

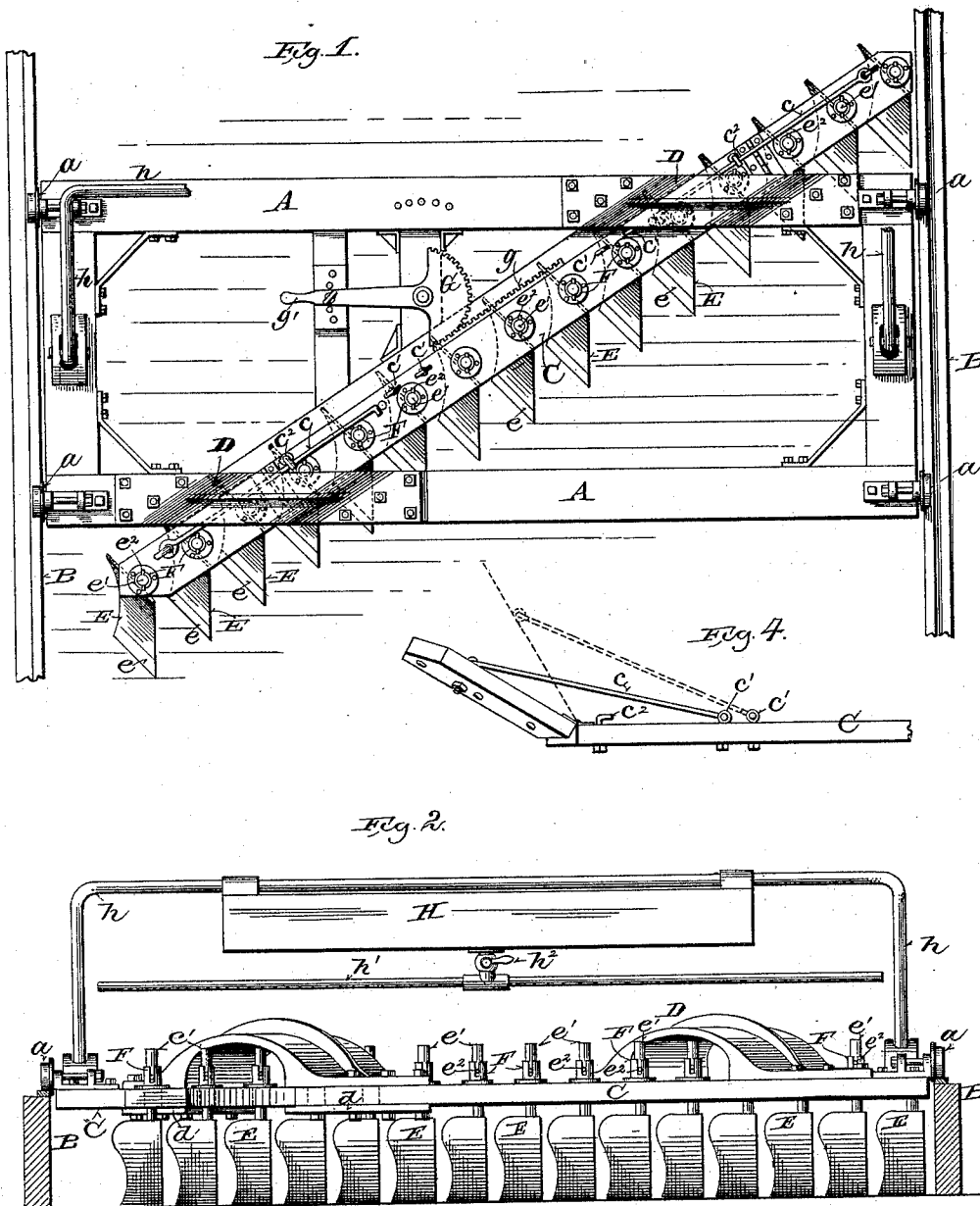
(No Model.)

2 Sheets—Sheet 1.

A. MUNTZENBERGER.
MALT PLOW.

No. 476,293.

Patented June 7, 1892.



Witnesses:

E. C. Amur
Chas. R. Goss.

Inventor:

Adolph Muntzenberger
By Winkler, Henders, Smith & Pott, Attorneys.

Attorneys.

UNITED STATES PATENT OFFICE.

ADOLPH MUNTZENBERGER, OF HARVARD, ILLINOIS.

MALT-PLOW.

SPECIFICATION forming part of Letters Patent No. 476,293, dated June 7, 1892.

Application filed July 27, 1891. Serial No. 400,795. (No model.)

To all whom it may concern:

Be it known that I, ADOLPH MUNTZENBERGER, of Harvard, in the county of McHenry and State of Illinois, have invented certain new and useful Improvements in Malt-Plows; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

The main object of my invention is to facilitate the stirring and agitation of malt and to effectively separate and distribute the same during the processes of germination and drying.

It consists, essentially, of a carriage adapted to travel back and forth over the malt-floor, an obliquely-arranged plow-beam mounted upon said carriage and provided with a gang of plows, together with certain peculiarities of construction and arrangement hereinafter particularly described, and pointed out in the claims.

In the accompanying drawings like letters designate the same parts in the several figures.

Figure 1 is a plan view of a malt-plow embodying my improvements. Fig. 2 is a front elevation of the same. Fig. 3 is an end elevation, and Fig. 4 is a detail showing one of the jointed ends of the plow-beam and the manner of raising and holding the same in an elevated position.

A represents a frame, which may be constructed of timber or any other suitable material in rectangular or other suitable form. It is provided at the ends with flanged or grooved wheels *a a*, adapted to run upon tracks *B B*, provided for the purpose at the sides of the malt-floor. *C* is the plow-beam mounted obliquely upon said frame, in which it is capable of endwise movement. The plow-beam may be constructed of timber or any other suitable material and attached to the frame or carriage in any suitable manner, so as to permit of its longitudinal movement. A convenient construction for the purpose is shown in the drawings, and consists of cut-

ting the side beams of the carriage *A* obliquely to receive the plow-beam *C* and of connecting the obliquely-cut ends of the carriage-beams by yokes *D D*, which are arched upwardly to permit of the shanks or stems of the plows to pass under the same in shifting the plow-beam longitudinally. These yokes are bolted to the top of the carriage-frame *A* with plates *d d* on the under side, through which the bolts pass, said yokes and plates projecting over the oblique ends of the carriage-beams, so as to embrace the sides of the plow-beam *C* and hold and guide the same in place.

E E are the plows or shovels constructed of galvanized iron or other suitable material approximately in the form of the mold-board of an ordinary plow. When constructed of iron or metal, the material preferably employed for the purpose, the lower edges of the plows or shovels are provided with detachable strips *e e*, of wood, rubber, or other suitable material, which will not abrade the malt-floor or be as liable to mutilate and injure the malt. They are formed or provided with vertical stems or shanks *e' e'*, by means of which they are attached at suitable intervals to the beam *C*.

To provide for the movement of the machine in opposite directions and to adapt it to irregularities and inequalities in the floor which it traverses, the several plows or shovels are made reversible and vertically movable.

The plow-beam *C* is provided on the upper side with vertically-notched sleeves *F F*, in which the shanks *e' e'* of the plows are loosely inserted, said shanks *e'* being provided with cross-pins or lateral projections *e² e²*, which when the plows rest normally on the malt-floor engage the notches in said sleeves, as shown in Fig. 2, thereby holding the several plows in their proper working positions and at the same time permitting of their free vertical movement independent of each other to conform to the irregularities in the surface of the malt-floor. By the oblique position of the plow-beam each plow *E* is brought in advance of the one next to it, so as not to interfere with the turning of the material by the latter. In order to cause the several plows to traverse different paths when the movement of

the machine is reversed, the beam C is made longitudinally movable in the frame or carriage A.

To shift the plow-beam lengthwise when the movement of the machine is reversed, any suitable mechanism may be employed. I have shown as convenient for the purpose a segment-gear G, engaging a rack *g* on the plow-beam and journaled upon a stud on a cross-girt of frame A and provided with a lever-arm *g'*, by which the gear may be operated and the plows shifted laterally in either direction. When shifted and properly adjusted, the plow-beam is held in place by a pin passing through the arm *g'* into one of a series of holes in frame A or by any other suitable locking device. The vertical notches in the sleeves F extend diametrically through them, and the plows are reversed by raising them until the pin *c*² clears said notches, and turning them half-way round, in which reversed positions the pins will again drop into and engage with said notches, thereby holding the plows in their proper working position for the reverse movement of the machine.

By providing a series of perforations in the frame A or an adjustable fastening for holding the plow-beams in place the plows may be adjusted laterally, so as to traverse the desired paths through the material, thus facilitating the effectual turning of the malt in opposite directions and its thorough agitation.

As it is sometimes desirable to turn and agitate the malt along the center of the floor more than at the edges, I joint the plow-beam C near each end and provide it with hinges, whereby either or both of the end sections may be turned up, as shown in Fig. 4, so as to carry the plows or shovels E E attached thereto out of contact with the malt.

The hook *c* and eyes or staples *c'* may be employed for holding the hinged end sections of the plow-beam in their elevated position, and when they are lowered into working position they may be held in place by hooks *c*², swiveled in the plow-beam and arranged to be turned over and across the hook *c*, as shown in Fig. 1.

For the purpose of moistening the malt in the process of germinating, I provide the machine with a water-tank H, which is suspended from a bail-shaped rod *h*, hinged at its ends to frame A, so as to be shifted in position when the movement of the machine is reversed.

h' is a tube or pipe attached to the water-tank H crosswise of the malt-floor and extending approximately from end to end of the machine. It is formed with a series of small perforations, through which the water is sprinkled in fine jets or streams upon the grain just behind the plow.

A cock *h*² affords means for regulating and controlling the supply of water from the tank H to the perforated pipe *h'*, constituting the sprinkler.

Any suitable propelling mechanism or con-

nections may be employed for moving the machine back and forth over the malt-floor. I have shown in Fig. 3 as suitable for the purpose a cable I, attached at the ends to the frame of the machine and passing over drums or sheaves K K, located at or near the ends of the malt-floor, one of said drums or sheaves being connected in any suitable manner to a convenient source of power.

Various changes in the details of construction may be made within the intended scope of my invention.

I claim—

1. The combination, in a malt-plow, of a carriage adapted to travel back and forth over the malt-floor and a gang of plows provided with vertical stems, which are freely movable lengthwise in vertical apertures in said carriage, substantially as and for the purposes set forth.

2. The combination, in a malt-plow, of a carriage adapted to travel back and forth over the malt-floor and provided at the sides with wheels, ways for said wheels at the sides of the malt-floor, and a plow-beam obliquely mounted upon said carriage and provided with a gang of freely vertically-movable plows, substantially as and for the purposes set forth.

3. The combination, in a malt-plow, of a carriage provided with a plow-beam longitudinally adjustable in said carriage transversely to the travel of the plow and a gang of plows attached to said beam, substantially as and for the purposes set forth.

4. The combination, in a malt-plow, of a carriage adapted to travel back and forth over the malt-floor and provided with a plow-beam oblique to its line of travel and a gang of plows provided with vertical stems, which are freely movable lengthwise in vertical apertures in said beam and capable of being turned therein for reversing the plow, said stems being held from turning when the plows are in operation by keys which permit of their free vertical movement, substantially as and for the purposes set forth.

5. The combination, in a malt-plow, of a suitable frame adapted to travel back and forth over the malt-floor and a gang of reversible and vertically adjustable plows, substantially as and for the purposes set forth.

6. The combination, in a malt-plow, of a suitable frame adapted to travel back and forth over the malt-floor, a plow-beam mounted obliquely upon said frame and adjustable longitudinally therein, and a gang of plows attached to said beam, substantially as and for the purposes set forth.

7. The combination, in a malt-plow, of a suitable frame adapted to travel back and forth over the malt-floor, a plow-beam mounted obliquely and longitudinally adjustable in or upon said frame and provided with a gang of plows reversibly connected therewith, substantially as and for the purposes set forth.

8. The combination, in a malt-plow, of a suitable frame adapted to travel back and

forth over the malt-floor and a longitudinally-adjustable plow-beam mounted obliquely upon said frame and provided with reversible and vertically adjustable plows, substantially as and for the purposes set forth.

9. The combination, in a malt-plow, of a suitable frame adapted to travel back and forth over the malt-floor and a plow-beam mounted upon said frame and provided with a gang of plows, said beam being jointed so as to permit of raising a part of the plows out of contact with the malt, substantially as and for the purposes set forth.

10. The combination, in a malt-plow, of a suitable frame adapted to travel back and forth over the malt-floor and provided with a gang of reversible plows and a sprinkler adjustably connected with said frame, so as to be shifted in the direction of travel of the machine when its movement is reversed, substantially as and for the purposes set forth.

11. The combination, in a malt-plow, of a suitable carriage adapted to travel back and forth over the malt-floor on ways provided for the purpose, a plow-beam mounted upon said frame and provided at suitable intervals with vertical sleeves longitudinally notched or slotted, and a gang of plows provided with upwardly-extending cylindrical shanks, which are loosely inserted in said sleeves and provided with lateral projections adapted to en-

gage the notches or slots therein, so as to permit of the free vertical movement of said plows and to hold the same in proper working position, substantially as and for the purposes set forth.

12. The combination, in a malt-plow, of a suitable carriage adapted to travel back and forth over the malt-floor on ways provided therefor, a gang of freely vertically-movable plows attached to said carriage, and a cable passing over drums at or near the ends of the malt-floor and attached to said carriage, so as to move the same back and forth, substantially as and for the purposes set forth.

13. The combination, in a plow for turning malt, of suitable ways, a carriage adapted to travel on said ways over the malt-floor, and a gang of freely vertically-movable plows connected therewith and each consisting of a metallic mold-board provided at the lower edge with a strip of wood or other equivalent material which will not abrade the malt-floor, substantially as and for the purposes set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

ADOLPH MUNTZENBERGER.

Witnesses:

STUART SAUNDERS,
J. J. PAUNTAIN.