

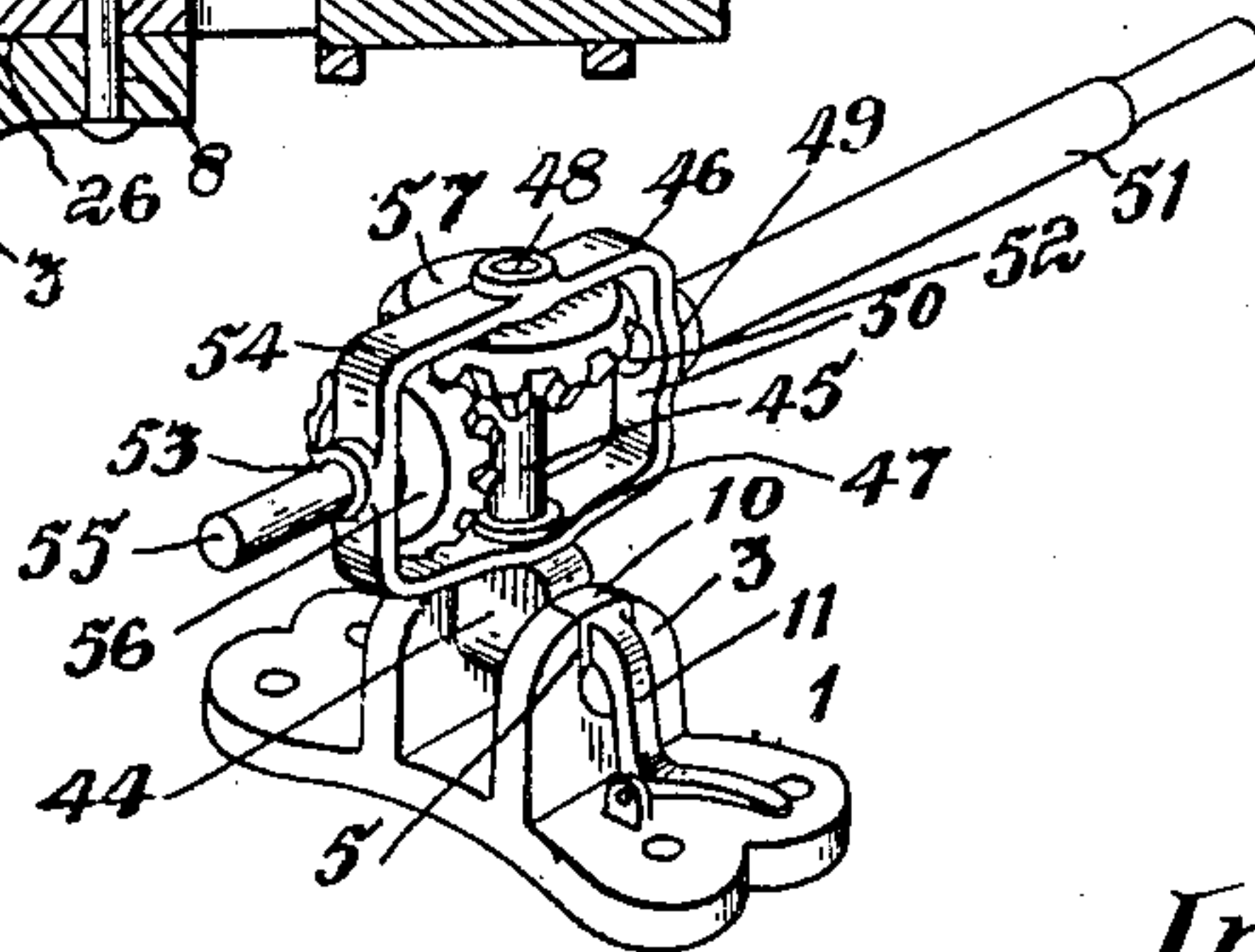
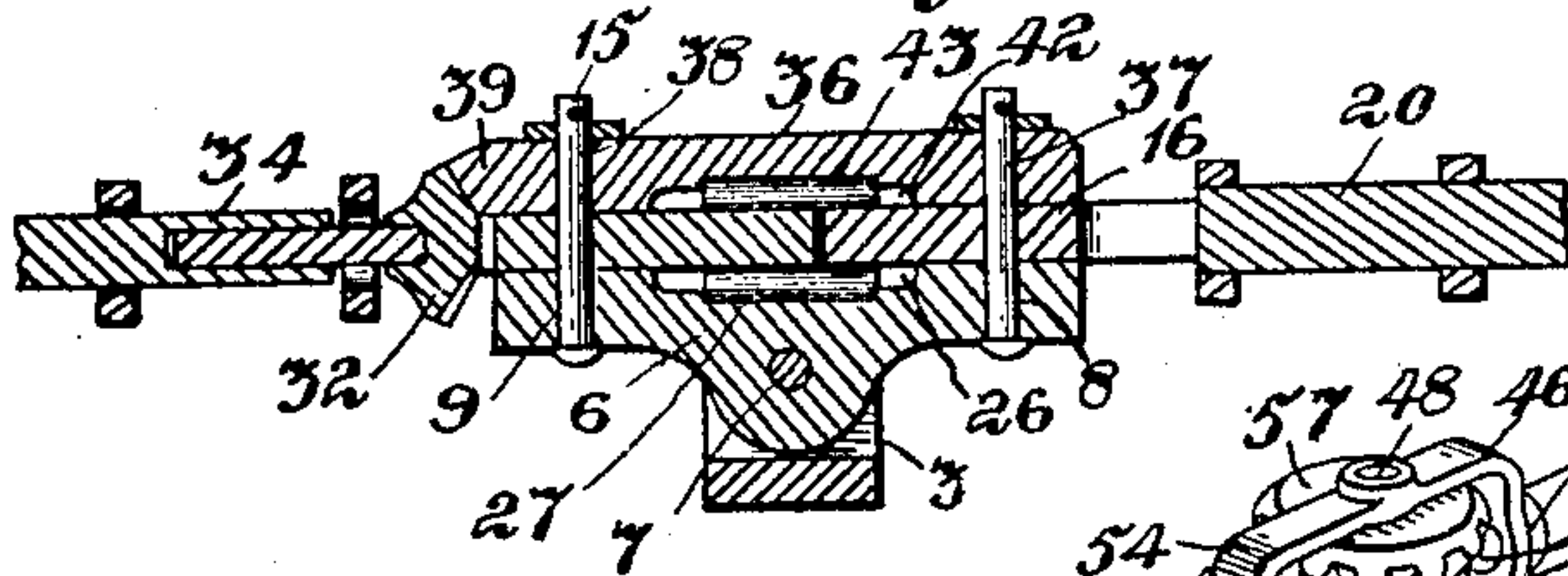
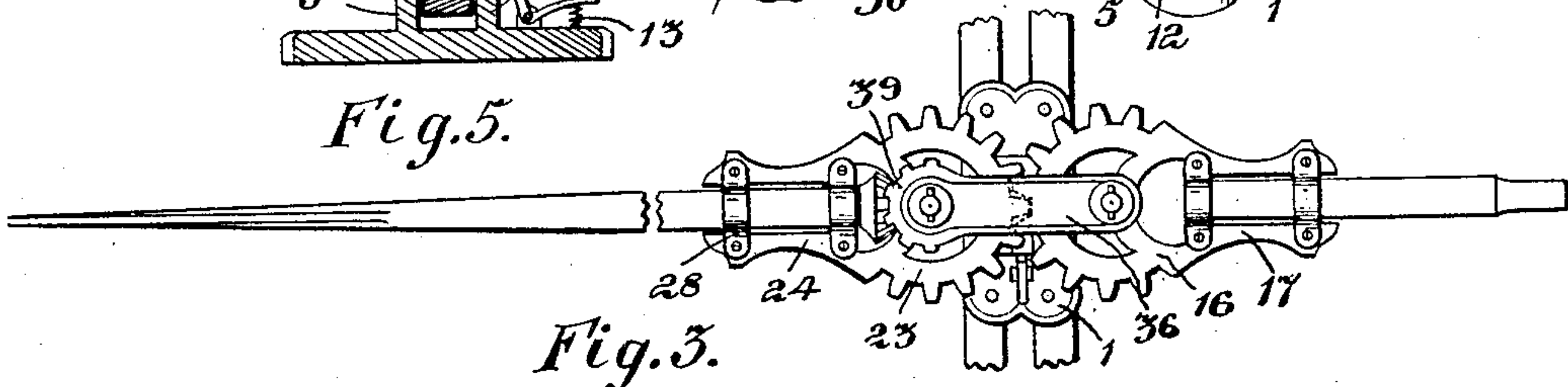
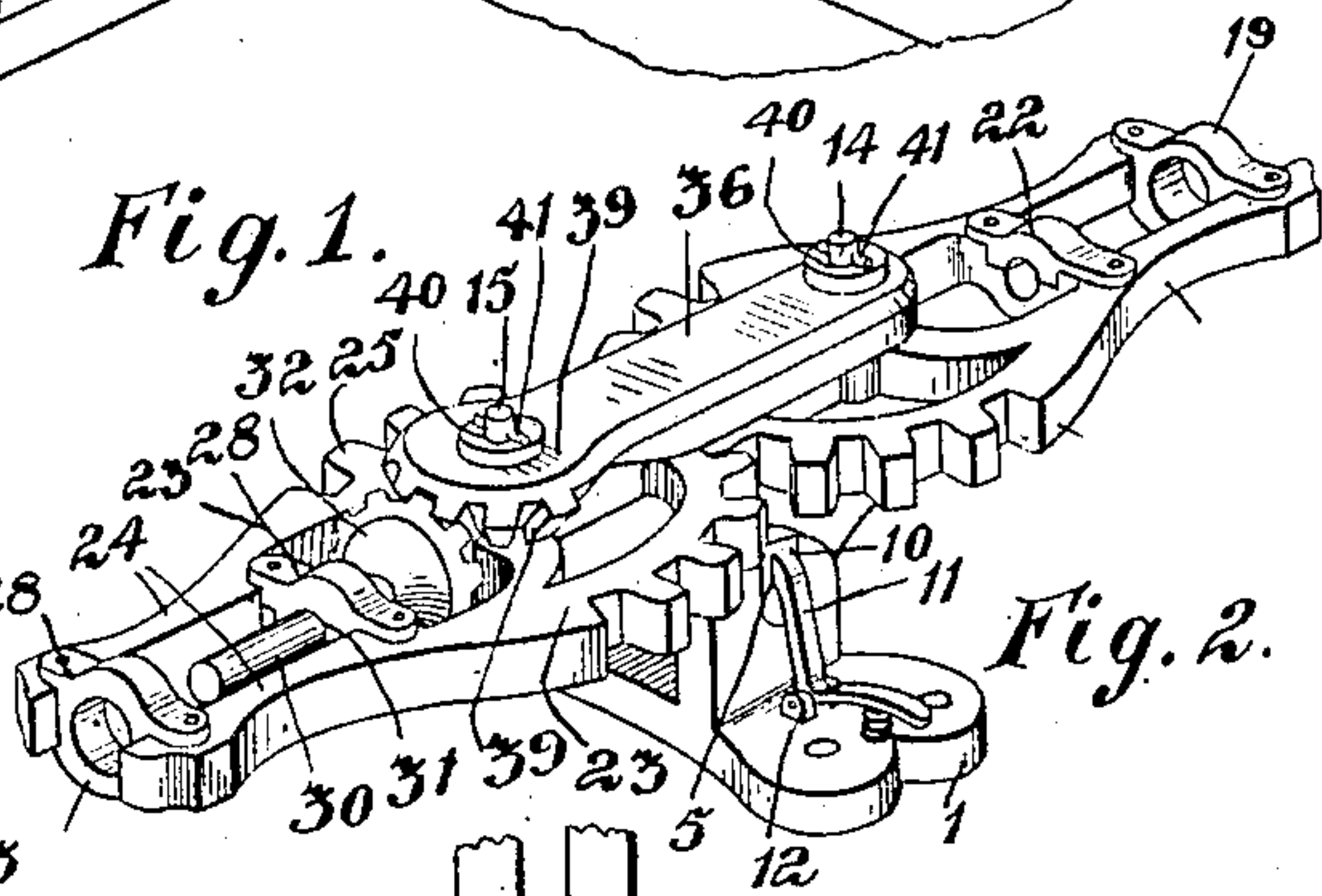
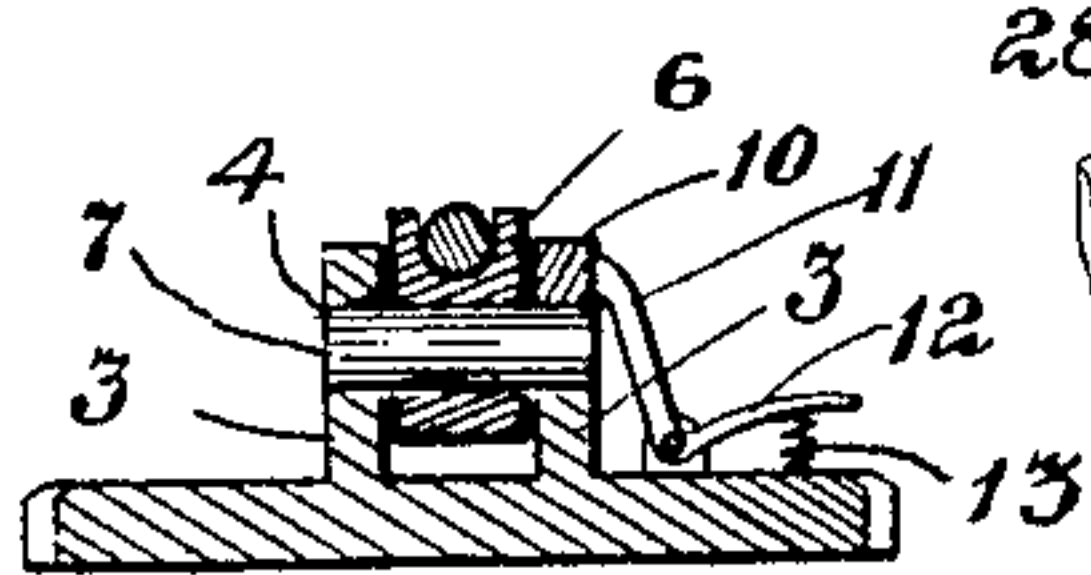
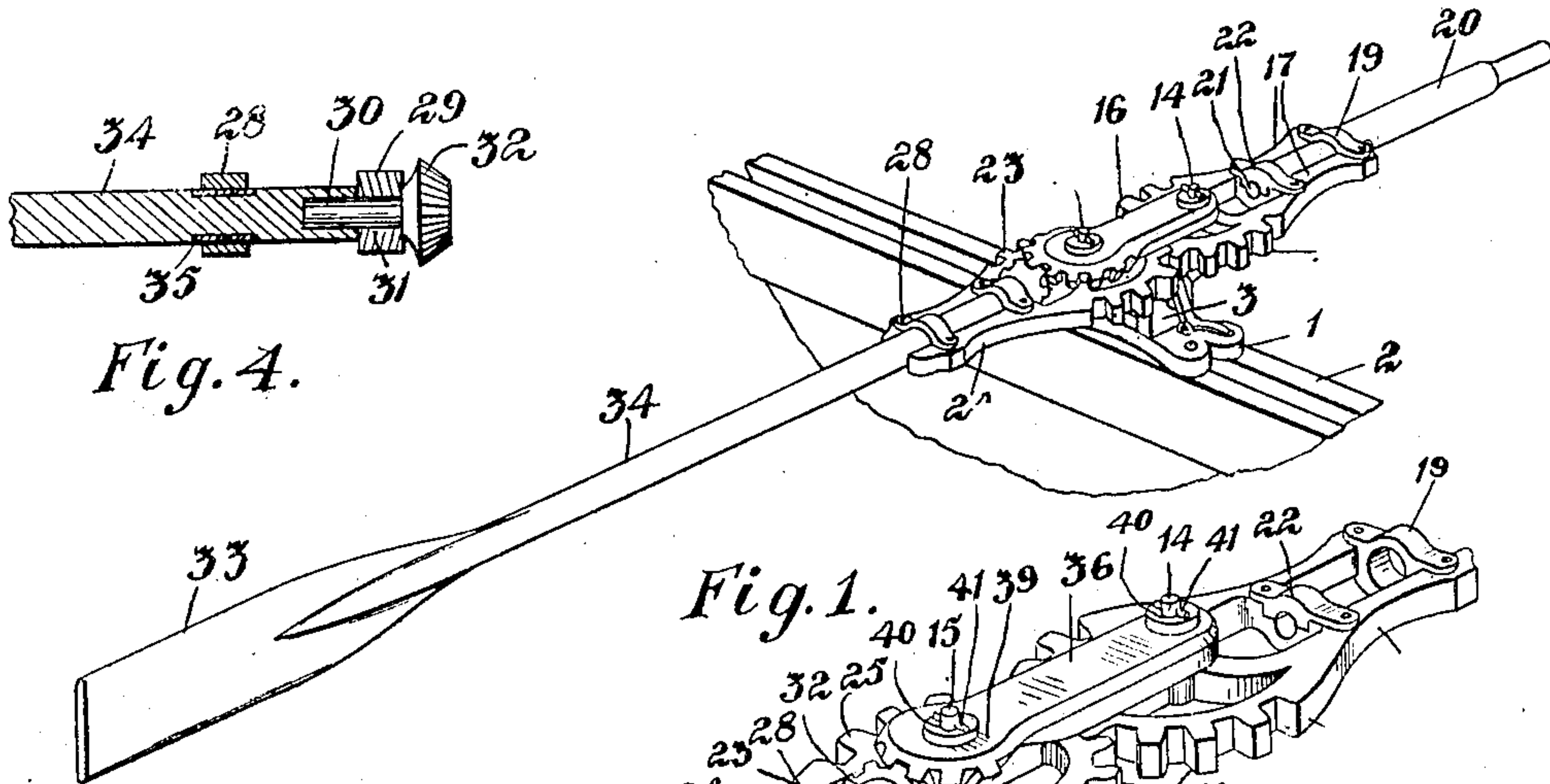
No. 882,072.

PATENTED MAR. 17, 1908.

J. LEHMAN.

OAR.

APPLICATION FILED FEB. 25, 1907.



Witnesses

A. Demmison.

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Fig. 7.

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UNITED STATES PATENT OFFICE.

JOSHUA LEHMAN, OF TORONTO, ONTARIO, CANADA.

OAR.

No. 882,072.

Specification of Letters Patent.

Patented March 17, 1908.

Application filed February 25, 1907. Serial No. 359,179.

To all whom it may concern:

Be it known that I, JOSHUA LEHMAN, a subject of the King of Great Britain, resident of the city of Toronto, in the county of York, Province of Ontario, in the Dominion of Canada, manufacturer, have invented certain new and useful Improvements in Oars, of which the following is a specification.

My invention relates to improvements in oars, and the object of the invention is to devise an oar, in which the rower will be enabled to sit facing in the direction of the movement of the boat being propelled, and whereby the manual exertion and skill necessary in propelling a boat with oars is reduced to the minimum, and it consists essentially of a gear mechanism introduced as an intermediary between the handle and the blade stem, the particular arrangement and construction being described in detail in the present specification and shown in the accompanying drawings that form part of the same.

In the drawings, Figure 1 is a perspective view of the oar complete showing a portion of a boat gunwale, and the base of the gear mechanism attached thereto. Fig. 2 is an enlarged perspective detail of the base with the gear mechanism and supporting block pivoted therein. Fig. 3 is a plan view of the oar. Fig. 4 is a longitudinal section of a portion of the oar stem. Fig. 5 is a longitudinal sectional view through the base and pivotal supporting block. Fig. 6 is a longitudinal vertical section through the gear mechanism and supporting block. Fig. 7 is a perspective detail of a modified form of the pivot block and oar.

Referring to the drawings, 1 is the base of the gear mechanism securely fastened to the gunwale 2 and rigid therewith, having the vertical lugs 3 extending upwardly therefrom parallel one with the other, one of said lugs 3 having the circular orifice 4 through the upper end thereof and the other having a vertical slot 5 from the upper end.

6 is a block pivotally supported between the parallel lugs 3 on the pivot pin 7 which extends within the orifice 4 and slot 5, and having the orifices 8 and 9 therethrough at the extremities of the extending ends.

10 is a block having a semi-circular hollow in the under side and fitting within the upper end of the slot 5 and 11 is an L-shaped arm pivotally supported at the angle thereof in the lugs 12 extending upwardly from the

base 1 and fixedly secured to the said block 10 at its upper end.

13 is a spring secured to the base 1 underneath the horizontal arm and exerting an upward pressure thereon and thereby holding the said block 10 securely in position in the slot 5.

14 and 15 are pins fixedly secured in the orifices 8 and 9 respectively and extending upwardly therefrom.

16 is a gear segment mounted on the pin 14 and having the arms 17 extending from the inner side thereof in a substantially parallel direction, the teeth 18 of said gear 16 terminating at each side of the segment at the points where the said arms jut inwardly therefrom.

19 is a collar in between the outer extremity of the arms 17 and rigidly secured thereto.

20 is the handle of the oar inserted through the collar 19 in between the arms 17 and having the pin 21 rotatably secured in the collar 22 secured to the arms 17 between the gear segment and the collar 19. It will thus be seen that any forward or rear movement of the handle 20 will turn the gear segment 16 on the pin 14 and further, any downward or upward pressure on the handle will swing the pivot block 6 on its pivot.

23 is a gear segment co-acting with the gear segment 16 and turning on the pin 15, having the arms 24 extending outwardly therefrom and substantially parallel, the teeth 25 of said gear segment terminating at the points where the arms 24 jut outwardly therefrom.

26 is a longitudinal recess in the upper face of the block 6 and 27 is a roller resting in said recess and engaging the under edge of the rims of the gear segments 16 and 23 and forming a rolling contact for the said segments.

28 is a collar secured in between the arms 24 at the extremities thereof and rigid therewith and 29 is a collar rigidly secured to the said arms intermediate of their length.

30 is a pin extending through the orifice 31 in the collar 29 between the arms 24.

32 is a bevel gear fixedly mounted at the inner end of the pin 30 to the inside of the rim of the segment.

33 is the oar blade, from which extends inwardly the stem 34, the latter being hollowed at the inner end and fitting over the pin 30 between the arms 24 and rigidly se-

cured to said pin so as to turn in the collar 28 on the rotation of said pin 30.

35 is a metal liner encircling the oar stem 34 under the collar 28 in order to avoid any great wear on that portion of the oar stem.

36 is a plate having the orifices 37 and 38 arranged apart and fitting over the pins 14 and 15 and 39 is a bevel gear face on the under side of one end of said plate and co-acting with the bevel gear 32.

40 are washers placed on the pins 14 and 15 above the plate 36, and 41 are pins retaining said washers and said plate on the pins 14 and 15.

42 is a longitudinal recess in the underside of the plate 36, and 43 is a roller resting in said recess and engaging the upper edge of the rims of the gear segments 16 and 23 and forming a rolling contact for said segments on the upper side.

It will be seen that the oar stem and blade are connected to the handle 20 through the segmental gears 16 and 23, which act as an intermediary in the driving of the oar blade through the water. The pulling of the handle 20 either forward or back, rotates the gear segment 16 on the pin 14, and as this gear segment co-acts with the gear segment 23, the said gear segment 23 will be rotated on the pin 15. Any rotatory movement of the gear segment 23 will have the effect of moving the oar blade either backward or forward, as the case may be, for the oar stem is rigidly secured in between the jutting arms from the said gear segment. Furthermore in the action of pulling or pushing the handle and the consequent turning of the gear segment 23, the bevel gear wheel 32 engages the teeth of the bevel gear face 39 of the plate 36, and as the oar stem 34 turns with the pin 30, any rotating movement of the said gear wheel 23 will turn the oar stem.

The bevel gear face 39 and the bevel gear 32 are so arranged that the oar stem in one stroke of the oar blade will turn the latter about one quarter of a revolution, which is the necessary movement for feathering the blade of the oar. The operation of this oar is purely mechanical, yet there is still the beneficial result of the exertion to the rower and besides the great convenience of facing in the direction in which the boat is moving. In addition there is the regular mechanical movement which completely overcomes any of the usual irregular motions of an oarsman during the various strokes. The manual exertion and skill necessary for the feathering of the oar is eliminated, in fact this oar brings rowing within the reach of everyone, as a child or a woman could readily use it without any previous practice.

The modification of the device shown in Fig. 7 may be used in place of the device previously described, should the oarsman desire to row the boat in the usual way, that

is, facing the stern of the boat, and still retain the mechanical feathering action.

44 is a pivot block supported in the lugs 3 having the pin 45 projecting vertically upward therefrom.

46 is a rectangular frame having the orifices 47 and 48 in the bottom and top sides respectively adapted to fit over the pin 45.

49 is a boss projecting from the side 50 of the frame 46 and 51 is the oar handle fixedly secured in the orifice 52 in said boss.

53 is an orifice in the side 54 of the frame and 55 is a pin journaled in the said orifice to the outer end of which is secured the oar stem 34.

56 is a bevel gear fixedly secured to the inner end of the pin 55 to the inside of the frame 46 and meshing with the bevel 57 fixedly secured to the pin 45.

It will be readily seen that the oar may be swung freely in a forward or backward direction, the frame 46 pivoting on the pin 45 and as the bevel gear 57 is fixed to said pin the bevel gear 56 will be caused to rotate as the frame is swung on its pivot. The oar is thus given a feathering movement similar to the movement given through the gear 32 and gear teeth 39 on the plate 36.

What I claim as my invention is:—

1. In an oar, in combination, a pivotal block supported from the gunwale of a boat and having pins extending upwardly from each end thereof, a pair of co-acting segmental toothed gears journaled on said pins, an oar handle rotatably supported from one of said gears, an oar stem rotatably supported from the other of said gears, a bevel pinion fixedly secured to the inner end of said oar stem and rotating therewith, and a plate having orifices therethrough through which the pins extending from the aforesaid pivotal block extend, said plate being rigidly secured to said pins above said segmental gears and having a bevel gear surface formed on its under side at one end and meshing with the bevel pinion secured to said oar stem, and adapted to rotate said pinion on the swinging of the segmental gear supporting said oar stem to feather the oar, substantially as described.

2. In a device of the class described, in combination, a base having parallel lugs extending upwardly therefrom, a block pivoted on said base, pins fixedly secured thereto at the extremities of said blocks, and projecting upwardly therefrom, gears mounted on said pins and having arms substantially parallel extending therefrom respectively, collars secured at the end of said arms, a handle secured in one of said collars, a pin journaled in the oar gear between said arms, a bevel gear fixedly mounted in the inner end of said pin inside of said oar gear, an oar blade having its stem fixedly secured to said pin between the arms, and a plate having a

bevel gear face co-acting with said bevel gear and secured to the upper end of said pins from said block, substantially as described.

3. In a device of the class described, in
5 combination, a base having a pair of parallel lugs extending upwardly therefrom, said lugs having a journal orifice in the upper end thereof, a pivot block having a journal pin adapted to rest within said orifices, a block
10 resting within said orifice above said pin, a bell crank lever secured to said block, spring means for holding said block in position and retaining said pin in said lugs, gears mounted

on said pivot block, an oar blade having the stem thereof secured to one end of said gears, 15 and a handle extending from the other of said gears, substantially as described.

Signed at the city of Toronto, in the county of York, in the Province of Ontario, in the Dominion of Canada, this 28th day of 20 January, 1907.

JOSHUA LEHMAN.

Witnesses:

H. DENNISON,
E. WILKINS.