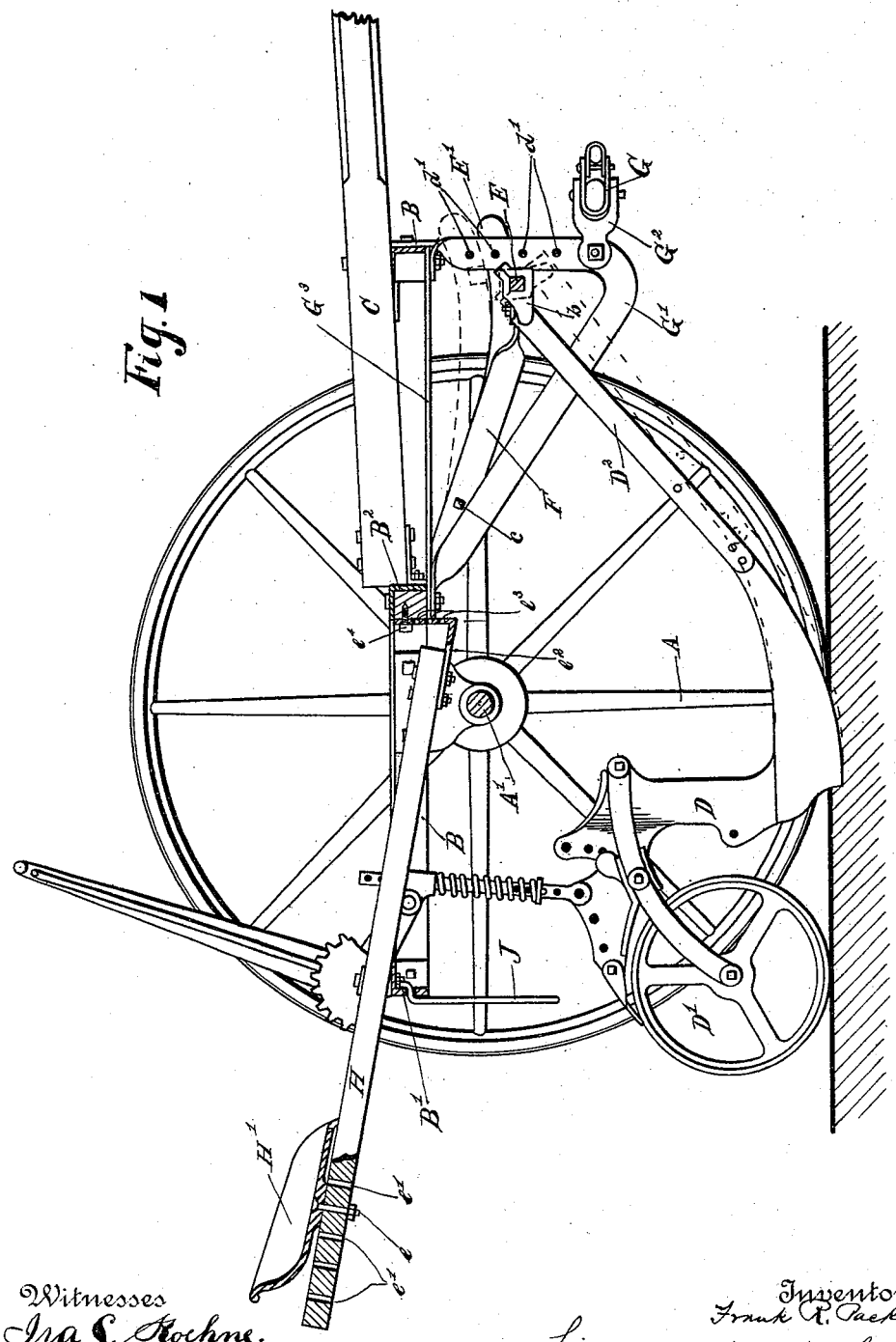
(No Model.) 3 Sheets—Sheet 1.

F. R. PACKHAM.

GRAIN DRILL.

No. 490,360. Patented Jan. 24, 1893.

Fig. 1



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(No Model.) 3 Sheets—Sheet 2.

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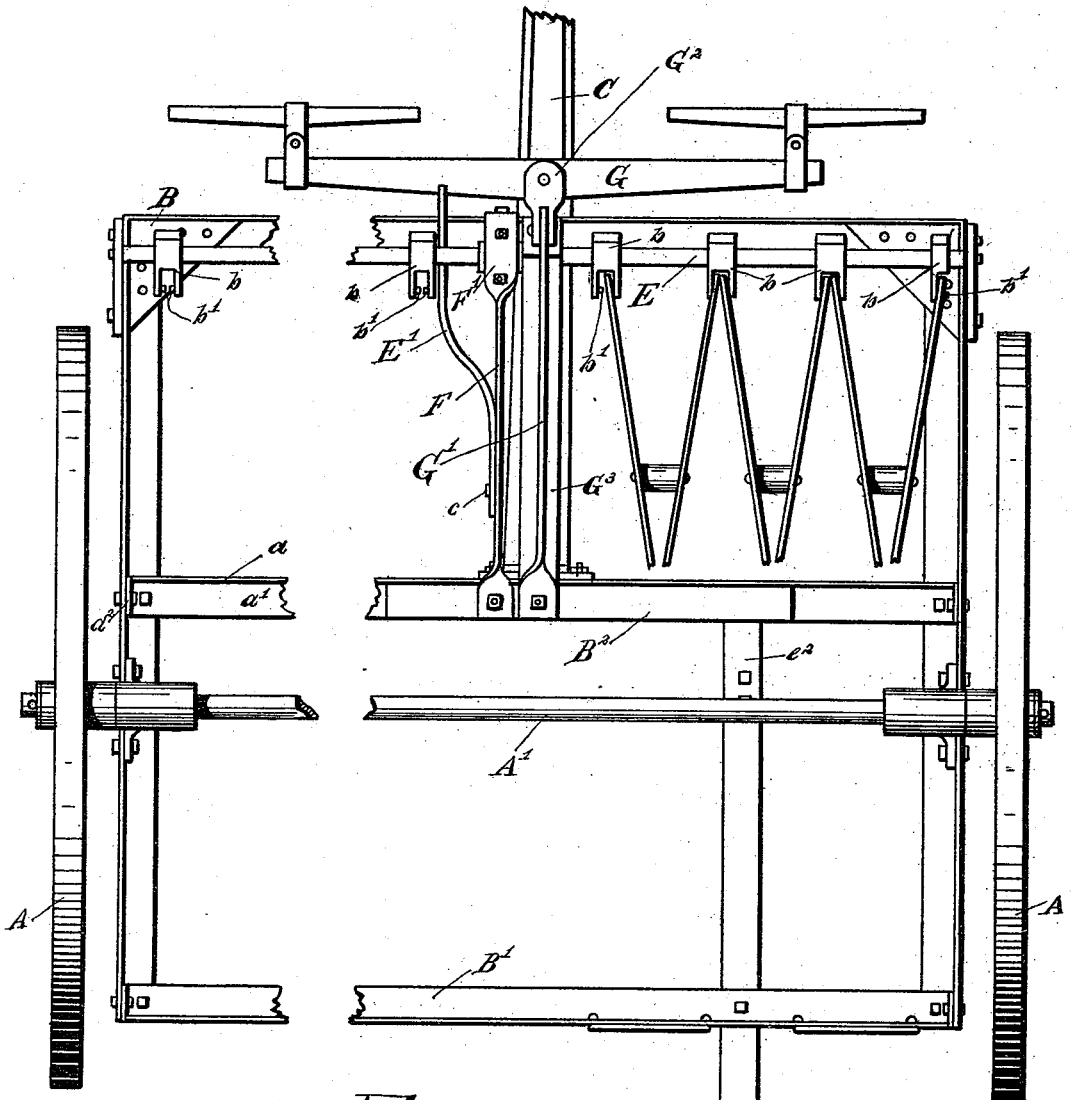

Fig. 2.

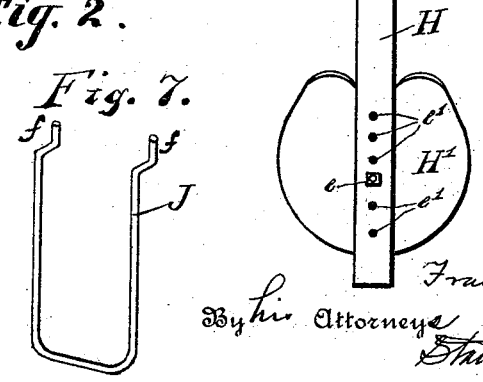

Fig. 7.

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(No Model.) 3 Sheets—Sheet 3.

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GRAIN DRILL.

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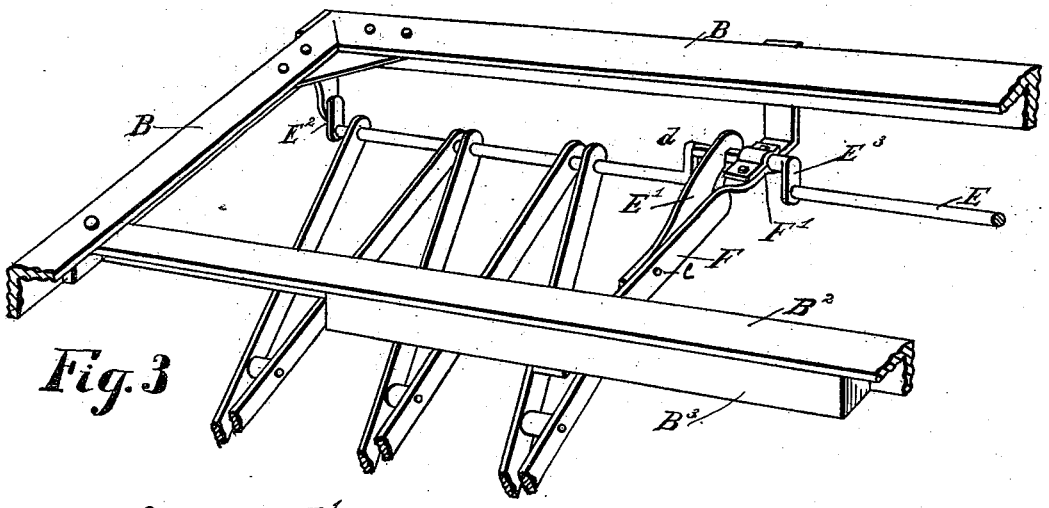


Fig. 3

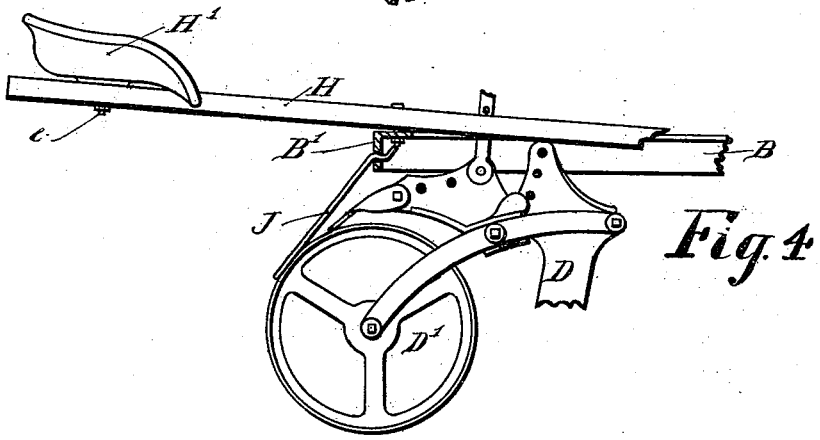


Fig. 4

Fig. 5

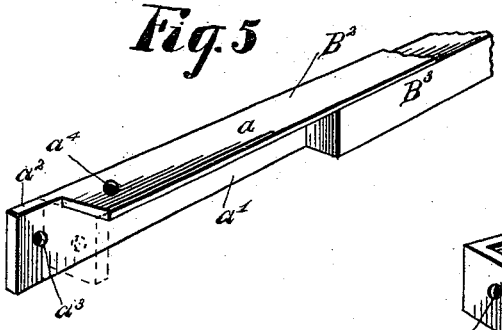
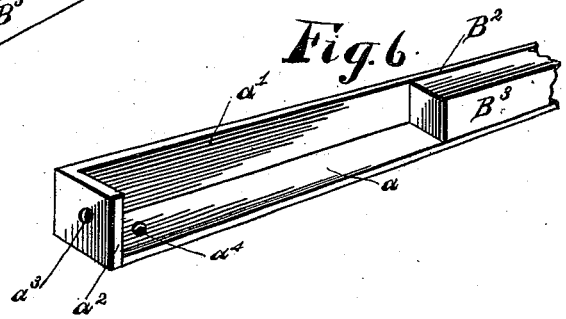


Fig. 6



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UNITED STATES PATENT OFFICE.

FRANK R. PACKHAM, OF SPRINGFIELD, OHIO, ASSIGNOR TO THE SUPERIOR DRILL COMPANY, OF SAME PLACE.

GRAIN-DRILL.

SPECIFICATION forming part of Letters Patent No. 490,360, dated January 24, 1893.

Application filed January 18, 1892. Serial No. 418,480½. (No model.)

To all whom it may concern:

Be it known that I, FRANK R. PACKHAM, a citizen of the United States, residing at Springfield, in the county of Clark and State of Ohio, have invented certain new and useful Improvements in Grain-Drills, of which the following is a specification.

My invention relates to improvements in grain drills and the object of my invention is to provide novel means for attaching the shoes or hoes of a grain drill so that the point may be elevated or depressed independent of the movement thereof by the ordinary raising and lowering apparatus.

A further object of my invention is to provide novel constructions of a grain drill frame.

A further object of my invention is to simplify and cheapen certain constructions of the operating parts, as will hereinafter more fully appear.

I attain these objects by the constructions illustrated in the accompanying drawings, in which,

Figure 1, is a sectional elevation of a grain drill embodying my invention, with the hopper and the shoe attachment removed. Fig. 2, is a bottom plan of the same with the shoes and a portion of the drag-bars removed. Fig. 3, is a perspective view of a portion of the frame, showing a modification in the manner of attaching the drag-bars thereto. Fig. 4, is a detail view of a portion of the frame and a shoe or hoe in an elevated position. Figs. 5 and 6, are details of a portion of the frame hereinafter more fully referred to. Fig. 7 is a detail of the foot support or stirrup.

Like parts are represented by similar letters of reference in the several views.

In the said drawings A A, represent the carrying wheels; B B, represent the main frame, C, the tongue connected thereto, D, the shoes provided with pressing and covering wheels D′, D², the drag-bars, which connect the shoes to the frame in a manner hereinafter more fully specified.

The frame B B, I preferably construct of angle iron, the front and sides of which are formed of a single piece with the ordinary braces in any suitable manner. I also continue the said frame at the rear by a connecting and supporting piece B′, which may, if desired, be formed integral with the other parts of the frame, though preferably made separate are secured at each end to the angle iron forming the respective sides of the frame by bolts so that they may be removed if desired. About mid way of the frame and connecting the respective sides thereof parallel with the front is the cross bar, usually termed a bed-rail B². This bed-rail I construct as follows: I take a piece of angle iron preferably of the same size as that employed for the other parts of the frame. Cut off a portion of one wing *a*, for a distance about equal to the width of said wing, as indicated in full lines in Fig. 5. This leaves a projecting end a^2, of the other wing *a*′, which is bent at right angles, as indicated by dotted lines, in Fig. 5, so as to butt up against the end of the wing *a*, in the manner shown in Fig. 6; the said projecting end having been first preferably provided with a perforation a^3. Each end of the bed-rail B², is preferably formed in this manner. I also preferably perforate the other wing *a*, of the angle iron bed-rail with an opening a^4, in a plane at right angles to the opening a^3.

In assembling the bed-rail in position, that wing which contains the perforation a^4 is placed immediately under the horizontal wing of the frame proper with the opening a^4 coinciding with a similar opening through said frame. The vertical wing of the frame proper is also pierced with an opening coinciding with the opening a^3, and the end a^2, is butted up against said vertical wing and the respective wings *a a*′, of the bed-rail connected to the horizontal and vertical wings by bolts or other connections passing through said openings. By this construction a very strong connection is secured between the bed-rail and the frame proper; the wings of said bed-rail being thus firmly connected to the said frame, while the formation of the end a^2, presents a broad surface in contacting with the wing of said frame. By this construction the frame proper together with the bed-rail is formed entirely of metal. It is desirable in some cases that means be provided for securing certain of the operating parts to the bed-rail in varying positions. For this purpose and for the

further purpose of adapting the bed-rail to parts already in use, which parts have been constructed for use with wooden bed-rails, and which have been heretofore almost exclusively used, I provide within the angle iron bed-rail a wooden block B^3, secured to the respective wings of said angle iron in any suitable manner and made of any or sufficient length, so as to extend along that portion of the bed-rail to which the parts are to be applied. This construction furnishes the means for readily applying the bearings or other operating devices or parts by screws or otherwise to the wooden portion of the bed-rail. The holes for the reception of said screws being readily formed at any convenient point in the said wooden portion.

Extending along the front of the main frame preferably slightly below and slightly back of the front bar of said frame and parallel thereto, is a shaft E, supported in suitable bearings from the main frame. To this shaft E, each of the drag-bars D^2, is connected in such a manner that the rotation of the said shaft in certain limits will elevate or depress the point of connection of said drag-bar with the frame and thus elevate or depress the front end of the shoe, so as to change the angle thereof. This shaft E I preferably form as shown in Figs. 1 and 3, with a square portion intermediate its length and having projecting fingers *b*, to which the drag-bars are attached. These fingers *b*, are preferably bifurcated and each fork thereof is provided with an inwardly projecting stud *b'*, adapted to engage in the perforated end of the drag-bar. Means are provided for holding the shaft in different positions of rotation. This I preferably accomplish by employing a pivoted latch-bar E', having formed therein a notch corresponding to the shape of the shaft E. By this construction and the employment of a square shaft, three different elevations of adjustment are secured in the point of attachment for the front end of the drag-bar. By forming the shaft with more sides and notching the latch-bar E', to correspond, any desirable number of adjustments may be secured.

The pivoted latch-bar E', is preferably pivoted at *c*, to a supporting and connecting piece F, preferably formed of a flat piece of iron connected at its rear end to the bed-rail B^2, and extended downwardly to bend with a quarter twist, so as to form a bearing F', for the shaft E, from whence it is turned upwardly to connect to the front rail of the frame B B. In Fig. 3, I have shown this construction modified, the shaft E, in this case being round and threaded through each of the drag-bars, the said shaft being supported in the middle and at the respective ends by crank-arms E^2 E^3, the central crank-arm E^3, being preferably provided with an extended shank or spindle *d*, formed with a square projecting end adapted to be engaged by the pivoted latch-bar E', and thus hold the said shaft in different positions of adjustment, to accomplish the elevation or depression of the front ends of the shoes.

To provide for connecting the double-trees G, to the frame and to provide for adjusting the same to different heights to change the angle of draft, I employ a hitch-bar G', constructed of a single piece of flat metal formed at each end with a quarter turn and bent substantially to a V-shape with one arm longer than the other, one end of said bar being connected to the bed-rail B^2, and the other to the front rail of the frame B, so that the shorter arm of the bar stands substantially vertical or at right angles to the plane of the frame. This portion of the bar is provided with a series of openings *d'*, through which a connecting shackle G^2, is pivotally connected to said bar. I also preferably provide a straight flat bar G^3, which connects the bed-rail B^2, to the front rail of the frame B. The same bolt which secured the respective ends of the draft-bar G', being adapted to pass through the ends of said connecting bar and join the same to the respective rails of the frame. This construction produces a very strong and rigid hitch on which the double-tree is adjustable.

Connected at its forward end to the bed-rail B^2, and extending backwardly over the top of the rear frame rail B', is a seat-bar H, carrying the seat H', which is secured to said bar by means of a bolt *e*, passing through one of a series of openings *e'*, in said bar. This seat-bar is preferably made of wood and provided at its forward end with an L-shaped connecting plate or bar e^2, having a series of openings e^3, through which the fastening screw e^4, passes, a wood screw being preferably used for this purpose extending into the wooden block B^3, of the bed-rail B^2. Means are thus provided by which the seat may be adjusted backward or forward along its supporting bar or the forward end of the bar adjusted vertically to accommodate the operator.

On each side of the seat-bar H, I provide supporting loops or stirrups J, adapted to receive the feet of the rider. These stirrups are each formed of a single piece of metal bent in a substantially U-form each of which is provided with a double bend *f*. The rear rail B', of the frame is perforated and adapted to receive the ends of these loops which are raised to an unusual position and passed through the said perforations, so as to remain therein by gravity; the construction being such that they must be raised to an unusual position before they can be removed from the perforations. This construction permits a pivoted movement of said stirrups so as in no wise to interfere with the raising and lowering of the shoes and their pressing and covering wheels, the wheels or supporting frame thereof being adapted to contact with the lower end of said stirrups and thus force them backwardly as shown in Fig. 4, the stirrups returning to their normal position when the shoes are again lowered for operation.

Any suitable form of lifting mechanism

may be employed for raising and lowering the shoes or hoes.

By the constructions shown and described a strong and effective frame is secured the parts of which are all compactly arranged and permitting various useful and effective adjustments therein.

Having thus described my invention, I claim

1. In a grain drill, a main frame formed with a front and two sides substantially at right angles to said front from a single piece of angle iron, with the vertical wing of said angle iron on the outside, and a connecting bar or rail also of angle iron and parallel to the front bar, said connecting bar or rail being constructed at each end with a bearing plate formed by removing a piece of one flange of said angle iron and bending the projecting end of the other flange at right angles until it rests against the end of the shorter flange, said connecting bar being attached to the vertical wing of the said frame through the connecting plate thus formed, substantially as specified.

2. In a grain drill an iron frame formed with a front rail and side rails at substantially right angles thereto bent from a single piece of angle iron, and a connecting bar substantially parallel with the front rail and connected at each end to the side rails, said connecting bar being also formed of angle iron and provided at each end with a bearing plate formed by removing a portion of one wing and bending the extended end of the other wing inwardly at right angles so as to rest in contact with the end of the shorter wing, said bearing plate thus formed being connected to the vertical wing of the side rail with the horizontal wing of the connecting bar resting under and connected to the horizontal wing of the side rail—substantially as specified.

3. In a grain drill, a main frame and a series of planting shoes, a drag-bar for each of said shoes, a revolving shaft supported in said frame, said shaft being square in cross section and provided with projecting fingers in line with each other, to which the respective drag-bars are pivoted, and a pivoted latch having a notch adapted to engage said shaft and thus hold it in different positions of adjustment, whereby the angular position of all the drag-bars and their shoes may be simultaneously changed without changing their relative positions, substantially as specified.

4. In a grain drill, a metallic frame having a connecting bar or bed-rail formed of angle iron with its ends connected to the side rails of said frame, and a wooden block connected to said connecting bar or bed-rail within the adjacent wings of said angle iron, substantially as and for the purpose specified.

5. The combination with the main frame, of a hitch-bar formed of a single piece and connected to the front and bed-rails respectively of said frame, so that the front portion thereof is substantially at right angles to the plane of the frame, said bar being provided with a series of openings to receive the double tree hitch, substantially as specified.

6. The combination with a grain drill frame having the rear connecting rail formed of angle iron, and a seat in the rear of said rail, of foot stirrups formed of a single piece of metal with a double bend, adapted, when turned to an unusual position, to enter the perforations in the vertical wing of said angle iron, substantially as specified.

7. The combination with the planting shoes and their lifting devices, of a foot stirrup or stirrups arranged above said shoes and pivotally connected to the main frame so as to be automatically moved out of the way of said shoes, when the shoes are raised, substantially as specified.

In testimony whereof I have hereunto set my hand this 30th day of December, A. D. 1891.

FRANK R. PACKHAM.

Witnesses:
R. D. BALDWIN,
FRANK WATT.