

No. 702,402.

Patented June 17, 1902.

A. CHAPLIN.

SEED DRILL.

(Application filed Jan. 2, 1901.)

(No Model.)

3 Sheets—Sheet 1.

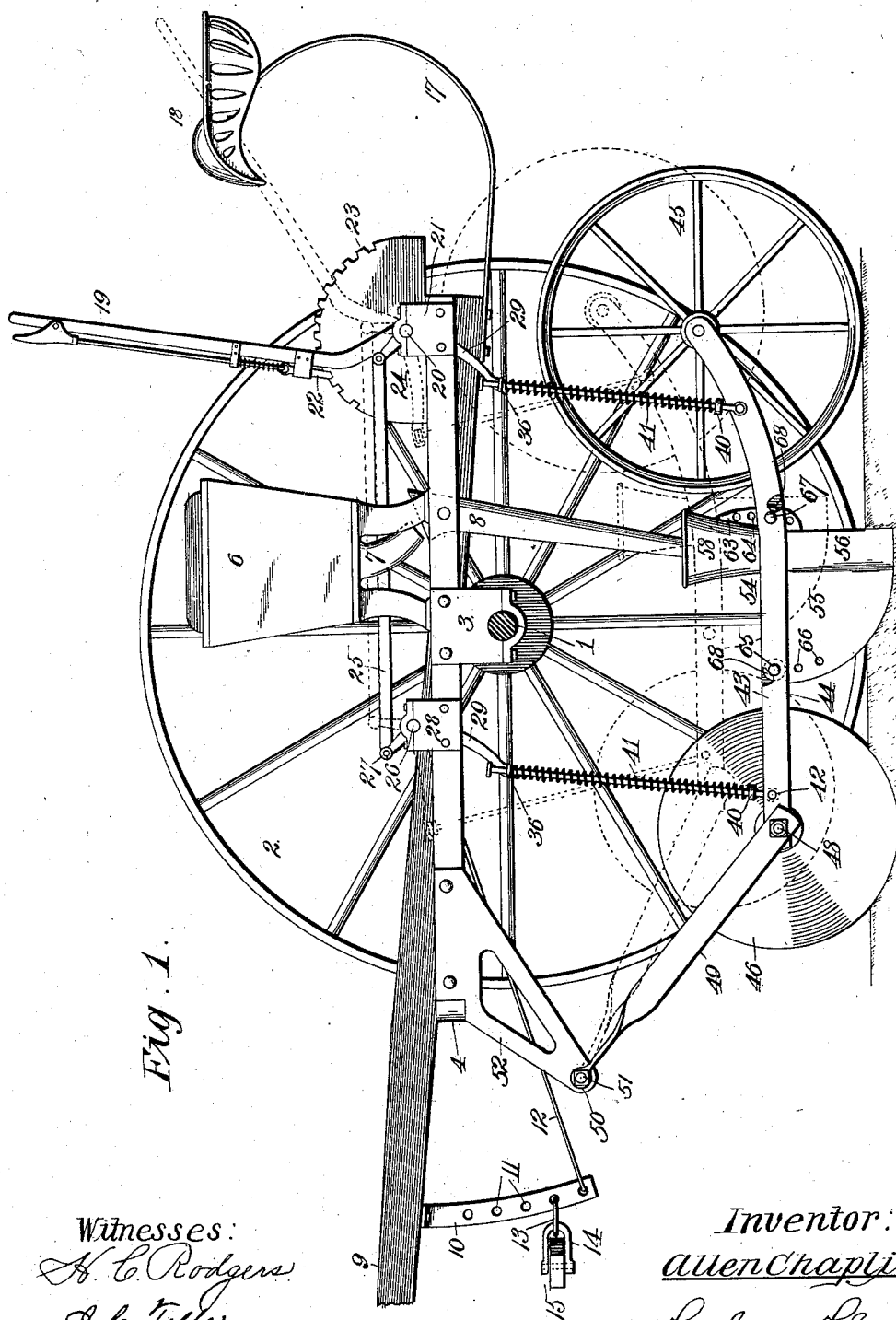


Fig. 1.

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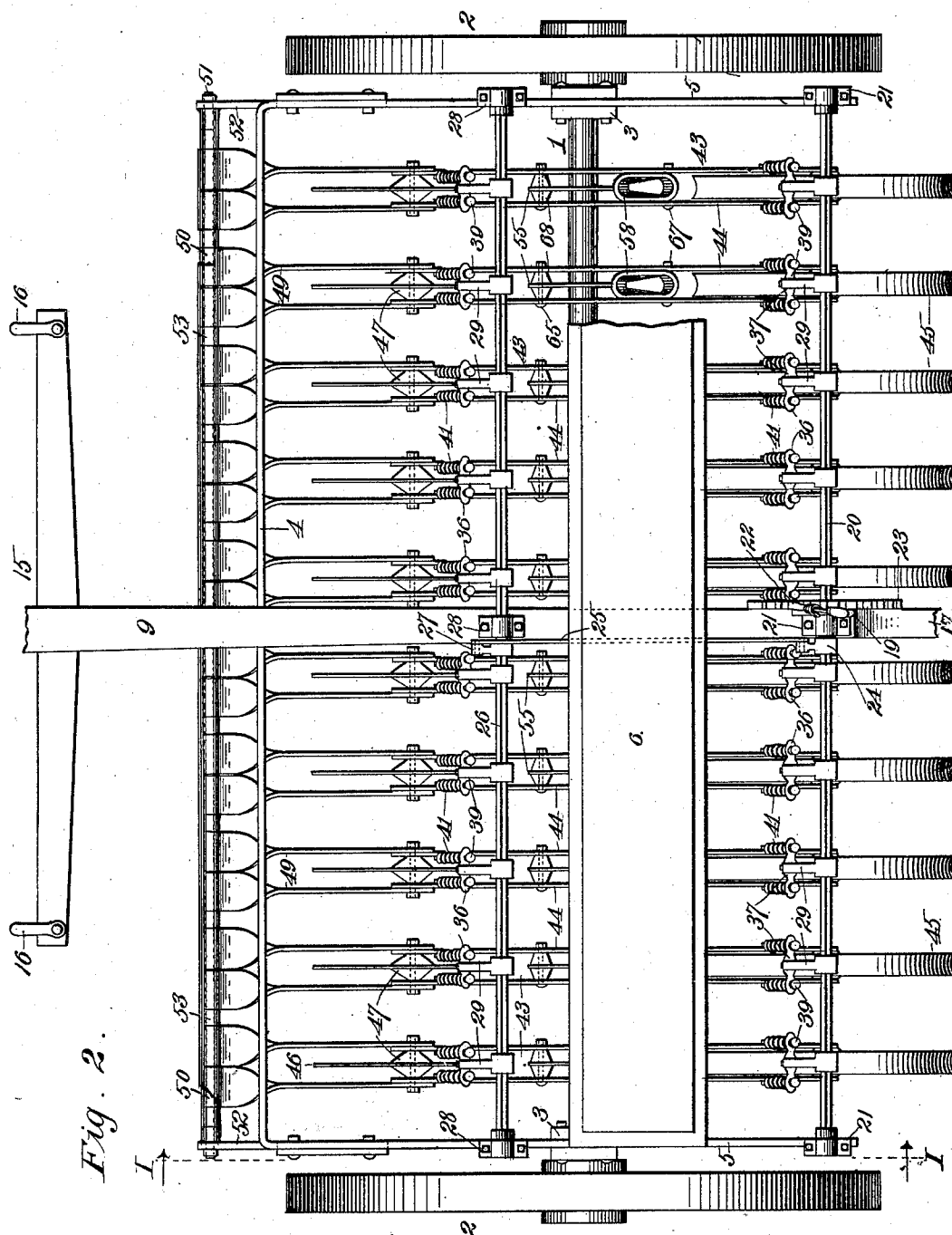
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3 Sheets—Sheet 2.



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3 Sheets—Sheet 3.

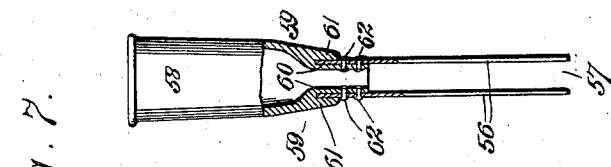


Fig. 7.

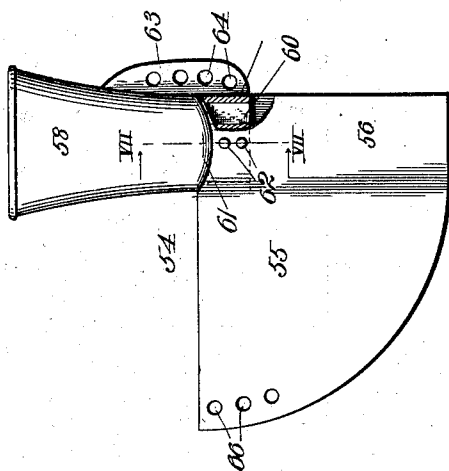


Fig. 6.

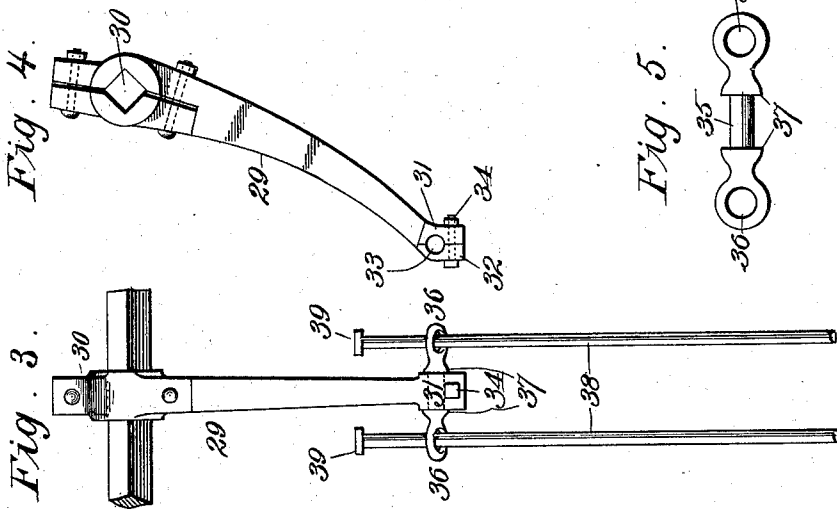


Fig. 3.

Fig. 5.

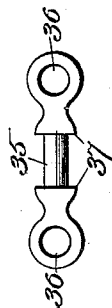
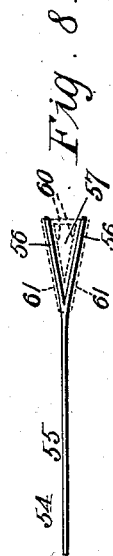


Fig. 8.



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UNITED STATES PATENT OFFICE.

ALLEN CHAPLIN, OF WALTON TOWNSHIP, SUMNER COUNTY, KANSAS.

SEED-DRILL.

SPECIFICATION forming part of Letters Patent No. 702,402, dated June 17, 1902.

Application filed January 2, 1901. Serial No. 41,804. (No model.)

To all whom it may concern:

Be it known that I, ALLEN CHAPLIN, a citizen of the United States, and a resident of Walton township, Sumner county, Kansas, have invented a new and useful Seed-Drill, of which the following is a specification.

My invention relates to seed-drills; and it consists in certain novel and peculiar features of construction and combinations of parts, as hereinafter described and claimed.

The object of the invention is to produce a seed-drill of simple, strong, and durable construction which shall operate efficiently upon any kind or condition of soil, by which the seed may be planted at a uniform depth irrespective of the surface configuration or density of the soil and which is under perfect control of the driver at all times.

Other desirable objects are hereinafter enumerated, and in order that the invention may be fully understood reference is to be had to the accompanying drawings, in which—

Figure 1 represents a vertical section of a seed-drill, taken on the line I I of Fig. 2. Fig. 2 is a top plan view of the drill, partly broken away. Fig. 3 is an enlarged detail view showing parts of the connection whereby the driver is enabled to raise or depress the seed-planting mechanisms. Fig. 4 is a side view of one element shown in Fig. 3. Fig. 5 is an enlarged plan view of another element shown in Fig. 3. Fig. 6 is an enlarged side elevation of the drill-shoe forming a part of my invention. Fig. 7 is a rear elevation showing the drill-shoe, partially sectioned. Fig. 8 is a plan view showing the drill-shoe with the hose-cup omitted.

Referring now to the drawings in detail, wherein like reference-numerals designate corresponding parts, 1 designates the shaft or axle of the machine, and 2 the carrying-wheels, which are of large diameter, and therefore adapted to work well on soil of any kind or condition.

3 designates bearings, in which the shaft or axle is journaled, said bearings being bolted to and depending from a skeleton rectangular frame arranged horizontally and consisting of a metallic bar bent to form the front or body portion 4, extending transversely almost from wheel to wheel, and the rearwardly-projecting parallel arms 5.

6 designates the seedbox, mounted upon arms 5 of the frame and provided with the usual devices (not shown) for permitting the seed to pass through the depending spouts 7 and drop into the upper end of the hose-pipes 8, depending from the frame in the usual or any preferred manner.

9 designates the tongue of the machine, the same being arranged centrally, as usual, and extending from a point about in line with the rear ends of arms 5 forwardly and upwardly and resting upon the transverse body portion 4 of the frame.

10 designates a bracket depending from the tongue forward of the frame and provided with a longitudinal series of perforations 11 and having its lower end connected by a link 12 with the tongue, rearward of said front or body portion 4 of the frame, in any suitable manner.

13 designates a link adapted for pivotal connection with any one of the perforations 11; 14, a clip loosely connected to the link; 15, a whiffletree pivoted in said clip, and 16 clips for the attachment of singletrees. (Not shown.) By this arrangement it is possible to so adjust link 13 upon perforated bracket 10 that practically a perfect balance is secured and the draft-animals are relieved almost entirely of neck weight, leaving them free to exert their full power in the propulsion of the machine.

17 designates a spring-bar secured to the rear end of the tongue and carrying a seat 18, as usual, at its upper end and within convenient reach of lever 19, projecting upward from the transverse rock-shaft 20, journaled in bearing-boxes 21, secured upon the rear ends of frame-arms 5 and tongue 9, said lever being provided with the usual devices for causing the engagement and disengagement of the spring-actuated pawl 22 with the notched sector 23, secured to the tongue. 24 designates a crank-arm projecting from said shaft, near its center by preference, and connected pivotally by a link 25 with a similar crank-arm 27 of a second transverse rock-shaft 26, arranged forward of the axle and journaled in bearing-boxes 28, secured to the frame-arms 5 and to the tongue, if desired, and both of these shafts, except at their bearing-points, are preferably rectangular in

cross-section to receive the crank-arms 29, equal in number to and in longitudinal alinement with the hose-pipes 8, the hub portions of said arms being provided with sectional boxings 30 to enable the arms to be clamped rigidly on the shaft. At their free ends they are formed with bearings comprising the integrally-formed portion 31 and the separable portion 32, provided with registering grooves which conjointly form cylindrical passages 33, said separable portions or caps 32 being bolted to portions 31, as at 34. Journaled in the cylindrical passages 33 of the arms are short bars 35, terminating at their ends in eyes 36 and formed with shoulders 37 to prevent longitudinal movement in said passages, and extending upwardly through the eyes of said bars, hereinafter termed "eyebars," are pull and push rods 38, having heads or enlargements 39 at their upper ends to prevent any possibility of disengagement with the eyebars and collars or enlargements 40 near their lower ends to form abutments for the expansive springs 41, spirally encircling the rods and bearing at their upper ends against the under sides of the eyebars. The lower ends of the pull and push rods connected to the front shaft are preferably pivoted, as at 42, to the inner sides of frames 43, said frames each consisting of a pair of parallel bars 44, which in length exceed slightly the distance between the rock-shafts and for the greater portion of their length extend approximately parallel with the surface of the ground, their rear ends occupying the same horizontal plane, if desired, though it is preferred to have the bars curve upwardly at their rear ends in order to accommodate between them larger press or covering wheels 45 than it would be possible to use if said bars were perfectly straight, as will be readily understood, these press-wheels having their peripheries concaved to more efficiently perform their covering function.

46 designates colters or cutting-wheels arranged at the front ends of and between the bars of frames 43, said colters having, preferably, cone or other bearings 47, made to exclude dust and dirt as far as possible, though I do not limit myself to any particular style. The bearings are carried by clamping-bolts 48, pivotally uniting the front ends of frames 43 with the rear ends of the parallel draft-bars 49, said draft-bars extending upwardly and forwardly at a suitable angle, the major portion of the bars having their narrow edges occupying vertical planes, with the corresponding edges of the front or small portion occupying a horizontal plane, this result being attained by giving the bars a half twist near their front ends, at which points they are rigidly secured in any suitable manner to the short sleeves 50, journaled upon the tubular draft-rod 51, extending horizontally and transversely and carried at the front ends of the brackets 52, depending from the side arms 5 of the machine-frame, spacing-sleeves

53, preferably of cast metal, being fitted upon the draft-rod between the pairs of draft-bars, as shown in Fig. 2, or in any other suitable or preferred manner. The draft-rod is tubular, because of its greater strength and stiffness than a solid rod; but it is to be understood that I do not limit myself to any particular style of draft-rod, any particular way of supporting the same, or any particular method of securing the draft-bars thereto so as to possess the necessary vertical vibration independent of each other.

54 designates the drill-shoes, the same being carried by the frames 43 between the colters 46 and the covering-wheels 45, and, like said colters and wheels, are preferably arranged between the draft-bars. Each shoe consists of a thin quadrant-shaped front portion 55, having its curved edge preferably struck from the same radius as the colter and sharpened. From the lower point of the quadrant upon a vertical line the shoe is branched to form the walls 56, which diverge gradually rearward and provide a chamber 57 between them.

58 designates the hose-cups, forming a part of the shoes and receiving the lower ends of the hose-pipes. The hose-cups are provided with a portion depending below the upper edge of said walls, the same being triangular in plan view, with its sloping sides bifurcated, as at 59, so as to snugly clasp the upper edges of said walls both internally and externally, the inner portion 60 of said triangular portion extending down below the outer portion 61 to receive the rivets 62, projecting inwardly from said walls, and in this connection it will be noticed that the transverse or rear wall of the inner portion forms a closure for a few inches at the upper end of the rearwardly-opening chamber 57 between the walls 56, and projecting rearwardly from said transverse wall and from the cup is a rib or flange 63, having a vertical series of perforations 64. To secure each shoe rigidly in position, a bolt 65 extends through the corresponding frame 43 and one or another of the openings 66 in the front edge of the shoe, a similar bolt 67, carried by said frame, extending through one of the perforations 64 of the cup-flange, suitable spacing-sleeves 68 being fitted upon the bolts between the sides of the frame and the shoe to hold it rigidly in alinement with the corresponding colter and covering-wheel.

The drawings show the machine as embodying a gang of ten sets of planting mechanisms arranged to vibrate vertically independently of each other to automatically adapt themselves to irregularities in the surface over which they pass, together with means whereby the driver may raise or depress the entire gang simultaneously and gage the depth at which the seed is to be planted. This permits of the seed being planted at different depths in the same field, so as to accommodate varying kinds and conditions of soil.

In traveling to and from the field and also to avoid obstructions the driver raises the gang to an inoperative position, as shown by dotted lines in Fig. 1, this result being effected by the proper manipulation of the lever, as also indicated by dotted lines, the manipulation of the lever operating the crank-shafts and causing the eyebars to slide upward on pull and push rods 38 until their independent movement is limited by contact with the heads 39 of said rods, when the continued operation of the shafts is accompanied by the elevation of the rods and the planting mechanisms. In actual operation the colters make a narrow gash or cut of the desired depth in the ground and serve to sever sod and clods or lumps of earth in the path of the machine. The narrow front portions of the shoes, following immediately in the wake of the colters, travel with practically no resistance in the narrow grooves made by the colters, serving to keep the same open and prevent the dirt falling therein, the diverging rear walls 56 serving to increase the width of the furrow or groove as slightly as possible and yet hold the walls of earth sufficiently apart to permit the seed dropping in the usual manner from the seedbox through the intermediate devices to attain the proper depth, when the earth, all resistance being removed, falls inward and covers the seed by filling up the furrows or grooves. In this connection it will be noted that, like the cultivator-shovel or the mold-board of a plow, the shoes have the divergence of their walls 56 continue to their rear edges, so that in passing through the earth they will scour and clear themselves of soil, for the reason that as long as in action they are pressing against the soil. If said diverging walls should be bent so as to have their rear walls extending parallel, they would impose practically no pressure upon the walls of earth previously separated by the diverging portions of the shoes. As a consequence upon their parallel walls mellow damp soil would accumulate, at first at their extreme rear edges and then gradually forward, until the diverging walls and forward portions were reached and covered, thereby materially increasing the draft and the width of the groove or furrow. The concave covering-wheels, following immediately in the wake of the shoes, press the loose earth firmly down into the grooves or furrows in the usual manner. In case exceptionally hard obstructions are met—such, for instance, as rocks projecting, perhaps, only slightly from the ground—the springs 41 of the planting mechanisms encountering such obstruction or obstructions will yield and permit such mechanisms to ride over said obstruction or obstructions without injury and without interfering with the operation of the other seed-planting mechanisms, this independent automatic action being essential, as many obstructions are encountered which the driver fails to observe, who, if he did and wished to avoid contact with them, would be

compelled to elevate all for the purpose of avoiding an obstruction in the path of one.

By means of the draft-bars 49 it will be noted that the draft on the planting mechanisms is obtained from a point forward of the same, so as to eliminate any lateral strain upon the pull and push rods 38, leaving said rods free to perform their proper function—namely, to pull the planting mechanisms upward or, through the instrumentality of springs 41, to push them yieldingly downward, the intensity of such pressure being regulated, of course, by the position in which the lever 19 is locked on the sector by the dog 22. By means of said lever the driver can force said mechanisms into any reasonable seed-bed and gage the depth of cut very accurately, so that it will be uniform in soils of substantially the same kind and condition, or, if needed, practically the entire weight of the machine can be evenly distributed upon the planting mechanism, this being effected by depressing the same sufficiently to transfer most of the weight of the frame and drive-wheels to the rock-shafts 26 by throwing the lever forward a sufficient distance.

From the above description it will be apparent that I have produced a seed-drill embodying the features of advantage enumerated as desirable in the statement of invention, and while the preferred embodiment of the invention is described and shown it is to be understood that it is susceptible of various changes in the form, proportion, detail construction, and arrangement of the parts without departing from the spirit and scope of the invention.

Having thus described the invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a seed-drill, the combination of a wheeled frame, having seed-dropping mechanism, a seed-planting mechanism below and connected to the same, comprising a colter at its front end, a covering-wheel at its rear end, a shoe between and in line with the colter and covering-wheel and provided with a seed-cup, and parallel bars connecting the shoe, the colter, and the covering-wheel, headed rods pivoted at their lower ends to and near the opposite end of said bars, and provided with shoulders, an eyobar slidingly connecting said rods, spiral expansive springs upon said rods and engaging said shoulders and eyebars at their opposite ends, a pair of rock-shafts provided with crank-arms pivotally connected to said eyebars at their free ends, and means to operate said rock-shafts and secure them at the desired point of adjustment, substantially as described.

2. In a seed-drill, a frame consisting of a pair of parallel bars a furrow-making device carried at the front end and centrally of the space between said bars, a furrow-closing device centrally and secured at the rear end of said frame, and a drill-shoe interposed between said furrow making and closing de-

vices and consisting of a perforated thin front
portion arranged centrally of said bars, a
branched rear portion, a hose-cup surmount-
ing and adapted to discharge into the chamber
5 formed between the branches or walls of the
rear portion, and provided with a rearwardly-
projecting perforated rib, a clamping-bolt ex-
tending through said bars and one of the perfo-
rations of the front portion, sleeves upon said
10 bolt between said portion of the shoe and said

bars, a clamping-bolt extending through said
bars and one of the perforations of the rib, and
sleeves upon said bolt between said rib and
said bars, substantially as described.

In testimony whereof I affix my signature 15
in the presence of two witnesses.

ALLEN CHAPLIN.

Witnesses:

E. L. GRAY,
MERRITT JEFFRIES.