

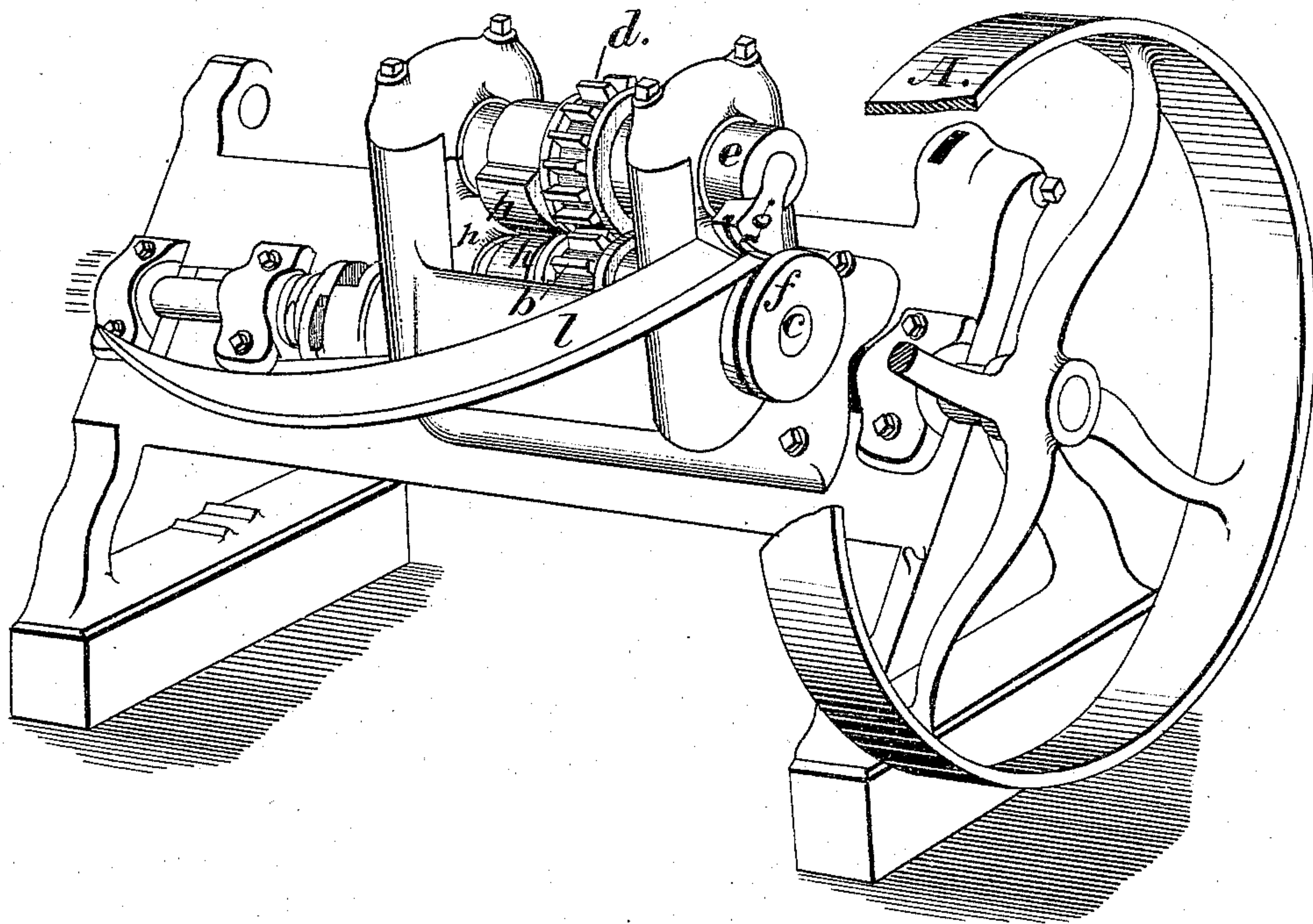
H. WATERS.

## Machines for Rolling Scythes.

No. 137,741.

Patented April 8, 1873.

*Fig. 1.*



*Witnesses.*

W.B. Crosby.  
W.B. Gleason.

*Inventor:*

Hervey Waters

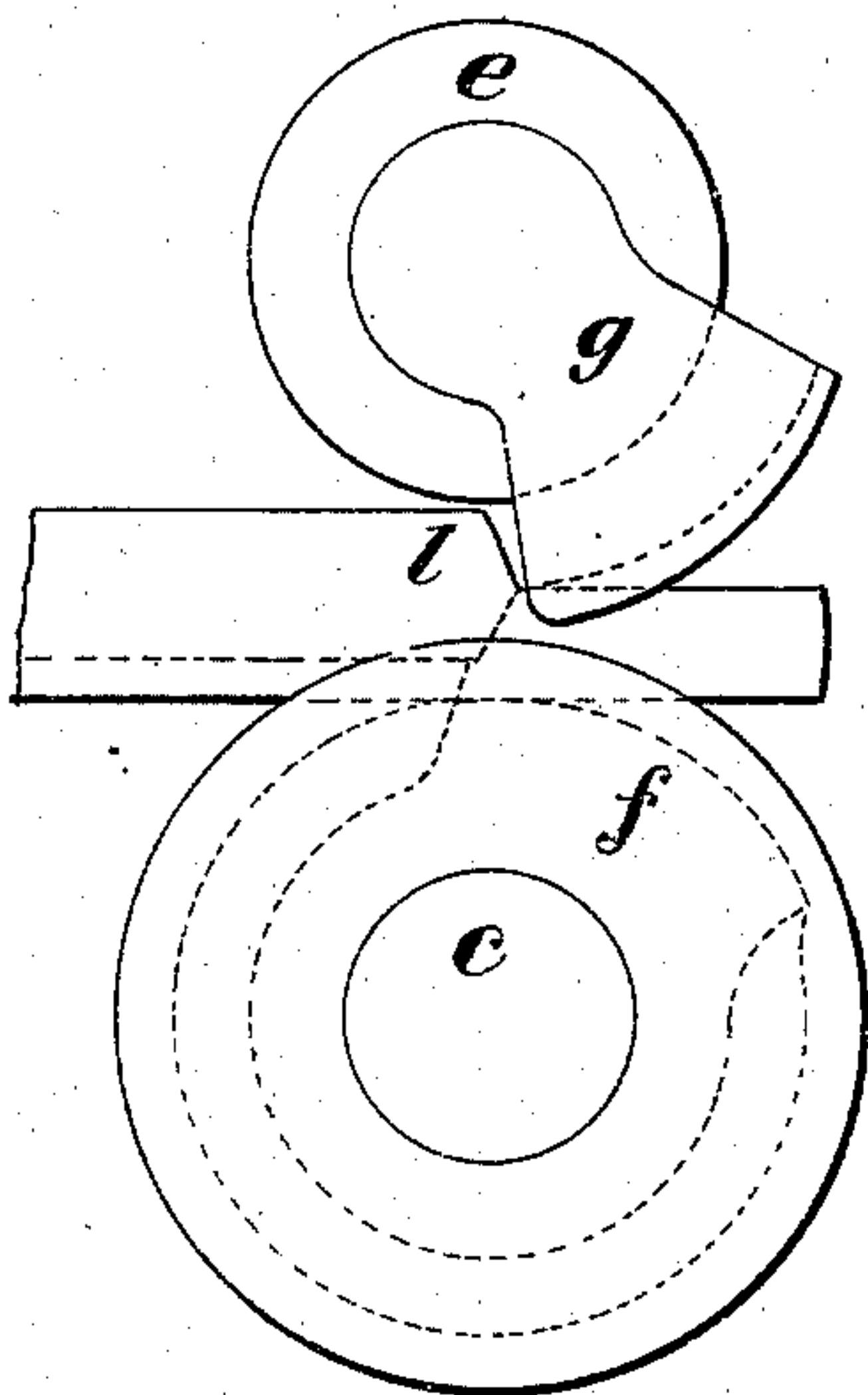
H. WATERS.

Machines for Rolling Scythes.

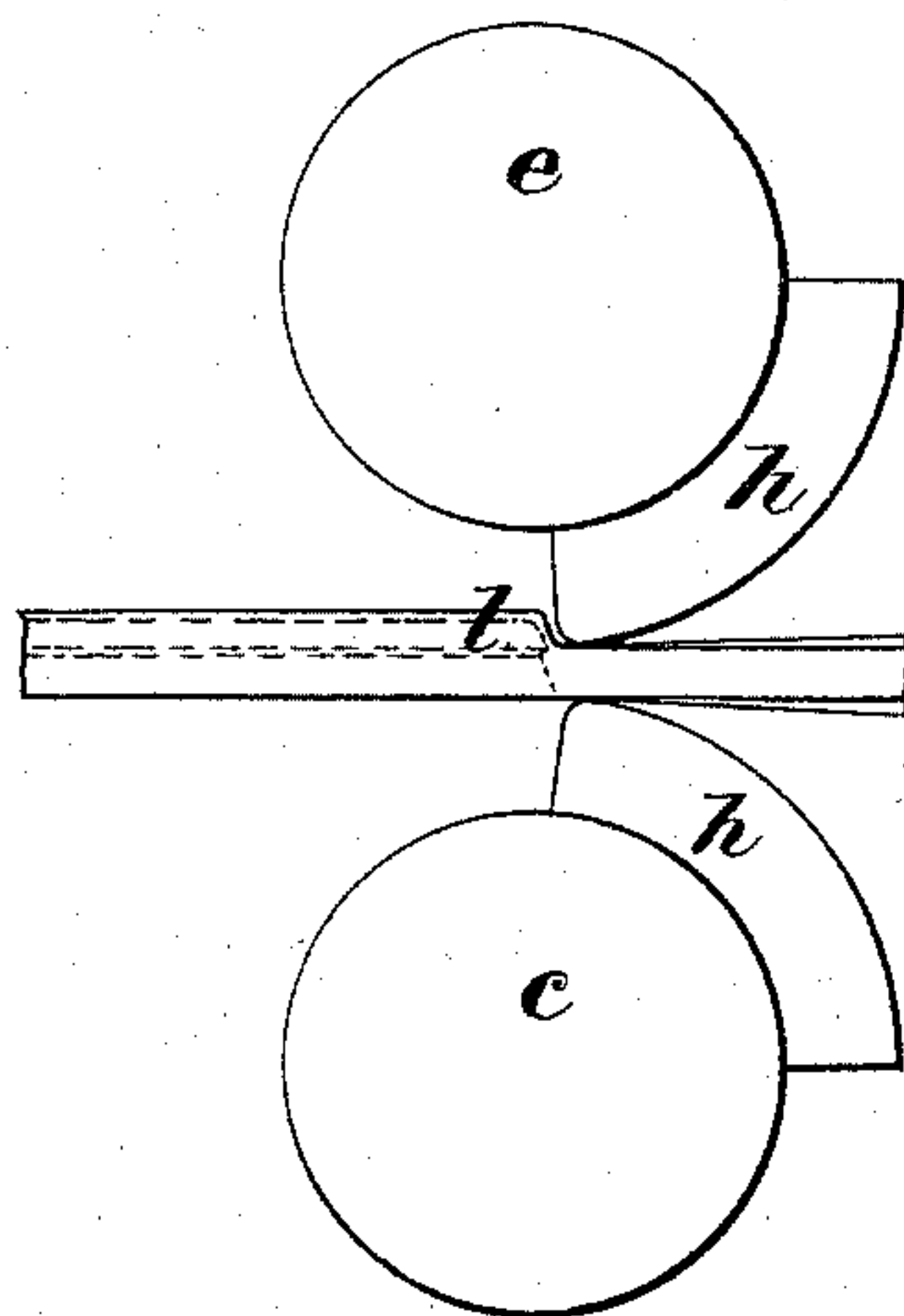
No. 137,741.

Patented April 8, 1873.

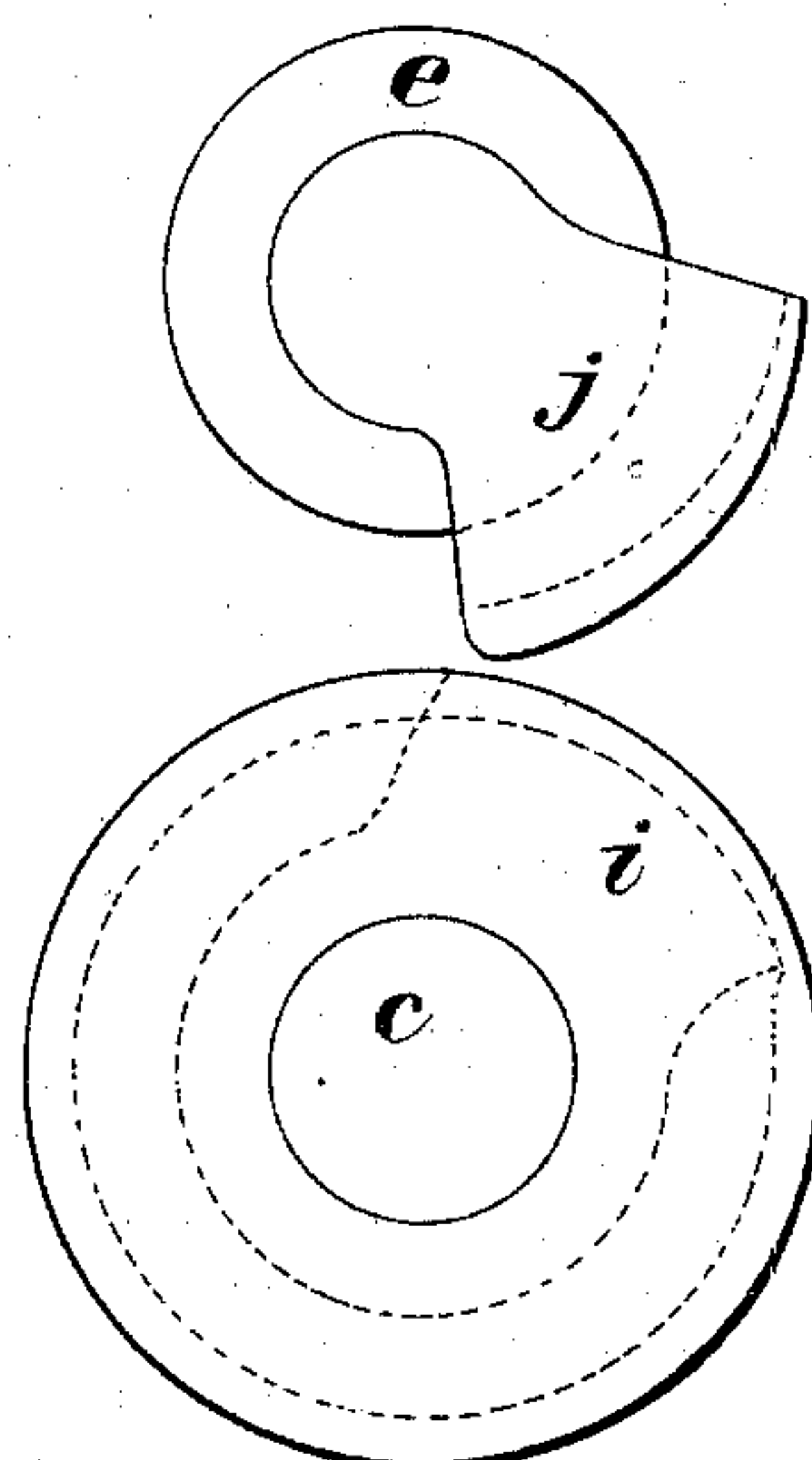
*Fig. 2.*



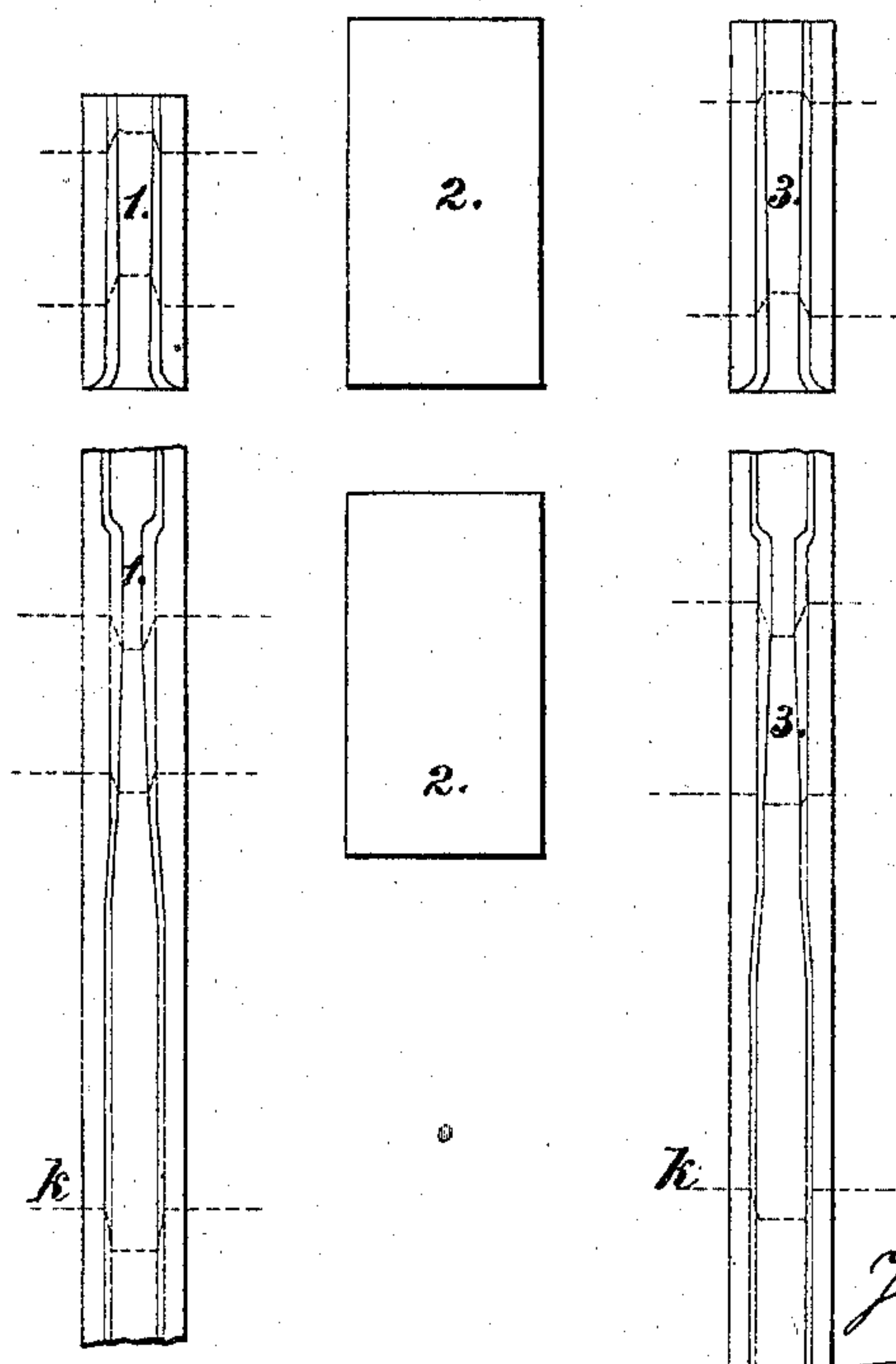
*Fig. 3.*



*Fig. 4.*



*Fig. 5.*



Witnesses.

W. B. Crosby  
W. B. Gleason.

Inventor.

Henry Waters



# UNITED STATES PATENT OFFICE.

HERVEY WATERS, OF NORTHBRIDGE, MASSACHUSETTS.

## IMPROVEMENT IN MACHINES FOR ROLLING SCYTHES.

Specification forming part of Letters Patent No. 137,741, dated April 8, 1873; application filed February 13, 1865.

*To all whom it may concern:*

Be it known that I, HERVEY WATERS, of Northbridge, county of Worcester and State of Massachusetts, have invented an Improved Suit of Roller-Dies; and I do hereby declare that the following, taken in connection with the drawing which accompanies and forms part of this specification, is a description of my invention sufficient to enable those skilled in the art to practice it.

To be able to manufacture that class of scythes which have their backs solid with their webs mostly by rolling instead of hammering is the special object of my invention.

My invention relates to that class of rolling the general character of which is that the rolls have a portion of their surfaces lower than their working-surfaces. In operating them the bar or blank to be drawn is put through between the rolls from their delivering-side, they there biting upon it at any convenient position, and by their action from such point toward the end put through return the blank upon the same side of the rolls from which it was presented. My invention consists of a suit of rolling-dies, each pair of the suit respectively, and the several pairs in succession, being of suitable form and proportion to the bar or blank to be first introduced to each other and to the resultant form, so that the drawing and shaping shall be effected by successive passes, the same being so constructed and operated as that the figure finally produced shall be of the form required.

Figure 1 of the accompanying drawing is a perspective view of my mill for rolling the heel ends of my scythes.

A is the driving-pulley, serving as a "fly," and having on the driving-shaft with it, beneath the housings of the rolls, a driving-gear working into and driving the gear *b*, which is fast on the die-shaft or roll *c*. The gear *b* works into and drives the gear *d*, which is fast upon the roll *e*. *f* and *g* constitute the pair of dies for the first pass of the suit. *h h* constitute the dies for the second pass, and on the rolls *c* and *e* at the ends thereof opposite to *f* and *g*, respectively, (but not seen in the drawing,) is a pair of dies similar to *f* and *g*, but varying in dimensions from *f* and *g*, as will hereafter appear by the description.

Figs. 2, 3, and 4 are respectively views of the pairs of dies as used in this suit, Fig. 2 being for the first pass, Fig. 3 for the second pass, and Fig. 4 for the third pass, the letters of reference being in each figure the same, and the same as in Fig. 1, but *i* and *j* being the pair of dies before alluded to as not seen in the perspective drawing.

In Figs. 2 and 4 the full lines of the dies show their outlines in elevation, and the dotted lines nearest the full lines in said figures represent the bottoms of the grooves. At Fig. 5 are plans of the working-surfaces of the dies, the same being represented as reduced to a plane.

1 1 are the grooves for the first pass; 2 2, plain surface-dies for the second pass; and 3 3, the grooved dies for the third pass. *k k* are dotted lines, showing the depth and form of those portions of the grooves in the bottom dies, which serve only as guides, by means of which the blank or bar is guided properly to the position to be acted upon by the grooved dies for drawing and shaping the work. These guiding-grooves are of uniform breadth and of uniform depth in nearly all their extent, which is nearly around the circumference of the lower die, excepting always that part which, in the revolution of the rolls, comes opposite to the upper die. This part constitutes the working-die, and is in form and extent every way the converse of the upper die for all the purposes of drawing and shaping scythe-shanks. The other dotted lines in Fig. 5, across the grooves of the dies, represent the depth and form of the grooves at about the points where they are located; and it will be observed that the dies for the first pass have their corresponding parts deeper and a little wider than the similarly-corresponding parts of the third pass.

This, it will be readily understood, is for the reason that, in consequence of the action of the first and second passes, the parts upon which the third pass acts will have become smaller than at first, but the distances between the similarly-corresponding parts in the direction of the circumference of the roll are greater than in the first pass. This difference should be equal, as near as may be, to the increased length of the piece in the correspond-



ing parts from the drawing of the second and third passes of the dies.

The pair of dies *h h* in Figs. 1 and 3, and 2 in Fig. 5, have their working-surfaces of equal or nearly equal sizes concentric with and nearly parallel to the axes of the rolls, and at such distance therefrom as will, between their surfaces, bring the piece to its proper dimensions in one direction, when the rolls are so adjusted that the dies for the first and third passes shall bring the piece to its proper dimensions in the other direction.

In Fig. 1, at *l*, is shown a scythe with its heel end between one pair of the grooved dies, and in Figs. 2, 3, and 4 the dies are represented in about the position at which they bite upon their work; but it should be understood that the operative, taking the scythe in his hand, presents its heel end, the back being downward, in the long open groove of the lower die; and when the upper die in its revolution is out of the way, he carries the scythe to such position as that the forward face of the upper die shall impinge upon the shoulder formed by the heel end of the blade, as seen in Fig. 2, when the die will move along the scythe until the two dies bite upon the blank part for the heel, when they will carry forward the scythe until they pass off the extreme end thereof. The operative then presents the heel end flatwise between the rolls, so as to be caught between the dies *h h* at or near that part of the "set" of the blade nearest to the heel end there-

of for the second pass. For the third pass the scythe is introduced, in the same manner as in the first pass, between the dies *i* and *j*, when a fourth pass may be and usually is made by putting it again between the dies *h h*, as before.

It will be observed that in the particular form just described the two flat sides of the finished form of the heel end of the scythe are parallel to each other; therefore, it is practical to make more than one pass in the same dies, especially when the manner of determining the position upon the blank, in the direction of its length, shall be substantially the same as described.

Having thus described my invention and its mode of operation, I do not wish to be understood as limiting myself to any of the particular modes therein set forth for guiding the blank or bar to the action of the dies or for determining the position at which the dies shall be impressed upon the blank or bar, as these may be greatly varied.

I claim—

A suit of roller-dies, made and operating substantially as described.

In witness whereof I have hereunto set my hand.

HERVEY WATERS.

Witnesses:

J. B. CROSBY,  
W. B. GLEASON.