

(No Model.)

2 Sheets—Sheet 1.

F. H. STORM.
SEEDER ATTACHMENT FOR HARROWS.

No. 589,628.

Patented Sept. 7, 1897.

Fig. 1.

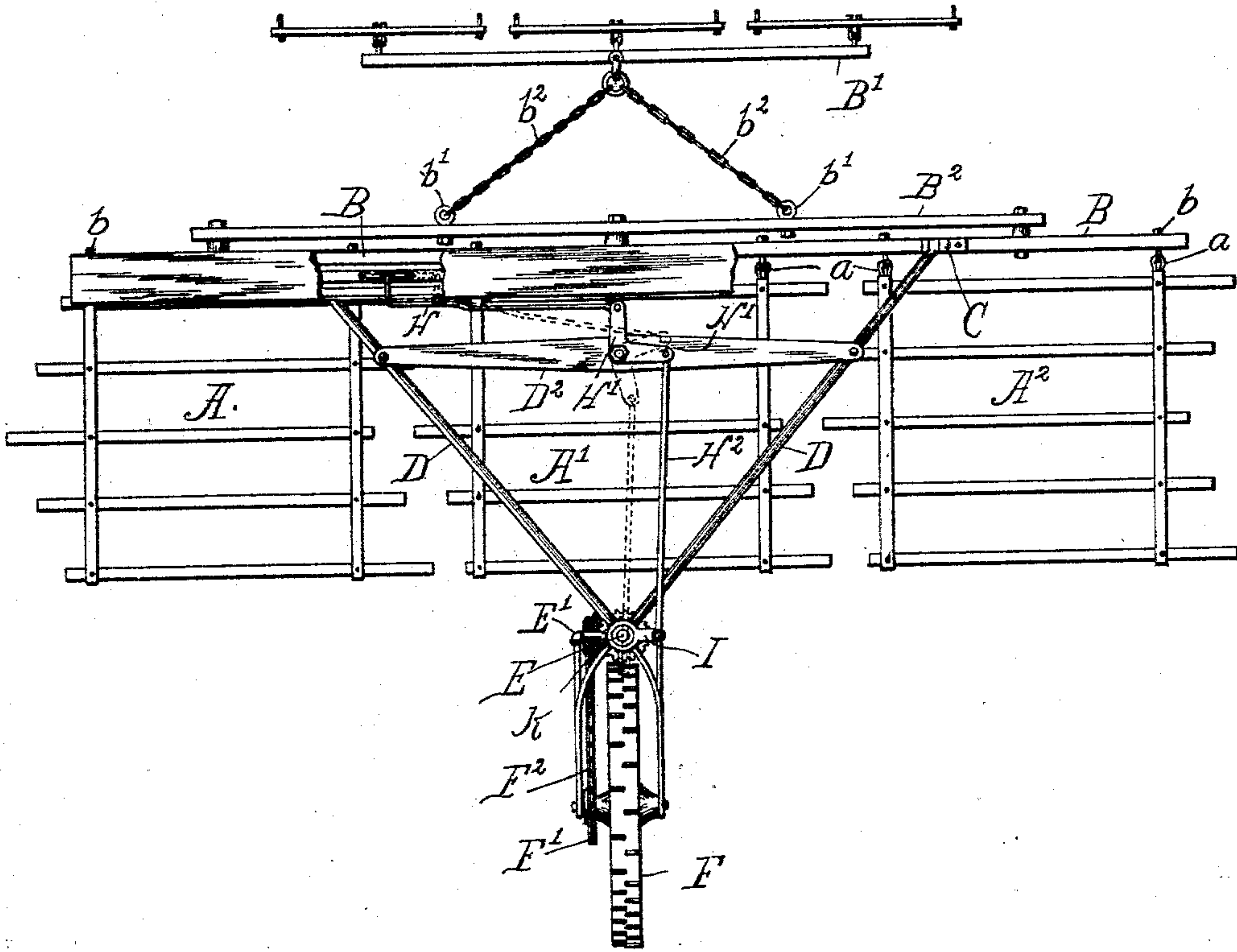
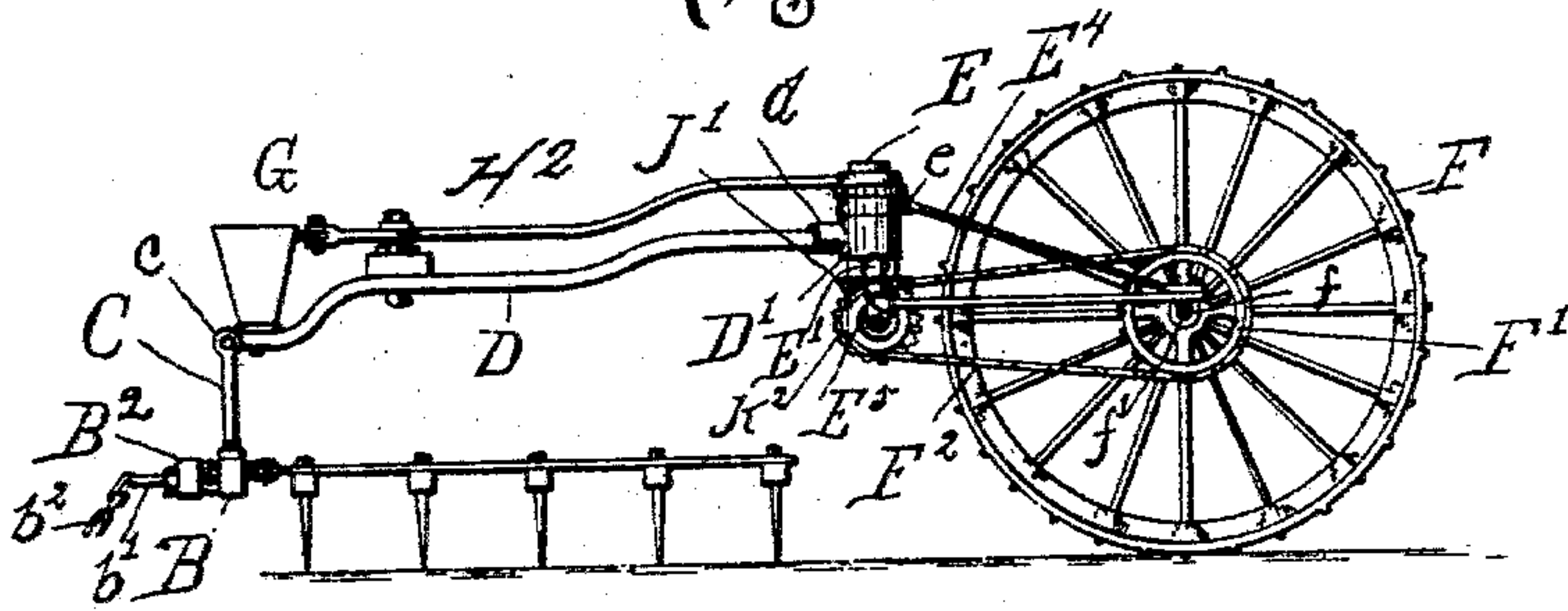


Fig. 2.



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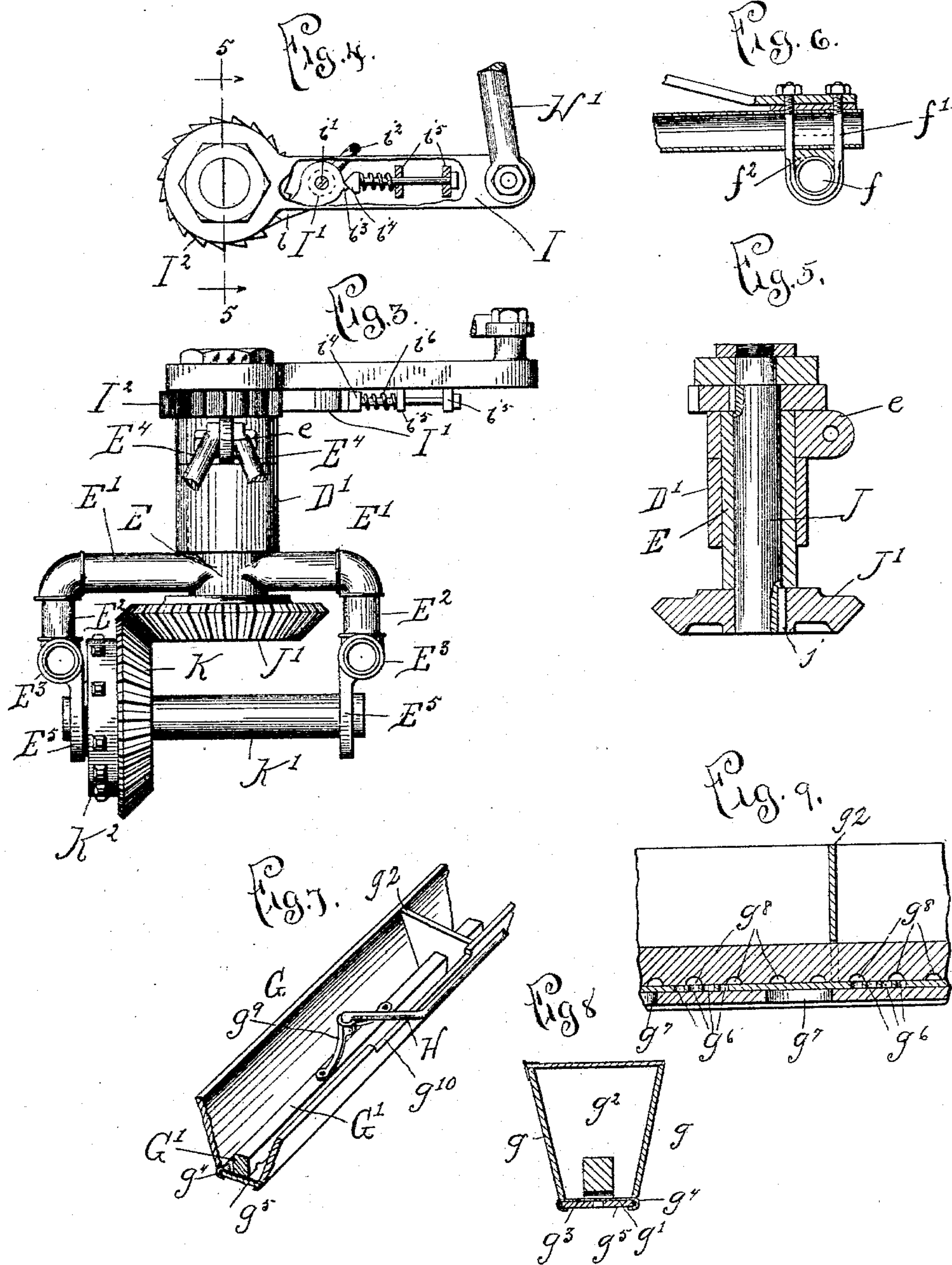
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2 Sheets—Sheet 2.

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SEEDER ATTACHMENT FOR HARROWS.

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UNITED STATES PATENT OFFICE.

FREDERICK H. STORM, OF PRESTON, IOWA.

SEEDER ATTACHMENT FOR HARROWS.

SPECIFICATION forming part of Letters Patent No. 589,628, dated September 7, 1897.

Application filed September 28, 1896. Serial No. 607,169. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK H. STORM, of Preston, Jackson county, State of Iowa, have invented certain new and useful Improvements in Seeder Attachments for Harrows, of which the following is a specification.

This invention relates to a seeder attachment for harrows; and the object of the invention is to provide a simple practical attachment by means of which the sowing of the grain and the harrowing of the ground may be accomplished in a single operation, thereby avoiding the necessity for going over the ground separately with seeder and harrow.

The invention consists in the matters hereinafter described, and more particularly pointed out in the appended claims, and will be readily understood by reference to the accompanying drawings, in which—

Figure 1 is a plan view of a harrow equipped with my attachment, parts of the seed-receptacle being broken away to expose the substructure. Fig. 2 is a side elevation of the same. Fig. 3 is a rear elevation of the yoke-standard, the drive-wheel being removed from between the yoke-arms. Fig. 4 is a top plan view of the upper end of the yoke-standard, the central part of the crank-arm being broken out to expose the arrangement of the ungearing pawl mechanism. Fig. 5 is an axial section taken on line 5 5 of Fig. 4. Fig. 6 is a longitudinal vertical section of the end portion of one of the yoke-arms, showing the manner of attaching the wheel-axle thereto. Fig. 7 is a fragmentary perspective view of a portion of the seedbox, the cover having been removed. Fig. 8 is a transverse vertical section of the same. Fig. 9 is a central longitudinal section, showing more particularly the arrangement of the dropping mechanism.

Referring to said drawings, A A' A² designate a plurality of harrow-sections which may be of any suitable form, those shown herein being of the usual well-known construction.

The several harrow-sections are each connected with a connecting-bar B, arranged to extend transversely adjacent to the front ends of said sections conveniently by means of metal loops *a*, attached to the cross-bars of the several drag-sections and engaging eyebolts *b*, inserted through the connecting-bar.

The whiffletrees B' may be connected with

the connecting-bar B in any suitable or preferred manner, the arrangement in the present instance comprising a second bar B², bolted to the front side of the connecting-bar B and provided with eyebolts *b'*, with which are connected draft-chains *b*², as indicated clearly in the drawings.

In the particular embodiment of the invention illustrated herein the connecting-bar is made to serve as one member of an overlying frame which serves to support the seedbox and the mechanism for actuating the grain-dropping devices, and is supported at its rear end by means of a drive-wheel, from which motion is communicated to said dropping mechanism. Referring to said parts, C designates standards secured rigidly to the connecting-bar, so as to rise vertically therefrom near each end of the connecting-bar, and each provided at its upper end with an eye *c*, with which eyes are severally connected the forward ends of two rearwardly-converging horizontal frame members D. At their rear ends the horizontal frame members are connected with a sleeve-casting D', which is arranged to encircle and fit upon a vertical yoke-standard E, the said sleeve-casting being provided with integral tubular projections *d*, within which the ends of the horizontal frame members telescope and are secured. The yoke-standard is made hollow or tubular, so as to accommodate a rotary shaft, hereinafter more particularly described, and is provided at its lower end with two oppositely-extending arms E', (see detail Fig. 3,) with the outer ends of which are rigidly connected depending portions E². With the lower ends of the depending portions E² are connected yoke-arms E³, which are arranged to extend horizontally rearward at right angles to the depending portions and parallel with each other.

F designates a drive-wheel mounted between the yoke-arms to rotate upon a shaft *f*, (see detail Fig. 6,) which is shown in the present instance as secured rigidly to the ends of the yoke-arms, transversely of the latter, by means of U-clips *f'*, which embrace said shaft and extend vertically through suitable apertures formed in the ends of said arms and serve to clamp said parts and an interposed clamping-block *f*² rigidly together. In order to render the supporting-frame more rigid

and to strengthen the yoke-arms against carrying strains brought upon said frame, a pair of braces E^4 are connected with the outer ends of the respective yoke-arms conveniently by means of the U-clips, which extend at their upper ends upwardly through the ends of said braces and extend from thence forwardly and obliquely upward to the upper part of the yoke-standard, at which point they are connected with ears e' , formed upon the rear side of the ring E^5 , said ring being divided at a point between said ears and being clamped rigidly upon the yoke-standard by means of the bolt which passes through the ears and serves to secure the braces thereto. The sleeve casting D' is arranged to fit easily upon the yoke-standard and is prevented from vertical movement thereon by means of a clamping-ring at its upper side and by engagement with the divergent yoke-arms at its lower side, said connection obviously forming a swivel-joint between the yoke and the horizontal frame members, which permits the drive-wheel to oscillate freely about a vertical axis.

G designates a seedbox mounted upon the horizontal frame members, near the front end thereof, so as to extend transversely of the harrow and vertically above its front part. The seedbox is of the usual form, having sides g , converging downwardly to a relatively narrow horizontal bottom g' , and in order to prevent the grain from sliding longitudinally within the seedbox and accumulating at one end thereof, in case of sidehill work, the seedbox is provided with a plurality of transverse partitions g^2 , which also serve as suitable guides for a dropping-bar G' , arranged to reciprocate longitudinally upon the bottom of the seedbox centrally thereof.

In the present construction herein described the bottom of the box is composed of two thicknesses of material, an inner sheet-metal bottom proper, g^3 , suitably secured to the side walls of the box and provided along its longitudinal margins with inwardly bent or returned portions g^4 , which form grooves within which is arranged to slide a second bottom plate or slide g^5 . The upper sheet-metal bottom plate is provided with a series of grain-outlet apertures g^6 , preferably in groups of three or four, arranged closely together, with an intervening imperforated part, as indicated clearly in sectional view Fig. 9.

The bottom plate g^5 is provided with a series of elongated slots g^7 , spaced at distances apart equal to the distance between the several groups of outlet-apertures, each slot being of suitable length to register with all of the outlet-apertures of a single group at once. Obviously with this construction the number of outlet-apertures which are opened to permit the escape of grain may be regulated by simply sliding the lower plate in one direction or the other, so as to shut off more or less of the outlet-apertures. In order to feed the grain through the bottom plate, the dropping-bar G' is provided in its under surface

with a series of transverse grooves g^8 , extending from side to side thereof and of suitable size to readily admit the grain beneath the bar.

In operation the dropping-bar is reciprocated longitudinally in each direction a distance sufficient to cause a plurality of the transverse grooves to traverse or slide over the seed-outlets, thus obviously serving to feed the grain effectually through the seed-plate while the machine is in operation and also to prevent the seed from escaping from the box when not in operation.

Means for actuating the dropper-bar are in the present instance constructed and arranged as follows: Upon the upper surface of the dropper-bar is mounted a casting J' , provided with a vertical socket or journal bearing, with which is engaged the downturned end of an actuating-rod H . The actuating-rod extends horizontally and rearwardly out through a suitable elongated slot or recess g^{10} , formed in the upper rear margin of the seedbox, and is bent at a point immediately outside of said side wall, so as to extend longitudinally of the box to the central part of the supporting-frame, at which point it is pivotally connected with a bell-crank lever H' , mounted upon a supporting-bar D^2 , which is secured to and arranged to rest transversely upon the horizontal frame members D . With the opposite arm of the bell-crank lever is connected a crank-rod H^2 , which extends rearwardly and is connected with a crank-arm I , mounted upon the upper end of a shaft J , which is journaled to extend vertically through the tubular yoke-standard E .

In order to actuate the driving-shaft J from the drive-wheel, said shaft is provided at its lower end with a bevel-wheel J' , conveniently splined thereon, as indicated at j' , (see Fig. 5,) and arranged to intermesh with a second bevel-wheel K , mounted upon a shaft K' , supported horizontally from the yoke-arms by means of depending ears or castings E^5 , cast or otherwise made rigid with said arms at suitable points to support the shaft K' axially beneath the gear J' .

The gear K is preferably mounted loosely upon the shaft K' , and rigidly connected thereto or formed integrally therewith, upon the side remote from the gear-teeth, is a sprocket K^2 . This sprocket is driven from a second sprocket F' , mounted upon the drive-wheel concentrically with the axis thereof, by means of a sprocket-chain belt F^2 .

By means of the foregoing construction it will be obvious that the trailer or drive wheel F may swing freely or have caster movement about the vertical axis formed by the shaft J without changing the relations of the gears J' and K to each other, and therefore without unengaging the dropping mechanism.

In order to disconnect or ungear the grain-feeding mechanism when desired—as, for instance, in turning at the ends of the field—

the crank-arm upon the upper end of the drive-shaft is mounted loosely thereon and is provided with a clutch I', adapted to be thrown into engagement with a ratchet-wheel I², splined or otherwise mounted rigidly upon the drive-shaft at a point immediately adjacent to the crank-arm. As a convenient construction such clutch is herein shown as having the form of a pawl i, pivotally mounted upon the under surface of the crank-arm adjacent to the ratchet-wheel, as indicated at i', and provided with a tailpiece or handle i², by means of which it may be oscillated into or out of engagement with the periphery of the ratchet-wheel. In order to hold the pawl in engagement with the ratchet and also to hold it retracted when shifted to its opposite position, the side of the pawl remote from the ratchet-wheel is provided with a V-shaped boss or lug i³, which is engaged by the similarly-shaped end of a plunger i⁴, mounted to reciprocate longitudinally of the crank-arm in suitable depending lugs or brackets i⁵ i⁶ and held yieldingly in contact with the pawl by means of a coiled spring i⁷, interposed between the head of the plunger and proximate supporting-lug. Obviously with this construction the pawl may be forced out of engagement with the ratchet by means of the tailpiece, and as soon as the point of the V-shaped lug thereon has passed the correspondingly-shaped point of the plunger the tension of the spring will tend to hold it out of engagement with the ratchet-wheel. At the same time the ratchet will be held yieldingly in engagement with the ratchet-notches and permitted to vibrate sufficiently to allow the ratchet-wheel to be turned backward without throwing the pawl out of engagement. The operation of the device is obvious and need not therefore be detailed herein.

While I have herein described a practical and what I deem to be preferred embodiment of my invention, yet it will be understood that various modifications may be made in the details thereof without departing from the invention and without involving more than ordinary mechanical skill. I do not therefore wish to be limited to the precise details shown, except as made the subject of specific claims.

I claim as my invention—

1. The combination with a harrow, of a frame supported from and above the harrow, a seedbox provided with grain-dropping mechanism, mounted upon said frame transversely of the harrow, a drive-wheel having swiveling connection with the frame to permit it to accommodate itself to the direction of travel of the harrow, and flexible operative connections between the wheel and dropping mechanism, permitting caster action of the wheel without ungearing said driving connections.

2. The combination with a harrow, composed of a plurality of floating sections, of a connecting-bar with which the several sections are flexibly connected, a frame attached

at its front to said connecting-bar and supported at its rear by means of a trailer-wheel, a seeder-box mounted upon said frame transversely of the harrow and provided with grain-dropping mechanism and flexible operative connections between the wheel and grain-dropping mechanism, whereby the wheel is permitted to have caster action without ungearing the dropping mechanism and the grain will be sown as the harrow is drawn along.

3. The combination with a harrow composed of a plurality of floating sections, of a connecting-bar with which the several sections are flexibly connected, a frame comprising standards rising from said connecting-bar, horizontal frame members connected with the upper ends of said standards and converging rearwardly, a yoke-frame with which the converging ends of said horizontal frame members are connected, a drive-wheel mounted between the ends of said yoke-frame, an upright drive-shaft journaled in the yoke-frame, operative connections between the drive-wheel and the drive-shaft whereby the latter is rotated as the wheel traverses the ground, a seedbox mounted upon said supporting-frame so as to extend transversely of the harrow and provided with dropping mechanism and operative connections between said drive-shaft and the dropping mechanism of the seedbox.

4. The combination with a harrow composed of a plurality of floating sections, of a connecting-bar with which the several sections are flexibly connected, a frame comprising standards rising from said connecting-bar, horizontal frame members connected with the upper ends of said standards and converging rearwardly, a yoke-frame with which the converging ends of said horizontal frame members are connected, a drive-wheel mounted between the ends of said yoke-frame, an upright drive-shaft journaled in the yoke-frame, operative connections between the drive-wheel and the drive-shaft whereby the latter is rotated as the wheel traverses the ground, a seedbox mounted upon said supporting-frame so as to extend transversely of the harrow and provided with dropping mechanism embracing a reciprocatory dropping-bar arranged to cooperate with seed-outlets in the bottom of the seedbox and operative connections between said dropping-bar and the vertical drive-shaft, comprising a crank-arm mounted upon the drive-shaft, a bell-crank lever mounted upon the frame between the seedbox and drive-shaft and operating-rods connecting the arms of said bell-crank lever with the crank-arm and with the dropping-bar respectively.

5. The combination with a harrow, of a seeding attachment comprising a seedbox and a carrying-frame for supporting the latter supported at its front part from the harrow and at its rear by means of a trailer-wheel having swiveling connections with said frame,

and flexible operative connections between the seed-dropping mechanism and the trailer-wheel, arranged to permit free movement of said wheel without ungearing the driving
5 mechanism.

6. The combination with a harrow of a seeding attachment, comprising a seedbox provided with dropping mechanism and a carrying-frame for supporting the latter supported at its front part from the harrow and
10 at its rear by means of a drive-wheel arranged to trail behind the harrow and having swiveled connection with said frame, operative

connections between said drive-wheel and dropping mechanism and means for throwing
15 said connections out of gear, arranged upon the rear part of the carrying-frame accessible to the operator walking behind the harrow.

In testimony that I claim the foregoing as my invention I affix my signature, in the presence of two witnesses, this 19th day of Sep-
20 tember, A. D. 1896.

FREDERICK H. STORM.

Witnesses:

I. F. SCHIDES,

GEORGE STORM.