

(No Model.)

W. W. HILL.  
RUDDER FOR HARROWS.

No. 291,906.

Patented Jan. 15, 1884.

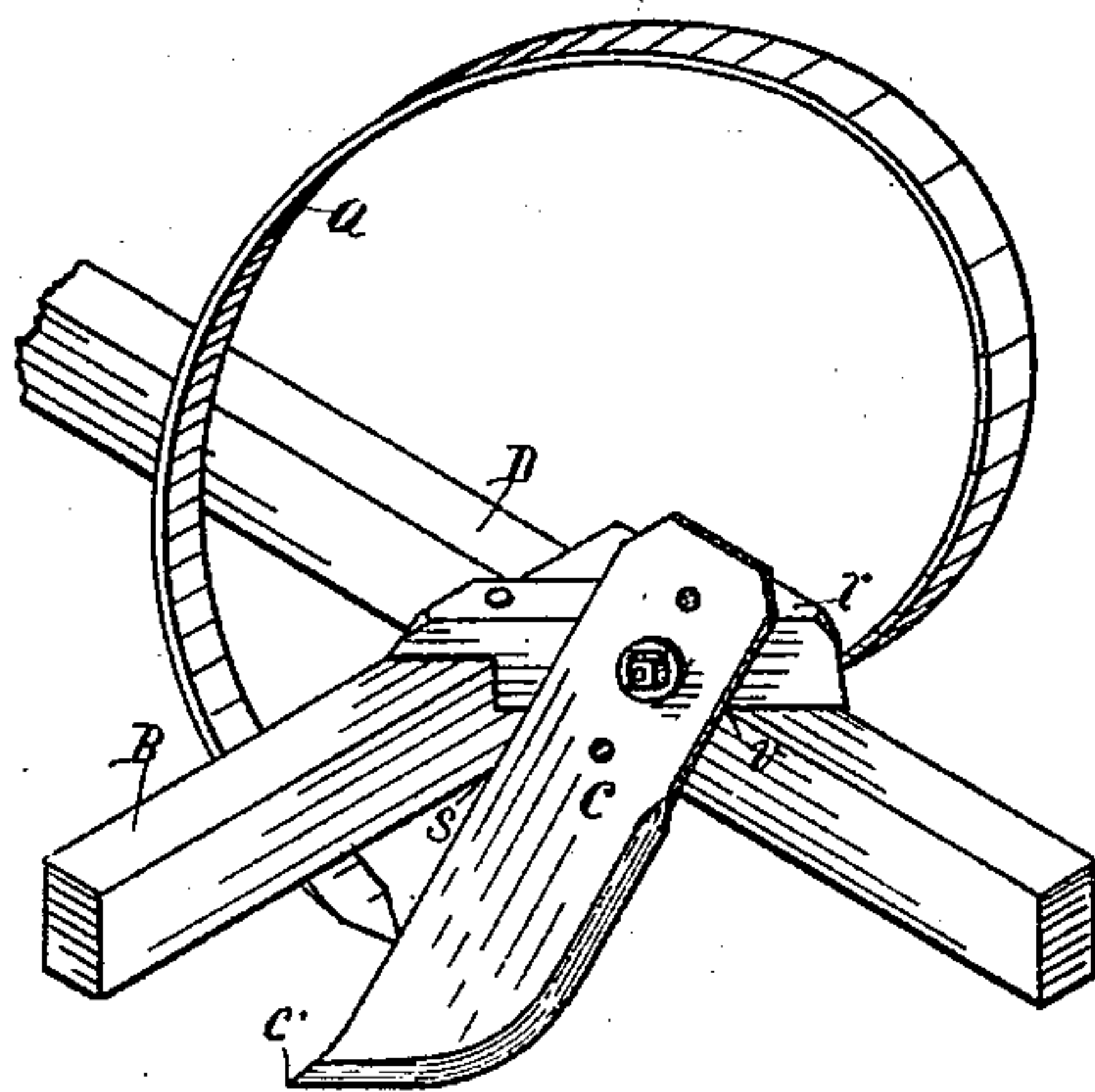
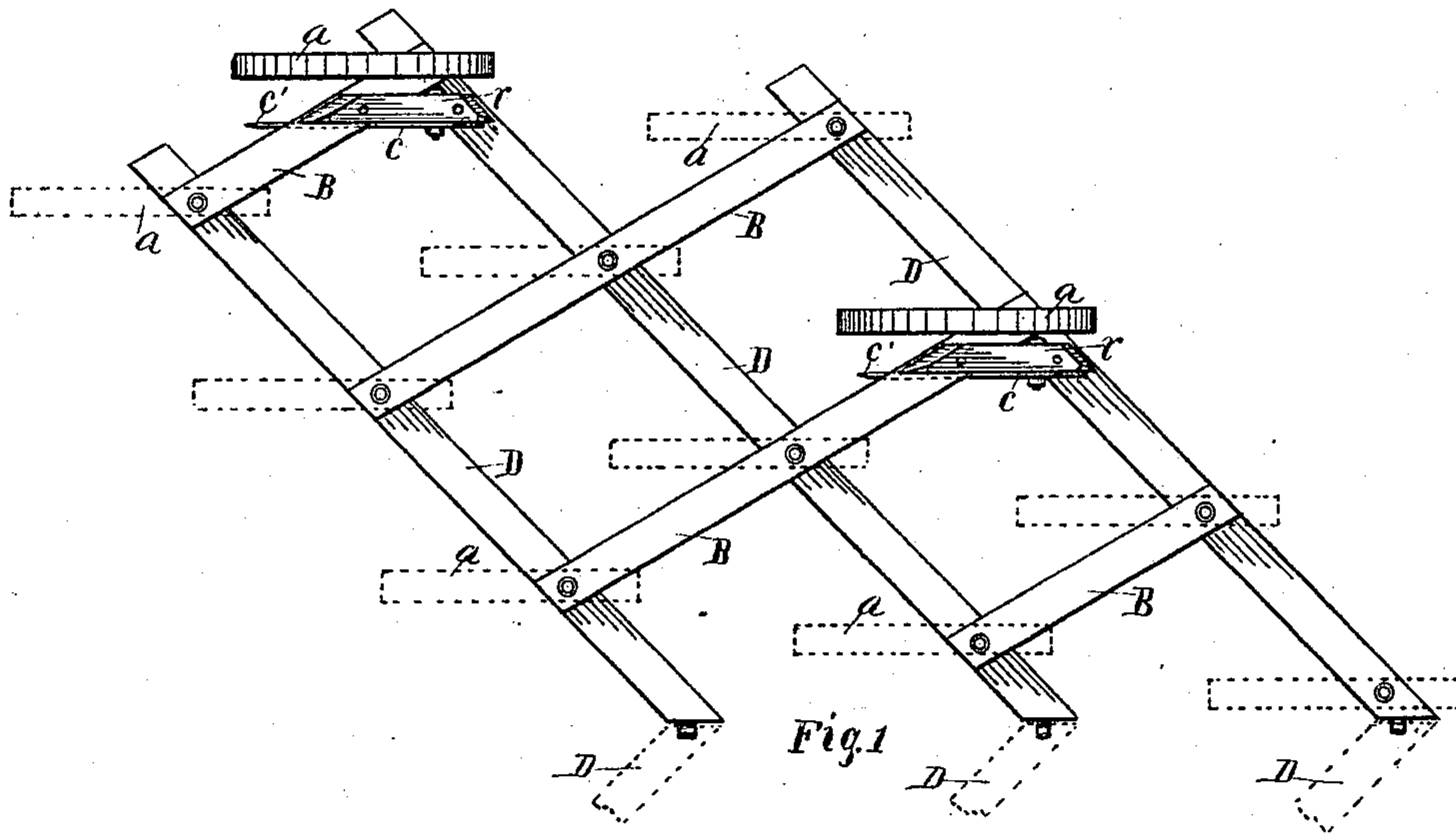


Fig. 2

Attest.  
Ino. C. Perkins  
Ino. H. Chase

Inventor,  
Warren W. Hill  
Per Lucius B. West  
Atty-

# UNITED STATES PATENT OFFICE.

WARREN W. HILL, OF TEXAS, MICHIGAN.

## RUDDER FOR HARROWS.

SPECIFICATION forming part of Letters Patent No. 291,906, dated January 15, 1884.

Application filed August 23, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, WARREN W. HILL, a citizen of the United States, residing at Texas, county of Kalamazoo, State of Michigan, have  
5 invented a new and useful Rudder for Harrows, of which the following is a specification.

My invention has for its object certain improved means, hereinafter described and claimed, for preventing the teeth of a harrow  
10 from trailing, by causing the frame or beams to which the teeth are attached to draw straight ahead in a given plane, and not move back and forth laterally during the operation.

In the drawings forming a part of this specification, Figure 1 is a top view of one wing  
15 of a butterfly-harrow frame; and Fig. 2 is a broken portion of the frame enlarged, showing a rudder connecting therewith.

B D are the beams composing the frame of  
20 a harrow. In the drawings here shown curved spring-teeth *a a* are connected with the frame in the usual manner of such style teeth and frame. It is especially with reference to said  
25 style of harrow that my rudders are constructed; but they may be used with equal utility with other styles of float-harrows, and with sulky-harrows and wheel-cultivators as well.

The rudder consists of a blade-shaped piece  
30 of steel or other suitable metal, *c*, having a rounded or runner-shaped sharpened edge presented to the soil. The top of the rudder has a series of holes, through one of which it is bolted to the frame, or, as in the present case, to a support, *r*, which is mortised at one

end, and adapted to fit the frame, to which it  
35 is bolted. The other holes in the rudder are used to adjust it higher or lower. When used with a butterfly float-frame, Fig. 1, I use two rudders on each half of the frame at the side.

In the operation the rudders enter the soil,  
40 and prevent any lateral swinging of the frame. As the rudder is fastened to the frame with a single bolt in the corner, where two beams, B D, cross each other, the rudder cant back until the back side intercepts the beam B in  
45 the rear at S, thus giving it a proper angle to draw easily, and holds it in said position.

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

1. The combination, with the harrow-frame,  
55 of the rudders in the angles of said frame, and the single securing-bolt, whereby the rudders cant back to a proper angle, and are held in said angle by the harrow-beams, substantially as set forth.

2. The combination, with the harrow-frame,  
60 of the rudder-holders in the angles of the beams, the adjustable rudders, and pivotal bolts, substantially as described.

In testimony of the foregoing I have here-  
unto subscribed my name in the presence of two witnesses.

WARREN W. HILL.

Witnesses:

JOHN H. CHASE,  
O. K. BUCKHOUT.