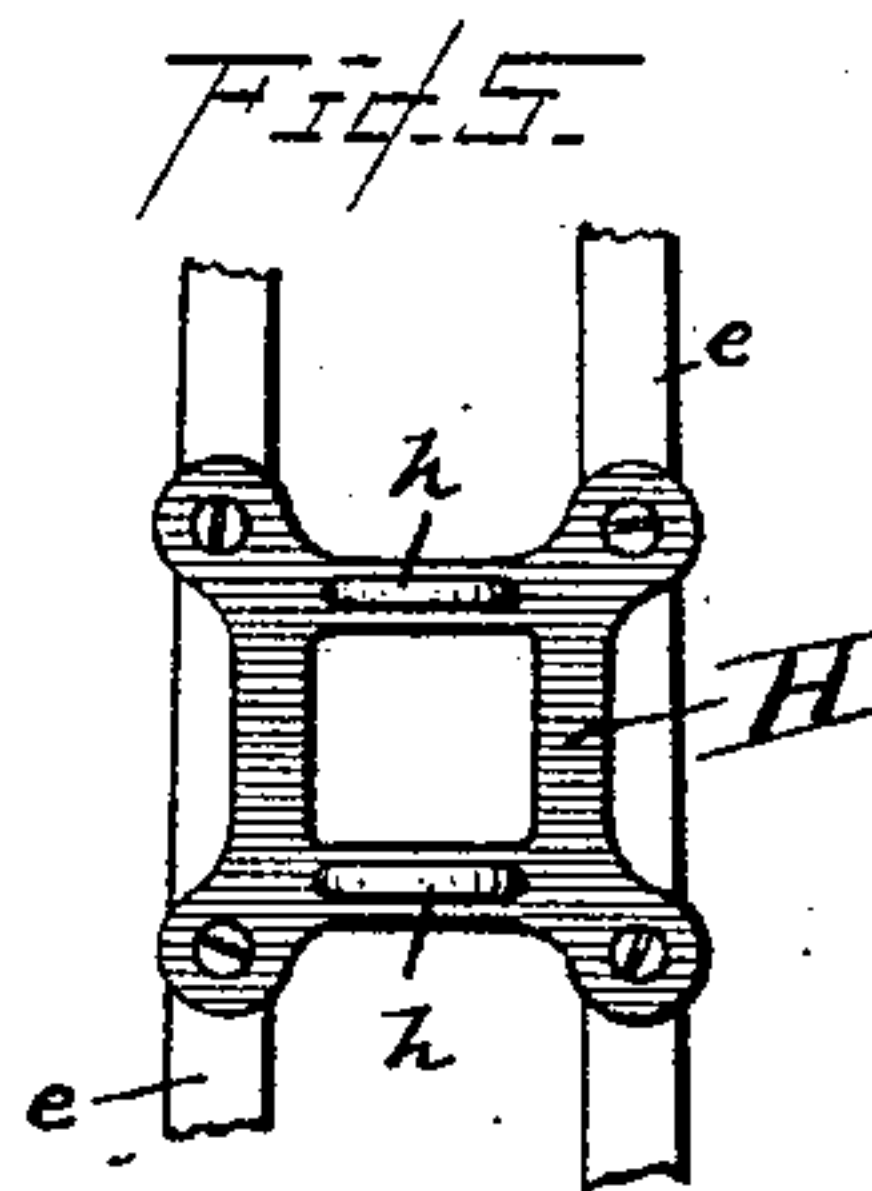
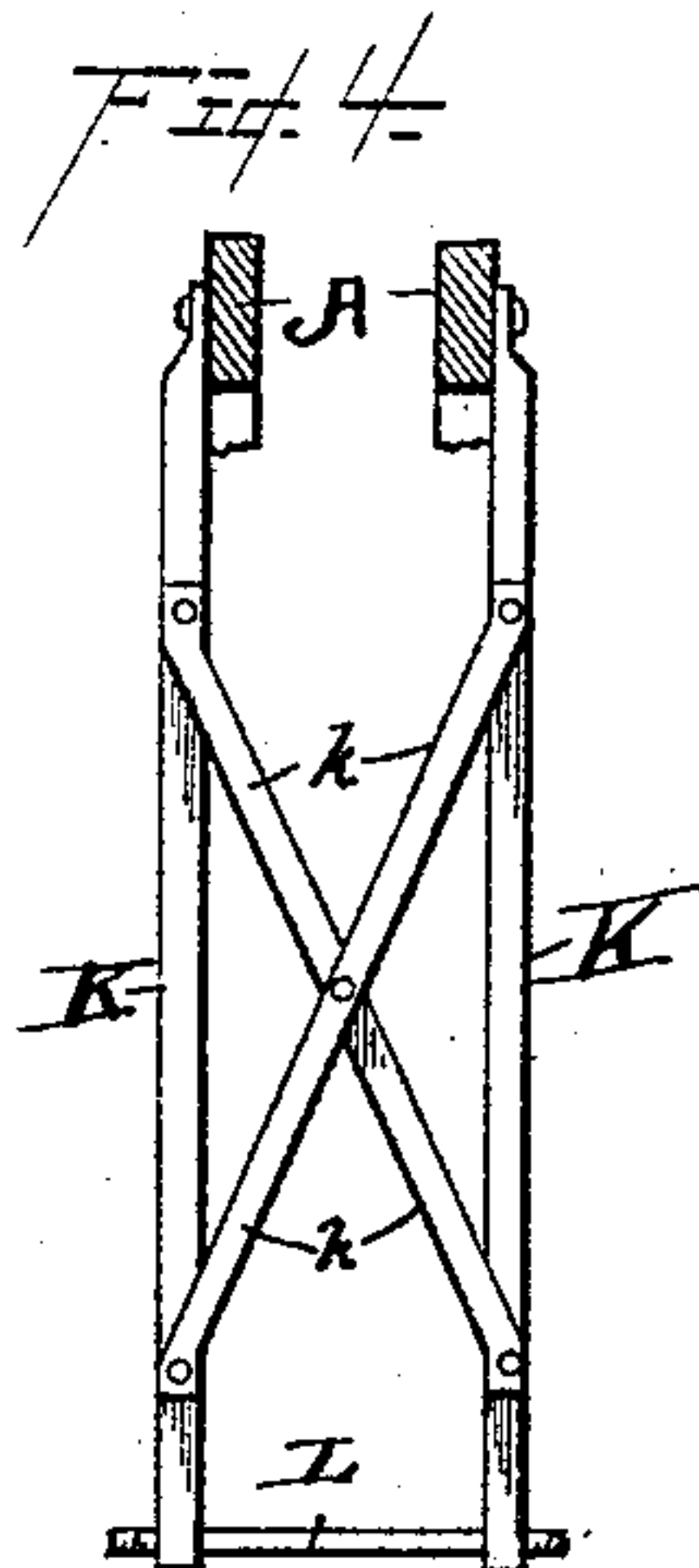
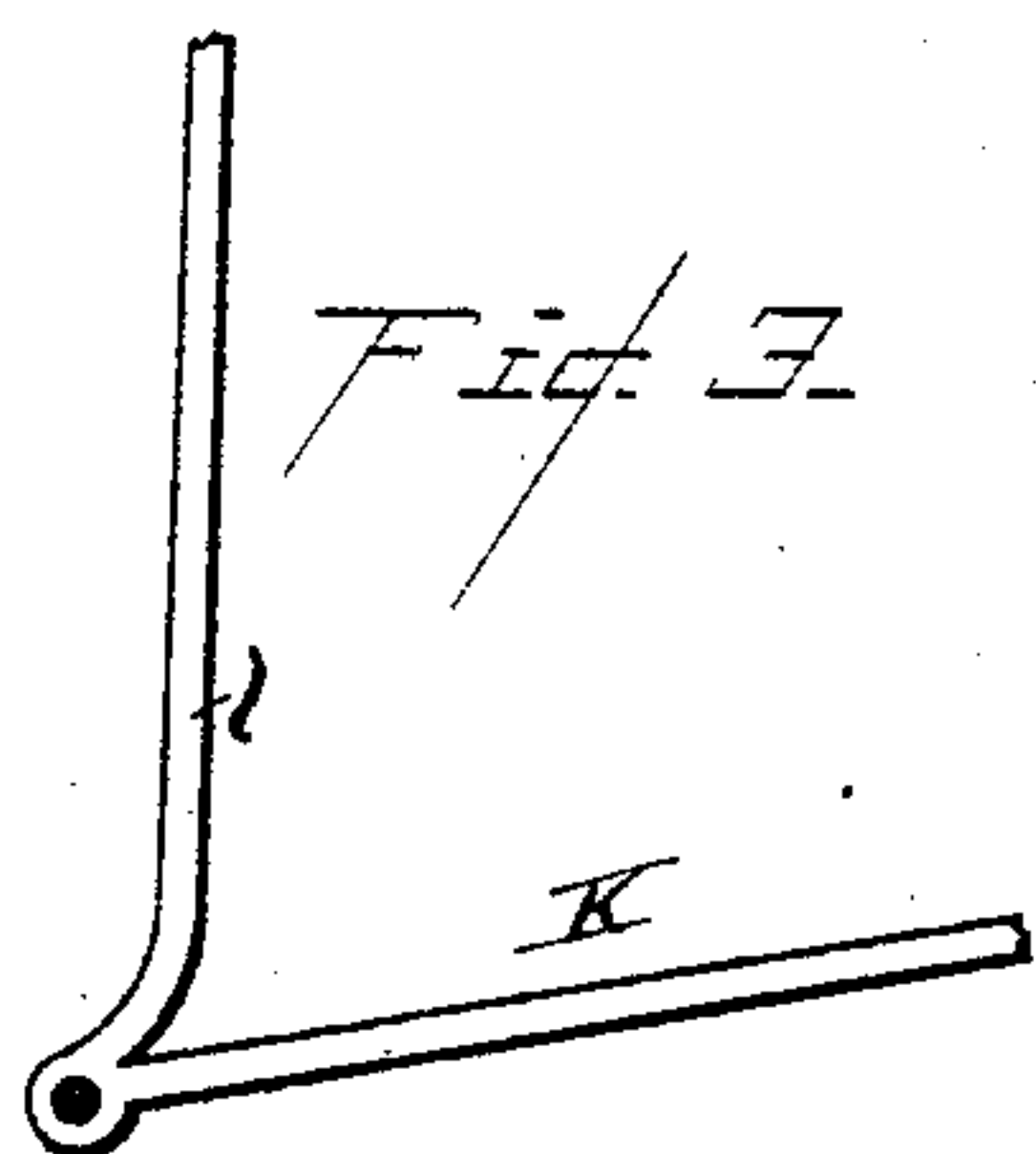
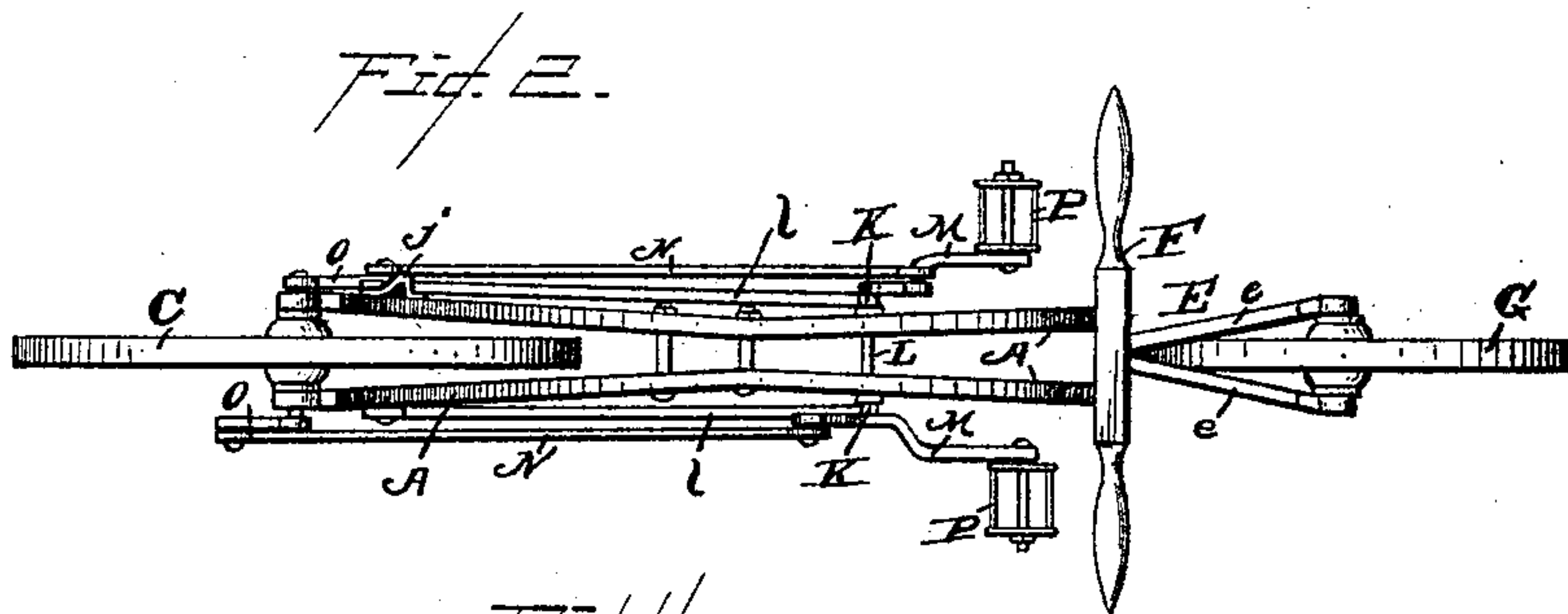
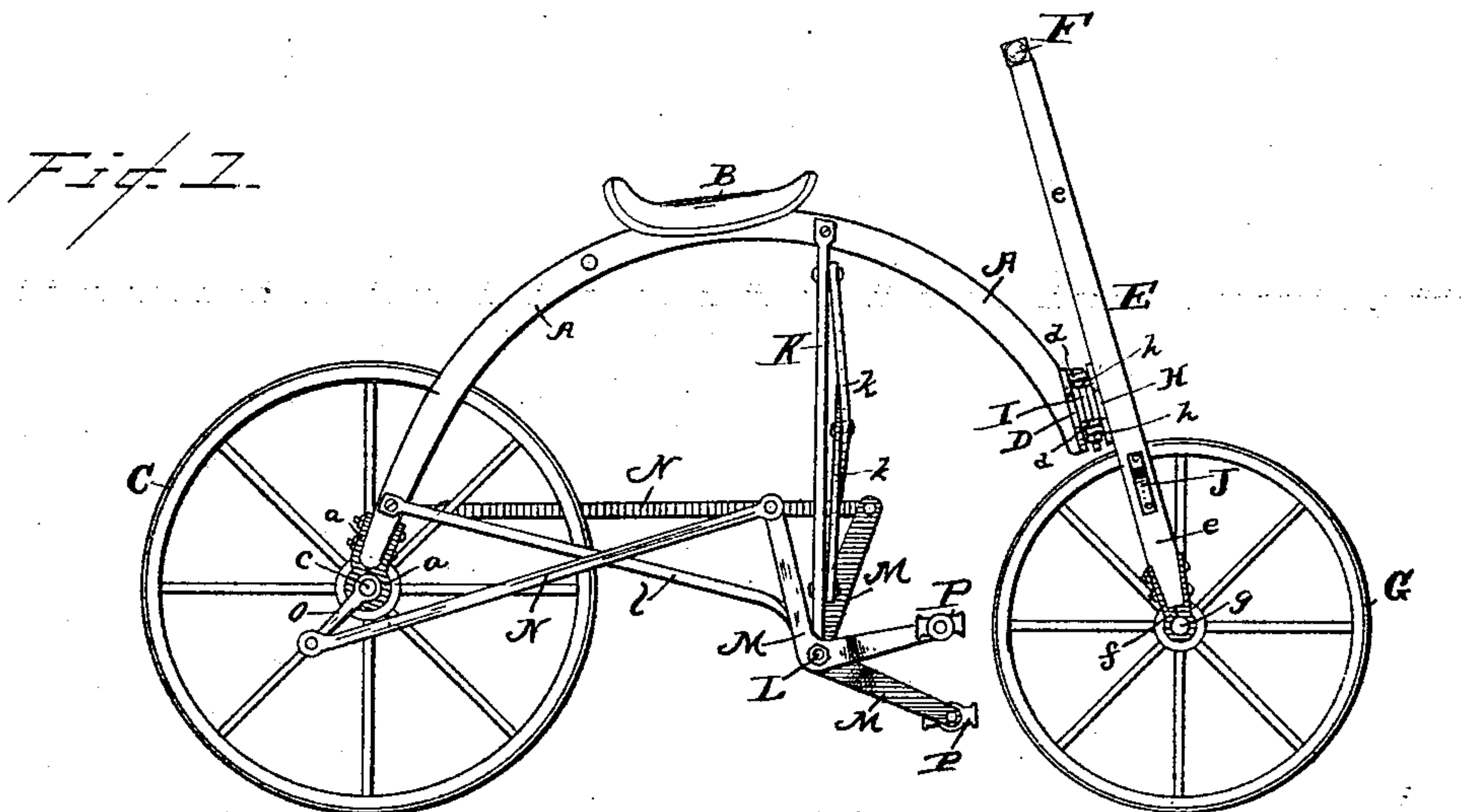


(No Model.)

J. A. CRANDALL.
BICYCLE.

No. 436,305.

Patented Sept. 9, 1890.



WITNESSES

Percy L. Brooks.
Arthur C. Dowell.

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UNITED STATES PATENT OFFICE.

JESSE A. CRANDALL, OF BROOKLYN, NEW YORK.

BICYCLE.

SPECIFICATION forming part of Letters Patent No. 436,305, dated September 9, 1890.

Application filed July 3, 1890. Serial No. 357,639. (No model.)

To all whom it may concern:

Be it known that I, JESSE A. CRANDALL, of Brooklyn, in the county of Kings and State of New York, have invented certain new and
5 useful Improvements in Bicycles; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked
10 thereon, which form part of this specification, in which—

Figure 1 is a side elevation of my improved bicycle. Fig. 2 is a top view thereof with the seat removed. Figs. 3, 4, and 5 are details.

15 This invention is an improvement in bicycles, and its object is to provide a strong, simple, and durable bicycle which can be constructed at small cost and sold for a low price; and it consists in the novel construction and
20 combination of parts hereinafter clearly described and claimed.

Referring to the drawings by letter, A A designate two similar bowed or arc-shaped bars or rods lying side by side, but a few inches
25 apart, and together constituting the backbone of the machine. The saddle B is bolted or secured between and upon the members of the backbone, which converge or stand closer together at center, and the rear ends of the bars
30 A diverge to embrace the rear wheel C, which is mounted on a stub-shaft *c*, journaled in bearings formed in strap-irons *a a*, secured to the lower ends of the bars A. The front ends of the bars are connected by a casting D, having
35 two arms at each side, so as to unite and brace the bars also, and it has two perforated ears *d d* springing from its outer face, as shown.

E designates the standard, composed of two pieces *e e*, united at top to each other and to
40 the handle-bar F, but diverging at bottom to embrace the front guide-wheel G, which is mounted on a stub-shaft *g*, journaled in bearings formed in straps *f*, secured to the lower ends of pieces *e*.

45 H designates a casting similar to D and secured to and bracing and uniting the members *e e* of the standard just above the wheel G, and having on its rear face perforated ears *h h*, which coincide with the ears *d* of
50 casting D, and through which passes a bolt

I, also passing through ears *d*, and thereby uniting and hinging the standard to the backbone, as shown.

J J are angle-straps attached to the pieces *e e* and forming foot-rests, and *j* is a mount-
55 step iron attached to bar A at the rear end thereof.

K K designate metallic rods attached to the opposite members of the backbone just in front of the saddle and depending therefrom
60 between the wheels, and *k k* are straps constituting an X-brace and uniting the rods to brace them laterally in relation to each other and the backbone.

L designates a stub-shaft fixed in and unit-
65 ing the lower ends of rods K K, and *l* are straps united by one end to the lower ends of these rods or to the stub-shaft and extending rearwardly therefrom, and are connected to the rear ends of the backbone, as indicated,
70 thus preventing the rods from swinging.

M M designate bell-crank treadle-levers pivotally mounted at their angles on the ends of shaft L outside the rods K, and N N are pit-
75 man-rods connecting the upstanding arms of these levers with crank-arms O O, fixed on the ends of shafts *c* exterior to the backbone, the levers and cranks at opposite sides being set at different angles, as indicated.

On the ends of the free arms of the levers
80 M are attached pedals P P, by which they can be operated. The straps *l* hold the rear wheel rigid with the shaft L, on which the treadles are mounted, so that there is no jerking or jumping action when the latter are operated,
85 and the braces *k* prevent lateral swaying of the treadles, and the latter being suspended nearly vertically below the seat the entire weight of the rider can be thrown thereon by his simply rising in his seat, thus rendering
90 its propulsion easy. The backbone and standard can be made of wood without impairing the machine and lessening its cost and weight. The curved form of the backbone renders it springy, and thus easy riding.

95 Having described my invention, what I claim as new, and desire to secure by Letters Patent thereon, is—

1. The combination of the backbone formed of two arc-shaped bars embracing the rear
100

wheel and having their front ends united by a casting, the standard pivotally connected or hinged to said casting, and the front wheel attached to said standard with the treadle-levers suspended from the backbone between the wheels and the pitman-rods connecting said levers with cranks on the axle of the rear wheel, substantially as and for the purpose described.

10 2. The combination of the curved backbone, the rear wheel attached to one extremity thereof, the standard hinged to its other extremity, and the guide-wheel attached to said standard with the rods suspended from the backbone, the straps connecting said rods and bracing them laterally, the straps connecting the lower ends of said rods to the rear end of the backbone, the crank treadle-levers supported by said rods, and the pitmen connecting said levers with crank-arms on the shaft of the rear wheel, substantially as set forth.

15 3. The herein-described bicycle, consisting of a pair of arc-shaped bars arranged side by side to form the backbone, the rear wheel mounted between the rear ends of said bars

on a shaft journaled in straps attached thereto, the casting uniting the front ends of said bars and the seat supported thereon, the standard formed of diverging pieces, the front wheel mounted between the lower ends of said pieces on a shaft attached thereto, a casting uniting said pieces and attached to the casting on the backbone to form a hinge therewith, with the rods depending from the backbone and carrying a stub-shaft on their lower ends, the lateral bracing-straps for said rods, the brace-straps connecting their lower ends to the rear ends of the backbone-bars, the bell-crank treadle-levers, the crank-arms on the shaft of the rear wheel, and the pitmen connecting said crank-arms and treadle-levers, all constructed and arranged to operate substantially as and for the purpose specified.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

JESSE A. CRANDALL.

Witnesses:

WILLIAM CUNNINGHAM,
NOAH TEBBETTS.