Oct. 6, 1953 C. J. RICE 2,654,626

IMPLEMENT FOR CARRYING OUT DIGGING OPERATIONS

Filed Jan. 12, 1948 5 Sheets-Sheet 1

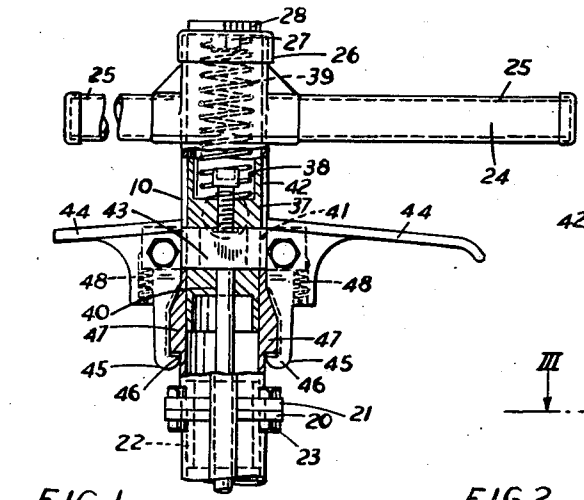


FIG. 1.

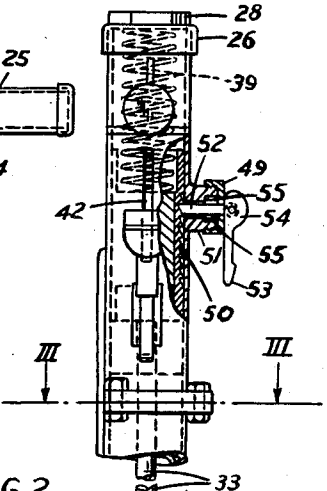
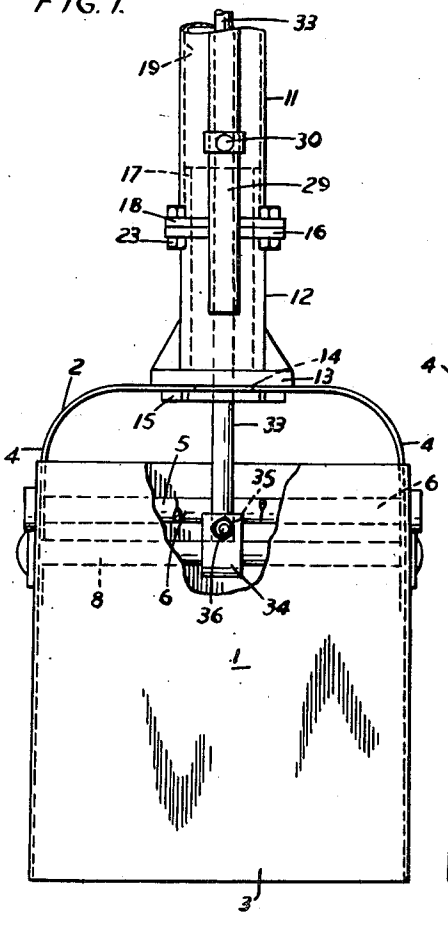
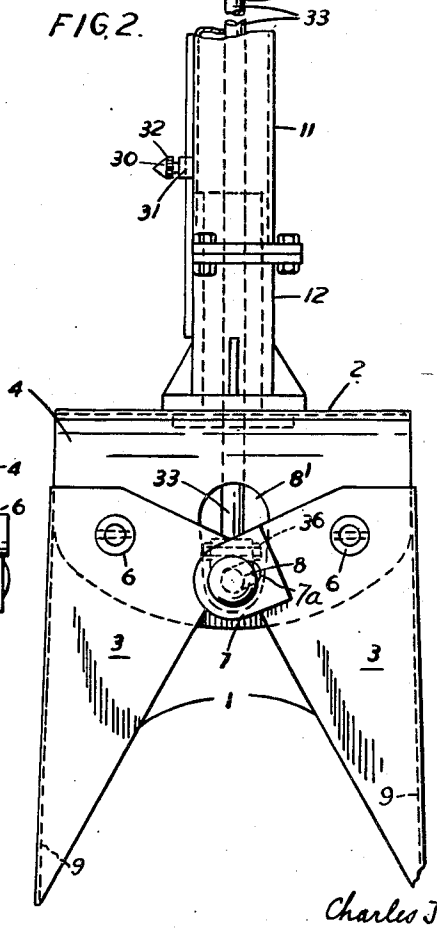


FIG. 2.





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IMPLEMENT FOR CARRYING OUT DIGGING OPERATIONS

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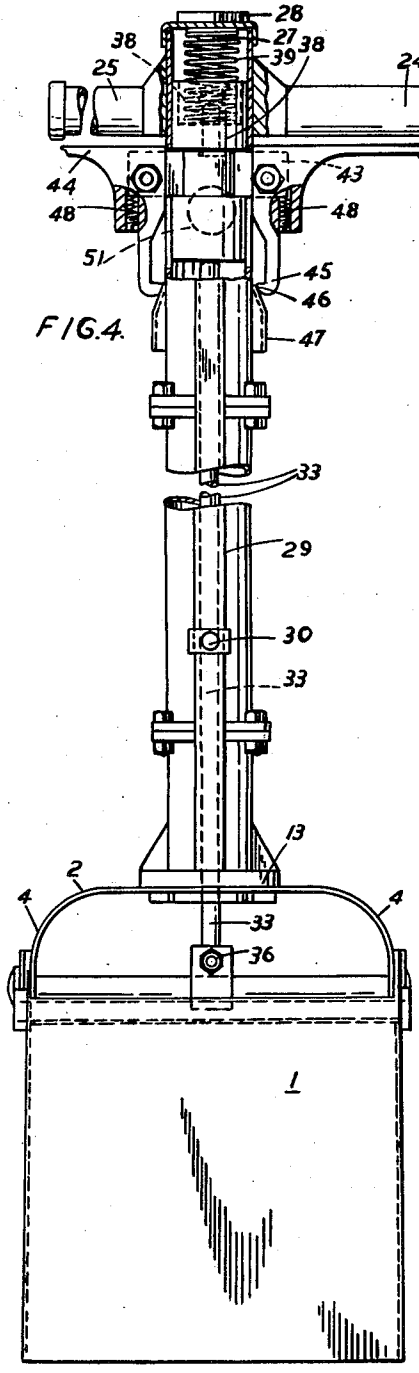


FIG. 4.

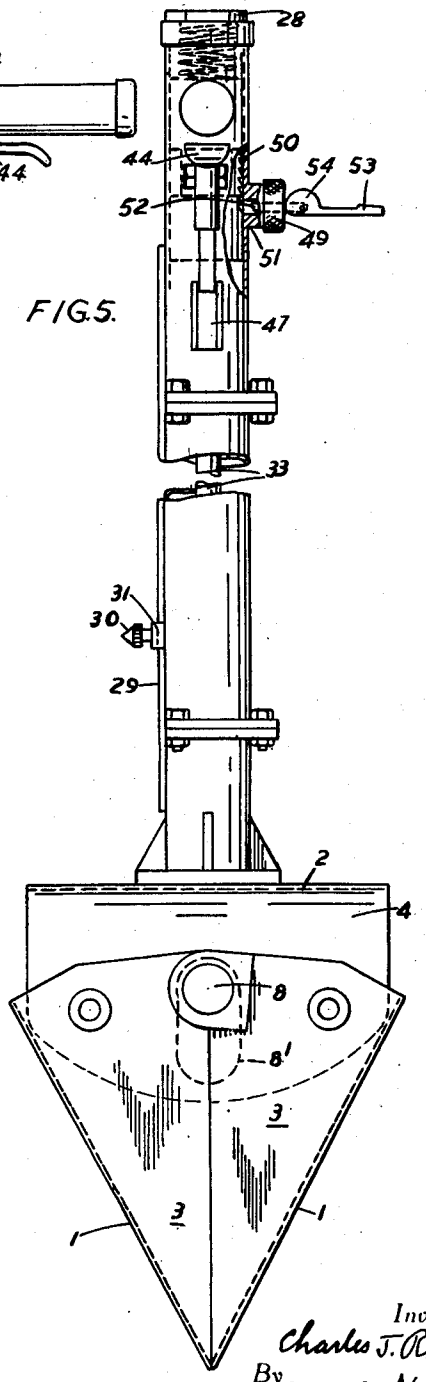


FIG. 5.

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IMPLEMENT FOR CARRYING OUT DIGGING OPERATIONS

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FIG.6.

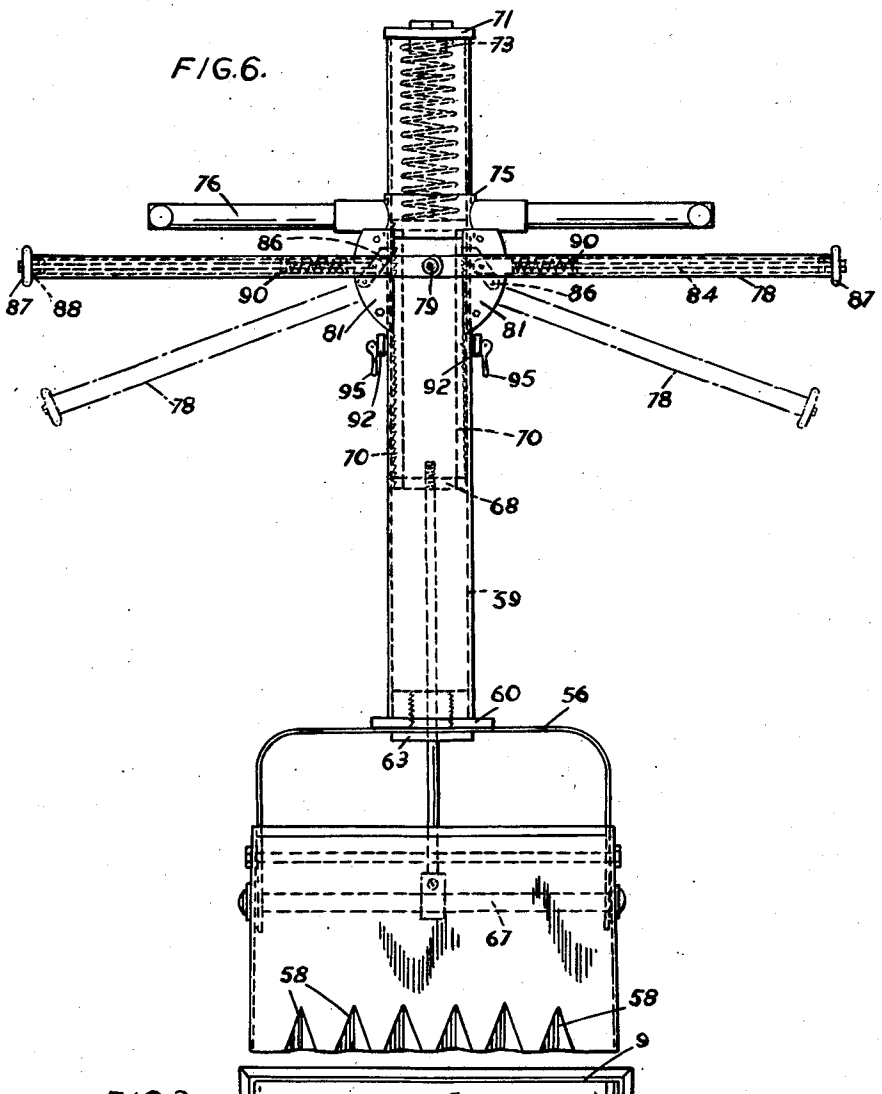
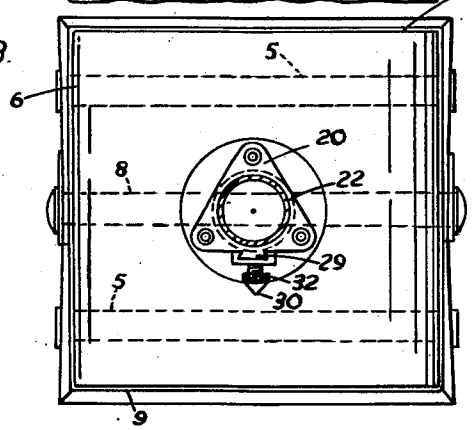


FIG.3.



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IMPLEMENT FOR CARRYING OUT DIGGING OPERATIONS

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FIG. 7.

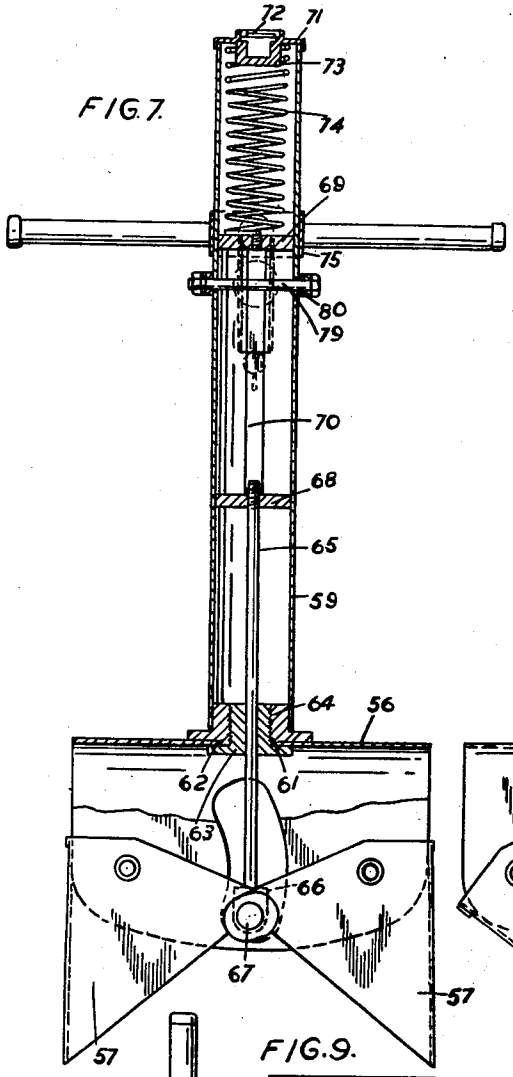


FIG. 8.

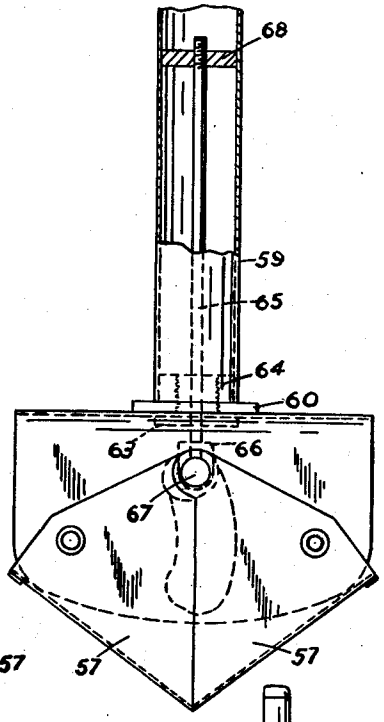
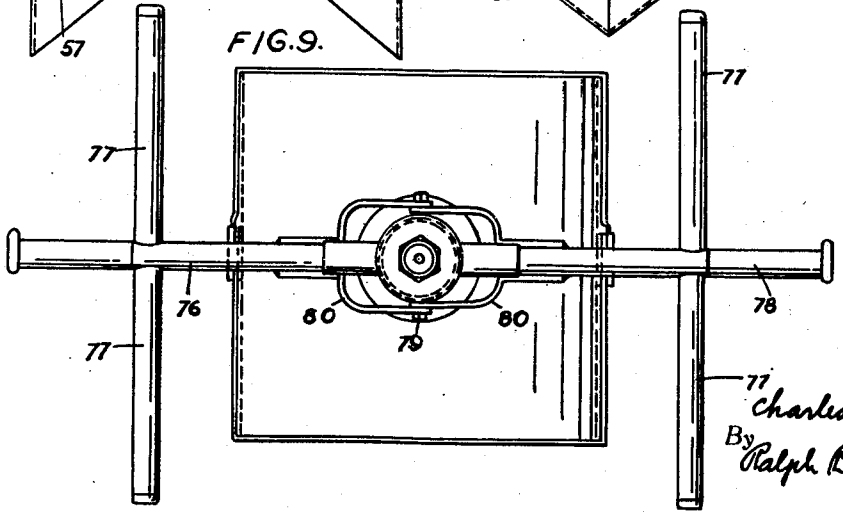


FIG. 9.



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IMPLEMENT FOR CARRYING OUT DIGGING OPERATIONS

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FIG. 10.

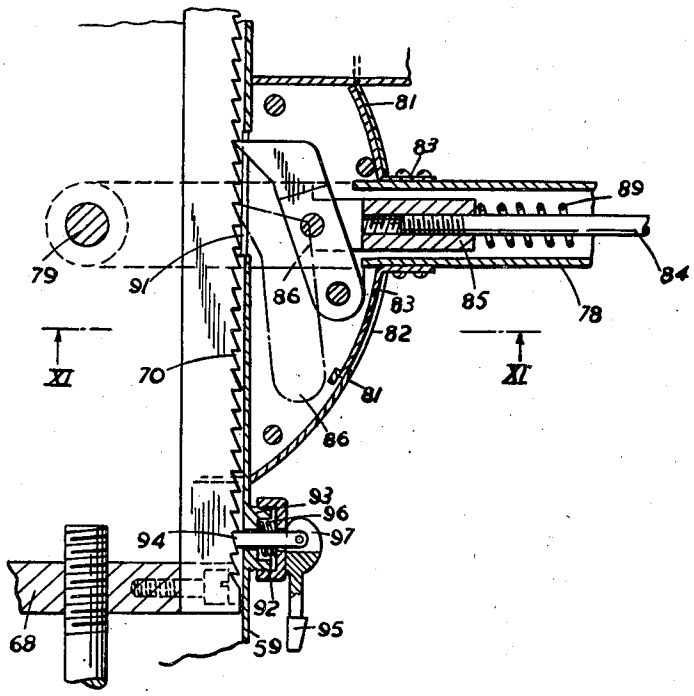
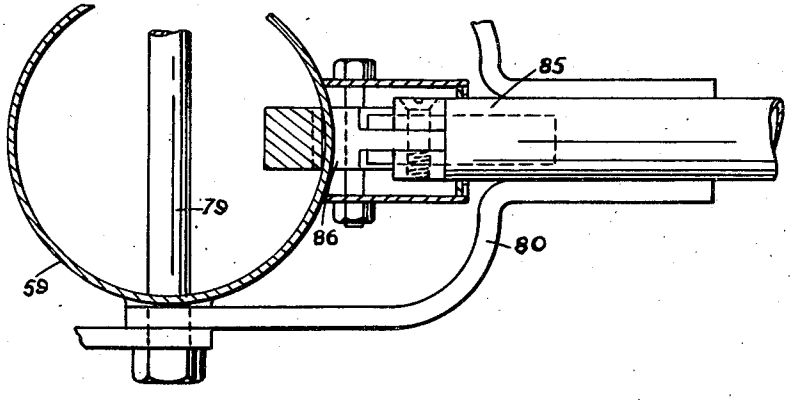


FIG. 11.



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Patented Oct. 6, 1953

2,654,626

UNITED STATES PATENT OFFICE

2,654,626

IMPLEMENT FOR CARRYING OUT DIGGING OPERATIONS

Charles John Rice, Bexley Heath, England

Application January 12, 1948, Serial No. 1,806
In Great Britain November 4, 1946

Section 1, Public Law 690, August 8, 1946
Patent expires November 4, 1966

12 Claims. (Cl. 294—50.8)

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This invention is concerned with improvements in or relating to implements for carrying out digging operations and more particularly, though not necessarily exclusively for digging holes, e. g. holes of square cross section for receiving posts, small trees or the like, or trench headings in sand, earth, clay, chalk or stony or rocky soil.

It is well known that the normal procedure when erecting a post, such for instance as a concrete post, is to dig a hole in the ground with the aid of a spade but this inevitably leads to the hole being of a cross-section substantially larger than that of the post and moreover the hole is invariably larger at its head than at its root, a formation which is opposed to the secure fixing of a post. In order to reduce as much as possible the extent to which the walls diverge from one another it is usual to employ a small trowel or like implement for removing the loosened soil when the depth of the hole makes removal by means of a spade difficult or impossible. The usual procedure therefore entails an amount of work greatly in excess of that required for removing a mass of earth corresponding to that of the part of the post which is to be embedded and moreover the amount of concrete or like material required for subsequently embedding the post is correspondingly excessive.

One of the objects of the present invention is to provide a digging element with the aid of which the above mentioned disadvantages can be avoided. A further object is to provide a tool of a simple, inexpensive and highly efficient nature.

According to the present invention there is provided a manually operated digging implement comprising a head portion having two angularly movable blade-like portions adapted to be moved into positions in which they are substantially parallel with respect to one another and into positions in which they are inclined with respect to one another so forming a closed or substantially closed scoop, and means operable by a user for urging said blade like portions into either of the said positions.

The aforesaid head portion of an implement in accordance with the present invention may be carried at the end of a stem of any suitable kind, e. g. a member of cylindrical form, and any suitable handle may be fitted to the upper end of said stem, such handle being for instance in the form of a cross bar, which may if desired be adapted for use by two operators.

The means for controlling the movements of the above mentioned blades may be of various different kinds but it is desirable that these should

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be of a very robust nature and preferably well protected against the adverse influence of mud and the like. Such controlling means may for instance comprise a rod mounted for reciprocation with respect to the aforesaid stem, the said rod being coupled either directly or indirectly to the blade-like portions at its lower end and to actuating means at its upper end. In cases where the handle of the implement comprises a cross bar the said actuating means may comprise two levers, and said levers are advantageously located just below and parallel to the said cross bar in positions suitable for being gripped by the user's fingers.

Spring actuated means are preferably provided for urging the aforesaid blades into their parallel positions and the hand controlled means are preferably employed for urging said blades into their inclined scoop-forming positions. Thus for instance a compression spring may embrace the aforesaid pull rod and abut at one end against a stop on the rod at the other end against a stop on the stem of the device.

The aforesaid head portion of a device according to the present invention is preferably readily detachable from the stem portion so that a single stem portion can be used with head portions of various dimensions or a single head portion can be provided with stem portions of various lengths, it being understood for instance that the desirable length of the stem portion is to some extent determined by the depth of the hole to be dug. Thus I may provide said stem in three sections the centre section being readily removable so that a centre section of suitable length may be inserted which in cooperation with a pull rod of appropriate length enables the implement for digging holes of the required depth.

An implement according to the present invention may if desired include releasable means for locking the blade portions in their scoop-forming positions, such provision being desirable in cases where it is desired to transfer a loaded scoop over distances beyond the reach of a single operator or where it is desired to pass a loaded scoop from one operator to another one as may for instance arise when digging deep holes.

A spirit level or the like may be fitted to or embodied in a device according to the present invention, such spirit level or the like preferably being located on or adjacent to the handle of the said device and serving to assist for instance in ensuring that a vertically extending hole is formed notwithstanding the fact such hole may be made on rising ground or in other circum-

stances where there is difficulty in determining the required positioning of the implement.

If desired a device according to the present invention may include provision for enabling the depth of a hole to be measured. Thus for instance the stem portion of the device may include a guide member for a depth indicator adjustably mounted thereon, so that the required depth of hole can be set by the height of said indicator above the tips of the blades in their opened positions.

An implement according to this invention may also include means for preventing the inadvertent closing of the blades as the implement is being inserted into the ground, such means preferably being associated with the scoop closing means. Thus for instance said scoop closing means may have one or more pawls or like members incorporated therewith and adapted when the blades are in their open position to engage one or more lugs or like detent members on the stem.

In order that the invention may be well understood I will now describe by way of example only two preferred embodiments thereof with reference to the accompanying drawings in which:

Figure 1 shows a front elevation in part section of one form of implement with the blade members in their open position,

Figure 2 shows a side elevation thereof in part section,

Figure 3 shows a section on the line III—III of Figure 2,

Figure 4 shows a front elevation in part section of the implement with the blades in their closed or scoop forming position,

Figure 5 shows a side elevation of Figure 4,

Figure 6 shows a front elevation of a modified form of implement with the blades in their open position,

Figure 7 shows a sectional side elevation thereof,

Figure 8 shows a fragmentary side elevation in part section with the blades in their scoop forming position,

Figure 9 shows a plan view of the implement in Figures 6 to 8,

Figure 10 is a fragmentary sectional elevation to an enlarged scale of the means for actuating the blades, and

Figure 11 is a section on the line XI—XI of Figure 10.

Referring now to Figures 1 to 5 in this example the device includes a head portion 1 comprising a U-shaped carrier 2 made from spring steel or other suitable metal and two blade portions 3, each of said blade portions being of channel form in cross section, of rectangular form in front elevation, and of substantially triangular form in side elevation. The front face of each blade may for instance be about 6½'' long and 6'' wide and the triangular side portions thereof are so disposed that they can overlap one another at the inner ends of the blades. The said blades 3 are slightly splayed outwardly towards their edge in order to provide a suitable cutting clearance for the implement.

The said blades 3 are pivotally mounted on the U-shaped carrier 2. The side plates 4 of said carrier 2 have two tubes 5 welded thereto and extending therebetween and bolts 6 are disposed in said tubes to provide pivots for the two blades 3.

The two digging blades 3 are joined together for simultaneous opening and closing movement by means of a cross-pin 8 which passes through apertures formed in the overlapping parts 7 of the triangular side portions of the blades, the cross-pin 8 being adapted to move in the slot 8', provided in the side plates 4 of the carrier 2, during opening and closing of the blades 3. The apertures in the part 7 of at least one of the blades 3 must be slotted, as shown at 7a, to permit pivotal movement of the blades about their pivotal axes.

The aforesaid blades 3 are pivotable between limiting positions in one of which said blades are disposed with their rectangular surfaces in parallel relationship (Fig. 2) or in slightly downwardly diverging relationship and in the other position the inclined side walls of the blades are urged towards one another so forming an open topped V-shaped scoop (Fig. 5).

The aforesaid blades 3 are prevented from opening beyond the above mentioned opened position for instance by the inner surfaces 9 of the rectangular faces of the blades 3 abutting against the edges of the side plates 4 of the carrier 2 although it is of course within the scope of the present invention to provide other stop means of any suitable kind.

The dimensions of the aforesaid carrier 2 and blades 3 are such that when the blades 3 are in their opened position the innermost edges of the rectangular faces are separated by a distance equal to the width of the rectangular faces so adapting the implement for digging square holes.

The head portion of the above mentioned U-shaped carrier 2, which has an area large enough to enable the implement to be pressed into the ground by foot pressure is carried at one end of a stem to be further described. This stem in the embodiment shown comprises three sections 10, 11 and 12. The section 12 which is of generally tubular form has a boss or flange 13 at one end thereof which abuts against the said head portion, and an extension (not shown) which passes through a hole 14 in the head portion where it is secured by a nut 15. The other end of the section 12 has a flange 16 thereon and an extending spigot 17 adapted to cooperate respectively with a flange 18 and the bore 19 of the section 11. The other end of the section 11 which is a section of metal piping of suitable length has a flange 20 thereon which cooperates with a flange 21 on the upper section 10 said section 10 having a bushing 22 at one end adapted to fit into the bore 19 of section 11, and having a cross handle 24 at its other end. Thus the said stem has a central section 11 which can be readily removed, upon disengaging bolts 23 which secure flanges 16 and 18 and 20 and 21 together, so that a longer or shorter section can be substituted according to the depth of the hole to be dug. It being understood that where a deeper hole is to be dug it will be convenient to have a longer stem in order to bring the cross handle 24 to a convenient level for manipulation.

I have found that for the commencement of a hole a length of stem of about 3' is generally convenient, but where a deep hole is being dug it may be convenient to lengthen the stem by inserting longer centre sections 11 as the depth of the hole increases.

The cross handle 24 which is integral with the upper end of section 10 is provided with a grip 25 of vulcanized rubber or other suitable substance as a protection against shock or jarring during use of the implement. At the upper end of section 10 which is also a length of metal piping a screwed cap 26 is provided which has a boss 27 extending inside the bore of section 10 for a pur-

pose to be further described and a cavity 28 in the outer side suitable to receive a spirit level.

Extending along the three sections 10, 11, 12 is a dove-tail shaped rail or guide 29 on which is slidably mounted a depth indicator 30. The indicator 30 comprises a slide member 31 and a locking nut 32 adapted to secure it in any desired position on the rail or guide 29, so that the depth of a hole to be dug, may be set before operations commence by adjusting indicator 30 so that its height above the ends of blades 3 in their open position is equal to the required depth of hole. It will be understood that the rail or guide 29 is also made in three similar sections to the sections 10, 11 and 12.

A pullrod 33 extends through the above mentioned stem and its lower end is adapted to be secured to the above mentioned cross-pin 8 engaging slotted apertures in the side flanges of the blades 3 of the device, the securing means consisting of a clevis 34 permanently attached to the central part of the said cross pin 8 and having a socket 35 for receiving the end of the pull rod 33 the said end of the pull rod 33 being secured to the clevis 34 by means of a through bolt 36 set pin or the like.

Access to the above described means for releasably securing the stem of the device to the blade portion and the pull rod 33 to the cross pin 8 extending between the blades 3 can be had through the opening between the upper edges of the said blade portions 3 and the bridge of the U-shaped carrier 2, such opening being desirable not only for the purpose of affording access to the said parts but also for the purpose of providing an overflow outlet in the event of the blade portions 3 being over-loaded i. e. overloading to an extent which might otherwise prevent closing of the said blades.

In the bore of the section 10 of the stem there is provided a centre plug 37 which is slidable therein. The upper surface of said plug 37 has a recess or well 38 therein and a compression spring 39 to be further referred to is located with one end in the well 38 and the other end around the boss 27. The said centre plug 37 has a bore 40 on its lower face into which the upper end of pull rod 33 is screwed. A slot 41 is provided extending transversely through the centre plug 37 and corresponding slots 42 are provided in the section 10 so that a cross bar 43 to be further described can extend through slots 41 and 42 and move longitudinally with respect to the section 10.

Longitudinal movement of the cross bar 43 which extends through the section 10 and the centre plug 37 will thus effect corresponding longitudinal movement of the pull rod 33 and hence will operate the blades 3. Two levers 44 are pivotally connected to said cross bar 43, the said levers extending under the cross handle 24 of the device and spaced therebelow by a distance such that said levers can be gripped by the user's fingers and pulled towards the cross handle 24 for a purpose hereinafter described.

A pawl 45 depends downwardly from each of the aforesaid levers 44 disposed below the cross handle 24 of the device, such pawls 45 terminating in detent portions 46 which when the pull rod 33 is in its lowermost position are adapted to engage lugs 47 mounted on the outside of the section 10, so that during use of the implement the blades 3 will be prevented from closing due to pressure against the ground unless levers 44 are first gripped and pulled towards the cross

handle 24. Small compression springs 48 are housed in the aforesaid lever assemblies 44 and are adapted to abut at their upper ends against the aforesaid cross bar 43 so tending to cause the said levers 44 to pivot in a direction swinging the pawls 45 towards the stem 10 and into engagement with the lugs 47 whenever the levers are released by the user.

The mounting of the above mentioned pawl actuating levers 44 is such that they can only pivot to an extent appropriate for releasing the pawls 45, continued upward pressure on said levers then causing the cross bar 43, pull rod 33 and cross pin 8 engaging the blades 3 to move upwardly thereby causing the blades 3 to close into their scoop-forming position (Figs. 4 and 5).

A locking device 49 is provided which enables the blades 3 to be locked in their scoop forming position. On one side of the centre plug 37 a toothed rack 50 is secured so that movement of said plug 37 will move said rack 50. On the section 10 of the stem there is a tubular boss 51 which has a locking pawl 52, adapted to engage rack 50 slidably mounted therein. A locking lever 53 having a cam profile 54 is pivotally connected to the end of the locking pawl 52 and serves to withdraw the pawl 52 out of engagement with the rack 50 against the action of a compression spring 55. Thus when the lever 53 is in the position shown in Fig. 2, the pawl 52 whilst allowing the pull rod 33 to be raised and the blades 3 to be thus closed, will retain the centre plug 37 in its raised position and thus prevent the blades 3 from opening. In Figure 5 the pawl 52 is shown in its withdrawn position in which the blades 3 are free to open under the action of the spring 39 upon release of the levers 44.

When the above device is in use the cross handle 24 is gripped by the operator's hands and the blades 3 are rested on the ground in the position where a hole is to be formed. The cross handle 24 is then urged downwardly and in order to exert greater pressure the operator may press with his foot on the head of the carrier portion 2 of the device. During the application of downward pressure the blades 3 are prevented from collapsing by virtue of the aforesaid detents 46 engaging the lugs 47 and preventing the upward movement of the pull rod.

As the downward movement of the blade 3 proceeds the handle is rocked slightly in two directions at right angles to one another so facilitating the progress of the blades 3 through the soil and also breaking the plug of earth which is released by said blades. This rocking action of the implement during its progress through the ground also ensures desirable consolidation of the side walls of the hole and further results in the hole being slightly larger, e. g. larger by an amount of approximately one inch, than the maximum cross sectional area of the head of the implement thereby ensuring the provision of clearance for the easy withdrawal of the loaded implement. When the blades have cut into the earth to a distance of say 4½", the actuating levers 44 are gripped so causing an initial pivotal movement which frees the detents 46 from engagement with the lugs 47 and subsequent upward movement moves the pull rod 33 upwardly so causing the blades 3 to turn into their inclined scoop-forming positions (Figs. 4 and 5). The implement is then raised from the hole so removing the trapped earth and this can then be released at the side of the hole or transferred to any required site. As above explained such re-

lease may be effected automatically upon releasing the grip on the levers 44 or upon releasing the locking pawl 52.

If in the process of using the above implement the cross handle reaches ground level the stem and handle portions can be removed from the blade assembly and replaced by a longer centre section 11 or a different blade assembly appropriate to the depth of the hole can be fitted. It being understood that the pull rod 33 can be readily unscrewed from the centre plug 37 and substituted by another pull rod of appropriate length.

In Figures 6 to 11 a further embodiment according to my invention is shown which is particularly suitable for use in cases where larger holes are to be dug, this implement being adapted to be operated by two users.

As will be seen from Figures 6, 7 and 8 the head portion of the implement comprises a carrier 56 and two blades 57 which are pivotally mounted in a manner similar to that described with reference to Figs. 1 and 2. The blades 57 are toothed as at 58 to facilitate the removal of stones or the like which may be encountered in the digging operations.

A stem 59 of tubular form is provided with a boss 60 welded to its lower end. The boss 60 has a rectangular spigot 61 which enters a hole 62 in the carrier 56. A plug 63 is screwed into the internal bore 64 of boss 60 so as to secure the stem 59 and the carrier 56 together so that they will not rotate relative to each other. The plug 63 has a central bore through which a pull rod 65 passes, said pull rod 65 being connected by a clevis 66 to a cross pin 67, which serves a similar purpose to the cross pin 8 referred to above.

The other end of the pull rod 65 is screwed into a plate 68 which is slidably disposed in the stem 59. A further plate 69 is slidably disposed in the other end of the stem 59 and two toothed racks 70 are secured between the two plates 68 and 69.

The upper end of the stem 59 has a cap 71 screwed thereon which has a bubble lever 72 therein, and a boss 73 which serves to locate one end of a compression spring 74, the other end of which abuts against the upper surface of the plate 69 for a purpose to be further described.

Secured to the upper part of the stem 59, e. g. by welding is a collar 75 which carries a cross bar 76 having two handles 77 at each end thereof to enable one operator to work at each side of the implement.

Below the said cross bar 76 are two actuating levers 78 which are pivotally secured to each other and with respect to the stem 59 by means of a bolt 79 which passes through the stem 59 and is secured to the stirrups 80 (Fig. 9) which carry the levers 78.

On opposite sides of the stem 59 arcuate guard plates 81 are mounted said guard plates having a slot 82 therein defining the movement of the levers 78. Bolted to the levers 78 are two strips 83 which act as guides for the levers 78 moving within the slot 82 provided in the guard plates 81.

The said levers 78 which are of tubular form each have a rod 84 therein which is secured at one end to a clevis 85 which has a lifting pawl 86 pivotally mounted therein. Rotatably mounted at the outer end of each of the rods 84 is a handle 87 which has a key 88 adapted to engage a corresponding keyway in the end of the lever 78. Thus by withdrawing the handle 87 from the lever 78 and rotating it through 90° the rod 84, clevis 85 and pawl 86 can be locked in the withdrawn position against the action of a compression spring 89 which abuts against a plate 90 mounted on the rod 84.

The stem 59 has a slot 91 on each side thereof through which the lifting pawl is adapted to pass to make engagement with the teeth of the rack 70. Thus a downward movement of the lever 78 (Fig. 10) will cause the pawl 86 to engage a tooth on the rack in the position shown in dotted lines and as the two levers 78 are again raised the pull rod will be raised thus closing the blades 57 into their scoop forming position (Fig. 8).

Two locking devices 92 are provided one on each side of the stem to cooperate with the two racks 70 and to retain the rack in its raised position while the levers 78 are being lowered for a further raising movement. These locking devices 92 each comprise a boss 93 on the stem 59 having a locking pawl 94 slidable therein. The locking pawl 94 has a locking lever 95 pivotally attached thereto so that in the position shown in Fig. 10 the locking pawl 94 is kept in engagement with the teeth of rack 70 by the action of the compression spring 96. The lever 95 has a cam profile 97 which enables the pawl 94 to be locked out of engagement with the rack to allow the rack and therefore the pull rod 65 to move downwardly in order to open the blades 57.

Thus when the implement has closed with a scoop full of soil, and the soil has been withdrawn, the handles 87 are withdrawn from the tubular levers 78 and rotated so as to lock pawls 86 out of engagement with the rack, and the pawls 94 are then locked in their withdrawn positions so that under the influence of the spring 74 the blades 57 can open.

It is in general desirable that there should be a slight cutting rake on the aforesaid blades in order to ensure adequate clearances for the upper part of the blade assembly, i. e. such blades when in their fully opened positions are preferably very slightly divergent in a downward direction.

In order to ensure that the hole being dug has comparatively smooth sides and further to ensure that the base of the hole is a substantially flat and horizontal surface it is desirable that the tool should be actuated in two positions at right angles to one another periodically during the formation of the hole and at the final hole clearing stage.

It will be appreciated that a hole dug in the above described manner is well adapted for supporting a concrete post, i. e. there is a flat base and flat surrounding surfaces all of which are formed by earth which is consolidated to the same extent as it was before the hole was dug and only very little grouting material is required for completing the embedding operation. It will also be appreciated that a hole or series of holes can be very accurately located, e. g. a disc or the like may be disposed in the position to be occupied by a post and a mark can then be made by placing the blades around the disc and urging them into the ground.

Whilst I have hereinbefore described one embodiment of the present invention I wish it to be understood that the specific details may be varied or modified without departing from the scope of such invention. Thus for instance, there may be variations in the particular form of the locking means and also in the shape and mounting of the blades of the device. Moreover the aforesaid stem portion need not necessarily be of circular cross

section but may be of square, hexagonal or other polygonal shape in cross-section.

I claim:

1. A manually operated digging implement comprising a tubular stem having handles extending rigidly on either side of one end thereof, a head portion mounted rigidly on the other end of said stem, two blade-like portions pivotally mounted upon said head portion for angular movement about fixed axes carried by said head portion, said blade-like portions being adapted to be moved into positions in which they are inclined with respect to one another to form a substantially closed scoop, a pull rod extending through said stem and being operatively connected at its lower end to said blade-like portions, a pair of manually operated actuating levers connected to said pull rod near its upper and and disposed below said handles and arranged substantially parallel with said handles, said levers being arranged adjacent said handles and in positions to be grasped by the fingers of hands resting upon said handles whereby said levers may be manually drawn upwardly towards said handles, said pull rod having toothed means rigidly connected thereto, and at least one resiliently mounted releasable locking pawl extending into said stem below said handles and serving to engage said toothed means and allow movement of said pull rod and blade-like portions in a scoop-forming direction whilst positively preventing movement of said portions in an opening direction after any movement thereof in a scoop-forming direction.

2. A manually operated digging implement as claimed in claim 1 in which said actuating levers are pivotally and axially movable with respect to said stem and each has a locking pawl adapted to engage detent means on said stem to prevent inadvertent closing of said blade-like portions when the device is in use, said locking pawls and actuating levers being so disposed that upon gripping said levers they are pivoted with respect to said handles and stem to release them and upon being further gripped tend to move the blade-like portions in a scoop-forming direction, and spring means acting upon said locking pawls for automatically re-engaging said locking pawls with said detent means upon release of said actuating levers.

3. A manually operated digging implement as set forth in claim 1 and including ratchet means connected with said pull rod and movable therewith, said actuating levers being pivotally mounted on said stem, and pawl means operated by said levers and engageable with said ratchet means to raise said pull rod and move said blade portions into their scoop forming position.

4. A manually operated digging implement as set forth in claim 3 in which said actuating levers are pivotally mounted with respect to each other and said stem.

5. A manually operated digging implement as set forth in claim 3 in which at least one releasable locking pawl extends into said stem and serves in its locking position to engage said ratchet means so as to prevent any movement of said blade-like portions in a scoop opening direction whilst permitting movement thereof in a scoop closing direction.

6. A manually operated digging implement as set forth in claim 3 in which said actuating levers are pivotally mounted with respect to each other and said stem and having ratchet means on each side of said pull rod, an aperture on each side of said stem adjacent said ratchet means, pawls adapted to extend through said apertures and engage said ratchet means, tubular levers each carrying one of said pawls and means controlled by movements of said levers upwardly with respect to said stem to move the said blade portions into their scoop forming positions, spring means in said tubular levers against which said pawls are movable out of engagement with said ratchet means, locking means associated with said levers to retain said pawls out of engagement with said ratchet means, and further spring means in said stem tending always to urge said pull rod downwardly so as to move said blade portions into their substantially parallel position.

7. A manually operated digging implement as set forth in claim 1 in which said stem is tubular and comprises three sections, the centre of said three sections being readily detachable from between the other two, the lower section carrying said blade-like portions, said operating means for urging said blade-like portions into either of said positions being operable from the upper of said three sections.

8. A manually operated digging implement as forth in claim 1 in which said stem is formed of three mutually detachable tubular sections, said head portion being detachably secured to the lowermost of said sections, said operating means comprising a pull rod extending through said sections and operatively connected or with said blade-like portions, and including actuating means for said pull rod and blade portions movably mounted on the uppermost of said sections, and depth gauging means mounted on the exterior of said stem and extending over at least a part of all said sections.

9. A manually operated digging implement comprising a tubular stem having three mutually detachable sections, a U-shaped head portion attached to the lower of said sections, slots in the arms of said U-shaped head portion, two angularly movable blade portions pivotally mounted in said U-shaped head portion and movable into a position where they are substantially parallel to each other and into a position inclined to each other so as to form a substantially closed scoop, lugs on adjacent sides of each of said blade portions, a cross pin connected to each of the lugs in said blade portions and extending across said head portion, said cross pin being movable in said slots, a pull rod extending through said stem and reciprocally mounted therein, the lower end of said pull rod being attached to said cross pin, and actuating means on the uppermost of said sections serving to move said pull rod and thereby to move said blade portions into either of said positions.

10. A manually operated digging implement comprising a tubular stem having three mutually detachable sections, handle means attached to the uppermost of said sections, a head portion detachably mounted on the lowermost of said sections, two channel shaped blade portions pivotally mounted in said head portion and movable into a position where they are substantially parallel to each other and into a position where they are inclined to one another so as to form a substantially closed scoop, a cross pin connected to said blade portions, a pull rod movably mounted in said stem and having its lower end detachably connected to said cross pin so that reciprocation of said pull rod causes pivotal movement of said blade portions, spring means in said stem

acting on the upper end of said pull rod and tending always to urge said blade portions into their substantially parallel position, actuating levers arranged below said handle means and being reciprocally mounted on the uppermost section of said stem adjacent said handle means and arranged substantially parallel therewith, and operatively associated with said pull rod so as to move said blade portions in a scoop forming direction when said levers are moved upwardly on said stem, detent means on said stem, locking pawls on said actuating levers adapted to engage said detent means and prevent an inadvertent scoop forming movement of said blade portions, ratchet means associated with said pull rod and a further locking pawl on said stem adapted in the locking position to engage said ratchet means and retain said blade portions in their scoop forming position.

11. A manually operated digging element comprising a tubular stem having handles extending rigidly on either side of one end thereof, a head portion mounted rigidly on the other end of said stem, two blade-like portions pivotally mounted upon said head portion for angular movement about fixed axes carried by said head, said blade-like portions being adapted to be moved into positions in which they are inclined with respect to one another to form a substantially closed scoop, a pull-rod extending through said stem and being operatively connected at its lower end to said blade-like portions, a pair of manually operated actuating levers disposed below said handles and arranged substantially parallel with said handles, said levers being arranged adjacent said handles and in positions to be grasped by the fingers of hands resting upon said handles whereby said levers may be manually drawn upwardly towards said handles, said tubular stem having a slot formed in the wall thereof below each handle, and means extending through said slots and connecting said levers

with said pull-rod to move said pull-rod upwardly by upward movements of said levers.

12. A manually operated digging implement comprising a tubular stem, an inverted U-shaped head portion having the yoke section thereof rigidly connected with the lower end of said stem, the parallel arms of said head portion having slots formed substantially centrally thereof, two plate-like blades arranged across the open sides of said head portion and each having triangular side portions arranged on the outside of the arms of said head portion, said triangular side portions extending in overlapping relation with each other and with the slots in the arms of said head portion, a pair of tubular bearing members rigidly supported between the arms of said head portion on opposite sides of said slots, pivot pins mounted within said bearing members and engaging said side portions for pivotally supporting said plate-like blades for pivotal movement about the axes of said pins, a cross pin extending through said slots in the arms of said head portion and having operative engagement with the overlapping side portions of said blades, and a pull-rod arranged within said tubular stem and having its lower end operatively connected to said cross pin.

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