

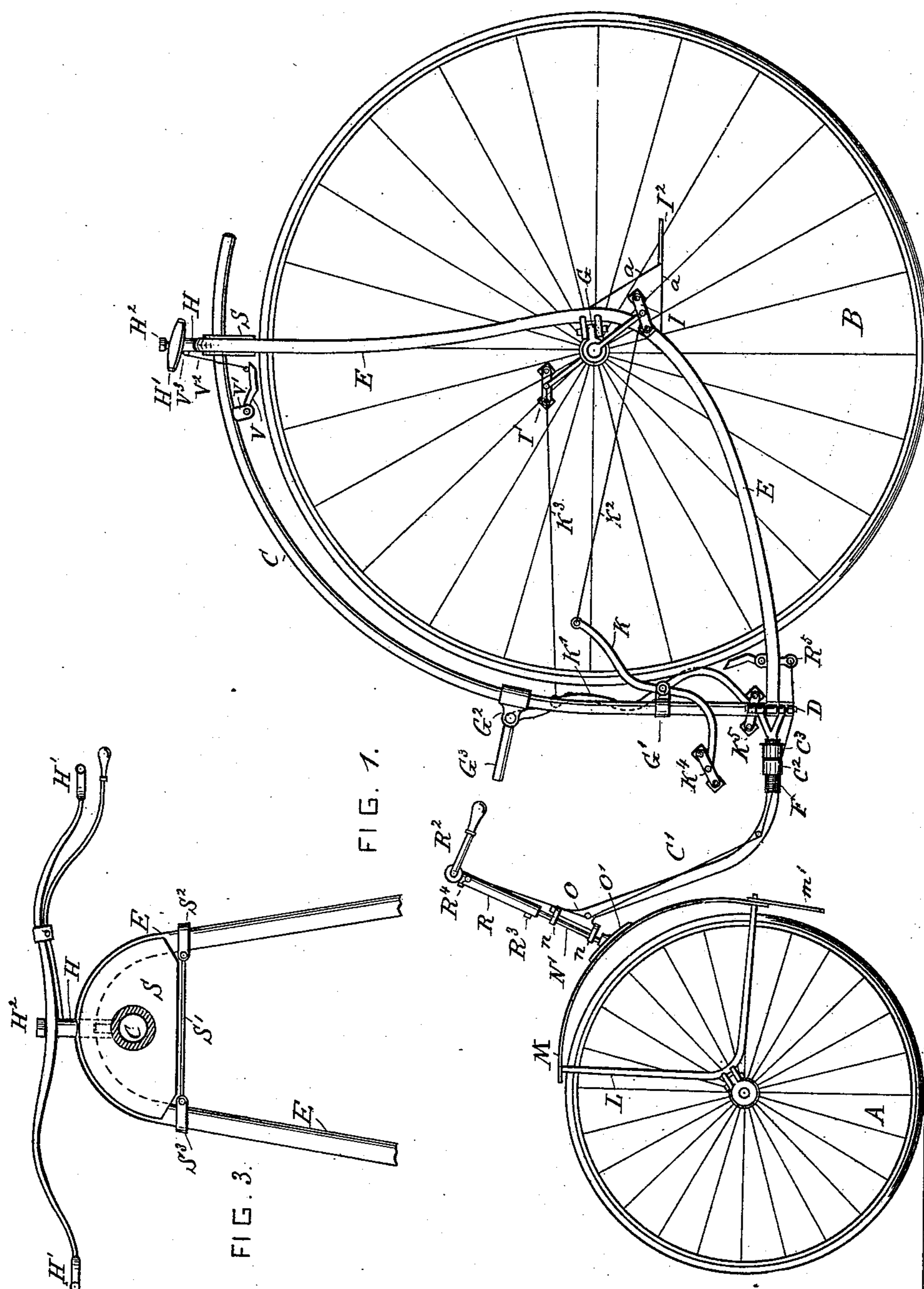
(No Model.)

2 Sheets—Sheet 1.

T. O'BRIEN.
BICYCLE.

No. 471,621.

Patented Mar. 29, 1892.



WITNESSES

W. A. Lowe
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INVENTOR

Thomas O'Brien

(No Model.)

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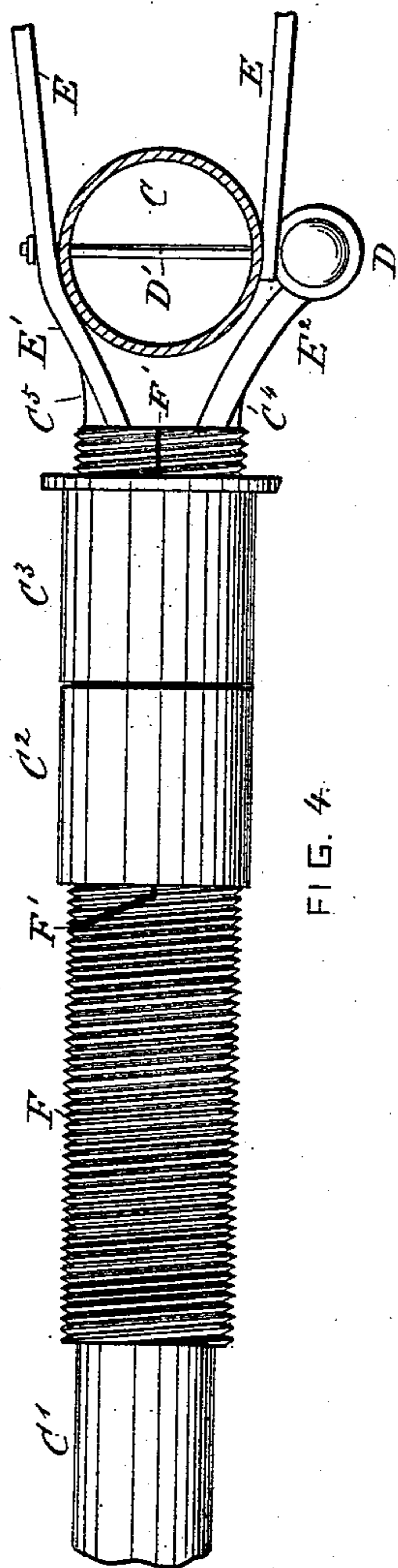


FIG. 4.

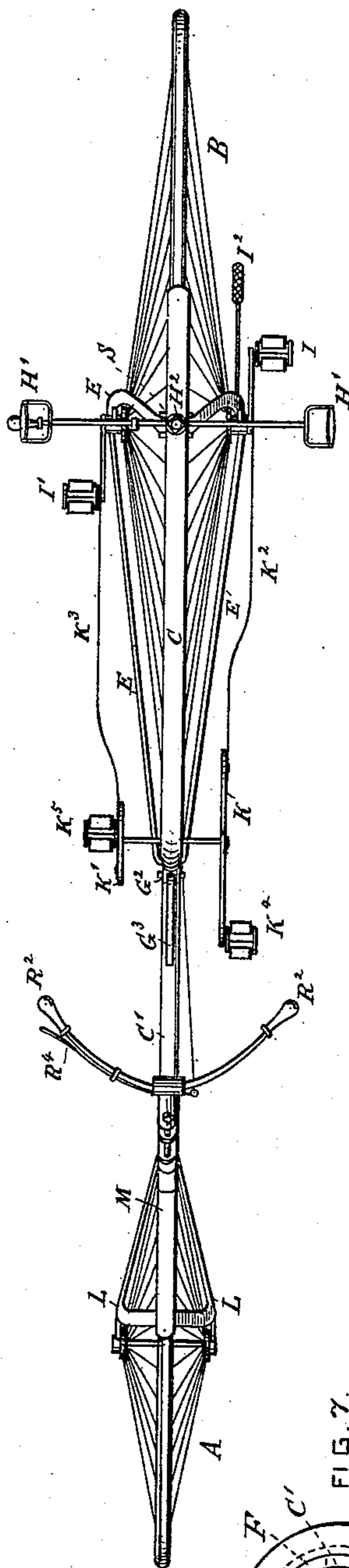


FIG. 2.

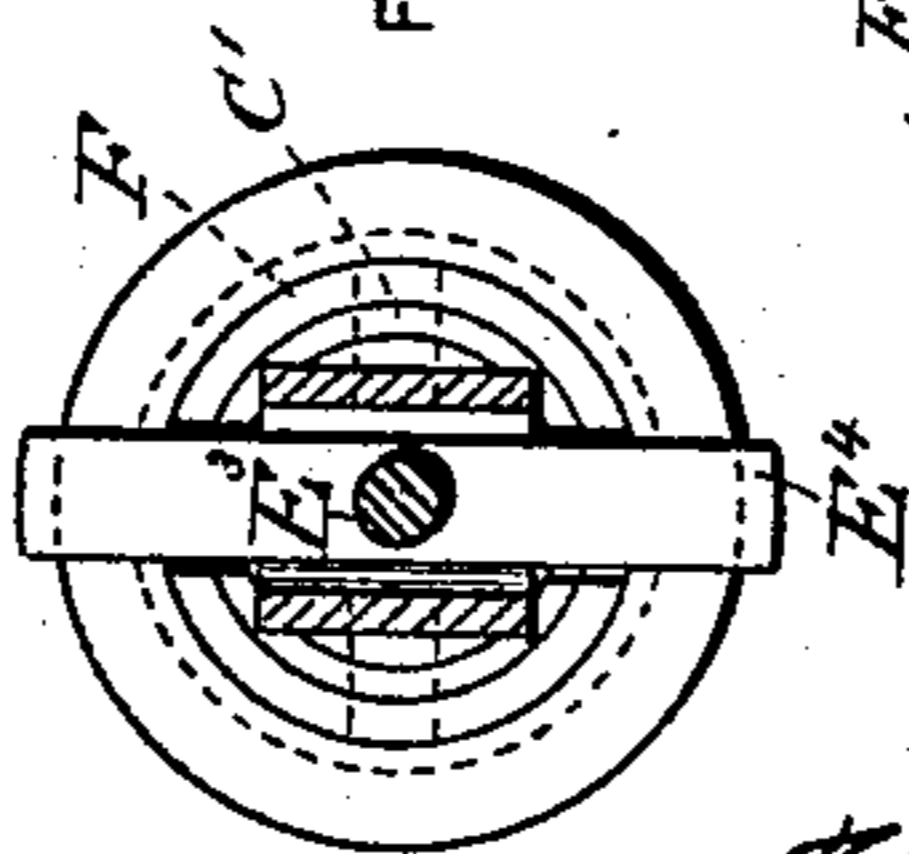


FIG. 7.

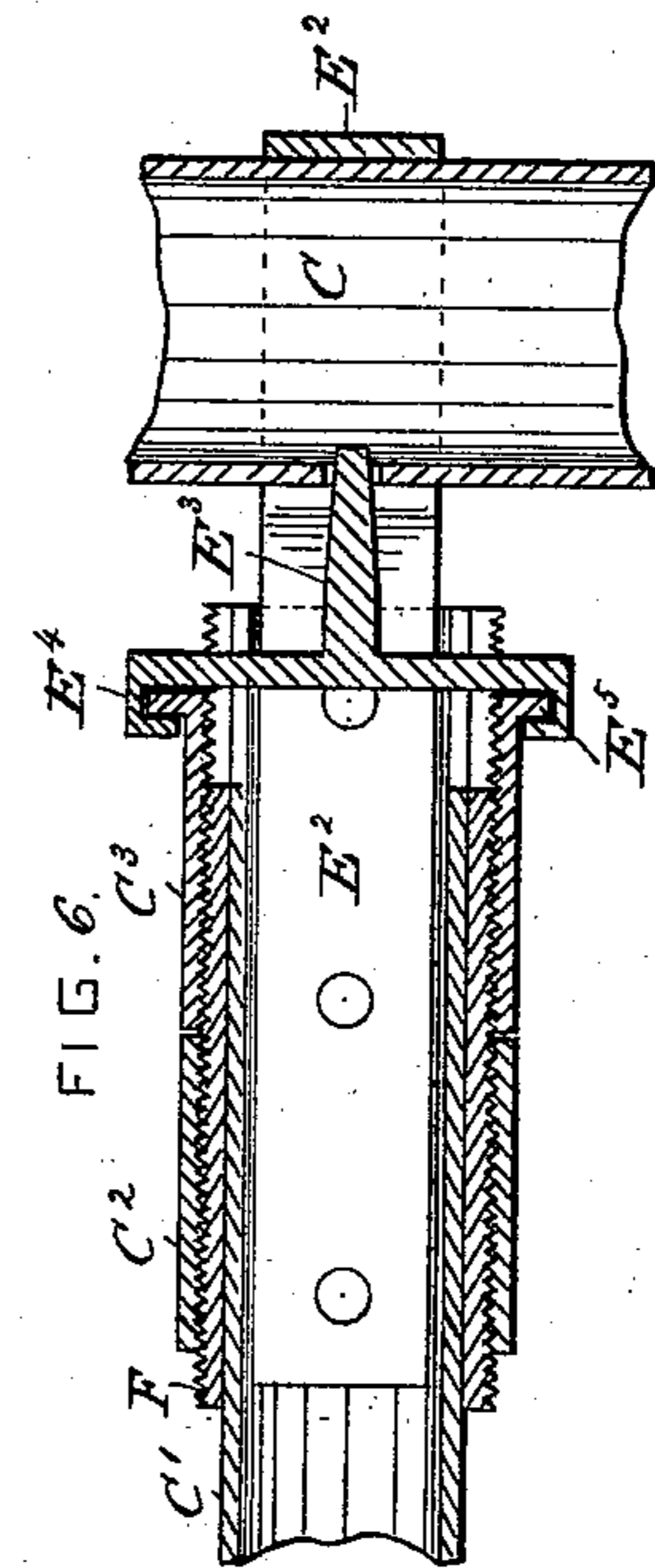


FIG. 6.

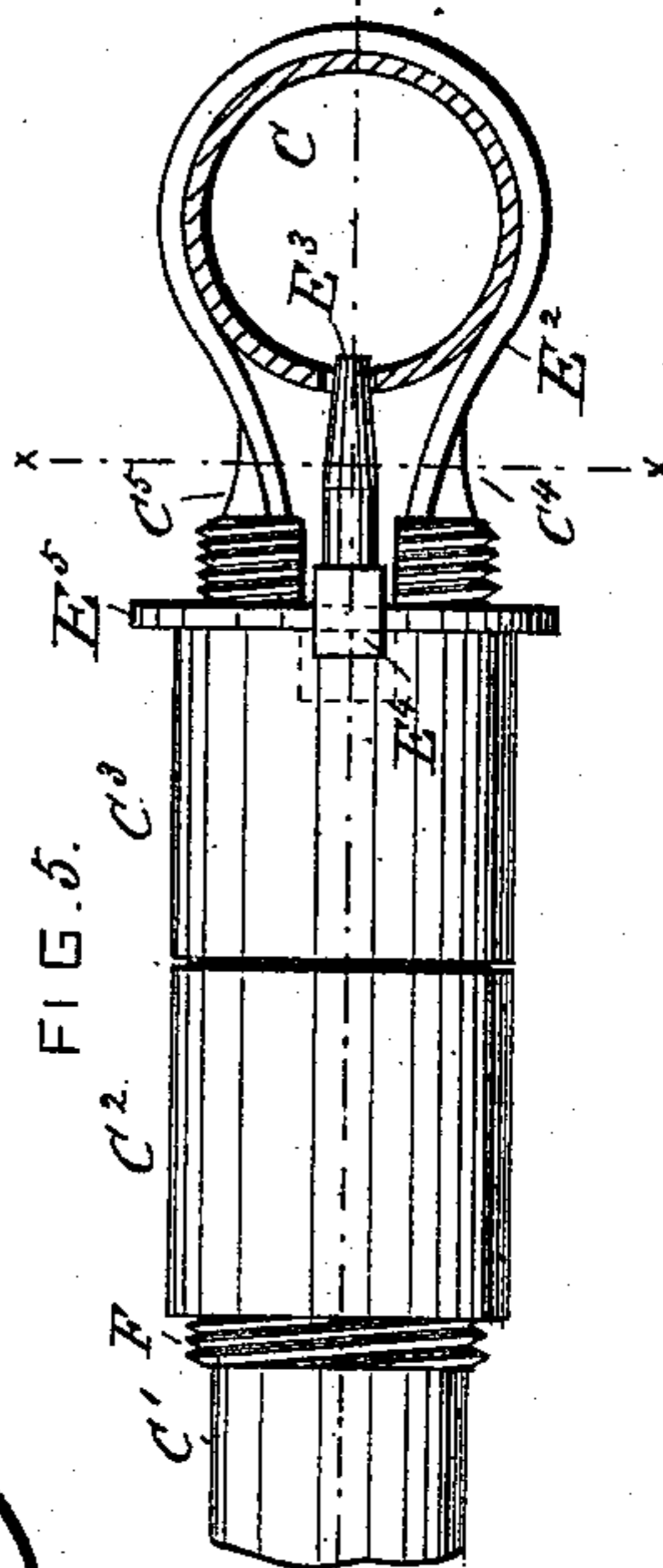


FIG. 5.

WITNESSES

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UNITED STATES PATENT OFFICE.

THOMAS O'BRIEN, OF NEW YORK, N. Y.

BICYCLE.

SPECIFICATION forming part of Letters Patent No. 471,621, dated March 29, 1892.

Application filed February 4, 1890. Serial No. 339,180. (No model.)

To all whom it may concern:

Be it known that I, THOMAS O'BRIEN, a citizen of the United States of America, and a resident of the city, county, and State, of New York, have invented certain new and useful Improvements in Bicycles, of which the following is a specification.

My invention relates to the construction of a connecting frame or spine and the forks of a velocipede, and has for its objects the folding of the machine for transportation or storage and the absorption of vibration by isolating or insulating the spine from the forks, and by which means giving to the handle-bars and seat of the rider immunity from jar or concussion.

In the drawings is shown a tandem bicycle having a large wheel and a smaller wheel in front. The large wheel carries a rider on top, and between the wheels there is provided a seat for a person of either sex. The rider on the large wheel propels the machine by a downward pressure on the pedals, and the pedals for the front rider are at the lower forward ends of levers whose upper ends are connected by connecting-rods to the cranks on the axle of the large wheel and by which means the rider on the front seat assists in propelling the machine.

In the drawings, Figure 1 is a side elevation with the seats removed. Fig. 2 is a plan thereof. Fig. 3 is a view from the rear of the method of insulating and sustaining the spine. Fig. 4 is a plan view of the folding mechanism with a hinge, showing how the spines and forks are united. Fig. 5 is a plan view having a movable pin which may be used with or without the hinge D. In this case the projecting fork E' is not used. Fig. 6 is a longitudinal section of Fig. 5, and Fig. 7 is a view of the locking mechanism from the line X X in Fig. 5.

The wheels A B, their axles and bearings, and treadles may be of any desired construction. The backbone or spine C is in one piece of tubing, and is united to the spine C' by means of the locking mechanism, and this locking mechanism consists of the hinge D, the forwardly-extending fork E' to F', (see Fig. 4,) the screw-threaded sleeve F on the spine C', and the screw-threaded nuts C² C³. The spine C' is preferably of tubing, and the space occupied by the forwardly-extending

fork E' to F' is cut out of the screw-threaded sleeve F and spine C', and a swelling C⁵ is forged upon said extended fork, and its outward surface is threaded to conform to the screw-threading on the sleeve F. The arm E² of the hinge D is split and spread apart so as to form two knuckles, and the forward end of said arm is inserted in the tube C' and therein made secure by rivets or in any other manner. By an interchangeable part the nut C³ has a flange, to which is fitted the movable pin E³, as shown in Figs. 5 and 6, and this pin may be used with or without the hinge D, and when without the hinge the arm E², as shown at D, Fig. 1, is split and spread apart and carried around the spine C below the forks E and riveted within the spine C'. In this case the projecting fork E' to F' is not used. (See Fig. 4.) The forks E may be secured to the spine C in any skilled manner. I show a bolt D', having an eye for the pin of the hinge D, and a riveted nut on the other end, and the top and bottom eyelets of said hinge are brazed or forged to the spine C. By this construction when the nuts C² C³ are turned backwardly toward the front wheel sufficient for the nut C³ to clear the extended fork E' or the pin E³ from the spine C the front wheel A may be swung around and placed beside the wheel B. The spine C' is carried forwardly and upwardly and united to the neck O, which is connected by the bearings *n n* to the steering-post N', the said steering-post and step O' being secured on top of the mud-guard M, and this mud-guard M is made of spring-steel or sheet-steel, and in the latter case it is fastened at one end and bent to the desired curvature and then fastened to the other end of the forks L, the said forks being made sufficiently strong to resist the pressure of said mud-guard.

On top of the steering-post N' is the adjustable sliding sleeve R, which carries the handle-bars R², which when adjusted is made fast by the set-screw R³, and the brake-handle R⁴ is operated in the usual manner.

The forks E are constructed of or in one piece, arched at the top to receive the rubber cushion S, curved backwardly of the axle of the wheel B and secured to the bearings thereon at G. They are thence carried forwardly and secured to the spine C, as herein-

before described. By this system of mounting the forks E at G backwardly of the axle and the friction-bearings thereon the weight of the rider being thus thrown backwardly 5 of the axle has a tendency to push the machine forward.

The levers K K' are on the bolt of the clamping-ring G', and the upper ends of said levers are connected by connecting-rods K² 10 K³ to the cranks on the axle of the wheel B, and the pedals K⁴ K⁵ are on the lower forward ends of said levers for the feet of the front rider, who by which means assists in propelling the machine.

15 Within the arch of the forks E over the wheel B is a rubber cushion S, the edge of which is formed to straddle the arch of said forks and bearing S', and this bearing, which may be a spring, if so desired, is held in place 20 by the split clamping-rings S² S³, and through the said rubber cushion the spine C is extended backwardly sufficient for the saddle of the rider, and by insulating the spine from the forks in said manner vibration cannot be 25 transmitted to the seat and handle-bars. The handle-bars H' of the wheel B are shown over the forks of said wheel; but they may be also placed in front of said forks on the said spine by means of a standard secured by welding 30 or by split clamping-ring. The forks of these wheels may be of any desired sectional shape.

The brake V is carried on the spur V', and a rod V² connects the brake to the brake-handle V³, which is adjusted on the handle- 35 bar H', the latter being on the standard H, and H² the securing-nut on top.

The saddle-bar G³, by means of the split clamping-ring G², is adjustable up or down upon the spine C.

40 The rods a a are brazed to the fork E and form the step I².

The connecting-frame and folding mechanism of this machine are equally applicable for use in a tricycle or other velocipede.

The depending links and connecting-rods 45 heretofore described by me in my patents, Nos. 372,428 and 372,429, may be used in this machine instead of the levers K K'.

The mud-guard M is similar to that patented to me in Patent No. 394,287. 50

The forks L are similar to those patented to me in Patent No. 413,415.

I claim as my invention—

1. The combination, in a bicycle, with the wheels A B, forks L, mud-guard M, steering- 5: standard N', and handle-bars R², of the spines C and C', the forks E, the split clamping-ring G², and the saddle-bar G³, substantially as set forth.

2. The combination, in a bicycle, with the 60 wheels A B, forks L, mud-guard M, and steering-standard N', of the spines C and C', the forks E, the levers K K', the connecting-rods K² K³, and the pedals K⁴ K⁵, by which the front rider assists in propelling the machine, 65 substantially as specified.

3. In a bicycle or other velocipede, the combination, with the wheels A B, their forks, and mud-guard, of the spine C, spine C', hinge D, screw-threaded sleeve F, the forwardly-pro- 70 jecting fork E', the nuts C² C³, and the interchangeable pin E³, by which means the machine is folded, substantially as set forth.

4. In a bicycle or other velocipede, the combination consisting of the forks E, rubber 75 cushion S, the bar or spring S', the clamping-rings S² S³, and the spine C, on which the handle-bar standard H is secured, substantially as set forth.

In testimony that I claim the foregoing as 80 my invention I have signed my name, in presence of two witnesses, this 30th day of October, 1889..

THOMAS O'BRIEN.

Witnesses:

WM. A. LOWE,
A. JONGHMANS.