No. 657,494. Patented Sept. 4, 1900.

J. J. MARICK.

PLOW.

(Application filed July 26, 1900.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1

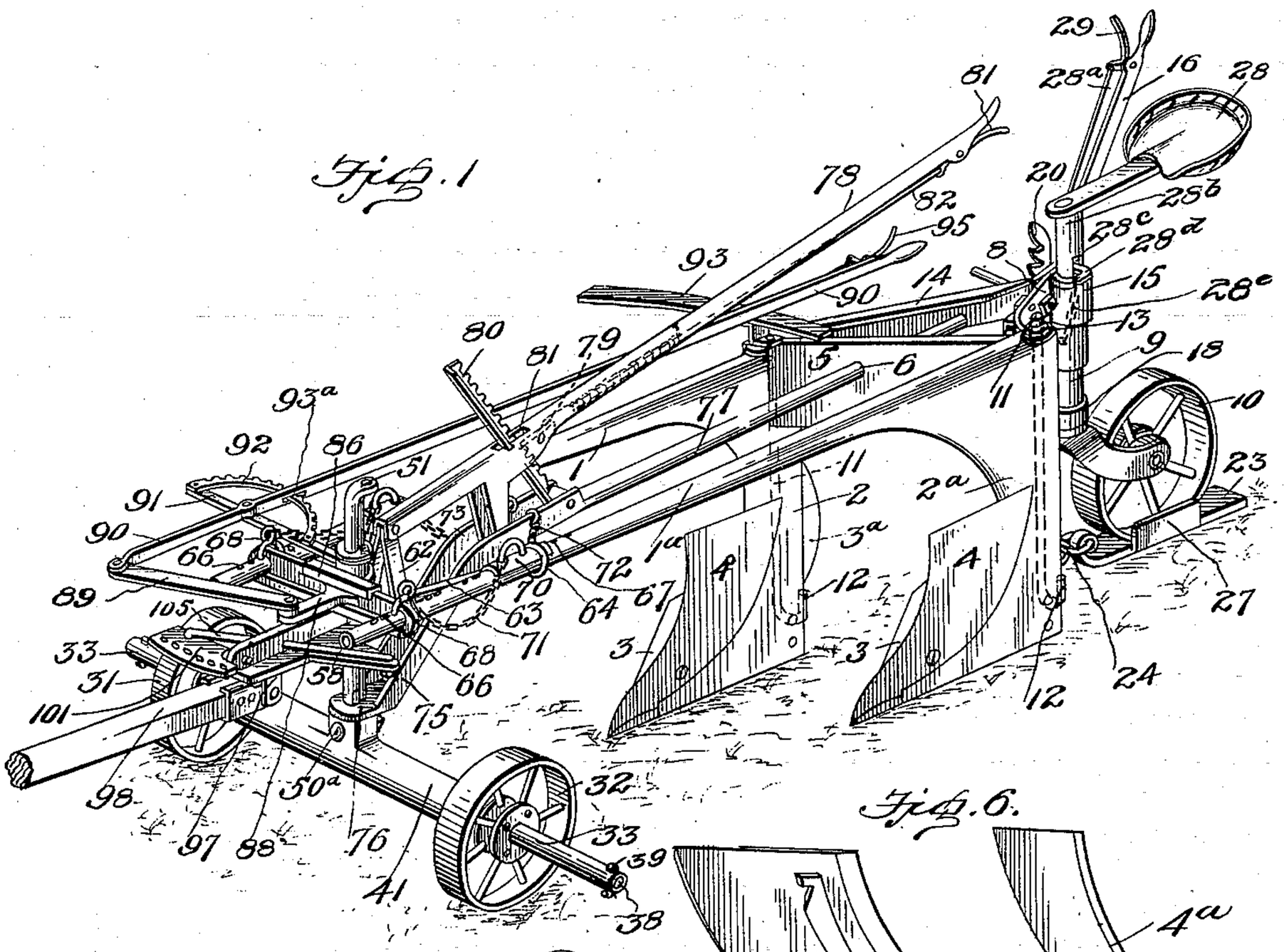


Fig. 5

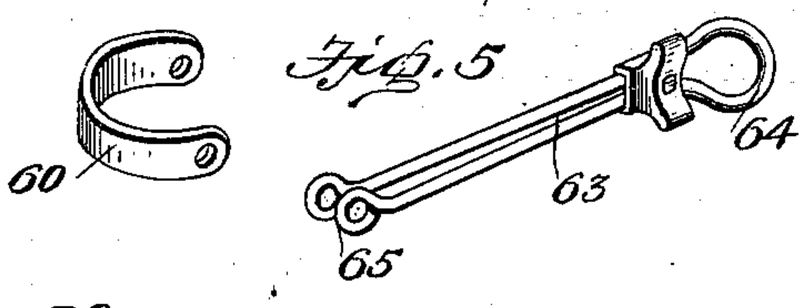


Fig. 6.

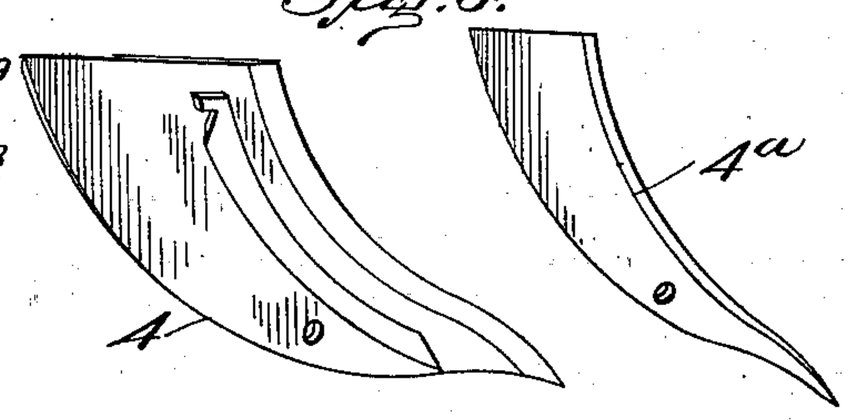
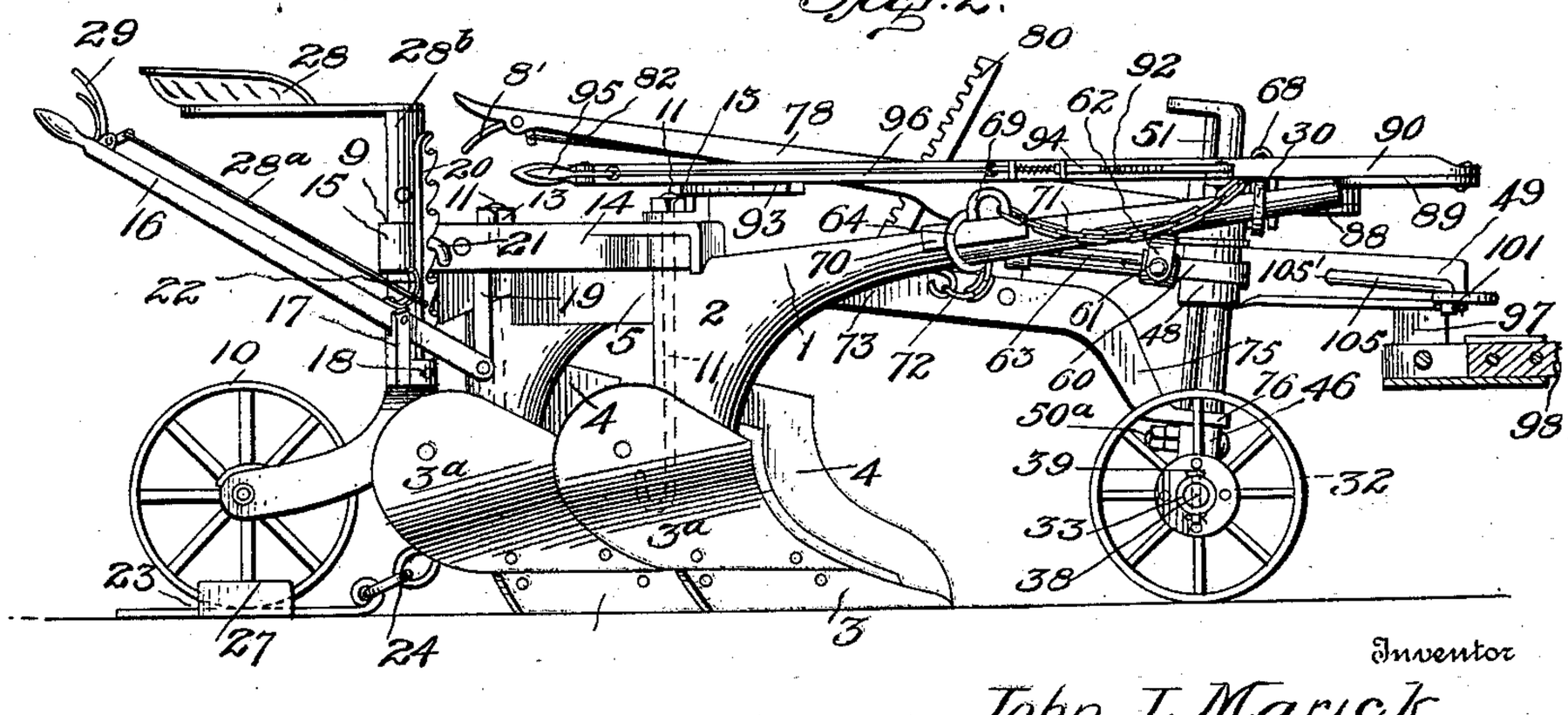


Fig. 2.



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PLOW.

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(No Model.) 2 Sheets—Sheet 2.

Fig. 7.

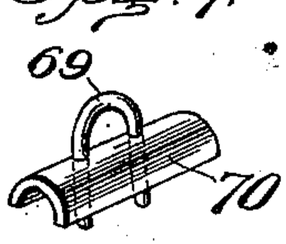


Fig. 3.

Fig. 8.

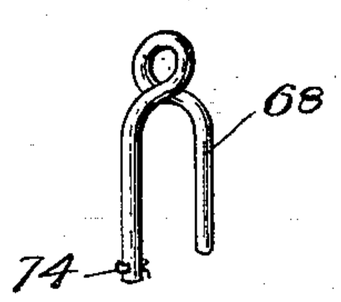


Fig. 9.

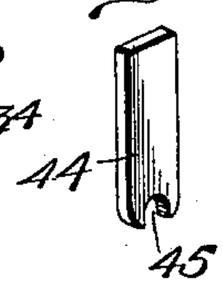


Fig. 4.

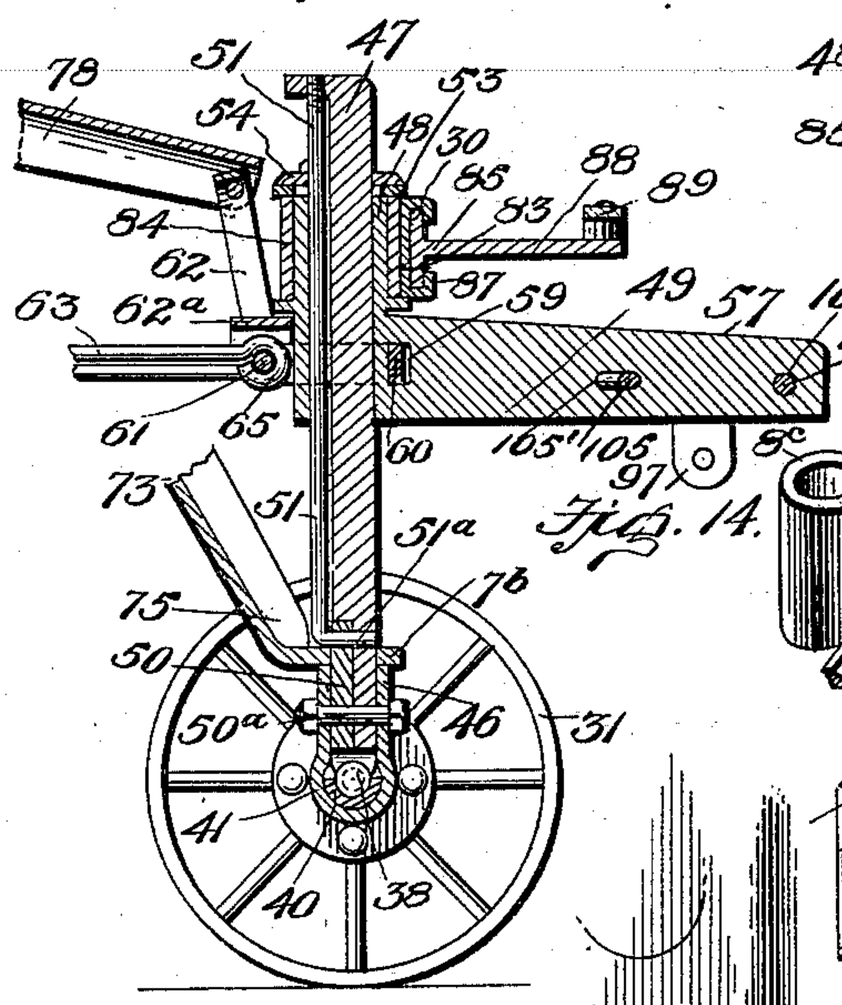


Fig. 10.

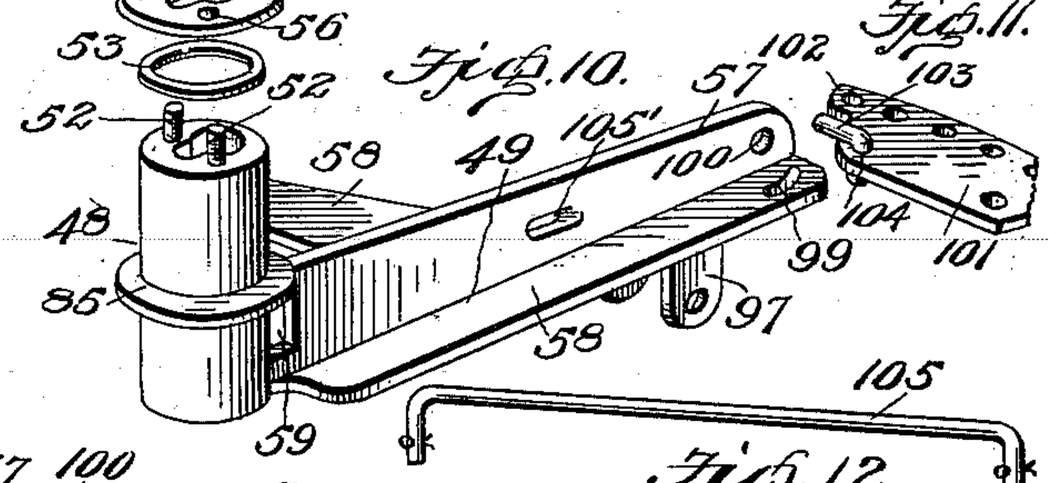


Fig. 11.

Fig. 12.

Fig. 14.

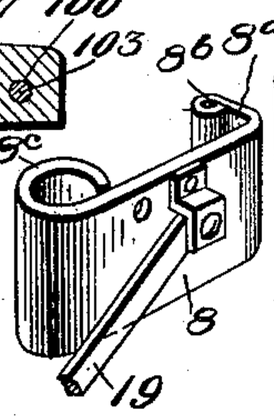


Fig. 13.

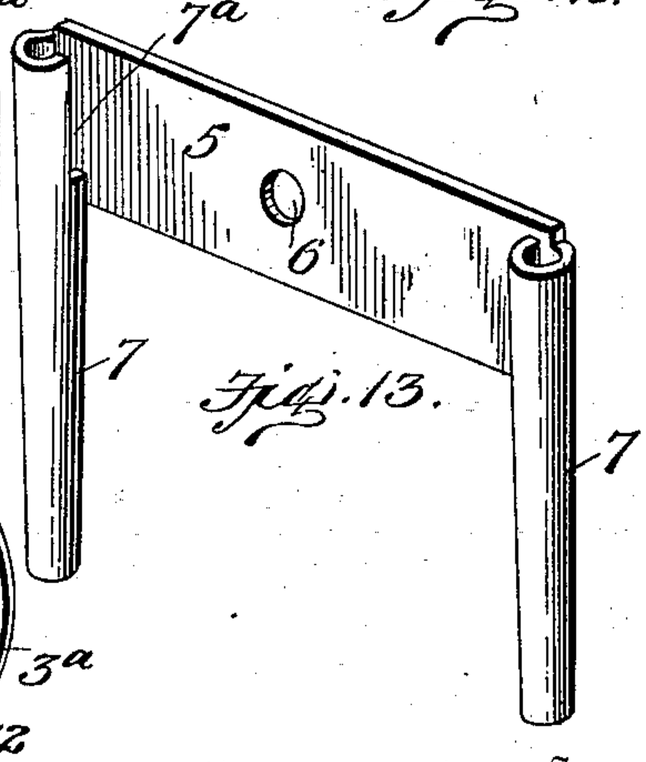
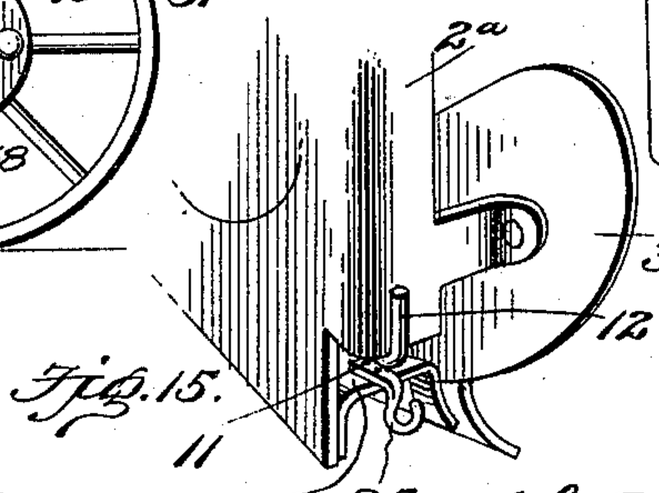


Fig. 15.



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UNITED STATES PATENT OFFICE.

JOHN J. MARICK, OF CHICAGO, ILLINOIS.

PLOW.

SPECIFICATION forming part of Letters Patent No. 657,494, dated September 4, 1900.

Application filed July 26, 1900. Serial No. 24,902. (No model.)

To all whom it may concern:

Be it known that I, JOHN J. MARICK, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Plows; 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 make and use the same.

My invention relates to improvements in plows; and it consists of certain novel features of construction, combination, and arrangement of parts, as will be hereinafter more fully described, and particularly pointed out in the appended claims.

The objects of the invention are to provide a gang-plow in which the parts are mounted in such manner as to be readily and conveniently assembled and disassembled for repairs or other purposes, to provide means affording a wide range of adjustment of the working parts, and to generally simplify and improve the construction and increase the practical efficiency of plows of this character.

In the accompanying drawings, Figure 1 is a perspective view of a gang-plow embodying my invention. Fig. 2 is a side elevation thereof, showing the inner end of the tongue in section. Fig. 3 is a cross-section through the front truck-frame of the carrying-wheels and coöperating parts looking toward the front and showing in dotted lines the wheels reversed to widen the gage in transporting the plow from place to place. Fig. 4 is a vertical section of the same, taken at right angles to that shown in Fig. 3. Fig. 5 is a detail perspective view of the draft-collar and one of the draft-rods. Fig. 6 shows two inner side elevational views, representing the cutter 4 and shield-plate 4^a. Fig. 7 is a detail perspective view of one of the cuffs for holding the draft-rods in place. Fig. 8 is a similar view of one of the pins for securing the cross-beam. Fig. 9 is a detail view of one of the keys for securing the wheel shafts or axles. Fig. 10 is a perspective view of the head-tube, draft-arm, and washer and top plate of the head-tube. Fig. 11 is a perspective view of the draft-plate. Fig. 12 is a detail view of the equalizing draft-rod. Fig. 13 is a perspective view of the rear diagonal cross-beam. Fig. 14 is a detail view of the rear bearing-plate for the caster-wheel, and Fig. 15 is a fragmentary rear perspective view of one of the plows.

Referring now more particularly to the drawings, in which like reference characters designate corresponding parts throughout the several views, 1 and 1^a represent two hollow or tubular beams resilient formed or provided at their rear ends with tubular stocks or standards 2 and 2^a, which carry the plow-shares 3 and moldboards 3^a. Each standard is recessed upon its inner side to receive a cutting-blade 4, which is bolted or otherwise fastened thereto. When this blade is not used, a shield-plate 4^a is inserted in its place in the recess to prevent the entrance of dirt and to protect the walls of the recess from injury. One of the beams is made shorter than the other to provide for the proper mounting of the plows one in advance of the other in the usual way, and the two beams are connected at their rear ends by a diagonal cross-beam 5, formed of spring metal and provided with a central opening 6 and tubular legs 7 at the ends thereof, which legs are preferably formed by bending or coiling the metal upon itself and are adapted to fit down in the sockets of the standards 2 and 2^a. One of these legs 7 is notched, as shown at 7^a, to receive the angularly-bent end 8^a of a removable bearing-plate 8. This end 8^a is formed with a tubular slide 8^b, which fits within the upper end of the leg 7, having the notch 7^a, while the opposite end of the plate is formed into a hub or tubular bearing 8^c, in which is mounted the spindle 9 of the caster-wheel 10, which supports the rear end of the plow. The standards 2 and 2^a are notched at their heel ends, as shown in Fig. 15, to receive locking-bolts 11, having lower hooked ends 12 to engage the edges of the standards and upper threaded ends to receive nuts 13. These bolts pass upwardly through the sockets of the standards and legs 7 of the cross-beam 5 and secure the rear ends of the side beams 1 and 1^a thereto, and in addition the bolt in the standard 1^a also passes through the slide 8^b and holds the bearing-plate 8 against displacement. By removing these bolts the rear cross-beam, bearing-plate, and caster-wheel may all be disconnected and re-

moved, if desired. A brace 14 is also detachably connected to the standard 2 by its bolt 11 and is provided at its opposite end with a loop or eye 15, which engages the spindle 9 of the caster-wheel 10 and assists in holding the parts securely connected. The rear end of the frame is adjusted through the medium of a lever 16, pivoted near its front end to a bracket 17, having an eye 18 engaging the said spindle of the caster-wheel. The forward end or short arm of this lever is connected to an arm 19 upon the bearing-plate 8 and carries a pivoted rack 20, normally held pressed into engagement with a hook or fixed pawl 21 on the brace 14 by a spring 22. Upon pressing down the long arm of the lever the arm 19 is forced upwardly, lifting the rear ends of the side beams in a manner readily understood, the loops or eyes or bearing portions 8^b and 18 of the bearing-plate 8 and bracket 17 sliding freely on the caster-wheel spindle during this movement. By thus adjusting the rear end of the frame the heel ends of the plowshares may be elevated as desired. In transporting the plow from place to place it is desirable to provide a brake to prevent the plow from running upon the horses in descending grades. To this end I provide a skid or shoe 23, carrying a link or chain 24 at its front end to engage a hook 25, supported by a bracket 26 in the base of the standard 2^a. This skid is adapted to support the caster-wheel 10 and to act as a shoe or runner and is provided with side flanges 27 to hold it in engagement with the wheel. The driver's seat 28 is mounted upon a seat-post 28^b, having a slot 28^c. A key 28^d, held by a chain 28^e, is provided to fit into said slot to hold the seat-post secured. This key has a bit or lug, and when inserted is given a quarter-turn to cause said bit to bridge across the slot and prevent withdrawal of the key. When it is desired to use the skid, it is connected up to the hook 25 and placed under the caster-wheel 10. The weight of the driver, as well as that of the rear portion of the machine, is thus thrown upon the skid, which is thereby caused to drag and act as a brake to prevent the plow from moving forward too rapidly upon the horses. The rack-bar 20 is adapted to be retracted and disengaged from pawl 21 through the medium of a rod, cord, chain, or cable 28^a and a pivoted handle 29, connected thereto and mounted on the lever 16.

The side beams 1 and 1^a are connected at their front ends by a front cross-beam 30, having openings at its ends, through which the side beams pass and are supported by carrier-wheels 31 and 32. These wheels are mounted upon hubs 33, provided at their outer ends with diametrically-opposite openings 34 and at their inner ends with sand collars or bands 35, each having an opening 36 in line with diametrically-opposite openings 37 in the inner end of the hub. Each hub is slidably mounted upon a shaft or axle 38 and is rigidly connected thereto to rotate therewith by means of a key 39, passed through the openings 34 and a corresponding opening in the outer end of the axle, as clearly shown in Fig. 3. The axles are longer than the hubs and project beyond the inner ends of the same and are journaled to rotate in a boxing 40, removably mounted upon the interior of a bearing-sleeve 41, so as to be easily and conveniently removed when worn for substitution of a new boxing. The axles are formed at their inner abutting ends with annular grooves 42 in line with a slot 43 in the boxing, through which slot pass retaining-keys 44, having segmental notches 45 to fit within said grooves in the axles to hold both the boxing and axles in place against endwise movement. These keys are fitted within a rectangular box or socket 46, projecting upwardly from the center of the bearing-sleeve. In the normal operation of the plow when plowing the parts are arranged as shown in full lines in Figs. 1 and 3, from which it will be seen that the wheels 31 and 32 are located close up to the ends of the sleeve 41, with the sand-bands 35 projecting over upon said ends of the sleeve to exclude dust, sand, and dirt. It is desirable, however, to widen the gage when the plow is being transported from one place to another to obviate all liability of the plow turning over and to adapt the same to be drawn easier. To accomplish this, it is simply necessary to disengage the pins 39 and to release the wheels and reverse them by sliding the hubs off the axles and replacing them with the ends containing the slots 34 inward, as shown in dotted lines in Fig. 3, the pins 39 being then passed through the openings 36 in the sand-bands and 37 in the hubs and the openings in the outer ends of the axles 38, as will be readily understood. The carrier-wheels as thus constructed and mounted are adapted to swing upon a vertical stem or king-bolt 47, projecting at its upper end through a head-tube 48, carried by a draft bar or arm 49. The lower end of the stem or king-bolt is made rectangular to fit within the socket 46 and is cut away or stepped to receive a chock-block or feather 50, having a socket to receive the bent end 51^a of a locking-rod 51, extending parallel with the king-bolt and projecting through the tube 48. This block when inserted holds the king-bolt firmly seated in the socket 46 and when detached permits of the removal of the king-bolt through the head-tube 48. A bolt 50^a secures the block and lower end of the king-bolt in the socket 46. The bore or opening of the head-tube is key-shaped to receive the king-bolt and rod and prevent independent rotative movement thereof, and said tube is provided at top with threaded stems 52. A washer 53 fits down upon the top of the head-tube, and a cap 54 is fitted thereon and provided with a keyhole-slot 55 for passage of the king-bolt and rod and openings 56 for passage of the stems 52, on which nuts are threaded

to hold the washer and cap in place. The draft bar or arm 49 is provided with a central flange 57 and a lateral bracket 58, said flange being provided at its inner end with a slot 59. Passed through this slot is a collar 60, through the ends of which is passed a pivot-pin 61. To said pin are also pivoted a stirrup or yoke 62 and two draft-bars 63, each of said draft-rods consisting of a rod bent upon itself to form at one end a loop 64 and two parallel strands, provided at their free ends with eyes 65, embracing the ends of the collar 60 and pivotally mounted on the said pin 61. These rods 63 extend rearwardly on opposite sides, and their loops 64 embrace the beams 1 and 1ª and transmit the pull of the draft-animals equably thereto. An inverted-U-shaped coupling 62ª is also mounted on the pin 61 and serves to prevent the yoke 62 and draft-rods 63 from spreading. The beams are each provided at their forward ends with two series of openings 66 and 67. The openings 66 are adapted to receive U-shaped pins 68, which hold the front cross-beam 30 in place, and the openings 67 the ends of similar pins 69, carried by cuffs 70, which act as stops to hold the loops 64 in place. The two sets of pins are connected by chains 71, and the cuffs are secured by chains 72 to a central channel-brace 73 to prevent loss or misplacement of the parts. If desired, the pins 68 may be retained in position by cutter-pins 74, passed therethrough. The channel-brace 73 is located centrally between the side beams 1 and 1ª and has a downwardly-bent end 75 terminating in a flat foot 76, which is connected with the king-bolt 47 and locking-rod 51 and reinforces the same. The rear end of the brace terminates in a rod or arm 77, which is loosely mounted in the opening 6 of the rear cross-beam 5. To the channeled portion of the beam is pivoted a lever 78, the forward end of which is pivotally connected to the stirrup or yoke 62. By raising and lowering this lever the front ends of the side beams 1 and 1ª may be elevated and depressed to move the plowshares up and down for deep or shallow plowing or for holding them above the surface of the ground when the plow is being moved from one place to another. The rear end of the frame is elevated by the lever 16, as hereinbefore described. To hold the lever 78 fixed in adjusted position, a spring-actuated pawl 79 is provided to engage a rack 80, pivoted to the brace 73 and projecting through a slot 81 in said lever 78. This pawl is retracted by means of a pivoted handpiece 81 and a rod, cord, or wire 82, connecting same with the pawl.

The front cross-beam 30 is mounted to slide laterally in a flanged guide 83, carried by a sleeve 84, which is mounted on the head-tube 48 between a flange 85 thereon and the cap 54. The upper flange 86 of this guide is made comparatively short to allow the side beams 1 and 1ª to swing freely without interference, while the bottom flange 87 thereof is made longer to form an extended bearing. From the front of the cross-beam 30 projects an arm 88, to which is connected one end of a link or short lever 89. The opposite or outer end of this link is in turn connected to the forward end of a lever 90, pivoted near its front end to a bracket 91, projecting from the fixed sleeve 84 and carrying a segment-rack 92. The lever is mounted to swing laterally of the plow and rest upon a support 93 and is provided with a slot 93ª, through which the rack extends. A spring-pressed pawl 94 is provided on the lever to engage the rack and hold the lever fixed in adjusted position, and said pawl is operated by a pivoted handpiece 95 and a rod or its equivalent 96. By swinging the lever in one direction or the other the cross-beam 30 will be slid in the guide to swing the side beams 1 and 1ª and plows laterally to one side of the line of draft, so as to present a greater or less extent of surface of the plows and increase or diminish the size of the furrow.

The draft-bar 49 is provided at its front end with ears 97 for attachment of the tongue 98 and with a segmental slot 99 and a transverse opening 100. A draft-plate 101 is provided with a lip 102 to extend past the end of the flange 57 of said bar and with a pivoted L-shaped key 103, the short arm of which is adapted to pass through an opening 104 therein and in the segmental slot 99 and the long arm into the opening 100. In inserting the pin the plate 101 is held vertically with its lip 102 downward and the long end of the pin engaged with the opening 100. The plate is then turned down to an approximately-horizontal position to bring the short arm of the pin into the slot 99, and finally swung forward on the pin until the lip 102 extends past the front end of flange 57. By this means the draft-plate is securely fastened against casual displacement. The outer rear edge of the plate has connected thereto a rod 105, which passes diagonally through a slot 105', formed in the flange 57, and is connected to the bracket 58 in the opposite side of the draft-bar. The purpose of this construction is to equalize the draft, the rod serving to transmit the pulling strain equally to both sides of the draft-bar. The plate 101 is perforated to adjustably receive a clevis.

The cutters 4 are used for breaking land. When it is not desired to use the cutters, a shield-plate 4ª is inserted in the recess in its place to fit snugly and prevent the walls of the recess from being broken or injured.

From the foregoing description, taken in connection with the accompanying drawings, the construction and mode of operation of the invention will be apparent, and it will be seen that it provides a gang-plow having desirable advantages, among them being the detachability of all the parts, so as to provide for ready repair and the quick replacement of a broken part, the effective raising and lowering of the frame, and the means whereby the

plows may be adjusted to stand at an angle to the line of draft. Other advantages of the invention will also be manifest.

It will of course be understood that changes in the form, proportion, and minor details of construction may be made within the scope of the invention without departing from the spirit or sacrificing any of the advantages thereof.

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

1. In a plow, the combination of a draft-bar having a segmental slot and a transverse opening, and a draft-plate carrying a pivoted L-shaped key to engage said slot and opening, substantially as set forth.

2. In a plow, the combination of a draft-bar having a vertical flange and a laterally-projecting bracket at one side, a draft-plate, and a rod passing diagonally through said flange and connecting said bracket and outer rear edge of the draft-plate to equalize the pulling strain on both sides of the line of draft, substantially as set forth.

3. In a plow of the character set forth, the combination of plow-beams, a king-bolt carrying wheels, a sleeve in which the king-bolt is mounted, a cross-beam connecting the front ends of the plow-beams, a guide upon the sleeve in which said cross-beam is mounted to slide, and means for sliding the cross-beam, substantially as set forth.

4. In a plow of the character described, the combination of plow-beams, a king-bolt carrying wheels, a cross-beam connecting the forward ends of the side beams, a sleeve in which the king-bolt is mounted, a guide upon the sleeve and an operating-lever for sliding the cross-beam, substantially as set forth.

5. In a plow of the character set forth, the combination of plow-beams, a head-tube, a king-bolt mounted in the head-tube, a draft-bar connected to said bolt, draft connections between said bar and plow-beams, a cross-beam connecting the side beams, a guide in which the cross-beam is slidably mounted and carried by the head-tube, and a lever for operating the cross-beam, substantially as set forth.

6. In a plow of the character described, the combination of plow-beams, a king-bolt carrying wheels, a head-tube carrying the king-bolt, a guide mounted on the head-tube, a cross-beam connecting the side beams and slidable in said guide, means for sliding the cross-beam, and means connected to the head-tube for raising and lowering the side beams, substantially as set forth.

7. In a plow of the character set forth, the combination of a king-bolt, a sleeve or tubular bearing carried by the king-bolt, and axles journaled in said sleeve and carrying removable reversible wheels, substantially as set forth.

8. In a plow of the character set forth, the combination of a king-bolt, a sleeve or tubular bearing carried by the king-bolt, shafts or axles journaled in said sleeve and having grooved ends, hubs mounted on the axles and carrying reversible wheels, and keys engaging the grooved ends of the axles, substantially as set forth.

9. In a plow of the character set forth, the combination of a sleeve or tubular bearing, axles journaled therein and having grooved ends, hubs mounted on the axles and carrying reversible wheels, a king-bolt fitted in a socket in the sleeve and having a recessed end, a chock-block inserted in said recess, keys on opposite sides of said block and engaging the grooved ends of the axles, a locking-rod, and a head-tube having a keyhole-slot to receive said bolt and rod, substantially as set forth.

10. In a plow of the character set forth, the combination of plow-beams provided with standards having sockets, a rear cross-beam having legs fitting in said sockets, and bolts passed through the standards and legs and securing said cross-beam to hold the plows in place, substantially as set forth.

11. In a plow of the character set forth, the combination of plow-beams provided with standards having sockets, a rear cross-beam having legs fitting in said sockets, a bearing-plate engaging one of said legs and provided with a bearing, a caster-wheel journaled in said bearing, and means for raising and lowering the plows on said caster-wheel, substantially as set forth.

12. In a gang-plow, the combination of plow-beams provided with standards having sockets, a rear cross-beam having legs to fit within said sockets, bolts passed through the standards and legs and securing said cross-beam, a bearing-plate connected to the cross-beam, a caster-wheel journaled in said plate, a lever connected to the bearing-plate, a rack carried by the lever, and a pawl to engage said rack, substantially as set forth.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

JOHN J. MARICK.

Witnesses:
J. A. WILLSON,
H. B. WILLSON.