

No. 725,887.

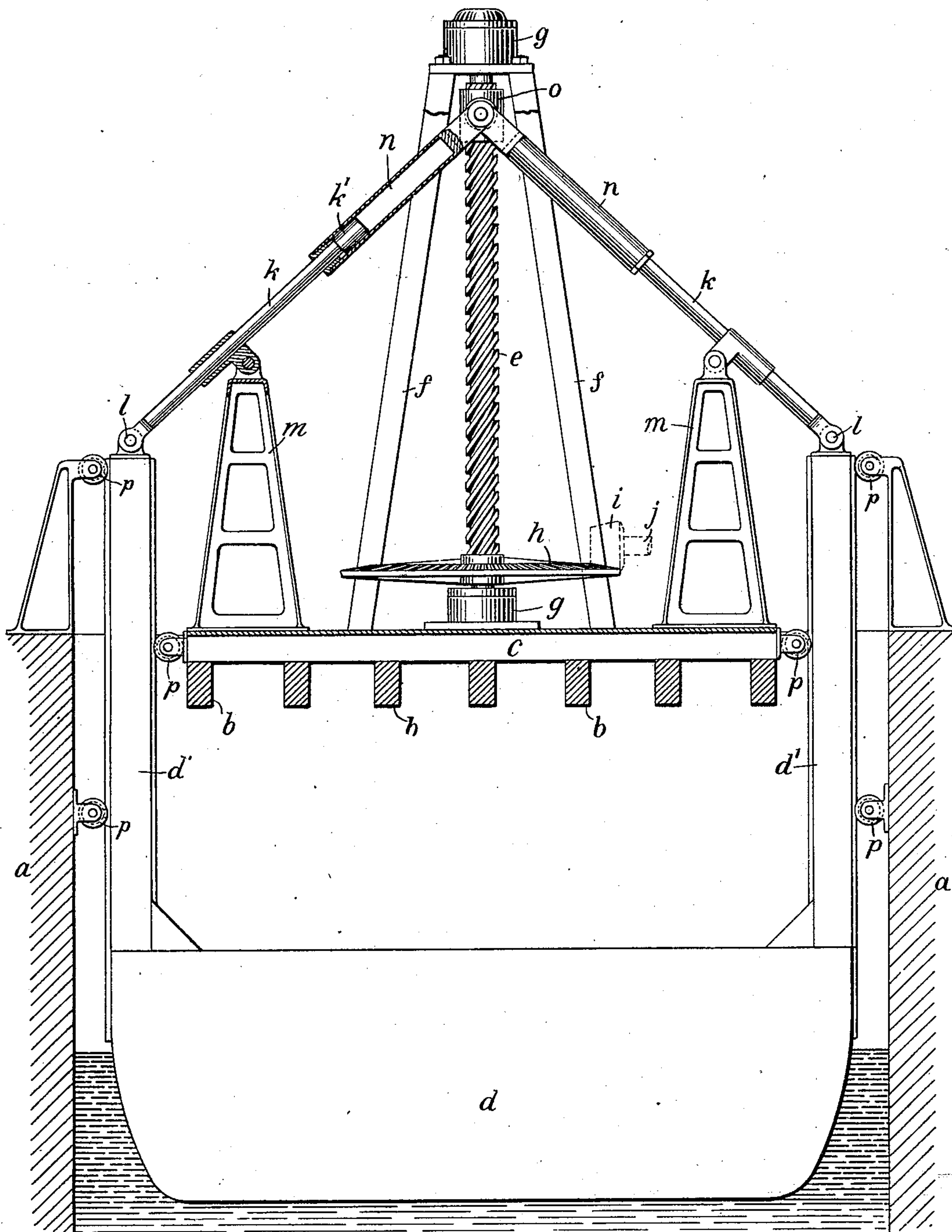
PATENTED APR. 21, 1903.

H. SMETANA.
TIDE WATER APPARATUS.
APPLICATION FILED OCT. 15, 1902.

NO MODEL.

2 SHEETS—SHEET 1.

Fig. 1



Witnesses:
Raphael Vetter
William Hill

Henry Smetana Inventor
by Ed. A. Saxe Atty

No. 725,887.

PATENTED APR. 21, 1903.

H. SMETANA.
TIDE WATER APPARATUS.
APPLICATION FILED OCT. 15, 1902.

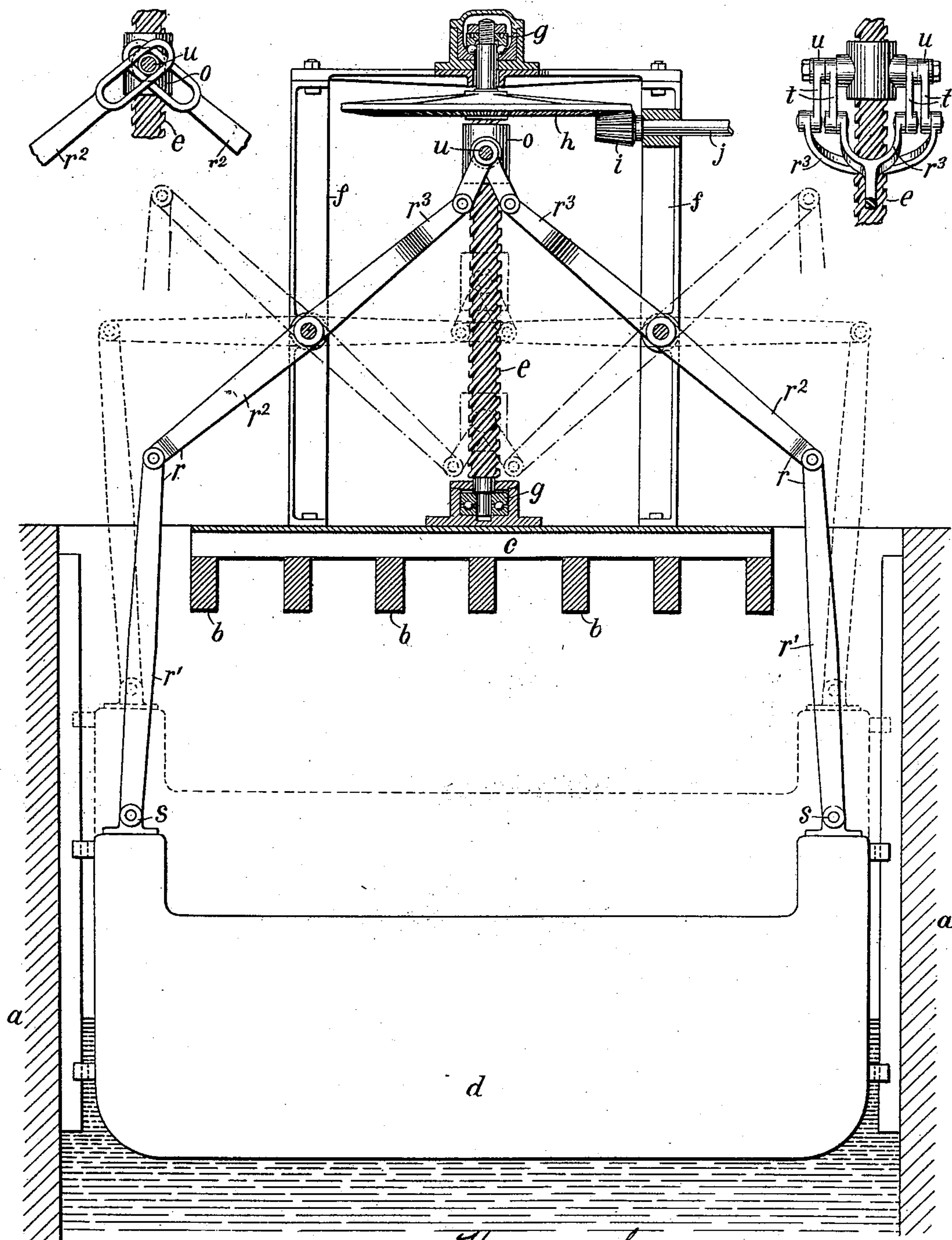
NO MODEL.

2 SHEETS—SHEET 2.

Fig. 4

Fig.2

Fig.3



Witnesses:

Witnesses:
Raphael Ketter
William Hill

Henry Smetana Inventor

by Ed. A. Haas Atty

UNITED STATES PATENT OFFICE.

HENRY SMETANA, OF NEW YORK, N. Y., ASSIGNOR TO INTERNATIONAL TIDE POWER COMPANY, A CORPORATION OF NEW YORK.

TIDE-WATER APPARATUS.

SPECIFICATION forming part of Letters Patent No. 725,887, dated April 21, 1903.

Application filed October 15, 1902. Serial No. 127,437. (No model.)

To all whom it may concern:

Be it known that I, HENRY SMETANA, a citizen of the United States, and a resident of New York city, State of New York, have invented certain Improvements in Tide-Water Apparatus, of which the following is a specification.

My invention relates to improvements in tide-power apparatus and is designed to produce a simple, compact, and effective device.

In the following I have described, with reference to the accompanying drawings, one general form of device, with modifications, illustrating the principle of operation.

In the drawings, Figure 1 is a front elevation, partly in section, of one form of apparatus. Fig. 2 is a similar view showing certain modifications. Fig. 3 is a side view, slightly enlarged, of the connections at the upper part of the worm as shown in Fig 2, parts being broken away; and Fig. 4 is a front view of a modification of the operating-levers, parts being broken away.

Similar letters indicate similar parts throughout the several views.

a a indicate the side walls of a tank, preferably located on the shore and having means permitting the ingress and egress of tide-water.

b b b indicate beams or other suitable means conveniently supported, as desired, independent of moving parts and adapted to form a fixed foundation for the platform *c*, which supports certain operating means.

d is a float confined in the tank and free to rise and fall therein by the rising and falling of the tide.

e is a worm supported in a suitable frame *f f* on the platform *c* and provided with ball-bearings *g g*.

h is a gear-wheel keyed on the worm *e* and adapted to transmit motion through bevel-wheel *i* and shaft *j* to any desirable place.

In Fig. 1 the float *d* is provided with upwardly-extending arms *d' d'*, having levers *k k* pivoted thereto, as at *l*. Frames *m m* act as fulcrums for the respective levers, which are each provided with a piston-head *k'* at

the outer end. The piston-heads work in cylinders *n n*, pivoted on nut *o*, traveling on worm *e*. Wheels *p p p* are provided at appropriate places to lessen friction and to assist in keeping the parts in alinement.

It is obvious that as the float *d* rises and falls levers *k k* will cause nut *o* to travel down and up the worm *e*, turning the same, and through gear-wheel *h* and bevel-wheel *i* transmit the motion, as desired. The relative proportions of wheels *h* and *i* may be arranged as desired.

In Fig. 2 the arms *d' d'* on the float are omitted, one arm *r'* of each of the compound levers *r* being pivoted directly to the float, as at *s*. Each of the other arms *r²* of the levers *r* is pivoted on the frame *f* and is provided with yokes *r³ r³*, pivoted to arms *t t'*, respectively, swinging on pins *u u* on nut *o*. The yokes *r³ r³* are adapted to pass inside each other, as shown in Fig. 3.

In Fig. 4 the yokes *r³ r³* and arms *t t'* are omitted, the lever-arms *r² r²* being slotted, so as to permit them to slide on pin *u*, as shown.

The dotted lines in Fig. 2 show various different operative positions of the parts.

It is obvious that the details of construction and arrangements of parts may be varied without departing from the spirit of my invention, and I do not restrict myself to the details shown.

What I claim, and desire to secure by Letters Patent of the United States, is—

1. A tide-power apparatus comprising a float, levers fulcrumed on a fixed foundation and adapted to be operated by said float, a worm, means actuated by said levers to turn said worm and means actuated by said worm to transmit its motion.

2. A tide-power apparatus comprising a tank, a float confined to vertical movement in said tank, levers fulcrumed on a fixed foundation and adapted to be operated by said float, a worm, a nut on said worm adapted to receive motion from said levers and means actuated by said worm to transmit its motion.

3. A tide-power apparatus comprising a tank, a float confined to vertical movement

in said tank, a fixed framework, levers piv-
oted to said float and fulcrumed on said
framework, a worm supported in said frame-
work, a nut on said worm adapted to receive
5 motion from said levers and means actuated
by said worm to transmit its motion.

In witness whereof I have hereunto signed

my name in the presence of two subscribing
witnesses.

HENRY SMETANA.

Witnesses:

ED. A. ISAACS,

J. WILLIAM HILL.