J. URIE.

Making Plows.

No. 102,731. Patented May 3, 1870.

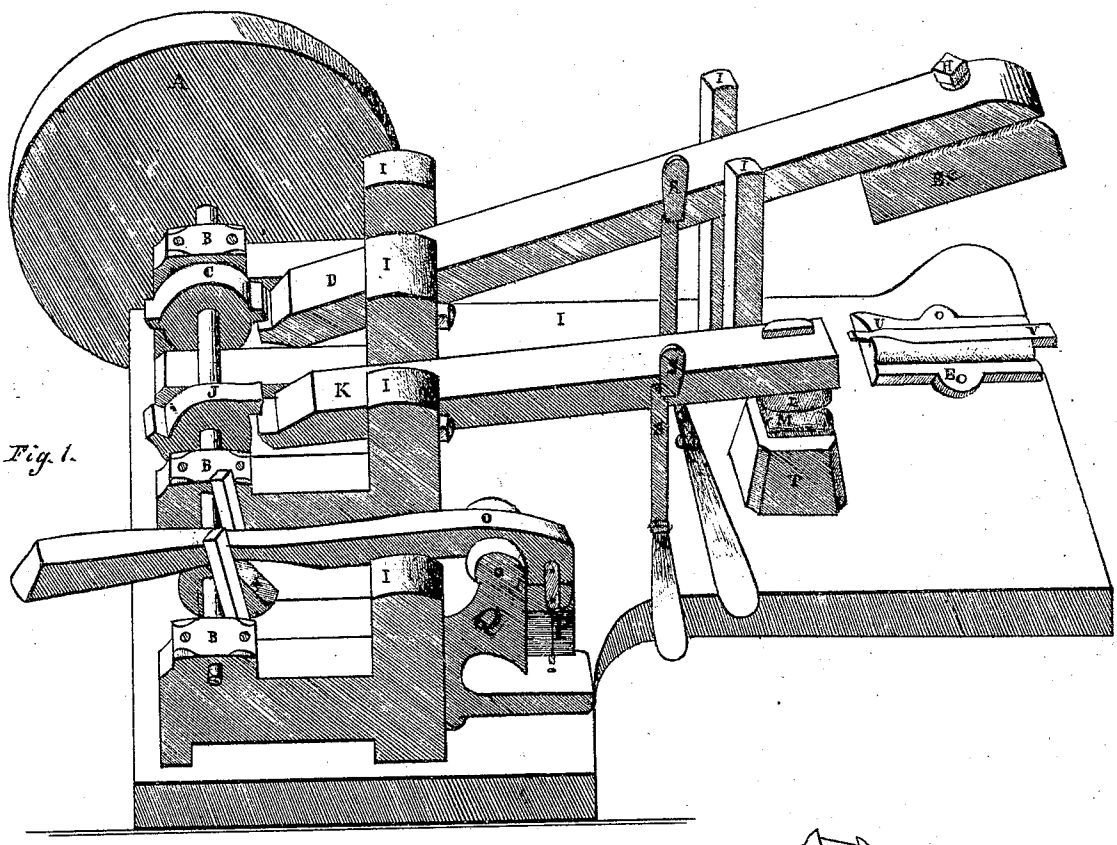

Fig. 1.

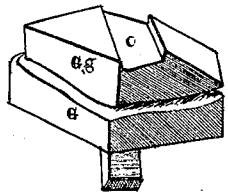

Fig. 3.

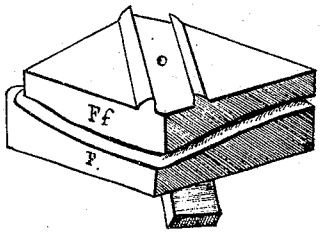

Fig. 2.

Witnesses,

Marion Johnson

Robert D. Richardson

Inventor

James Urie

United States Patent Office.

JAMES URIE, OF EVANSVILLE, INDIANA.

Letters Patent No. 102,731, *dated May* 3, 1870.

IMPROVED MACHINE FOR MAKING PLOWS.

The Schedule referred to in these Letters Patent and making part of the same.

Be it known that I, JAMES URIE, of the city of Evansville, in the county of Vanderburg and State of Indiana, have invented a new and useful Improvement in Machine for Making Plows; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings making a part of this specification, in which—

Figure 1 is a perspective view of the machine, with the die and beater attached, for making uprights for plows.

Figure 2 represents the die and beater for shaping mold-boards, and

Figure 3 represents the die and beater for shaping the share for plows.

A is the driving-wheel.

B, the journal for the shaft of the driving-wheel.

C, the cam for the die-beam.

D, the die-beam.

E, the die for the upright of plows.

E *e*, the beater for the upright.

F, the die for the mold-board.

F *f*, the beater for the mold-board.

G, the die for the share.

G *g*, the beater for the share.

H, the beater-screw.

I I I, &c., the frame-work of the machine, including the various wooden uprights.

J, the cam for the trip-hammer.

K, the trip-hammer beam.

L, the hammer.

M, the anvil.

N, the eccentric wheel for the punch.

O, the punch-lever.

P, the punch.

Q, the punch fulcrum.

R, the die-treadle.

S, the hammer-treadle.

T, the anvil-block.

U, the upright for the plow.

V, the iron wedge.

In fig. 1, the driving-wheel A is constructed of cast-iron or other metal. It is from six to seven feet in diameter, which may be increased or diminished according to the size and power of the machine. This wheel has a smooth surface-rim, of sufficient width for the belt which drives the machine to run upon. It also has a circular flange, constituting a secondary rim, upon the side of the wheel, but of less diameter than the wheel, upon which the belt is placed when increased motion is required.

The belt which moves the wheel embraces, at the other end, a small pulley, which also has a secondary rim, but on the reverse side from that on the driving-wheel. Whenever an accelerated motion of the machine is required, the belt is taken from the main rim of the pulley and placed upon this secondary rim.

The pulley is always placed at a convenient distance from the driving-wheel, and attached to the main shaft of the engine. As the driving-wheel revolves over toward the front part of the frame-work I, it causes the shaft, and, consequently, the cams C and J and the eccentric wheel N, to rotate in the same direction, all these wheels being firmly attached to the shaft of the driving-wheel.

The cam for the die-beam is made of cast-iron, but having two steel-pointed teeth for the purpose of raising the die-beam.

This die-beam is made of hickory, or some other hard wood. It is supported by an iron axle passing through it near the rear end, and terminating in the wooden uprights I I of the frame-work, on each side of the beam. This beam reaches from the cam to the front part of the frame-work I, which may be of any desired length.

Attached to the lower side of the front end of this beam is a cast-iron beater, E *e*, which is fastened by a heavy screw, H.

Immediately below this beater, and fastened firmly to the frame-work, is the die E, which is the exact counterpart of the beater E *e*. It is fastened to the frame-work by heavy screws, so that, when the die-beam falls, the beater will strike exactly upon the die. This die is made of cast-iron, and has two jaws projecting upward, with a tapering groove between them. These jaws are used to make the upright of the plow, and are so constructed as to give the upright the requisite shape when the beater is let upon it. One jaw is used for making the upright of a right, and the other for making the upright of a left plow.

The die-beam is raised by means of a belt coming from the pulley, and working upon the driving-wheel, causing the shaft and the cam C to revolve over toward the beam, and making the teeth of the cam press down the rear end of the beam, thus raising the forward end with the beater.

The die-treadle is made of iron or steel. It is fastened at the angle to the frame-work, under the side of the die-beam. It has a shoulder for the beam to rest upon, at the height which the cam raises the beam. It also has a spring, which throws the shoulder under the beam as soon as the foot of the operator is removed from the treadle, thus causing the beam to remain at rest while the driving-wheel, shaft, and cam are in motion. The same is true with the treadle S, in connection with the trip-hammer, with its beam K, which is raised by the cam J attached to the shaft.

The upright for plows, U, is made thus: Take a flat bar of iron one-fourth of an inch thick, six inches wide, and about sixteen inches long. Make a split four

inches long in the center of one end of this bar, which is then heated in a furnace. After being thus heated, one edge of this bar is placed in the groove of the die, against the right or left jaw, as it shall be desired to make a right or left upright. This heated bar is then fastened to its place by the iron wedge V. It is then bent over the adjacent jaw for the reception of the beater, when the operator places his foot upon the treadle, throwing down the die-beam and causing the beater to strike heavily upon the heated bar. These blows may be repeated as often as necessary until the iron bar assumes the exact shape of the die, and is thus prepared and fitted for the mold-board.

The motion of the beater continues as long as the operator keeps his foot upon the treadle; but, as soon as he removes his foot from the treadle the shoulder of the treadle is thrown under the beam, and thus holds it stationary.

After making a sufficient number of uprights, the first beater and die may be removed from the beam and frame-work, and another beater and die, as represented in fig. 2 of the drawings, may be attached in the same manner as the first beater and die were fastened. This beater and die are used to give the requisite shape to the mold-board, which is placed upon the die and subjected to the action of the beater in the same manner as in the manufacture of the upright. This die has a ridge at one side for the edge of the mold-board to rest against, and prevent it from getting out of position.

When a supply of mold-boards have been made, this beater and die may be taken off, and another set, as represented in fig. 3, attached in the same manner as the preceding ones. These are used for making the share for plows. The share is first properly heated, and then subjected to the action of the trip-hammer until it is properly sharpened, when it is placed upon the die G, where it is quickly reduced to shape by the strokes of the beater G *g*, as above described.

The above dies and beaters are all usually made of cast-iron, but may be of wrought iron, steel, or any other hard metal. In all instances, the beater is the exact counterpart of the die belonging to the same set, and will fit upon it exactly when there is nothing between them.

The beam of the trip-hammer is supported in the same manner as the die-beam. It is raised in the same manner by the revolution of the cam J, which presses down the rear end of the beam, thus raising the forward end with the steel hammer L, which strikes upon the steel anvil M, which anvil is firmly set in a wooden block, T. The trip-hammer is used for various purposes in the manufacture of plows, such as beating, sharpening, drawing out the landside, &c. It is also held at rest upon the shoulder of the treadle S while the driving-wheel and cams are in motion.

The natural position of the treadles is with the shoulder under the beam, which position they assume without assistance, as soon as the beams are raised. By placing the foot upon either of the treadles, the beam is at once put in motion by the action of the cam,

The eccentric wheel N, being firmly attached to the shaft of the driving-wheel, is propelled by it. As this wheel revolves it raises the handle of the punch-lever O, and thus presses down the punch P, which is of cast-steel. This punch is used for piercing holes for bolts, rivets, &c., in the manufacture of plows. It is all of iron except the steel point. It should be placed at a convenient distance from the trip-hammer and treadles, so as not to be in the way of the operator. If necessary, its position on the frame-work may be reversed. The beam of the trip-hammer is of hard wood.

I do not claim the trip-hammer and the punch as separate and independent instruments or machines, as a part of my invention; but

What I do claim as my invention, and desire to secure by Letters Patent, is—

The improved machine herein described, for manufacturing plow-irons, consisting, essentially, of the trip-hammer L, anvil T, and die M, the die-beam D, the series of interchangeable dies for forming mold-boards, uprights, and shares, and the punching device, all constructed and operating substantially as described.

JAMES URIE.

Witnesses:

J. B. RUCKER,

ROBT. D. RICHARDSON.