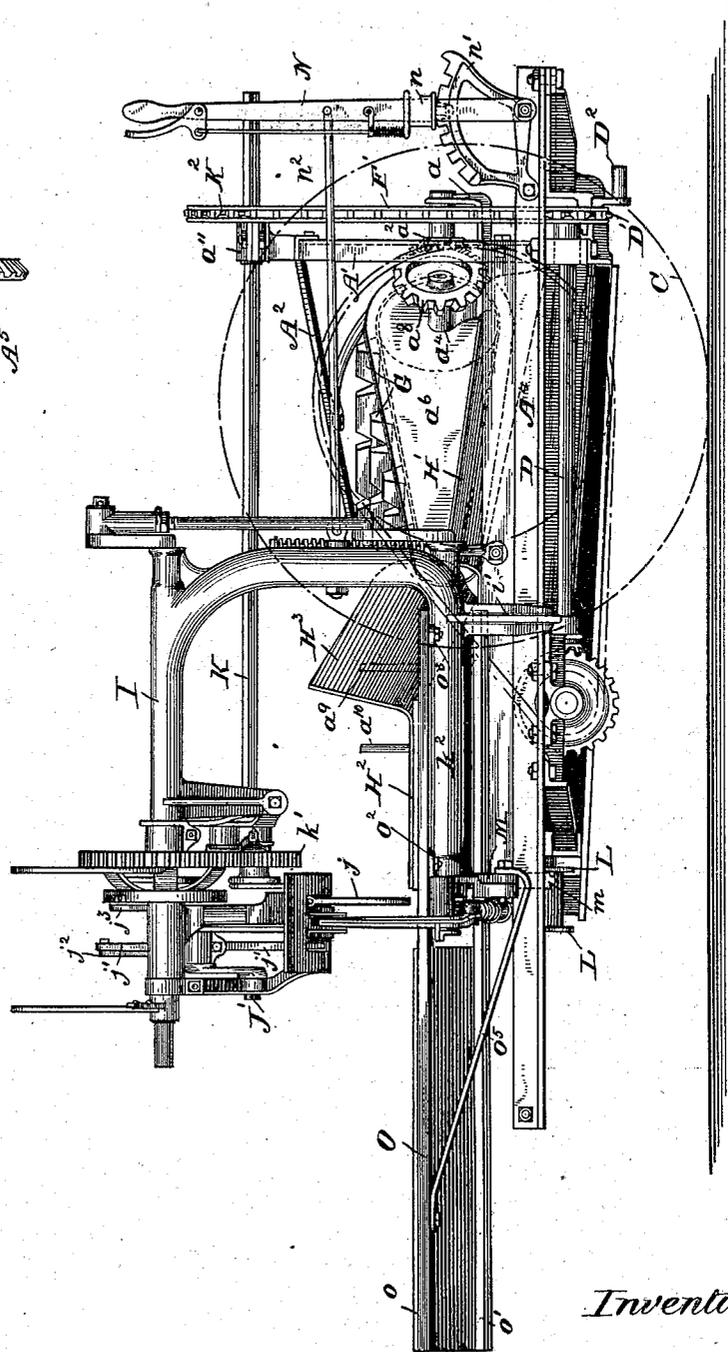


Fig. 3.

Witnesses

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UNITED STATES PATENT OFFICE.

CHARLES A. ANDERSON RAND, OF CHICAGO, ILLINOIS.

HARVESTER.

SPECIFICATION forming part of Letters Patent No. 555,883, dated March 3, 1896.

Application filed June 20, 1892. Serial No. 437,372. (No model.)

To all whom it may concern:

Be it known that I, CHARLES A. ANDERSON RAND, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Harvesters, of which the following is a full description, reference being had to the accompanying drawings, in which—

Figure 1 is a plan view of so much of a harvesting-machine as is necessary to show my invention. Fig. 2 is a front elevation; Fig. 3, a stubble-side elevation; Fig. 4, a detail of the binding-table; Fig. 5, a sectional view of the head-hastening device; Fig. 6, a detail.

The object of my invention is to produce a harvester that shall permit its binding attachment to bind the grain upon substantially the same level as the platform traveling conveyer.

As in this application I shall confine my claims to the means for handling the grain only, I show the binding devices only in so far as necessary to make clear their position and functions relative to the cutting and delivering apparatus, the reel, sheaf-carrier, and other parts being omitted.

In another application, filed March 20 and serially numbered 466,961, the binding device will be shown, described and claimed in detail.

In the drawings the parts lettered A, joined as shown, constitute the main frame, which needs no description.

B is the cutting apparatus, B' the draft-tongue, and B² the brace connecting the latter to the shoe of the grain-platform.

C is the supporting and driving wheel. It may have an axle with any of the usual forms of raising and lowering devices and be geared by means of a chain to the parts of the machine requiring to be driven. As far as the present application is concerned it is only necessary to begin at the crank-shaft D, from which the various moving parts receive their motion. It has at its forward end a sprocket-wheel D', by which the binder and conveying devices are driven, and the crank D², by which the sickle is reciprocated.

E is the platform conveyer, made somewhat narrow, but extended rearwardly by means of the backboard E'. The endless

platform conveyer is moved at its stubble end by a roller, as usual in machines of the kind, which is shown in dotted lines in Fig. 1. It is journaled at front and rear, and upon its forward end is the sprocket-wheel F.

F' is a driving-chain thrown around the crank-wheel D'. As the crank-wheel is given rotation the conveying-canvas is given movement in the proper direction to carry the grain that falls thereon continuously stubbleward. Overlying the delivery end of the conveying-canvas is the diagonal conveyer G. Reaching rearwardly from the front frame A' is a stout bar A². To the vertical part A³ of the front frame is secured the bracket a. (Shown in detail in Fig. 6.) In this bracket is journaled a short shaft, keyed to which is the sprocket-wheel a'. The chain F' is also thrown around this sprocket-wheel. To the shaft is keyed the pinion a². The bracket a is extended so as to form a journal-bearing a⁴ for the front end of the shaft of a driving-drum. (Shown in dotted lines in Fig. 3.) Reference to Fig. 1 will show that this driving-drum is diagonal relative to the line of advance of the machine. Its shaft is journaled at its rear end in the bearing a⁵, downreaching from the arm A², the framework of which, a⁶ and a⁷, is so hung that it may rise and fall on the shaft a³ of the drum.

To the end of the drum-shaft is connected the bevel-gear a⁸, adapted to mesh into the pinion a². At the end of the diagonal conveyer nearest the driving-wheel is an idler-roller journaled in the sides of the said frame. Around these two rollers is thrown an endless canvas G, having high slats. As the slats of this canvas are designed to strike into the swath of grain above, I provide, preferably, toothed bars, so that the grain may be engaged as aggressively as possible. It is desirable to so provide that the slats of the diagonal conveyer shall not carry straws over on their return movement after they have delivered that moved by them, and hence to the arm A², I bolt a spring-rod a⁹ and extend it around the receiving end of the conveyer and underneath, as shown in Fig. 2, and finally turn it upward, as shown in Figs. 1 and 2. This will have the effect of clearing the slats of any straws that may adhere. If desirable, several such rods may be employed. I have shown

one, a^{10} , as secured to the rear side piece a^7 of the diagonal conveyer. There may be as many, however, as the slats have notches. The shaft having the pinion a^2 serves but as
 5 means for giving movement to the driving-drum of the diagonal conveyer. The latter may, however, be driven in various ways.

H is a receiving-table onto which the straws are delivered and from which the packing
 10 devices of the binder take it.

Although this application has not to do with the binding devices, I have shown the packers of the same, because in my machine they become a part of the conveying devices and take
 15 the grain from the receiving-table H and carry it onward. Hence they form an element of an important combination of parts adapted to convey the grain, give it direction, and deliver it finally into the binding-receptacle proper.
 20 The receiving-table is also extended deliveryward behind the main wheel so far as to form the frontal portion of the binder-table H^2 . Along the forward margin of the receiving-table H and the part H^2 of the binding-table
 25 the butt-guides H^1 and H^3 are placed. They are preferably formed by turning the sheet metal of which the parts of the table are formed upward. The guide H^3 shields the forming bundle from the main wheel C.

I is the main frame of the binder attachment, which attachment need not be explained in this application only so far as the means for supporting it, the packing devices, and the table are concerned.
 30

J is the packer-shaft having double cranks, on which the packers j and j' are carried. They are linked to the binder-frame by the connections j^2 and j^3 , and by the cranks are given an orbital movement, as shown in dotted
 40 lines of Fig. 2. In order to give the packers and binding devices movement, a shaft K, preferably square, is supported in the bracket a^{11} on the front frame A^1 . At its rear end it is journaled in a bearing K^1 on the binder-frame. At the front end of the shaft is a
 45 sprocket-wheel K^2 , having a square eye to fit the shaft.

In order that the square shaft may be free to move fore and aft, the hub of the sprocket-wheel is extended rearwardly, so as to form
 50 in effect the journal-bearing of the shaft, and the shaft passes through it. The sprocket-wheel is driven in the direction indicated by the arrow in Fig. 2; but in order that the packer-cranks may operate upon the grain properly it is necessary that they be revolved
 55 in the reverse direction. To accomplish this change of direction I provide a pinion k on the shaft K and a gear k^1 on the packer crank-shaft. The latter meshes in the main gear, also, of the binding attachment; but such fact may be ignored in this application.
 60

The course of grain travel is shown by the line of arrows in Fig. 1. The cut grain is received by the conveyer E in the usual manner and carried deliveryward until it passes
 65 under the diagonal conveyer, which, having

aggressive slats, slides the swath slightly rearward, delivering it onto the receiver H. When it is forced to a position within reach
 70 of the packers they carry it in the direction of their feeding-movement and force it onto the binding-table proper. It is not my object to move the butts only, thus wheeling the
 75 straws by allowing the heads to remain stationary. This has often been done; but it is what I wish to avoid, because by the construction shown herein the swath or stream not
 80 being interrupted at any point, but simply given an oblique direction, the grain does not accumulate at the rear stubbleward corner of the platform as it would if the swath was
 85 wheeled with that corner as a pivot. To hasten the heads of the grain at that point, I provide toothed wheels L L, secured to the
 90 rear end of the platform-conveyer roller-shaft l . The wheels are provided with backwardly-deflected teeth l^1 . These by their agitation of the straws and their movement in the proper
 95 direction tend to carry the heads of the grain forward onto the receiving-table H. The side frame-pieces A^4 and A^5 , that are shown in Fig. 4, extend rearwardly beyond the wheel
 100 some distance.

M is a slide having the hooks m m' , reaching under the bars or frame-pieces A^4 and A^5 , and the feet m^2 and m^3 , which lie over the parallel bars of the main frame that are placed
 105 each side of the main wheel. To the slide M the rear end of the main frame I of the binder is connected by bolts in the lug i cast upon the lower sleeve k^2 . At the forward end of the main binder-frame is the downreaching
 110 lug i^1 , adapted to ride upon the side bar A^4 and also to hook thereunder, as seen in Fig. 2. The main binder-frame is practically supported immediately above this bar, and the latter takes all its weight. The part of the support M that reaches to the right in Fig. 4 serves to steady the binder attachment.
 115

N is a lever having a latch n adapted to engage a quadrant n^1 on the main frame. Connecting the lever to the main frame is the rod
 120 n^2 . By these means the binding attachment is slid back and forth. One of the important features of my invention is this placement of the binding attachment. Reference to all of the figures will show that the main portion of the frame is more or less forward of the rear
 125 edge of the main wheel. With the lever N thrown forward as far as the quadrant n^1 will allow, the binder will move as far forward as necessary to handle the shortest grain.

O is the rear portion of the binder-table, and it is connected to the forward part H^2 , as will
 130 be explained.

O' is a portion that, extending grainward, forms the rear part of the receiving-table H. The forward edge of the part O' laps over the
 135 part H.

o and o' are bars, the former secured to the lugs o^2 and o^3 on the binder-frame, and the latter secured to the lug o^4 of the slide M.

o^5 is a brace extending from the lug i of the

binder-frame rearward and upward to the bar
 o. By reference particularly to Figs. 1 and 3
 this will be understood, and it will be readily
 seen that the rear portion of the receiving-
 5 table O' and the rear portion of the binder-
 table proper being secured to the main binder-
 frame they must move therewith. In order
 that a gap shall not be left in the table when
 the binder is adjusted rearwardly, I extend
 10 the part O under the part H², but not so far
 forward as to come in contact with the driv-
 ing-wheel in any position of adjustment.

By placement of my binder-frame outside
 and alongside of the master-wheel, and plac-
 15 ing the latter well forward in its frame, it is
 not necessary to deflect the swath of grain as
 far rearward as has heretofore been done.
 It will be seen that there is a gap between the
 end of the delivery-canvas E and the receiv-
 20 ing-table H. If nothing were provided, straws
 would be carried therethrough, but by place-
 ment of the diagonal conveyer so as to sweep
 fully across the gap the straws are seized and
 carried thereover before they have time to fall
 25 through.

I am aware that it is not new to use an over-
 lying conveyer; but I believe my arrangement
 to be new, and the functions performed by the
 parts because of the new arrangement to be
 30 new. It is not my purpose to advance the
 butts of the grain and thus wheel the straws
 into a new position, as has often been at-
 tempted, but, on the contrary, to change the
 direction of movement of the swath as a whole
 35 and not change the linear direction of the
 straws.

I give my packers great scope of movement,

so that they may act not only as packers but
 reach well toward the grain and act as con-
 40 veyers and take the grain from the receiving-
 table, along which the swath is moved diag-
 onally, and carry it onward, but now in a di-
 rection transverse to the line of advance of
 the machine. In short, my device is intended
 to operate upon the grain and convey it in the
 45 path indicated by the arrows in Fig. 1.

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

1. In combination, the main wheel, the cut-
 50 ting apparatus and grain-delivering conveyer
 abreast thereof, a binder in rear of said wheel,
 the receiving-table H between the delivering-
 canvas and the said wheel, the overlying en-
 dless conveyer G having aggressive conveying-
 55 teeth adapted to engage the swath of grain
 and slide the straws backward while convey-
 ing them toward the binder, and said binder
 having conveying devices whose direction of
 action is parallel with the line of movement
 60 of the platform delivering-canvas, substan-
 tially as described.

2. The main wheel and a suitable support-
 ing-frame, the cutting apparatus and plat-
 form delivering devices abreast of the said
 wheel, the receiving-table H, a binder in rear
 65 of the said wheel and having conveying de-
 vices adapted to force the grain into the
 binder, the overlying diagonal conveying-
 canvas G, and the head-hastening feeders, all
 combined substantially as described.

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Witnesses:

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