

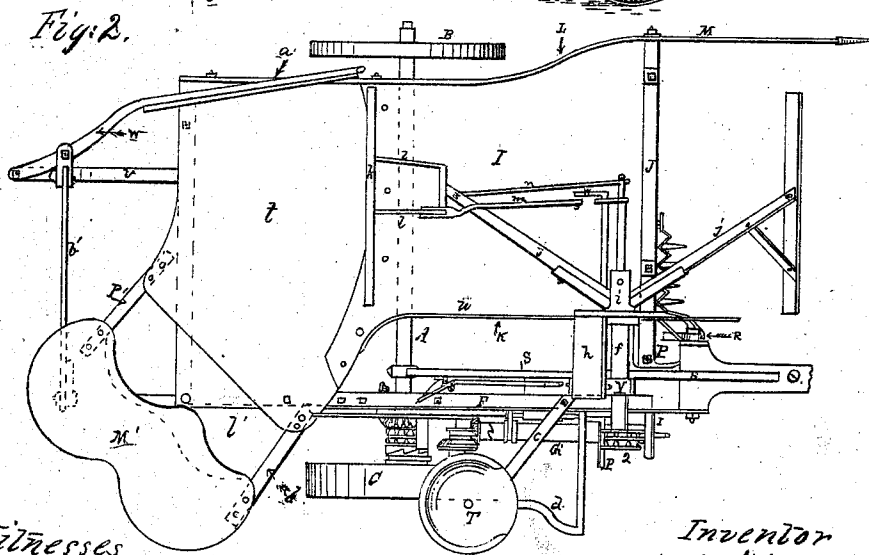
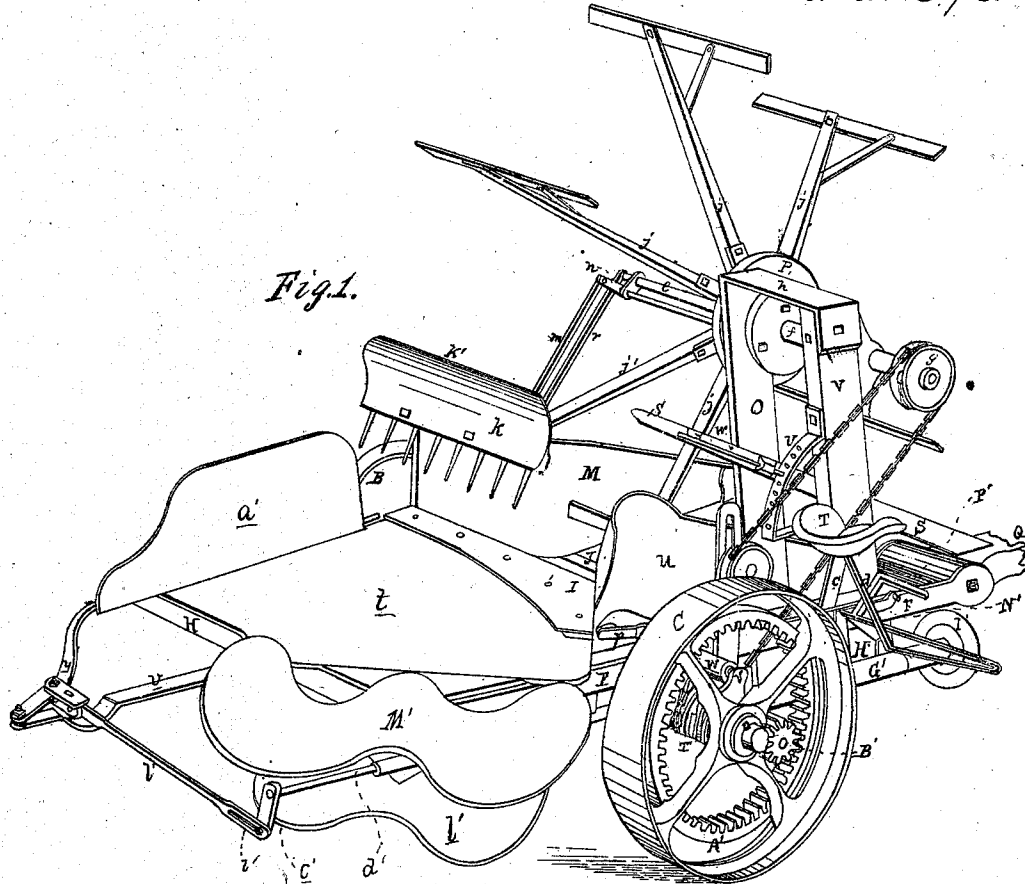
W. N. Whiteley.

Sheet 1 - 4 Sheets.

Harvester

No 105395

Patented Jul. 12. 1870.



Witnesses
Chas. A. Honkness
Jas. Brown

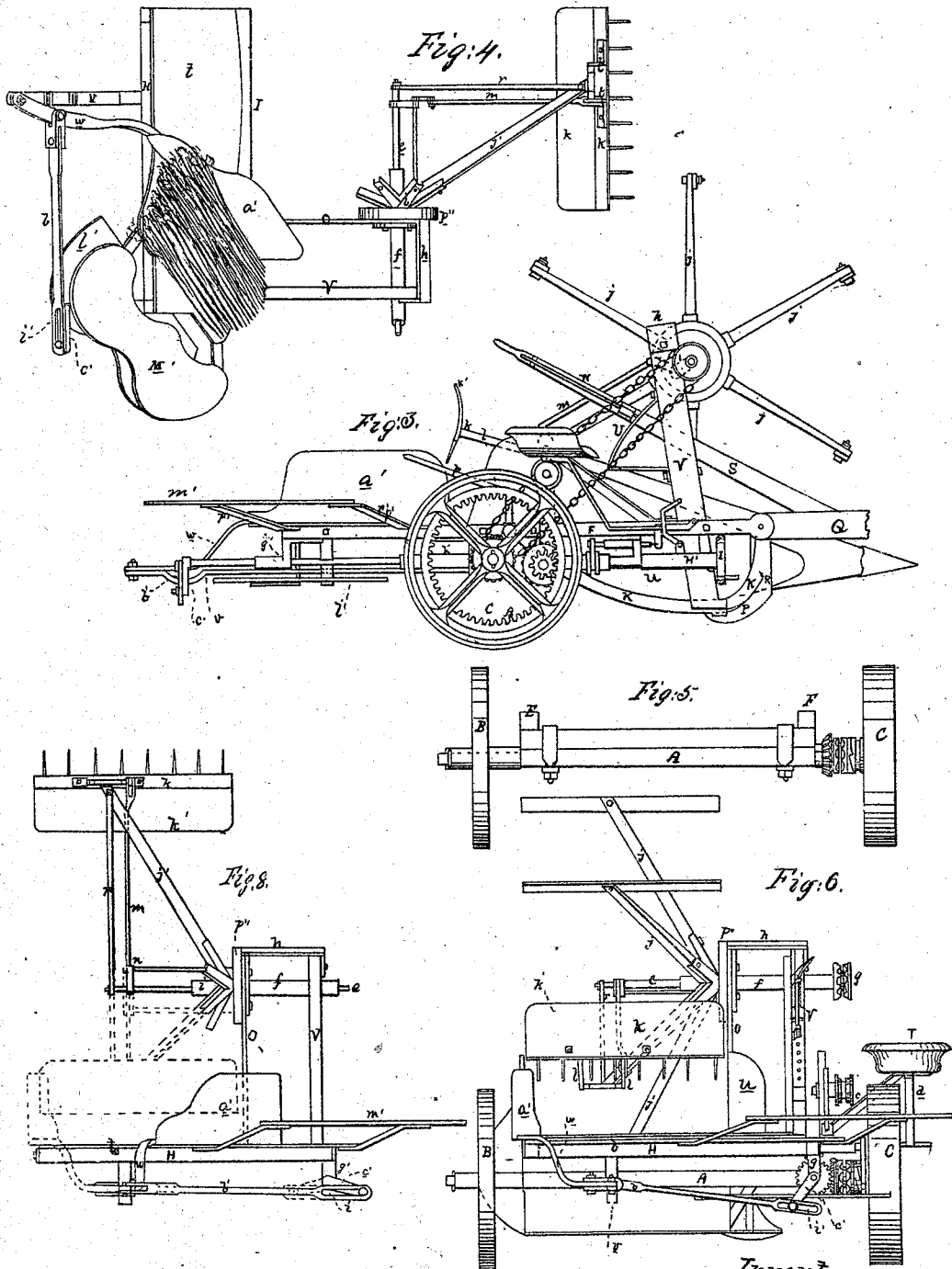
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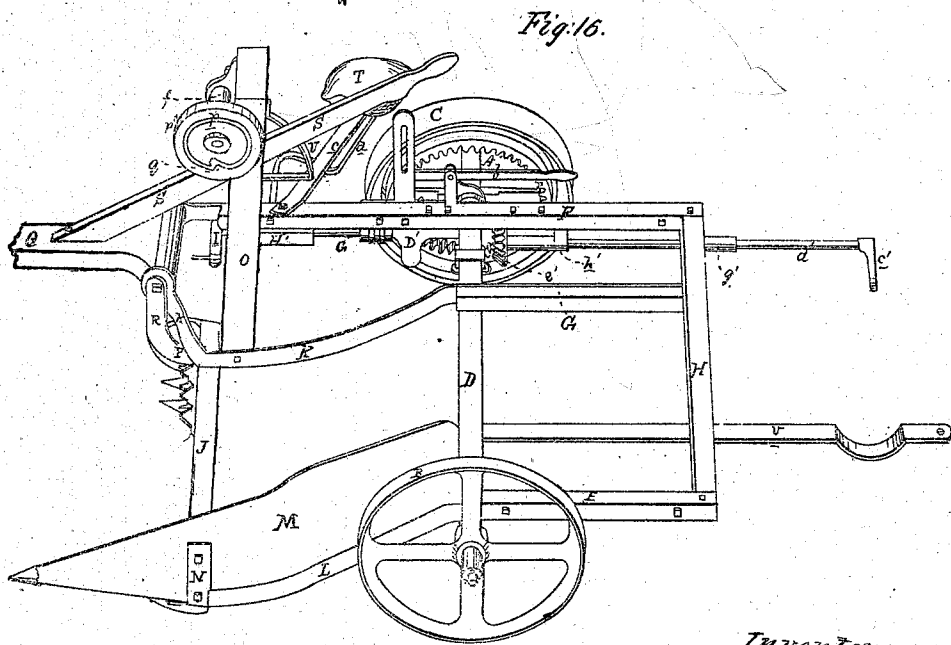
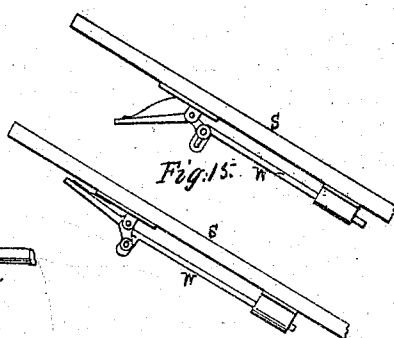
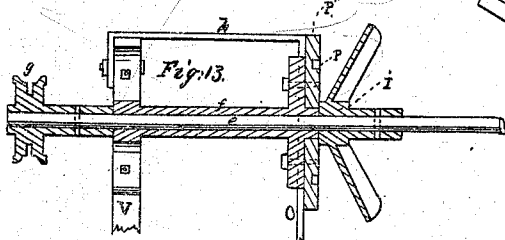
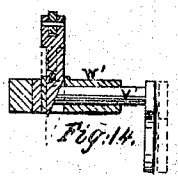
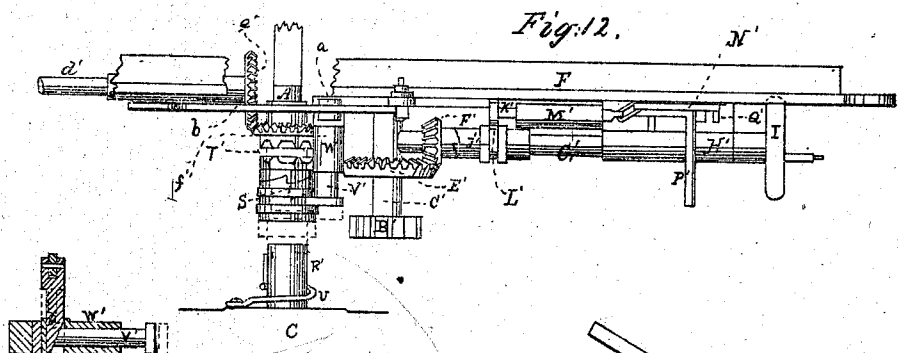
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UNITED STATES PATENT OFFICE.

WILLIAM N. WHITELEY, OF SPRINGFIELD, OHIO.

IMPROVEMENT IN HARVESTERS.

Specification forming part of Letters Patent No. 105,395, dated July 12, 1870.

To all whom it may concern:

Be it known that I, WILLIAM N. WHITELEY, of Springfield, in the county of Clarke and State of Ohio, have invented a new and useful Improvement in Harvesters; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing, in which—

Figure 1 is a perspective view of my machine. Fig. 2 is a plan of the same. Fig. 3 is side elevation of the same. Fig. 4 is a perspective, showing action of gather-board. Fig. 5 is an elevation of wheels and axle. Fig. 6 is a rear elevation of my machine. Fig. 7 is an outer side elevation of the same. Fig. 8 is a rear elevation of secondary platform. Fig. 9 is a perspective, showing action of rake. Fig. 10 is an inner side elevation of my machine; Fig. 11, elevation of driving mechanism for rake and cutters; Fig. 12, plan of the same; Fig. 13, longitudinal section of reel-post and bearing; Fig. 14, section showing construction of clutch; Fig. 15, latch of tongue-lever; Fig. 16, perspective view of my machine arranged as a mower.

This invention relates to that class of harvesters known as "combined machines," which may be employed to reap grain, or may be arranged, by detaching certain of its parts, to mow grass; and it consists more particularly in the arrangements whereby the same machine is enabled to cut grass, to cut grain and deliver it at the rear of the machine upon the ground, to deliver it at the side of the machine in a gavel upon the ground, or to deliver it upon a table, where it may be bound in sheaves by attendants riding upon the machine, and peculiar arrangements of devices for operating the rakes, the clutches, and the construction of the machine.

That others may understand more fully my invention, in its construction and operation, I will particularly describe it.

The frame is supported upon the continuous metallic axle A, which extends entirely across the machine, and its ends form bearings for the supporting-wheels B C, the latter of which is the driving-wheel, for the operative-mechanism of the machine. On top of the iron axle A a wooden beam, D, is firmly secured, by clips or otherwise, and to this beam D the string-

pieces E F G are secured, to form the rear portion of the main frame of the machine. The string-pieces E F G are connected at their rear ends by the cross-bar H. The main platform I and the cutting apparatus J are supported by the curved string-pieces K L, which extend backward over the axle A, and are bolted securely to the timbers E G. The outer string-piece L is bolted at its front end to the outer end of the finger-bar J, and the outer end of said bar is turned upward, as at N, at an angle of ninety degrees, or thereabout, to form a supporting-standard for the divider M, which extends forward and backward of the cutting apparatus in the usual manner. The forward end of the string-piece K is secured to the foot of the inner reel-post O, and this latter, by an angle foot-piece, is bolted securely to the inner end of the finger-bar and the inner shoe P. From said connection with the post O and finger-bar J the string-piece K is bent outward and upward to the level of the forward end of the side frame F, and the joint of the tongue Q is formed between the ends of said frame or string-pieces F and K, as shown in the drawing, Figs. 2 and 3.

The tongue-joint is further strengthened on the inner side by the lug or post R, which is preferably cast with the inner shoe P, and which extends upward and forms a bearing for the pivot-bolt of said joint.

The lever S is firmly bolted to the tongue Q a little in advance of the tongue-joint, and extends thence backward, slightly inclined upward, so as to reach a position convenient to the hand of a person upon the seat T. By raising or depressing the rear end of the lever S, the tongue-joint and cutting apparatus may be raised or depressed, as may be desired.

A segment-rack or perforated latch-plate, U, is secured to the outer reel post V, in a position by the side of the lever S, and so that the spring-latch or detent W will engage therewith to hold the lever S at the desired point.

The principal platform I is connected, at its front edge, with the finger-bar J, as usual, and from thence it curves backward and upward to the top of the axle A, where it becomes horizontal, and ends a little distance in rear of said axle.

The operative mechanism and gearing of

the machine are located at its side, and attached to the side frame-piece F, (see Figs. 11 and 12.) The prime motion is derived from the wheel C, to which is attached the internal gear A', which meshes with a pinion, B', upon a counter-shaft, C'. The counter-shaft C' is mounted in bearings on the bracket D', which is bolted to the side frame F, as shown in Fig. 16. The bevel-driver E', also mounted upon the shaft C', meshes with the bevel-pinion F', upon the cutter's crank-shaft G', which extends forward below the side frame F, and is mounted in bearings in the brackets D' and H'.

The cutter's pitman-crank wheel I' is secured to the forward end of the shaft G'. The cutters are thrown out of gear by moving a sliding ratchet-sleeve, J', (which is fitted to the shaft G', and moves on a feather thereon,) so as to disengage it from the ratchet-teeth cut on the end of the hub of the pinion F'.

To control the clutch-sleeve J', a rod, K', (with its box-bearing M' secured rigidly to the bracket H',) is provided at one end with an ordinary clutch-fork, L', and at the other it is linked to the bell-crank lever N'. When the forward end of said lever N' is raised, then the clutch-sleeve J' is withdrawn, and the cutters are thrown out of gear, and when said lever is liberated, the spring O', located within the sleeve-box M', immediately returns said clutch to its engagement with the pinion F'.

In order to control said clutch conveniently I have employed a foot-lever, P', which is pivoted to the bracket H', and is provided with a lug, which projects underneath the lever N', so that, when said foot-lever is pushed forward, said bell-crank is raised up, and the sleeve J' is withdrawn. The positions of the two levers are then such that their lines of motion are perpendicular to each other, and the clutch will remain withdrawn until the foot-lever is pushed backward again to release it.

A convenient stop to limit the forward motion of the foot-lever is provided by turning the forward end of the bell-crank lever N outward at right angles, as shown at Q'. The driving-wheel C is provided with a long cylindrical hub, R', on its inner side, and upon said hub the clutch-sleeve S' is fitted. Said sleeve moves back and forth upon a feather on said hub, and is thrown forward into engagement with the chain-wheel T' by a spring, U', which is secured, by a screw, to the wheel C.

The chain-wheel T' drives the reel and rake direct from the master-wheel, as will be more fully described hereinafter.

The clutch S' is controlled by means of a rod, V', which moves in a sleeve-box, W', and bears, at its outer end, an ordinary clutch-fork. The inner end of the rod V' is beveled and opposed to the wedge a, as shown in Fig. 14. When the wedge a is forced downward the clutch S is disengaged, and the chain-wheel is out of gear; but when said wedge is withdrawn, the spring U' forces said clutch into engagement again. The wedge a is con-

trolled by a hand-lever, b, located conveniently for the hand of the driver while upon his seat T.

The driver's seat T is mounted upon legs c d bolted securely to the side frame F.

The reel is of that class known as open-head overhung reels, and its shaft e has its bearings in a long sleeve-box, f, (see Fig. 13,) which is bolted first to the reel-posts O V, the same being braced at the top by the cross-bar h. At the outer end of said shaft is the chain-wheel g, through which motion is transmitted to the reel. The reel-head i is secured to the reel-shaft by a screw or pin, and it is provided with arms to receive and hold the reel-arms j j. The shaft e extends to a point opposite the center of the reel to support the rake k, which revolves with and acts as a part of the reel.

The rake k is provided with arms l, which are jointed to the lower end of one of the reel-arms j', and is supported in the desired position by the rod m, crank n, and cam p. These parts operate as follows:

The cam p is a groove in a circular plate, p'', secured to the reel-post O, and provided with a central orifice for the passage of the reel-shaft e, upon which said plate p'' is adjustable in the direction of the reel's revolution. The end of the crank n' dips into the cam-groove p, and controls the position and motion of the rake.

The cam-groove p is circular, except during about one-eighth of its circumference, and, consequently, the position of the rake k in relation to the reel-blades is constant during the greater part of its revolution. As, however, the rake k, in removing the gavel over the curved portion of the platform I, reaches the extremity of the curved portion of said platform, the pin n' comes in contact with an abrupt shoulder or angle, q, by which it is pushed upward toward the center or axis of revolution, and the crank n, rod m, arms l, and rake-head k are correspondingly depressed or pushed away from said axis, and this receding motion, in connection with the forward motion of the rake, may be so arranged as to resolve into a line having any desired direction. Thus, as the rake k pushes the grain forward up the curved platform I, the cam p will be so adjusted that the pin n' will reach the shoulder q at the moment when the rake-teeth have reached the point where the platform I becomes horizontal above the axle A, and thence the rake will project in a line parallel with the platform I for a short distance, or far enough to push the grain beyond said platform. These motions are clearly shown in Fig. 7. From the point of its greatest prolongation, the rake is returned to its position in the reel by an eccentric curve of the cam-groove from the point q, until it re-enters the regular curve about the axis of revolution.

The rod m is adjustable, both vertically and laterally, upon the arm l, for the purpose of adjusting the position or extension of the rake

and said adjustment may be secured by slots and bolts, or, more economically, holes, as shown. The brace *r* extends from the end of the reel-shaft *e* to the arm *j'*, to strengthen and support it. The rake-head *k* is provided with a high shield, *k'*, which is curved forward, as shown, and serves to compress the gavels as it is pushed along the platform. The divider *M* curves inward behind the cutting apparatus a little, far enough to permit the grain-wheel *B* to travel within the line of cut, and it also has an effect to compress the gavel laterally. A similar divider, *u*, located on the inner edge of the cutting apparatus, prevents any grain being pushed off the inner side of the platform.

My machine, as thus far described, will be capable of reaping grain, and delivering it in gavels at the rear of the cutters; or, by removing the platform *I* and the reel, it may be employed to cut grass. When so employed, the cutters run upon the ground, and the arrangement of the machine is as shown in Fig. 16.

If the machine should be employed as a dropper, it might be advisable to attach an ordinary slat-dropper at the rear of the platform *I*, or an inclined apron, to conduct the grain to the ground.

I will now describe those devices which I attach to the above-described machine to cause it, first, to deliver upon the ground at the side of the machine; and, second, to deliver to binders riding upon the machine. A secondary platform, *t*, is laid upon the frame-timbers *E F G H*, and upon this platform the grain is received from the main platform *I*. A long arm, *v*, is secured, at its front end, to the axle *A*, and projects to a distance in rear of the cross-frame *H*, to which it is likewise bolted. The arm *w* is jointed to the rear end of the arm *v*, as shown in Fig. 1, and the last-named arm reciprocates back and forth over the platform *u*, and projects slightly beneath the rear edge of the platform *I*, which is curved, to correspond to the circular movement of said arm *v*. The gather-board *a'* is attached to the arm *w*, and, as the latter sweeps over the platform, it removes whatever may be thereon toward and off the side of said platform. The reciprocations of the arm *w* and gather-board *a'* are produced by a slotted pitman, *b'*, and a crank, *c'*, the shaft *d'* of which is driven from the main wheel *C* by means of the bevel-gears *e' f'*. (See Fig. 12.) The shaft *d'* has its bearings in hangers *g' h'*, attached to the string-piece *F*.

It is desirable that the motions of the gather-board *a'* should be intermittent, so that it may be at rest while the gavel has been deposited by the rake *k*; and to attain this end easily, I make a slot, *i'*, at the crank-end of the pitman *b'*, and the crank-pin passes through and plays in said slot. A portion of each revolution is thereby exhausted in moving from

one end of said slot to the other without moving the gather-board.

By proper adjustment of the length of slot *i'* and position of the crank *c'* in reference to the motion of the reel-rake, the operation of the rake and gather-board may be made to alternate properly, and the gavel may be swept from the side of the platform to the stubble in the manner commonly known as side-delivery.

It will generally be preferred, however, to attach a binder's stand and table to the side of platform *t*, and have the gavels bound before reaching the ground. To this end, therefore, I attach the foot-board or stand *l'* to the rear corner of the frame *F H*, by means of hangers, as shown, and immediately behind said stand *I* mount the binders' table *m'* upon arms *p' p'*. The binders' table *m'* is in the form of two crescents joined or overlapping, so that each binder, as he stands in the hollow edge of his table, has a circular table upon which to bind his sheaf, and no more than one-fourth or one-third of a turn will be required for either to collect his gavel from the platform and transfer it to his table.

It will now be observed that the axle *A* is placed at the point of juncture between the two platforms *I* and *t*, so that the said axle not only forms a bearing or fulcrum on which the machine is balanced, but it becomes possible to mount the driving and grain wheels upon a single continuous axle. It also then becomes possible to employ, with a side-cut machine, a grain-wheel in diameter equal to the diameter of the driving-wheel, and capable of bearing its full proportion of the weight of the machine.

The driver's seat is located far back toward the driving-wheel, and the weight of the binders upon the stand *t* is so disposed as to counterbalance the extra weight of the machine in front of the axle *A*, and cause it to rest very lightly upon the necks of the horses.

Having described my invention, what I claim as new is—

1. A harvester-frame, constructed substantially as described, and combined with a continuous axle, which extends beneath said frame, and rests in the hubs of the main driving and grain wheels, substantially as set forth.

2. The removable platforms *I* and *t*, arranged, in reference to the continuous axle *A*, substantially as described.

3. A tongue-joint, formed by the frame-pieces *F K* and shoe-lug *R*, arranged as described.

4. The reel *j*, rake *k*, and gather-board *a'*, moved in conjunction by means of a chain-wheel and bevel-gear wheel upon a sleeve, *T*, substantially as described.

5. In combination with the clutch-rod *k'*, the lever *N'* and *P'*, constructed and operating substantially as described.

6. The rake-head *k* and arms *l l*, jointed to the arm *j'*, combined and arranged with the rod *m*, cranks *n n'*, and cam *p*, so that the rake will be driven out beyond the circumference of the reel, to discharge the gavel from the principal platform, and returned within the circumference of the reel, to act as a reeling beater and rake, substantially as described.

7. The crank-shaft *d'*, slotted pitman *b'*, and vibrating gather-board *a'*, arranged to operate substantially as described.

WILLIAM N. WHITELEY.

Witnesses:

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CHAS. EVANS.