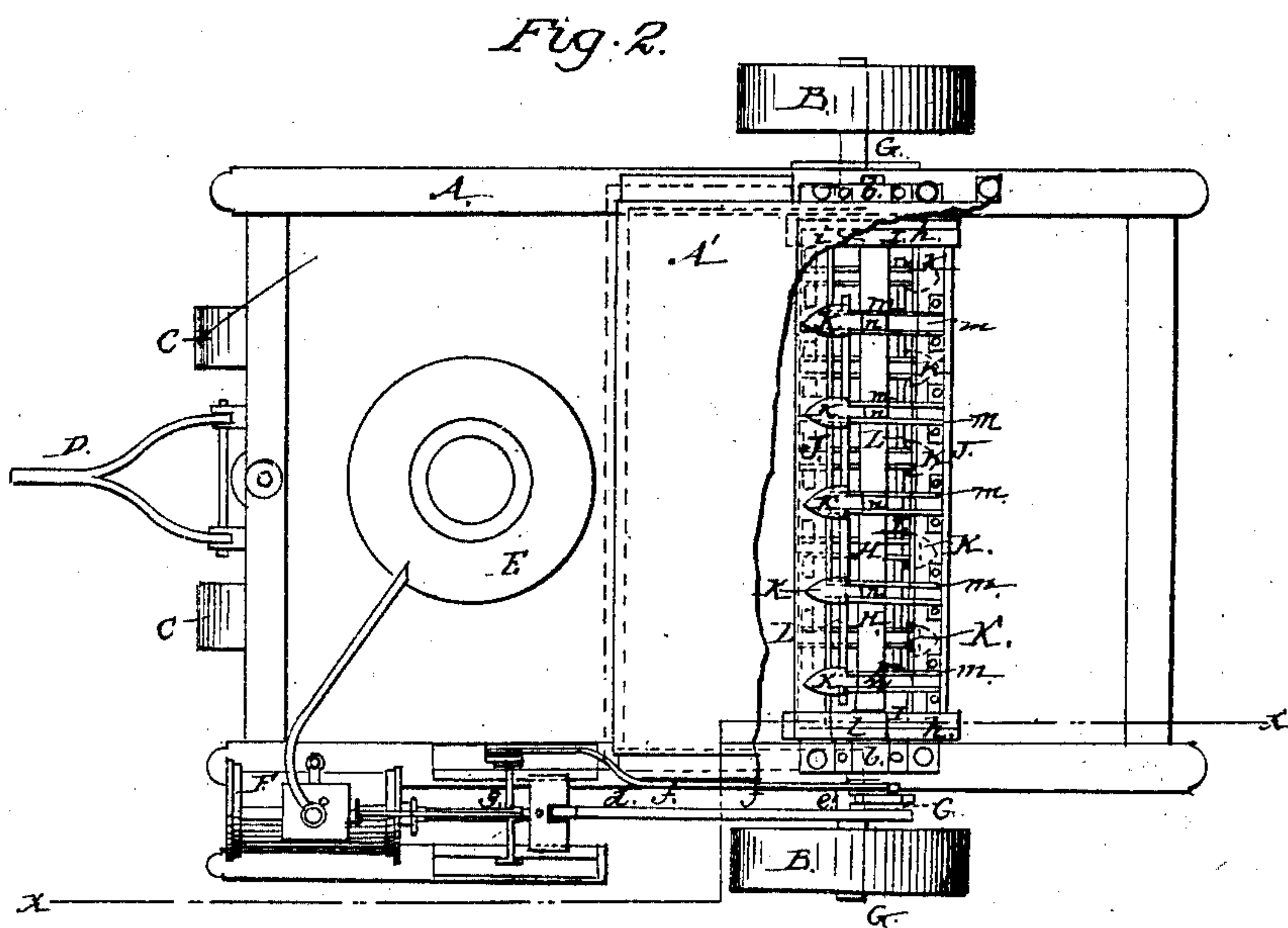
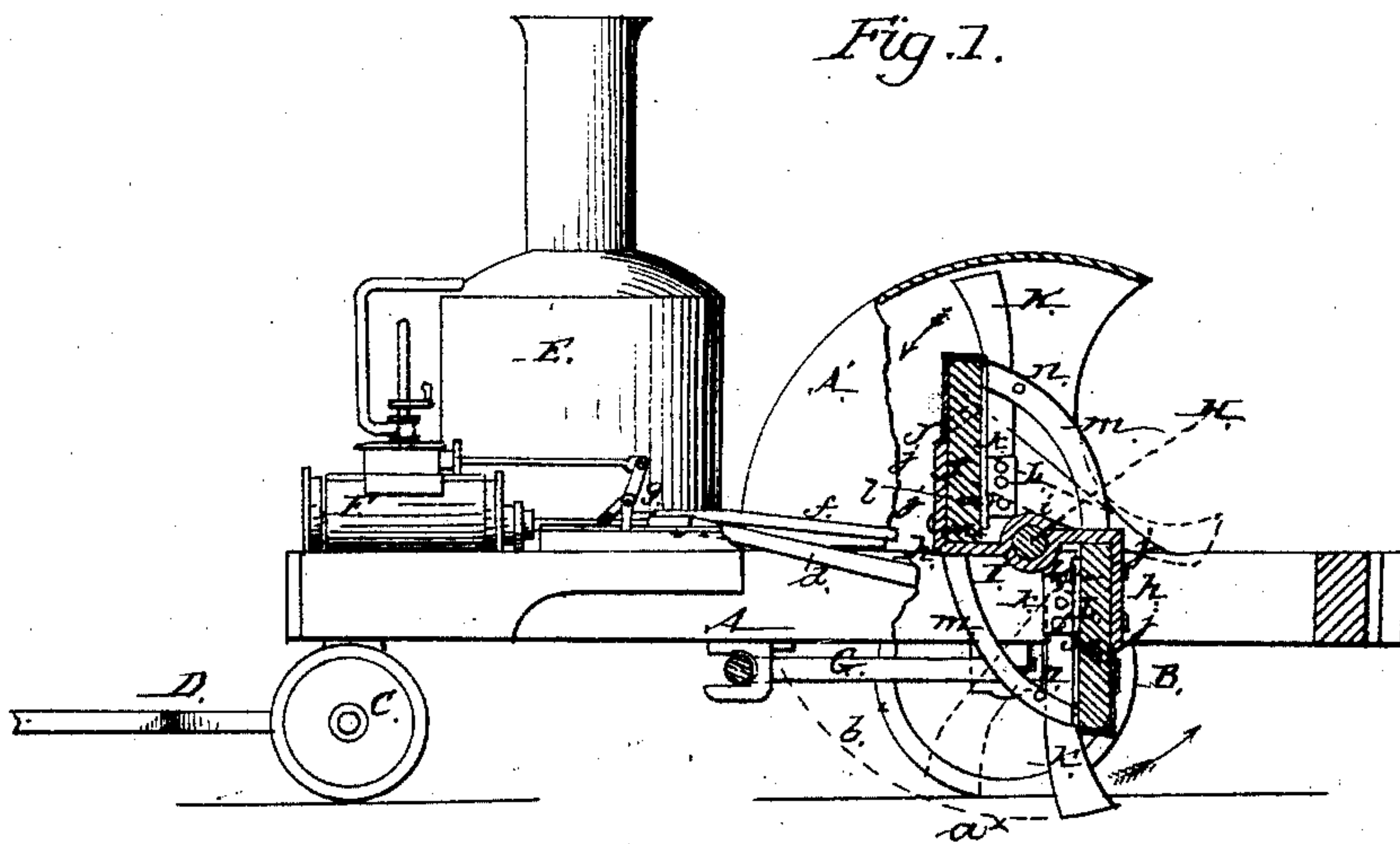


R. J. GATLING.

Steam-Plow.

No. 28,465.

Patented May 29, 1860.



Witnesses:  
W. Coombs  
R. S. Spencer

Inventor:  
Richd. Gatling  
per *Wm. H. Atkinson*

# UNITED STATES PATENT OFFICE.

RICHARD J. GATLING, OF INDIANAPOLIS, INDIANA.

IMPROVEMENT IN MACHINES FOR BREAKING AND PULVERIZING THE SOIL.

Specification forming part of Letters Patent No. 28,465, dated May 29, 1830.

*To all whom it may concern:*

Be it known that I, RICHARD J. GATLING, of Indianapolis, in the county of Marion and State of Indiana, have invented a new and Improved Machine for Breaking and Pulverizing the Soil; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a side sectional view of my invention, taken in the line *x x*, Fig. 2; Fig. 2, a plan or top view of the same.

Similar letters of reference indicate corresponding parts in the two figures.

The object of this invention is to obtain a simple, efficient, and economical machine for breaking and pulverizing the soil, designed more especially for breaking prairie lands and for pulverizing the soil of old farms, rendering the same in proper condition for the general cultivation of crops.

The invention may be operated and propelled by steam, or animal power may be used to draw the machine along, steam being employed to operate the breaking and pulverizing apparatus.

To enable those skilled in the art to fully understand and construct my invention, I will proceed to describe it.

A represents a rectangular frame, the back part of which is supported by two wheels, B B, the front part being supported by wheels C C, the axle of which is secured to the front part of the frame by a king-bolt, *a*. To the axle of the front wheels, C C, the draft-pole D is attached. On the front part of the frame A a steam-boiler, E, is placed, and an engine, F, is placed at one side of the frame. Two engines, however, may be employed, if desired—one at each side of the frame.

The boiler and engine may be of ordinary construction, and therefore do not require a minute description.

On the back part of the frame A, and at points nearly at a vertical plane with the axle G of the wheels B B, there are bearings *b b*, in which the journals of a shaft, H, are placed. This shaft is driven or rotated by means of a crank, *c*, and connecting-rod *d* from the engine F, the cut-off of the engine being operated from an eccentric, *e*, on shaft H, and rods *f* and rock-shaft *g* connected therewith.

On the shaft H there are placed two heads, I I, one near each end. These heads are firmly keyed to the shaft, and they are formed each of two bent or right angular arms, *h h*, projecting from opposite points of a hub, *i*, in reverse position to each other, as shown clearly in Fig. 1.

To the arms *h h* two cross-pieces, J J, are attached by bolts *j*, said cross-pieces being secured to the outer portions of the arms *h h*, that are tangential with the shaft H or with circles concentric therewith. The cross-pieces J J, it will be seen by referring to Fig. 1, are in parallel planes, and their inner ends touch a plane which bisects longitudinally and centrally the shaft H.

To one side of each cross-piece J a series of shares, teeth, or cutters, K, are attached. The shares of each cross-piece are fitted at their inner ends on a shaft, L, and between plates *k*, which are attached to a slide, M, secured to the inner part of the cross-piece J by set-screws *l*, which pass through slots in the slide and into the cross piece. The slides M extend the whole length of the cross-pieces. Each share is fitted between two curved bars or braces, *m m*, which extend from the inner part of one cross-piece to the front part of the other, as shown clearly in Fig. 1. These curved arms or braces prevent any lateral movement of the shares K, and the latter are kept in a proper position firmly against their respective cross-pieces J by means of wooden pins *n*, which pass transversely through the arms or bars just back of the shares.

The shares project a suitable distance beyond the outer ends of the cross-pieces J. This distance, however, may be varied as occasion may require by adjusting the slides M nearer to or farther from the inner edges of the cross-pieces J. The shares K of one cross-piece J are in line with the centers of the spaces between the shares of the other cross-piece, as plainly shown in Fig. 2.

The axle G of the wheels B B is of bent form, so as to admit of the shaft H and the shares attached thereto to be placed between the wheels B. The precise shape of the axle is shown by the dotted lines in Fig. 2.

I would remark that the share-frame is covered by a guard, A', attached to the frame A.

The operation is as follows: As the machine is drawn along, the draft-animals being attached to it as usual, the shaft H is rotated



from the engine F through the medium of the crank *c* and connecting-rod *d*, and the shares K, which move in the direction indicated by the arrows, act upon the ground, breaking and pulverizing it in a thorough manner. The shares of one cross-piece J rotate and work in the spaces between the shares of the other cross-piece, so that the soil will be fully acted upon. The action of the shares K on the soil favors the draft movement, while the position of the same between the wheels B B admits of the ground being acted upon at a uniform depth, as the shares will rise and fall simultaneously with the wheels. The depth of the action of the shares K in the soil is regulated by adjusting the slides M, and in case the shares K meet with any obstructions that may be in their path the wooden pins *n* will break and the shares will turn round on their shaft L, as indicated in red, Fig. 1. This effect is due to the relative position of the shafts L with the shaft H.

It will be seen by referring to Fig. 1 that the shares, when connected to the cross-pieces J by the pins *n*, will describe a circle concentric with the shaft, as indicated by the dotted lines *a*<sup>x</sup>; but when the pins *n*, in meeting with an obstruction, are broken the ends of the shares are turned inward, as indicated by the dotted lines *b*<sup>x</sup>, so that the shares are virtually shortened and the obstructions passed over without the shares being injured. The wooden pins *n*, when broken, are replaced by

new ones immediately after the obstruction which caused them to be broken has been passed over. The bars or braces *m* prevent the shares from moving or working laterally, and also serve to keep the cross-pieces J J in proper position. In consequence of employing two sets of shares, as shown, both sets may be adjusted in a horizontal plane so as to be free from the earth, and the machine readily turned at the headlands, and also readily moved and transported from place to place.

I do not confine myself to any particular form of shares, cutters, or teeth K, for various forms may be used, according to circumstances.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A rotary share-frame provided with shares capable of being adjusted to vary the depth of their cut, as well as to escape or pass over obstructions that may be in their path, substantially as herein shown and described.

2. The employment of two sets of shares, K, attached to a rotating frame at opposite points of its shaft, to admit of the adjustment of the shares free from the ground when they are not required for operation, and thereby allow the machine to be readily turned and transported from place to place.

RICHARD J. GATLING.

Witnesses:

O. F. MAYHEW,

JOSIAH LOCKE.