

(No Model.)

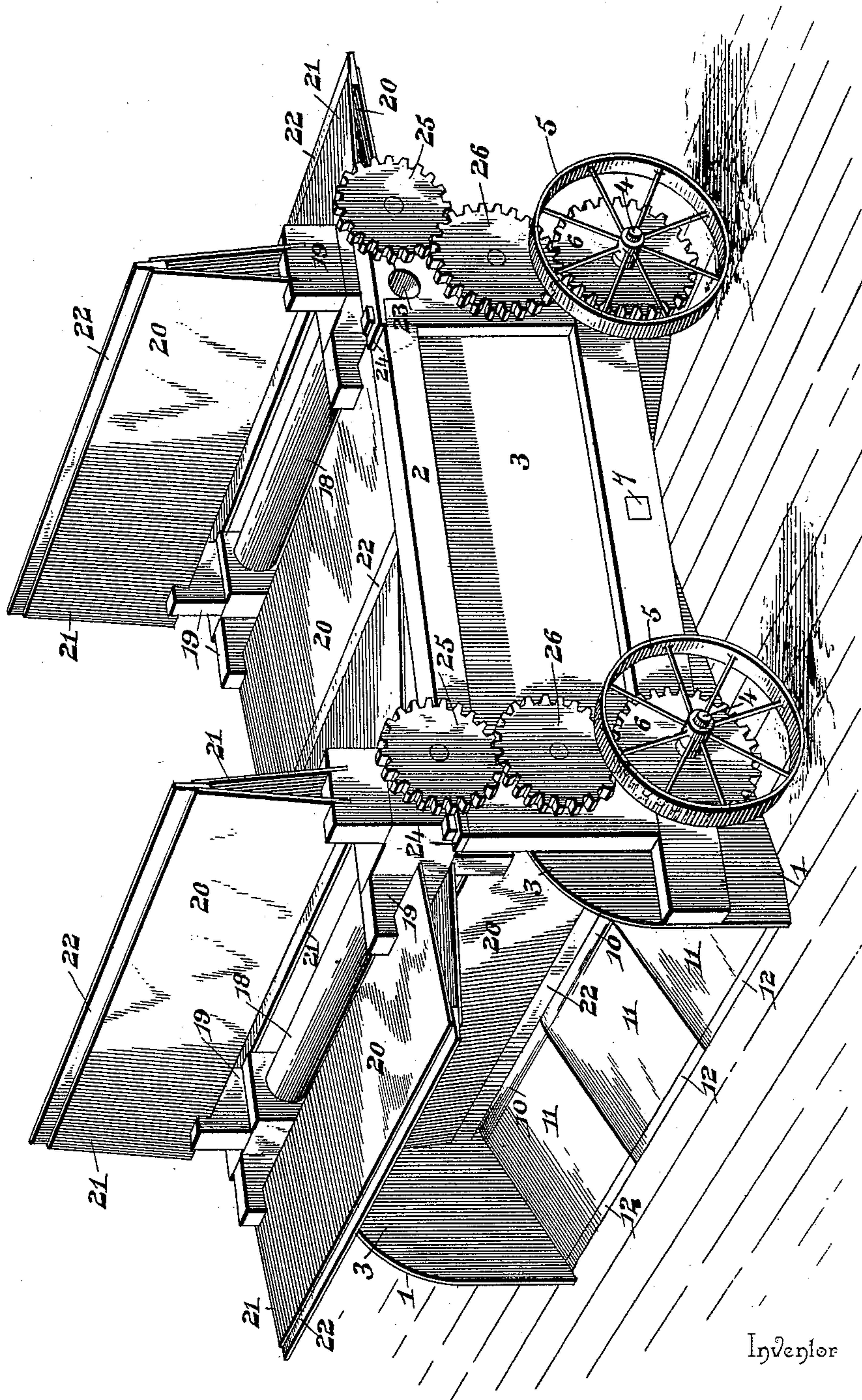
2 Sheets—Sheet 1.

E. KRAFT.
MALT TURNING MACHINE.

No. 587,444.

Patented Aug. 3, 1897.

Fig. 1.



Inventor

Witnesses

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2 Sheets—Sheet 2.

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Fig. 2.

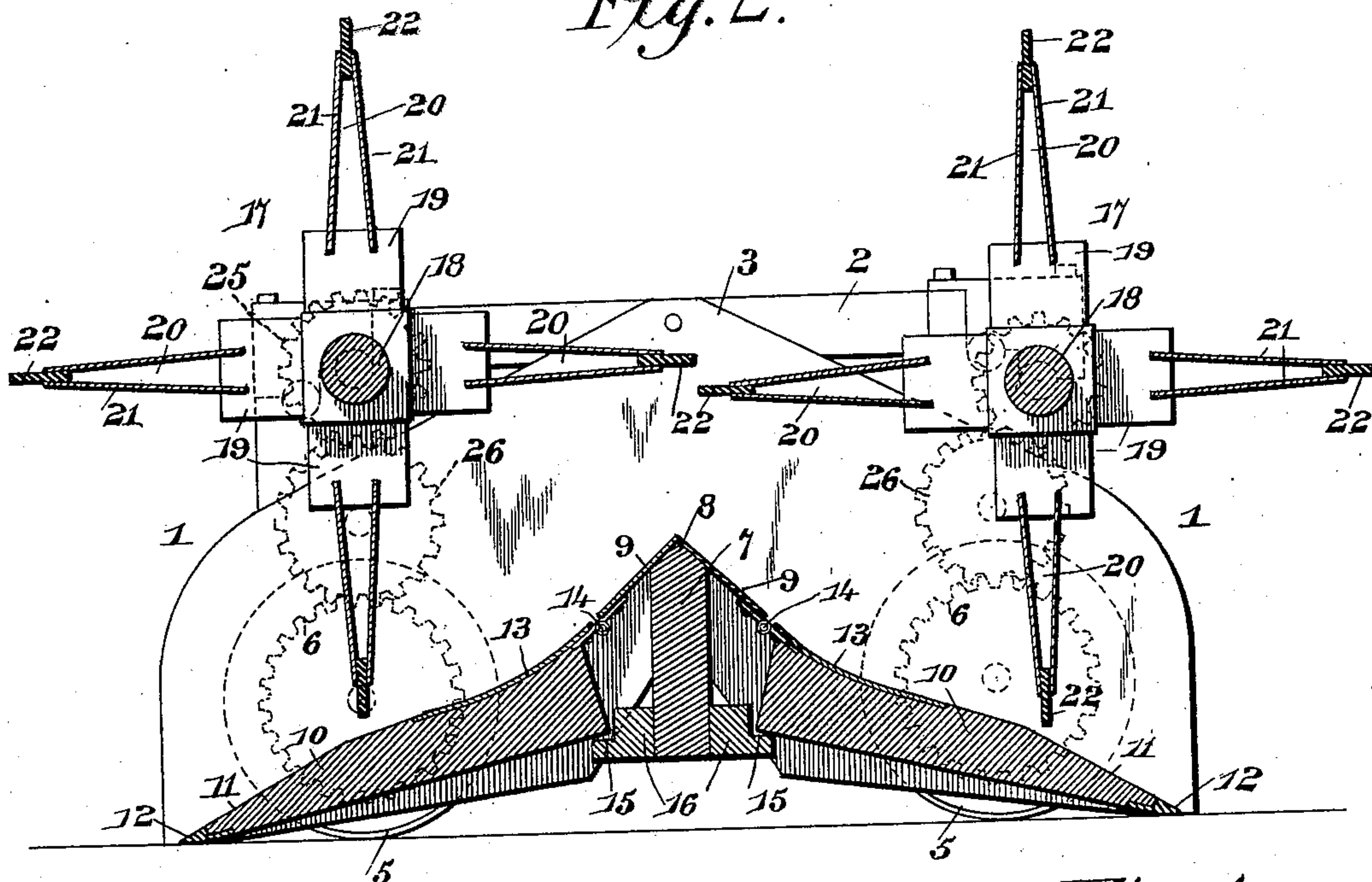
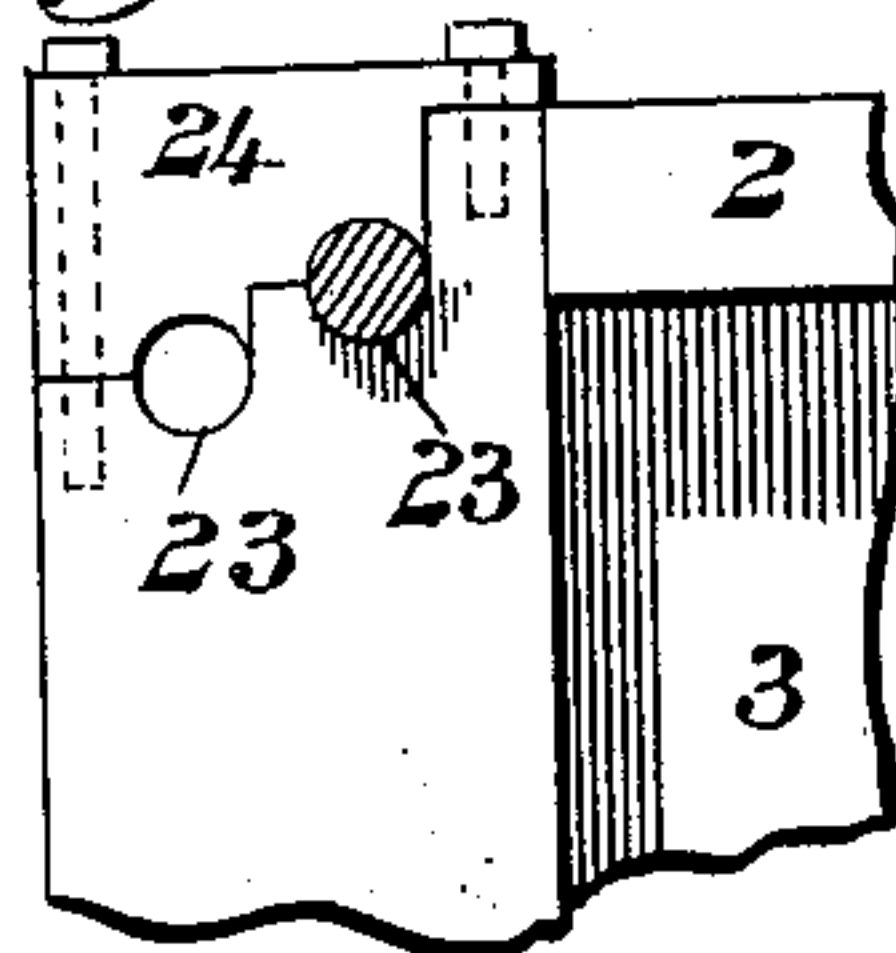
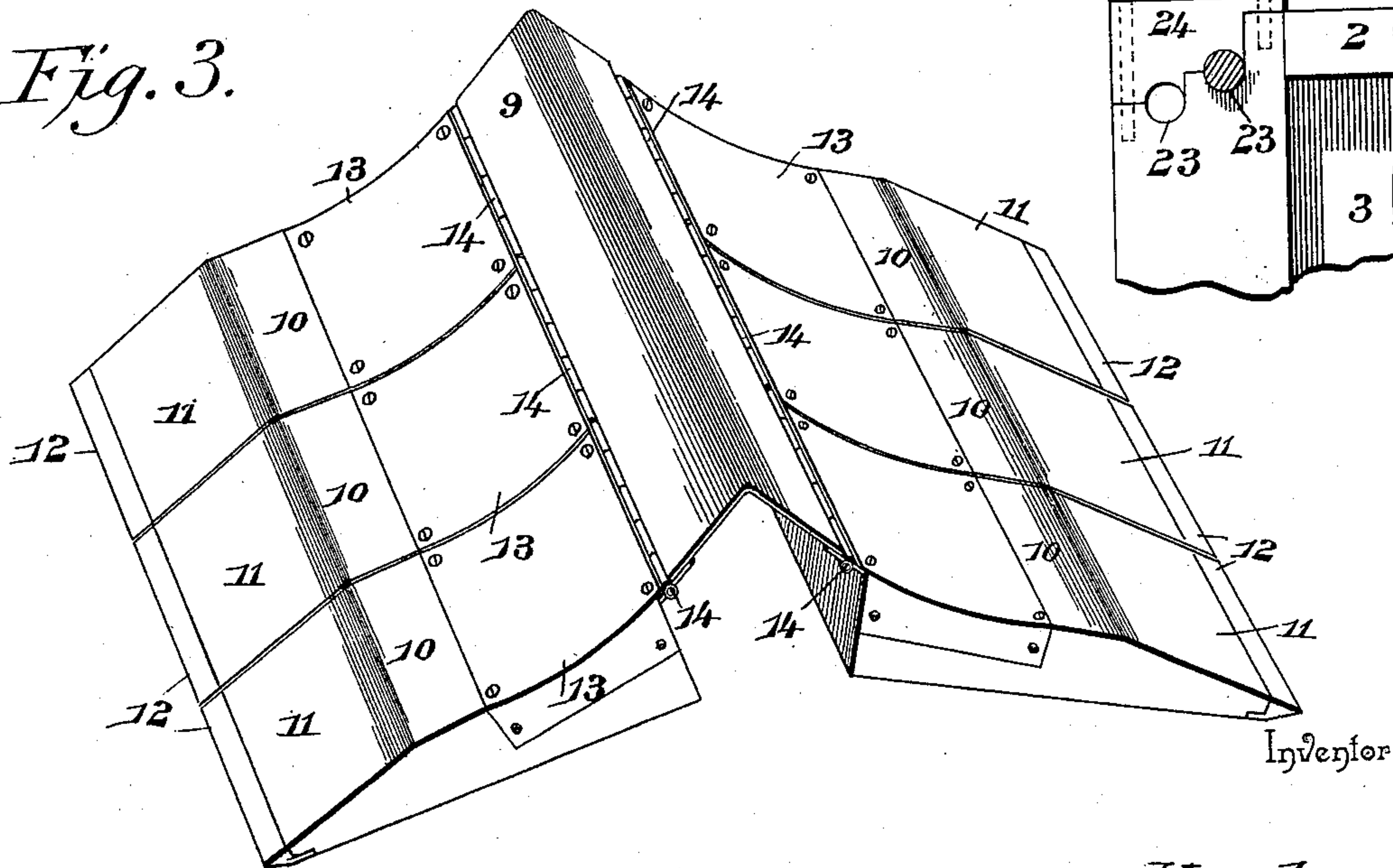


Fig. 4.

Fig. 3.



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UNITED STATES PATENT OFFICE.

EDWARD KRAFT; OF MADERA, PENNSYLVANIA.

MALT-TURNING MACHINE.

SPECIFICATION forming part of Letters Patent No. 587,444, dated August 3, 1897.

Application filed August 19, 1896. Serial No. 603,281. (No model.)

To all whom it may concern:

Be it known that I, EDWARD KRAFT, a citizen of the United States, residing at Madera, in the county of Clearfield and State of Pennsylvania, have invented a new and useful Malt-Turning Machine, of which the following is a specification.

This invention relates to malt-turning machines; and it has for its object to provide a new and useful machine of this character especially designed for use in malt-kilns and malt-sprouting houses to provide simple and efficient means for turning the malt over on the floor without the aid of hand-shovels, which are now commonly employed for this purpose.

In the treatment of malt it is customary to spread the same out on large floors for sprouting, but ordinarily the malt sprouts more rapidly in the central layers than on the bottom or top, and it is therefore necessary to turn up and mix the grain at intervals in order to insure an even sprouting and at the same time prevent the malt from getting too solid in bunches and also to ventilate the same to prevent the accumulation of gas. This work has been usually accomplished by hand, but the herein-described machine automatically does the same work more positively and thoroughly than has heretofore been possible.

With these and other objects in view, which will readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination, and arrangement of parts hereinafter more fully described, illustrated, and claimed.

In the drawings, Figure 1 is a perspective view of a malt-turning machine constructed in accordance with this invention. Fig. 2 is a central vertical longitudinal sectional view thereof. Fig. 3 is an enlarged detail in perspective of opposite sets of self-adjusting shovel-shoes. Fig. 4 is an enlarged detail elevation of one corner of the traveling scoop-box, illustrating the pair of corner bearings respectively disclosed at different elevations.

Referring to the accompanying drawings, the numeral 1 designates a traveling scoop-box adapted to travel over the floor of a kiln or sprouting-house for the treatment of malt grain, and said scoop-box is open at both

ends and essentially comprises the opposite parallel side frames 2, having metal facing-plates 3 at their inner sides, so as to inclose a space between the opposite side frames 2 of the box through which the malt is worked when taken up by the turning and mixing devices of the machine.

The opposite side frames 2 of the scoop-box 1 are provided at their opposite lower ends with short offstanding wheel-spindles 4, which receive thereon the floor-wheels 5, carrying at their inner sides the cog drive-wheels 6, the function of which wheels will be more particularly referred to. The wheels 5 at opposite sides of the box provide for the wheeled support thereof, so that the same may be readily moved over the floor on which it works by any suitable means, and at a point centrally between their opposite ends the side frames 2 of the scoop-box are connected by a central transverse cross-bar 7, Fig. 2, having a pointed upper edge 8, on which is fitted the central inverted-V-shaped crown-plate 9, at opposite sides of which, within the box, are arranged separate sets of inclined self-adjusting shovel-shoes 10.

The shovel-shoes 10 at opposite sides of the crown-plate 9 are duplicates in construction and arranged in a transverse series side by side, and said shoes are provided with beveled lower ends 11, tapering to shoveling-points 12, which travel directly on the floor and serve to scoop up the grain onto the shovels. The shovel-shoes 10 in each of the opposite transverse series or sets of such shoes are detachably fastened at their inner upper sides to the hinge-plates 13, hinged at one edge, by means of the hinges 14, to the opposite side edges of the central crown-plate 9, so that each shovel-shoe is independently hinged to the plate 9, so as to readily adjust itself to inequalities in the floor over which the machine travels.

The hinge-plates 13 are preferably embedded flush in the shoes 10 to which they are fastened, so as to provide a perfectly-smooth upper surface for the shoes over which the malt can be smoothly and evenly worked during the turning and mixing thereof, and by reason of the disposition of the crown-plate 9 the opposite sets of independently-movable shovel-shoes are normally disposed at an inclination downward from the center of the

scoop-box toward the open ends thereof; so that the outer pointed ends of the shoes will travel directly on the floor. The said shoes 10 are adapted to engage at their inner ends below the hinges 14 in the rest-seats 15, formed longitudinally in the outer sides of the cleats 16, arranged on opposite sides of the central cross-bar 7 at the lower edge of such cross-bar, and at this point it will be observed that the rest-cleats 16 assist in properly supporting the series of shovels 10 and also serve to brace such shovels as the same are being pushed over the floor to scoop up the sprouting malt.

Arranged for rotation over each of the opposite series or sets of shovel-shoes 10 is a rotating beater-reel 17, essentially comprising a transverse reel-axle 18, a series of radial hub-blocks 19 near each end of the axle 18, and a series of regularly-spaced radially-disposed beater-wings 20.

The radially-disposed beater-wings 20 of each beater-reel essentially comprise a pair of flat plates 21, suitably fitted at their inner edges in the radial hub-blocks 19 and convergently disposed toward their outer edges, so as to provide the beater-wings 20 with opposite beveled sides that allow the grain to readily slide off of the wings, and between the outer edges of the convergently-disposed plates 21, comprising the beater-wings, are clamped rubber or other suitable flexible edge strips 22, which protect the grain from undue friction at the outer edges of the wings and thereby prevent the grain from being overheated while turned and mixed by the machine.

The transverse axles 18 of the oppositely-arranged beater-reel are adapted to be interchangeably journaled in either of a pair of bearings 23, preferably capped by a removable bearing-block 24 and formed in the side frames 2 of the scoop-box at the opposite upper corners of said side frames, so that at each end of the scoop-box will be arranged diametrically opposite pairs of the bearings 23. The separate bearings 24 at each end of the scoop-box are respectively disposed at different elevations or in different vertical and horizontal planes to provide means whereby the axles 18 of the reels may be adjusted toward or away from the vertical center of the scoop-box according as the reels are being used for beating the scooped grain back through the scoop-box or for returning the same onto the floor. The beater-reel which is employed for beating the scooped grain back through the box has its axle journaled in the lower set of bearings at one end of the box, while the other reel has its axle journaled in the higher set of bearings at the opposite end of the box, so that the outer edges of its wings will travel in such close proximity to the point of the crown-plate 9 as to positively catch all the grain worked up to that point and beat the same back onto the floor. The said axles 18 of the oppositely-

arranged beater-reels have mounted on their opposite extremities the gear-wheels 25, meshing with adjacent idler gear-wheels 26, which in turn mesh with the cog drive-wheels 6 therebelow to provide for communicating motion from the floor-wheels 5 to the beater-reels as the scoop-box travels over the floor.

In the operation of the machine one beater-reel may be all that is required, especially in the malt-kiln, and may be readily changed from one end of the box to the other, according to the direction of travel, but when both reels are employed the same rotate simultaneously and in the same direction, the one serving the function of stirring up and turning the malt grain as it enters the scoop-box, while the other reel acts in the capacity of a delivery-reel and returns the malt back to the floor.

Changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

Having thus described the invention, what is claimed, and desired to be secured by Letters Patent, is—

1. In a malt-turning machine, a traveling scoop-box open at both ends and carrying a shovel sliding on the floor over which the box travels, and a rotating beater-reel working within the box over said shovel, substantially as set forth.

2. In a malt-turning machine, a traveling scoop-box open at both ends and carrying a self-adjusting shovel working on the floor over which the box travels, and a rotating beater-reel mounted within the box over said shovel, substantially as set forth.

3. In a malt-turning machine, a wheeled scoop-box, carrying oppositely-inclined shovels, substantially as set forth.

4. In a malt-turning machine, a wheeled scoop-box carrying oppositely-inclined self-adjusting shovels, and rotating beater-reels mounted within the box over said shovels, substantially as set forth.

5. In a malt-turning machine, a wheeled scoop-box open at both ends, opposite sets of oppositely-inclined self-adjusting shovel-shoes mounted within the box and having their lower ends contacting with the floor over which the box travels, and rotating beater-reels mounted within the box over the opposite sets of shovel-shoes, substantially as set forth.

6. In a malt-turning machine, a wheeled scoop-box open at both ends, an inverted-V-shaped crown-plate transversely connecting the opposite sides of the box centrally between their ends, opposite sets of oppositely-inclined self-adjusting shovel-shoes hinged at their inner upper edges, to the opposite edges of said crown-plate, and rotating beater-reels mounted to rotate in the box over the opposite sets of shovel-shoes, substantially as set forth.

7. In a malt-turning machine, a wheeled scoop-box open at both ends, a transverse cross-bar connecting the opposite sides of the box centrally between their ends and carrying rest-cleats at opposite lower sides, an inverted-V-shaped crown-plate supported on said cross-bar, a transverse series of self-adjusting shovel-shoes arranged at an incline at each side of said crown-plate and hinged at their inner upper edges to such plate, said shovel-shoes being provided with beveled lower ends and adapted to engage at their inner ends below their hinges against said rest-cleats, and rotating beater-reels mounted to rotate in the box over the opposite set or series of self-adjusting shovel-shoes, substantially as set forth.

8. In a malt-turning machine, a wheeled scoop-box open at both ends and provided at each end in its opposite sides with transversely-opposite pairs of bearings, the separate bearings of each pair being respectively disposed in different vertical planes and at different elevations, oppositely-inclined shovels mounted within the box, and rotating beater-reels arranged to rotate over the opposite shovels and having their axles interchangeably journaled in either of the differ-

ent bearings at the ends of the box, the extremities of the reel-axles being geared directly with the wheels supporting the scoop-box, substantially as set forth.

9. In a malt-turning machine, a wheeled scoop-box open at both ends and carrying a shovel adapted to slide on the floor over which the box travels, and a rotating beater-reel journaled in the sides of the box above the shovel and comprising a transverse axle, a series of radial hub-blocks near the ends of the axle, and a series of regularly-spaced radially-disposed beater-wings, each beater-wing comprising a pair of flat plates fitted at their inner edges in the radial hub-blocks and convergently disposed toward their outer edges, and flexible edge strips fitted between said outer edges of the convergently-disposed plates of each beater-wing, substantially as set forth.

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

EDWARD KRAFT.

Witnesses:

JOSEPH DENNY,
W. IRVIN SHAW.