No. 896,281. PATENTED AUG. 18, 1908.

C. E. DUNN.

METHOD AND MACHINE FOR THE REDUCTION OF PEAT TURF.

APPLICATION FILED OCT. 11, 1906.

2 SHEETS—SHEET 1.

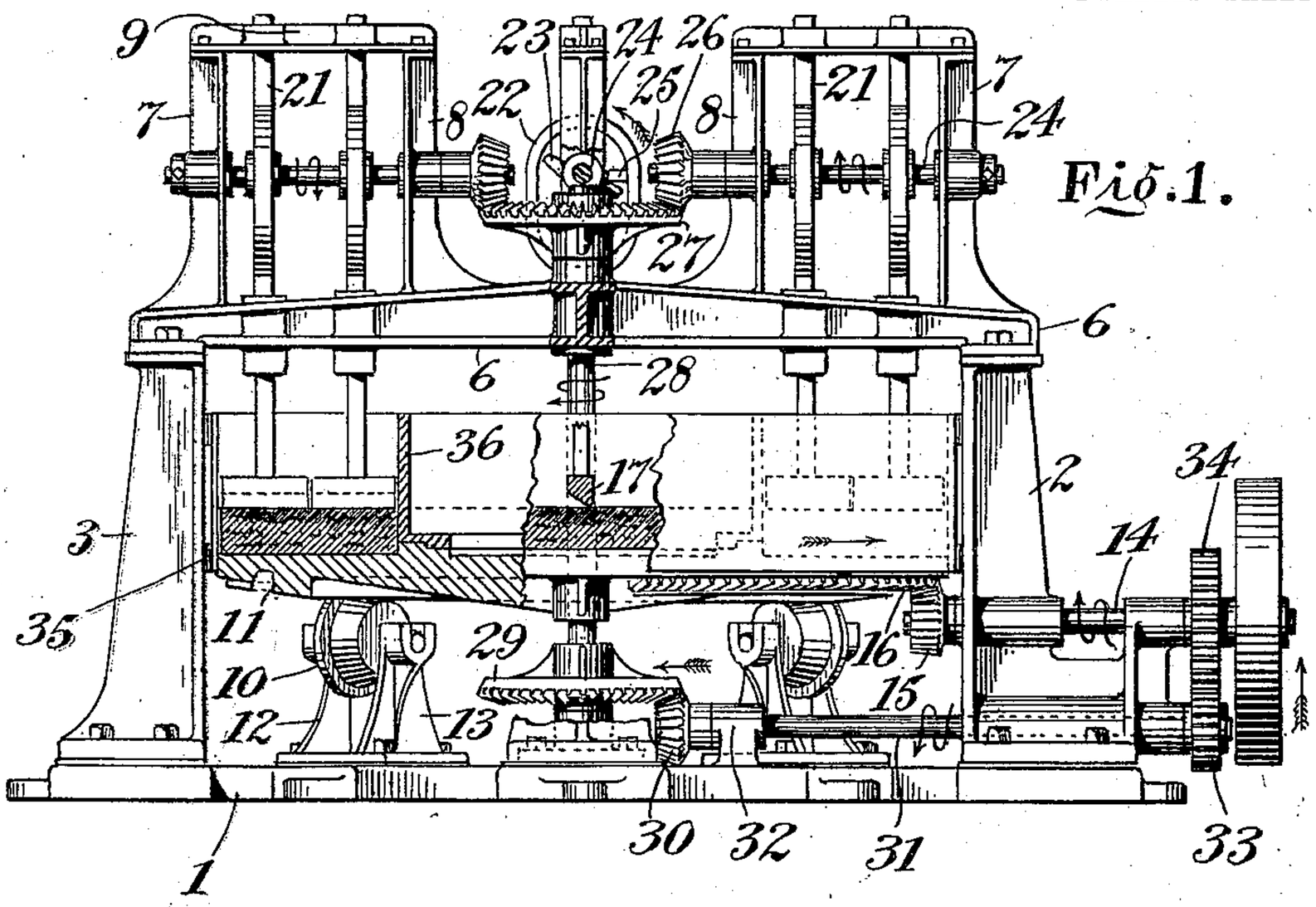
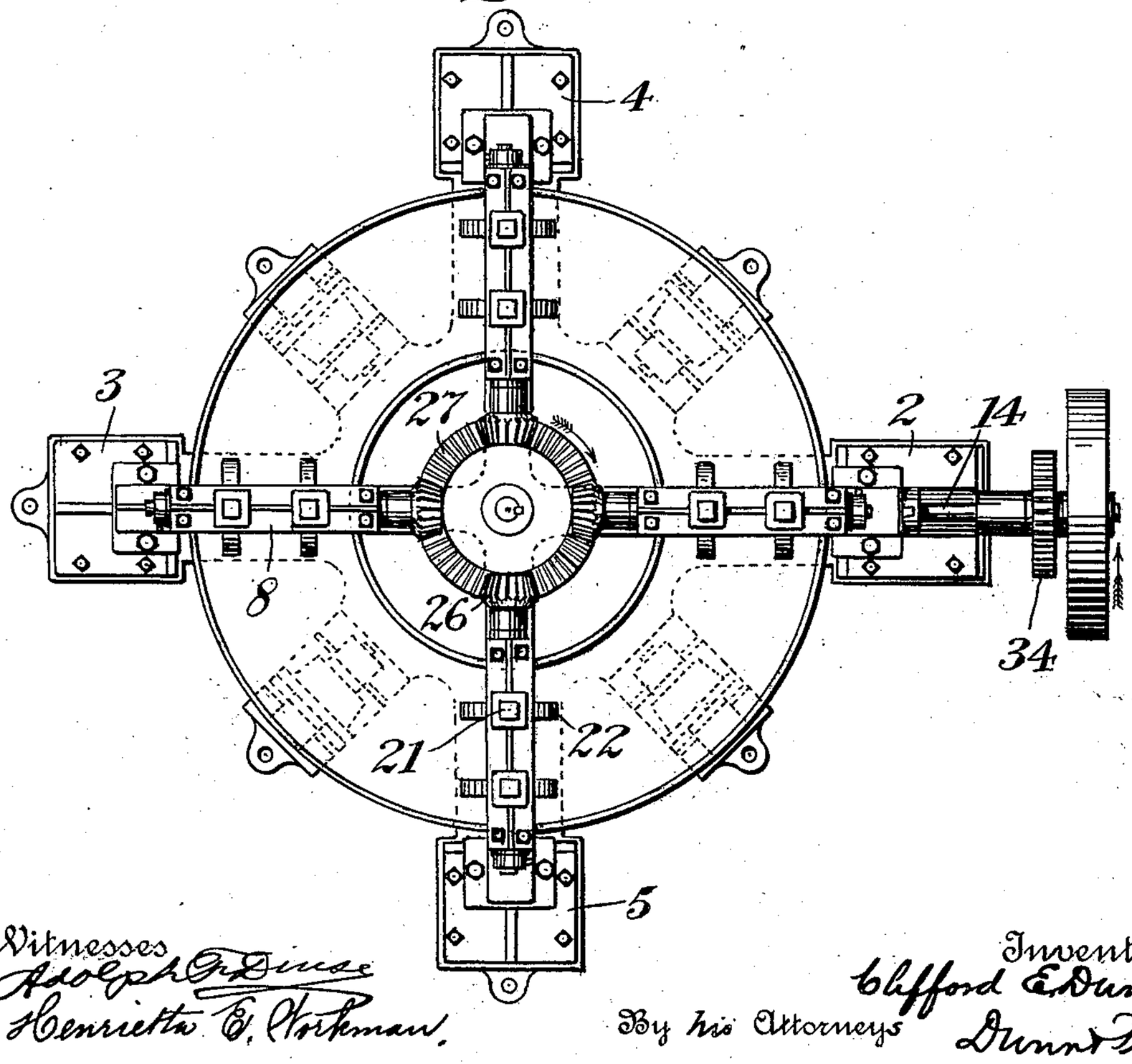


Fig. 1.

Fig. 2.



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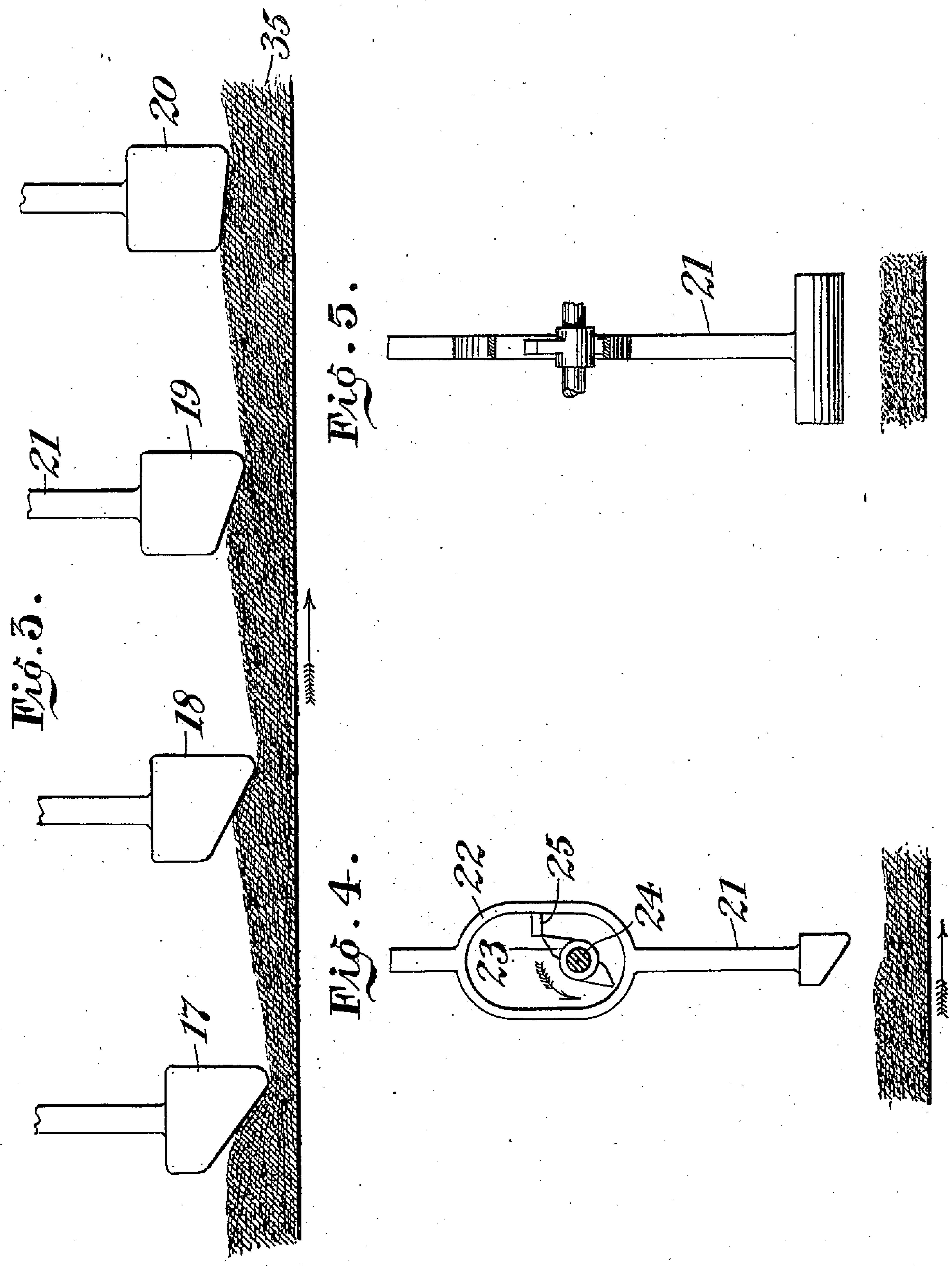

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UNITED STATES PATENT OFFICE.

CLIFFORD E. DUNN, OF NEW YORK, N. Y., ASSIGNOR, BY MESNE ASSIGNMENTS, TO EDWARD P. METCALF, OF PROVIDENCE, RHODE ISLAND, AND ADOLPH LOEWENTHAL AND CLIFFORD E. DUNN, OF NEW YORK, N. Y., TRUSTEES.

METHOD AND MACHINE FOR THE REDUCTION OF PEAT-TURF.

No. 896,281. Specification of Letters Patent. Patented Aug. 18, 1908.

Application filed October 11, 1906. Serial No. 338,346.

To all whom it may concern:

Be it known that I, CLIFFORD E. DUNN, a citizen of the United States, residing in New York city, borough of Brooklyn, county of Kings, and State of New York, have invented certain new and useful Improvements in the Methods and Machines for the Reduction of Peat-Turf, of which the following is a full, clear, and exact specification.

My invention relates to certain new and useful improvements in the method or art of producing half stuff from peat turf or other similar material, and has for its object the improvement of the product thus obtained, as well as the cheapening and more rapid production thereof.

It also relates to machines such as may be employed in carrying out the method aforesaid, and to details of construction therein, and likewise to a new and improved form of stamper or reducing hammer, all of which will be more particularly pointed out hereafter in this specification.

The invention relates generally to that class of methods and apparatus wherein the peat turf is reduced, and the fibers thereof separated while the material is in its natural, raw condition, and generally before any washing or cleansing operations have taken place, and in the accompanying application I have disclosed one typical form of machine which may be used to carry out the process forming part of my invention; but it will be understood that this is but one form of machine which may be used for that purpose, and that many others can be designed and employed without departing from the spirit of my invention.

In the application of Christian Esser, Serial No. 84,457, filed the 2nd day of December, 1901, a method of making half stuff from peat is described, which consists in subjecting the raw peat as it comes from the bog to the action of vertically reciprocating stampers or hammers, while the peat itself is disposed upon a table moving substantially at right angles to the direction of operation of the stampers. By this combined motion of the table and hammers, a rubbing or abrading action is produced upon the peat, which action serves to separate the fibers and reduce the peat to the desired extent.

The present process consists in an improvement upon the said method whereby an increased abrading action is obtained, and the peat thus reduced with greater speed and uniformity, and it consists, broadly, in subjecting the peat turf to an abrading force applied to the said peat at an inclination relatively to a line perpendicular to the outer surface of the peat which operates in two different directions, so as to more completely perform the fiber-separating operation, and it consists in first subjecting the peat to a reasonably severe blow applied in said direction, and then rubbing the peat in a reverse direction to that of the aforesaid blow with sufficient pressure to produce the desired separation of fibers.

It also consists in subjecting the peat turf to a series of fiber-separating operations differing progressively in the application of the force or direction thereof, and in the following specification I have described one typical form of machine which may be used for that purpose, although other constructions and other types of machines may be designed and used for carrying out the invention.

In the accompanying drawing Figure 1 is an elevation of said machine with part of the carrier broken away; Fig. 2 is a plan view of the same; Fig. 3 is a detail of the stampers illustrating them as extended, and showing their progressive action upon the peat; Fig. 4 is an end view of one of the stampers showing in detail the manner of operating it; and Fig. 5 is a side view of the same parts, one side of the yoke being broken away.

Upon the base 1, are bolted side standards 2, 3, 4, 5 and a four-branched cross-head 6 is suitably attached, as by bolts, to the upper ends of these standards. A pair of brackets 7, 8, is attached to each branch of the cross-head and extend upwardly, being united at their upper ends by cross-heads 9, and serve to support the stamper actuating devices.

A charge of raw peat turf 35, is evenly spread upon the floor of carrier 36, which is of annular trough shape, and has a flat bottom, which is preferably of rigid substance, such as iron or stone, upon which the peat turf may be advantageously reduced, and upwardly extending side walls. It is supported upon flanged rollers 10, of which four are shown, and which revolve in an annular track 11, formed in the under side of the carrier, and are each journaled in a pair of

standards 12, 13, bolted to the flooring 1. Carrier 36 is revolved from the driving shaft 14, which is journaled in post 2, and upon the inner end of which is fixed gear 15, which engages the teeth of rack 16, formed upon the under side of said carrier.

The stampers 17, 18, 19, 20, are disposed over the bed of peat turf and beneath each branch of the lower cross-head 6, through which their stems 21 extend, and by which they are guided. The machine, as illustrated, contains four pairs of stamps, or eight in all. The faces of each of the stamps in a pair are alike. The upper ends of the stems 21 are guided in openings in the upper cross-heads 9, through which they pass. The said stems are formed with yokes or loops 22, which are large enough to permit lugs 23 to revolve freely therein. The said lugs are two in number for each stamper and are fixed upon opposite sides of operating shaft 24, the rotation of which causes the said lugs to successively engage a pin or tappet 25, which is fixed upon yoke 22, and projects inwardly therefrom in the path of lugs 23. Shafts 24 are suitably mounted in bearings in posts 7, 8, and carry on their inner ends bevel pinions 26, which are in mesh with bevel gear 27, upon the upper end of main shaft 28, and this shaft derives its motion from driving shaft 14, through bevel gears 29, 30, shaft 31, which is journaled in posts 32 and 2, pinion 33, and gear 34 fixed upon said driving shaft 14. The main shaft 28 has a bearing at its lower end in base 1, and likewise at the junction of the cross-head 6, and passes freely through an opening in the carrier 36, which it serves to maintain in position.

An important feature of my invention is the form of the operating faces of the stampers 17, 18, 19, 20. As illustrated in extended view (Fig. 3), I have shown these as a progressive series of four, with a differing bevel on the operating face of each stamper. The layer of peat turf 35, is here supposed to be moving in the direction of the arrow, and will be successively engaged by the stampers, which, for convenience, are shown as extended in a straight line. The stamper 17 will first engage the layer of turf, and owing to the sharp bevel of its operating face will penetrate the same to some extent, and will, in so doing, have a drawing or reducing effect thereon, and it will remain in contact therewith until lifted by the opposite lug 23, and during this wait the layer of peat turf will have been drawn forward through the action of the driving shaft, which is constant, and there will have ensued first a driving or stamping action, coupled with a drawing action, upon the peat turf, and then a drawing or massaging action, which is highly desirable in separating and reducing the fibers, and in spreading or smearing the gelatinous or gluey matter which is contained in the peat evenly over the fibers. The same effect will be produced by the successive stampers 18, 19, 20, but owing to the progressively nearer approach to the horizontal in their operating faces, each will operate upon the mass of peat turf in a somewhat different manner than its predecessor, and they will have a progressively reducing and drawing effect. The shape of the stampers is shown in Figs. 4 and 5, the former figure showing the end of the stampers, and the latter the side, from which it will appear that in operation they cover the width of the layer of peat turf as the same is spread in the carrier, but that their faces being narrow with relation to their length, they engage but a small area in width of advancing peat at each stroke.

If desired, the peat turf may be spread upon the carrier gradually in position to be first engaged by the stamper 17, or if preferred, the entire carrier may be loaded, in which case the peat under stampers 18, 19, and 20 will receive its first reduction from these stampers, which in that case will be less effectual than if it had previously passed under stamper 17, but in the revolution of the machine said peat will pass under stamper 17, and again under stampers 18, 19, and 20, insuring a uniformity of product.

The operation of my machine is as follows: A load of peat turf having been deposited upon the carrier, power will be applied and the carrier will revolve as indicated by arrows (Fig. 1), and the stampers will then be reciprocated. Stamper 17 (as indicated in Fig. 1), is so disposed that the bevel or inclination of its operative face is opposed to the mass of advancing peat, and the other stampers are similarly disposed, so that a drawing, massaging, and reducing action upon the peat is produced. The rotation of the carrier is slow, and is so proportioned that each stamper makes overlapping strokes and makes a sufficient number of reciprocations, so that each part of the peat shall receive the impact and drawing effect of each stamper.

The method herein described of reducing peat turf by subjecting it to the action of a stamper which in its reciprocation has a penetrating and drawing action upon the peat, I believe to be new, as well as the method of reducing the peat turf by subjecting the same, while contained upon a moving carrier, to the drawing effect of a stamper, the face of which is opposed to the movement of the peat, and which further draws or reduces the peat, and likewise the method described of reducing the peat by subjecting the same to the massaging or drawing effect of a series of stampers having operating faces of progressively decreasing inclination, the bevels of which are opposed to the movement of the advancing peat.

The stampers may be made of any suitable material, wood having been found to give excellent results when used in combination with a stone bed plate in the carrier.

It is obvious that the embodiment of my invention described and shown in the foregoing description and drawings is but one typical form thereof, and that many modifications and changes may be made therefrom without departing from the spirit of my invention, and I do not mean to limit myself to the specific form described, but

What I claim and desire to secure by Letters Patent is:

1. The method of reducing peat turf to half stuff, consisting in subjecting the raw peat turf to a plurality of regularly recurring dissimilar rubbing operations, substantially as described.

2. The method of reducing peat turf to half stuff, consisting in subjecting the raw peat turf to a plurality of pressure operations applied to the said peat at an inclination relatively to a line perpendicular to the plane of the outer surface of the mass of peat, so as to rub the fibers apart and to reduce the same to a uniform condition, substantially as described.

3. The method of reducing peat turf to half stuff, consisting in subjecting the raw peat turf to a severe blow applied to the said peat at an inclination relatively to a line perpendicular to the plane of the outer surface of the mass of peat, and then subjecting the same to a similarly applied pressure operation in the reverse direction, substantially as described.

4. The method of reducing peat turf to half stuff, consisting in subjecting the peat turf to a series of pressure operations applied to the said peat at an inclination relatively to a line perpendicular to the plane of the outer surface of the mass of peat, each of which differs from the others.

5. The method of reducing peat turf to half stuff, consisting in subjecting peat turf to a series of pressure operations applied to the said peat at an inclination relatively to a line perpendicular to the plane of the outer surface of the mass of peat, each of which differs progressively from the others, substantially as described.

6. The method of reducing peat turf to half stuff, consisting in subjecting the raw peat turf to a series of pressure operations applied to the said peat at an inclination relatively to a line perpendicular to the plane of the outer surface of the mass of peat, each one of which differs from the others in the degree of application, substantially as described.

7. A machine for reducing peat turf, which comprises a carrier a series of stampers having operating faces of progressively decreasing inclination, means for reciprocating said stampers and means for causing a relative movement of said peat with relation to said stampers, during the stamping, in such direction that the peat is drawn against the inclined face of said stampers, substantially as described.

8. A machine for reducing peat turf which comprises a carrier, a series of reciprocating stampers having operative faces of progressively decreasing inclination, means for causing the said peat to be moved in a direction opposed to the inclination of the operative faces of said stampers, and means for causing the said stampers to remain in contact with the said peat turf between blows, substantially as described.

9. A machine for stamping peat turf comprising a movable carrier, a stamper arranged in operative relation thereto, having an operative face at an angle with relation to the floor of the carrier, means for reciprocating said stamper, and means for moving said carrier in a direction opposed to the inclination of the operative face of said stamper, substantially as described.

10. A machine for stamping peat turf comprising a movable carrier, a stamper arranged in operative relation thereto, having an operative face at an angle with relation to the path of travel of the carrier, means for reciprocating said stamper and means for moving said carrier in a direction opposed to the inclination of the operative faces of said stamper, and means for permitting said stamper to remain in contact with the peat between blows, substantially as described.

11. A machine for stamping peat turf comprising a stamper having its operative surface set at an angle to the horizontal, whereby a penetrating surface is formed at one side thereof, combined with a flat bed plate, and means for producing a relative movement of said parts so that the stamper shall operate over different parts of the bed plate, substantially as described.

12. A machine for stamping peat turf comprising a rotary carrier, a stamper having its operative surface set at an angle to the horizontal, whereby a penetrating surface is formed at one side thereof, means for reciprocating said stamper, and means for moving said carrier in a direction opposed to the inclination of the inclined face of said stamper, substantially as described.

13. A machine for stamping peat turf comprising a rotary carrier, a stamper having its operative surface set at an angle to the horizontal, whereby a penetrating surface is formed at one side thereof, means for reciprocating said stamper, and means for moving said carrier in a direction opposed to the inclination of the inclined face of said stamper, and means for causing said stamper to remain in contact with said peat between blows, substantially as described.

14. In a machine for stamping peat turf, a movable carrier, a stamper in operative relation thereto, a stem therefor, an offset on said stem, a tappet in said offset, an operating shaft and a lug thereon for reciprocating said stamper, substantially as described.

15. In a machine for stamping peat turf, a base plate, standards thereon, cross-heads connecting said standards at their upper ends, a rotary carrier, a plurality of bevel-faced stampers arranged in operative relation to said carrier and guided by said cross-heads, means for revolving said carrier, a main driving shaft and radial operating shafts driven by said main shaft, lugs on said operating shafts and tappets on said stampers in operative relation to said lugs, and supports for said operative shafts, substantially as described.

16. In a machine for stamping peat turf, a base plate, lower standards thereon, cross-heads connecting said stampers at their upper ends, a rotary carrier, a pair of upper standards upon each branch of said cross-head, an upper cross-head head uniting said upper standards, a plurality of stampers located in operative relation to said carrier, and guided by said upper and lower cross-heads, means for revolving said carrier, a main driving shaft and operating shafts radially disposed and driven by said driving shaft, lugs on said operating shafts and tappets located in operative relation thereto on said stampers, substantially as described.

17. In a machine for stamping peat turf, a base plate, standards thereon, cross-heads connecting said standards at their upper ends, a rotary carrier, an annular track on the bottom thereof, a plurality of supporting rollers having flanges riding in said track, a plurality of stampers arranged in operative relation to said carrier and guided by said cross-heads , means for revolving said carrier, a main driving shaft and radial operating shafts driven by said main shaft, lugs on said operating shafts and tappets on said stampers in operative relation to said lugs, and supports for said operative shafts, substantially as described.

18. In a machine for stamping peat turf, a base plate, lower standards thereon, cross-heads connecting said standards at their upper ends, a rotary carrier, an annular track on the bottom thereof, a plurality of supporting rollers having flanges riding in said track, a pair of upper standards upon each branch of said cross-head, a cross-head uniting said upper standards, a plurality of stampers located in operative relation to said carrier, and guided by said upper and lower cross-heads, means for revolving said carrier, a main driving shaft and operating shafts radially disposed and driven by said driving shaft, lugs on said operating shafts and tappets located in operative relation thereto on said stampers, substantially as described.

19. The method of reducing peat turf to half stuff which consists in subjecting the peat turf to a sharp blow, and then to an increasing rubbing pressure, whereby the peat turf is reduced by a rubbing or drawing action.

20. The method of reducing peat turf to half stuff which consists in first subjecting the peat turf to a sharp blow, and then to an increasing rubbing pressure, and then subjecting the peat turf to another blow, and to a rubbing pressure increasing to a less extent.

21. The method of reducing peat turf to half stuff which consists in causing a relative movement between the said peat turf and a plurality of rubbing surfaces, in causing said rubbing surfaces to exert pressure upon said peat turf in a direction inclined relatively to a line perpendicular to the said relative path of travel, so as to rub the fibers apart and reduce the same.

22. A machine for stamping peat turf comprising a carrier, a stamper arranged in operative relation thereto, means for causing relative movement between the same, an operative face to said stamper inclined throughout relative to such path of travel, and in a direction opposed thereto.

23. A machine for stamping peat turf comprising a carrier, a series of stampers arranged in operative relation thereto, means for causing a relative movement between the same, operating faces to said stampers inclined relative to such path of travel in a direction opposed thereto, and with a progressively decreasing inclination.

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

CLIFFORD E. DUNN.

Witnesses:

ADOLPH F. DINSE,

HENRIETTA E. WORKMAN.