

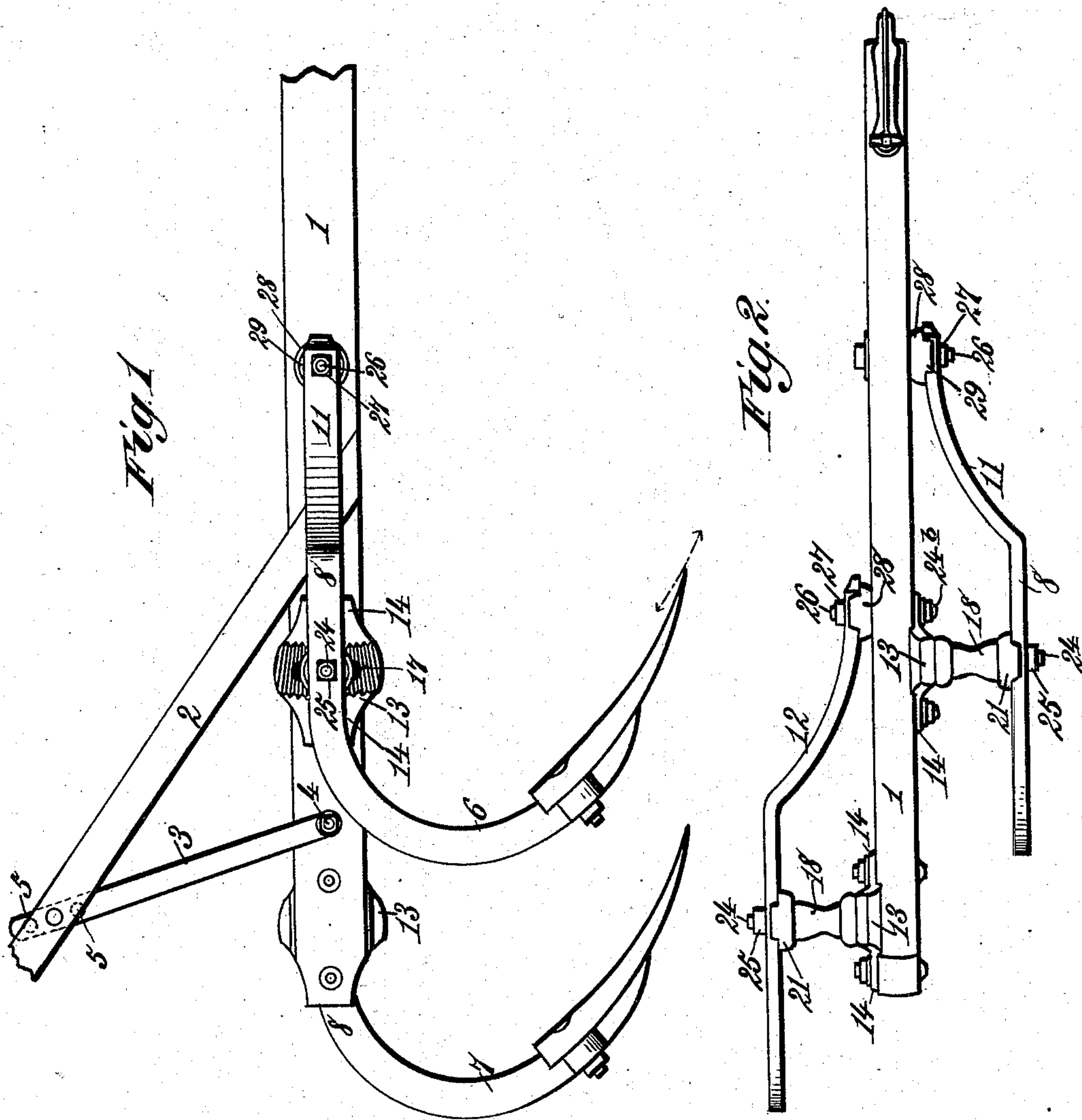
(No Model.)

3 Sheets—Sheet 1.

G. W. LONG & W. S. FISHER.
 DUPLEX SHOVEL PLOW.

No. 562,311.

Patented June 16, 1896.



Witnesses.
Robert Everett,
Dennie Sumby.

Inventors.
George W. Long.
William S. Fisher.
By James L. Norris.
Atty.

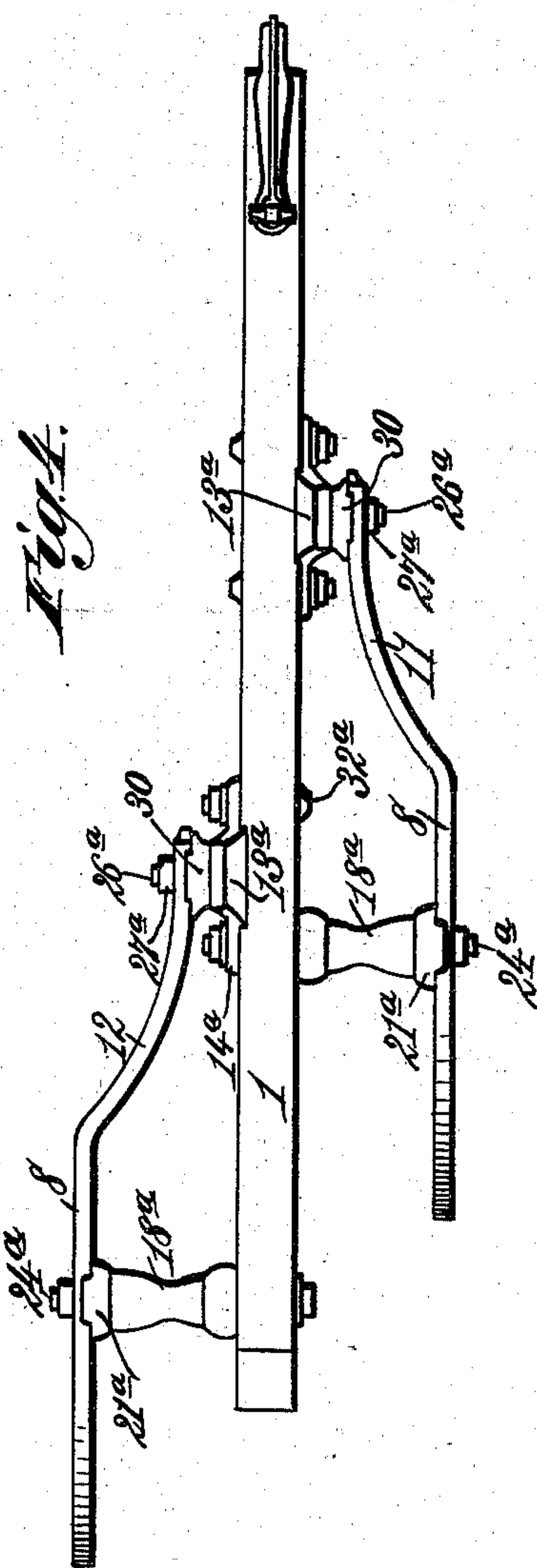
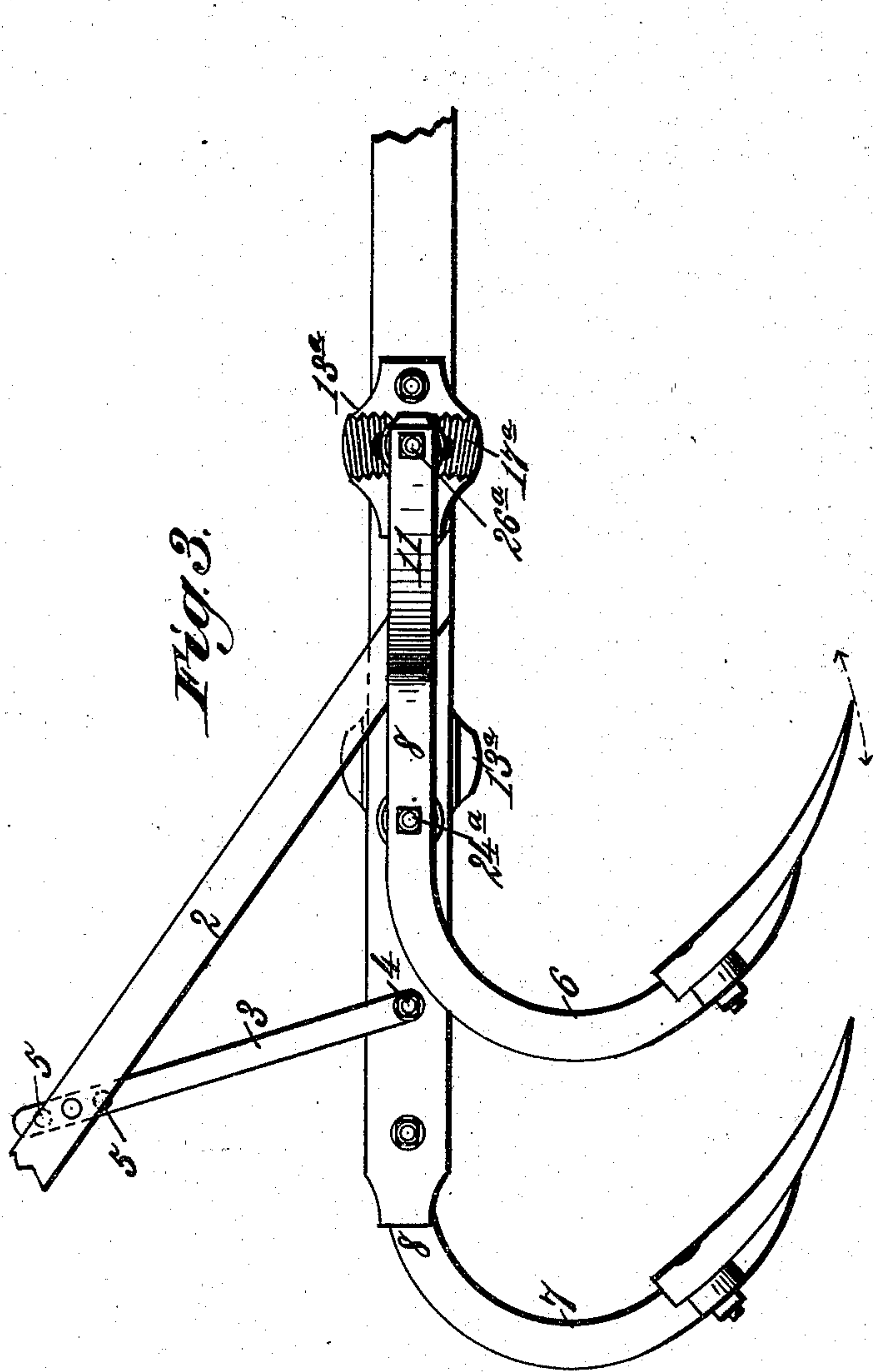
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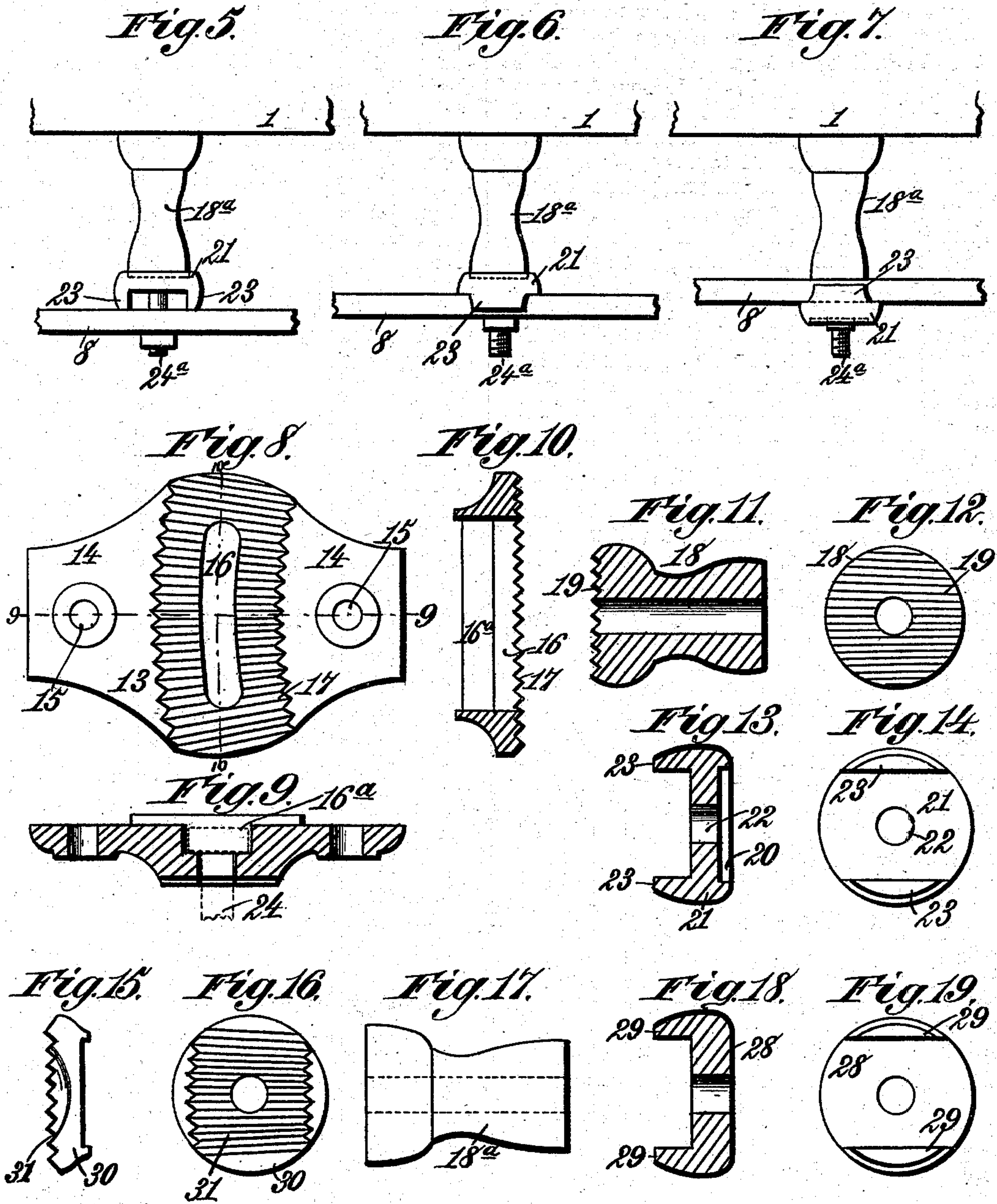
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UNITED STATES PATENT OFFICE.

GEORGE W. LONG AND WILLIAM S. FISHER, OF LEWISBURG, TENNESSEE.

DUPLEX SHOVEL-PLOW.

SPECIFICATION forming part of Letters Patent No. 562,311, dated June 16, 1896.

Application filed September 23, 1895. Serial No. 563,382. (No model.)

To all whom it may concern:

Be it known that we, GEORGE W. LONG and WILLIAM S. FISHER, citizens of the United States, residing at Lewisburg, in the county of Marshall and State of Tennessee, have invented new and useful Improvements in Duplex Shovel-Plows, of which the following is a specification.

This invention relates to that class of plows wherein shares or shovels are carried by plow-feet of a form similar to ordinary drag-bars and adjustably mounted on the sides of a plow-beam from which the guiding-handles extend.

The objects of our invention are to provide new and improved means for connecting the curved plow-feet to the plow-beam in such manner that it is possible to secure a wide range of lateral adjustments of the plow-feet to regulate the width of the plow, in addition to vertical adjustments for regulating the depth of penetration in the soil.

The invention also has for its object to provide novel, simple, and efficient means for obtaining a triple adjustment of the front end of each plow-foot relatively to the plow-beam to accommodate the lateral bodily adjustment of the rear portion of the plow-foot in changing the distance between the share, or plow, at one side, and the share or plow at the opposite side of the plow-beam.

The invention also has for its object to provide novel, simple, and efficient means for laterally and vertically adjusting the rear end portion of each plow-foot to vary the distance between the shares or plows and regulate their depth of penetration in the soil.

The chief features of the invention reside in a vertically-slotted base-plate, bolted or otherwise secured to the side of the plow-beam, and provided with a plurality of corrugations arranged one above another, preferably in the arc of a circle of considerable radius, a spreader-block having ribs or teeth at its inner end to engage the corrugations of the base-plate, a reversible spreader-block washer adapted to bear against the outer end of the spreader-block and having a fork to either bear against the side of or to embrace the plow-foot, and a bolt passing through the plow-foot, the washer, and the spreader-block, and vertically adjustable in the slot of the

base-plate, whereby the plow-foot can be readily raised or lowered in a vertical plane and also adjusted laterally to a greater or less distance from the side of the plow-beam, all as will more fully hereinafter appear.

The invention also involves other devices and features of construction which will be hereinafter described in detail and specifically pointed out in the claims, reference being made to the accompanying drawings, in which—

Figure 1 is a side elevation of a duplex shovel-plow embodying our invention, a portion of the plow-beam and portions of the guiding-handles being broken away. Fig. 2 is a top plan view of the same, omitting the guiding-handles to facilitate the illustration of the novel features. Fig. 3 is a broken side elevation similar to Fig. 1, showing a modified arrangement of the parts for adjusting the plow-feet. Fig. 4 is a plan view of the part shown in Fig. 3, omitting the handles. Figs. 5, 6, and 7 are detail plan views showing the manner in which the spreader-block washer is susceptible of being applied for obtaining a triple adjustment of the plow-foot relatively to the side of the plow-beam. Fig. 8 is a front side elevation of the vertically slotted and corrugated base-plate. Fig. 9 is a sectional view taken on the line 9 9, Fig. 8, showing in dotted lines a portion of the bolt adapted to be raised and lowered in the slot of the base-plate. Fig. 10 is a sectional view taken on the line 10 10, Fig. 8. Fig. 11 is a longitudinal sectional view of one of the spreader-blocks which engages the corrugated base-plate. Fig. 12 is a view looking at the corrugated end of the spreader-block shown in Fig. 11. Fig. 13 is a sectional view of the spreader-block washer used in connection with a spreader-block shown in Fig. 11. Fig. 14 is a plan view looking at the forked side of the spreader-block washer shown in Fig. 13; and Figs. 15, 16, 17, 18, and 19 are detail views hereinafter fully described in detail.

In order to enable those skilled in the art to make and use our invention, we will now describe the same in detail, referring to the drawings, wherein—

The numeral 1 indicates the plow-beam having handle-bars 2, connected by a brace-rod 3 with the plow-beam. The end of the brace-

rod 3 is secured by a bolt 4 to the plow-beam, and the upper end of the brace-rod is provided with a plurality of perforations 5, for the purpose of adjustable connection with the guiding-handles to regulate the height of the latter. The brace-rod is connected with the guiding-handles by bolts passing through any of the perforations 5 into the handles, as will be obvious.

The numerals 6 and 7 indicate the plow-feet, which are curved into segmental form and are constructed with horizontally-arranged members 8, curved inward at their front ends, as at 11 and 12, Fig. 2.

The numerals 13 indicate the two base-plates, each of which is formed with forward and rearward projecting ears 14, having bolt-holes 15, Fig. 8, for the passage of bolts, by which each base-plate is rigidly secured to one side of the plow-beam. The base-plate is constructed at its center with a vertically-arranged slot 16, formed in the arc of a circle of considerable radius, and the rear side of the base-plate is formed with a vertically-elongated chamber or recess, as at 16^a, Figs. 9 and 10, adapted to receive the head of a bolt, as will hereinafter appear, so that while the bolt is held in engagement with the base-plate the bolt can be raised or lowered in the slot 16.

The front face of each base-plate is also constructed with a plurality of approximately horizontal corrugations 17, arranged one above the other, and the whole series being preferably located in the arc of a circle, as will be understood by reference to Fig. 8.

The horizontal arms 8 of the plow-feet are held somewhat widely separated from the sides of the plow-beam through the medium of spacing-blocks 18. (Best seen in Figs. 2 and 11.) The inner end of each spacing-block is constructed with a plurality of ribs or teeth 19, Fig. 11, adapted to engage any of the corrugations 17 of the base-plate. The outer end of each spacing-block is adapted to enter into a circular recess 20, formed in one side of a spreader-block washer 21. (Best seen in Figs. 13 and 14.) The spreader-block washer 21 contains a central orifice 22, and the side opposite the circular recess 20 is bifurcated or forked, to provide two projecting arms 23, which are adapted to embrace one of the horizontal portions 8 of a plow-foot, as best seen in Fig. 2, or to bear directly against the inner side of the portion 8, as will hereinafter appear.

A bolt 24, Figs. 1, 2, and 9, is arranged in operative connection with the base-plate 13. For this purpose the bolt is constructed at its inner end with a head which lies in the vertically-elongated chamber or recess 16^a, as best seen in Fig. 9, so that while the inner end of this bolt is held in engagement with the base-plate, the bolt can be raised and lowered in the vertically-arranged slot 16 of the base-plate. The bolt 24 extends through the slot 16, and through the spreader-block 18, the spreader-block washer 21, and the horizontally-arranged member 8 of the plow-foot.

The outer end of the bolt is provided with a nut 25, so that the parts can be clamped together, and thus rigidly hold the plow-foot in any position to which it is adjusted. By loosening the nut 25 and disengaging the ribbed or toothed end 19 of the spreader-block 18 from the corrugated portion 17 of the base-plate, the plow-foot can be raised or lowered in a vertical plane and secured in different positions of vertical adjustment by engaging the ribbed or toothed end of the spreader-block with the corrugated portion 17 of the base-plate and tightening the nut 25. As the plow-foot is raised or lowered, the bolt 24 is correspondingly raised or lowered in the vertically-arranged slot 16 of the base-plate 13; but when the parts are clamped by tightening the nut 25, to hold the plow-foot in the position to which it has been adjusted, the head on the inner end of the bolt 24 is firmly clamped in the chamber 16^a of the base-plate, as will be obvious.

The front extremity of the inwardly-curved part 11 of each plow-foot is connected with the plow-beam through the medium of a bolt 26, having a nut 27, bearing against the front end of the part 11, and between the latter and the plow-beam is located a washer 28, having one side flattened, and the opposite side bifurcated or forked, to provide two arms or members 29, adapted to embrace the front end of the part 11 of the plow-foot, as best seen in Figs. 1 and 2. The washer 28 is susceptible of being rotated, so that the extremities of the arms or members 29, which constitute the block of the washer, can lie directly against the inner end of the part 11, and thereby serve to hold the front end of the plow-foot at a greater distance from the side of the plow-beam. Further, by removing the nut 27, detaching the washer 28, and placing it on the bolt in front of the front extremity of the plow-foot, the said front extremity can be shifted against the plow-beam for the purpose of securing another adjustment of the plow-foot.

It will be obvious that the construction of the forked washer 28 renders it possible to obtain a triple lateral adjustment of the front end of the plow-foot with relation to the side of the plow-beam. The spreader-block washers 21 are also susceptible of the same adjustments, as will be understood by reference, for example, to Figs. 5, 6, and 7; that is to say, each spreader-block washer can be so arranged that the arms or members 23, constituting the fork thereof, can be caused to lie against the inner side of the member 8 of the plow-foot, as in Fig. 5, or the forked parts of the washer can be caused to embrace the member 8, as in Fig. 6, or the washer can be detached and applied to the outer side of the member 8, as in Fig. 7, thereby securing a triple lateral adjustment of the member 8 with relation to the side of the plow-beam, as will be obvious.

The adjustable and reversible forked wash-

ers 21 and 28 render it possible to secure a wide range of lateral adjustment of the forward portion of each plow-foot, and to maintain the forward portion of the plow-foot approximately parallel with the plow-beam, so that the desired adjustments are readily effected without throwing the body portion of the plow-foot out of the proper relation with the side of the plow-beam.

The corrugated vertically-slotted base-plates 13, in connection with the spreader-blocks 18, the bifurcated washers 21 and 28, and the bolts 24 and 26, render it possible to secure a wide range of lateral adjustments of the plow-feet to regulate the width of the plow, in addition to vertical adjustments to regulate the depth of penetration of the shares or shovels in the soil.

We regard the specific construction of the forked washers, in connection with the bolts, plow-feet, and spreader-blocks, as important elements, in that the combination provides very simple means for securing all necessary adjustments of the plow-feet to suit whatever conditions may be required. Various contrivances for this purpose have been heretofore proposed, but we regard the simple means described and shown as possessing many advantages over the more complicated devices heretofore proposed for a similar purpose.

In Figs. 1 and 2 of the drawings we illustrate the vertical adjustment of the plow-feet as secured by the arrangement of the vertically-slotted and corrugated base-plates 13 and spreader-blocks 18, in rear of the attachments at the front ends of the plow-feet. This arrangement of the parts is preferred, but the same results can be accomplished by the rearrangement of substantially the same parts, as illustrated in Figs. 3 and 4. In these figures the vertically-slotted and corrugated base-plates 13^a, which are in all respects the same as the base-plates 13, are arranged in operative connection with the front extremities of the inwardly-curved parts 11 and 12 of the horizontal members 8 of the plow-feet, while the spreader-blocks 18^a and forked spreader-block washers 21^a are arranged in operative connection with the horizontal members 8 of the plow-feet. With the parts arranged as shown in Figs. 3 and 4, we employ corrugated washers 30, (best seen in Figs. 15 and 16,) which are constructed with ribs or teeth 31, to engage any of the corrugations 17^a of the base-plates 13^a. The corrugated washers 30 are designed to embrace the front extremities of the curved parts 11 of the plow-feet, and are clamped to the base-plates 13^a through the medium of nuts 27^a, arranged on bolts 26^a.

In the arrangement shown in Figs. 3 and 4 the bolts 24^a, on which the spreader-blocks 18^a are mounted, pass through the plow-feet, the plow-beam, and through one of the ears 14^a, of the vertically-slotted and corrugated base-plates 13^a, while the bolt 32^a passes

through the plow-beam and through the other ear of the base-plate. The bolts 26^a, for clamping the front ends of the plow-feet in engagement with the base-plates 13^a, are engaged at their inner ends with said base-plates in the same manner as is described with reference to the heads of the bolts 24, and as shown in Fig. 9.

In the arrangement shown in Figs. 1 and 2 the bolt 24^b passes through one of the ears of the front corrugated base-plate 13, and on this bolt is mounted the forked washer 28, which coöperates with the front extremity of the curved part 12 of the plow-foot lying at the left-hand side of the plow-beam. With the parts arranged as shown in Figs. 1 and 2, when the plow-feet are adjusted vertically, they can turn on the bolts 24^b and 26 as centers; but with the parts arranged as shown in Figs. 3 and 4, when the plow-feet are adjusted to raise or lower the shares or shovels, the plow-feet turn on the bolts 24^a as centers.

The vertically-slotted and corrugated base-plates are susceptible of being cast into the form shown, and likewise the spreader-blocks and the forked washers may also be cast, whereby the various parts, necessary for adjusting the plow-feet, can be very economically manufactured, and can be renewed whenever occasion demands.

Whenever the horizontal members 8 of the plow-feet (shown in Figs. 1 and 2) are adjusted away from the sides of the plow-beam by turning the forked spreader-block washers 21, and causing the arms or members constituting the forks to lie against the inner sides of the members 8, the front ends of the plow-feet can also be adjusted away from the plow-beam by loosening the nuts 27 and rotating the forked washers 28, so that the arms or members 29, constituting the forks, can lie against the inner sides of the front ends of the plow-feet, thereby enabling the plow-feet to be adjusted laterally while they are maintained approximately parallel with the plow-beam. The same result is attained through the medium of the forked washers when the plow-feet are adjusted toward the sides of the plow-beam.

It will be observed that the forked washers, adapted to be used in the manner explained, secure a triple lateral adjustment of each plow-foot relatively to the side of the plow-beam, as will be clearly understood by reference to Figs. 5, 6, and 7. These remarks apply to the spreader-block washers 21 as well as to the plain washers 28.

The construction and combination of parts illustrated and described render it possible to exactly set the plow-feet to any desired position, so that the shares or shovels plow lightly and freely shed the soil.

The various parts necessary to secure the adjustments specified are simple and economical in construction, and do not greatly increase the cost of the plow, while they render the latter superior to ordinary duplex

shovel-plows having more complicated devices for adjusting the plow-feet laterally and vertically. The adjustments of the plow-feet can obviously be effected rapidly and conveniently, so that comparatively little time is lost in changing the width of the plow as a whole, or varying the depth of penetration in the soil.

The construction of the forked washers 28 is best observed by reference to Figs. 18 and 19, and in Fig. 17 is illustrated a detail side elevation of one of the spreader-blocks 18^a.

Our invention provides efficient and simple devices for connecting the plow-feet to the plow-beam, in such manner that a wide range of lateral adjustments, in addition to vertical adjustments, can be very conveniently obtained.

Having thus described our invention, what we claim is—

1. The combination with a plow-beam, and a plow-foot, of a vertically-slotted and corrugated base-plate secured to the plow-beam, a spreader-block having ribs or teeth at its inner end to engage the corrugations of the base-plate, a reversible spreader-block washer adapted to bear against the outer end of the spreader-block and having a fork to bear either against the side of or to embrace the plow-foot, and a bolt passing through the plow-foot, the washer, and the spreader-block, and having its inner end engaged with and adjustable in the vertically-slotted part of the corrugated base-plate, substantially as described.

2. The combination with a plow-beam, and a plow-foot carrying a share or shovel, and provided with a horizontally-extending member, of a vertically-slotted base-plate secured to the side of the plow-beam and provided with a plurality of corrugations arranged one above another, a spreader-block having ribs or teeth at its inner end to engage the corrugations of the base-plate, a spreader-block washer adapted to be placed at either side of the plow-foot to adjust it laterally, and a bolt passing through the plow-foot, the washer, and the spreader-block, and having its inner end engaged with and adjustable in the vertically-slotted part of the corrugated base-plate, substantially as described.

3. The combination with a plow-beam, and a plow-foot, of a washer having one side adapted to bear against the plow-beam, and the other side bifurcated or forked to provide two arms or members which are adapted to either bear against the side of or to embrace the plow-foot, and a bolt extending through the plow-foot and the washer and connected with the plow-beam, substantially as described.

4. The combination with a plow-beam, and a plow-foot having a horizontally-arranged member curved inward at its forward end portion, of a reversible bifurcated or forked

washer in operative connection with the front end of the plow-foot for adjusting the latter to or from the plow-beam, a vertically-slotted base-plate secured to the plow-beam and provided with a plurality of corrugations arranged one above another, a spreader-block having ribs or teeth at its inner end to engage the corrugations of the base-plate, a reversible spreader-block washer adapted to bear against the outer end of the spreader-block and having a fork to bear either against the side of or to embrace the plow-foot, and a bolt passing through the plow-foot, the bifurcated washer, and the spreader-block, and adjustable vertically in engagement with the slotted base-plate, substantially as described.

5. The combination with a plow-beam, and a plow-foot having a horizontally-arranged member curved inwardly at its forward end, of a reversible bifurcated or forked washer in operative connection with the front extremity of the said curved part, a bolt engaged with the plow-beam and passing through said washer to adjust the forward end of the plow-foot laterally, a vertically-slotted base-plate secured to the side of the plow-beam and provided with a plurality of corrugations arranged one above another in the arc of a circle, a spreader-block having ribs or teeth at its inner end to engage the corrugations of the base-plate, a reversible spreader-block washer having in one side a recess to receive the opposite end of the spreader-block and bifurcated or forked at the other side to bear either against the plow-foot or to embrace the same for adjusting the plow-foot laterally, and a bolt passing through the plow-foot, the washer, and the spreader-block, and vertically adjustable in the slot of the base-plate, substantially as described.

6. The combination of a vertically-slotted base-plate, provided on its front side with a plurality of corrugations, and in its rear side with a chamber or recess to receive a bolt which projects through the slot of the base-plate, so that the bolt is held in engagement therewith, but is susceptible of being raised and lowered, a spreader-block having ribs or teeth in its inner end to engage the corrugations of the base-plate, a spreader-block washer arranged at the outer end of the spreader-block, a plow-foot, and a bolt extending through the plow-foot, the spreader-block washer, and the spreader-block, and engaged with the chamber or recess in the rear side of the vertically-slotted base-plate, substantially as described.

In testimony whereof we have hereunto set our hands in presence of two subscribing witnesses.

GEORGE W. LONG.
WILLIAM S. FISHER.

Witnesses:

ROBT. L. ADAMS,
WILLS E. TALLY.