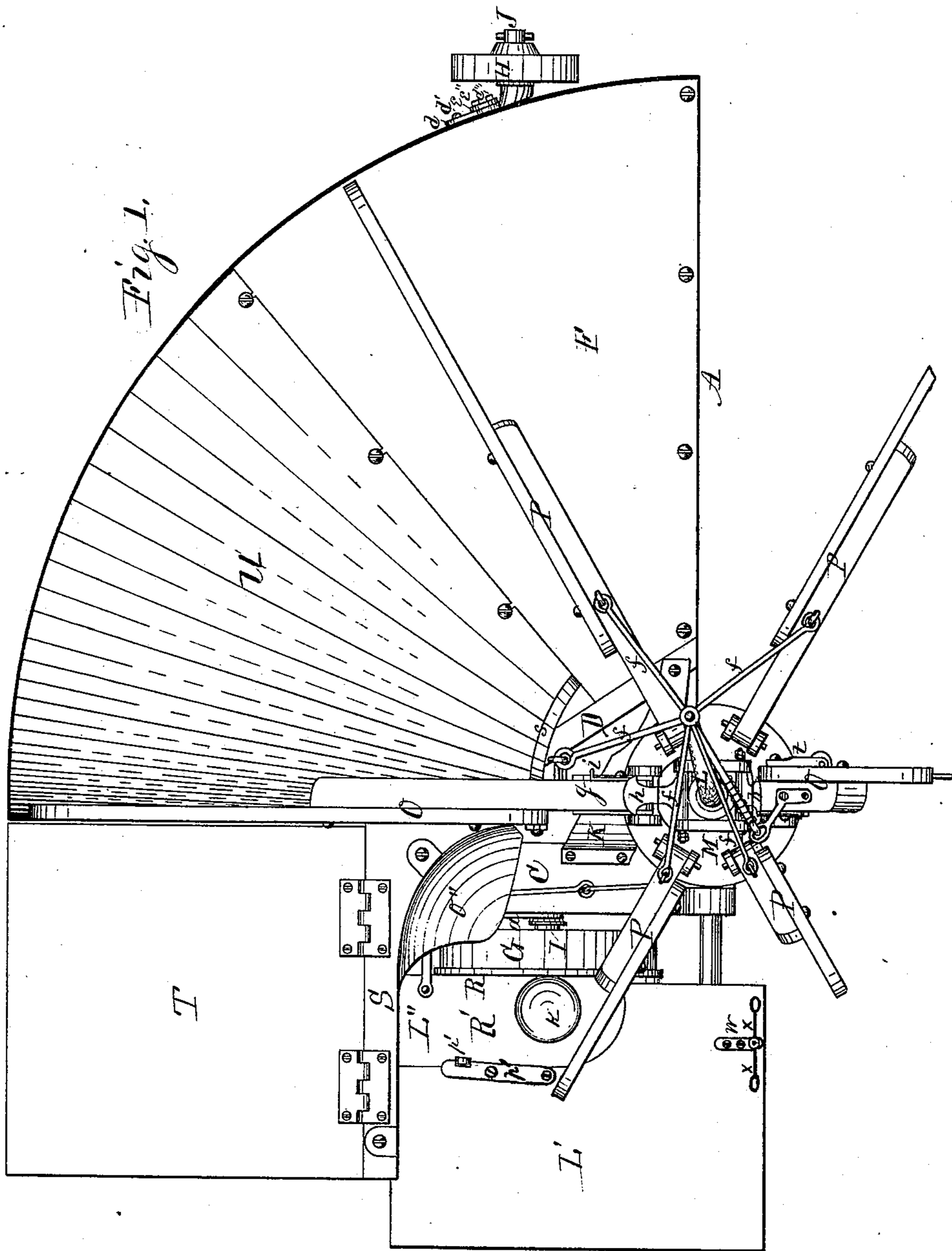


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SELF RAKING REAPER.

No 251,561.

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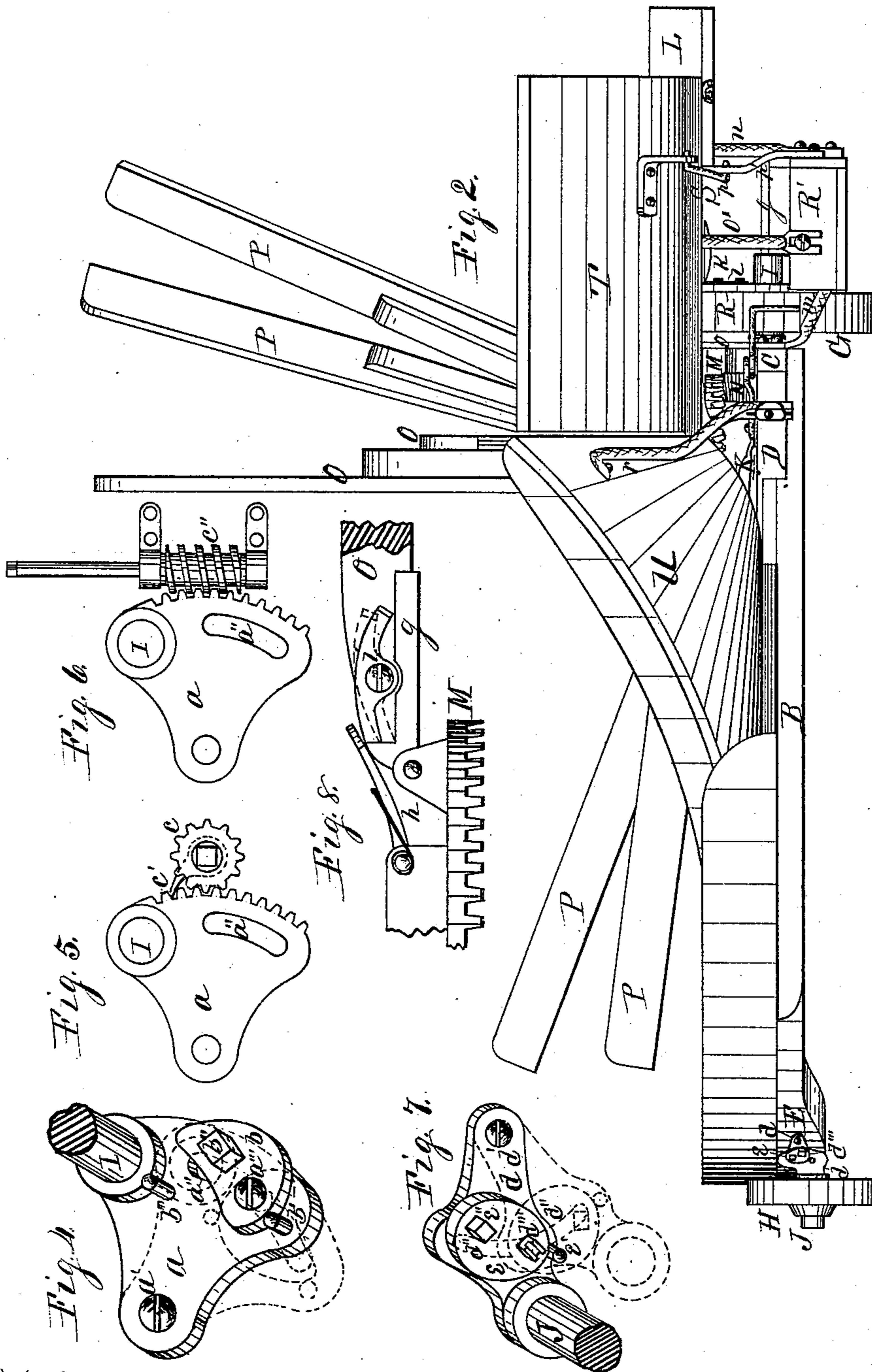
Witnesses.
D. B. Sheffield
A. B. Behel.

INVENTOR.
Daniel L. Emerson
Per. Jacob Behel.
Atty.

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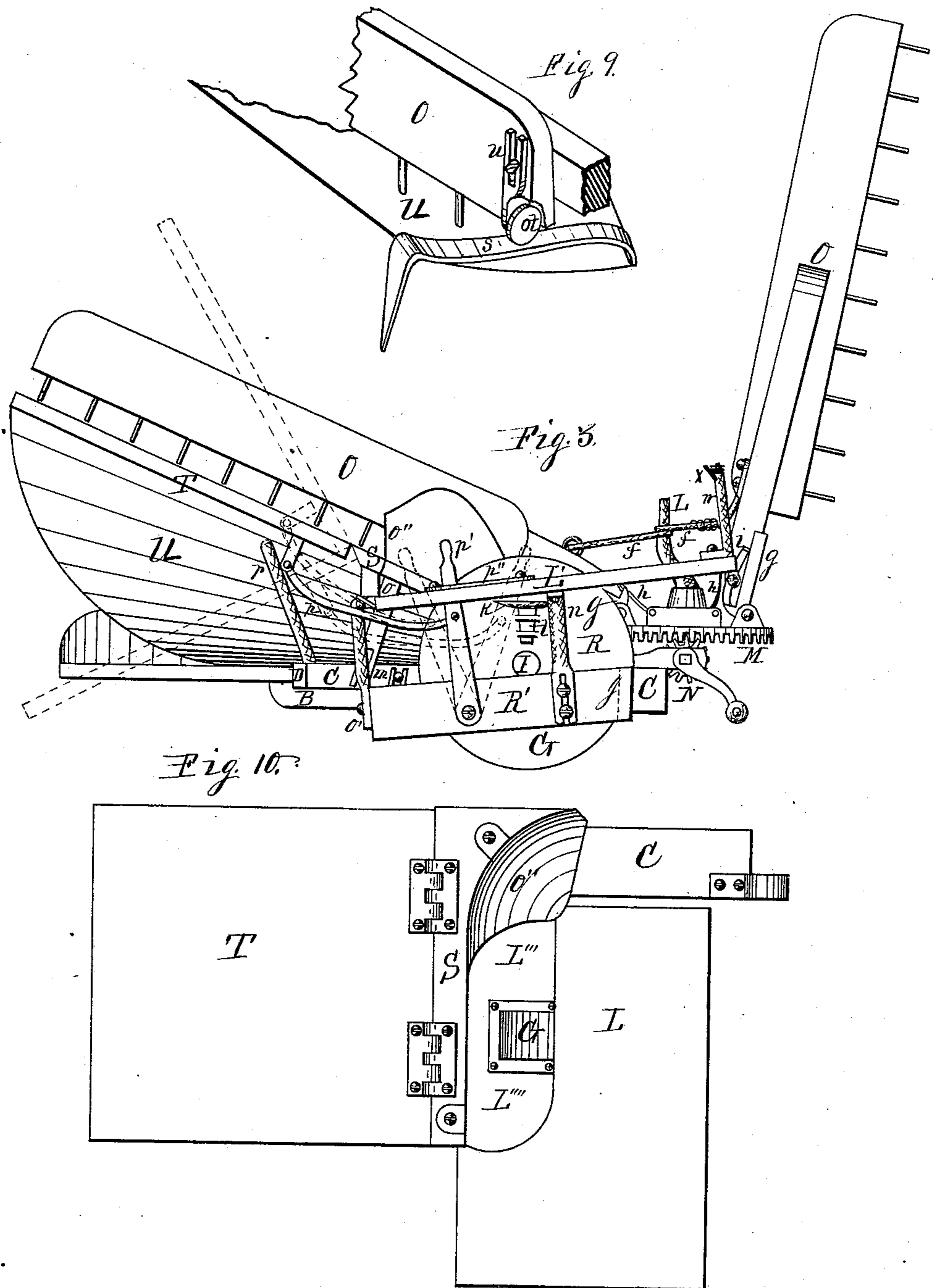
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UNITED STATES PATENT OFFICE.

DANIEL L. EMERSON, OF ROCKFORD, ILLINOIS.

SELF-RAKING REAPER.

SPECIFICATION forming part of Letters Patent No. 251,561, dated December 27, 1881.

Application filed December 27, 1879.

To all whom it may concern:

Be it known that I, DANIEL L. EMERSON, of the city of Rockford, in the county of Winnebago and State of Illinois, have invented a new and useful Improvement in Self-Raking Reapers, of which the following is a specification.

This invention relates to that class of self-raking reapers in which the rake and reel are combined. It, however, relates more particularly to certain attachments designed to carry men to bind the grain cut by the reaper as it is elevated and deposited by the rake on a receiving-table provided for its reception.

In the accompanying drawings, Figure 1 is a plan view of a self-raking reaper embodying my invention. Fig. 2 is a rear elevation; Fig. 3, a side elevation of the driving-wheel side of the machine, the reel-bats being omitted. Fig. 4 is an isometrical projection of the driving-wheel axle and its raising and lowering device. Figs. 5 and 6 are modifications of the same. Fig. 7 is an isometrical view of the grain-wheel axle and its raising and lowering device. Fig. 8 represents a portion of the crown-wheel and rake-arm, pawl, and controlling pivoted lever. Fig. 9 represents the inner end of the rake, showing an adjustable traveler and its trackway on curved platform. Fig. 10 represents a modification of the binders' tables.

In the foregoing figures I have represented such parts of a self-raking reaper as are necessary to clearly represent my improvements. The parts of the complete reaping-machine omitted may be supplied by the employment of any such parts known or used for the purpose.

The main frame of the reaping-machine represented in the figures is composed of a finger-beam, A, platform-supporting beam B, end beam C, angle end beam D, and curved end beam E, suitably framed and firmly joined to each other, on which is supported the receiving-platform F, all of which are substantially the same as like parts shown in a patent numbered 219,236, issued to me September 2, 1879. These parts are supported on a suitable driving-wheel, G, and a grain-wheel, H. The driving-wheel G is fitted to revolve on an axle-arm, I, projecting from the lever plate-arm, a, the rear end of which is pivoted to the end beam

C by means of a suitable bolt, a' , in such a manner that its free end may be adjusted vertically relative to the machine. The forward portion of this lever-arm is provided with a concentric slot, a'' , immediately under the axle-arm, designed to receive a clamping-bolt, a''' , by which to fix it in position when adjusted.

At b is represented a cam-formed washer, through which the clamping-bolt a''' is passed. When in the position represented in solid lines, the stud b' , projecting from the plate-arm, will rest against its lower edge and the machine will be in its lowest position.

By means of a suitable wrench placed upon the stud b'' , projecting from the face of the cam-washer, it may be turned into the position represented in dotted lines, and its edge surface operating against the stud b'' , will carry with it the lever plate-arm, and consequently the axle, into the position represented in the dotted lines, in which position it may be fixed by means of the clamping-bolts, and the studs b'' and b''' , resting against the edge of the cam-washer, serve to fix the axle in its lowest position relative to the frame more firmly. By means of this device the driving-wheel end of the machine may be readily raised and lowered and fixed in any desired vertical position relative to the driving-wheel within the limits of the device.

In Fig. 5 I have represented a rack-and-pinion movement employed for the same purpose, in which c represents the pinion, to be operated by a suitable wrench applied to a stud rising from its center, and a pawl, c' , will engage the teeth of the segment to prevent its running back, and when in the desired position it may be fixed by a clamping-screw, as in the last example.

In Fig. 6 I have represented a screw-gear movement capable of use for the same purpose. c'' represents the screw, which engages with the gear-teeth of the segment, and which is fitted to receive a wrench, by which it may be turned in either direction, to raise or lower the machine.

The grain-wheel H is fitted to revolve on an axle-arm, J, projecting from the lever plate-arm d , the rear end of which is pivoted to the curved beam F by means of a suitable bolt, d' , in such a manner that its free end may be adjusted vertically. This lever plate-arm is fit-

ted with a concentric slot, d'' , immediately in rear of the axle-arm, designed to receive a clamping-bolt, d''' , by which to fix it in position when adjusted.

5 At e is represented a cam-formed washer, through which the clamping-bolt d''' is passed, and when in the position represented in solid lines the stud e' , projecting from the plate-arm, will rest against its lower edge, and the machine will be in its lowest position.

By means of a suitable wrench placed upon the stud e'' , projecting from the face of the cam-washer, it may be turned into the position represented in dotted lines, and its edge surface, operating against the stud e'' , will carry with it the lever plate-arm, and consequently the axle, into the position represented in the dotted lines, in which position it may be fixed by means of the clamping-bolt, and the stud e' , resting against the edge of the cam-washer, serves to fix the axle in its lowest position more firmly. By means of this device the grain-wheel end of the machine may be readily raised and lowered and fixed in any vertical position relative to the grain-wheel within the limits of the device.

On this machine is suitably mounted my improved combined rake and reel, which in every particular as such is substantially the same as the rake patented to me September 2, 1879, and numbered 219,236, and is mounted on the machine to be operated and controlled by substantially the same devices in the same manner, and therefore I do not deem it necessary to describe it in detail in this connection further than to refer to some of the main parts employed in its construction, in which K represents a spider fixed to the frame; L , a rake-post fixed therein; M , a crown-wheel to revolve on the rake-post; N , a pinion to engage the crown-wheel and to be connected with the reaper-movement; O , rakes, and P reel-bats hinged to the crown-wheel; f , links connecting the rakes and reel-bats to the rake-post; g , joint-sockets of rake-arms; h , hook-detents to engage the hooks of the joint-sockets. In connection with these joint-sockets and hook-detents I have invented and applied a controlling pivoted lever, (represented at i), pivoted to the rake-arm in such a manner that when in the position represented in solid lines in Figs. 3 and 8 it will prevent the detent from engaging the rakes and permit them to descend to the platform in every revolution to operate as a continuous rake. This feature is especially desirable when the crop, or a portion thereof, is substantially uniform and of such a stand or growth that a suitable gavel will be discharged by each rake, or by each alternate rake, in every revolution.

When the crop is irregular in its stand the pivoted controlling-lever may be changed to the position represented in dotted lines in Fig. 8, in which position the hook-detent will engage with the rake to carry it in an elevated position to operate as a reel-bat, and the rake will be under the control of the operator, as in

my former patent. This device also enables the operator, without leaving his seat, to so control the automatic movements of the rake as not to deposit gavels in the line of travel of the team or machine in turning corners, or in other undesirable locations, all of which is readily accomplished by adjusting the controlling pivoted lever for the time being to the position represented in dotted lines, which will permit the detent to engage the rake and hold it elevated to operate as a reel-bat to prevent the deposit.

To carry out this part of my invention I have employed the pivoted lever i as a suitable device.

At R is represented a suitable shield, of plate material, designed to protect the operators from injury from the driving-wheel. It constitutes one side of the box-like portion R' , which furnishes the support on which the operators are carried, and its vertical front end portion, j , furnishes the foot-support of the driver when seated on the seat k , which is detachably supported on the shield R by means of a depending portion, l , fitted to enter suitable loops on the side of the shield fitted for its reception. This shield-plate, operators' support, and driver's seat is supported in position on the outward-projecting portion of the driving-wheel axle, and is connected to the main frame of the reaper by a brace, m , projecting from the box-like portion, and connecting with the main frame by means of a vertical portion slotted to receive a screw-bolt, by means of which it may be adjusted vertically, fixed in position when adjusted, and also made removable.

At L' is represented a binders' table of suitable form, opened to admit the operators to their supports, suitably elevated and supported in position by a standard, n , connected therewith, and having its lower portion provided with a vertical slot to receive clamping-bolts, by which it is made vertically adjustable and fixed in position to the support.

At S is represented a gavel-receiver, placed in rear of the driving-wheel at the rear end of the binders' table. It is supported in position on standards o and o' , fixed thereto, and having their lower portions slotted vertically to receive clamping-bolts, by which they are removably fixed in position to the main frame and operators' support and made vertically adjustable. The forward edge of this receiver is provided with an uprising portion, o'' , designed to prevent the grain, when deposited on the receiver, from sliding over its forward edge.

The main portion of the receiver, consisting of the inclined table T , is hinged at its forward edge, and is held in the position represented in solid lines to receive the gavel deposited by the rake by means of a connecting rod, p , pivoted to it and to the hand-lever p' , which is pivoted to the operators' support and engages the ratchet-plate p'' , fixed to the binders' table. By means of this hand-lever and its connections the receiving-table may be raised to

the position represented in the dotted lines to convey the gavel to the binders, or it may be lowered to the position represented in the lower dotted lines to dump or discharge the gavel on the ground.

At U is represented a spirally-inclined portion of the platform, connected to the rear portion of the main platform in a removable manner, and its delivery portion is on substantially the same plane with the transverse plane of the hinged receiver, when in the position of the solid lines, to receive the gavel delivered on it by the rake. The delivery edge of this spirally-inclined portion of the platform is supported on a standard, *r*, fixed to its under side, having its lower portion slotted to receive bolts, by which it is fixed to the main frame and made vertically adjustable. The end of this spirally-inclined portion of the platform nearest the rake's center is provided with a trackway, *s*, adapted to receive a traveler, *t*, fitted to revolve on a suitable bearing fixed to the heel or inner end of the rake by means of a vertical arm, *u*, slotted to receive bolts, by which it is fixed in place and made adjustable vertically, to govern the movement of the rakes in traversing the spirally-ascending portion of the platform.

The forward portion of the binders' platform is fitted with a standard, *w*, supporting a cross-bar, *x*, fitted with end loops to receive the driving-reins of the team employed.

From the foregoing it will be seen that with the parts of a complete reaping-machine supplied, such as the cutting apparatus and the gearing connecting it and the rake with the driving-wheel, to impart the required motion thereto, and a tongue with its usual appliances, all of which may be any of the known forms found applicable to this machine, and when in operation as a controllable rake or as a continuous rake the grain will be carried from the cutters over the main portion of the platform, up the spirally-inclined portion, deposited on the receiving-table within easy reach of the operators carried on these supports, one on the seat *k* and the other in the space *L''*, and be taken by them, bound, and cast from the machine or dropped on the ground. In this operation the operator on the rear end of the support will be in position to take the grain from the receiver and bind it on the binders' table; and should it accumulate beyond his capacity he can pass an occasional gavel, or an equal or larger portion, to the forward portion of the binders' table to be bound by the forward operator, either seated or standing, and he, having the driving-reins fixed in the rein-carrier, will be in position to render service as a binder.

In ascending sharp grades it may be found necessary to elevate the receiver to bring the deposited gavel within easy reach of the binders. This may be readily accomplished by means of the hand-lever, as hereinbefore described; and if it should be desirable at any time to deposit a gavel or gavels on the ground unbound it will be readily accomplished by

dumping the receiver by means of the same hand-lever. This dumping feature will be found valuable in harvesting crops difficult to bind, or for seed—such as clover, timothy, flax, or other like crops—which, especially with the employment of the rakes operating automatically, will be carried from the cutters rapidly, to prevent clogging, and deposited on the receiver, and, when a sufficient quantity has accumulated, may be dumped in compact bunches.

It will also be seen that the spirally-inclined portion of the platform, the travelers, the gavel-receiver, the binding-table, and the operators' support are made removable, which, when removed, will leave the machine a self-raking reaper substantially the same as secured to me by patent hereinbefore referred to.

In Fig. 10 in the drawings I have represented the binders' table placed in a different position relative to the gavel-receiver, in which position the binders or operators are both placed within easy reach of the gavel, one in each space *L'''* and *L''''*, on opposite sides of the driving-wheel *G*, which in this modification is placed farther from the machine.

I make no claim to the combination of the operators' supporting-platform located at the side of the driving-wheel, and a binding-table located over the supporting-platform, and a gavel-receiving table placed in rear of the driving-wheel and binding-table; or to a hinged gavel-receiving table in the relation shown and described; or to the combination of the supporting-platform, raking apparatus, spirally-inclined platform, and receiving-table; or to the combination of the platform, gavel-receiving table, spirally-inclined platform, and rakes provided with travelers and a trackway; or to the combination of the platform, hinged gavel-receiving table, spiral platform, and operators' supporting-platform.

I claim as my invention—

1. The combination, with an arm or plate pivoted to the harvester-frame, said arm or plate having a spindle secured thereto, upon which the harvester-wheel is mounted, and provided with a slot formed concentric with its pivot and lugs projecting from its upper and lower portions, of a cam pivoted to a clamping-bolt which extends through said concentric slot, said cam adapted to be adjusted to form a bearing for either of the lugs or pins on the face of said pivoted arm or plate, substantially as set forth.

2. The combination, with a harvester-rake and a detent constructed and arranged to engage a projection on the rake and hold the latter in its elevated position to operate as a reel-bat, of the lever *i*, pivoted to the rake and adapted to be adjusted in the manner shown and described, whereby the detent may be prevented from engaging with the rake-head when the lever is in one position, and may engage therewith when the lever is shifted to another position, substantially as set forth.

3. The combination, with the operators' supporting-platform located at the side of the

driving-wheel, of a binding-table secured above and oversaid supporting-platform, and a gavel-receiving table located in rear of the driving-wheel, and an operator's seat located within
5 an opening formed between the side of the driving-wheel and binding-table, substantially as set forth.

4. The combination, with the operators' supporting-platform and binding-table, both located at the side of the driving-wheel, of the
10 shield at the side of the driving-wheel and operator's seat removably secured to said shield, substantially as set forth.

5. The combination, with the platform of a

self-raking reaper, a gavel-receiving table, and
15 an intermediate spirally-inclined section or portion of a platform, of the rakes, each having a traveler journaled thereto in a vertically-adjustable standard or bracket, and a trackway to support said travelers and carry the
20 rakes practically parallel to the spiral platform and at any desired distance therefrom, substantially as set forth.

DANIEL L. EMERSON.

Witnesses:

A. O. BEHEL,

J. C. CARKHUFF.