

No. 612,900.

Patented Oct. 25, 1898.

E. M. HEYLMAN.

PLOW.

(Application filed Aug. 27, 1897.)

(No Model.)

3 Sheets—Sheet 1.

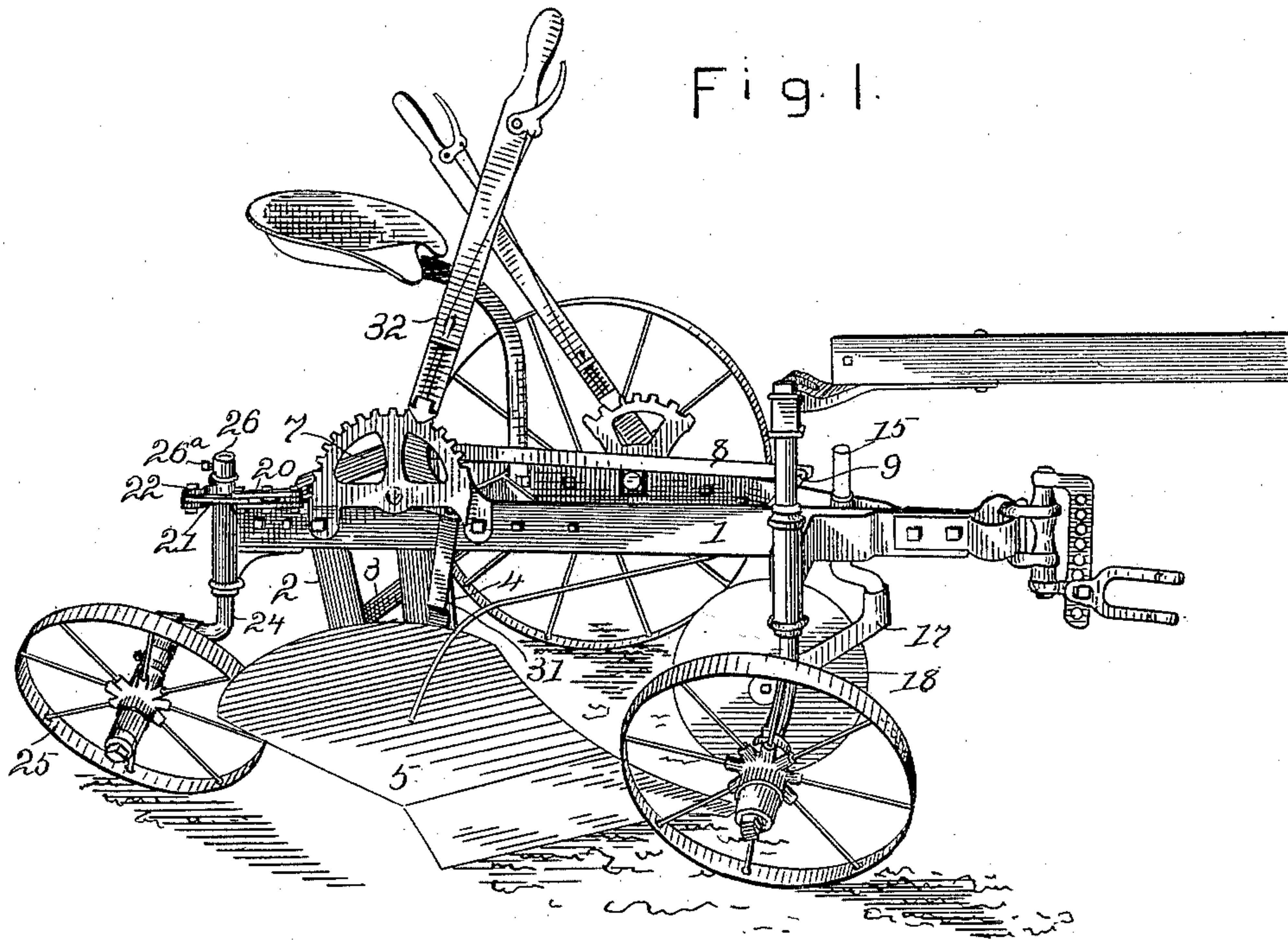
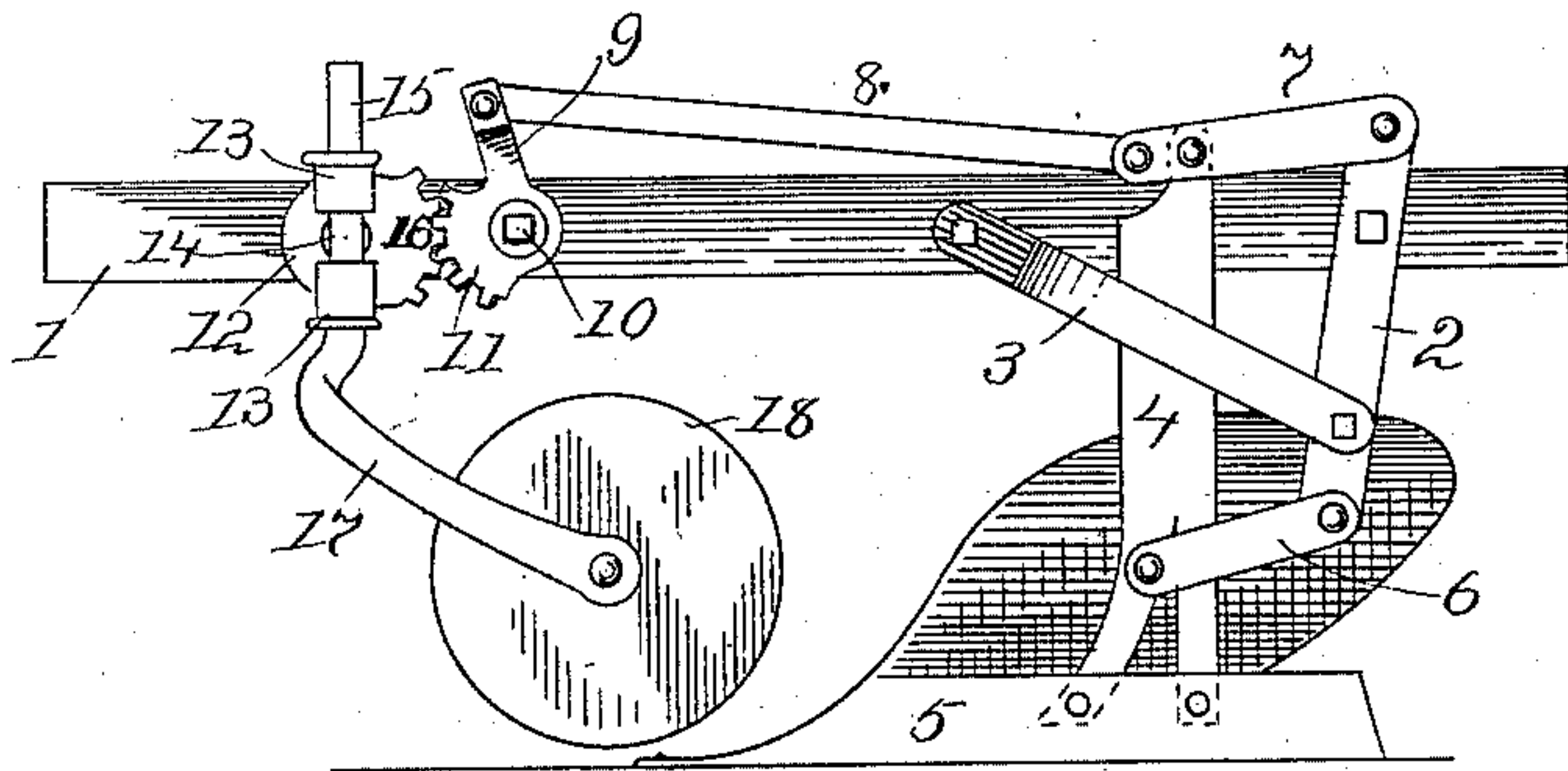


Fig. 2.



ATTEST

*Nora Graham*  
*Ira Graham*

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Fig. 3.

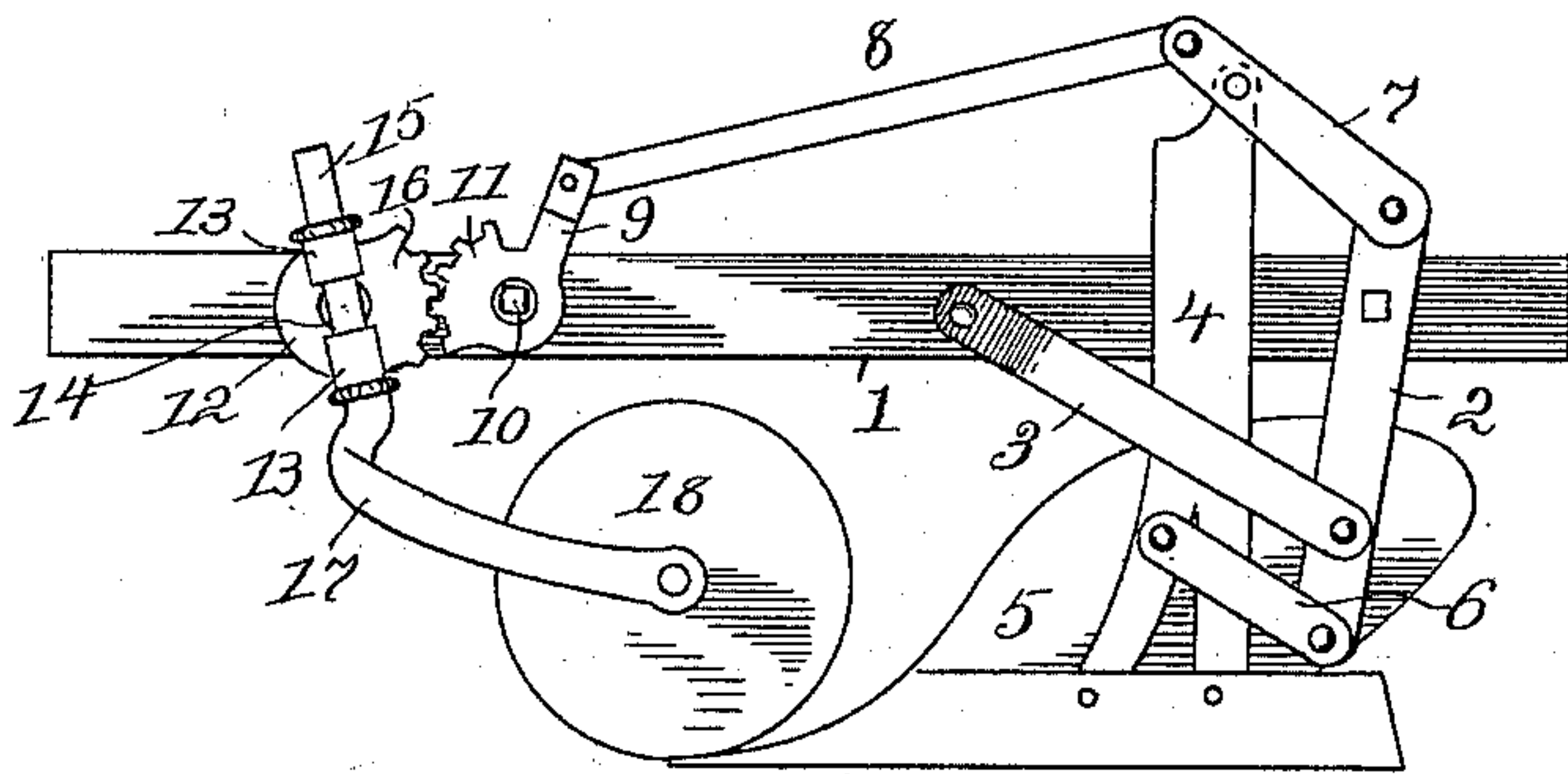
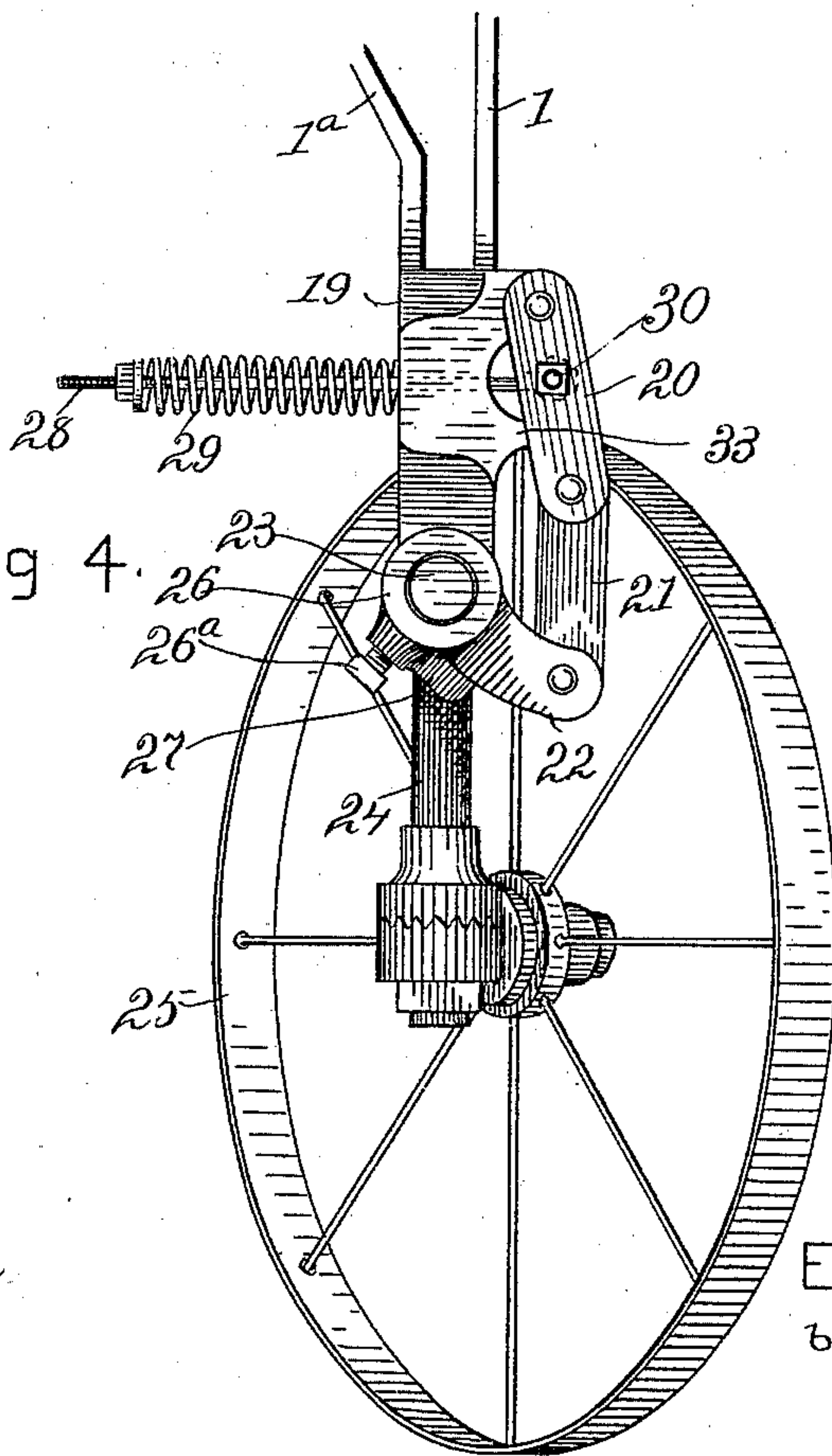


Fig 4.



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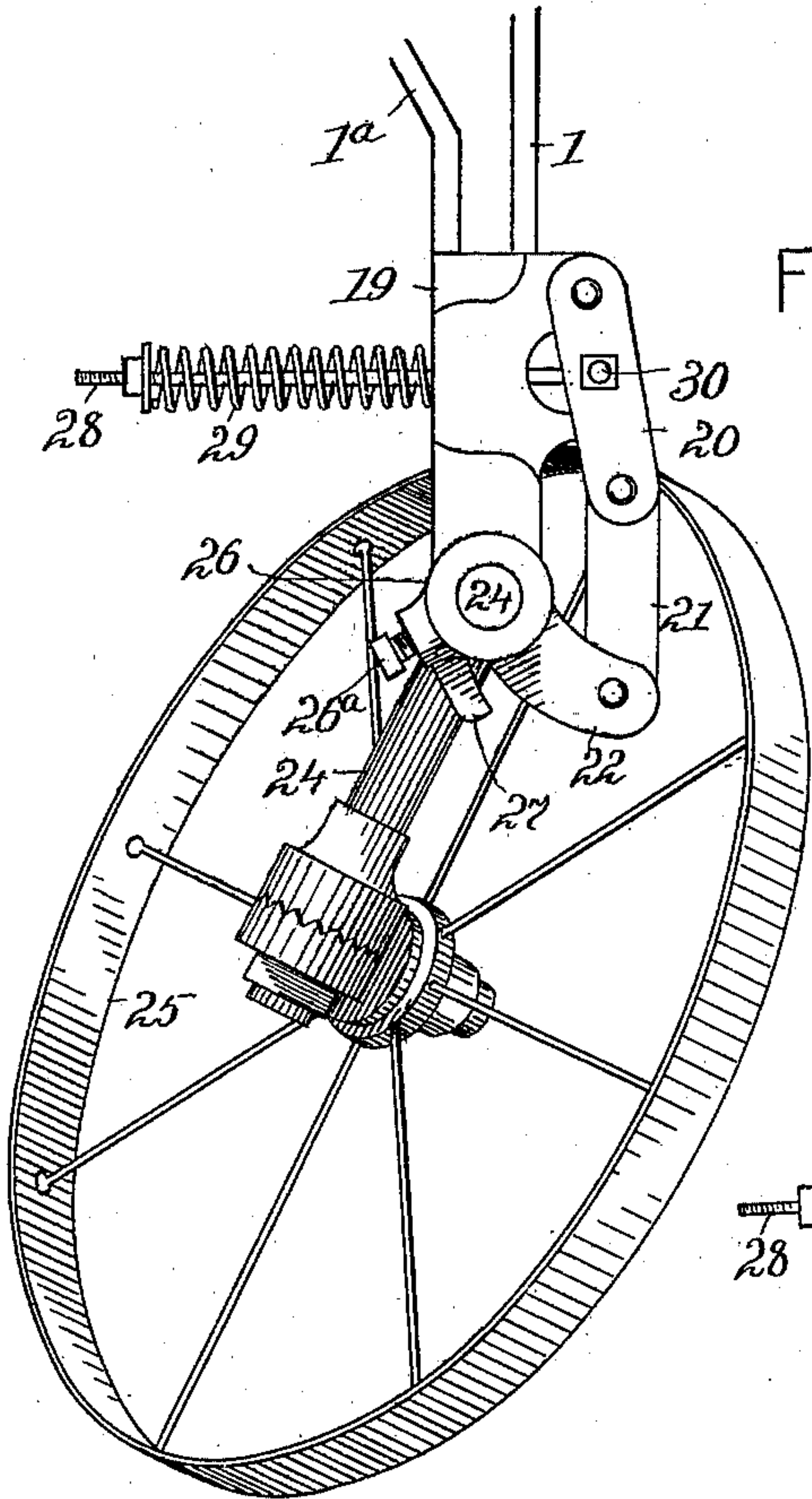


Fig. 5.

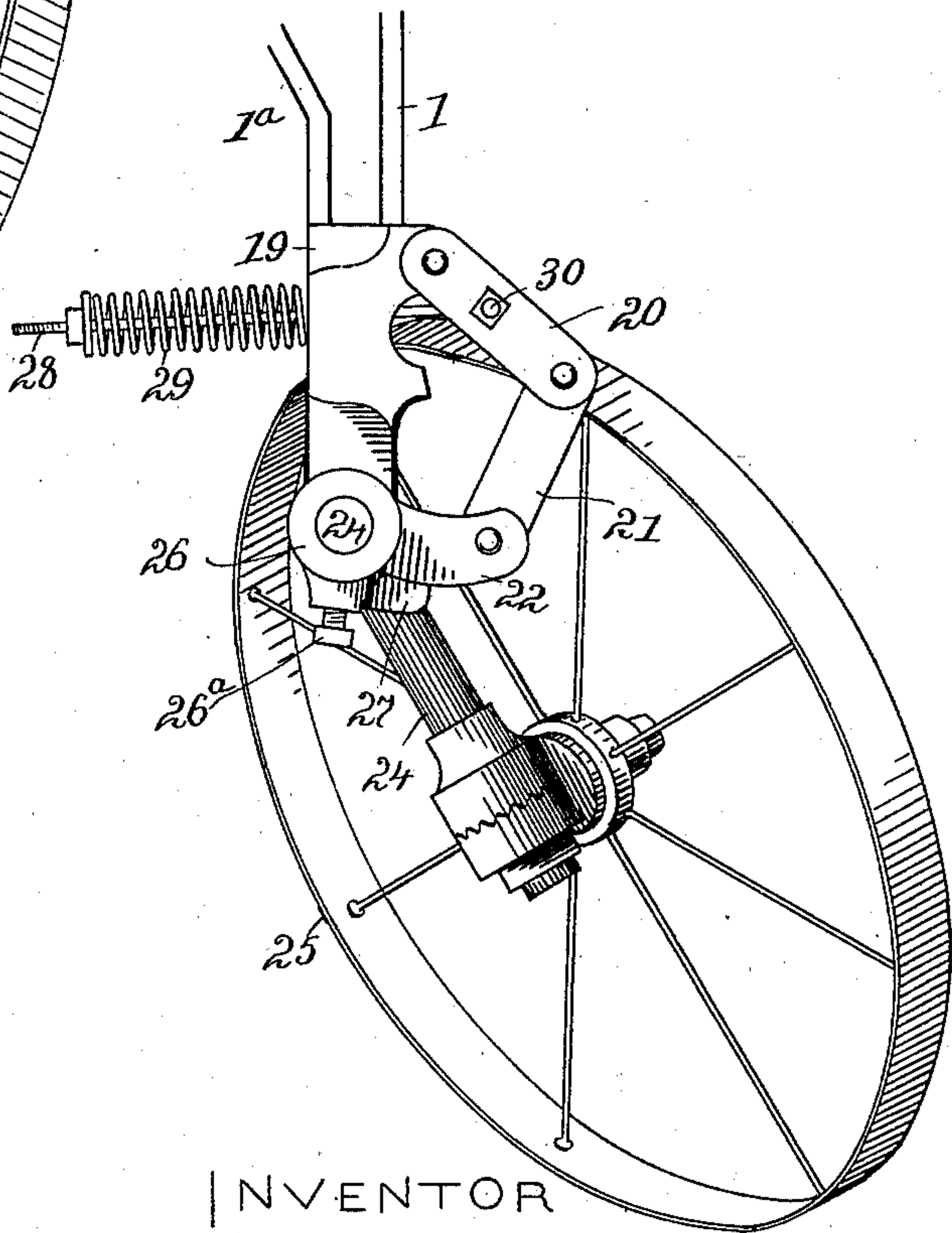


Fig. 6.

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# UNITED STATES PATENT OFFICE.

EDWARD M. HEYLMAN, OF CANTON, ILLINOIS, ASSIGNOR TO THE PARLIN  
& ORENDORFF COMPANY, OF SAME PLACE.

## PLOW.

SPECIFICATION forming part of Letters Patent No. 612,900, dated October 25, 1898.

Application filed August 27, 1897. Serial No. 649,759. (No model.)

*To all whom it may concern:*

Be it known that I, EDWARD M. HEYLMAN, of Canton, in the county of Fulton and State of Illinois, have invented certain new and useful Improvements in Plows, of which the following is a specification.

It is common practice to provide a wheeled plow with a caster-wheel which travels in the furrow and aids in directing the plow while plowing and in carrying it in turning. It is necessary to the perfect operation of such caster-wheel that it shall be sufficiently rigid with relation to the frame to control the width of the cut of the plow in act of plowing, and it must swing with relation to the frame in act of turning the plow around. Various locks have heretofore been employed to hold the caster-wheel rigid while plowing, and connections have been made from the tongue-wheel to the caster-wheel in such manner that the caster-wheel is controlled by the tongue. It is one object of this invention to improve this feature of a plow; and in the broadest sense this part of the invention consists in connecting the caster-shaft with the plow-frame by means of a spring having sufficient strength to guide the plow and yielding enough to give way to the side pull of the frame in act of turning. In a more restricted sense this part of the invention resides in a spring-controlled connection between the caster-wheel shaft and the frame, and in a still more restricted sense it resides in a toggle-joint connected with an arm on the shaft of the wheel and with the frame and a spring adapted to hold the toggle-joint extended.

Another feature of this invention relates to means for raising and lowering the colter of the plow, and this, together with the feature relating to the automatic control of the caster-wheel, is exemplified in the structure hereinafter described, and defined in the appended claims.

In the drawings forming part of this specification, Figure 1 is a perspective representation of a plow embodying my improvement. Fig. 2 is an elevation showing the colter-shifting mechanism as it appears when the colter is lowered. Fig. 3 is a similar view showing the colter raised. Fig. 4 is a plan showing the details of the mechanism used to automatically control the caster-wheel. Fig.

5 is a plan illustrating free swing of the caster-wheel in one direction. Fig. 6 is a plan illustrating swing of the caster-wheel in the opposite direction against the tension of the spring of the toggle-joint.

The frame 1 and 1<sup>a</sup> may be constructed in any desired manner, and in addition to other carrying-wheels suitably disposed it has a caster-wheel 25, which travels in the furrow behind the plow. The vertical portion 23 of the caster-wheel shaft journals in a bearing in casting 19, (see Fig. 4,) which is fastened to the rear end of the plow-frame, and the horizontal portion 24 extends rearward and carries a spindle for the caster-wheel. On the upper end of the vertical portion of the shaft is loosely mounted an arm 22, and above the arm is fixed a collar 26, which has a lug 27, that bears against the back surface of arm 22. A set-screw 26<sup>a</sup> is preferably employed to fasten the collar 26 onto the shaft. A toggle-joint composed of members 20 and 21 connects at one end with the swinging end of arm 22 and at the other end with the forward end of casting 19. A rod 28 connects at one end with member 20 of the toggle-joint by means of bolt 30, and it extends horizontally through an aperture in casting 19. It has on its extended end a washer and a nut, and between the washer and the casting is interposed a spring 29, which exerts a pull on the member 20 of the toggle-joint and tends to hold the toggle-joint extended. A lateral projection 33 on casting 19 provides a bearing against which the toggle-joint rests when subject to the stress of the spring, and this bearing is so located that the members of the toggle-joint cannot assume a straight line, and thereby bring the pivots on a dead-center.

The caster-wheel travels along the furrow, against the vertical wall thereof, and limits the width of the cut of the plow, and any ordinary side stress in a direction away from the vertical wall of the furrow is successfully resisted by the spring acting through the toggle-joint, the arm, the lug on the collar, and the set-screw. When an abnormal side stress is developed between the frame and the caster-wheel, as in act of turning around at the end of the field, the spring will yield, as shown in Fig. 6, the toggle-joint will swing, and the caster-wheel will turn sidewise on its vertical



bearing with sufficient freedom to permit the turn of the plow to be readily made. As soon as the abnormal stress is relieved the spring will draw the toggle-joint to its shown position preparatory to a continuance of the plowing operation. Side swing of the caster-wheel toward the land is unobstructed, as the lug 27 may swing away from the arm 22, as shown in Fig. 5, and so the greatest amount of freedom consistent with the proper operation of the plow is provided for the wheel.

The use of a toggle-joint in connection with the spring is advisable on account of the stiffness that results when the joint is extended and the free swing that is attainable when the joint is broken; but there are various mechanical equivalents of the toggle-joints which are capable of performing the desired function more or less completely, and the spring alone is able to effect a very desirable result.

The mechanism employed to raise and lower the colter is particularly applicable to a plow embodying the improvement patented March 17, 1897, No. 556,344, though it may be used with plows having other styles of lifts, and it is shown in detail in connection with such patented improvement in Figs. 2 and 3. In these figures, 1 represents a side bar of the plow-frame. 2 is a standard bolted to bar 1 and braced therefrom by brace-bar 3. The shank 4 of the plow 5 is swung from the standard 2 by means of links 6 and 7, and a lever 32 (shown only in Fig. 1) is connected with the plow-shank by means of a link 31 and provides means for raising and lowering the plow.

The vertical portion of shank 17 of colter 18 is journaled in bearings 13, which are fixed on a plate 12. The plate is journaled at 14 on a horizontal pivot, and it is supplied on its rear side with a segment of a circle of gear-teeth 16. An arm 9 is pivoted at 10 to the side of bar 1, and it has a segment of a circle of gear-teeth 11, which mesh with teeth 16. A bar 8 connects arm 9 with the swinging end of link 7 and provides means whereby the raising of the plow will rock arm 9 and raise

the colter, as suggested in Fig. 3. This connection does not interfere with the horizontal swing of the colter, it enables the extent of lift to be easily varied, and its essential peculiarity is the upwardly-extended arm connected by gearing or the like to the rocking plate of the colter.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a wheel-plow the combination of a plow-frame, a caster-wheel shaft journaled vertically therein and a spring tending to hold the caster-shaft against rotation in its bearings in the frame.

2. In a wheel-plow, the combination of a plow-frame, a caster-wheel shaft journaled vertically in the frame, and a yielding stop tending to hold the caster-shaft against rotation in its bearings in the frame.

3. In a wheel-plow, the combination of a frame, a caster-wheel shaft journaled vertically in the frame, an arm mounted loosely on the shaft, a lug fixed on the shaft and adapted to engage the arm, a toggle-joint connected with the arm and with the frame and a spring tending to hold the toggle-joint extended.

4. In a wheel-plow, the combination of a colter swung on a horizontal pivot, an upward-extended, pivoted arm connected with the colter-shank, and a bar connecting the arm with the plow-raising mechanism.

5. In a wheel-plow, the combination of a frame, a vertically-swingable toothed plate pivoted on the frame, a colter-shank pivotally connected with the plate, an upward-extended arm pivoted on the frame and having a segment of a circle of cog-gear meshing with the teeth of the plate of the colter and a bar connecting the arm with the raising mechanism of the plow.

In testimony whereof I sign my name in the presence of two subscribing witnesses.

EDWARD M. HEYLMAN.

Attest:

J. B. HOFFMAN,  
LUTHER MASON.