

W. STARKEY & O. P. JACKSON.  
Indicator and Gage-Cock.

No. 204,630.

Patented June 4, 1878.

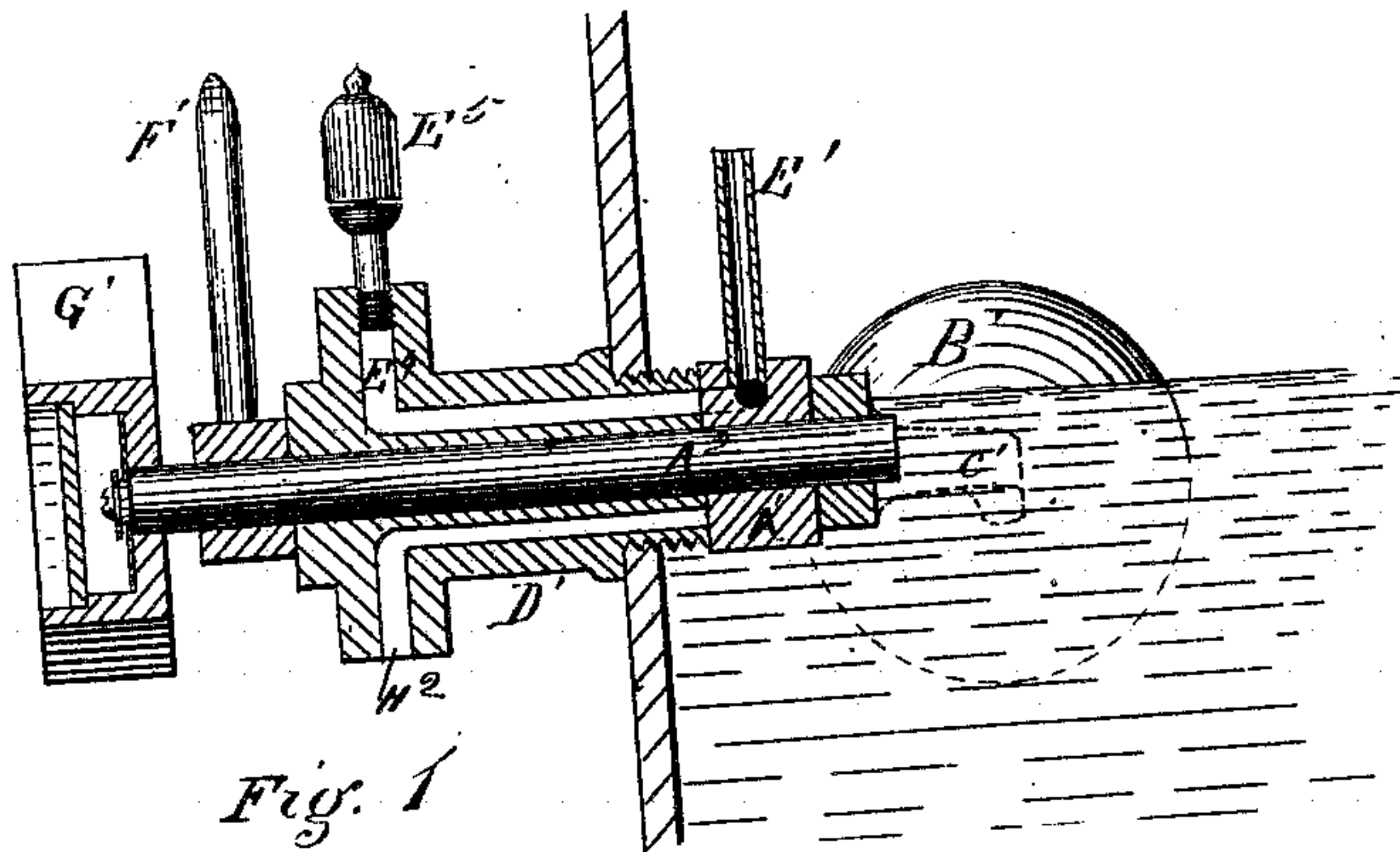


Fig. 1

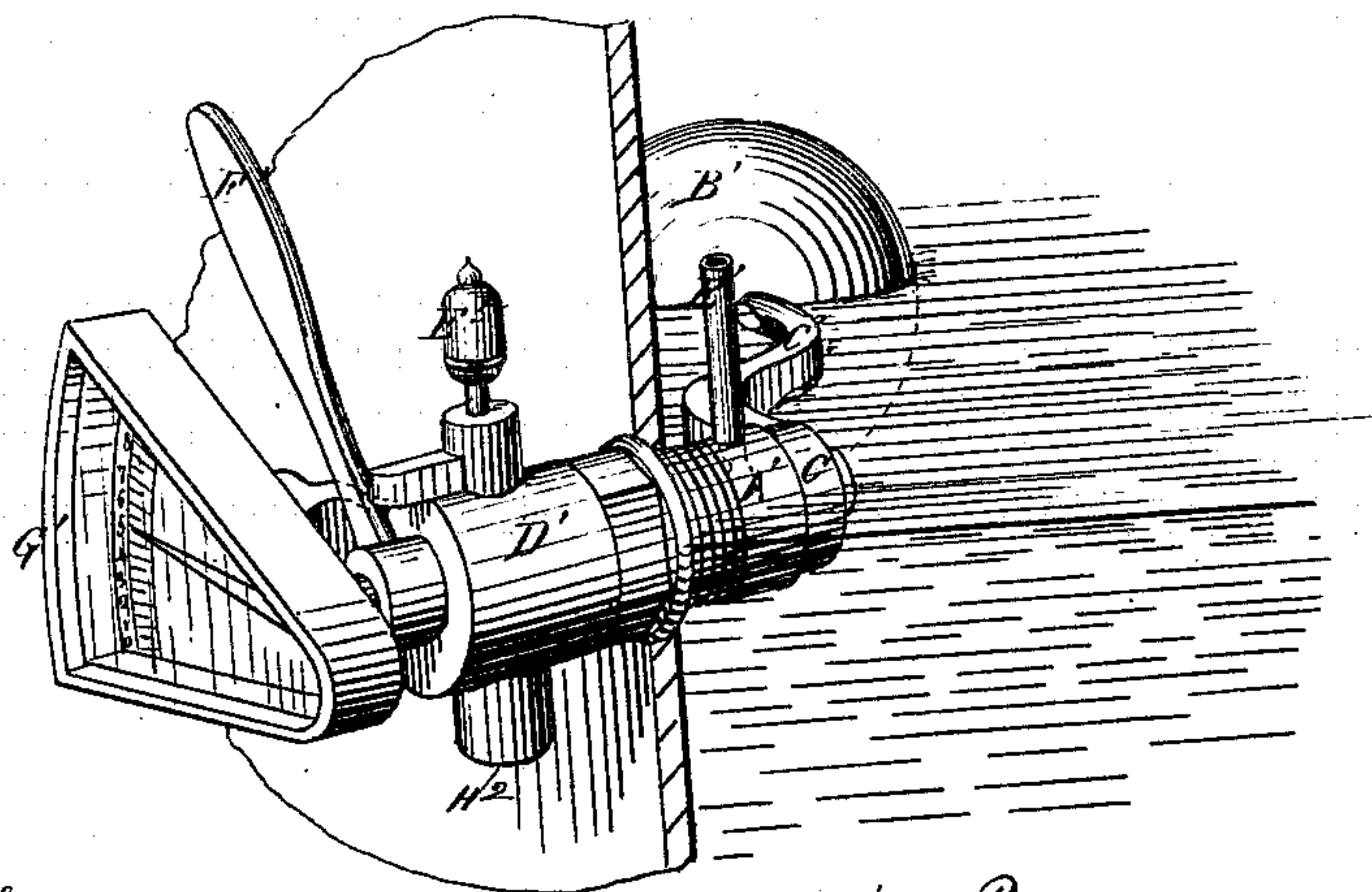


Fig. 2.

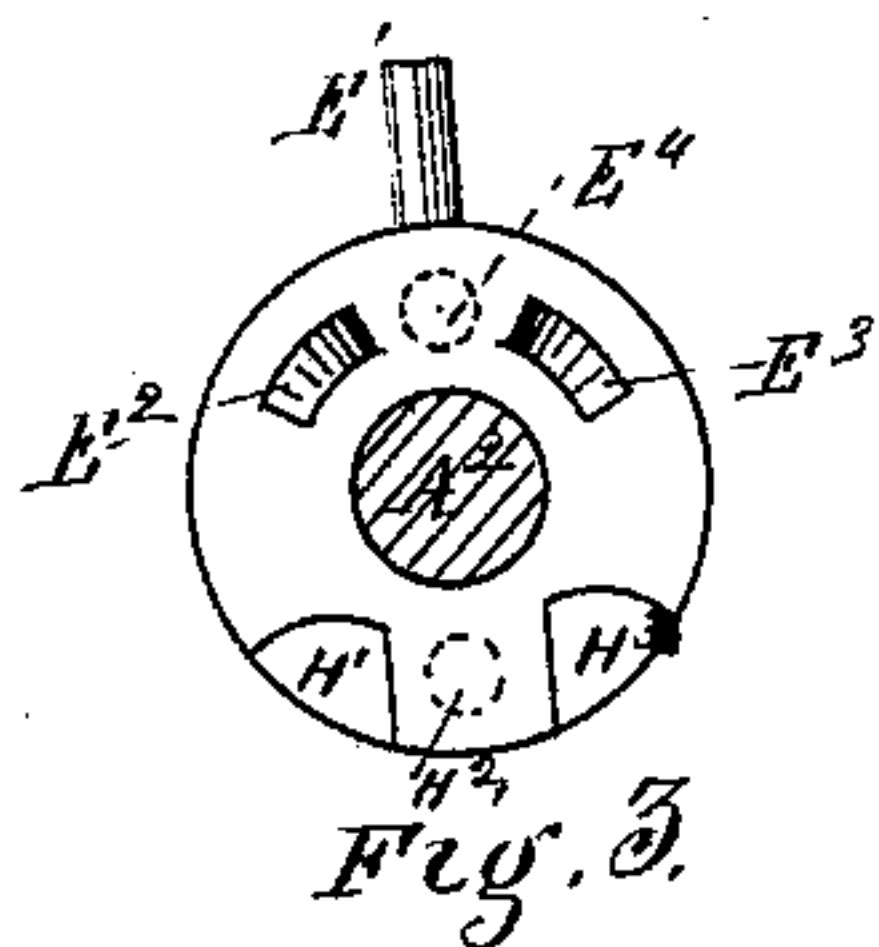


Fig. 3.

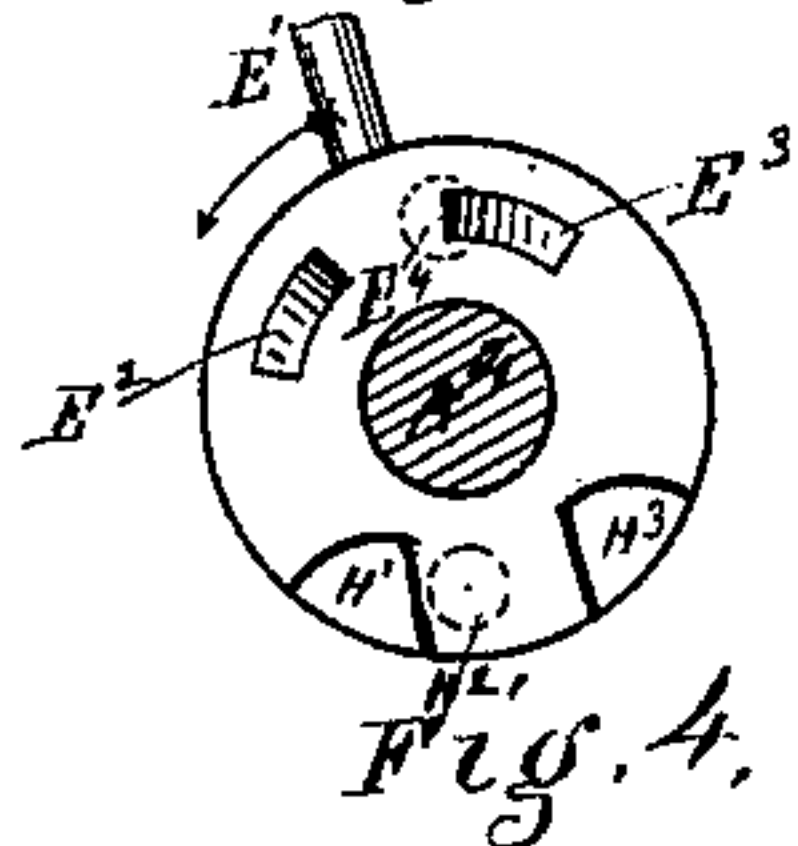


Fig. 4.

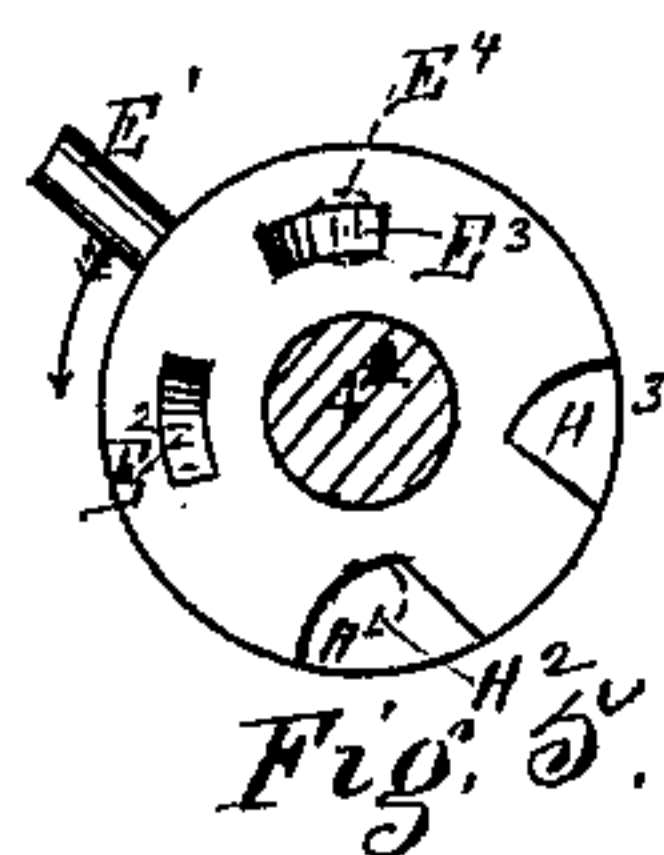


Fig. 5.

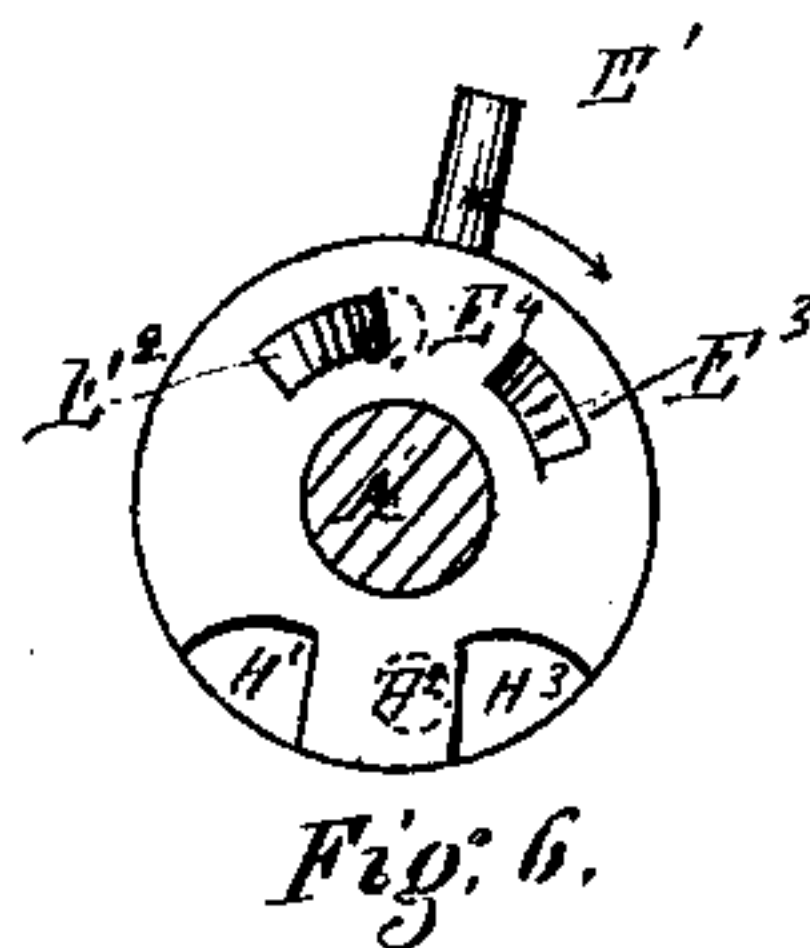


Fig. 6.

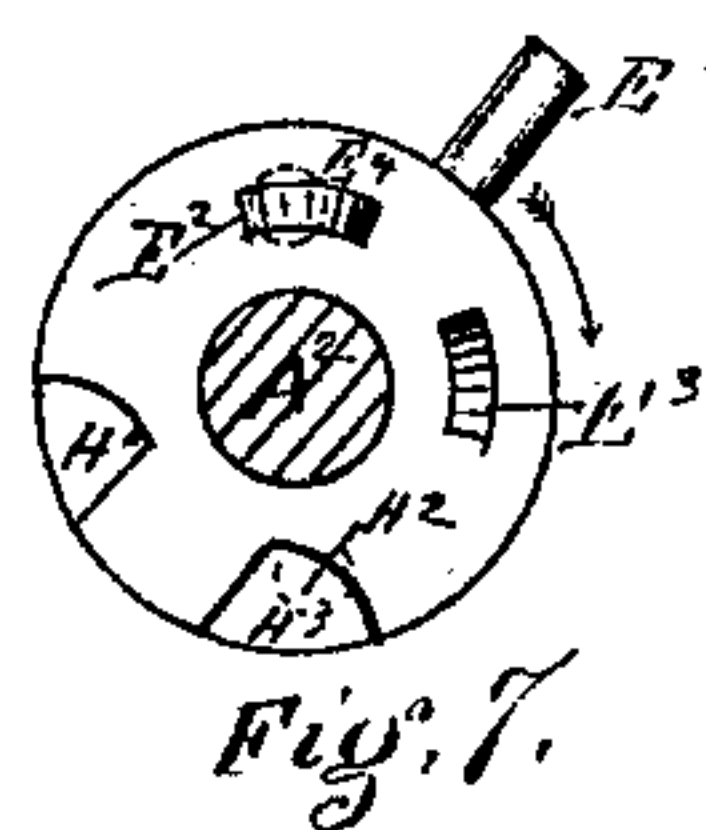


Fig. 7.

Witnesses

Francis L. Clark  
Emin Partridge

Inventors William Starkey  
Oliver P. Jackson



# UNITED STATES PATENT OFFICE.

WILLIAM STARKEY AND OLIVER P. JACKSON, OF PITTSBURG, PA., ASSIGN-  
ORS OF ONE-FOURTH THEIR RIGHT TO JOSEPH STARKEY, OF SAME  
PLACE.

## IMPROVEMENT IN INDICATORS AND GAGE-COCKS.

Specification forming part of Letters Patent No. 204,630, dated June 4, 1878; application filed  
May 8, 1878.

*To all whom it may concern:*

Be it known that we, WILLIAM STARKEY and OLIVER P. JACKSON, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Indicators and Gage-Cocks; and we do hereby declare the following to be a full, clear, concise, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which like letters indicate corresponding parts.

Figure 1 is a vertical central sectional view of our improvement. Fig. 2 is a perspective view of the same. Figs. 3, 4, 5, 6, and 7 are details of the same, showing the face of valve in different positions, which will be described as follows:

Fig. 1 is a vertical central sectional view of our improvement, which is screwed in the end of boiler in the usual position of a gage-cock, having a valve,  $A^1$ , with a stem of same, extending through the chamber  $D'$ , and through the hub of lever  $F'$  and through the dial-plate  $G'$ , having a finger on the same to show the stage of the water in boiler or boilers on the dial-plate  $G'$ . On the other end of the stem  $A^2$ , inside the boiler, is attached a lever,  $C'$ , which connects the float  $B'$  to the stem of the valve  $A^1$ , which is operated as the water ascends or descends in the boiler. The valve  $A^1$  has a pipe,  $E^1$ , screwed in the side of the same, having outlets through the face of the valve  $A^1$  by diverging ports  $E^2$  and  $E^3$ , as shown in Fig. 3, said ports connecting alternately with passage  $E^4$ , and conveying steam to the whistle  $E^5$ , when the water descends to the line of safety, also when the water ascends to the upper water-line, thus forming a high and low water indicator and signal-alarm. The lower side of the face of the valve  $A^1$  is provided with slotted ports  $H^1$  and  $H^3$ , as shown in Fig. 3. Said ports are placed at suitable distance apart, leaving a part of the valve-face  $A^1$  to cover the water-passage  $H^2$ . The valve  $A^1$  is connected to the lever  $F'$  by the stem of the same,  $A^2$ , as shown in Fig. 1.

In operation, it will be seen that the indi-

cator and signal work automatically by the float  $B'$  ascending and descending with the water in the boiler or boilers. As the water in all boilers is liable to foam, it can be ascertained by the action of the lever  $F'$ , which will be described in details, whether they contain solid water.

The valve  $A^1$  is pressed against the face of chamber  $D'$  by the pressure contained in the boilers, and is oscillated by the movement of the float  $B'$ , taking a different position according to the stage of water in the boilers. Fig. 3 shows the position of the valve when the water is at its proper line. As the float descends in the direction of the arrow the valve takes the position shown in Fig. 4, bringing the diverging port  $E^3$  in connection with the steam-passage  $E^4$ , which conveys steam to the whistle  $E^5$ , thus sounding an alarm until the water is brought up to the line of safety. As the float ascends in the direction of the arrow to the high-water line the valve takes the position shown in Fig. 6, bringing the opposite diverging port  $E^2$  in connection with the steam-passage  $E^4$ , thus conveying steam to the whistle, and sounding an alarm, as before described. To ascertain whether the water is solid or foaming, move the lever  $F'$  in the direction of the arrow, which causes the float to sink in the water and brings the valve to the position as shown in Fig. 5, bringing the slot  $H^1$  in connection with the water-passage  $H^2$ , allowing the water to escape through the same.

Reversing the lever  $F'$  in the direction of the arrow brings the valve to the position shown in Fig. 7, raising the float  $B'$  out of the water and bringing the opposite port  $H^3$  in connection with the water-passage  $H^2$ , discharging water from the mouth of the same, which can be seen by the engineer, for the purpose set forth above.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In a boiler, the combination of the chamber  $D'$ , pipe  $E^1$ , and diverging ports  $E^2$  and  $E^3$  in valve  $A^1$ , and passage  $E^4$ , whistle  $E^5$ , lever  $C'$ , and float  $B'$ , giving an oscillating

movement to the valve A<sup>1</sup>, substantially as set forth.

2. In a boiler, the combination of the chamber D' and valve A<sup>1</sup>, slotted ports H<sup>1</sup> and H<sup>3</sup>, which are alternately connected with the passage H<sup>2</sup> by moving the lever F', answering for the purpose set forth.

3. The combination of the chamber D', valve A<sup>1</sup>, lever C', float B', lever F', and dial

G', all arranged together, substantially as described.

In testimony thereof we hereby set our hands.

WILLIAM STARKEY.  
OLIVER P. JACKSON.

Witnesses:

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OTTO WIGAND, Jr.