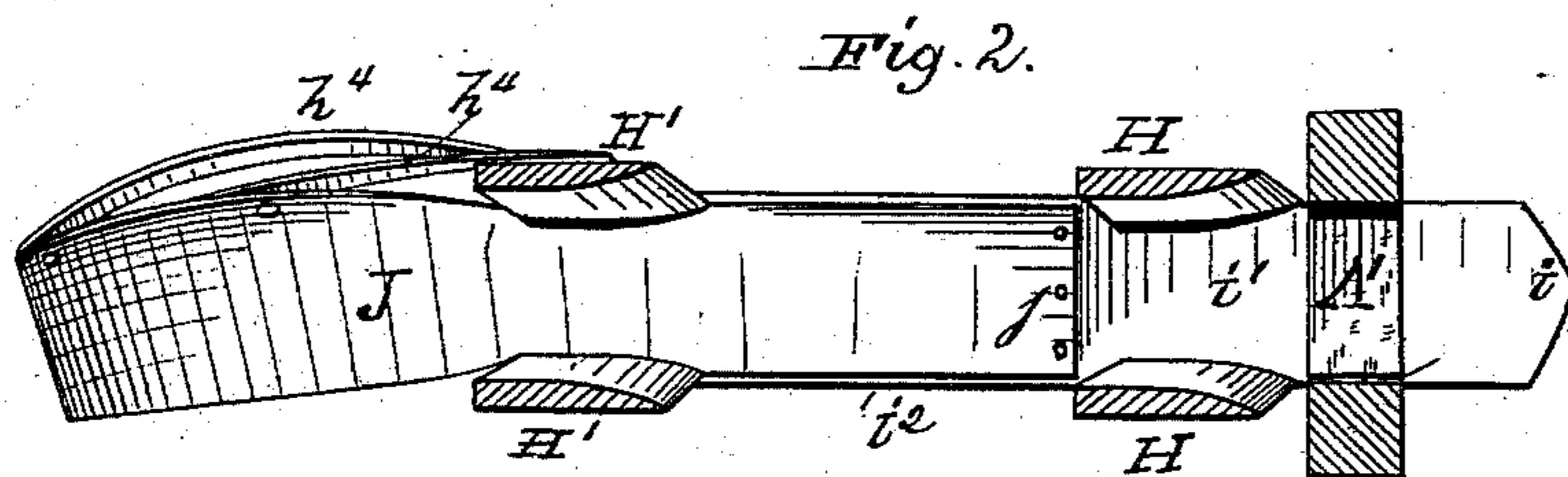
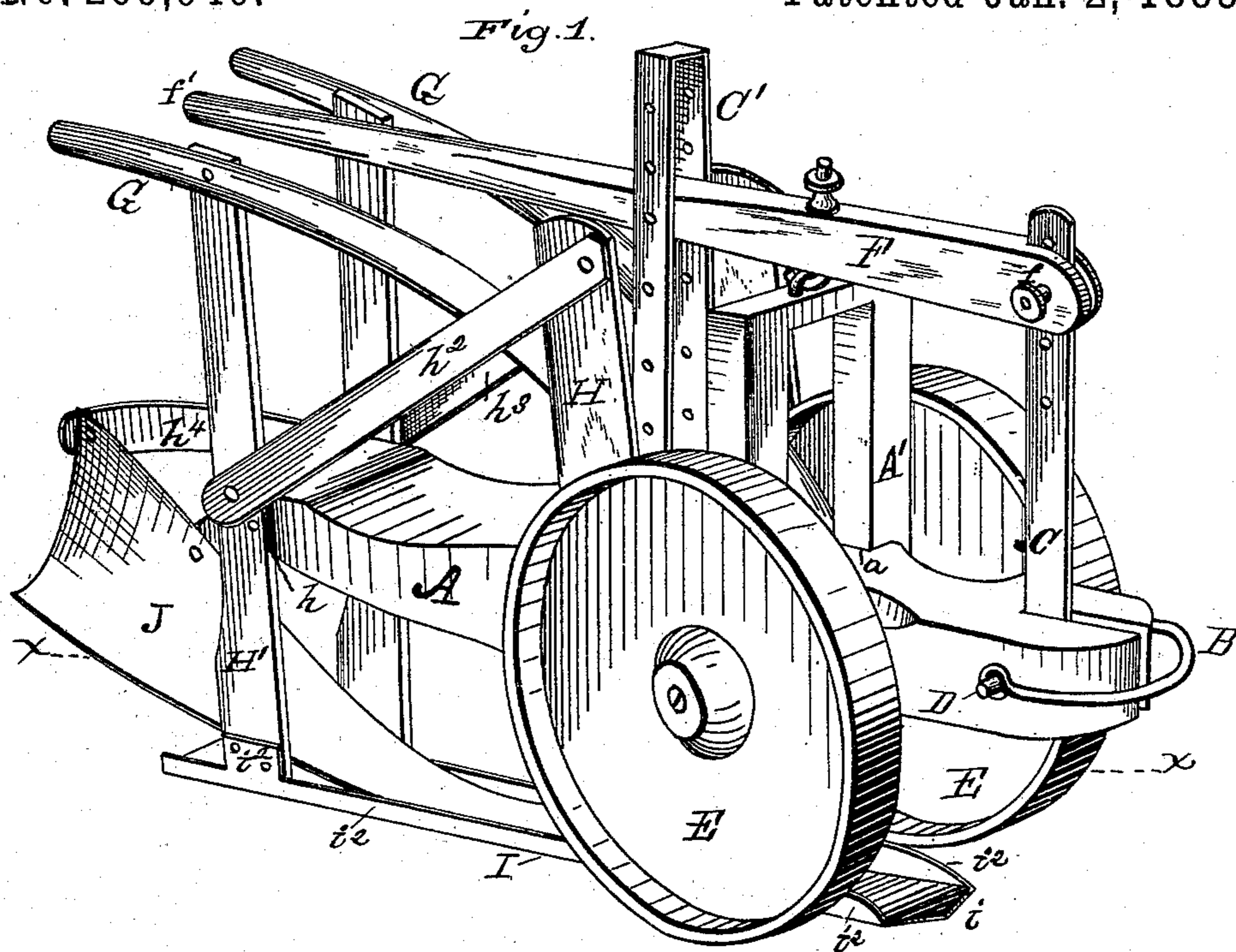


(No Model.)

S. LEFFLER.  
DITCHING MACHINE.

No. 269,946.

Patented Jan. 2, 1883.



Witnesses:

Wm. Masson

E. E. Masson

Inventor:

Samuel Leffler

By E. B. Stocking  
Att'y.

# UNITED STATES PATENT OFFICE.

SAMUEL LEFFLER, OF AINSWORTH, IOWA.

## DITCHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 269,946, dated January 2, 1883.

Application filed October 5, 1882. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL LEFFLER, a citizen of the United States, residing at Ainsworth, in the county of Washington and State of Iowa, have invented certain new and useful Improvements in Ditching-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to certain improvements in ditching plows or machines, as hereinafter described, and specifically set forth in the claim.

Figure 1 is a perspective of a plow constructed in accordance with my invention. Fig. 2 is a horizontal section on the line  $x x$  of Fig. 1—that is, on a line passing below the plow-beam, the wheels being removed.

Like letters refer to like parts in all the figures.

A represents the main beam, which is slotted vertically at its front end and apertured transversely, so that a clevis, B, and a pivoted post, C, are both secured by a single bolt, D, by which construction the post is allowed to oscillate in one direction only, and its connection, together with that of the clevis, in no wise weakens the beam. In rear of the clevis, and slightly in rear of that point on the beam through which a line drawn vertically from the point of the plow proper would pass, the beam is grooved at each side, as shown at  $a$ , for the reception of a rectangular frame, A', which is provided with trunnions, on which the wheels E rotate. By this construction the beam is always, whether the plow be raised or depressed, more or less pivotally supported, so that the operator can with slight exertion determine the depth of cut which it shall make. At the top of the frame A' is secured pivotally and centrally a lever, F, the forward end,  $f$ , of which is adjustably secured to the post C, and the rear end,  $f'$ , of which passes through a slotted post, C', securely fastened to the beam A, and provided with means for adjustably holding the lever in desired positions. The handles G are secured to the beam and to the upper ends of two pairs of side cutters, H and H', which are mortised into the sides of the beam at  $h$  to give additional strength, said mortises, from the bottom to the top of the

beam, being flared outwardly and upwardly, so that the walls of the ditch shall also flare or spread.

I represents the plow proper; and it consists of a plate of suitable metal, either wrought or cast, and having the forward V-point,  $i$ , the flat bottom  $i'$ , and the side flanges,  $i^2$ , the latter being extended for a short distance up the side knives or cutters, H H', as shown. The flanges  $i^2$  at the front are gradually declined, and terminate at the front V-point of the plow. The side cutters are externally plain or flat, and have front cutting-edges and inner rounded faces and rear square edges, and are bodily inclined to the rear and extend above the beam, and are there strengthened by braces  $h^2 h^3$ , the latter being extended to the rear and connected to the delivery-chute J, which, by means of the braces  $h^4$ , is further strengthened at its rear end, while its front end is secured to the plow at  $j$ , and it is gradually curved longitudinally and slanted or curved laterally from the point  $j$  to its rear end.

By the construction thus set forth the entire machine is adapted to do heavy work with the least possible exertion of the team or the operator, because of the perfect control of the depth of cut, as heretofore mentioned, and by reason of the advantageous operation of all the parts.

By means of the lever F the plow is raised or lowered bodily, its weight being supported at the front entirely by the wheels, thereby reducing the labor of the team and economizing their strength for the actual work of ditching.

Having set the plow to cut the desired depth, the point  $i$  may be slightly elevated and depressed by means of the handles, so that obstructions may be passed over or worked loose and removed with the soil. The side cutters act to divide the soil to define the wall-lines of the ditch, and then to compress the soil by means of their inner rounded faces and their back edges, which are square or thick. The soil now loosened is gradually raised by the delivery-chute and guided to the surface of the ground at one side of the ditch.

By inwardly compressing the soil the labor involved is greatly reduced, as nothing remains for the machine to do after the side cutters have separated the soil but to carry it up

and out of the chute, which operation, without first compressing the soil, would necessitate overcoming the friction of said separated soil against the walls of the ditch. My machine  
5 therefore possesses advantages in construction and operation which render it possible to meet the requirements of heavy work with less expense of motive power.

Having described my invention and its operation,  
10 eration, what I claim as new, and desire to secure by Letters Patent, is—

The combination of the plow I, having the V-point  $i$  and flanges  $i^2$ , with the side cutters, H H', having flat outer and rounded inner faces and front cutting-edges, substantially as  
15 shown and described.

In testimony whereof I affix my signature in presence of two witnesses.

SAMUEL LEFFLER.

Witnesses:

T. Y. WICKHAM,  
GEO. BLEEG.