

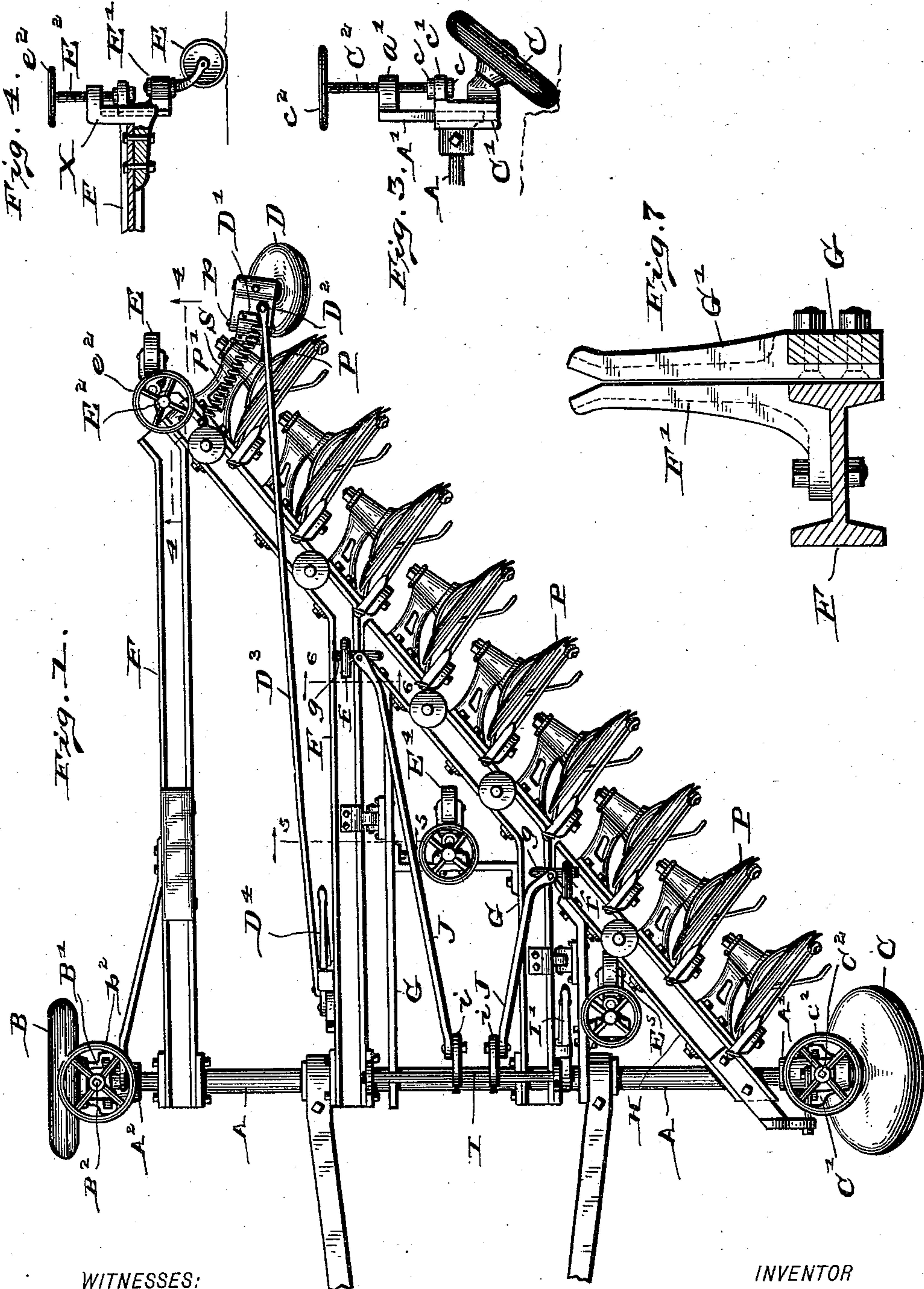
(No Model.)

2 Sheets—Sheet 1.

E. C. ATKINS.
ROTARY PLOW.

No. 543,119.

Patented July 23, 1895.



WITNESSES:

H. R. Neely
J. A. Walsh

INVENTOR

Elias C. Atkins,
BY
Chester T. Bradford,
ATTORNEY.

(No Model.)

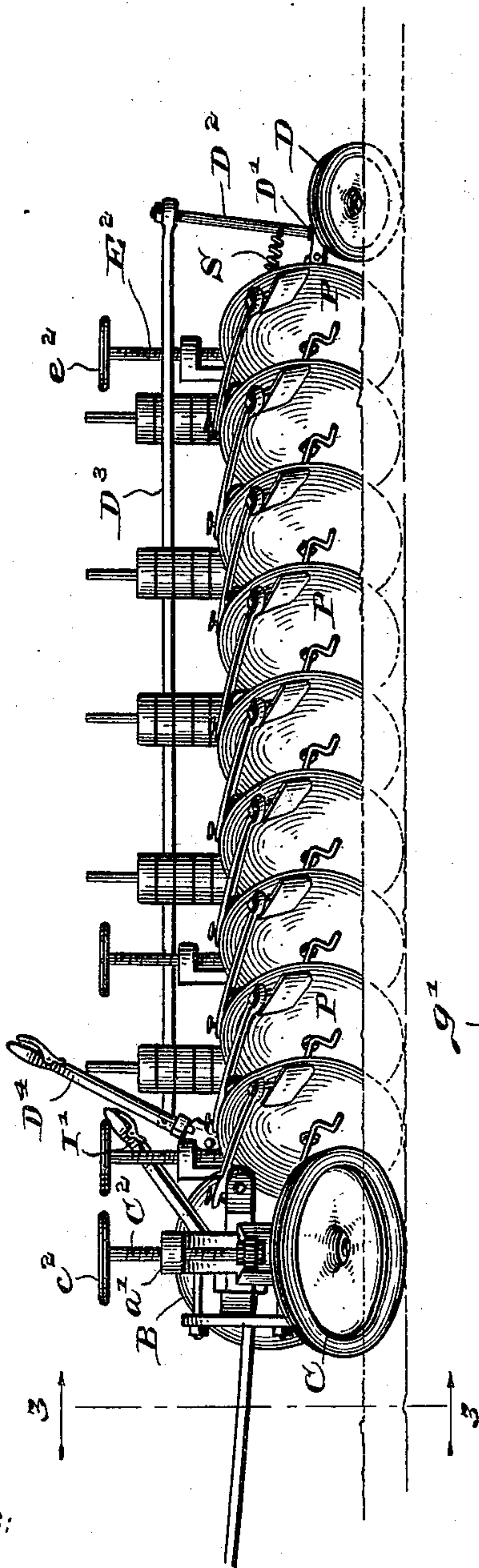
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Fig. 2.



WITNESSES:

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Fig. 6.

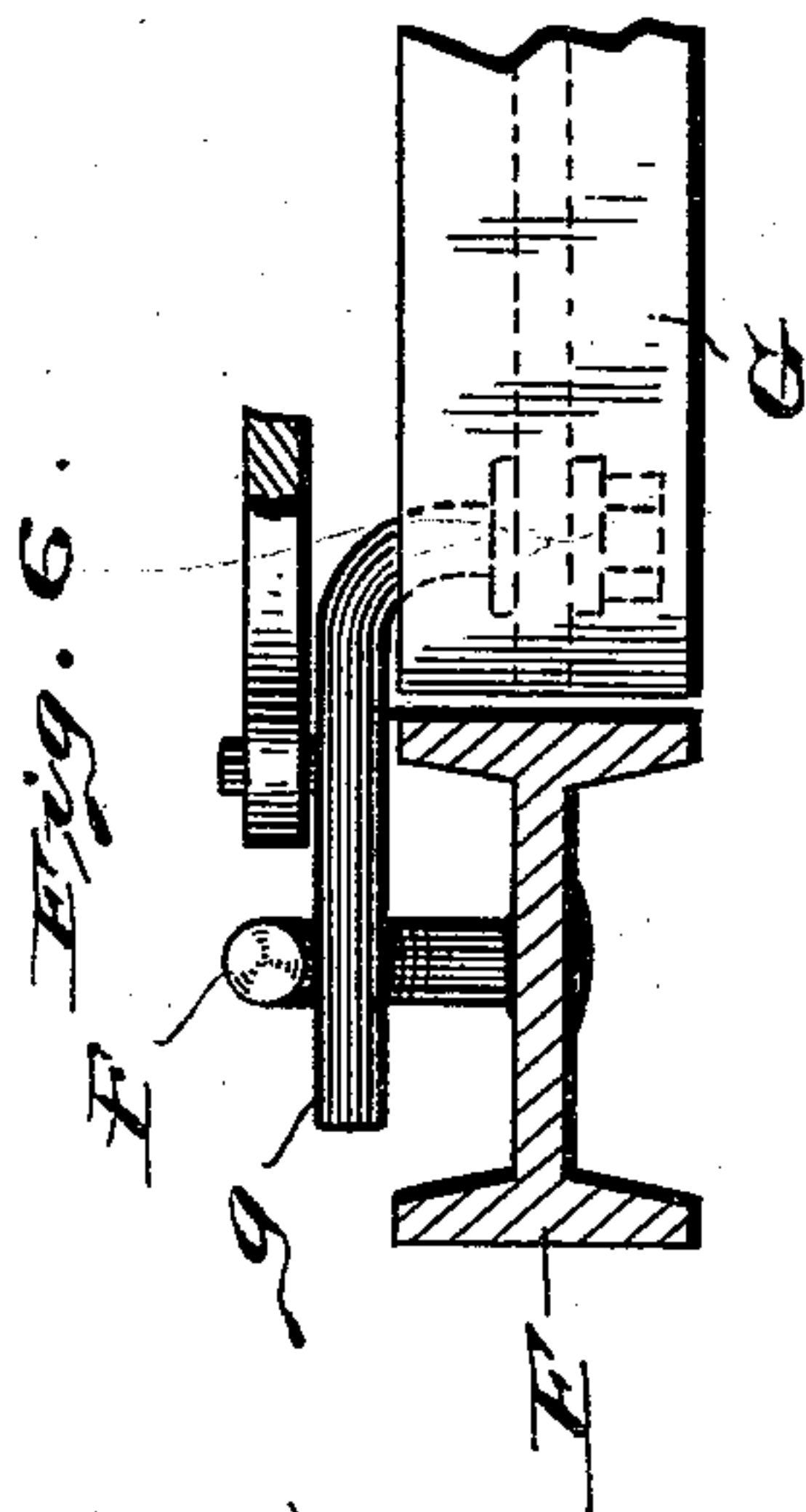
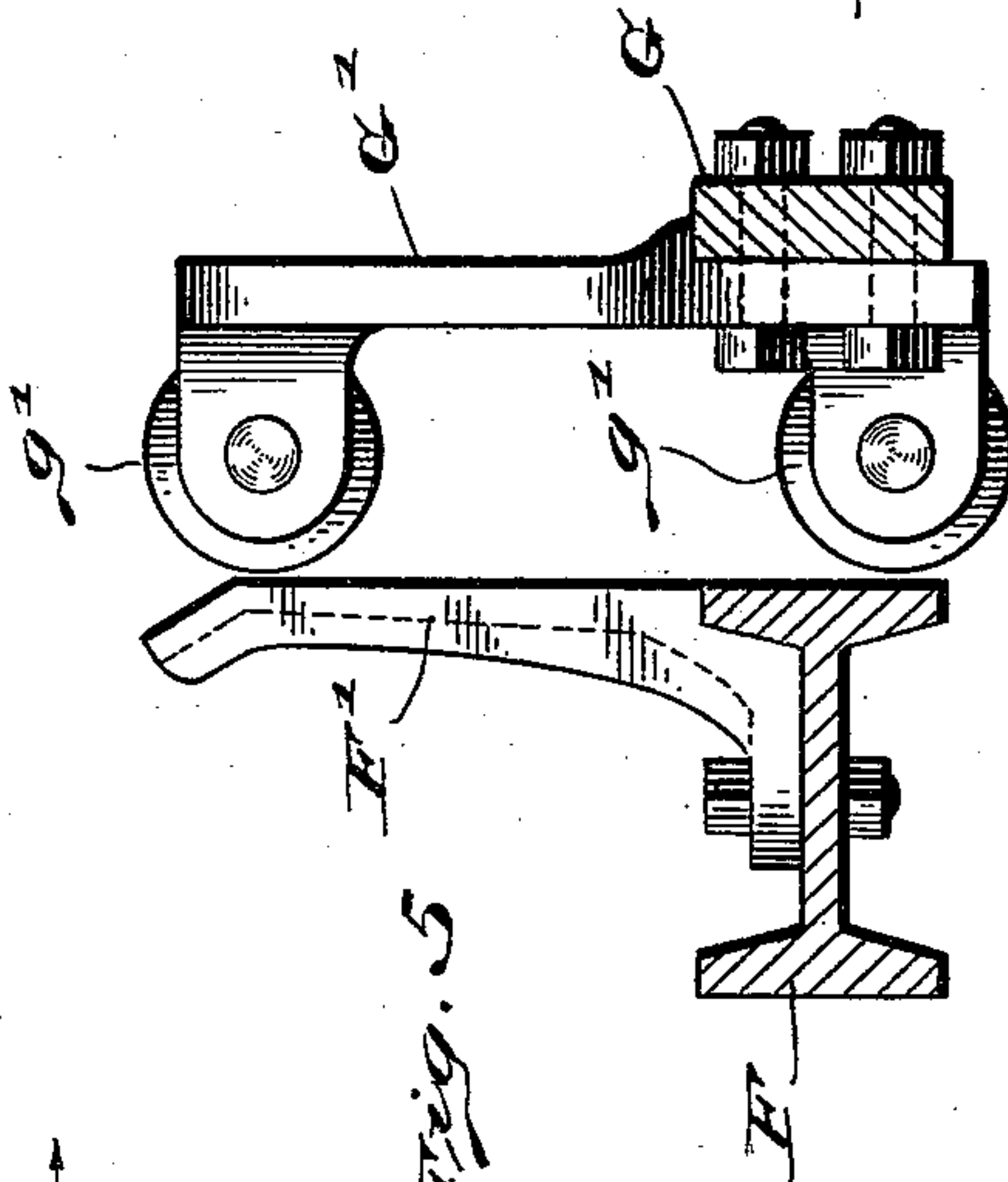


Fig. 5.



INVENTOR

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UNITED STATES PATENT OFFICE.

ELIAS C. ATKINS, OF INDIANAPOLIS, INDIANA.

ROTARY PLOW.

SPECIFICATION forming part of Letters Patent No. 543,119, dated July 23, 1895.

Application filed December 18, 1894. Serial No. 532,196. (No model.)

To all whom it may concern:

Be it known that I, ELIAS C. ATKINS, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Rotary Plows, of which the following is a specification.

The object of my present invention is to produce a rotary plow well adapted to use with a traction-engine or other powerful motor, whereby a single plow can be made to perform a very large amount of work.

Said invention mainly consists in adapting the frame of such plow to use under varying conditions of regular and irregular surfaces, and in providing means for manipulating the several parts.

A structure embodying my said invention will be first fully described and the novel features thereof then pointed out in the claims.

Referring to the accompanying drawings, which are made a part hereof and on which similar letters of reference indicate similar parts, Figure 1 is a top or plan view of a rotary plow embodying my various improvements; Fig. 2, a side elevation of the same; Fig. 3, a detail elevation as seen from the dotted line 3 3 in Fig. 2; Fig. 4, a detail elevation as seen from the dotted line 4 4 in Fig. 1; Figs. 5 and 6, detail sectional views as seen from the dotted lines 5 5 and 6 6, respectively, in Fig. 1; and Fig. 7, an alternative construction of the parts shown in Fig. 5.

In said drawings the portions marked A represent the main axle of the structure; B, the land-wheel thereto; C and D, furrow-wheels; E, a caster-wheel, and F, G, and H the three parts of the frame structure shown.

The axle A is a strong rod or bar extending across the entire width of the plow and is the structure to which the forward end of the frame-sections are connected, and said frame-sections are held to proper position thereon by suitable collars or sleeves placed upon said axle. Secured to the ends are suitable structures A' and A², which form slides for the spindle-heads on which the wheels B and C, respectively, are mounted. Said wheels B and C are well-known wheels for the purpose and are mounted upon suitable spindles ex-

tending out from the heads B' and C', the spindle for the wheel B being straight and that for the wheel C being inclined, as indicated. The spindle-heads B' and C' are adapted to slide vertically on the parts A' and A².

Referring now especially to the end-carrying wheel C, which is best shown by means of Fig. 3, the spindle-head C' is operated by the screw C², which passes through a screw-threaded bearing in a projection a' on the part A' and has collars c on each side of a projection c' on said head C', through which the lower end of said screw passes. Obviously, by turning the hand-wheel c² the screw C² is revolved and the head C' and wheel C are moved relatively to the axle A. An exactly similar arrangement at the other end provides for a similar movement of the wheel B. The caster-wheel E is similarly moved by the screw E², as clearly shown in Fig. 4. Thus by turning the various hand-wheels b², c², and e² the whole frame structure carrying the plows can be raised or lowered relatively to the wheels B, C, and E. This is useful both in determining the depth to which the plowing-disks P shall enter the ground in plowing and in raising said plowing-disks entirely out of the ground upon occasion when it is desired to transport the plow from place to place without having the plows in operation. These screws are especially desirable in so large and heavy a structure as is illustrated in this application, ordinary levers being, if not wholly insufficient for the purpose, extremely difficult to operate, while screws of the character shown can be made as powerful as desired.

It is, of course, perfectly obvious that the various hand-wheels may be connected by a chain, belt, or otherwise, and operated simultaneously if desired, and this may be done in some cases, although generally I prefer to leave them separate, as shown.

The staggered guide-wheel D, as arranged, forms a common support for the frame-sections against the side draft from the plows, and is in itself similar to those shown in previous applications and patents in which I am interested, and needs no special description. It is mounted in a swinging bearing-piece D', which is pivoted by a slightly-inclined pivot

p to the arm *P'* of the rear plowing-disk *P*. A heavy coiled spring *S* connects an upright arm *D*² to a point on the frame, and said spring is preferably arranged and adjusted to very nearly or quite carry the weight of the wheel. Extending forward from the upper end of the arm *D*² is a connecting-rod *D*³, which runs to an ordinary latch-lever *D*⁴, by which the wheel *D* can be thrown into and out of engagement with the furrow, as will be readily understood. The slight inclination of the pivot *p* will throw the wheel away from the side of the furrow when it is raised, thus contributing to ease of movement, while the spring being, as before stated, nearly or quite sufficient to sustain the weight of the wheel *D* the force necessary to be applied to the lever *D*⁴ is comparatively slight and the work of operating it is thus reduced in proportion. Similar mechanism may be applied separately to the plowing-disks should it be desired to operate them in a similar manner.

The caster or gage wheel *E*, which has heretofore been referred to and measurably described, is shown as mounted in a slide *E'*, running in ways in a casting *X* at the extreme rear end of the frame-section *F*. Similar caster or gage wheels *E*⁴ and *E*⁵ are shown as connected in a similar manner to the frame-sections *G* and *H*, and these may be arranged and operated in a similar manner as is the wheel *E*.

The frame is made up of several sections, each of which may be arranged to move independently of the others, so that the plow may operate efficiently in passing over uneven ground. I have shown this frame in the three sections *F*, *G*, and *H*, all pivoted to the axle *A*. It is necessary, however, that the strain of the side draft should be communicated from one to another of these frames, so that the staggered guide-wheel *D* may do its proper work. I have therefore interposed between the adjacent portions of the several frames contact-pieces which will receive such strain and at the same time permit the vertical movement. A desirable form is illustrated in Fig. 5, where there is shown as secured to the frame *F* an upwardly-projecting arm *F'*, forming one such contact-piece, and a similar upwardly-projecting arm *G'* is shown as secured to the frame *G*, forming another such piece. Upon the latter are shown anti-friction trucks *g'*, which rest against the face of the frame-beam *F* and arm *F'*. Manifestly, as one of these frames rises or falls relatively to the other one or both the anti-friction-trucks *g'* will take the pressure, and while retaining the lateral relation of the frames permit any usual vertical variation. Fig. 7 shows a variation of this construction, in which the anti-friction-trucks are omitted, and many other changes in construction might be employed without departing from my invention.

While it is necessary, as above stated, to provide for vertical variation of the frame-sections in some cases, in others it is desirable that they should be kept from such movement. I have therefore provided, as illustrated in Figs. 1 and 6, suitable interlocking devices *f* and *g* by which, as will be readily understood, when they are thrown into the positions shown in the drawings all the sections of the frame are rendered substantially rigid with each other, but which can be turned and disengaged so that the sections will be capable of independent movement, as described. The parts *f* are shown as stationary and the parts *g* as adapted to swing or pivot from one position to the other. In order that these movements can be made simultaneously, and especially that they may be made with slight trouble, I have provided a rock-shaft *I* at or near the front of the machine with arms *i* thereon, from which connecting-rods *J* run back to the parts *g*, and I have provided also a lever *I'*, by which said rock-shaft can be rocked and the parts manipulated, as will be readily understood.

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

1. The combination, in a rotary plow, of a common axle, several frame sections secured to said axle, rotary plows mounted upon each of said sections, contact pieces secured to the adjacent portions of the several sections whereby the side draft will be communicated from each to a common support, and a staggered guide-wheel forming such common support.

2. The combination, in a rotary plow, of an axle, a frame consisting of several sections secured to said axle, plows mounted upon each of the sections, a support for the side draft secured to the rear end of that section at the land side of the plow, and contact-pieces secured to the adjacent faces of said frame-sections whereby the side draft of the whole plow will be transmitted to said common support and the sections themselves permitted vertical variation.

3. The combination, in a rotary plow, of an axle, several frame-sections secured thereto, and movable attaching devices secured to the adjacent portions of the several sections, whereby said sections can be locked together and independent vertical movement prevented, and unlocked and independent vertical movement permitted, substantially as set forth.

4. The combination, in a rotary plow, of the axle, the frame-work, the plowing disks mounted on said frame-work, a wheel or disk pivoted at the rear of said frame-work, an arm extending up from the swinging bearing-piece carrying said staggered guide-wheel, a spring connecting said arm to a point on the rigid frame-work whereby its weight is sub-

stantially counterbalanced, a rod running
from said arm to the forward portion of the
plow, and a lever at the forward end of said rod
whereby through said rod said guide-wheel
5 may be raised and lowered, this operation be-
ing aided by said spring, substantially as set
forth.

In witness whereof I have hereunto set my
hand and seal, at Indianapolis, Indiana, this
15th day of December, A. D. 1894.

ELIAS C. ATKINS. [L. S.]

Witnesses:

CHESTER BRADFORD,
JAMES A. WALSH.