

No. 610,300.

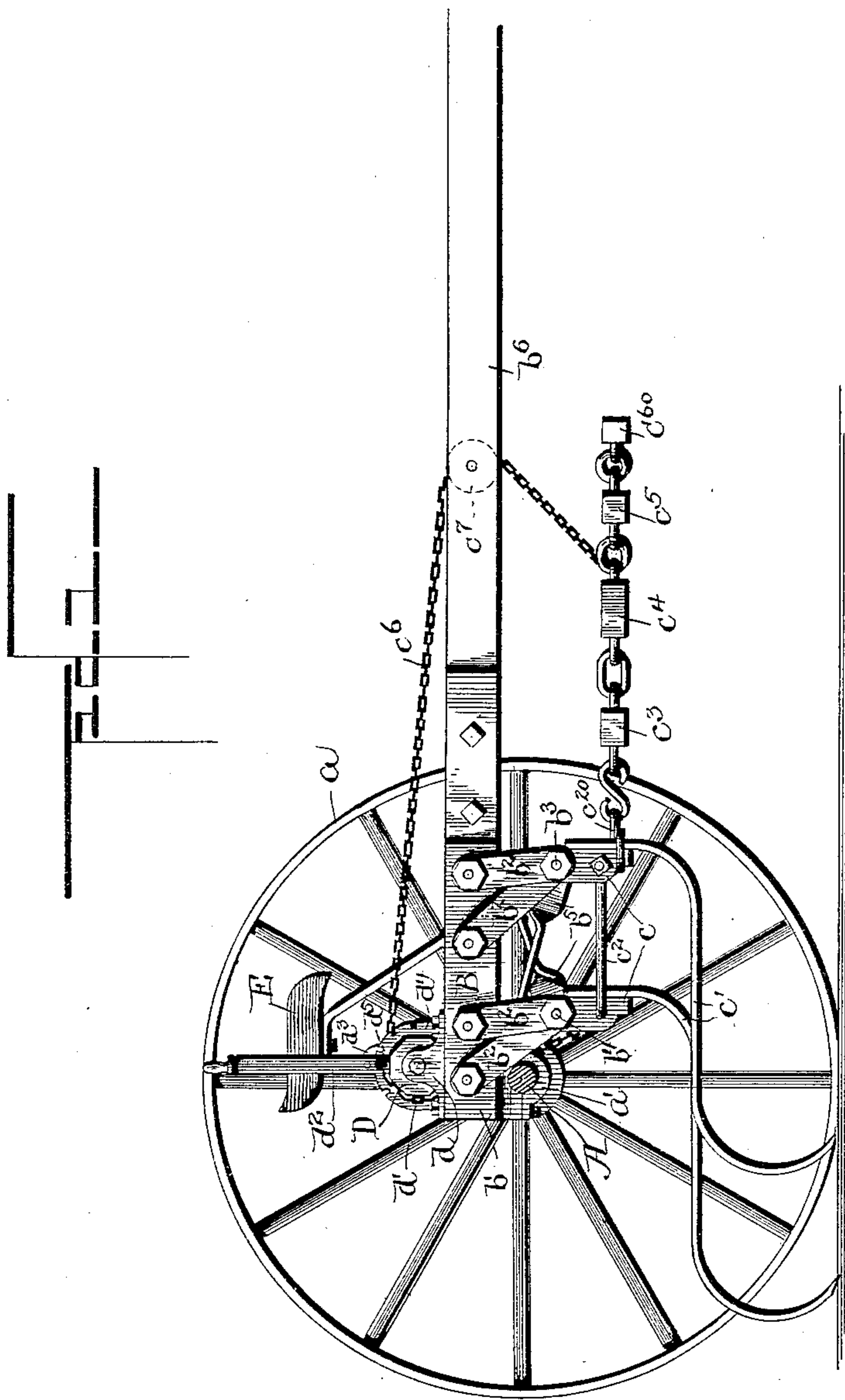
Patented Sept. 6, 1898.

N. FOURNIER.
WHEEL HARROW.

(Application filed Dec. 10, 1897.)

(No Model.)

3 Sheets—Sheet 1.



Witnesses:

Horace G. Deitz,
Arthur Page,

Napoleon Fournier, Inventor.

By

Marion Marion,

Attorneys

No. 610,300.

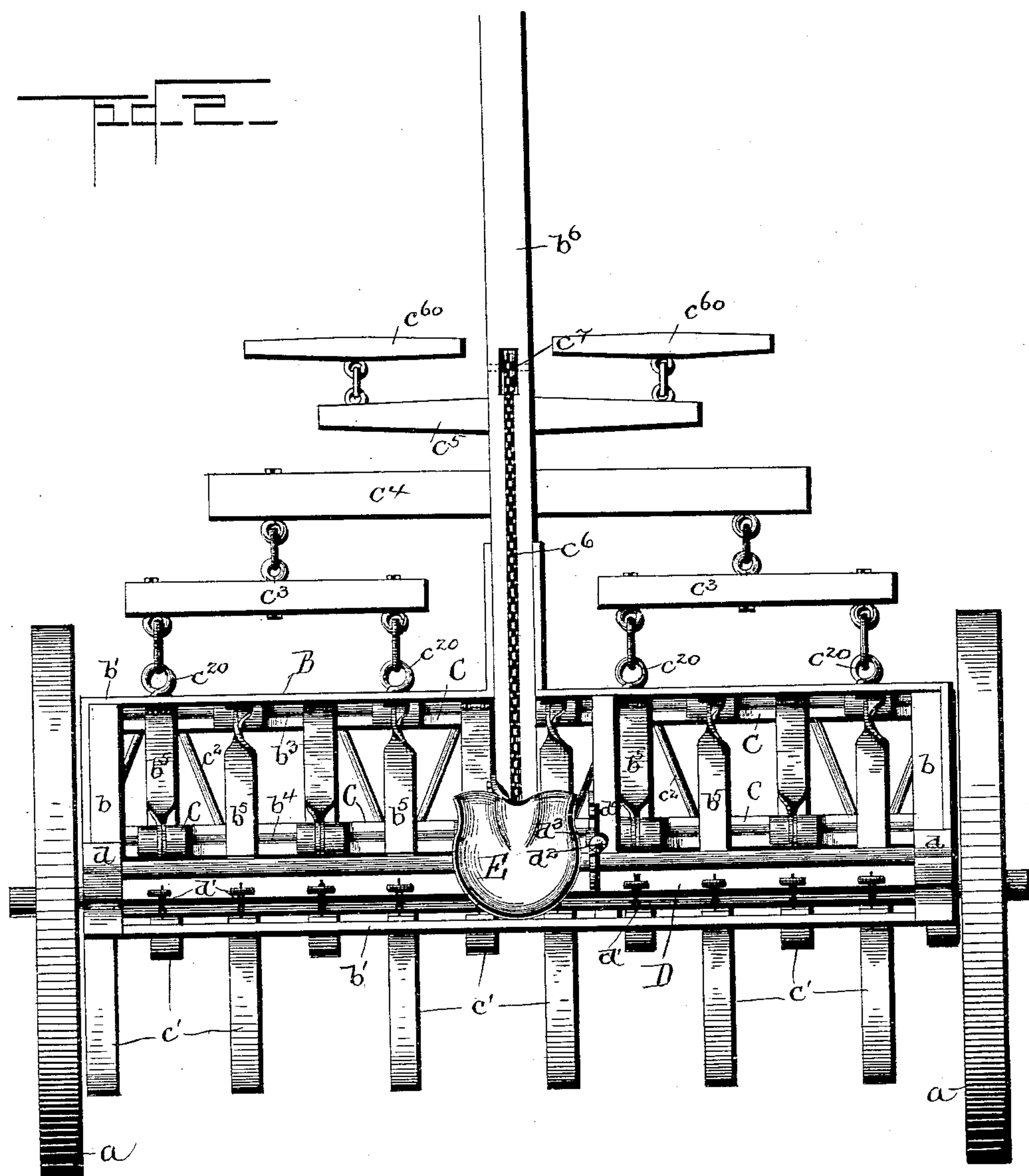
Patented Sept. 6, 1898.

N. FOURNIER.
WHEEL HARROW.

(Application filed Dec. 10, 1897.)

(No Model.)

3 Sheets—Sheet 2.



Witnesses:

Horace R. Ditz
Arthur Jags

Napoleon Fournier, Inventor

By *Marion A. Marion*
Attorneys

No. 610,300.

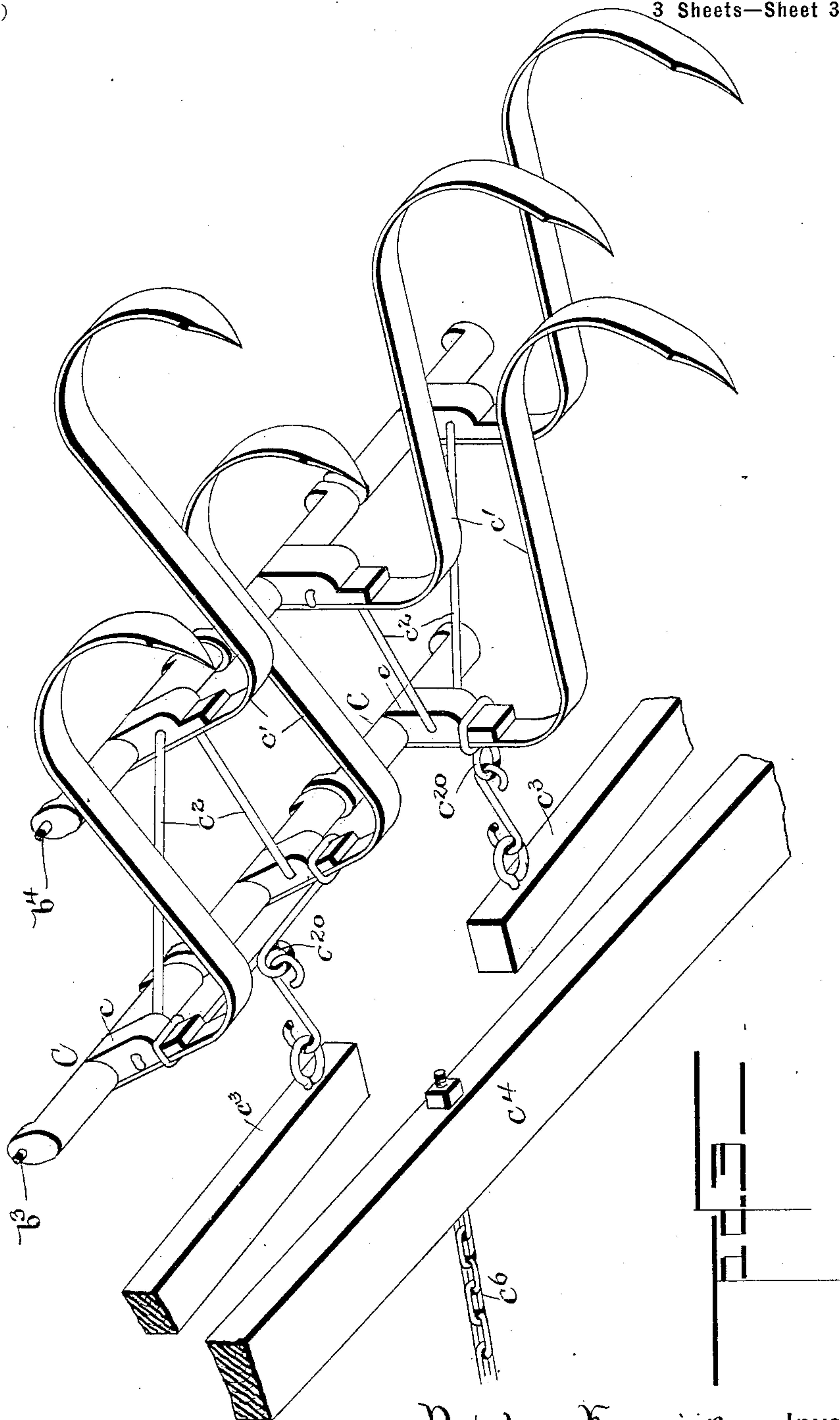
Patented Sept. 6, 1898.

N. FOURNIER.
WHEEL HARROW.

(Application filed Dec. 10, 1897.)

(No Model.)

3 Sheets—Sheet 3.



Witnesses:

Horace G. Deitz

Arthur Page

Napoleon Fournier, Inventor

By *Marion Marion*

Attorneys

UNITED STATES PATENT OFFICE.

NAPOLEON FOURNIER, OF ST. GERMAIN DE GRANTHAM, CANADA.

WHEEL-HARROW.

SPECIFICATION forming part of Letters Patent No. 610,300, dated September 6, 1898.

Application filed December 10, 1897. Serial No. 661,437. (No model.)

To all whom it may concern:

Be it known that I, NAPOLEON FOURNIER, a citizen of the Dominion of Canada, residing at St. Germain de Grantham, in the county of Drummond, Province of Quebec, Canada, have invented certain new and useful Improvements in Wheel-Harrows; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in harrows, and has particular relation to that class of such devices known as "wheel-harrows."

The object of my invention is to provide a device of this character in which the harrow-teeth, while held in positive relation with the ground upon which they are operating, are arranged to allow of a change of such relation corresponding with the change in the topography of the ground, said change being made automatically, yet not disturbing any of the relations existing before the change, each tooth being adapted to perform the same functions, whether held in alinement or otherwise.

A further object is to provide a device which will be neat and attractive in appearance, durable in construction, and which is simple in its operation.

To these ends my invention consists in the improved construction and combination of parts hereinafter fully described, and particularly pointed out in the claims.

In the drawings, in which similar letters of reference indicate similar parts in all of the views, Figure 1 is a side elevation of a harrow, showing my improvements, one wheel being shown as removed. Fig. 2 is a top plan view of the same. Fig. 3 is an enlarged view in perspective, showing the arrangement of the harrow-teeth, two sections being shown, each section being on a different plane.

A designates an axle on which are mounted wheels *a*, preferably constructed of iron or steel in order that they may be of light weight, yet capable of great strength. Suitable bearings *a'* are mounted on said axle, to which is secured the frame B, formed of the side pieces *b b*, held in position by means of the surround-

ing band *b'*, which forms the front and rear portions of the frame.

Secured to the sides of the frame are vertically-depending hangers *b² b²*, in the lower ends of which are mounted rods *b³ b⁴*, extending from one side of the frame to the other at the front and rear thereof. Braces *b⁵*, secured to the front and rear portions of the frame, extend downwardly and at their lower ends are mounted on said rods, serving to hold them in position regardless of the strain placed upon them when the device is being used. Pivotaly mounted on said rods *b³ b⁴* are bearings C, said bearings being of a length sufficient to occupy the entire space between the braces *b⁵*, and are provided at their centers with downwardly-extending portions *c*, preferably of the form shown in Fig. 3. To the front face of each of these portions *c* are secured the rearwardly-extending harrow-teeth *c'*, preferably formed as shown in the drawings; but it is apparent that any suitable teeth may be used, the essential feature being that they must be springy. The bearings C are connected together in series, as best shown in Fig. 3, by braces *c²*, secured in the downwardly-extending portions *c*, each series consisting of three teeth, the arrangement being such that alternate series have two teeth mounted on the rod *b³* and one tooth mounted on rod *b⁴*, the remaining series being arranged vice versa, having one tooth on the rod *b³* and two teeth on the rod *b⁴*. By this construction it is apparent that each series of teeth will move together when operated, while each series or section will be movable independently of the remaining sections.

Pivotaly mounted in suitable bearings *d*, secured to the top of the side pieces *b b*, is a roller D of suitable form, preferably octagonal, to the top side of which are secured suitable connecting means *d'*—such as chains, wire rope, &c.—the free ends of which are adapted to be secured to the downwardly-extending portions *c*, mounted on the rod *b⁴*. An operating-handle *d²* is mounted in said roller and is provided with a pawl *d³*, which engages with a segmental plate *d⁴*, mounted on the frame and extending a suitable distance around the roller D, the segmental

plate being provided with notches d^5 , into which the pawl d^3 is adapted to be placed and be held in engagement. The pawl d^3 may be operated in any suitable manner, as by a bell-crank lever, the upper end of which is in a position near the upper end of the handle d^2 , or it may be operated by suitable foot mechanism of any approved form. It will be seen that when the pawl is freed from the notches the handle may be moved backward or forward, this movement causing a corresponding movement of the roller, which in turn raises and lowers the teeth c' as the connection is wound or unwound on the roller D.

Each series of teeth or section is provided at its front end with an eye c^{20} , to which is secured by suitable means one end of a singletree c^3 , the two singletrees being in turn connected by suitable connections with a doubletree c^4 , provided with the usual doubletree c^5 , and singletrees c^{60} , to which the horses or other draft-animals are to be attached. This arrangement is such that when any one section is out of alinement, as when the harrow is being used on plowed ground and the furrows are deep and wide or when some obstruction is met by the teeth of the section, the movement of the section upward or downward will be communicated to the end of the singletree c^3 connected to that particular section, the movement being in turn communicated to the end of the doubletree c^4 to which the singletree is attached. It will be apparent, however, that the movement of the singletree c^3 will be small by reason of its connection to the section being close to the pivotal point of the bearings C, and by the use of the doubletree c^4 this small movement will be greatly reduced and to such an extent that the change in position will have but a slight effect on the pulling of the draft-animals. It will also be seen that whether the movement of the section be upward or downward the change will be instantly communicated to the draft-animals, but in such manner that the pulling power of these animals will remain the same, and the work will be done in an even manner regardless of the fact as to whether the teeth are in alinement or not.

The depth to which the teeth will enter the ground is regulated by the position of the bearings C, and as the connection between the doubletree c^4 and the bearings is a positive one it will be apparent that the doubletree must be movable backward and forward to correspond with the movement of the bearings, and as this movement must be regulated I have given the doubletree a free movement by connecting it with the roller D by means of a chain or wire rope c^6 , passing over a suitable roller c^7 , secured in the tongue b^6 . By means of this connection I am able to regulate the depth the teeth are to enter the ground and to modify the same at will and yet allow the independent movement of each

section or series of teeth, the pulling power of the draft-animals remaining the same regardless of the changes of the teeth.

E designates a seat mounted to the frame in any suitable manner.

It is obvious from what is shown and above described that I have provided a harrow which will be manufactured with a minimum number of parts and which is of a light weight, will yet be absolutely certain in its operation, and is always under the control of the operator, who is able to regulate it at will.

Having thus described my invention, what I claim as new is—

1. A harrow comprising a frame mounted on wheels; harrow-teeth pivotally connected to said frame, said teeth being arranged in sections, each section being movable independently of the remaining sections; and means, connected to said sections below the point of pivotal connection to said frame, for preserving an equalized pull on each of said sections, substantially as described.

2. A harrow comprising a frame mounted on wheels; harrow-teeth pivotally connected to said frame, said teeth being arranged in sections, each section being movable independently of the remaining sections; and means for preserving an equalized pull on each of said sections.

3. A harrow, comprising a frame mounted on wheels; teeth pivotally connected to said frame, said teeth being arranged in sections; each section being movable independently of the remaining sections and means connected to each of said sections for regulating the depth to which said sections will enter the ground.

4. A harrow comprising a frame mounted on wheels; rods connected to the front and rear portions of said frame; and harrow-teeth pivotally mounted on said rods, said teeth being arranged in sections each section being movable independently of the remaining sections.

5. A harrow comprising a frame mounted on wheels; rods connected to the front and rear portions of said frame; harrow-teeth pivotally mounted on said rods; and means for connecting said teeth in series each series being movable independently of the remaining sections.

6. A harrow comprising a frame mounted on wheels; rods connected to the front and rear portions of said frame; harrow-teeth pivotally mounted on said rods, said harrow-teeth being arranged in sections each section being movable independently of the remaining sections and each alternate section having a majority of its teeth mounted on said rear rod.

7. A harrow comprising a frame mounted on wheels; rods connected to the front and rear portions of said frame; bearings pivotally mounted on said front and rear rods, said bearings being arranged in sections; har-

row-teeth secured to said bearings and extending rearwardly therefrom; and means, connected to said frame and to said bearings below their points of pivotal mounting for preserving an equalized pull on each of said sections, substantially as described.

8. A harrow comprising a frame mounted on wheels; rods connected to the front and rear portions of said frame; bearings pivotally mounted on said front and rear rods; means for connecting said bearings in sections; each section having a movement independent of the remaining sections and harrow-teeth secured to said bearings and extending rearwardly therefrom.

9. A harrow comprising a frame mounted on wheels; rods connected to the front and rear portions of said frame; bearings pivotally mounted on said front and rear rods, said bearings being arranged in sections, each section having a movement independent of the remaining sections and each alternate section having a majority of its bearings mounted on said rear rod; and harrow-teeth secured to said bearings.

10. In a harrow, the combination with a frame mounted on wheels; and harrow-teeth pivotally connected to said frame, said harrow-teeth being arranged in sections; of a draft-equalizer connected to said frame and having a positive and independent connection to each of said sections, substantially as described.

11. In a harrow; the combination with a frame mounted on wheels; and harrow-teeth pivotally connected to said frame, said harrow-teeth being arranged in sections; of a draft-equalizer having one end secured to said frame and having its other end connected to each of said sections, substantially as described.

12. In a harrow, the combination with a frame mounted on wheels; and harrow-teeth

pivotally connected to said frame, said harrow-teeth being arranged in sections; of a draft-equalizer having one end secured to said frame and having its other end connected to each of said sections, said equalizer having a longitudinal movement independent of the movement of the harrow.

13. A harrow comprising a frame mounted on wheels; harrow-teeth pivotally connected to said frame, said teeth being arranged in sections; singletrees connected to said sections, the ends of said singletrees being connected to separate sections; a doubletree connected to said singletrees; and means for holding said doubletrees suspended below said frame, substantially as described.

14. A harrow comprising a frame mounted on wheels; harrow-teeth pivotally connected to said frame, said teeth being arranged in sections; a roller pivotally mounted on said frame; and means for connecting said sections and said roller, whereby when said roller is rotated said teeth will be raised, substantially as described.

15. A harrow comprising a frame mounted on wheels; harrow-teeth pivotally connected to said frame, said teeth being arranged in sections; a roller pivotally mounted on said frame; means for connecting said sections and said roller; means for rotating said roller; a draft-equalizer connected to said sections; and means for connecting said draft-equalizer and said roller, whereby when said roller is rotated said teeth will be raised and said equalizer moved longitudinally below said frame, substantially as described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

NAPOLEON FOURNIER.

Witnesses:

J. A. MARION,
HORACE G. DEITZ.