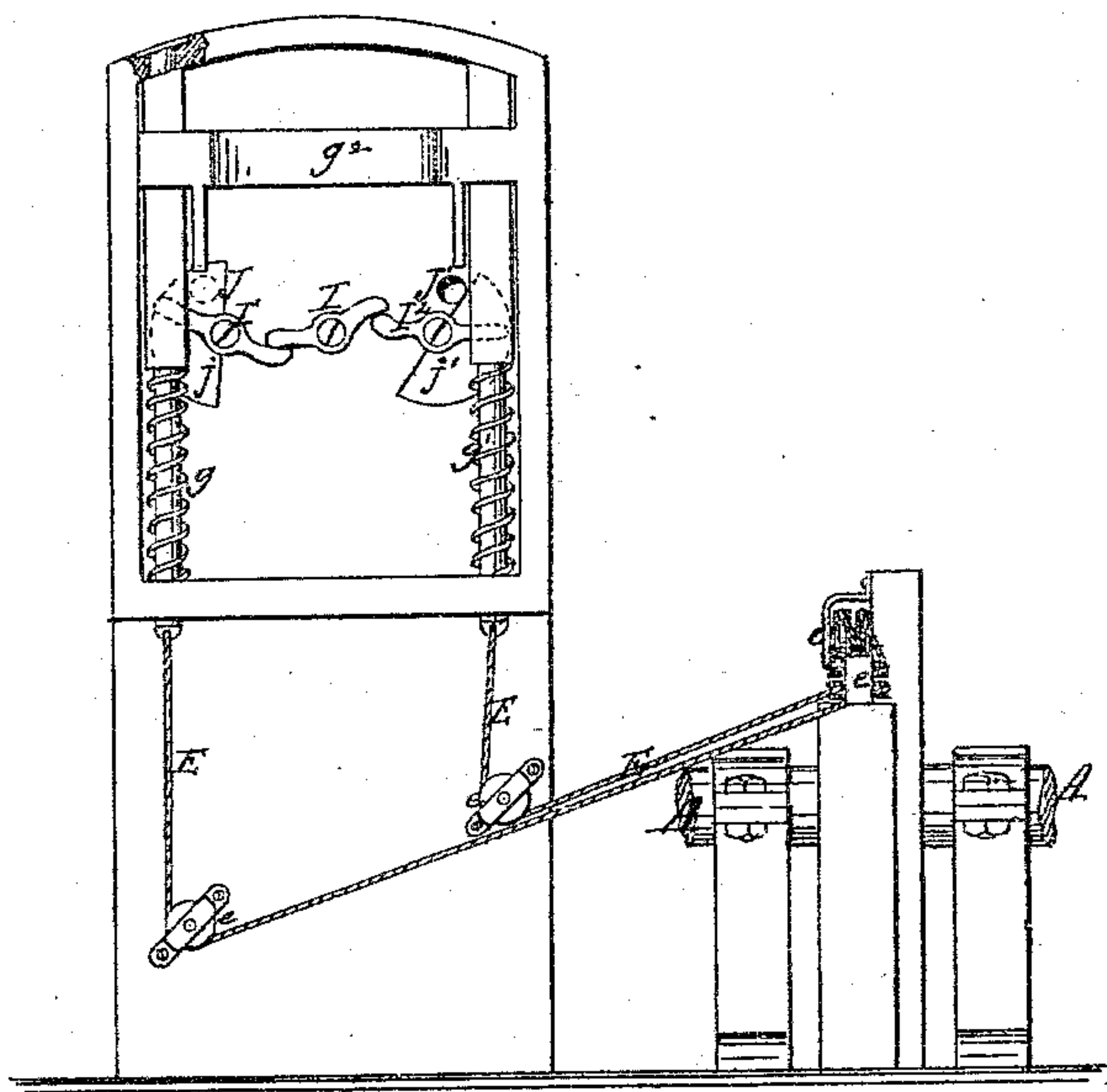
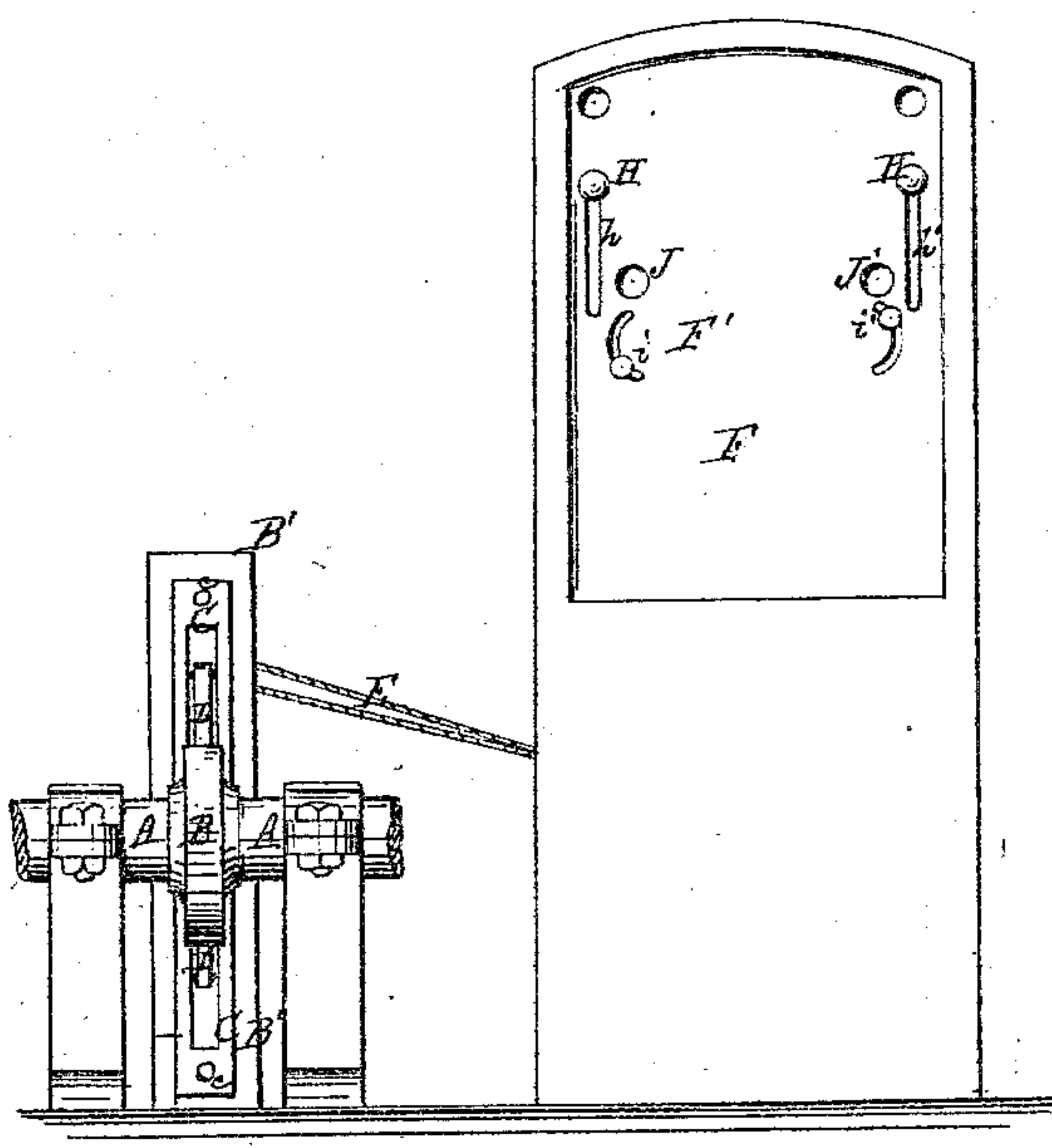
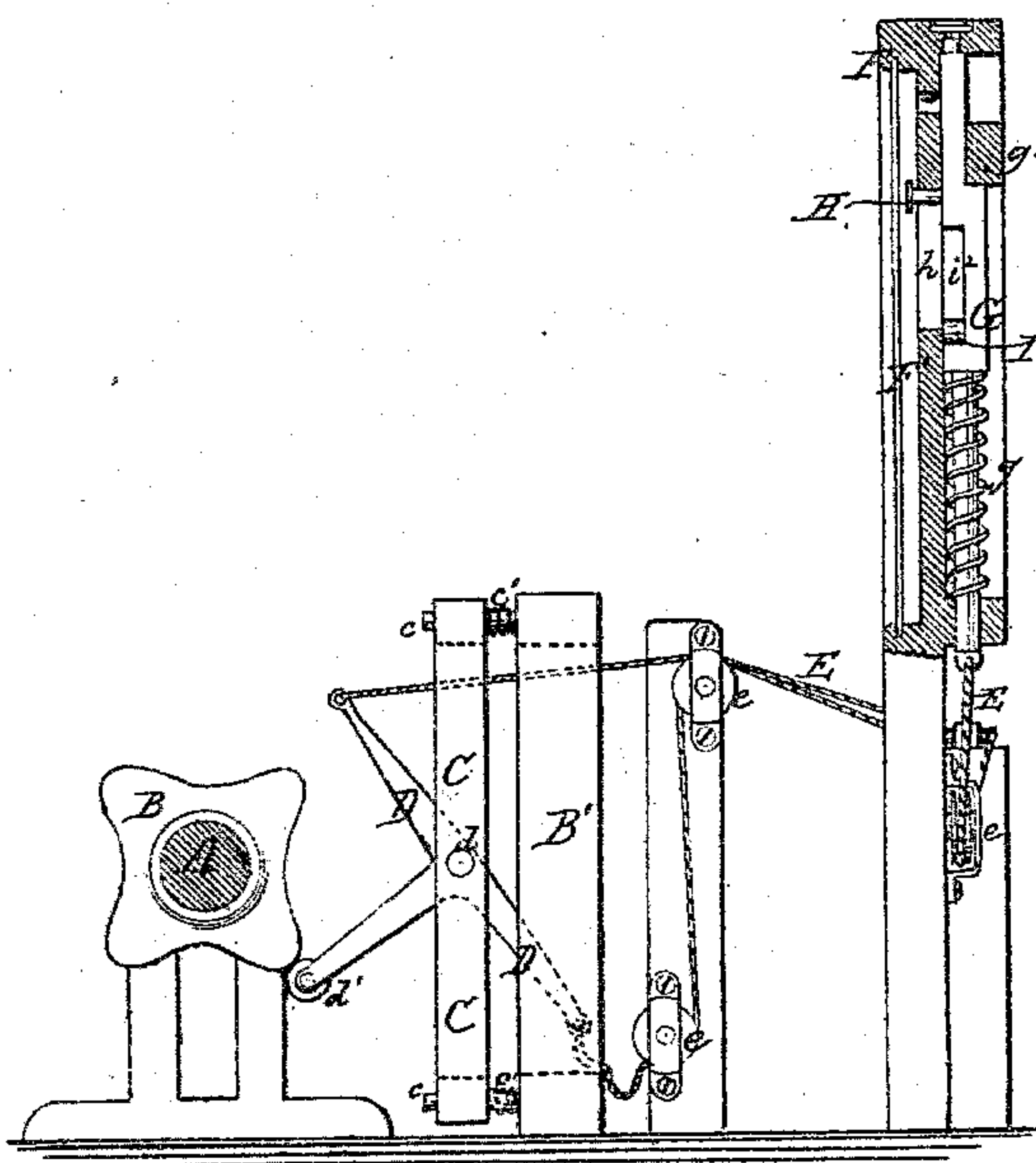


Improvement in Devices for Indicating and Registering the Motion of Marine Engines.

Patented June 13, 1871.



AM. PHOTO-LITHOGRAPHIC CO. N. Y. (OSBORNE'S PROCESS.)

UNITED STATES PATENT OFFICE.

ANDREW R. HARRIS, OF ST. LOUIS, MISSOURI.

IMPROVEMENT IN DEVICES FOR INDICATING AND REGISTERING THE MOTION OF MARINE ENGINES.

Specification forming part of Letters Patent No. 115,846, dated June 13, 1871.

To all whom it may concern:

Be it known that I, ANDREW R. HARRIS, of St. Louis, in the county of St. Louis and State of Missouri, have made certain new and useful Improved Devices for Indicating and Registering the Motion of Marine Engines; and I do hereby declare that the following is a full and true description thereof, reference being had to the accompanying drawing and to the letters of reference marked thereon.

This invention has for its object the formation of a more simple, economical, and perfect indicator and register for signaling to the pilot or other proper officer of a boat or vessel the exact motions of the engine, (usually termed "running ahead" and "backing motions,") so as to guard against errors, often resulting in accidents, and especially guard against and prevent any misunderstanding arising as to the exact motion of said engine.

The nature of this improvement relates, firstly, to the arrangement of a T-shaped lever in a slotted bar supported adjustably to an upright post, said lever to be operated by a peculiar cam device arranged on the driving-shaft of the engine to impart, by means of rollers and ropeage attachments, a reciprocating motion to indicating and registering knobs displayed in a frame or tablet in the pilot-house; secondly, this invention relates to peculiarly-constructed indicating and registering devices, which, when operated by the driving-shaft of the engine, as aforesaid, shall indicate and at the same time register, by separate knobs, the exact motion of said engine; thirdly, said invention relates to detail construction and arrangement of parts, hereinafter to be more fully described.

To enable those herein skilled to make and use my said improvements I will now more fully describe the same, referring to the accompanying—

Figure 1 as a sectional elevation; to Fig. 2 as a front elevation; and to Fig. 3 as a rear elevation.

On the driving-shaft A of the engine I secure cam B, of the shape and form clearly shown in Fig. 1. To a vertical post, B', I secure a slotted metallic bar, C, in which the T-lever D is pivoted at d. The slotted bar C, carrying

the lever D, I support adjustably by means of end rods e, having springs e' to the upright B'. By thus supporting said parts adjustably the lever D is retained in operative position to the cam B. A roller, d', at the end of the projecting arm of the lever, renders the action of the cam more smooth and regular. In order to connect the T-lever thus supported and arranged in the engine-room to operate the indicator in the pilot-house, a cord or rope, E, is secured at each end of the arm of the lever D, and passing over suitable pulleys, e, arranged in any proper manner so as to operate the indicator and register devices as follows: In a suitable frame, F, having a tablet, F', are arranged on both sides vertical rods G G'. Said rods are partly rounded and squared at bottom, operating in spiral springs g g', while at top said rods are adapted so as to operate through proper slots of the cross-piece g², in manner clearly shown in Figs. 1 and 3. Near the top each rod G G' carries knobs H H', fitted to operate in elongated slots h h' of the tablet F', in accordance with the reciprocating motion of said rods, Figs. 1 and 2. It is plain, by properly connecting the rods G G' with the T-lever a reciprocating movement is imparted to the indicating-knobs H H', in accordance with the motion of the engine.

Furthermore, to prevent any possibility of error rising as to the exact motion of the engine, there is also arranged in the frame F a register contrivance, as follows: To the tablet F' are pivoted cam-levers I I¹ I², constructed and arranged as shown in Fig. 3. The outer cams I¹ I² carry suitable knobs i i¹, operating in curved slots; also said cams i¹ i² are halved so as to fit and be operated by the vertical motion of the rods G G', which for this purpose are recessed, as at i², Fig. 1. As soon, therefore, as the forward movement of the engine is indicated by the knob H said movement is at the same time registered by the opposite knob i¹ traveling to the top of its slot, where it remains stationary as a record of said motion until a change occurs. Similarly, by the alternate action of the cam-levers, in accordance with the back motion of the engine, said motion is immediately registered by the knob i¹.

To still further insure a correct register of the motions of the engine, especially when the vessel is navigating in the night, I have provided the tablet F with the light-signals J J', displayed by placing a suitable light or lights in the frame. These light-signals are controlled by the action of the metallic plates j j', secured to and operating with the cam-levers I¹ I². When, therefore, a register of any motion is made, it is at the same time shown by the light-signal.

By a separate rope-attachment the T-lever can readily be placed out of gear with the gun, as desired; also, it is evident that the bell-pull attachments governing the action of the bells can be connected to the indicator in such a manner as to insure an immediate record of what bell has been rung.

The tablet or frame may be suitably lettered to more clearly understand the movement of the parts, and the indicating devices properly incased so as to prevent any unauthorized changing of the parts.

Having thus fully described my said invention, what I claim is—

1. The shaft A, having cam B, in combination with the T-lever D and slotted bar C, arranged adjustably to the post B', substantially as and for the purpose set forth.

2. The T-lever D, bar C, post B', in combination with the tablet F', rods G G', springs g g', and indicating-knobs H H', arranged to operate as and for the purpose set forth.

3. The parts described in second claim, in combination with the cam-levers I¹ I², light-signals J J', metallic plates j j', and knobs i i', when arranged to operate as indicating and registering devices, substantially as and for the purpose set forth.

In testimony of said invention I have hereunto set my hand.

A. R. HARRIS.

Witnesses:

WILLIAM W. HERTHEL,
ROBERT BURNS.