

(No Model.)

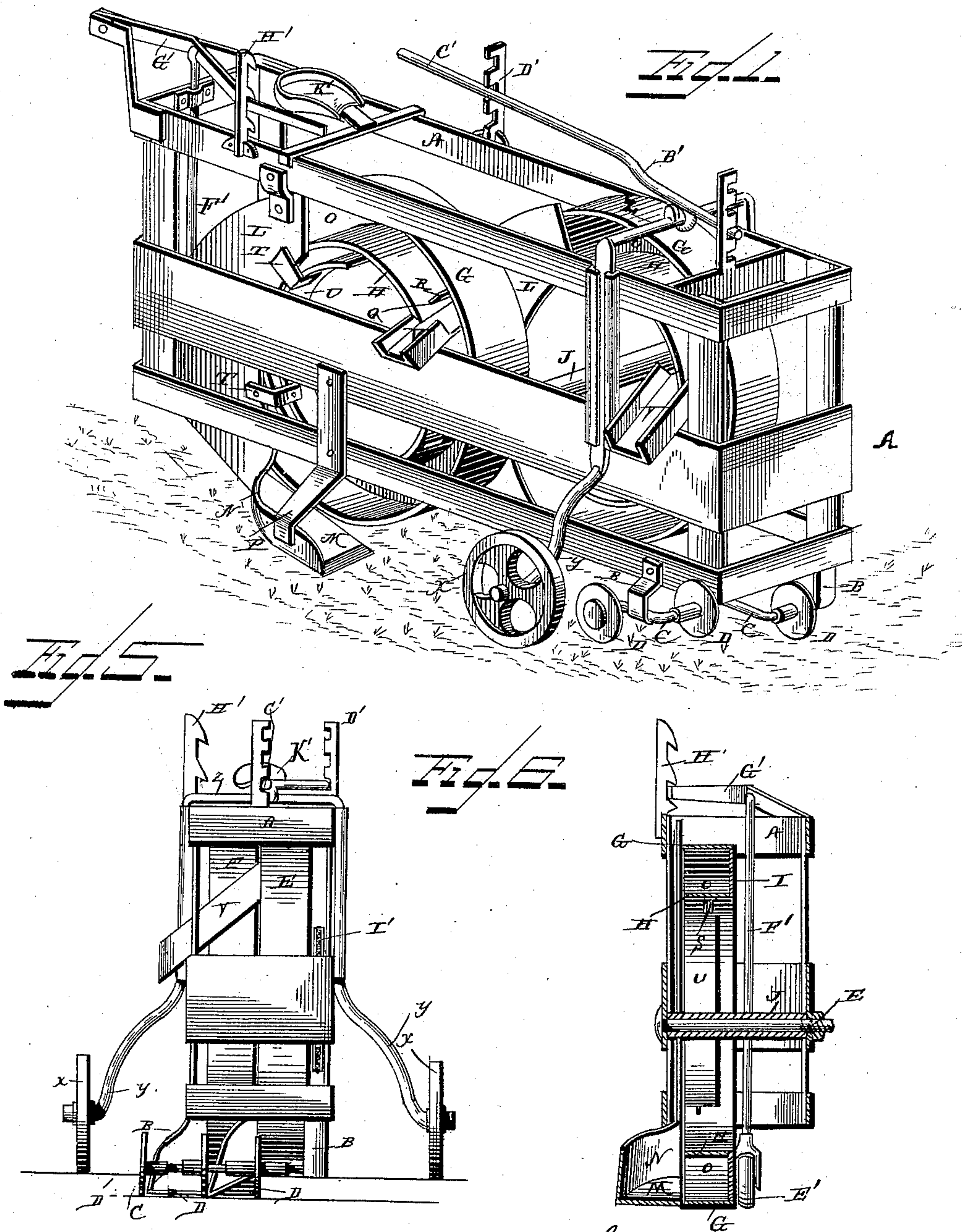
2 Sheets—Sheet 1.

S. M. STEWART.

DITCHING MACHINE.

No. 331,217.

Patented Nov. 24, 1885.



WITNESSES
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Samuel M. Stewart
INVENTOR
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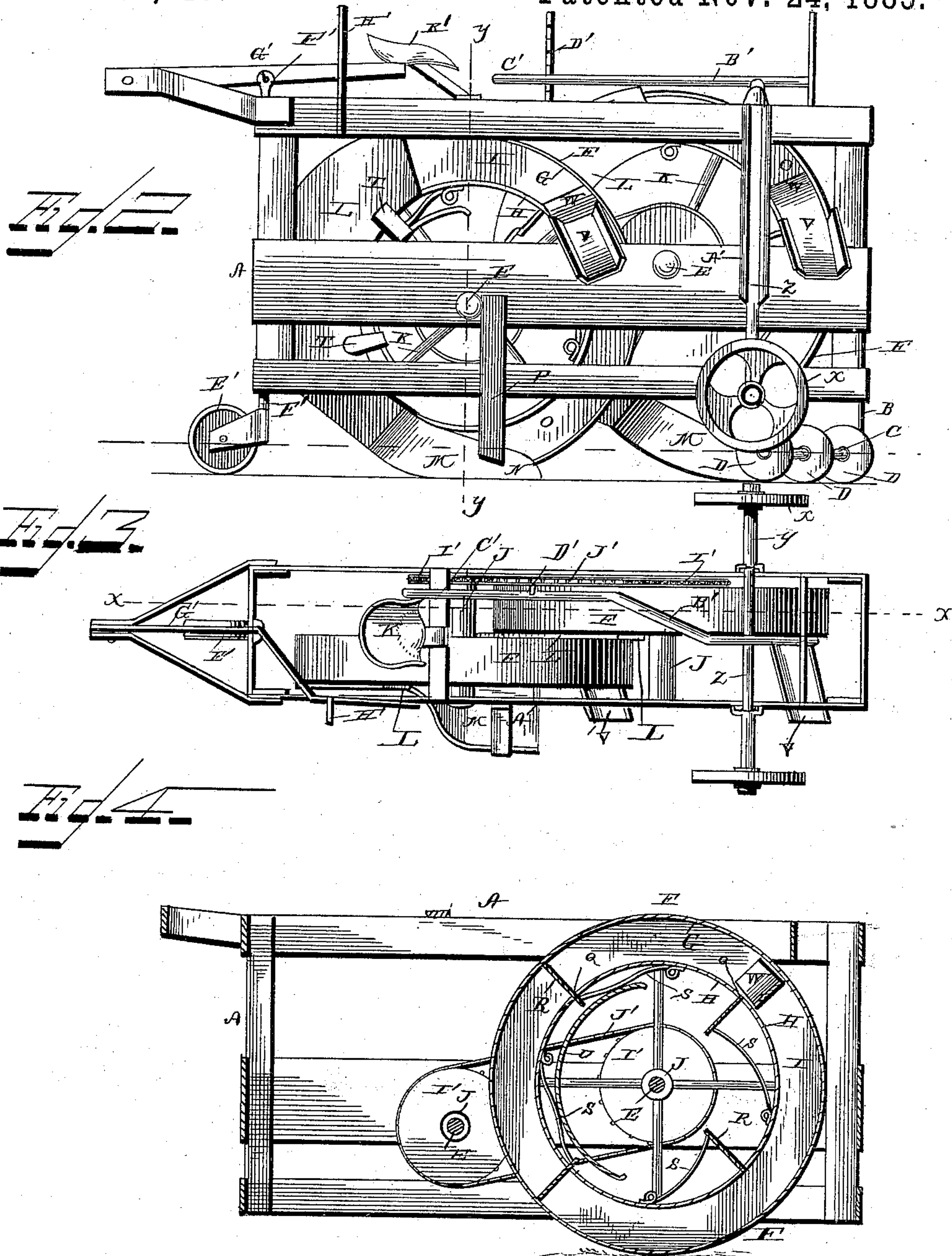
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UNITED STATES PATENT OFFICE.

SAMUEL M. STEWART, OF McCOMB, OHIO.

DITCHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 331,217, dated November 24, 1885.

Application filed July 30, 1885. Serial No. 173,019. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL M. STEWART, a citizen of the United States, and a resident of McComb, in the county of Hancock and State of Ohio, have invented certain new and useful Improvements in Ditching-Machines; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a perspective view of my improved ditching-machine. Fig. 2 is a side view of the same. Fig. 3 is a top view. Fig. 4 is a longitudinal vertical sectional view taken on the line *xx* in Fig. 3. Fig. 5 is a front view, and Fig. 6 is a transverse vertical sectional view taken on the line *yy* in Fig. 2.

The same letters refer to the same parts in all the figures.

This invention relates to ditching-machines; and it has for its object to provide a device of this class which shall possess superior advantages in the points of simplicity, durability, inexpensiveness, and general efficiency.

With these ends in view it consists in the improved construction and arrangement of parts, which will be hereinafter fully described, and particularly pointed out in the claims.

In the drawings hereto annexed, A designates a suitably constructed rectangular frame, which is provided at its front end with downwardly-extending brackets B B, supporting a crank shaft or rod, C, on which are journaled a series of revolving colters or cutters, D D, which, owing to the construction of the said shaft or supporting-rod, are located forward of one another, as will be plainly seen in the drawings. These colters or cutters serve in practice to cut the furrows and to loosen the slices which are to be displaced by the ditching-machine proper, as will be presently more fully described.

The sides of the frame are provided with bearings for a pair of transverse shafts, E E, on which are journaled the wheels F F, the rims of which consist of inner and outer con-

centric flanges, G and H, connected at their inner edges by an annular bottom or ring, I, and connected with the hub J by means of spokes K in the usual manner. The wheels F F are so arranged with relation to each other that the outer or open side of the front wheel shall bear against the inner or closed side of the rear wheel, as will be clearly seen in Fig. 3 of the drawings, the rim or periphery of each wheel reaching nearly to the axle of the other. Arranged against the open sides of the two wheels, in rear of the respective axles, are the covering-plates L L, which are connected to and supported by the main frame of the machine by means of brackets or in any other suitable manner, and which terminate at their lower ends in the forwardly-extending scoops or cutters M M, the outer rims of which, N, are curved in an outward and forward direction, as shown, and which serve to cut under the soil and to remove a slice, which, as the machine progresses, is forced or conveyed by the rim or flange N into the space O in the rim of the wheel. The free ends of the scoops or cutters are to be connected to the main frame of the machine by means of suitable braces, P P, whereby sufficient strength and rigidity shall be insured. The inner rims or flanges, H, of the wheels F are provided with transverse perforations Q Q, to receive or admit of the passage of a series of cutters, R R, which are mounted upon the free ends of springs S S, that are suitably attached to the said inner flanges, as shown. Secured to the inner edge of each of the covering-plates L by means of brackets T T is a curved guide-plate or cam-plate, U, which, as the wheels revolve, will press against the springs S S, and thus gradually force the cutters R R into the spaces O in the rims of the wheels. When the cam-plates U have been passed, the springs S will serve to retract the cutters R R from the space O.

V V designate the discharge chutes, which are suitably secured to the frame of the machine, and provided with curved tongues or scrapers W, extending into the spaces O, and bearing against the bottoms I of the latter.

The forward end of the machine is support-

ed upon a pair of wheels, $x x$, which are jour-
naled upon stub-axles y at the lower ends of
the legs of a yoke or bail, Z , which is arranged
to slide vertically in suitable bearings, A' ,
5 upon the sides of the frame. This yoke is ad-
justable vertically by means of a suitable le-
ver, B' , having a handle, C' , and arranged to
engage a suitable catch, D' , whereby it and
the yoke may be retained in any position to
10 which it may have been adjusted. The rear
end of the frame is supported on a caster-
wheel, E' , swiveled upon the lower end of a
stem, F' , which is also vertically adjustable
by means of a suitable lever, G' , which may
15 also be retained in any position to which it
may be adjusted by means of a suitable catch,
 H' . The hubs $J J$ of the wheels $F F$ are pro-
vided with chain-wheels $I' I'$, connected by a
chain, J' , by means of which motion may be
20 communicated from one wheel to the other,
in case only one of them should be in contact
with the ground.

The frame of the machine carries a suitable
seat, K' , for the driver, and it is also provided
25 with suitable means for the attachment of the
draft.

From the foregoing description, taken in
connection with the drawings hereto annexed,
the operation and advantages of this invention
30 will be readily understood. The front sup-
porting-wheels will run upon the sides or em-
bankments of the ditch, and the caster-wheel
at the rear end will run in the ditch, the front
end of the frame being properly adjusted to
35 make a cut of the desired depth. The col-
ters or revolving cutters at the front end of
the frame will mark the sides of two slices,
which are undercut by the scoops or cutters
 $M M$, which latter serve to force the said slices
40 into the spaces O of the wheels $F F$, which
latter meanwhile revolve by contact of one or
both of them with the ground. The furrow-
slices are thus elevated by means of the said
wheels $F F$, and the cutters $R R$ serve to cut
45 the said slices into smaller sections, which will
more readily slip out of the spaces O when
the discharge-chutes are reached. The cut-
ters $R R$ have the additional function of as-
sisting to retain and elevate the dirt in the
50 rims of the wheels $F F$. The general con-
struction is simple and inexpensive, as well
as compact and durable.

I would have it understood that in the manu-
facture of this machine I do not limit myself
55 to the precise construction and arrangement
of parts herein set forth, but reserve to my-
self the right to all modifications which may
be resorted to without departing from the
spirit of my invention.

60 Having thus described my invention, I claim
and desire to secure by Letters Patent of the
United States—

1. In a ditching-machine, the combination
of the frame, a crank shaft or rod suitably ar-
65 ranged and supported at the front end of the
latter, and a series of colters or revolving cut-

ters mounted upon the said rod or shaft, sub-
stantially as and for the purpose herein set
forth.

2. In a ditching-machine, the combination 70
of the frame, a series of colters or revolving
cutters at the front end of the same, the dirt-
elevating wheels, the rims of which are formed
of inner and outer annular flanges connected
by annular rings, the covering-plates cover- 75
ing the rear portions of the spaces thus formed,
and terminating at their lower ends in the for-
wardly-extending scoops or undercutters, and
the discharge-spouts, all arranged and oper- 80
ating substantially as and for the purpose here-
in set forth.

3. In a ditching-machine, the combination
of the dirt-elevating wheels, the covering-
plates covering the rear parts of the open- 85
ings or annular spaces in the same, and termi-
nating at their lower ends in the forwardly-ex-
tending scoops or undercutters having curved
outer flanges, the discharge-spouts having
curved tongues or extensions scraping the bot-
toms of the annular spaces in the elevating- 90
wheels, the revolving cutters at the front end
of the frame, and chain-wheels mounted upon
the hubs of the elevating-wheels and con-
nected by a suitable drive chain, substantially
as and for the purpose herein set forth. 95

4. In a ditching machine, the combination
of the dirt-elevating wheels consisting of in-
ner and outer concentric flanges connected by
annular rings so as to form annular spaces,
the inner flanges being provided with trans- 100
verse slots or openings, the plates or cutters
arranged to slide in the said slots, and the
supporting-springs carrying the said plates or
cutters at their free ends, said supporting-
springs being attached to the said inner flanges 105
of the elevating-wheels, substantially as and
for the purpose herein set forth.

5. In a ditching-machine, the combination,
with the frame, of the revolving dirt-elevat- 110
ing wheels having annular spaces, as described,
and provided with transverse slots or open-
ings in their inner sides, the guard-plates se-
cured to the frame by means of brackets and
bearing against the open spaces of the rear 115
portions of the said wheels, and terminating at
their lower ends in the forwardly-extending
scoops or undercutters, the guide-plates or
cam-plates secured to the inner edges of the
said brackets, and the plates or cutters ar- 120
ranged to slide in the slots in the inner sides
of the wheels and mounted upon the free ends
of springs which are attached to the inner
sides of said wheels, substantially as and for
the purpose herein set forth.

6. In a ditching-machine, the combination 125
of the frame, the adjustable supporting-wheels
at the front end of the latter, the vertically-
adjustable caster at the rear end of the frame,
the dirt-elevating wheels having annular
spaces, the reciprocating plates or cutters 130
mounted upon springs, as described, the guard-
plates or covering-plates terminating in the

scoops or cutters and having the cam-plates
secured thereto, the discharge-spouts, the
chain-wheels upon the hubs of the elevating-
wheels, the chain connecting the said wheels,
5 and the revolving cutters or colters at the front
end of the frame, all arranged and operating
substantially as and for the purpose herein set
forth.

In testimony that I claim the foregoing as my
own I have hereunto affixed my signature in 10
presence of two witnesses.

SAMUEL M. STEWART.

Witnesses:

IDA D. McHENRY,
A. J. SMITH.