

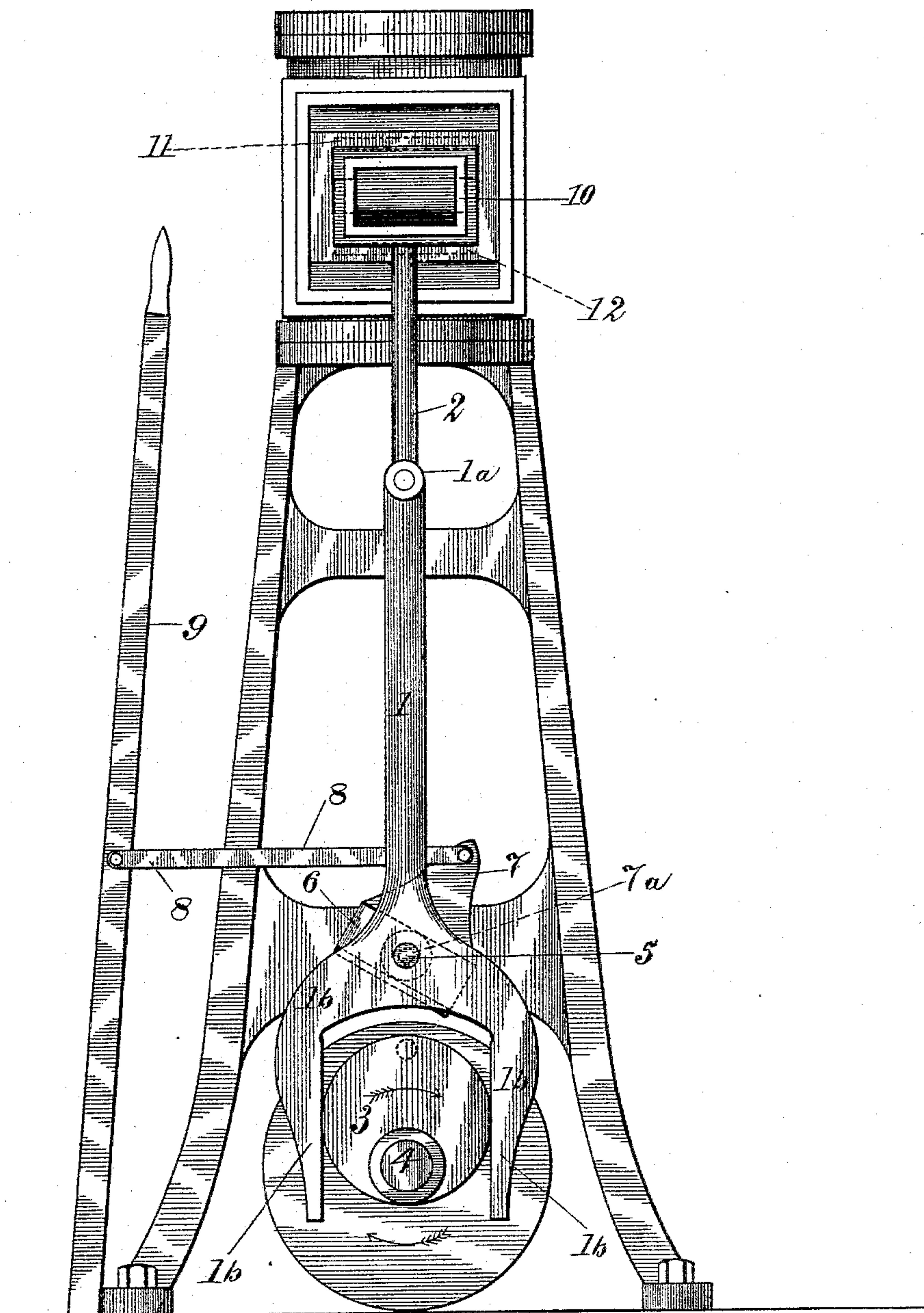
(No Model.)

5 Sheets—Sheet 1.

D. PITCEATHLY.
REVERSING GEAR.

No. 490,308.

Patented Jan. 24, 1893.



Witnesses.

Ch. Laurie.
M. E. Angell.

Fig. 1

Inventor.

David Pitceathly
by Chas. H. Riches
his attorney

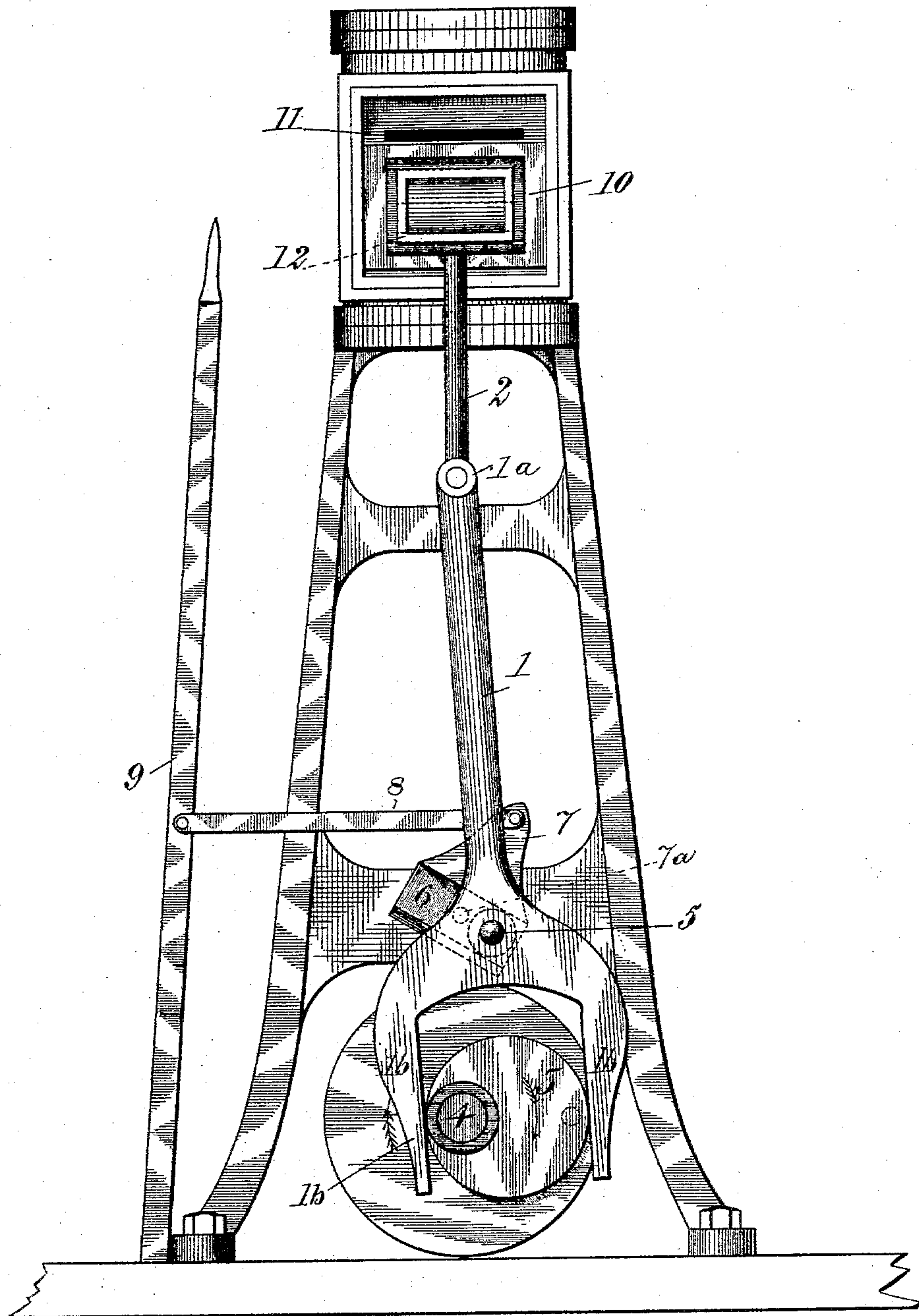
(No Model.)

5 Sheets—Sheet 2.

D. PITCEATHLY.
REVERSING GEAR.

No. 490,308.

Patented Jan. 24, 1893.



Witnesses.
C. L. Lawrie.
M. E. Angell

Fig. 2.

Inventor.
David Pitceathly
by Charles H. Riches
his atty

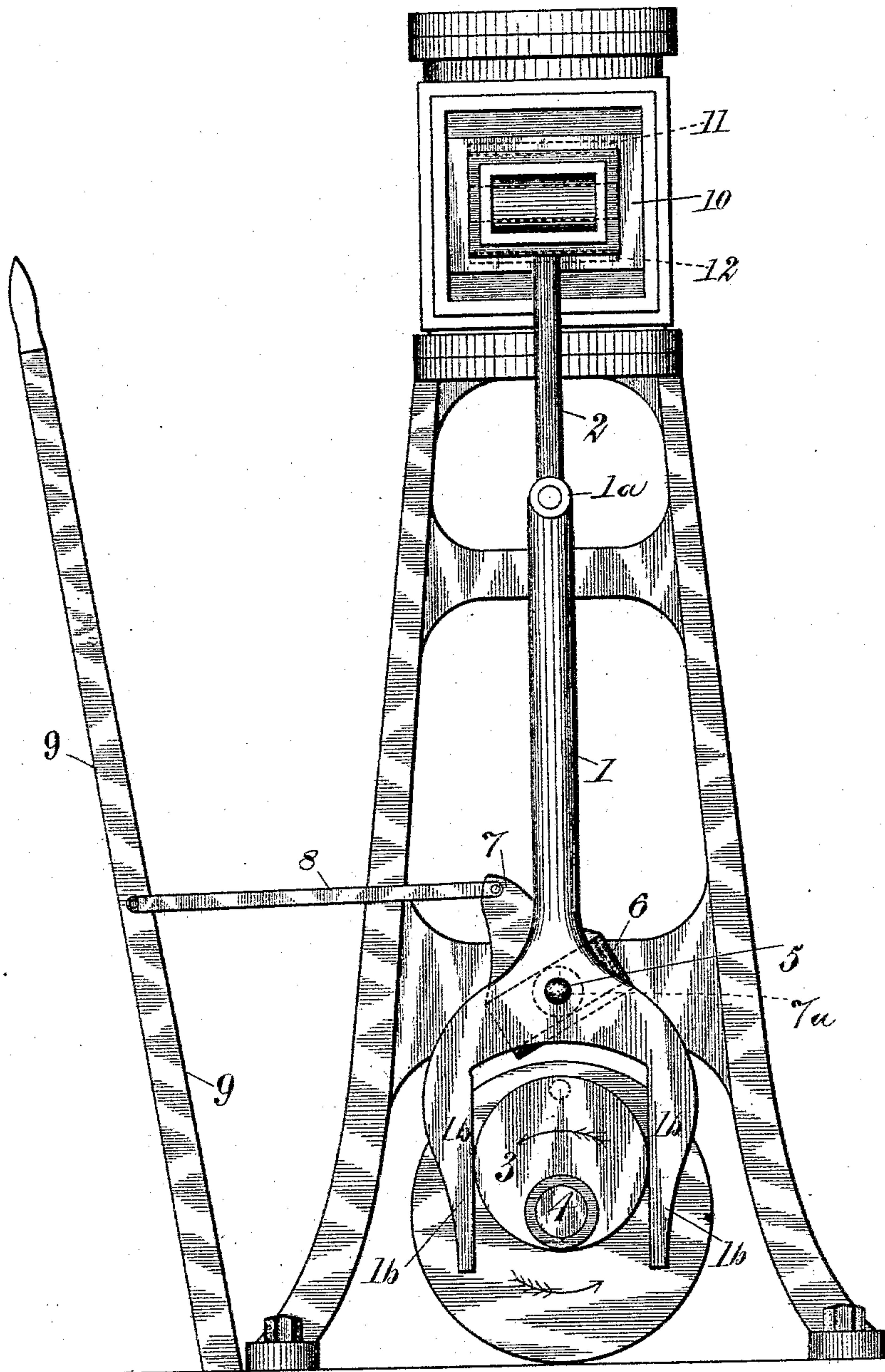
(No Model.)

5 Sheets—Sheet 3.

D. PITCEATHLY.
REVERSING GEAR.

No. 490,308.

Patented Jan. 24, 1893.



Witnesses.

C. L. Lawrie,
M. E. Angell

Fig. 3.

Inventor
David Pitceathly
by Charles H. Riches
his atty.

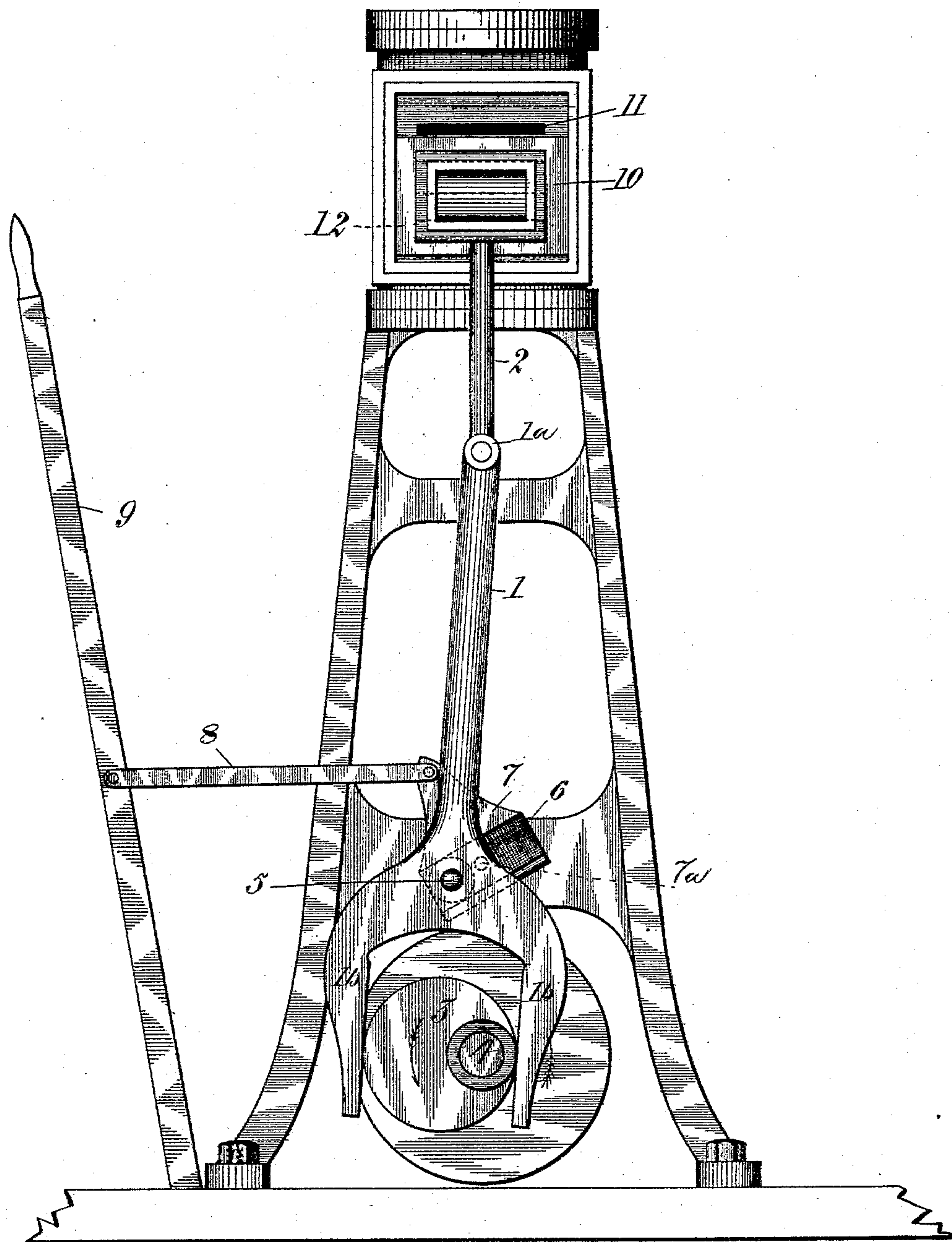
(No Model.)

5 Sheets—Sheet 4.

D. PITCEATHLY.
REVERSING GEAR.

No. 490,308.

Patented Jan. 24, 1893.



Witnesses

C. L. Lawrie.
M. E. Angell.

Fig. 4.

Inventor.

David Pitceathly
by Charles H. Riches
his atty

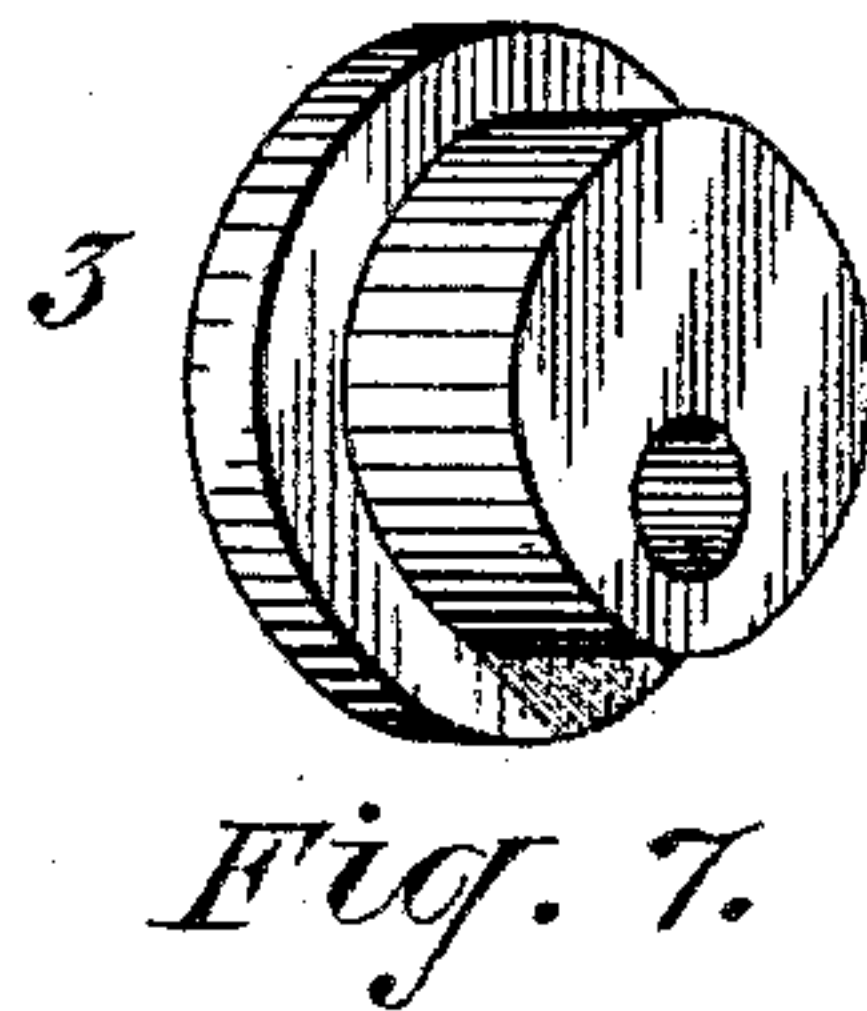
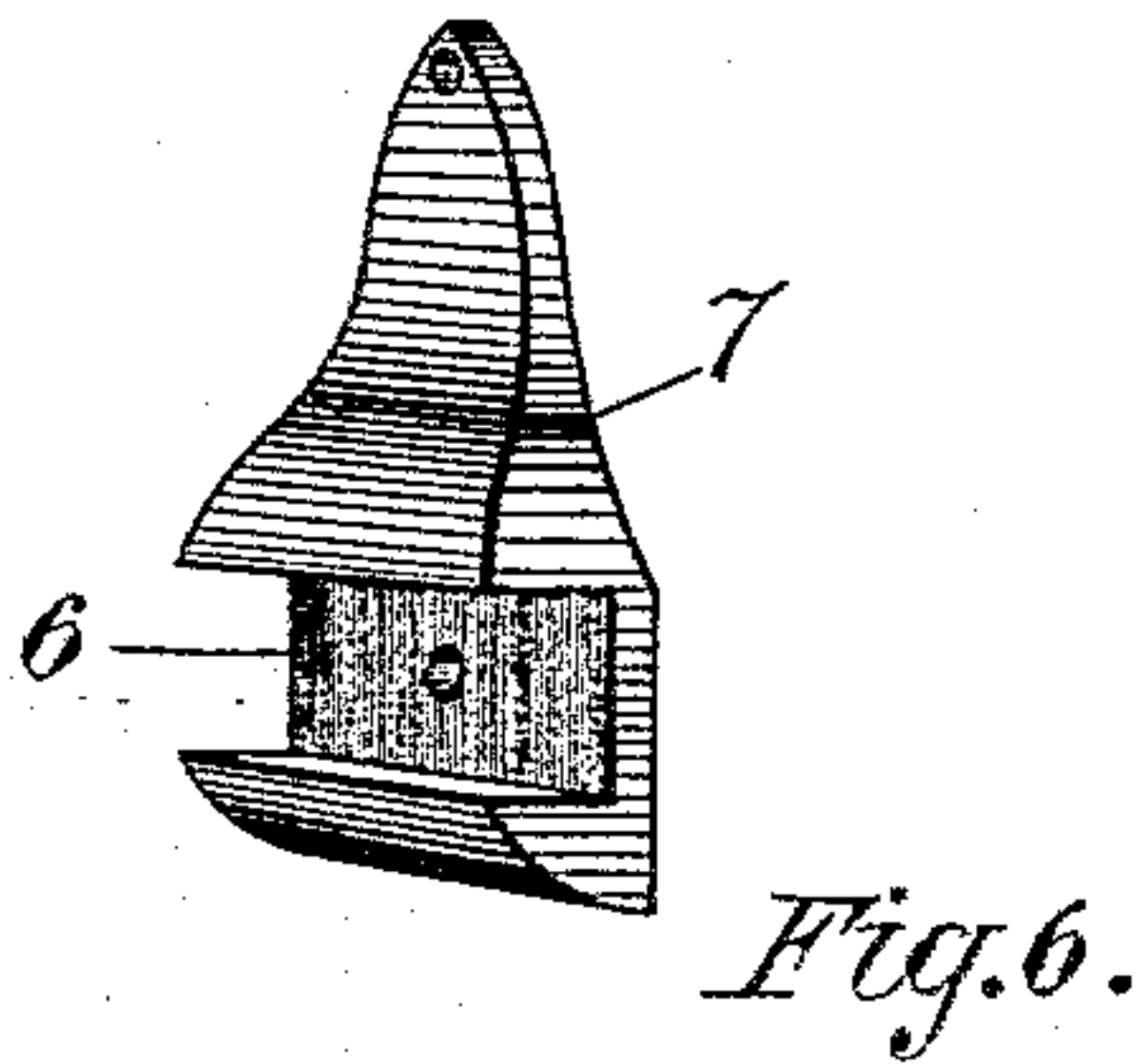
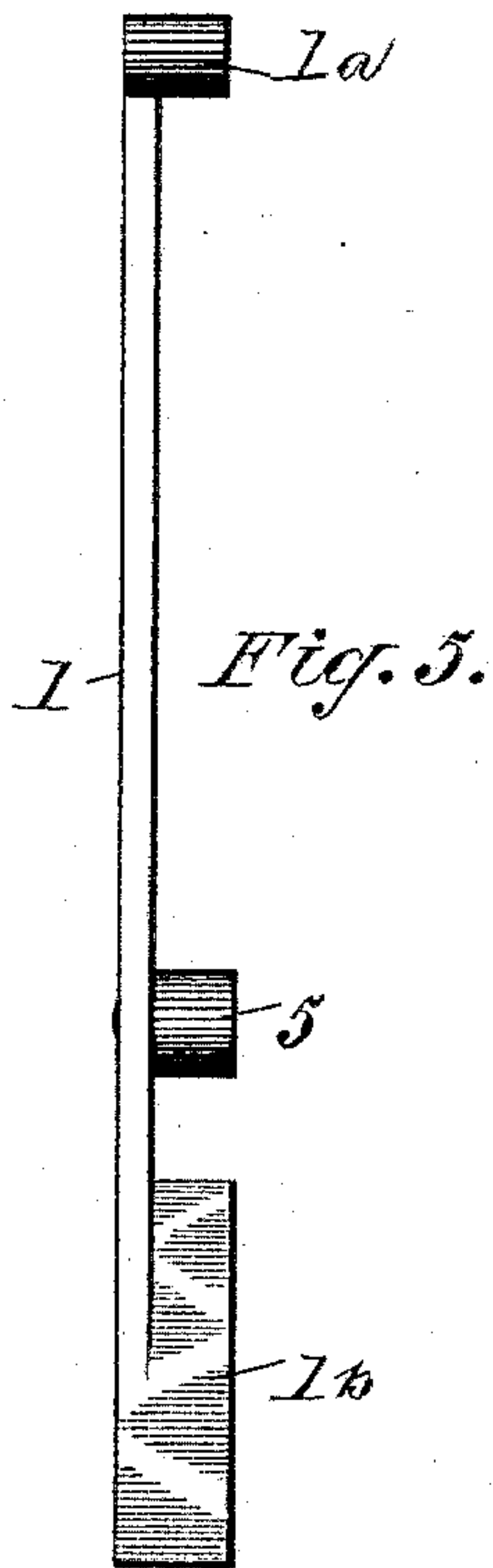
(No Model.)

5 Sheets—Sheet 5.

D. PITCEATHLY.
REVERSING GEAR.

No. 490,308.

Patented Jan. 24, 1893.



Witnesses.

C. L. Lawrie.
M. E. Angell.

Inventor.

David Pitceathly
by Charles H. Rees
his atty

UNITED STATES PATENT OFFICE.

DAVID PITCEATHLY, OF FENELON FALLS, CANADA.

REVERSING-GEAR.

SPECIFICATION forming part of Letters Patent No. 490,308, dated January 24, 1893.

Application filed June 4, 1892. Serial No. 435,572. (No model.)

To all whom it may concern:

Be it known that I, DAVID PITCEATHLY, of Fenelon Falls, in the county of Victoria and Province of Ontario, Canada, have invented certain new and useful Improvements in Reversing-Gear for Steam-Engines; and I hereby declare the following to be a full, clear, and exact description of the same.

This invention relates to a reversing gear for steam engines and more particularly to a reversing gear for that style of steam engine employed in the smaller class of steam boats; and the object of this invention is to so construct the reversing gear that the backward and forward movement of the engine is entirely under the control of a single eccentric rod; and the invention consists essentially of connecting to the valve rod of the engine an eccentric rod rotating about the shaft of the engine and providing this eccentric rod with a traveler which travels in the groove of a cam pivoted to the frame work of the engine, said cam having connected to its upper end a rocker shaft connected to the reach rod or reversing lever, the whole device being constructed as hereinafter more fully set forth in the specification and more particularly pointed out in the claims.

In the drawings:—Figure 1 represents the steam chest of the engine, the slide valve, the valve rod, the eccentric rod connected to the valve rod, the main shaft and the cam, the arrangement of these parts being ready for the forward motion of the engine. Fig. 2 shows the same parts in the forward motion of the engine and showing the valve having completed one-half of its stroke. Fig. 3 is a view of the same parts with the engine about to commence the reverse motion. Fig. 4 is a view of the engine on its reverse motion and the valve having completed about one-half of its travel. Fig. 5 is a side elevation of the eccentric rod. Fig. 6 is a perspective view of the cam. Fig. 7 is a perspective view of the eccentric wheel.

Like numerals of reference refer to like parts throughout the specification and drawings.

The reversing gear consists of an eccentric rod 1, connected at its upper end 1^a, to the valve rod 2, and having its lower end 1^b bifurcated to partially inclose the eccentric wheel

3 mounted upon and rigidly fixed to the main shaft 4. On the inner face of the eccentric rod 1 is a traveler 5 which works in the cam grooves 6 of the cam 7. The cam 7 is pivoted to the frame work of the engine by means of a rocker bolt 7^a and connected to the upper end of the cam 7 is one end of a rocker shaft 8, while the other end of the said rocker shaft is connected to the reach rod or reversing lever 9. The valve rod 2 is connected to and moves the valve 10 to close the ports respectively 11 and 12. If the engine be moved off the dead center in the way indicated by arrows in Figs. 1 and 2 and the cam is permitted to remain in the same position as indicated in the same figures the eccentric rod will descend and open the upper steam port 11 which will remain open until after the engine has passed the middle of its stroke when the valve 10 will shut off the upper steam port 11 and open the lower steam port 12. The engine while the cam is in this position is supposed to be running with a forward motion and will continue this forward motion as long as the cam remains in this position. If, however, it is desired to reverse the engine the cam 7 is thrown into the opposite oblique position shown in Figs. 3 and 4 of the drawings.

Fig. 3 shows the engine in the same position as in Fig. 1 with the exception that the cam is set on the opposite diagonal with the result that the lower steam port 12 will be opened during the commencement of the downward stroke and after the engine has passed the middle of its stroke the lower steam port 12 will be closed by the valve 10 and the upper steam port 11 will be opened. The engine while the cam is in the position shown in Figs. 3 and 4 of the drawings is supposed to be running in the reverse direction and will continue to run in this direction as long as the cam remains in this position. As the cam 7 is connected to one end of the rocker shaft 8, which rocker shaft is connected to the reach rod or reversing lever 9 the said cam is wholly under the control of the engineer in charge. The cam 7 rocks on the rocker bolt 7^a which is made fast to the frame work of the engine and during the movement of the cam into either of the indicated oblique positions the eccentric rod is moved to give the engine re-

spectively either a forward or reverse motion. The more horizontally the cam 7 is the less will be the throw that the valve 10 will have and consequently the less the speed of the engine. As before stated the movement of the cam 7 is wholly under the control of the engineer in charge and by his moving the reach rod or reversing lever 9 the cam 7 is shifted into any desired position and the engine started on its forward or reverse movement at will, and the stroke of the valve and the speed of the engine are controlled by the engineer manipulating the said reach rod or reversing lever 9.

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

1. A reversing gear for steam engines consisting of the combination of a steam chest, 20 steam ports from said steam chest into the working cylinder, a valve to close said ports, a valve rod connected to said valve, an eccentric rod connected to the valve rod having a bifurcated end which encircles the eccentric wheel the main shaft, an eccentric wheel 25 mounted on the main shaft, a cam secured to

the frame work of the engine, a traveler secured to the eccentric rod said traveler working in said cam said cam adapted to reverse the stroke of the eccentric rod, substantially as described. 30

2. A reversing gear for steam engines consisting of the combination of a steam chest, steam ports from said steam chest into the working cylinder, a valve to close said ports, 35 a valve rod connected to said valve, an eccentric rod connected to the valve rod, a bifurcated end to said eccentric rod, an eccentric wheel engaging with the bifurcated end, the frame work of the engine, a rocker bolt secured to the frame work of the engine, a cam 40 mounted upon the rocker bolt, a traveler secured to the inner side of the eccentric rod, said traveler working in said cam, means for altering the position of said cam, said cam 45 and traveler adapted to reverse the stroke of the eccentric rod, substantially as described.

Fenelon Falls, May 6, 1892.

DAVID PITCEATHLY.

In presence of—

JAMES JACKSON,
W. L. ROBSON.