

No. 717,010.

Patented Dec. 30, 1902.

E. MANES.
GANG DISK PLOW.

(Application filed Aug. 19, 1902.)

(No Model.)

2 Sheets—Sheet 1.

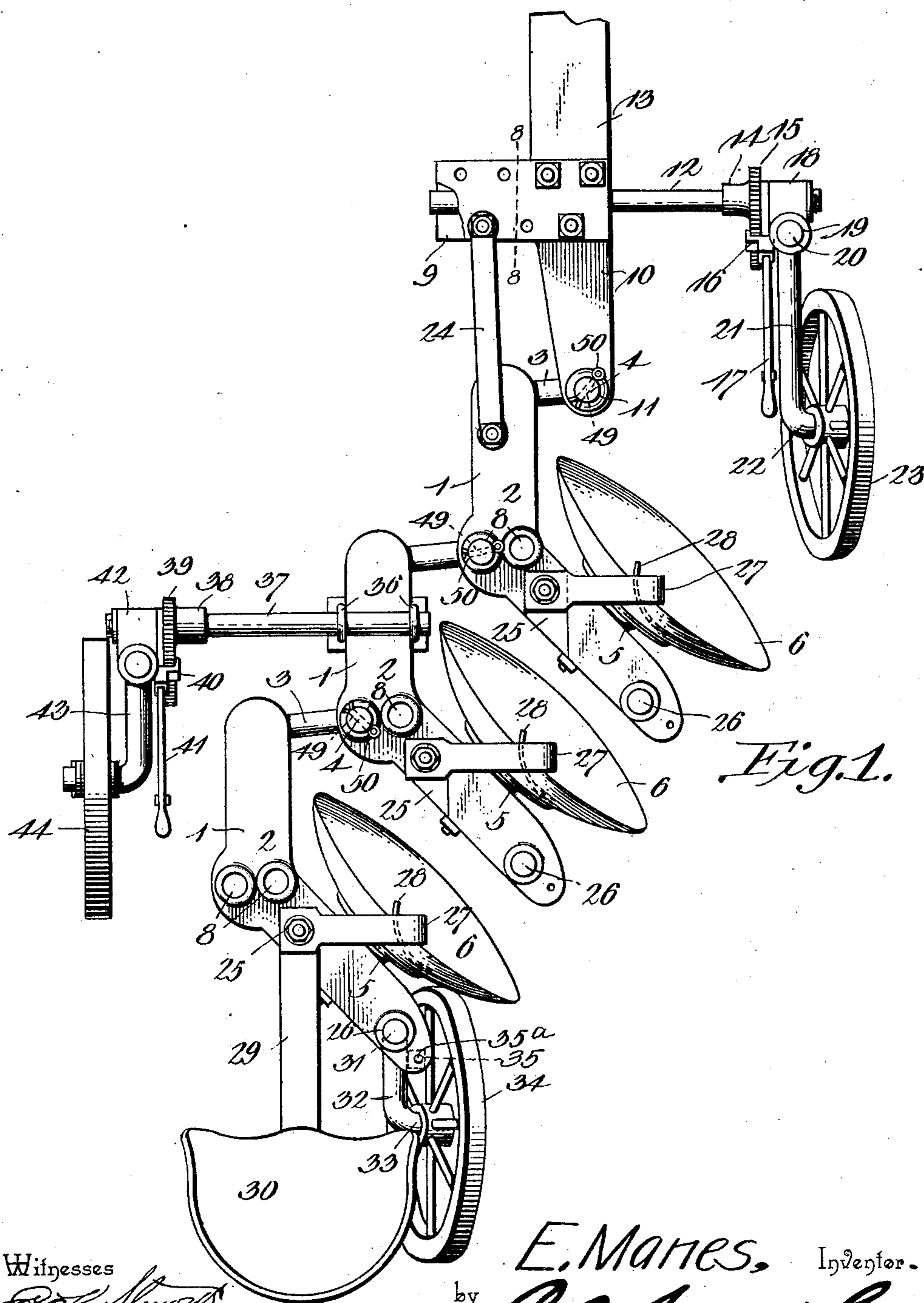


Fig. 1.

Witnesses

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2 Sheets—Sheet 2.

Fig. 2.

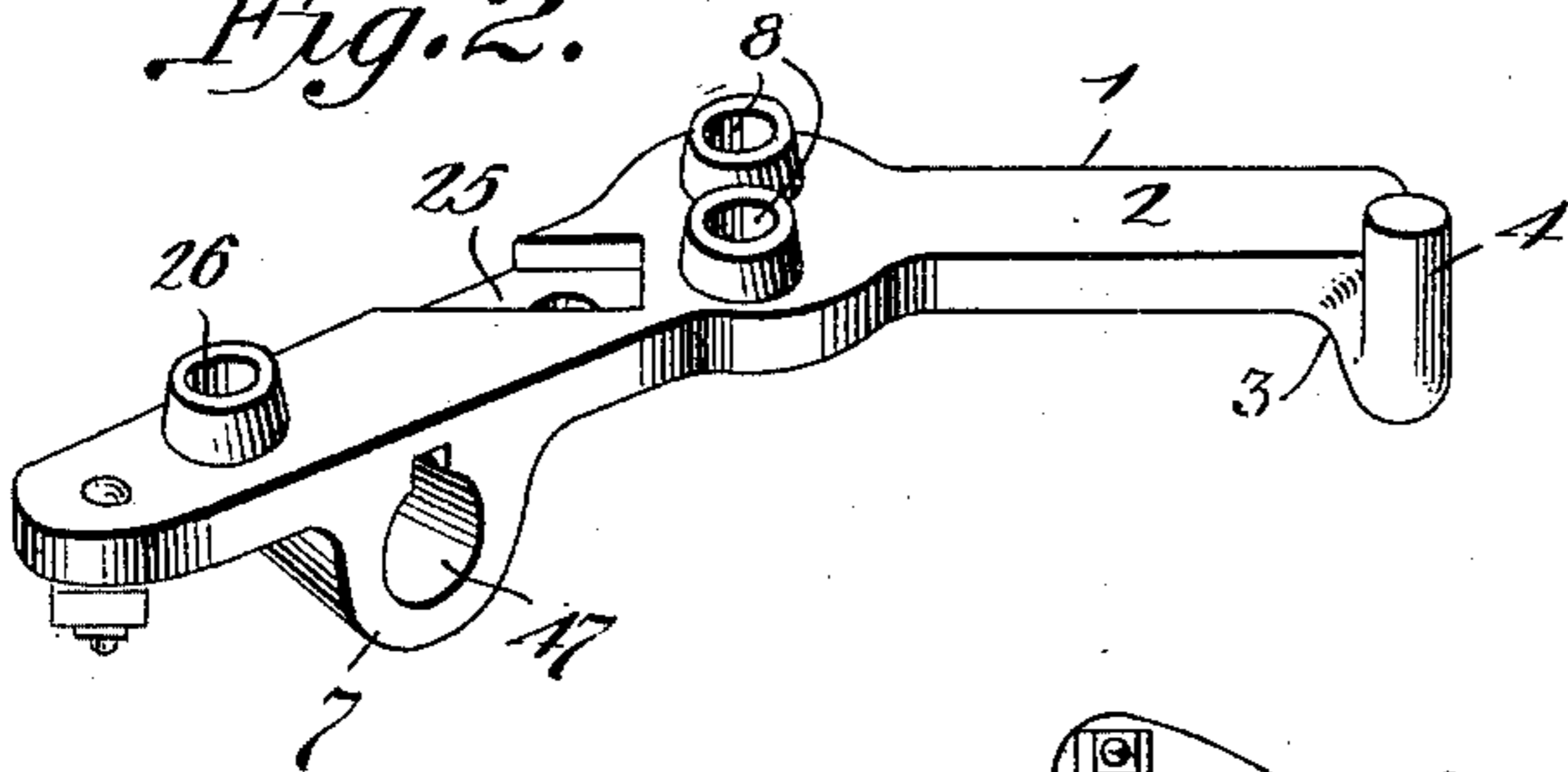


Fig. 3.

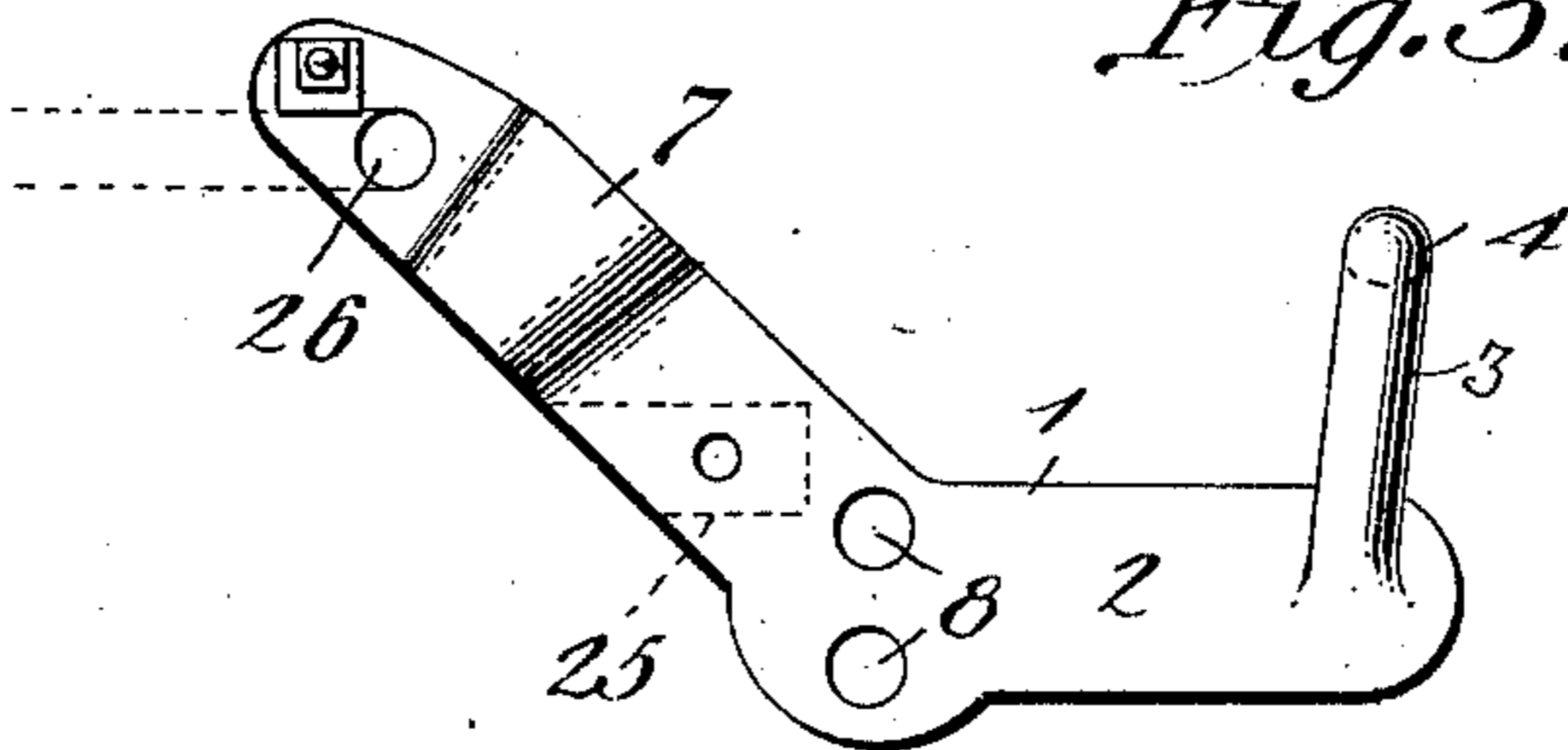


Fig. 7.

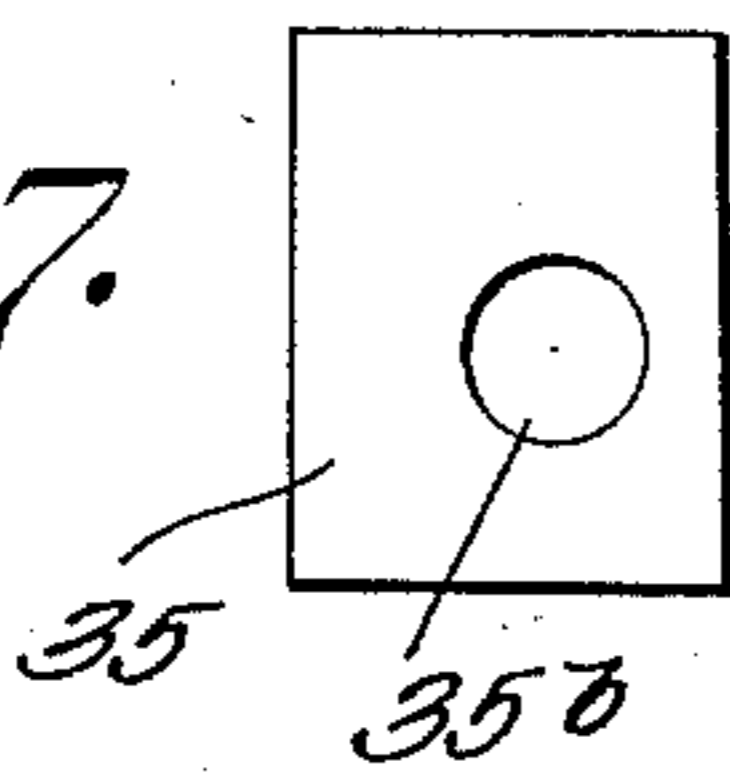


Fig. 8.

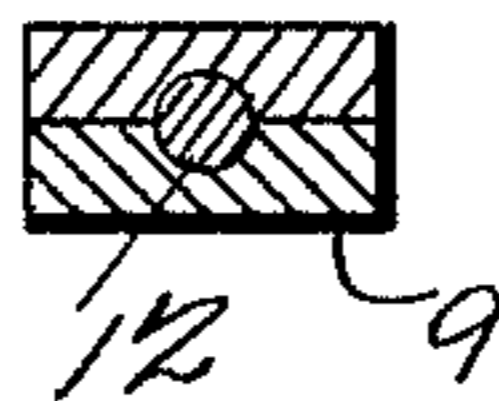


Fig. 4.

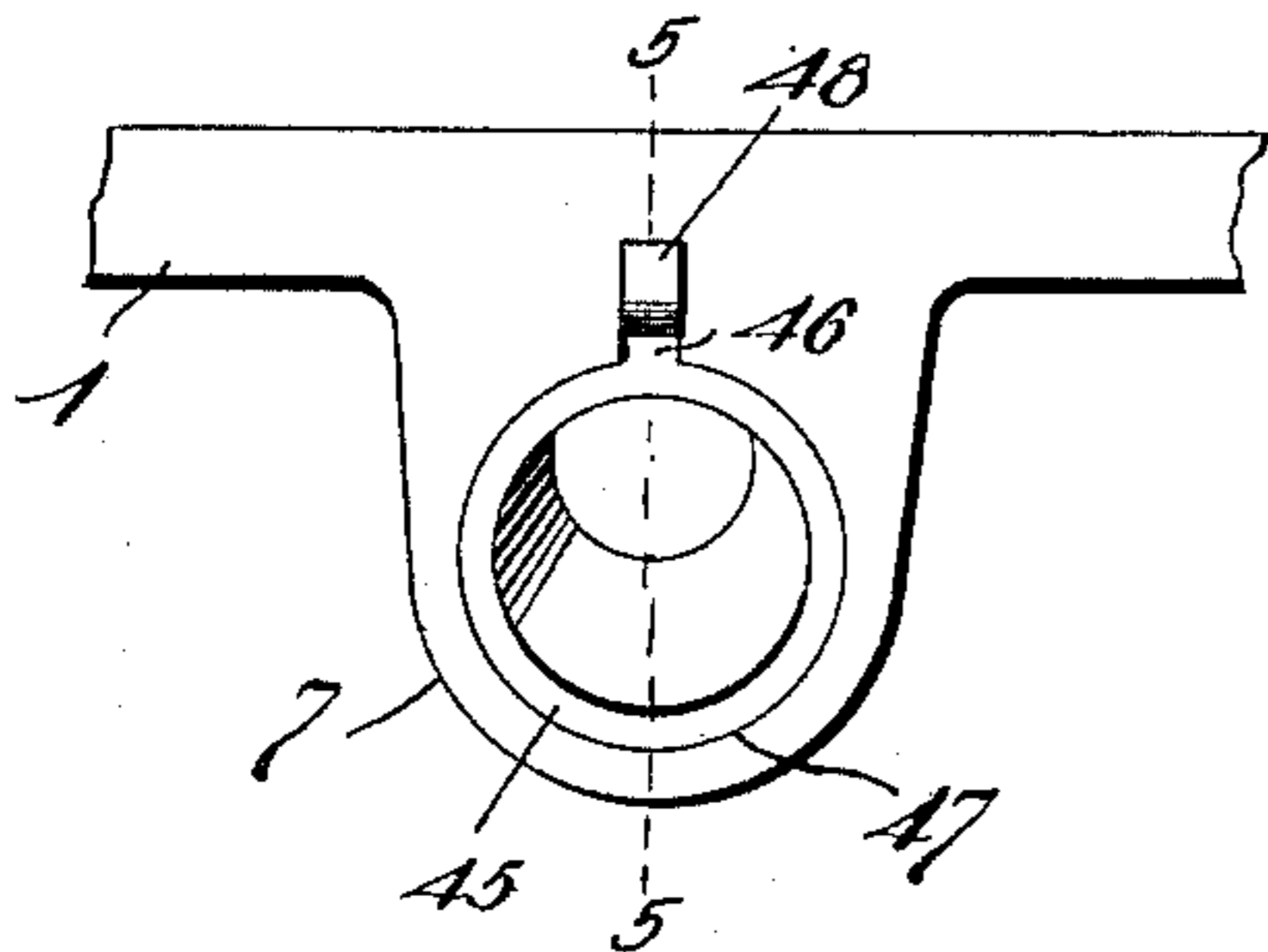


Fig. 5.

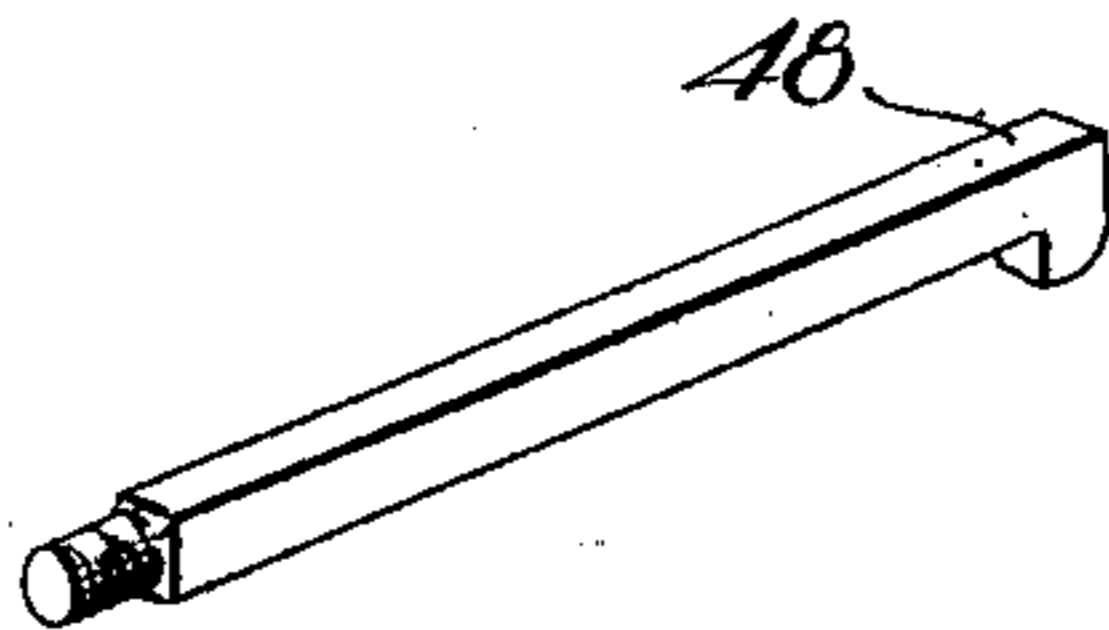
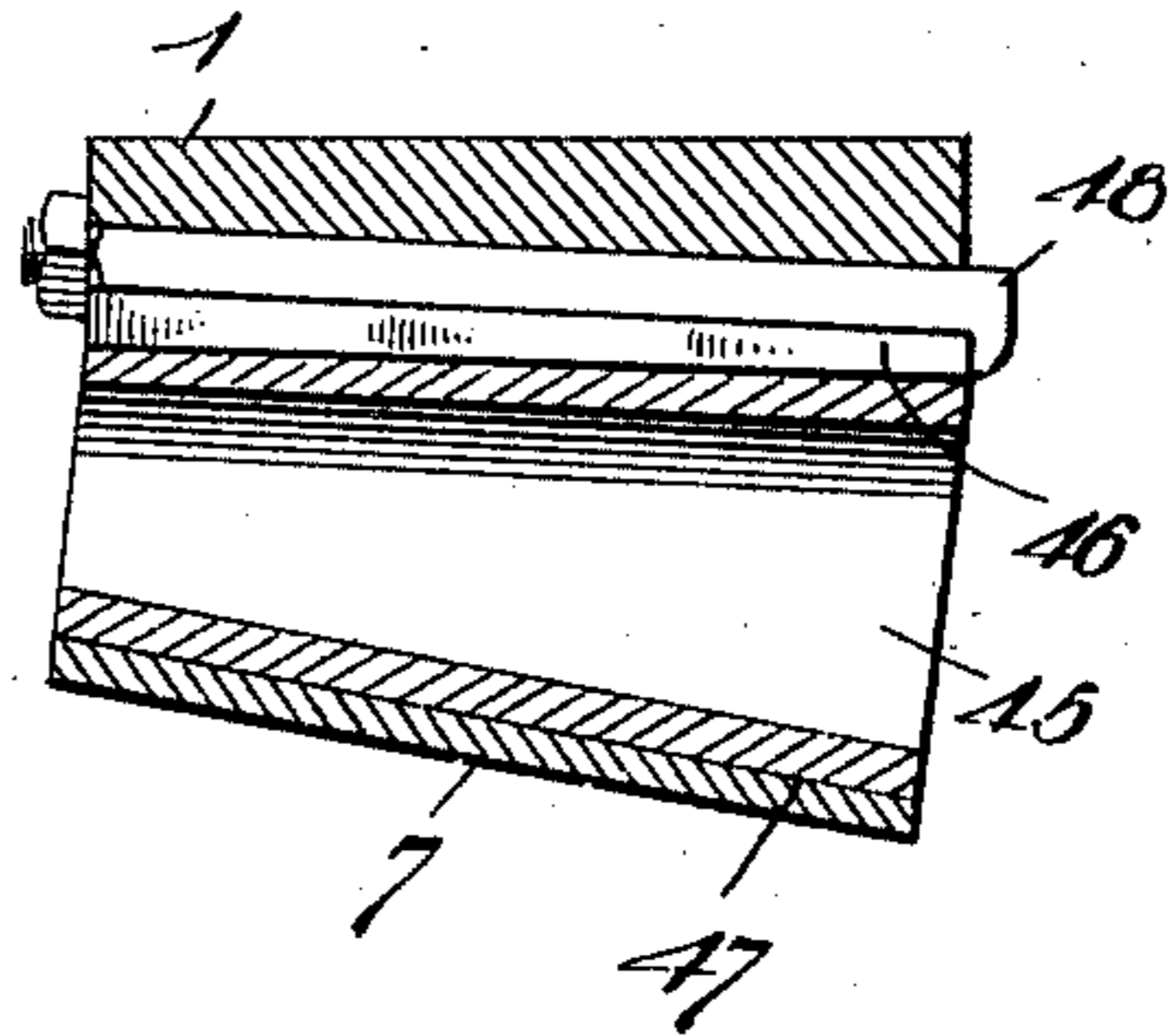


Fig. 6.

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UNITED STATES PATENT OFFICE.

EPHRAIM MANES, OF CHATTANOOGA, TENNESSEE, ASSIGNOR TO REVERSIBLE DISC PLOW & IMPLEMENT COMPANY, OF CHATTANOOGA, TENNESSEE.

GANG-DISK PLOW.

SPECIFICATION forming part of Letters Patent No. 717,010, dated December 30, 1902.

Application filed August 19, 1902. Serial No. 120,251. (No model)

To all whom it may concern:

Be it known that I, EPHRAIM MANES, a citizen of the United States, residing at Chattanooga, in the county of Hamilton and State of Tennessee, have invented a new and useful Gang-Disk Plow, of which the following is a specification.

This invention relates to that class of gang-disk plows which are convertible in the sense that any desired number of plows may be used in a single implement, each disk being supported by a separate frame, beam, or disk-carrying element, any desired number of which may be connected together to form a "chain" or "gang," the number of units of which is practically unlimited.

The invention has for its object to provide a plow of this class in which the frame-beams or disk-carrying elements shall be connected by hinge-joints, so that in turning corners there shall be no excessive strain upon any part of the device, inasmuch as each disk or plow will readily adapt itself to the direction which it is to be moved.

A further object of the invention is to so connect the disk-carrying elements or frame-beams by means of the hinge-joints that the disks may be disposed laterally at varying distances from each other.

With these and other objects in view the invention consists in the improved construction, arrangement, and combination of parts, which will be hereinafter fully described, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a plan view of a gang-disk plow constructed in accordance with the principles of the invention. Fig. 2 is a perspective detail view of one of the disk-carrying elements or frame-beams. Fig. 3 is a bottom plan view of the same. Fig. 4 is a detail side view of a portion of the frame, showing the detachable spindle-bushing in position. Fig. 5 is a sectional view taken on the line 5 5 in Fig. 4. Fig. 6 is a perspective detail view of the locking bolt or key for securing the spindle-bushing in position. Fig. 7 is a plan view of the adjustable stop used in connection with this invention. Fig. 8 is a sectional detail view taken on the line 8 8 in Fig. 1.

Corresponding parts in the several figures are indicated by similar numerals of reference.

The frame-beams carrying the disks of my improved gang-plow are all constructed exactly alike, and each has in the accompanying drawings been designated 1. Each of these beams is composed of an angular body 2, provided at its front end with a laterally-extending arm 3, having an upturned vertical pintle or pivot 4. The rear arm of each beam is provided with a bearing for the axle or spindle 5 of the plow-disk 6, said bearing 7 being adapted to receive a detachable boxing, as will be hereinafter described. Each of the beams 1 is provided at the angle formed by the intersection of its front and rear arms with one or more, preferably a plurality, of vertical perforations 8, forming journal elements adapted to receive the vertical pintle 4 of the beam next in rear, with which it will thus be pivotally connected.

In addition to the plow-carrying beams my improved implement comprises in its construction the front and rear supporting devices, carrying, respectively, the supporting-wheel and the furrow-wheel, and means capable of being attached to any desired intermediate beam of the gang carrying the land-wheel and its adjusting means.

The front portion of the frame comprises a plate 9, having a rearward-extending arm 10, which is provided at its rear end with a vertical perforation 11 to receive the spindle of the front frame-beam of the device. The plate 9 is transversely grooved to receive a bar 12, which is retained securely in position between the plate 9 and the under side of the tongue 13, which may likewise be grooved for the reception of the upper portion of said bar and which is securely bolted to the plate 9, the latter being of sufficient width to admit of the lateral adjustment of the tongue 13, in order that the draft may be applied at any desired point. Suitably secured near the outer end of the bar 12 is a sleeve 14, carrying a rack-bar 15, which is engaged by a spring-actuated lock-dog 16, carried by a hand-lever 17, which is suitably connected with a sleeve or block 18, mounted rotatably upon

the outer end of the bar 12. This block or sleeve has an approximately vertical perforation 19, through which extends a shaft 20, provided at its lower end with an angle-arm 5 21, having a spindle 22, upon which the supporting-wheel 23 is revolvably mounted. It will be seen that by this construction the said supporting-wheel is capable of vertical adjustment with relation to the part of the 10 frame supported thereby, which may thus be raised or lowered in the requisite manner.

The plate 9 may be connected by means of a link or rod 24 with the front end of the front frame-beam 1, which may thus when desired 15 be prevented from turning upon its pivot or spindle which engages the perforation 11 in the rearwardly-extending arm 10 of the said plate 9.

Each of the frame-beams 1 of the device is 20 provided with an appropriately-disposed recess 25, located in rear of the perforations 8. Each of said frame-beams is furthermore provided near its rear end with a vertical perforation 26, the purpose of which will be presently described. 25

The recesses 25 of each of the plow-beams are for the purpose of receiving the lower ends of suitably-constructed yokes or brackets 27, extending over the upper edges of the disks 30 or plows and downwardly in front of the latter, carrying scrapers 28, which engage the faces of said disks. The recess 25 of the rear beam of the gang additionally receives the lower end of the seat-bar 29, which supports 35 the seat 30.

The perforations 26 of the front and intermediate beams are temporarily not in use, but that of the rear beam of the gang receives the upwardly-extending arm 31 of the crank- 40 axle 32, the rear end of which has a spindle 33, upon which the furrow-wheel 34 is mounted.

35 designates an adjustable stop which is secured by means of a pin or bolt 35^a upon the under side of the frame-beam 1 in such a 45 position that it shall limit the movement in an outward direction of the crank-axle 32, thereby preventing the furrow-wheel carried by said axle from swinging too far in an outward direction. The said stop consists simply of a square or rectangular block having 50 an eccentrically-disposed opening 35^b, through which the securing-bolt 35^a passes. By simply loosening the bolt it will be seen that the block or stop may be turned so as to dispose 55 either of its sides toward the crank-axle 32, and said sides being at different distances from the bolt-hole it follows that the stop by simply giving it one-quarter or one-half of a turn may be disposed to regulate the outward 60 movement of the crank-axle and furrow-wheel.

Suitably connected by means of clips 36 with any one of the frame-beams constituting the gang is a bar or shaft 37, extending in the 65 direction of the land and carrying a sleeve 38, provided with a rack-segment 39, engaged by a spring-actuated lock-dog 40 upon a lever

41, which is connected with a block 42, loosely mounted upon the spindle at the outer end of the bar 37 and perforated at right angles to 70 the spindle to receive the crank-shaft 43, carrying the furrow-wheel 44, vertical adjustment of which may thus be had in the usual manner.

The detachable boxing heretofore referred 75 to as receiving and forming a bearing for the spindle of each plow-disk is composed of a bushing or sleeve 45, having a rib 46, the said sleeve and rib being accommodated in a correspondingly-constructed opening 47, formed 80 for their reception in the bearing portion 7 of each frame-beam, and where the said sleeves or bushings may be locked in position by means of bolts or keys 48 of suitable construction. 85

When the individual frame-beams of my improved gang-plow are connected together in the manner heretofore described, it is desirable that each of the spindles or pivots 4 should be provided at its upper end with a 90 transverse perforation 49 for the reception of a lock pin or key 50. I desire it to be understood, however, that the means for hinging the beams together to form a gang may be varied to any desired extent within the known 95 state of the art for constructing such connections.

The operation and advantages of my improved implement will be readily understood from the foregoing description, taken in connection with the drawings hereto annexed. 100 The frame-beam or disk-carrying element may be considered as a unit, any number of which may be connected to form a chain or gang of indefinite length; but it will at the 105 same time be understood that a single unit is capable of being used independently when so desired. Regarding the particular shape or structure of the frame-beam or disk-carrying element, I do not regard myself as limited 110 by the terms herein used as describing the structure of the same. I have described it as consisting of an angular frame-beam provided with a laterally-extending arm, and it might equally correctly be described as being 115 composed of a central or intermediate portion or member provided with lateral extensions at the ends thereof. Hence I may in practice employ any structure which shall admit of the parts being correlated in the manner 120 and for the purpose set forth in my foregoing specification. This it will be understood will include various curvatures of the beam and arm and any suitable proportions of the several related parts. The method herein described of constructing and connecting the 125 parts renders it possible in a very short time to add to or subtract from the number of plows employed, and the units or disk-carrying elements being interchangeable in the 130 event of injury to any one of the plows it may be very easily and quickly replaced. It should be specially observed that the draft is applied to each beam at or near the outer

end of its laterally-extending front arm, being thus practically in front of the disk carried by the said beam, which is thus retained in the proper line of draft, while at the time of turning a corner each of the disk-carrying frames will turn as upon a pivot, thereby avoiding the intense strain upon the draft-animals as well as upon the parts of the implement to which devices of this kind are usually subjected.

The tongue of the device has in the accompanying drawings (where a portion of the rear end of said tongue appears) been shown as being composed of a flat metallic bar. It is not to be implied by this construction that the said tongue should be in any degree elastic. On the contrary it is intended to make it absolutely rigid, in order that the necessary downward pressure may be exerted to force the disks of the gang into contact with the soil with the requisite degree of pressure to enable them to cut a furrow of the desired depth.

I desire to have it understood that while I have in the foregoing described a simple and preferred form of the invention I do not limit myself as regards the details of such construction, but reserve to myself the right to any changes, alterations, and modifications which may be resorted to without departing from the spirit or scope of the invention or detracting from the utility thereof.

Having thus described the invention, I claim and desire to secure by Letters Patent of the United States—

1. A gang-plow comprising a chain of hingedly-connected disk-carrying elements.
2. A gang-plow comprising a chain of adjustably-connected disk-carrying elements.
3. A gang-plow comprising a chain of interchangeable disk-carrying elements.
4. A gang-plow comprising a chain of interchangeably and adjustably connected disk-carrying elements.
5. A gang-plow comprising a chain of interchangeable disk-carrying elements hingedly and adjustably connected together.
6. In a gang-plow, a frame-beam provided with a lateral extension having a journal member for connection with the draft and also provided with means for mounting a rotary disk in the line of draft.
7. In a gang-plow, a frame-beam having lateral extensions, one of said extensions provided with a journal member for connection with the draft and the other provided with means for mounting the rotary disk in the line of draft.
8. In a gang-plow, a plurality of frame-beams hingedly connected with each other, each beam carrying a rotary disk disposed in the line of draft formed by the forward hinge connection of such beam.
9. In a gang-plow, a plurality of frame-beams having vertical perforations, and laterally-extending arms, and means for hingedly connecting a perforation of each beam with

the laterally-extending arm of the beam next in rear.

10. In a gang-plow, a plurality of angular frame-beams having vertical perforations disposed at their angles, and laterally-extending arms at their front ends, in combination with means for hingedly connecting a perforation of each beam with the laterally-extending arm of the beam next in rear.

11. In a gang-plow, a plurality of vertically-perforated angular beams provided at their front ends with laterally-extending arms having upturned spindles, a perforation of each beam receiving the spindle of the beam next in rear.

12. In a gang-plow, a plurality of vertically-perforated frame-beams having vertically-disposed spindles.

13. In a gang-plow, a plurality of disk-carrying frame-beams each having a recess for the reception of scraper-yoke and seat-standard, and means for connecting said frame-beams hingedly together.

14. In a gang-plow, a plurality of angular frame-beams having laterally-extending arms at their front ends, in combination with means for hingedly connecting the angular part of each beam with the laterally-extending arm of the beam next in rear, and disks, so connected with said beams as to be practically in the line of draft formed by the hinged connecting-points of the laterally-extending arms at the front ends of each of said beams.

15. A gang-plow comprising a plurality of frame-beams hingedly connected to move in an approximately horizontal plane, and a draft attachment having hinge connection with the front frame-beam.

16. In a gang-plow, a plurality of hingedly-connected frame-beams, a draft attachment, means for hingedly connecting the same with a laterally-extending arm of the front frame-beam, and additional connecting means for rendering such hinge connection inactive.

17. In a gang-plow, a plurality of frame-beams, hingedly connected, in combination with a draft attachment connected with the front frame-beam and having adjustable rotary supporting means.

18. In a gang-plow, a plurality of frame-beams, hingedly connected, in combination with a draft attachment connected with the front frame-beam and comprising a transversely-grooved plate, a tongue bolted thereto, and a transversely-adjustable bar clamped between said plate and tongue and having adjustable rotary supporting means.

19. In a gang-plow, a plurality of frame-beams hingedly connected, in combination with a draft attachment comprising a plate and a tongue adjustably connected with said plate, and a bar adjustably clamped between said tongue and plate and having adjustable rotary supporting means.

20. In a gang-plow, a plurality of hingedly-connected frame-beams, in combination with

a bar having rotary supporting means, and means for connecting said bar detachably with any one of the hingedly-connected frame-beams.

21. In a gang-plow, a plurality of frame-beams, hingedly and interchangeably connected, in combination with rotary supporting means for the rear frame-beam.

22. In a gang-plow, a plurality of frame-beams, hingedly and interchangeably connected, in combination with swiveled and rotary supporting means for the rear frame-beam, and an adjustable stop to limit the swiveled movement of such supporting means.

23. In a gang-plow, a plurality of hingedly and interchangeably connected frame-beams, a draft attachment connected with the front frame-beam, laterally-adjustable rotary supporting means, carried by said draft attachment, swiveled rotary supporting means for the rear beam, and rotary supporting means detachably connected with an intermediate beam of the gang.

24. In a gang-plow, an angular frame-beam vertically perforated at the angle thereof, provided at its front end with a laterally-extending arm having a vertically-disposed spindle and provided in its rear arm with a bearing for the spindle of the disk, and with vertical perforations in front and in rear of said bearing, the perforation in front of said bearing being disposed within the limits of a recess adapted to receive a scraper-supporting yoke, a seat-bar, or both.

25. In a gang-plow, an angular frame-beam adapted for hinge connection with an identically-constructed frame-beam in rear thereof, such frame-beam being provided at its front end with a laterally-extending arm having a vertically-disposed spindle and in its rear portion with a bearing for a disk spindle, a recess, and vertical perforations.

26. In a gang-plow, a frame-beam having journal elements adapting it for hinged connection with similarly-constructed beams in front and in rear thereof.

27. In a gang-plow a plurality of frame-beams each comprising within itself journal elements, said journal elements of each intermediate beam engaging, and forming hinge

connections with the adjacent beams in front and in rear thereof.

28. In a gang-plow, a frame-beam comprising within itself means for hinged connection with similarly-constructed beams in front and in rear thereof, and means for connection with a draft attachment in front and supporting means in rear thereof.

29. In a gang-plow, a frame-beam comprising within itself means for hinged connection with similarly-constructed beams in front and in rear thereof, means for connection with a draft attachment in front and supporting means in rear thereof, and means for the attachment of a scraper-supporting yoke and a seat-bar.

30. In a gang-plow, a frame-beam comprising within itself means for hinged connection with similarly-constructed beams in front and in rear thereof and having a socket for the reception of the detachable bushing for the spindle of the disk.

31. In a gang-plow, the frame-beam comprising within itself means for hinged connection with similarly-constructed beams in the front and in rear thereof, having a socket formed with a longitudinal recess, a spindle-bushing having a rib extending partially into said recess, and a lock-bolt occupying the remainder of said recess, headed at one end to engage the rib of the bushing and threaded at the other end to receive a retaining-nut.

32. In a gang-plow, a frame-beam comprising within itself means for hinged connection with similarly-constructed beams in front and in rear thereof, and provided at its rear end with a bearing for a crank-axle and with an adjustable stop for the latter, said stop comprising a rectangular block having an eccentrically-disposed perforation, and fastening means extending through said perforation.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

EPHRAIM MANES.

Witnesses:

O. F. JAMES,

G. W. HENSON.