G. B. CAMPBELL.

DITCH DIGGING MACHINE.

APPLICATION FILED FEB. 26, 1919.

1,333,158.

Patented Mar. 9, 1920.

2 SHEETS—SHEET 1.

Fig. 1.

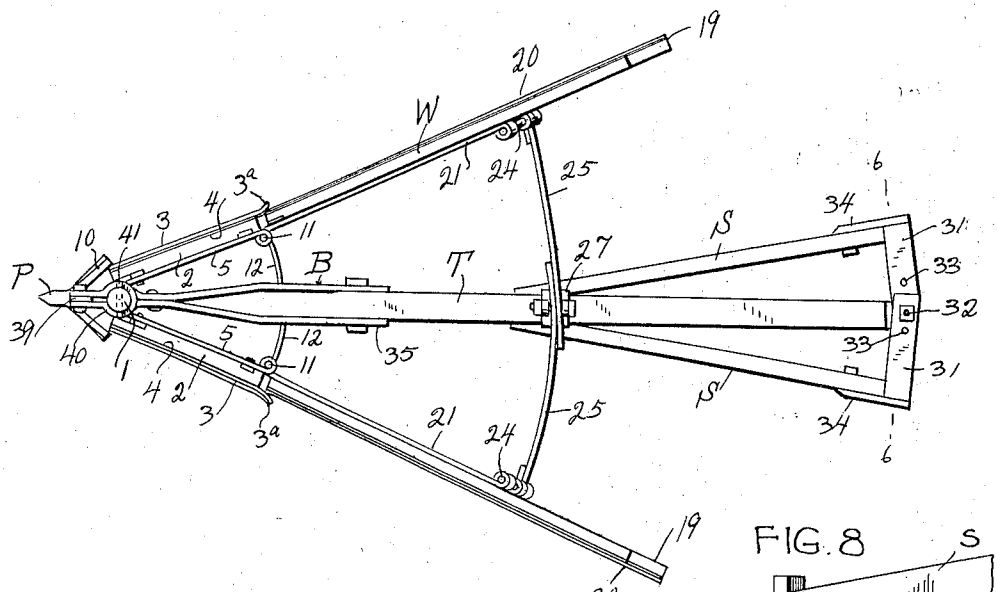


FIG. 8

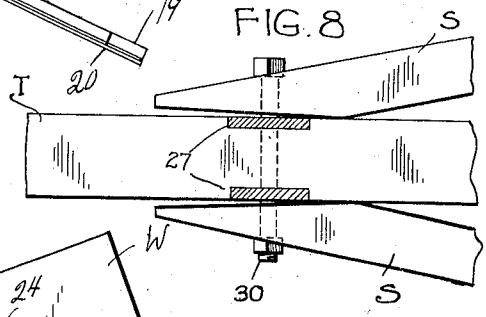
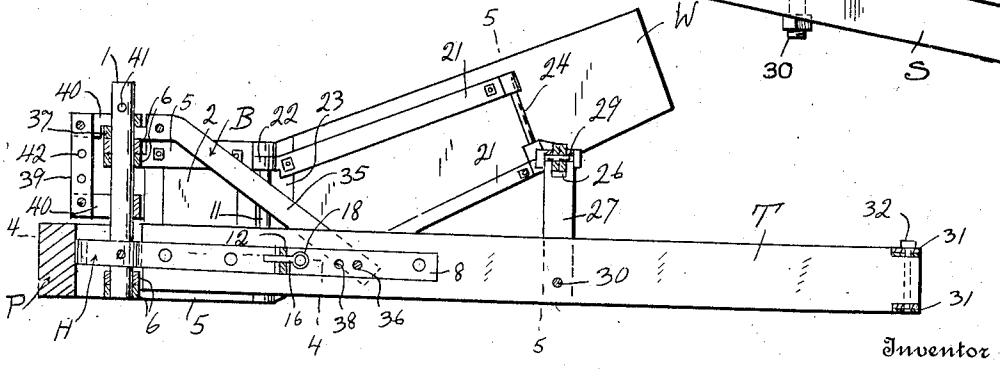


Fig. 2.



Inventor

G. B. Campbell

By Watson E. Coleman

Attorney

G. B. CAMPBELL.

DITCH DIGGING MACHINE.

APPLICATION FILED FEB. 26, 1919.

1,333,158.

Patented Mar. 9, 1920.

2 SHEETS—SHEET 2.

Fig. 3.

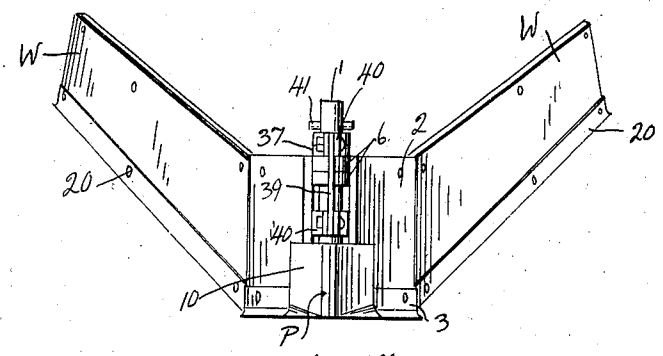


Fig. 4.

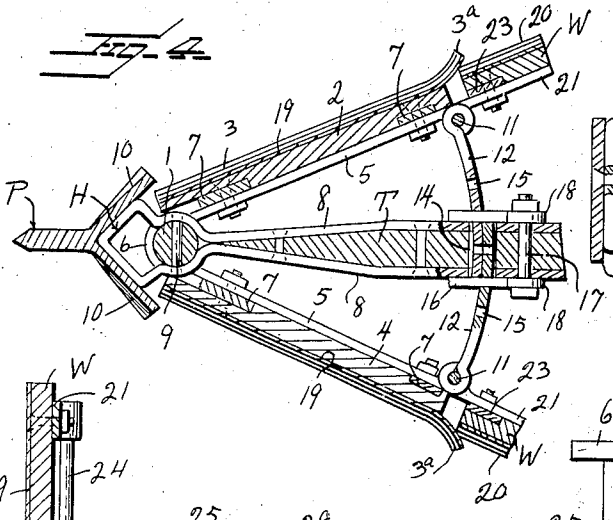


Fig. 6.

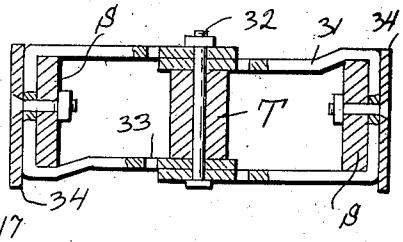


Fig. 7.

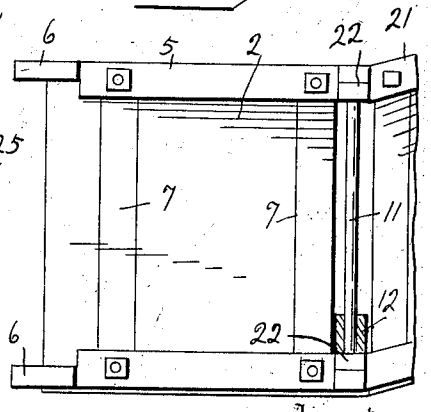
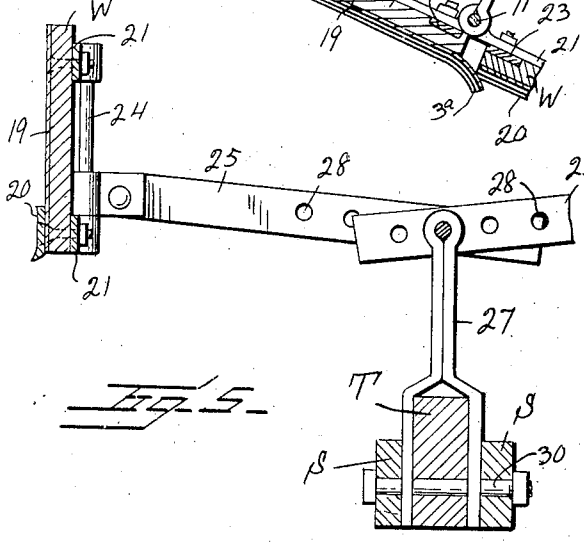


Fig. 5.



Inventor

G. B. Campbell

By Watson E. Coleman

Attorney

UNITED STATES PATENT OFFICE.

GEORGE B. CAMPBELL, OF FORT MORGAN, COLORADO, ASSIGNOR OF ONE-HALF TO ARLINGTON TAYLOR, OF FORT MORGAN, COLORADO.

DITCH-DIGGING MACHINE.

1,333,158. Specification of Letters Patent. Patented Mar. 9, 1920.

Application filed February 26, 1919. Serial No. 279,321.

To all whom it may concern:

Be it known that I, GEORGE B. CAMPBELL, a citizen of the United States, residing at Fort Morgan, in the county of Morgan and State of Colorado, have invented certain new and useful Improvements in Ditch-Digging Machines, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to certain improvements in ditch digging machines, and has relation more particularly to a device of this general character especially designed and adapted for use in the production of laterals or the like, and it is an object of the invention to provide a device of this general character having novel and improved means whereby the depth of the digging action may be controlled by the hitch therewith of the drive rigging.

It is also an object of the invention to provide a device of this general character having novel and improved means whereby the width of the bottom of the ditch may be regulated, and which means comprises two lateral swinging wings which are also capable of adjustment to throw more dirt on one side of the ditch than the other and thereby giving more cutting surface on the side where the stronger bank is desired.

An additional object of the invention is to provide a novel and improved device of this general character including two lateral swinging wings operating to regulate the slope of the ditch banks and to produce a uniform width between the banks, and which means also operate to clean out grass, weeds, or the like which would otherwise have to be plowed out or mowed down.

A still further object of the invention is to provide a novel and improved device of this general character including a forward or plow carrying member having extending rearwardly therefrom an elongated tail piece and wherein an adjustable connection is had between the plow carrying member and the tail piece which affords an additional means whereby the depth of the cutting action may be regulated.

An additional object of the invention is to provide a novel and improved device of this character including a front or plow carrying member having engaged therewith a rearwardly directed tail member and which tail member serves to prevent side movement and otherwise maintaining the device rigid.

Another object of the invention is to provide a novel and improved device of this general character embodying a front or plow carrying member having an elongated and rearwardly directed tail piece wherein said tail piece is provided with rearwardly diverging side wings adjustable relative to the tail member to snugly or exactly fit within the bottom of the edge made by the plow carrying member so that the device in its entirety is prevented from veering.

A more specific object of the invention is to provide a novel and improved device of this general character including a front or plow carrying member provided with a rearwardly directed elongated tail member and wherein laterally adjustable side wings are engaged with the front or plow carrying member together with a brace adjustably connecting the front or plow carrying member and the tail member so that when it is desired to deepen a ditch below what the device will make in its normal or natural relation, it is only necessary to adjust the brace to raise the wings so as to make the proper slope for the ditch sides, push the dirt out at the proper angle and prevent the dirt returning behind the ends or over the tops of the wings, and which adjustment is necessary because the wings should be elevated much higher for a deep ditch than for a shallow ditch.

The invention consists in the details of construction and in the combination and arrangement of the several parts of my improved ditch digging machine whereby certain important advantages are attained and the device rendered simpler, less expensive and otherwise more convenient and advantageous for use, as will be hereinafter more fully set forth.

The novel features of my invention will hereinafter be definitely claimed.

In order that my invention may be the better understood, I will now proceed to describe the same with reference to the accompanying drawings, wherein:

Figure 1 is a view in top plan of a ditch digging machine constructed in accordance with an embodiment of my invention;

Fig. 2 is a view in side elevation of the ditch digging machine as disclosed in Fig. 1

with certain of the parts removed and other of the parts shown in section;

Fig. 3 is a view in front elevation of the device as illustrated in Fig. 1;

Fig. 4 is an enlarged sectional plan view taken substantially on the line 4—4 of Fig. 2;

Fig. 5 is an enlarged fragmentary sectional view taken substantially on the line 5—5 of Fig. 2;

Fig. 6 is an enlarged sectional view taken substantially on the line 6—6 of Fig. 1;

Fig. 7 is an enlarged fragmentary view partly in elevation and partly in section illustrating the hinged connection between the front or plow carrying member and a side wing and Fig. 8 is an enlarged fragmentary view in plan showing the connection of the supplemental wings with the tail member.

As disclosed in the accompanying drawings, 1 denotes a vertically disposed post with which is engaged side members 2. Each of the side members consists of a plate of suitable material having secured to the lower marginal portion of its outer face a cutting or scraping blade 3. The side member 2 is preferably of wood and has disposed over its outer face a protecting plate or sheet 4 of metal.

Secured to the inner face of each of the side members 2 adjacent the upper and lower marginal portions thereof are metallic straps 5 which extend beyond the opposite ends of the member and the forward end portions of said straps are provided with the eyes 6 which surround the post 1 and whereby the member 2 is capable of swinging movement in a lateral direction for a purpose which will hereinafter be more particularly referred to. Adjacent the opposite ends of each of the members 2 and connecting the extremities of the straps 5 are the vertically disposed reinforcing or bracing straps 7 also preferably of metal and which are embedded within the member 2 as is clearly illustrated in Fig. 4.

T denotes an elongated tail member arranged rearwardly of the post 1 and secured to the opposite side faces of said member T are the straps 8 which terminate in advance of the member T and with their extremities preferably integrally connected. The extended portions of the straps 8 constitute a substantially V-shaped head H with the straps 8 immediately adjacent the head H contacting with the post 1 and keyed or secured to said post by the rivet 9 or the like.

The head H is secured to the rearwardly diverging wings 10 of the plow P. The wings 10 are of a length to partially overlie the members 2 to prevent dirt accumulating in advance of the blades 3.

It is to be particularly noted that the plow P comprises a vertically disposed entering or cutting edge and that the bottom of said plow P is normally a slight distance below the tail member T.

The rear end portions of the straps 5 are secured to and support the vertically disposed posts 11 and pivotally engaged with said posts are the inwardly directed arcuate arms 12 which extend through an opening 14 produced in the member T and the straps 8. The inner end portion of each of the arms 12 is provided with a series of openings 15 through which is directed a key 16 so that the members 2 may be effectually locked in their desired lateral adjustment relative to the member T and in accordance with the width of the ditch or lateral to be produced. The keys 16 are held against displacement by a bolt 17 directed through the member T in the straps 8 and the eyes 18 arranged at similar ends of the keys 16.

Coacting with the members 2 are the side wings W preferably formed of wood and overlying the outer face of each of said side wings is a metallic plate or facing 19, while the lower marginal portion of said wing has secured to the outer face thereof the cutting member or scraper 20 extending the entire length thereof. Each of the wings W is disposed upwardly and rearwardly on a predetermined incline and secured to the inner face of each of the wings adjacent the upper and lower margins thereof are the straps 21 and the forward end of each of said straps 21 is provided with an eye 22 through which a post 11 is directed whereby said wing is supported for lateral swinging movement, as the occasions of practice may require. 23 denotes a vertically disposed strap connecting the forward end portions of the straps 21 and serves as a brace or strengthening means. The rear ends of the straps 21 are connected by the vertically or transversely disposed post 24 and pivotally engaged with said post 24 is an end portion of an inwardly directed arcuate arm 25.

The arms 25 of the wings W extend within a kerf 26 formed in the upper end portion of an upstanding post 27 carried by the tail member T and each of said arms are provided with a longitudinally spaced series of openings 28 through which is disposed a removable bolt 29 carried by the post 27 and intersecting the kerf 26. By this means the wings W may be effectively locked in their different lateral positions or adjustments.

Although not shown, the upper end portion of the post 27 is adapted to have suitably engaged therewith a seat structure although the driver may stand upon the tail member T in advance or rearwardly of the post 27 as the occasions of practice may require.

Engaged with the opposite sides of the tail member T are the forward end portions of the rearwardly diverging supplemental wings S, and which forward end portions of the wings S are preferably anchored or connected to the member T through the medium of the bolt 30 which also secures the post 27 in applied position upon the tail member T. The rear ends of the wings S have secured thereto the inwardly directed yokes 31 which straddle the rear end portion of the tail member T and are adjustably held to said member T through the medium of the vertically disposed bolt 32. The adjustment of the yokes 31 is afforded through the medium of the openings 33 spaced longitudinally of the yokes and whereby the position of the wings S relative to the members T may be regulated as required. The wings S are adapted to be adjusted relative to the member T so that during a working operation the rear extremities of said wings will contact with the sides of the ditch or lateral so that veering of the device is prevented. To protect the rear extremities of the wings S against wear I find it of advantage to secure to the outer face of each of said wings S at its rear end portion a plate 34 preferably of metal. At this time attention is particularly directed to Figs. 1 and 2 and wherein the rear end portions of the cutting members or scrapers 3 are provided with the outwardly curved extensions 3^a which bridge the spaces between the members 2 and the wings W and which is also true of the plate or sheet 4 so that the entrance of dirt between the members 2 and the wings W is prevented and which would otherwise affect the efficiency of the device.

B denotes a brace member comprising a metallic strap returned upon itself to afford spaced arms 35 having their lower or free extremities overlving the opposite sides of the tail member T and adjustably secured thereto through the medium of the removable bolt 36. The opposite end portion of the member B is provided with the eye 37 surrounding the post 1 above the upper eyes 6. The arms 35 are adjustably engaged with the member T through the medium of longitudinally spaced openings 38 produced in the member T.

As disclosed in the accompanving drawings the members 2 and the wings W are adjusted relative to the tail member T for normal or shallow work. However, when it is desired to produce a deeper ditch the brace B is adjusted relative to the tail member T to raise the wings W so as to make the proper slope of the ditch sides, pushing the dirt out at the proper angle and preventing the return of the dirt behind the ends or over the tops of the wings W. As is believed to be obvious, the wings W must be elevated higher for a deep ditch than when the machine is adjusted for its normal or shallow work.

It is also believed to be obvious that the lateral adjustment of the wings W serve to regulate the slope of the sides of a ditch and that the wings can also be adjusted so as to throw more dirt on one side than on the other and thereby giving more cutting surface on the side where the stronger bank is desired. It will also be obvious that by having one of the wings W lying closely adjacent to the member T the dirt will be thrown to one side of the ditch.

Should the device be working on a hillside, the bottom of the ditch can be made level and the embankment thrown up on the lower side of the ditch by closing the wing W on the high side.

It will also be obvious that my improved device may be readily employed to clean out ditches or laterals as the cutting members or blades 3 and 20 will readily cut all weeds or other plant life within the ditch and it will also be obvious that the device will serve to remove from the ditch or lateral any sediment or refuse which may have collected therein.

39 denotes a vertically disposed pulling bar arranged in advance of the post 1 and provided at its opposite end portions with the rearwardly directed eye members 40 surrounding the post 1 with the upper member 40 above and resting when in its lowermost position on the eye 37 and with the lower eye 40 arranged intermediate the head H and the upper eye 6. The bar 39 is held against upward movement when in its lowermost position by the pin or key 41 disposed through the post above the upper eye 40.

The bar 39 is provided with a series of vertically spaced openings 42 which afford means whereby a draft rigging may be adjustably engaged with said bar. With the draft rigging engaged with the lower portion of the bar 39 the plow P will cut a ditch or lateral of a depth less than should the draft rigging be engaged with the upper portion of the bar. In other words, the point of connection of the draft rigging with the bar 39 serves to regulate the depth of the ditch or lateral produced.

Should it be desired that a slightly deeper ditch or lateral be cut as a result of the draft, the bar 39 may be elevated upwardly of the post 1 or in a position whereby the upper eye member 40 rests upon the key 41. The vertical adjustment of the bar 39 also serves to properly compensate for the draft power applied and particularly when the number of draft animals may be either increased or decreased.

From the foregoing description, it is thought to be obvious that a ditch digging machine constructed in accordance with my invention is particularly well adapted for

use by reason of the convenience and facility with which it may be assembled and operated, and it will also be obvious that my invention is susceptible of some change and modification without departing from the principles and spirit thereof, and for this reason I do not wish to be understood as limiting myself to the precise arrangement and formation of the several parts herein shown in carrying out my invention in practice except as hereinafter claimed.

I claim:

1. A machine of the class described comprising a post, side members engaged therewith for lateral swinging movement, a digging implement carried by the post in advance of the side members, a rearwardly directed tail member connected to the post and positioned between the side members, a vertically disposed pulling bar engaged with the post in advance thereof, said bar being adjustable longitudinally of the post.

2. A ditch digging machine comprising a vertically disposed and substantially straight post, side members engaged therewith for swinging movement, a rearwardly directed tail member positioned at the lower portion of the post, a member secured to the tail member and to the lower portion of the post, said member extending in advance of the post, and a digging implement secured to said extended portion of the member.

3. A ditch digging machine comprising a vertically disposed and substantially straight post, side members engaged therewith for swinging movement, a rearwardly directed tail member positioned at the lower portion of the post, a member secured to the tail member and extending in advance of an end thereof, said member being also secured to the lower portion of the post, said member extending in advance of the post, and a digging implement secured to said extended portion of the member, said ground digging implement comprising a vertically disposed cutting edge and rearwardly diverging wings.

4. A ditch digging machine comprising a vertically disposed and substantially straight post, side members engaged therewith for swinging movement, a rearwardly directed tail member positioned at the lower portion of the post, a member secured to the tail member and extending in advance of an end thereof, said member being also secured to the lower portion of the post, said member extending in advance of the post, and a digging implement secured to said extended portion of the member, said ground digging implement comprising a vertically disposed cutting edge and rearwardly diverging wings, said wings partially overlying the adjacent end portions of the side members.

5. A ditch digging machine comprising a vertically disposed and substantially straight post, side members engaged therewith for swinging movement, a rearwardly directed tail member positioned at the lower portion of the post, a member secured to the tail member and extending in advance of an end thereof, said member being also secured to the lower portion of the post, said member extending in advance of the post, a digging implement secured to said extended portion of the member, and means for holding the side members against swinging movement.

6. A ditch digging machine comprising a vertically disposed and substantially straight post, side members engaged therewith for swinging movement, a rearwardly directed tail member positioned at the lower portion of the post, a member secured to the tail member and extending in advance of an end thereof, said member being also secured to the lower portion of the post, said member extending in advance of the post, a digging implement secured to said extended portion of the member, and a rearwardly disposed brace member interposed between the upper portion of the post and the tail member.

7. A ditch digging machine comprising a vertically disposed and substantially straight post, side members engaged therewith for swinging movement, a rearwardly directed tail member positioned at the lower portion of the post, a member secured to the tail member and extending in advance of an end thereof, said member being also secured to the lower portion of the post, said member extending in advance of the post, a digging implement secured to said extended portion of the member, and outwardly and rearwardly diverging wings carried by the rear portion of the tail member.

8. A ditch digging machine comprising a post, side members engaged therewith, a digging implement carried by the post in advance of the side members, a rearwardly directed tail member connected to the post and positioned between the side members, laterally swinging wings pivotally engaged with the rear end portion of the side members, vertically disposed posts carried by the under faces of the wings adjacent their free ends, inwardly directed arms pivotally engaged with said posts, and means carried by the tail member with which said arms are engaged for holding the wings against lateral swinging movement.

9. A ditch digging machine comprising a post, side members engaged therewith, a digging implement carried by the post in advance of the side members, a rearwardly directed tail member connected to the post and positioned between the side members, laterally swinging wings pivotally engaged

with the rear end portion of the side members, vertically disposed posts carried by the under faces of the wings adjacent their free ends, inwardly directed arms pivotally engaged with said posts, and means carried by the tail member with which said arms are engaged for holding the wings against lateral swinging movement, said wings being on an upward incline with respect to the side members.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

GEORGE B. CAMPBELL.

Witnesses:

STOTON R. STEPHENSON,

ARLINGTON TAYLOR.