

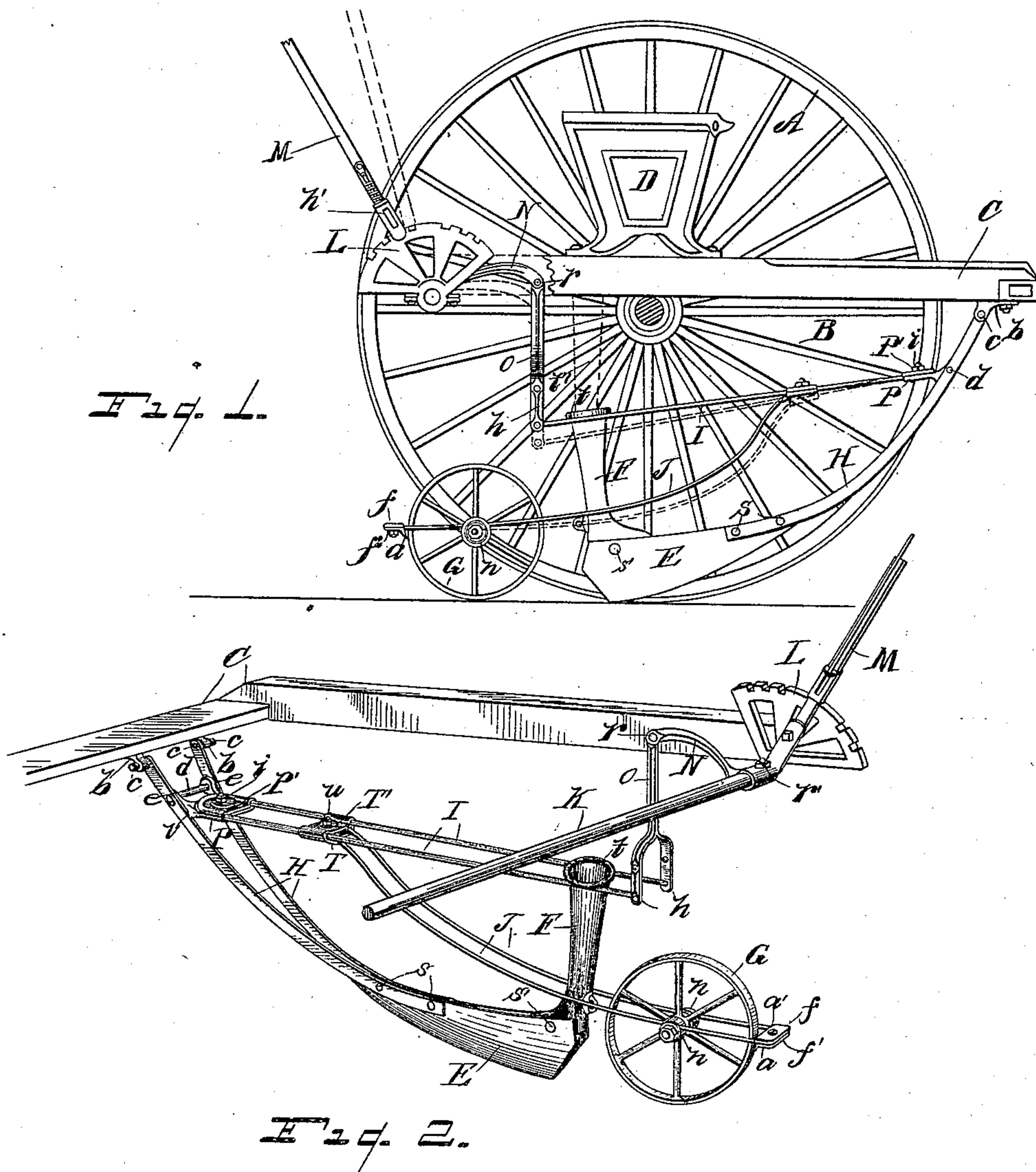
(No Model.)

2 Sheets—Sheet 1.

W. F. HOYT.
GRAIN DRILL.

No. 446,230.

Patented Feb. 10, 1891.



WITNESSES

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(No Model.)

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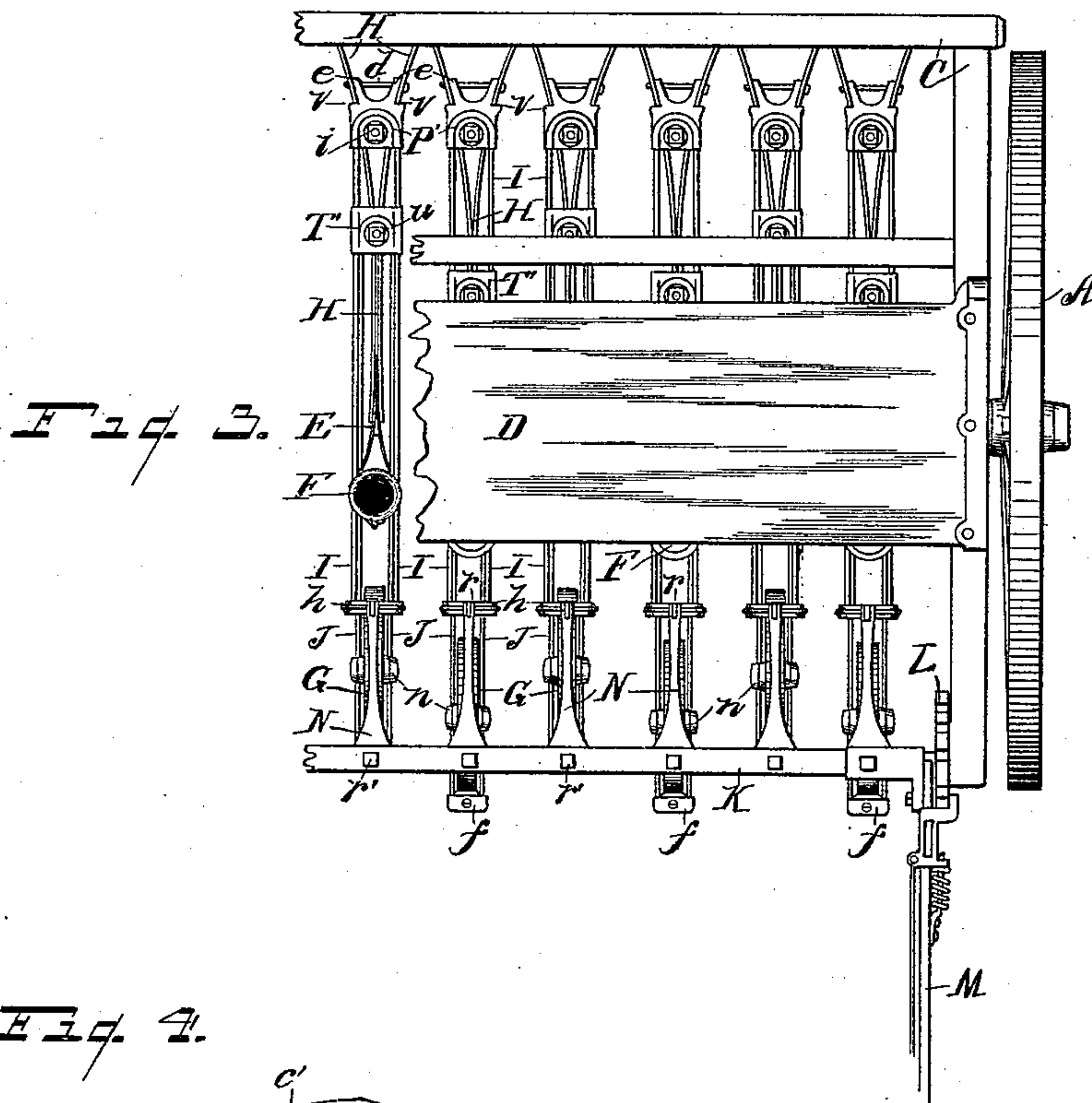


Fig. 4.

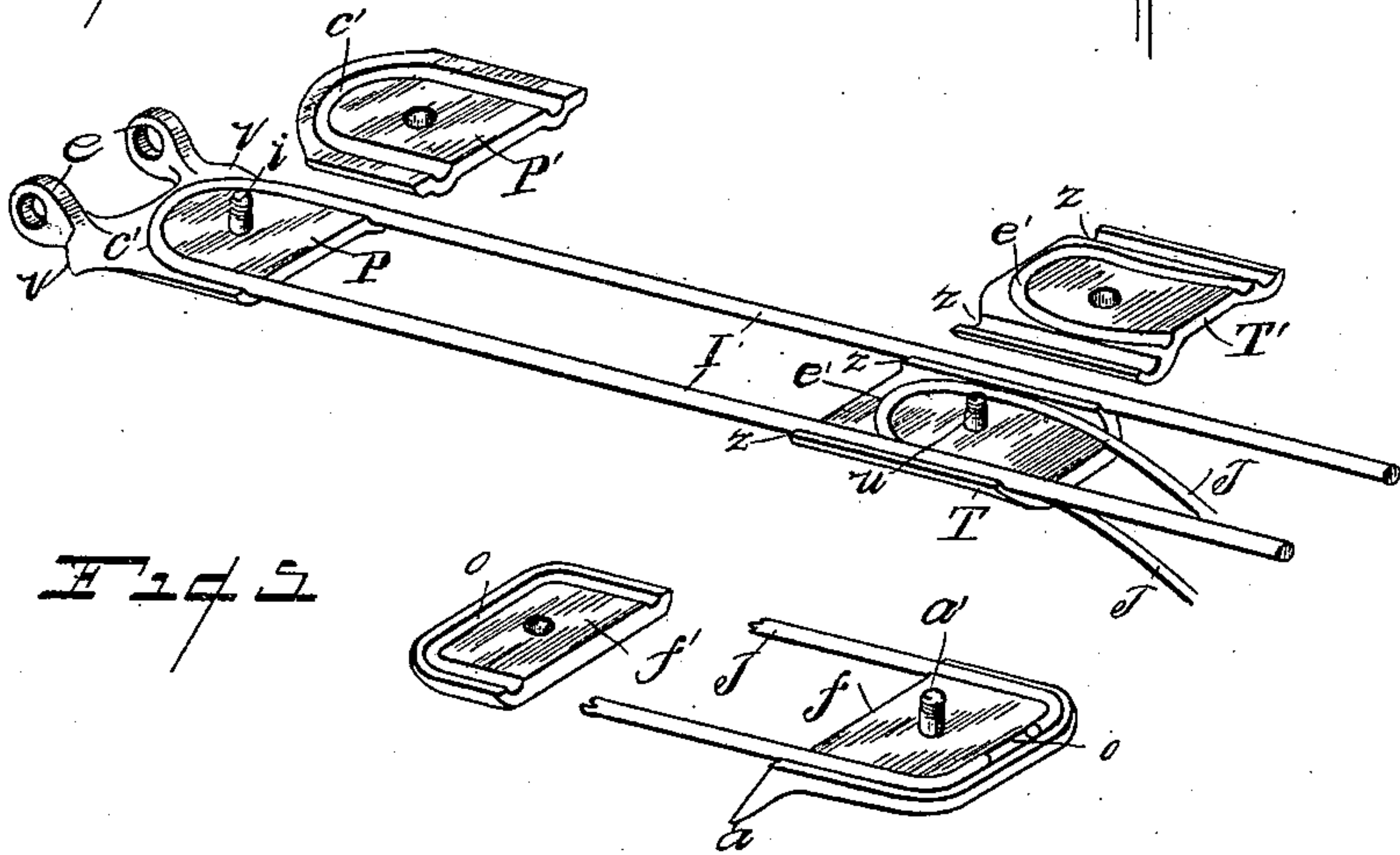
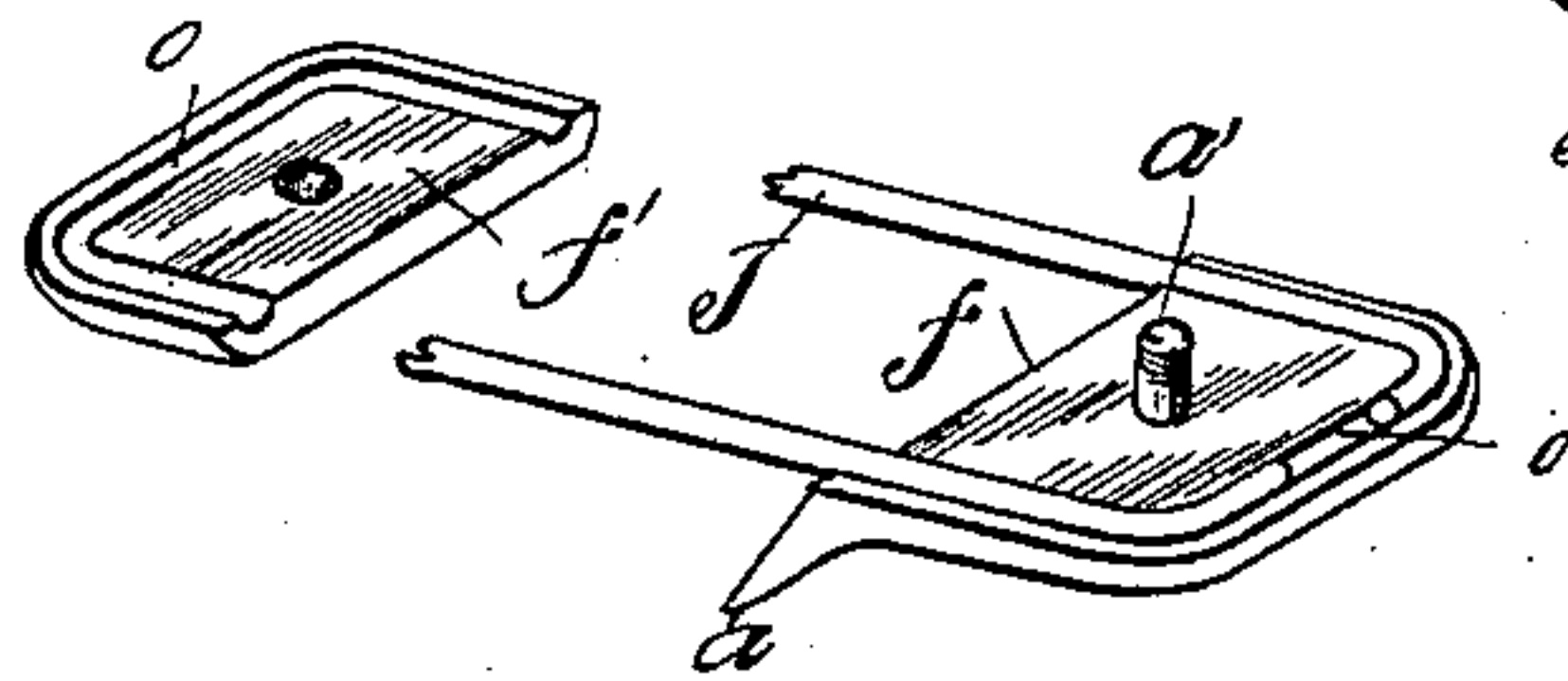


Fig. 5.



WITNESSES

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UNITED STATES PATENT OFFICE.

WILL F. HOYT, OF DOWAGIAC, MICHIGAN.

GRAIN-DRILL.

SPECIFICATION forming part of Letters Patent No. 446,230, dated February 10, 1891.

Application filed October 16, 1890. Serial No. 368,348. (No model.)

To all whom it may concern:

Be it known that I, WILL F. HOYT, a citizen of the United States, residing at Dowagiac, in the county of Cass and State of Michigan, have
5 invented certain new and useful Improvements in Grain-Drills; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to
10 make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to new and useful improvements in grain-drills commonly known as "shoe-drills;" and it consists in a certain construction and arrangement of parts, as hereinafter more fully set forth, the essential features of which being pointed out particularly in the claims.

The object of the invention is to provide an independent spring-pressure for each of the shoes and covering-wheels of the drill, whereby the work of the drill is rendered efficient in
25 uneven ground, and to provide means whereby said shoes and covering-wheels may be raised from the ground when the implement is not in use or when transporting it from one field to another. This object is attained
30 by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is an end elevation of my improved drill with one of the transporting-wheels removed, showing frame broken away. Fig. 2
35 is a perspective view of a portion of the drill embodying my improved features. Fig. 3 is a plan view of a portion of the machine. Fig. 4 is an enlarged perspective of the clamping-plates detached, between which the spring pressure-rods of the shoe and covering-wheel are adapted to be secured. Fig. 5 is a perspective view of the scraper plate and cap, adapted to be secured to the rear ends of the spring-pressure rods of the covering-wheels.

Referring to the letters of reference, A indicates the transporting-wheels of the drill; B, the axle connecting said wheels; C, the frame of the drill, and D the seed-box thereof, all of which parts are common.

50 E indicates the runners or shoes of the drill, to the forward end of which are riveted, as shown at s in Figs. 1 and 2, the curved draft-

rods H. Said rods curve upwardly and are slightly diverging, their upper ends being pivotally mounted on the trunnions c of the plates
55 b, secured to the under face of the front edge of the frame C, as clearly shown in Figs. 1 and 2.

F indicates the feed tube or hopper, secured at its lower end to the heel of the shoe E, as
60 shown at s', and through which the grain is conveyed to the furrow in the ground formed by said shoe.

I indicates the spring pressure-rods of the shoe. Said rods are formed of one piece bent
65 to a loop at their forward ends, as shown in Fig. 4, and extending rearwardly on each side of the hopper F. The rear ends thereof are pivotally attached to the bifurcated end h of the arm O, as shown in Fig. 2, the upper end
70 of said arm being pivoted at r to the free or outer end of the swinging arm N, the opposite end of the arm N being permanently secured at r' to the rock-shaft K, which extends along the rear edge of the machine-frame,
75 and which is actuated by the lever M, attached thereto. The forward looped end of the rods I is secured between the clamping-plates P P', which are provided with the grooves c' (see Fig. 4) in their adjacent faces, that re-
80 ceive said rods, and in which they are firmly held by the bolt i, passing through said plates, which draws them tightly together upon said rods. The under plate P of said clamping-plates is provided with the lugs e, having
85 eyes therein that are adapted to receive the bolt d, which passes loosely therethrough. The ends of said bolt pass through the adjacent faces of the draft-rods H, and are firmly secured therein, as shown in Figs. 2 and 3, by
90 which means the forward ends of the pressure-rods I are pivotally coupled to the draft-rods. The lugs e of the plate P, extending between the draft-rods H, keep the upper ends of said rods spread and in contact with
95 the trunnions c of the supporting-plates b. The plate P is also provided with the horizontal shoulders v on each side thereof, that are adapted to engage the upper edge of the rods H, for purposes hereinafter described. 100

J indicates the draft and spring pressure-rods of the covering-wheels G, which curve upwardly at their forward ends and are secured between the plates T T', mounted on

the rods H, as shown in Fig. 2. The adjacent faces of the plates T T' are provided with the grooves *e'* and *z*. (See Fig. 4.) The grooves *e'* receive the looped end of the rods J and the grooves *z* receive the parallel rods I. Said plates are provided with the bolt *u*, passing therethrough, by means of which they may be securely clamped upon said rods, as shown in Fig. 2, thus firmly securing the plates T T' to the rods I, and the looped end of the rods J between said plates. The rods J extend rearwardly on each side of the hopper F, and pass through and are secured in the hub *n* of the covering-wheel G. By this means said wheel is guided so as to travel directly in the furrow made by the shoe E in which the seed is deposited. The rods J extend slightly rearward of the wheel G, and are secured between the plates *f f'*, that are provided with the grooves *o* in their adjacent faces, that receive the bent ends of said rods, as clearly shown in Fig. 5, said plates being clamped upon said rods by means of the bolt *a'* passing therethrough.

The under plate *f* is provided with a depending lip *a*, and the parts are so arranged that said lip acts as a scraper to free the periphery of the wheel G from dirt during the operation of the machine, as shown in Figs. 1 and 2.

The shoes and hoppers, with their draft-rods and covering-wheels, and the spring pressure-rods and their actuating-arm O and swinging arm N, attached to the rock-shaft K, are arranged consecutively throughout the machine, as shown in Fig. 3, and are adapted to be operated simultaneously by means of the lever M, attached to the shaft K, the grain being conveyed to the hopper F of the shoe from the seed-box D by means of a flexible hose *t'*. (Shown by dotted lines in Fig. 1.) It will now be apparent that by throwing the lever M forward the shaft K is rotated, carrying the outer end of the swinging arm N downward, which, being coupled to the arm O, forces said arm down and depresses the rear ends of the spring-rods I, coupled to the bifurcated end *h* thereof, the shoulders *v* of the plate P, to which the forward ends of the rods I are attached, bearing upon the edge of the rods H. As the rear ends of the rods I are depressed the pressure thereon is conveyed through the rods I to the shoe E. At the same time the rods I are depressed by the action above described, the forward ends of the rods J are carried down, throwing an increased pressure on the wheel G, which position of the pressure-rods, lever M, and arm N, is clearly shown by dotted lines in Fig. 1. By this arrangement it is evident that the pressure on the shoe and covering-wheel is a spring-pressure, and may be regulated as desired, enabling a heavy pressure to be applied when the ground is hard or a light pressure when it is soft and yielding.

The arrangement of transmitting the pressure applied to the rods I to the shoe E through

the medium of the shoulders *v* of the plate P, bearing upon the draft-rods H of said shoe, enables the shoe to drop into a depression in the surface in advance of the covering-wheel G, and prevents said wheel from raising the shoe from the ground when riding over an obstruction, thereby insuring a continuous furrow, which would not be the case were the connection rigid between the rods I and H.

When it is desired to raise the shoes and covering-wheels in transporting the machine from one field to another, the lever M is thrown to the rear, rotating the shaft K and raising the swinging arm N, thereby drawing upward on the arm O and raising the rods I, which engage with the annular flange *t* at the upper end of the hopper F, raising said hopper and shoe, as shown in Fig. 2. The rods J of the covering-wheel G being secured to the rods I, said wheel is also raised by the same operation. Thus it will be seen that by throwing the lever M to the rear the shoes and covering-wheels are simultaneously raised from the ground, and by means of the segment-rack L, that receives the locking-bolt *h'* of the lever M, said lever may be secured in any desired position. It will also be seen that the manner of mounting the plates T T' upon the rods I permits of their longitudinal adjustment thereon, and the forward ends of the rods J of the covering-wheel G being secured between said plates, the distance between said wheel and the heel of the shoe may be increased or decreased by said adjustment, and that by sliding said plates rearwardly upon the rods I the forward movement of the lever M will throw a still greater pressure upon the wheel G.

Having thus fully set forth my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In combination with the transporting-wheels and frame, the hopper, shoe, and draft-rods, the latter having a pivotal connection with the frame, the clamping-plates having a pivotal connection with the draft-rods, the spring-metal pressure-rods attached to said plates, said rods extending rearwardly of the hopper, the forked arm coupled to said rods, and means for raising and lowering said arm, substantially as specified.

2. In combination with a frame of a grain-drill, the hopper having a flange at the upper end, the shoe attached to the hopper, the curved draft-rods leading from the shoe and having a pivotal connection with the frame of the machine, a swinging head located between the upper ends of the draft-rods, spring-metal rods attached to the swinging head, said rods extending back of the hopper and below the flange thereof, said spring-metal rods being coupled to an arm, said arm having means for raising and lowering it, and means for locking the parts, for the purposes set forth.

3. In combination with the frame, hopper, shoe, and draft-rods, the plates pivotally at-

5 tached between the upper portions of said draft-rods, said plates having the horizontal shoulders, said shoulders bearing upon the draft-rods; the spring-metal rods attached to said plates and passing rearward of and on opposite faces of the hopper, and means for applying pressure to the rear ends of said spring-metal rods, for the purpose specified.

10 4. In a grain-drill, the combination of the wheels and main frame, of a hopper, shoe, and draft-rods having a pivotal connection with the frame, means for applying spring-pressure to the shoe, comprising the pressure-rods having their forward ends coupled to
15 the draft-rods and a lever at the rear ends, a wheel traveling in the path of the shoe, and spring-metal rods coupling said wheel and its journal-bearing with the spring-pressure rods, substantially as indicated.

20 5. In a seed-drill having a hopper, shoe, and draft-rods, the hopper having a projection on its periphery at the top, plates pivoted between the upper end portions of the

draft-rods, spring-metal rods clamped between said plates, means for raising and lowering the rear ends of said rods, and a wheel
25 traveling in the rear of the shoe, said wheel having a spring-pressure connection with the spring-metal rods leading from the draft-rods.

6. In combination with the hopper, shoe, 30 and draft-rods, the plates pivoted between the draft-rods, the spring I, clamped between said plates and extending rearward of the hopper, means for raising and lowering the rear ends of said spring, the wheel in the rear
35 of the shoe, the plates T T', mounted on the spring I, and the doubled spring-metal rod J, having one end clamped between the plates T T' and having on the opposite ends the scraper-plates *ff'*, for the purposes specified. 40

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

WILL F. HOYT.

Witnesses:

C. A. PATTISON,
A. VANUXEM.