

George Selden,  
Concaving & Flanging Heads of Oil Tanks.

116636

Fig. 1.

PATENTED JUL 4 1871

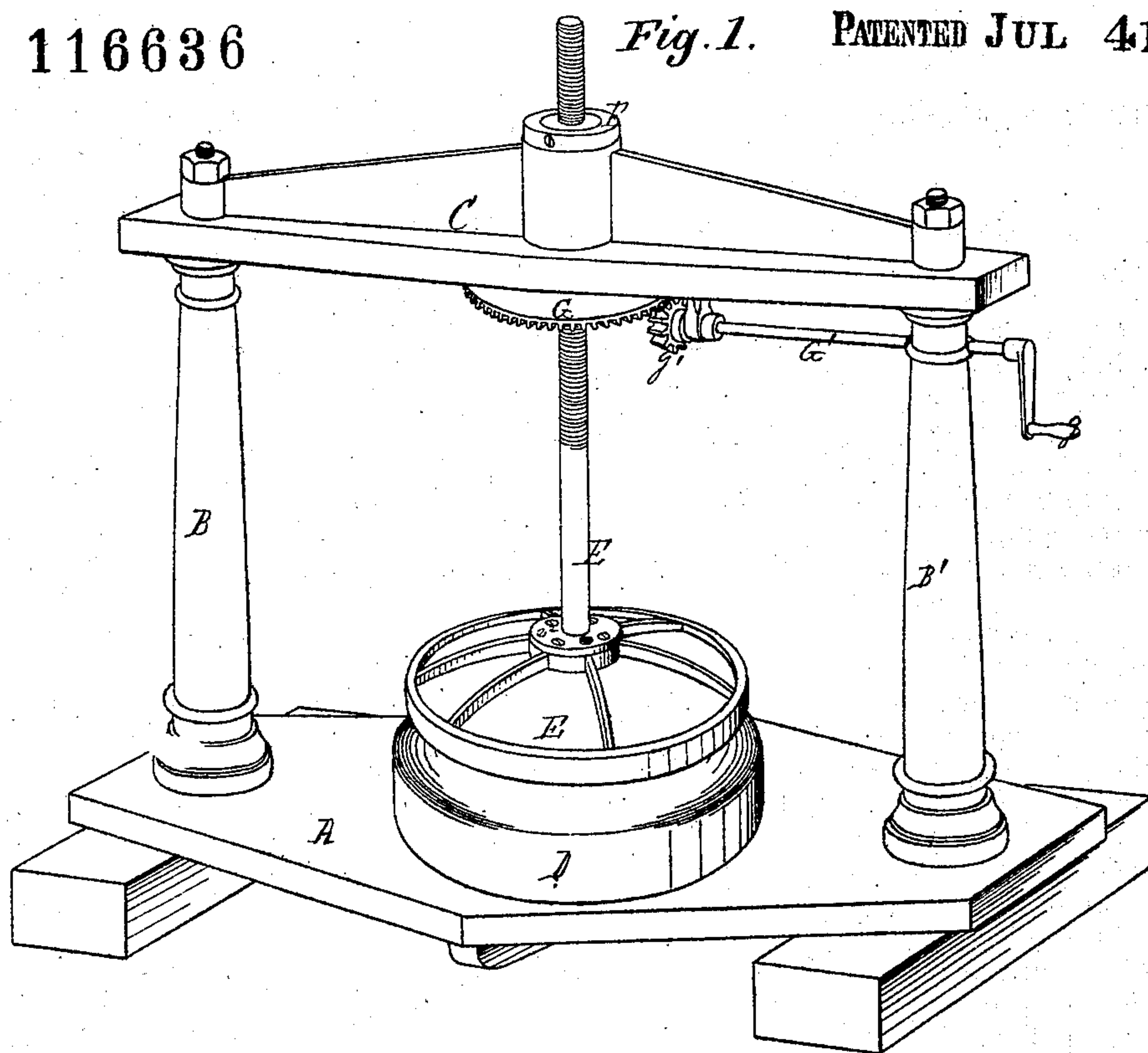


Fig. 2.

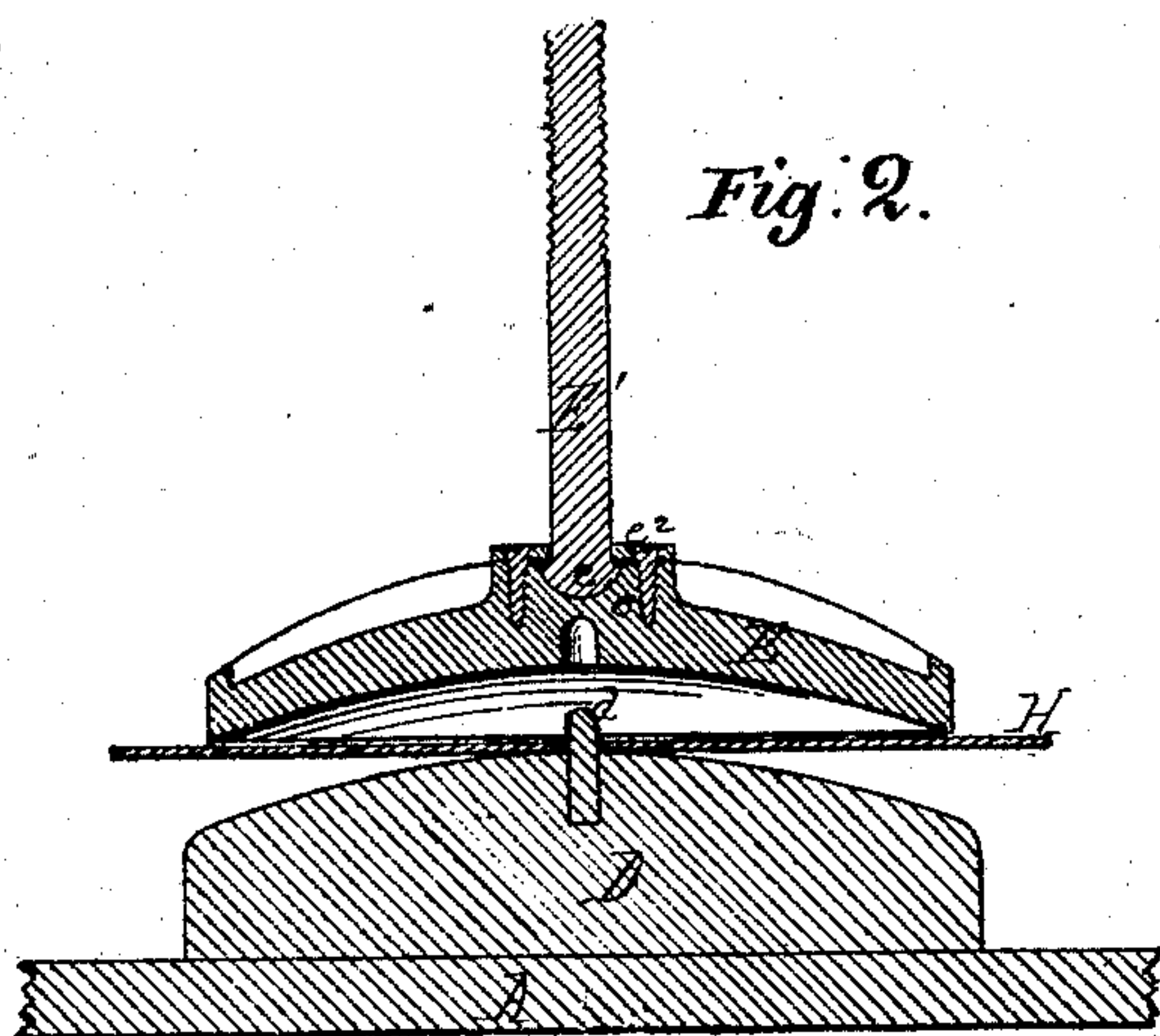
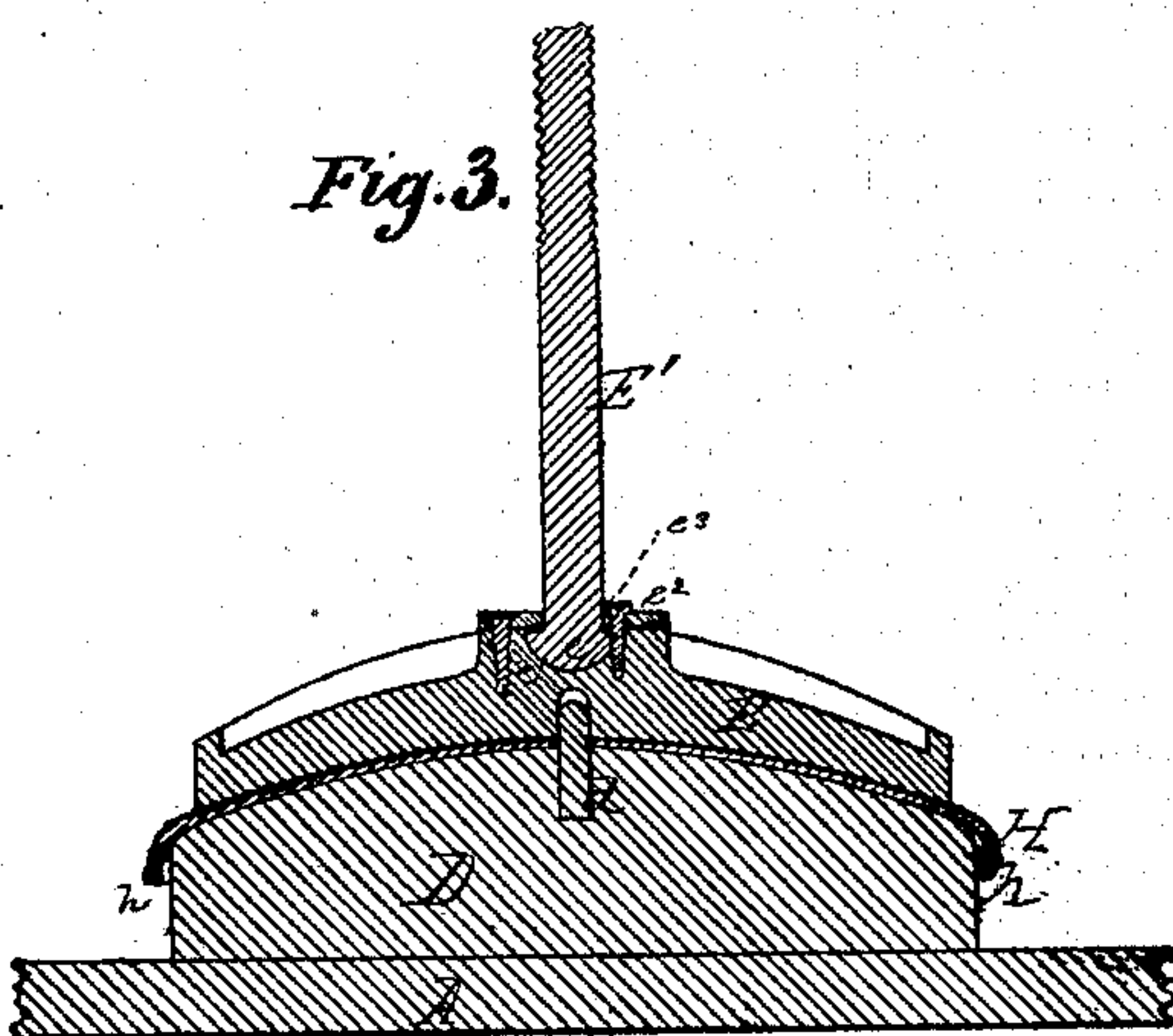


Fig. 3.



Witnesses.

Wm. Mahon  
H. J. Doubleday

Inventor.

George Selden  
by his Attorney  
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# UNITED STATES PATENT OFFICE.

GEORGE SELDEN, OF ERIE, PENNSYLVANIA.

## IMPROVEMENT IN MACHINES FOR TURNING THE FLANGES ON THE HEADS OF OIL-TANKS.

Specification forming part of Letters Patent No. 116,636, dated July 4, 1871.

*To all whom it may concern:*

Be it known that I, GEORGE SELDEN, of Erie, county of Erie, State of Pennsylvania, have invented certain new and useful Improvements in Concaving and Flanging Heads of Oil-Tanks of which the following is a full, clear, and exact description, reference being had to the accompanying drawing making part of this specification, in which—

Figure 1 is a perspective view of an apparatus employed in my improved method. Fig. 2 is a vertical section of the form or bed-piece and follower in position to commence the operation. Fig. 3 shows the position of the parts after the head has been concaved, with the flange partly turned.

Similar letters of reference denote corresponding parts in all the figures.

The process of concaving and flanging the heads of oil-tanks at one and the same operation, by any of the methods in common use, has been one of extreme difficulty, from the fact that the buckling and wrinkling incident to swaging plates of the required thickness rendered the use of stamps and dies, as ordinarily employed, impracticable; and it is equally difficult to form the plates into proper shape by the usual method of hammering either into or over a form, this method being objectionable for two reasons: 1st, the partial recoil of the plate after the blow renders the process a slow and tedious one; 2d, the continual vibrations of the metal frequently cracks and always materially weakens the plate, especially as the length of time required allows the plate to cool somewhat, this unfavorable result being particularly noticeable when working the medium and lower grades of iron, although the hammering possesses one decided advantage over stamping or swaging—that is, it entirely avoids the buckling and wrinkling, as the same series of blows which deflects and conforms the metal also upsets it in a manner that is well understood by all metal-workers.

My invention is designed to overcome the objections incident to the systems of manipulation above described; and to this end it consists in a method or process of concaving and flanging by the percussion imparted by blows from suitable hammers or mallets in combination with suitable devices for preventing the recoil of the plate after the blow has been received, substantially in the

manner and by the means which will be hereinafter fully described.

In the drawing, A is a bed-plate; B B', posts; and C, a girt or cap secured to the posts in any usual or desired manner, these parts forming a frame-work upon which the operative devices are supported. D is the former, located centrally of bed-plate A. It is circular in horizontal section, as shown in Fig. 1, its upper surface being convex, as in Figs. 2 and 3. *d* is a centering-pin. E is a follower, circular in form like the former D, but considerably smaller. It is made concave upon its under side, and in the drawing is represented to be the counterpart of the former; but this is not essential, as it may be made much more concave without impairing its usefulness. E' is a shaft, provided at its upper end with a screw-thread, which engages with a nut, F, mounted in suitable bearings in girt C. The lower end of shaft E' is enlarged and rounded, as at *e*, Figs. 2 and 3, to fit a suitable step or socket, *e*<sup>1</sup>, formed for its reception in the upper surface of the follower E. The shaft is secured to the follower by means of a plate, *e*<sup>2</sup>, thus making a ball-and-socket joint, which permits the follower to rock or vibrate freely within certain limits. *e*<sup>3</sup>, see Fig. 3, is a screw or pin passing through the ball *e* of the shaft, and serving to connect the shaft and follower and prevent one from rotating without the other. G is a bevel-gear wheel, made in one piece with or attached to the nut F. G' is a horizontal shaft, supported at one end in a hanger from the girt C and at the other end in post B'. It has a crank, *g*, at one end, and a bevel-pinion, *g*', at the other, said pinion taking into the bevel-gear G. Thus a rotary motion may be imparted to nut F, and if the shaft E' be held from turning around the shaft and follower may be raised and lowered by turning crank *g*, as will be readily understood.

I will now proceed to describe the operations of concaving and flanging. The plates, having been cut in a circular form, are heated in a suitable furnace, and placed upon the former D, the follower having been run up out of the way. The plate may be centered by means of pin *d* passing through a hole cut in the center for its reception. The follower is now run down until it touches the plate H, the position of parts at this stage being shown in Fig. 2. In practice I prefer to run the plate down to this



point by turning it around, the nut F remaining stationary. I now proceed to bend the plate to the former. This is done by a number of men stationed around the machine, each provided with a hammer or mall. These men strike a succession of blows as nearly simultaneously as may be upon that portion of the plate which projects beyond the follower, and as said plate is beaten down another man, by means of crank *g*, follows up the plate with the follower E, thus preventing all recoil or vibration, and facilitating the rapidity and certainty with which the operation is performed. When the plate shall have been beaten down to the form, as shown in Fig. 3, the edge will ordinarily assume the position at *h*, Fig. 3, and will require but little further up-

setting in order to perfect the flange. In some kinds of work it may be found not desirable to cut a hole in the plate for centering the pin *d*, in which case it, the plate, may be centered by means of guides arranged around the outside of former D in any manner that may be found most convenient.

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

The herein-described method of concaving and flanging iron plates or disks.

GEO. SELDEN.

Witnesses:

GEO. D. SELDEN,

F. F. CLEVELAND.