2 Sheets—Sheet 1.

M. J. AUSTIN.

DITCHING-MACHINE.

No. 182,986. Patented Oct. 10, 1876.

Fig. 1.

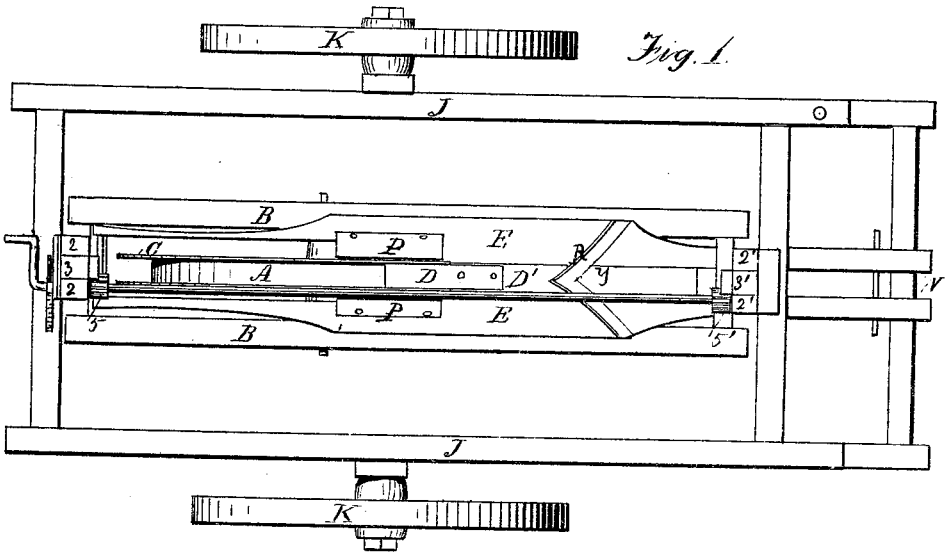
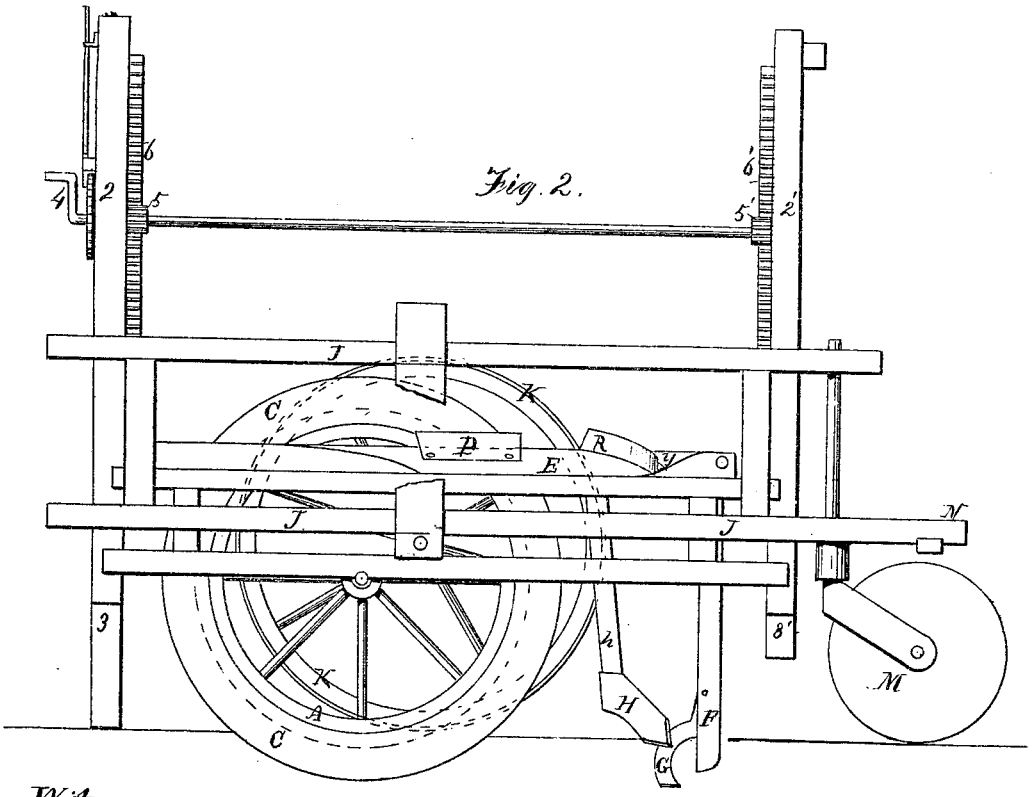


Fig. 2.



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2 Sheets—Sheet 2.

M. J. AUSTIN.

DITCHING-MACHINE.

No. 182,986. Patented Oct. 10, 1876.

Fig. 3.

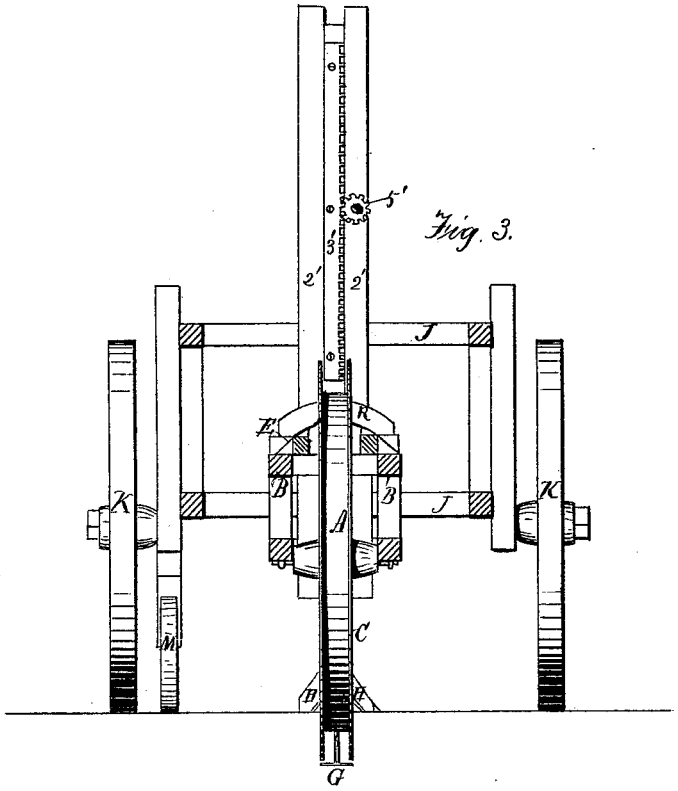
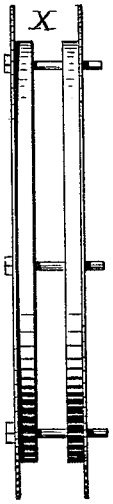


Fig. 4.



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UNITED STATES PATENT OFFICE

MATTHEW J. AUSTIN, OF BONHAM, TEXAS.

IMPROVEMENT IN DITCHING-MACHINES.

Specification forming part of Letters Patent No. **182,986**, dated October 10, 1876; application filed May 5, 1876.

To all whom it may concern:

Be it known that I, MATTHEW JONES AUSTIN, of the city of Bonham, county of Fannin, State of Texas, have invented a Ditching-Machine, of which the following is a specification:

My invention consists in the peculiar construction of a ditching-machine, hereinafter described, the same consisting in an exterior carrying-frame, provided with wheels and a tongue, to which is adjustably attached an interior frame, carrying the colter G for cutting the bottom of the ditch, the wideners H for cutting the shoulders of the same, and a double flanged wheel, A, which cuts the sides of the ditch, and carries up the earth impacted between the flanges to the upper part of the machine, whence it is removed by a scraper, D, and thrown to either side of the ditch by a double inclined shed, D′, all as hereinafter more particularly set forth.

The object of my invention is to easily and rapidly cut or excavate on the surface of the ground, soil, clay, or soft stone a ditch or trench of any reasonable width or depth suitable, and for the purpose of setting in pickets for making picket-fences, for laying pipes for water, gas, or other purposes, and for drainage and culverts for agricultural, sanitary, or other purposes, by the combination and use of one double flanged wheel A, as shown in Figs. 1, 2, and 3 of the accompanying drawing, so set in the frame B that two or more horses or other team may draw it forward. The weight of the frame resting on the wheel, sinks the flanges C into the ground, and as the wheel revolves, it lifts, by friction and cohesion, the mass of earth thus pressed between the flanges to the top of the wheel, where it is thrown out from between the flanges by a sharp scraper, D, set on a hinge in the frame, and resting horizontally and nearly at a tangent with the top of the wheel. The earth so thrown out is thrown to either side of the ditch by a slanting shed, E, attached to the scraper-bar D′, the wheel being guided in the ditch and the frame held level by the guiding foot-piece F, to which is attached a sharp subsoil-colter, G, for loosening the ground when hard or cutting roots when needed, with shoulders H attached to a movable foot-piece, *h*, for broadening or shouldering the trench to any required depth, as shown in Fig. 2, and two extra flanges, X, in Fig. 4, made to fit and be bolted to the main wheel, with triple-scrapered roof Y to fit the same, as shown in Figs. 1 and 2 of the accompanying drawing. The machine is illustrated more in detail in Fig. 2, in which a side view of the whole machine is given.

The carriage-frame J is supported a little back of the center of gravity by two wheels, K, and in front by one or more caster-wheels, M, which freely turns in any direction, and being thus supported, allows the use of a limber tongue, N, to which the team is hitched, and by which the machine is easily turned and adjusted in any position.

The frame J is made large enough to admit through it the frame B, and has fastened on the inside, at each end, grooved guides 2 2′, in which corresponding tongued guides 3 3′, fastened on the outside of the frame B, exactly fit, thus allowing a free but steady elevation or lowering of the frame B by means of a shaft and crank, 4, passing through the guides 2 2′, on which shaft two pinion-wheels, 5 5′, are fastened, which work into two cog-plates, 6 6′, fastened on the tongue-guides 3 3′, so that by turning the crank 4 the ditching-wheel A and foot-piece F, which are attached to the frame B, may be lowered into the ditch or elevated above the ground.

The wheel A being the leading feature in my invention, may be a simple plain wheel, made of either wood or iron, but which must contain two or more sharp cutting-flanges, riveted or fastened to the sides of the rim, and projecting beyond the face of the wheel, say one-twelfth of its diameter or less. The width of the wheel A between its flanges C should not be more than the depth of its flanges, or one-twelfth its diameter; but if it be required to make a ditch broader than this, then the extra flanges X, as shown in Fig. 4, will be bolted on each side the wheel A, thus forming a compound wheel to any required breadth, and the compound scraper placed in its position.

If it be required to broaden or shoulder the ditch to any given portion of its depth, then the shouldering flanges H will be bolted to the foot-piece *h* at any given position, as shown

in Fig. 2. There are also two scrapers, P, fastened on either side of the scraper-bar D′, to scrape the outside of the flanges C, and a fender, R, fastened to the shed E, to prevent the earth from passing over the front of the machine, and a pivoted fender, R′, to throw all the earth to either side of the ditch.

I do not propose to cut the whole depth of the ditch at once passing over it, but to cut the full depth of the flanges each time, passing back and forth until it is the required depth, or equal to one-half the diameter of the wheel A.

It will be evident that the frame B, or its equivalent, containing the ditching apparatus, may be used without the frame or carriage J, or that J may be made in any other form, and that a wheel may be substituted for the foot-piece F, either with or without the colter, as it works well in clear, damp soil without the colter.

I claim as my invention—

1. The vertically-sliding interior frame, moving in ways in the exterior frame, and operated by means of the crank-turning toothed pinions engaging with a rack, and controlled by a pawl and ratchet, as described.

2. In combination with the interior frame, constructed as described, the T-shaped colter G, the widener H, the flanged wheel A, the scraper D, shed D′, and fender R, all constructed, arranged, and operating substantially as described.

MATTHEW JONES AUSTIN.

Witnesses:
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