

No. 619,021.

Patented Feb. 7, 1899.

J. HOLT.  
PROPELLING DEVICE.

(Application filed Apr. 30, 1898.)

(No Model.)

3 Sheets—Sheet 1.

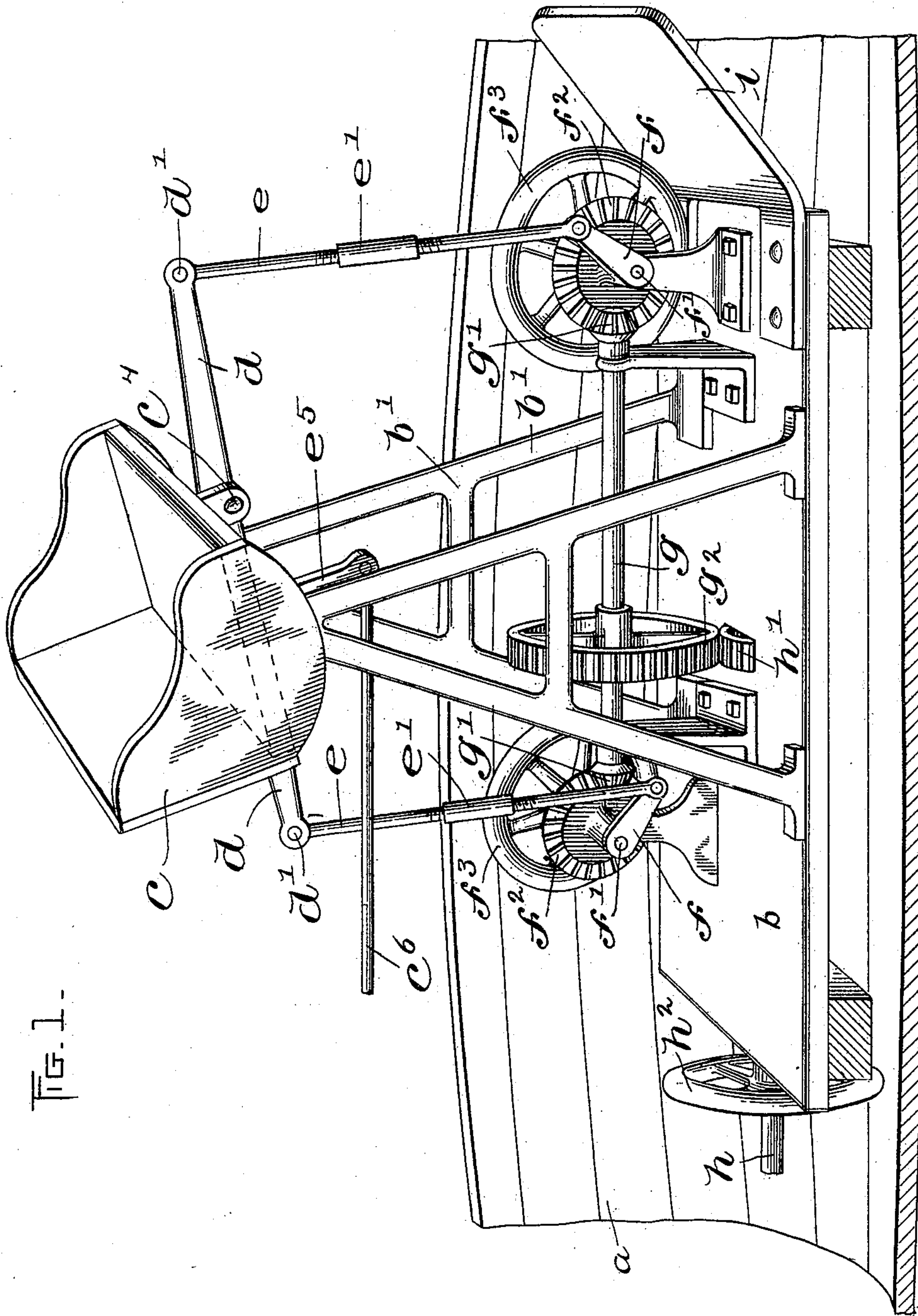


FIG. 1.

WITNESSES

A. S. Harrison.

P. W. Pezzetta.

INVENTOR:

John Holt

by Wright, Brown & Linsley  
Attys.

No. 619,021.

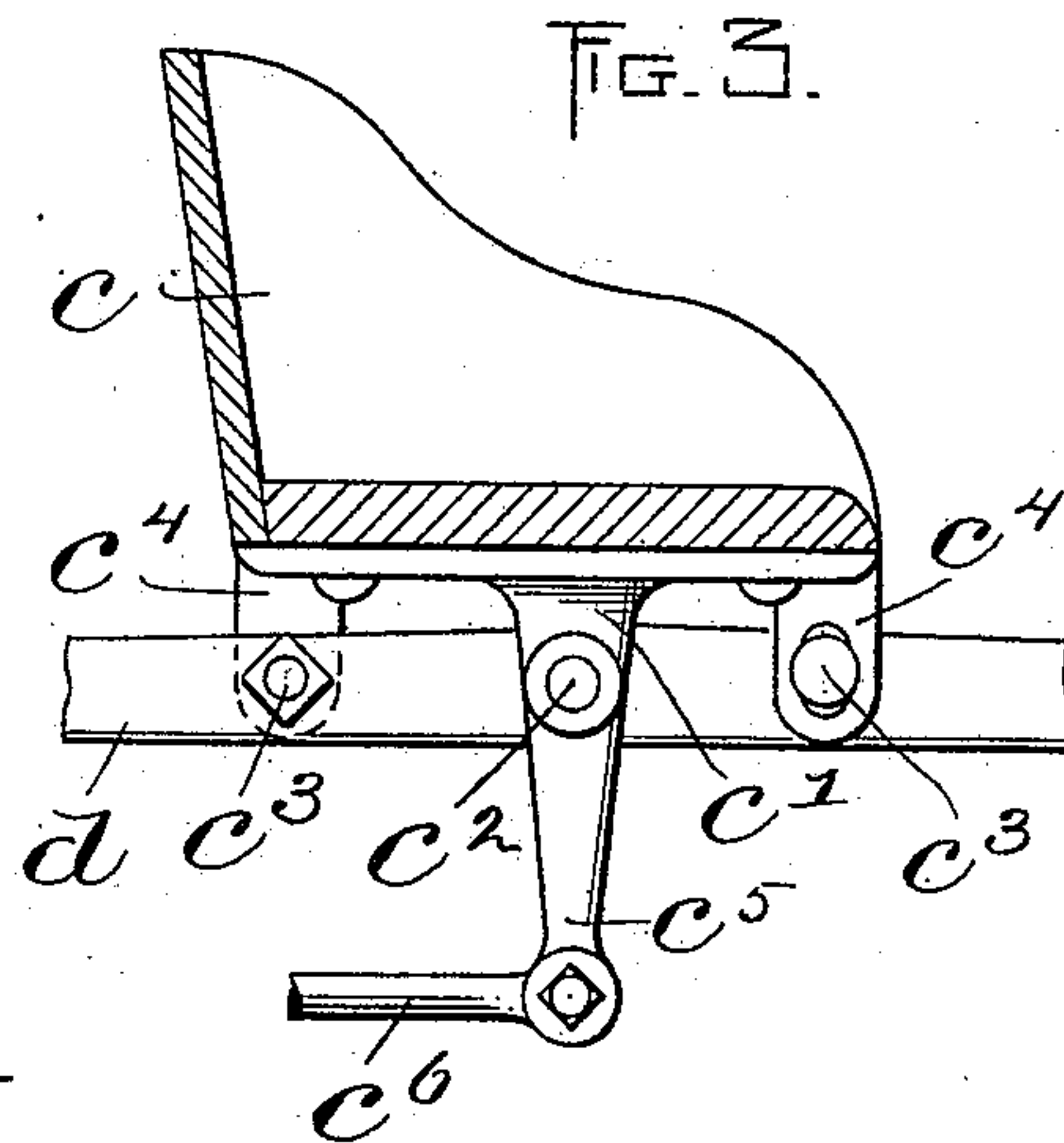
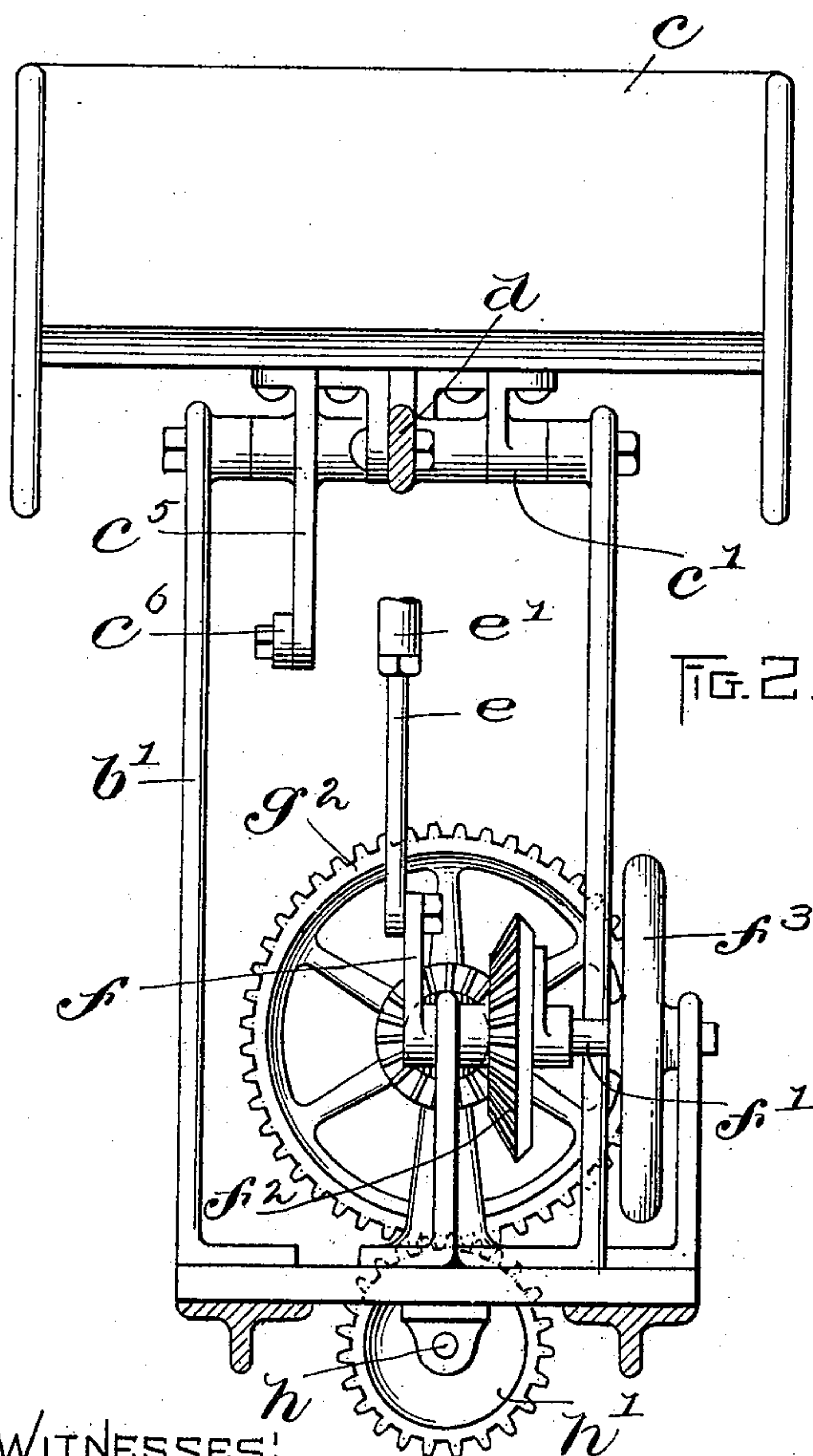
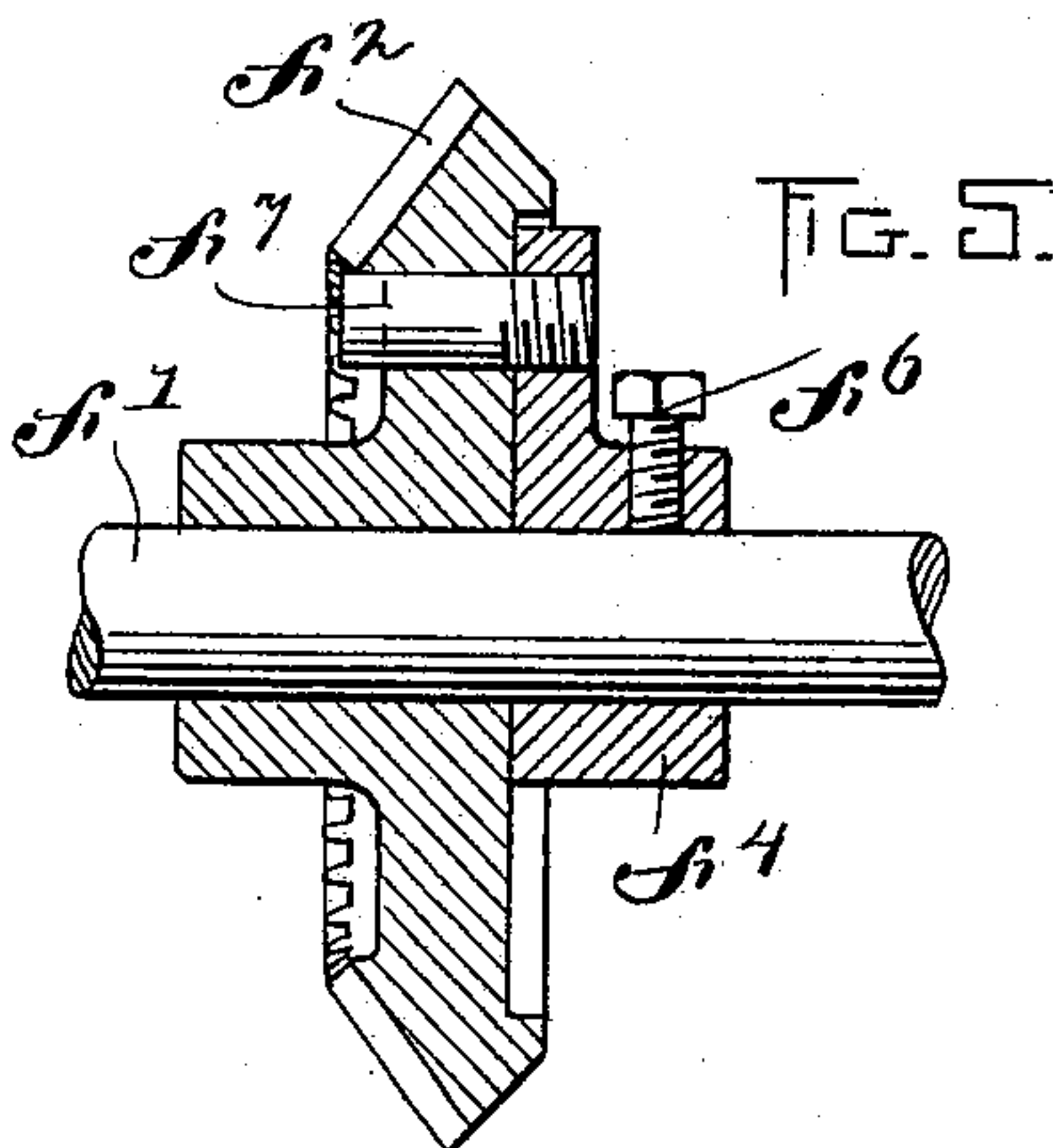
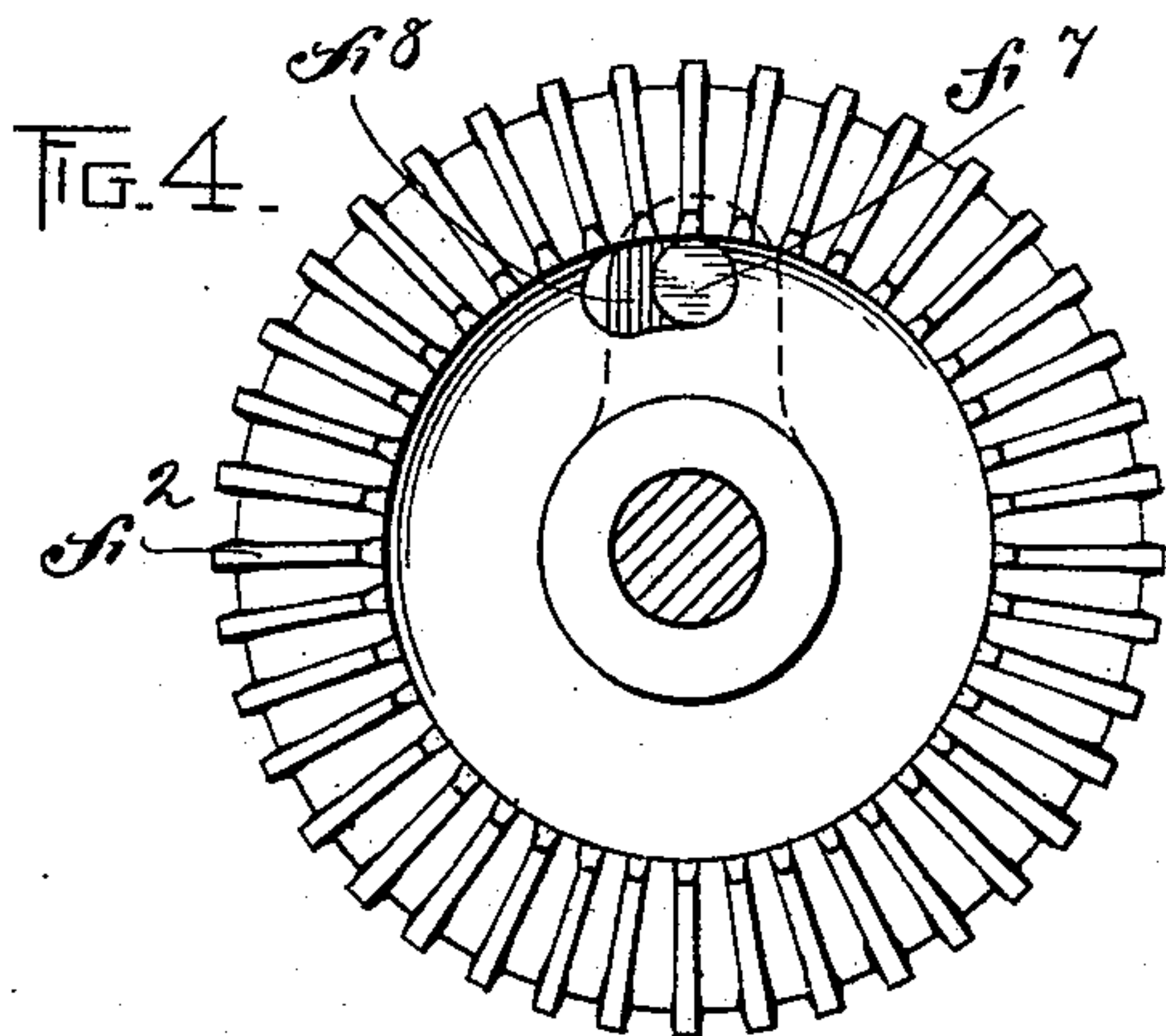
Patented Feb. 7, 1899.

J. HOLT.  
PROPELLING DEVICE.

(Application filed Apr. 30, 1898.)

(No Model.)

3 Sheets—Sheet 2.



WITNESSES:

A. D. Harrison.

P. W. Pezzetti.

INVENTOR:

John Holt

by Wright, Brown & Lundy  
Atty.







# UNITED STATES PATENT OFFICE.

JOHN HOLT, OF LAWRENCE, MASSACHUSETTS.

## PROPELLING DEVICE.

SPECIFICATION forming part of Letters Patent No. 619,021, dated February 7, 1899.

Application filed April 30, 1898. Serial No. 679,348. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN HOLT, of Lawrence, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Propelling Devices, of which the following is a specification.

This invention has relation to propelling mechanism actuated by the movements of a person sitting in an oscillating or rocking seat, such mechanism being well adapted for the propulsion of boats or wheeled vehicles.

The invention has for its object to provide a mechanism of this character having certain features of improvement and novelty, which I shall now proceed to describe and claim.

Of the drawings accompanying and forming a part of this specification, Figure 1 represents a perspective view of a mechanism constructed in accordance with my invention and applied to the propulsion of a boat. Fig. 2 represents an end elevation of the same. Fig. 3 represents a section on the line 3 3 of Fig. 2. Figs. 4 and 5 represent detail views in elevation and section, showing a lost-motion arrangement connected with one of the gears. Fig. 6 represents a view in side elevation, showing my improved mechanism adapted for the propulsion of a bicycle. Fig. 7 represents a section on the line 7 7 of Fig. 6.

The same reference characters indicate the same or similar parts in all the figures.

Referring for the present to Figs. 1 to 5, inclusive, of the drawings, *a* designates the hull of a boat, and *b* designates a suitable supporting-base on which the propelling mechanism is mounted.

*b' b'* are A-shaped standards pivotally supporting at their upper ends an oscillatory seat *c*, the latter having attached to its under side a bracket *c'*, through which the pintle *c<sup>2</sup>* of the hinge passes.

*d* is a rocking beam adapted to rock or oscillate on the pintle *c<sup>2</sup>* as a center and attached by means of adjustable bolts *c<sup>3</sup> c<sup>3</sup>* to ears *c<sup>4</sup> c<sup>4</sup>* on the under side of the seat. The rocking beam *d* extends forwardly and rearwardly from its pivot and has attached to its end at points *d' d'* two connecting or pitman rods *e e*. The latter are pivotally attached at their lower ends to two cranks *f f*, mounted on transversely-extending horizontal shafts *f' f'*. The rods *e* consist of upper and lower sections oppositely screw-threaded at their opposed ends and connected by turnbuckles

*e' e'*, which serve as a means for properly adjusting the length of the rods. On the same shafts *f'* with the cranks *f* are mounted bevel-gears *f<sup>2</sup> f<sup>2</sup>* and fly-wheels *f<sup>3</sup> f<sup>3</sup>*, and meshing with the gears *f<sup>2</sup>* are two bevel-pinions *g' g'*, mounted on the ends of a longitudinally-extending horizontal shaft *g*. The cranks *f f* are set at approximately a half-revolution apart and are arranged to revolve in opposite directions, so that the gears *f<sup>2</sup> f<sup>2</sup>* in rotating will both tend to turn the shaft *g* in one direction. On the latter shaft between its ends is mounted a large spur-gear *g<sup>2</sup>*, whose teeth mesh with those of a smaller gear or pinion *h'*, mounted on a propeller-shaft *h*. The latter extends rearwardly through the stern of the boat and is provided with a propeller and also, preferably, with a fly-wheel *h<sup>2</sup>* inside of the boat.

*i* is a foot-rest adapted to rest and brace the operator's feet when he is actuating the propelling device.

By reason of the revolution of the cranks *f f* in opposite directions by the rocking beam and pitman-rods there is a slightly-unequal motion of the lower ends of said rods, which I compensate for by mounting one of the bevel-gears *f<sup>2</sup>* loosely on its shaft and provide a collar *f<sup>4</sup>*, (see Fig. 5,) which is rigidly secured to the shaft by means of a set-screw *f<sup>6</sup>* and has a pin *f<sup>7</sup>*, which projects into a slot *f<sup>8</sup>* in the gear. Any lost motion which occurs in the operation of the two cranks is taken up by this pin-and-slot arrangement.

The operation of the propelling mechanism is very simple and will be readily understood. A person sitting in the chair *c* places his feet upon the foot-rest *i* and gives the chair a rocking or oscillating motion on its hinge, thus actuating the rocking beam *d* and causing the revolution of the cranks and bevel-gears which transmit motion to the shaft *g* and, through the gears *g<sup>2</sup>* and *h'*, to the propeller-shaft *h*, causing the propeller to revolve and the boat to be driven forward or backward, according to the direction of revolution of said propeller.

A suitable steering apparatus, operated either by the occupant of the seat or by another person in the boat, may be provided, but is not here shown, as the same forms no part of my invention.

In Figs. 1 and 2 an arm *c<sup>5</sup>* is shown projecting downwardly from the hinge-bracket *c'*, be-



ing formed on or attached thereto, and at the lower end of said arm there is pivotally attached a horizontal connecting-rod  $c^6$ , which extends longitudinally of the boat and is adapted for attachment to an arm similar to the arm  $c^5$  on a second oscillating seat forming a part of another propelling mechanism, which may be similar to that shown and connected to the same propeller-shaft. In this way the power of two or any number of persons may be employed in propelling the boat. It is also evident that the seat  $c$  may be made of such dimensions as to accommodate two or more persons. Furthermore, it will be apparent that other well-known propelling means, such as side paddle-wheels, could be actuated by means of the mechanism which I have illustrated and described.

My improved propelling mechanism is equally well adapted for propelling wheeled vehicles, and in Figs. 6 and 7 I have illustrated the said mechanism as applied to the propulsion of a bicycle.  $j$  designates the frame of said bicycle;  $k$  and  $k'$ , the front and rear wheels, respectively;  $m$ , the crank-axle, and  $m'$  the forward chain-wheel or sprocket-wheel mounted in bearings of the usual or any suitable construction.  $c$  designates an oscillating seat, similar to the seat  $c$  shown in the previous figures and hinged at  $c^3$  to the bicycle-frame in place of the ordinary seat.  $d$  is a rocking beam attached to and oscillating with the seat  $c$  and connected at its ends to pitman-rods  $e e$ , similar to those hereinbefore described, and provided with adjusting-turnbuckles  $e' e'$ . The forwardly-extending section of the rocking beam  $d$  is located on one side of the bicycle and is connected by means of its pitman-rod  $e$  to a crank  $f^9$  on the end of the crank-axle  $m$ . The rearwardly-extending section of the rocking beam is connected by means of its pitman-rod  $e$  to a crank  $f^{10}$ , which is keyed on the other side of the bicycle to the axle  $n$  of the rear wheel. On said axle is also secured a sprocket-wheel  $n'$  of equal size with the forward sprocket-wheel  $m'$  and connected therewith by means of a chain  $n^2$ . The axle  $n$  rotates in suitable anti-friction-bearings  $n^3 n^4$ , carried by the frame. The rear wheel  $k'$  rotates around the axle  $n$ , suitable bearings  $n^5$  being interposed between the two, and is driven in the usual manner by means of a chain  $o$ , connecting the forward sprocket-wheel  $m'$  with a smaller sprocket-wheel  $n^6$  on the hub  $k^{10}$  of the rear wheel, said sprocket-wheel  $n^6$  having two sets of teeth for the two chains  $n^2$  and  $o$ . The cranks  $f^9 f^{10}$  are set at half a revolution apart, and in this instance they revolve in the same direction.  $p$  is a foot-rest attached to the lower forward bar of the bicycle-frame. The occupant of the seat propels the bicycle by imparting an oscillating motion to said seat and driving the mechanism in much the same manner as hereinbefore described in connection with the boat-propelling mechanism, and steering is performed by grasping the handle-bars  $j'$  and

turning the front wheel in the ordinary manner. In this form two rotary shafts or axles  $m$  and  $n$  are mounted in bearings below the seat and are provided with cranks  $f^9 f^{10}$ , respectively, while the hub  $k^{10}$  of the wheel  $k'$  constitutes a third rotary shaft—a hollow one—connected with the first-mentioned shafts by means of the sprockets  $n^6$ , chain  $o$ , sprockets  $m' n'$ , and chain  $n^2$ .

I am aware that both boats and wheeled vehicles have been propelled heretofore by means of an oscillating seat, and I do not claim such an arrangement broadly.

I claim—

1. A propelling device comprising a hinged seat adapted to be rocked or oscillated by a person sitting therein, a rocking beam secured to and adapted to move with said seat, two rotary shafts mounted in bearings below said seat and provided with cranks set at half a revolution apart, pitman-rods connecting said cranks with the two ends of the beam respectively, a third rotary shaft, and connections between the said third shaft and the first-mentioned shafts, whereby rotation of the latter due to the oscillation of the seat causes the rotation of said third shaft, substantially as described.

2. A propelling device comprising a seat adapted to be rocked or oscillated by a person sitting therein, a rocking beam secured to and adapted to move with said seat, two rotary shafts mounted in bearings below said seat and provided with cranks which revolve in opposite directions a half-revolution apart, bevel-gears mounted on said shafts, pitman-rods connecting the cranks with the two ends of the beam, respectively, a third rotary shaft provided with bevel-gears which mesh with the gears on the first-mentioned shafts, and a compensating mechanism interposed between one of the cranks and the third shaft and adapted to take up lost motion due to the unequal revolution of the cranks.

3. A propelling device comprising a seat adapted to be rocked or oscillated by a person sitting therein, a rocking beam secured to and adapted to move with said seat, two rotary shafts mounted in bearings below said seat, and provided with cranks which revolve in opposite directions a half-revolution apart, bevel-gears mounted on said shafts, pitman-rods connecting the cranks with the two ends of the beam, respectively, and provided with turnbuckles for varying their lengths, a third rotary shaft provided with bevel-gears which mesh with the gears on the first-mentioned shafts, and a compensating mechanism interposed between one of the cranks and the third shaft and adapted to take up lost motion due to the unequal revolution of the cranks.

In testimony whereof I have affixed my signature in presence of two witnesses.

JOHN HOLT.

Witnesses:

FRED H. EATON,  
WILLIAM J. BLAND.