

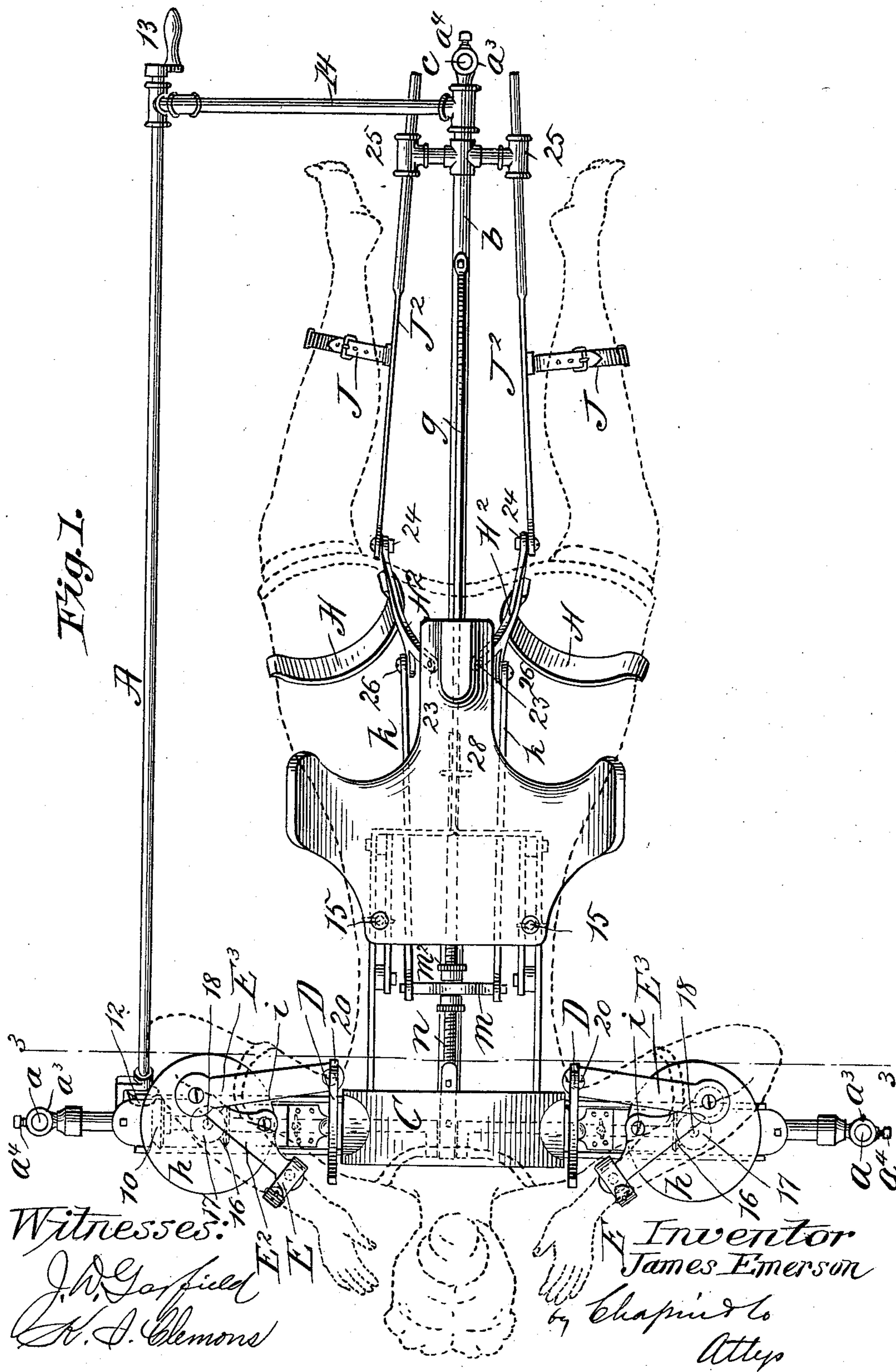
(No Model.)

4 Sheets—Sheet 1.

J. EMERSON.  
DEVICE FOR TEACHING SWIMMING.

No. 563,578.

Patented July 7, 1896.



(No Model.)

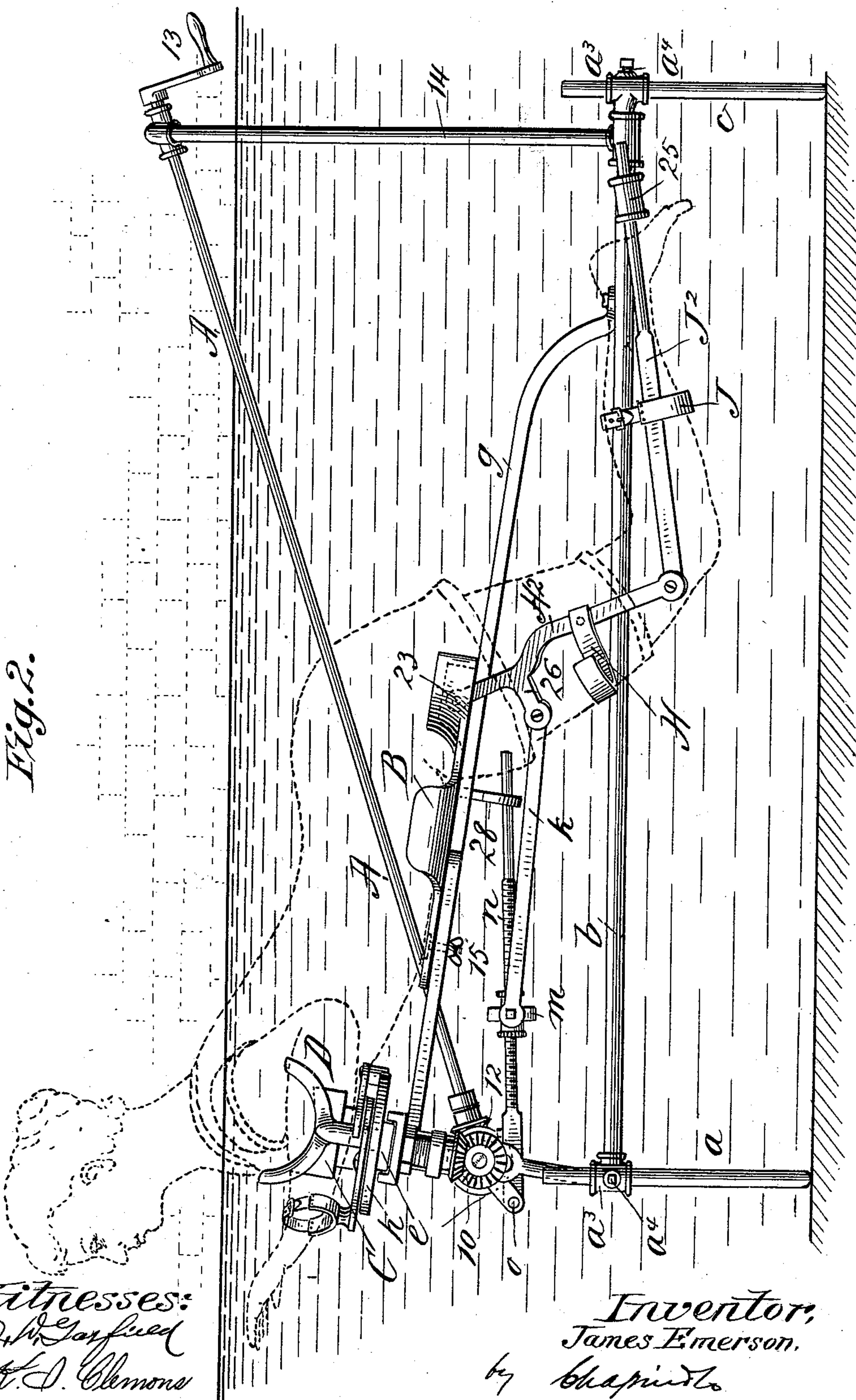
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Fig. 2.



Witnesses:  
J. H. Sanford  
H. S. Clemons

Inventor,  
James Emerson.  
by Chapman  
attys



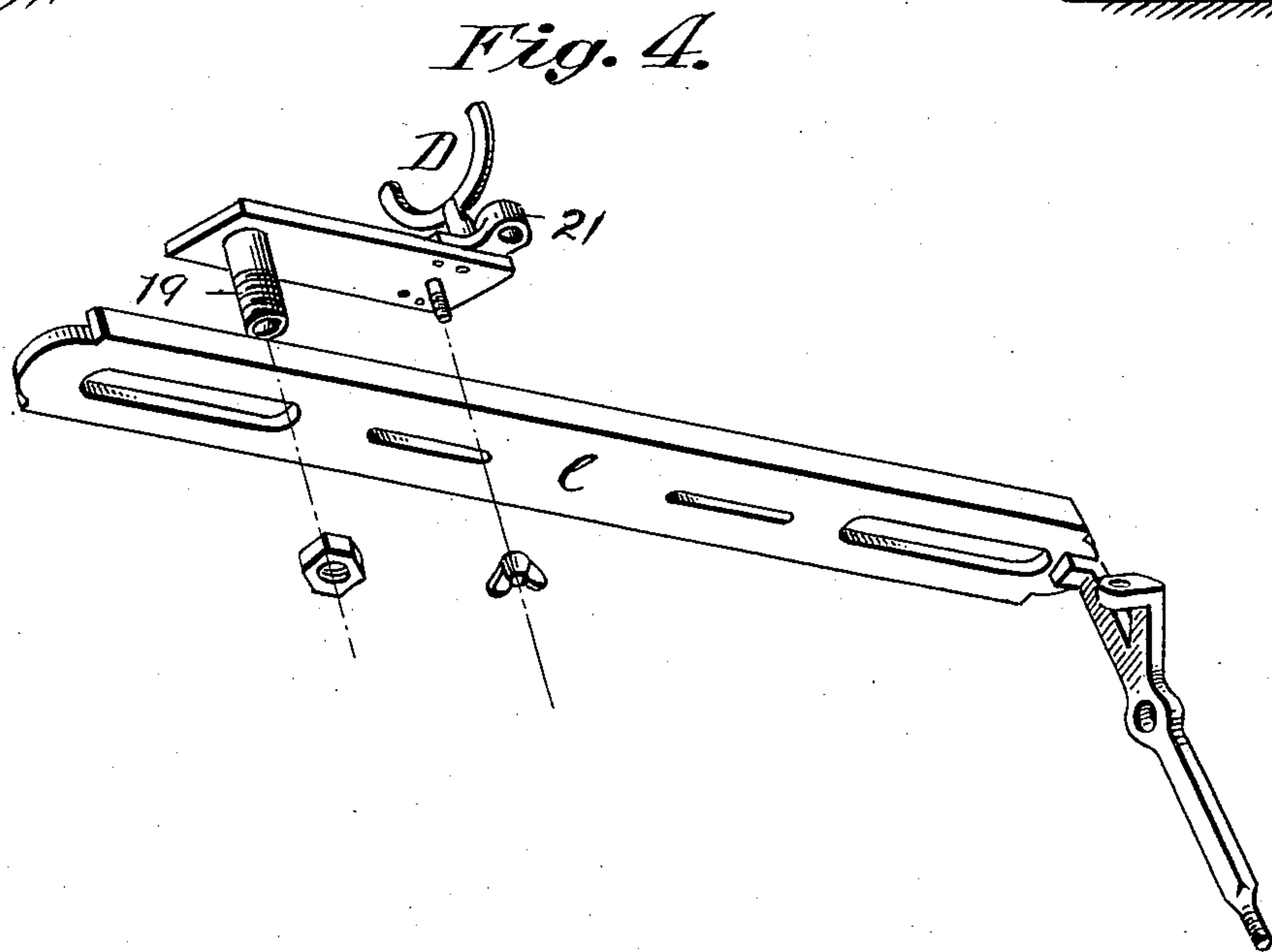
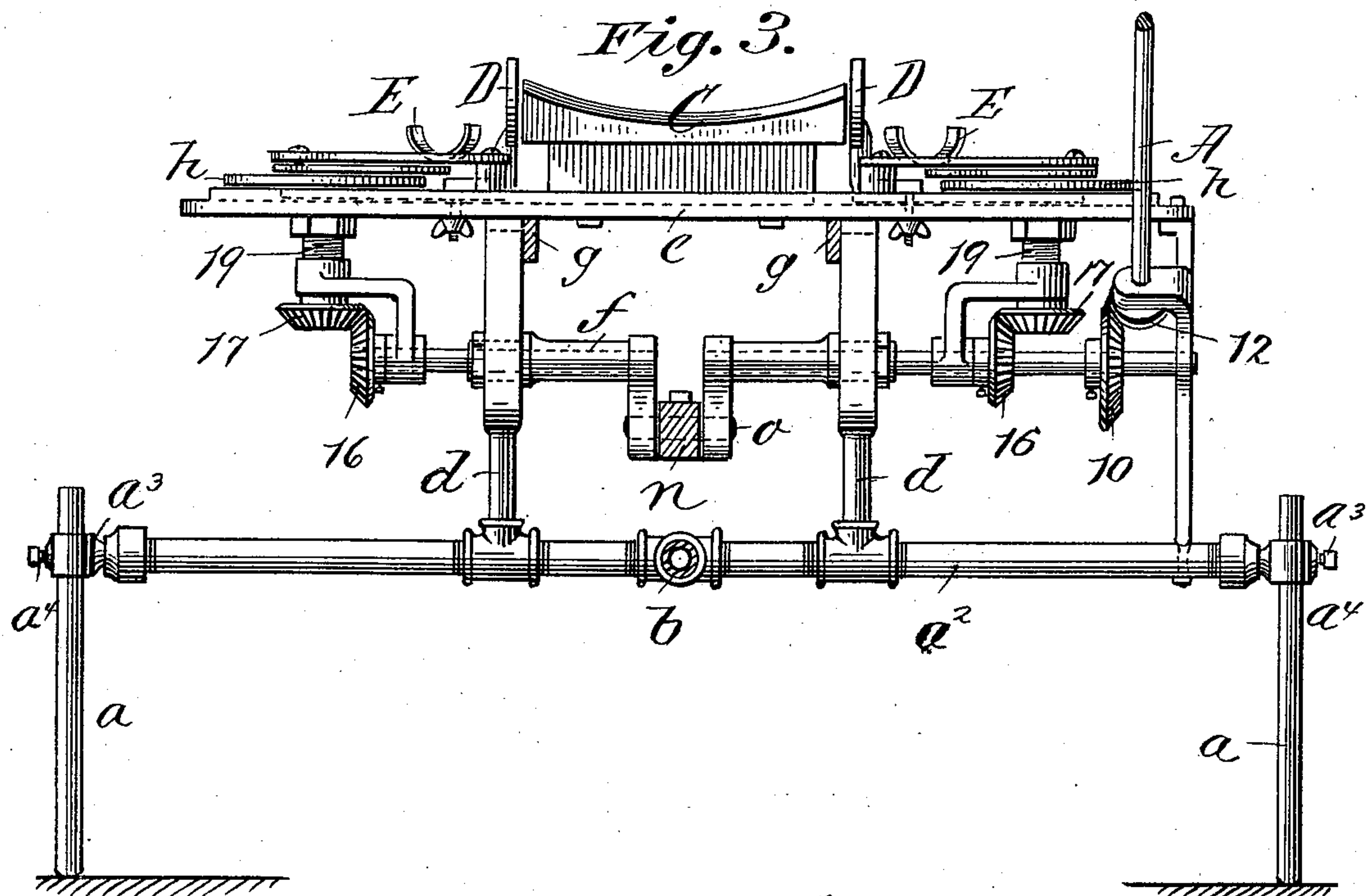
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Witnesses:  
J. D. Garfield  
H. J. Clemons

Inventor,  
James Emerson  
by Chapman & Co  
Attys

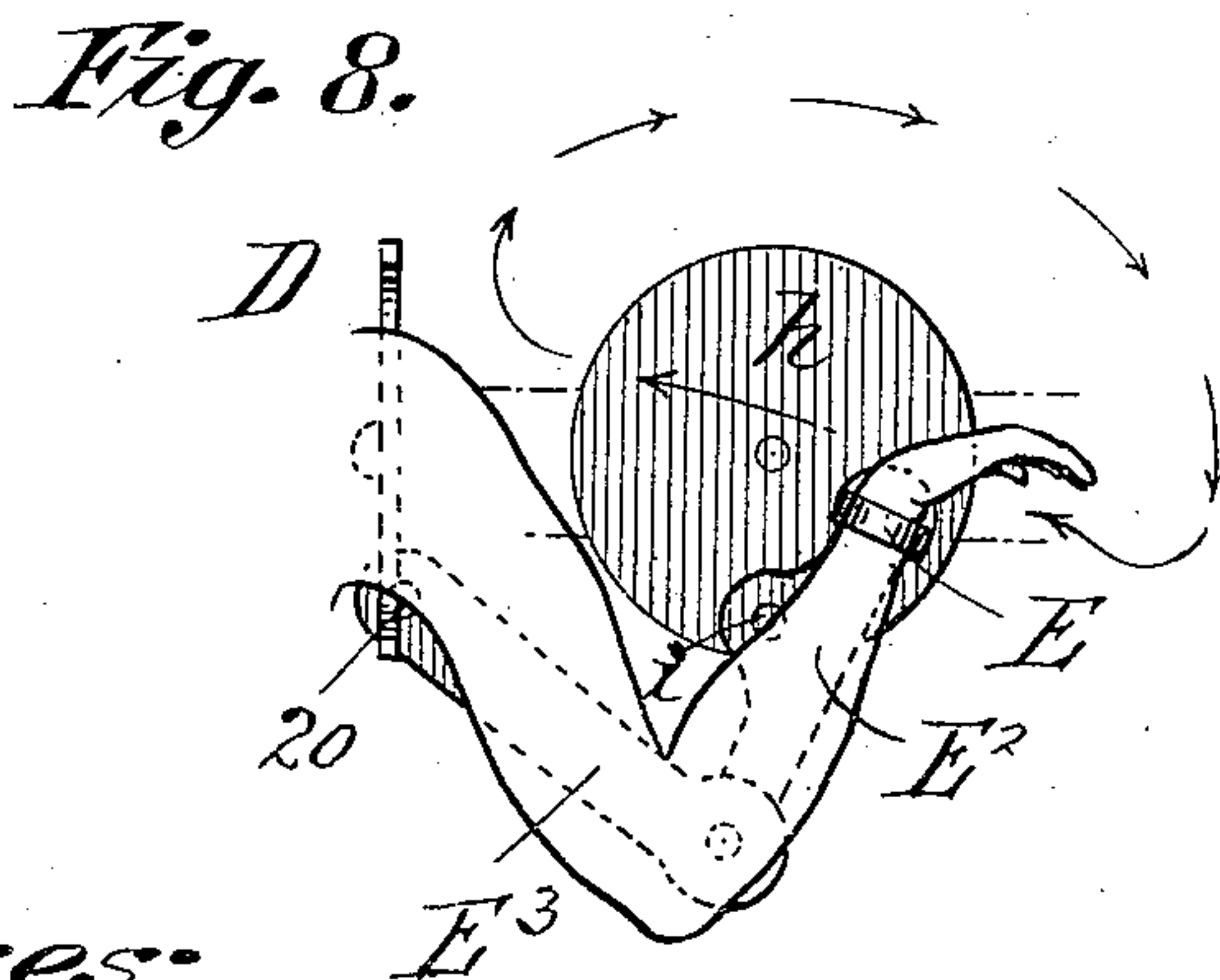
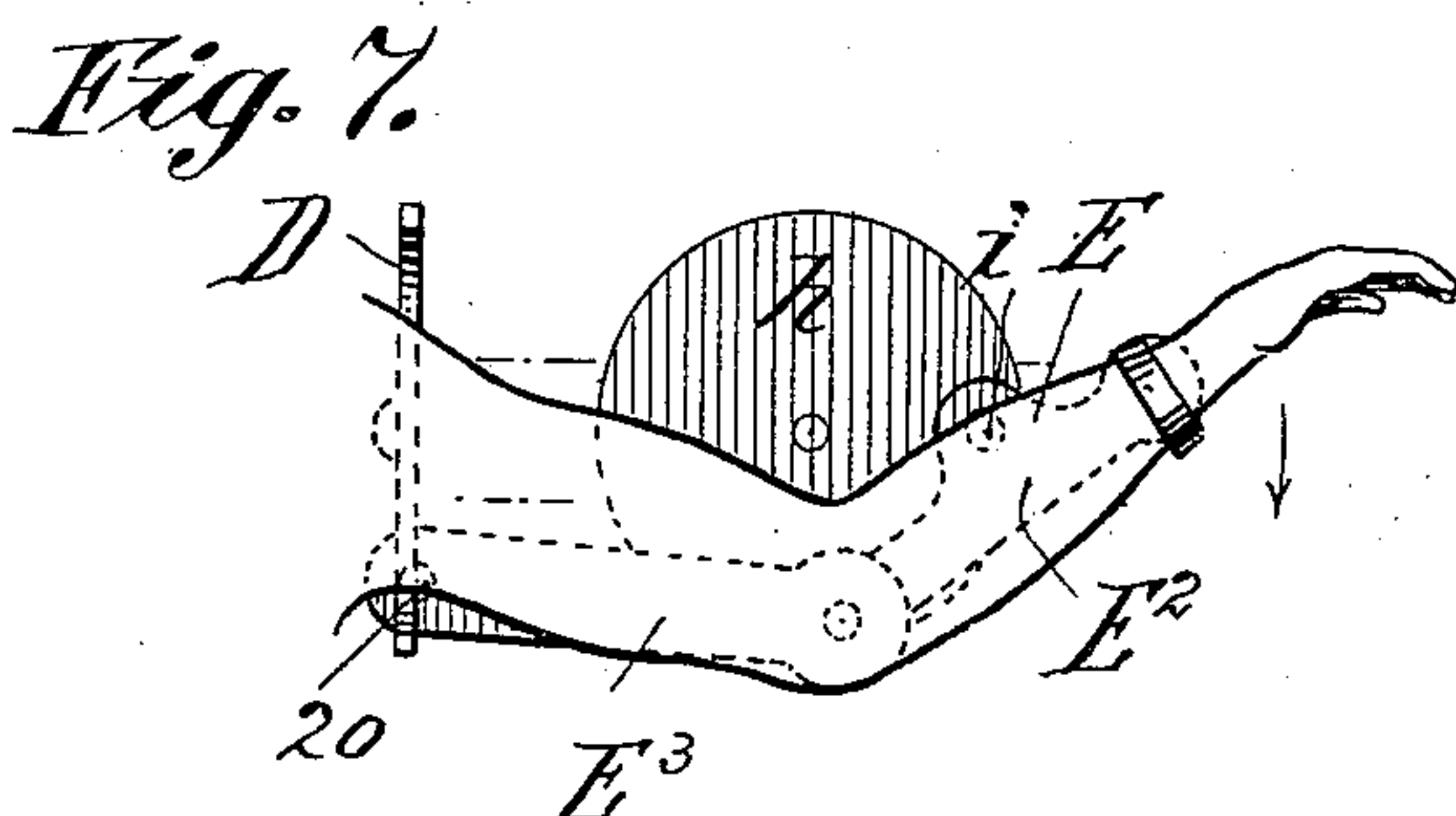
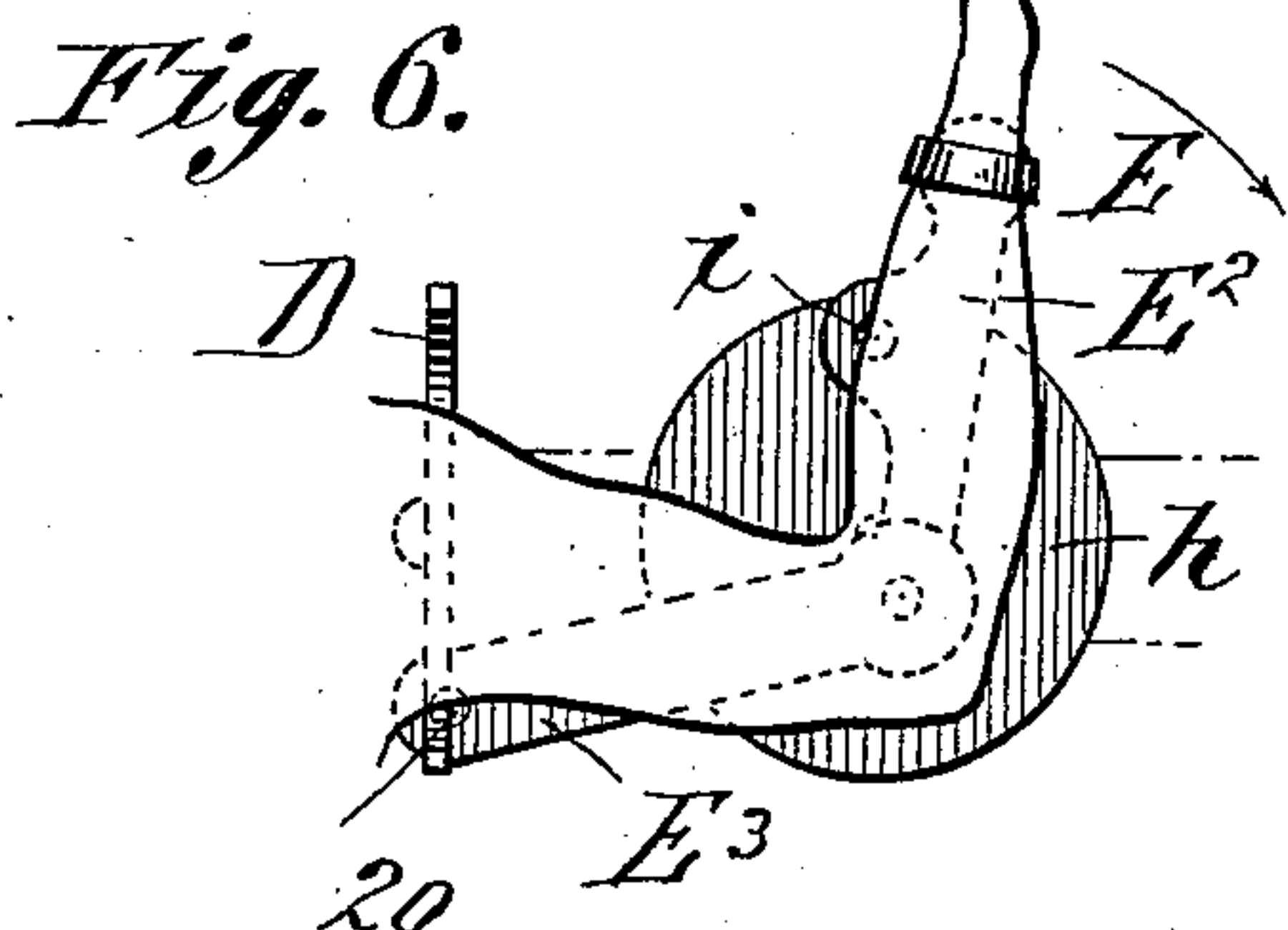
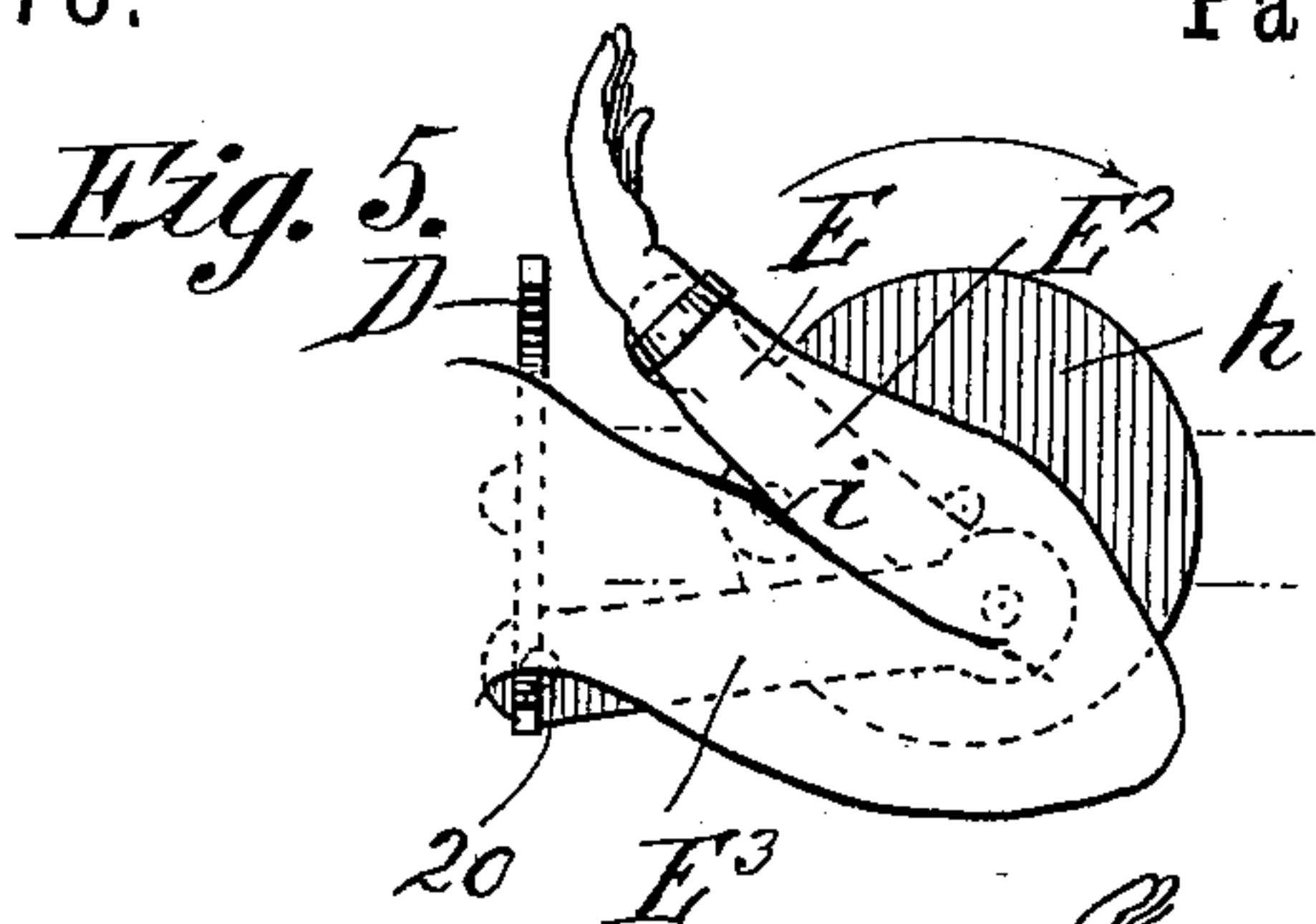
(No Model.)

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DEVICE FOR TEACHING SWIMMING.

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Patented July 7, 1896.



Witnesses:

J. D. Garfield.  
H. D. Clemons

Inventor  
James Emerson

by Chapman & Co  
Attys



# UNITED STATES PATENT OFFICE.

JAMES EMERSON, OF WILLIMANSETT, MASSACHUSETTS.

## DEVICE FOR TEACHING SWIMMING.

SPECIFICATION forming part of Letters Patent No. 563,578, dated July 7, 1896.

Application filed July 30, 1895. Serial No. 557,571. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES EMERSON, a citizen of the United States of America, residing at Willimansett, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Swimming-Machines, of which the following is a specification.

This invention relates to improvements in machines for instructing persons in the art of swimming; and it consists in a suitable support or framing to be placed in a swimming tank or pool or in the open water, having mounted thereon supports for the body and supports for the arms and legs, which arm and leg supports are constrained for movements in courses practically corresponding to those performed by a swimmer, and which arm and leg supports have mechanism for imparting thereto their movements.

The invention further consists in constructions and combinations of parts, all substantially as will hereinafter fully appear, and be set forth in the claims.

Reference is to be had to the accompanying drawings and to the characters of reference marked thereupon, in which—

Figure 1 is a plan view of the swimming-machine. Fig. 2 is a side elevation of the same. Fig. 3 is a sectional elevation as seen on the transverse line of section 3 3, Fig. 1. Fig. 4 is a perspective view of parts in detail to be hereinafter referred to. Figs. 5, 6, 7, and 8 are views in illustration of the mechanical arm motion.

The machine, as shown, comprises a stand or support to be set into the water in the swimming-tank or elsewhere, and embodies the two legs  $a$  at the front, the cross-bar  $a^2$ , supported by and between the legs, the central longitudinal bar  $b$ , jointed to the middle of and extended rearwardly from said cross-bar, and the rear end leg  $c$ .

The T-shaped frames, which comprise the bars  $b$  and  $a^2$ , have sleeve-couplings at their ends, as seen at  $a^3$ , which have sliding and adjustable connections vertically with the said legs, being confined by the set-screws  $a^4$ . Projecting upwardly from the aforesaid for-

ward cross-bar  $a^2$  are the uprights  $d$ , supporting at their tops the transverse bar  $e$ , and also serving for the bearings of the crank-shaft  $f$ , which has thereon the bevel-gear 10, in mesh with which is the bevel-gear 12, which is on the operating-shaft A, which is extended in an upward and rearward direction, terminating in the crank-handle 13 or other device for turning it. The operating-shaft at its crank end is further supported by the upwardly and laterally extended bar 14, which is attached to the aforesaid T-frame  $a^2$   $b$ .

B represents the body-support, which is mounted on the longitudinal Y-shaped frame  $g$ , which extends in an inclined direction from the rear part of the frame member  $b$  to a connection with the aforesaid cross-bar  $e$ , and upon the cross-bar  $e$  is the breast-support C. The body-support B is adjustable longitudinally toward and away from the breast-support by reason of being detachably confined on the frame  $g$  by the bolt-slot and set-screw connection seen at 15 15.

D D are the shoulder-supports, which normally are stationary, although they are adjustable toward and from each other in order to adapt the machine to persons of different size, and E E are the supports for the forearm or wrist, the same having imparted to them peculiar movements to cause the arms of the learner to describe approximately the same movements which are performed in swimming by mechanism which will be now described.

At or near each end of the crank-shaft  $f$  are bevel gear-wheels 16 16, which mesh into the bevel gear-wheels 17 17 on the vertical shafts 18, which project through and above the sleeve-bearings 19 19 therefor and have secured upon their upper ends the disks  $h$ .

Each arm-support E is secured upon or carried by a lever  $E^2$ , which intermediately, as seen at  $i$ , is pivoted to the rotary disk  $h$  at an eccentric point thereof and its inner end is pivotally connected to another lever-arm  $E^3$ , which has its inner end connected by the pivot 20 to the stationary support 21 at or near each shoulder-support.

The arms  $E^2$   $E^3$  together make a toggle which has the doubling-up and straightening



movement because of the rotary movement of the pivot  $i$ , connecting the outer toggle member  $E^2$  with the rotary disk, so that in effect the wrist or arm support  $E$  and the arm of the learner when constrained to move thereby has first the forward thrust, which at its termination is followed by the lateral and then the rearward stroke, concluding with the recover, these arm movements being so nearly like those performed by an actual swimmer that the beginner who has these movements mechanically imparted to her arms thereby shortly acquires the swimming arm stroke.

$H$  and  $J$  are the thigh and leg or ankle supports, they being mounted on respective levers  $H^2$  and the longitudinally-ranging bars  $J^2$ . Each of the levers  $H^2$  is pivotally connected, as seen at 23, to the body-support or other suitable stationary part of the machine, and to its rear extremity, at 24, is pivoted one of the bars  $J^2$ , the latter having a sliding support in and through a stationary sleeve 25, which is supported by the rear extremity of the bar  $b$  of the main supporting-frame.

The levers  $H^2$   $H^2$  are arranged in downwardly and outwardly divergent planes, as may be perceived on reference to Fig. 1, and to a member or intermediate part 26 of each lever  $H^2$  there is pivotally secured the rear end of the duplicated connecting-rod  $k$ , the forward end of each of these rods being secured to the cross-head  $m$ , which is on the longitudinally-ranging bar  $n$ , the forward end thereof being hung upon the crank or wrist pin  $o$ , while the rear end of the bar  $n$  has a sliding movement longitudinally through the apertured support 28 therefor which depends below the body-support  $B$ . Therefore, through the turning of the operating-shaft  $A$ , in addition to the arm movements hereinbefore described, the machine is susceptible of imparting the leg thrusts, which are to all intents and purposes the same as those of a swimmer, and which will be understood as consisting of the swinging and longitudinal thrusts and the compounds thereof imparted to the parts  $H^2$   $J^2$  and the thigh and ankle supports.

The cross-head or connection-piece  $m$  is adjustable along the bar  $n$ , the latter being screw-threaded, receiving thereupon an internally-threaded sleeve or nut  $m^2$ , with which the cross-head has such an engagement as to permit the independent rotation of the nut.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a swimming-machine, a body-support, and the arm-supports each consisting of the lever  $E^3$ , having its one end pivotally supported, and a second lever  $E^2$ , pivoted to the outer end of the said lever  $E^3$ , combined with a revoluble part having a connection with the lever  $E^2$ , at a point outwardly be-

yond its connection with lever  $E^3$ , and means for imparting the revoluble movement to said part, substantially as described.

2. In a swimming-machine, a support for the body, and duplicated articulated arm-supports each consisting of lever  $E^3$ , pivoted to a stationary support, a second lever  $E^2$ , having its inner end pivoted to lever  $E^3$ , a disk having the eccentric and revoluble stud  $i$ , in engagement with an intermediate part of the lever  $E^2$ , shafts on which the said disks are mounted and means for imparting continuous rotary movements to said shafts, substantially as described.

3. In a swimming-machine, the combination with a frame, the shoulder-rests  $D$ , and the supports on which they are mounted which are adjustable transversely on the frame, bevel gear-wheels journaled in said adjustably-movable shoulder-supports, and the disks  $h$ , connected with the said gear-wheels and having the eccentric-studs  $i$ , the shaft  $f$ , having the gear-wheel 16, adjustable thereon, means for rotating the said shaft, the arm-supports consisting of the levers  $E^3$ ,  $E^2$ , articulated as described and engaged by said eccentric studs, all substantially as and for the purposes set forth.

4. In a swimming-machine, a body-support, and articulated leg-supports each consisting of a lever  $H^2$ , having thigh-rest  $H$ , which lever has its one end pivoted to a stationary support, the bar  $J^2$ , having the ankle-rest  $J$ , which lever has its one end pivoted to the end of lever  $H^2$ , a support 25, on which the extremity of said bar is constrained for an endwise sliding movement, a crank-shaft and means for rotating it, and connections between the crank and intermediate parts of said levers  $H^2$ ,  $H^2$ , substantially as described.

5. In a swimming-machine, a support for the body, movable articulated leg-supports consisting of the pivoted levers  $H^2$ ,  $H^2$ , with the thigh-rests  $H$ ,  $H$ , thereon, the bars  $J^2$ ,  $J^2$ , with the ankle-rests thereon, which bars are pivotally connected to the said levers, the supports 25, in which the extremities of the bars are sustained and permitted to have endwise-sliding movements, the crank-shaft, the bar  $n$ , hung thereon, the cross-head  $m$ , and the connecting-rods  $k$ , secured to the cross-head and to intermediate parts of the levers  $H^2$ , substantially as described.

6. In a swimming-machine, the combination with a frame and a body-support  $B$ , longitudinally adjustable thereon, and having the leg-supports consisting of the levers  $H^2$ ,  $H^2$ , and bars  $J^2$ ,  $J^2$ , pivoted and supported as described, the crank-shaft, the screw-threaded bar  $n$ , hung on the crank, the cross-head longitudinally adjustable on the said bar, and having secured thereto the connecting-rods which are also connected to the said levers, substantially as described.

7. In a swimming-machine, in combination, 130



a frame, a stationary breast-support, a body-support adjustable longitudinally on the frame toward and away from the breast-support, shoulder-rests adjustable transversely  
5 relative to the breast-support and articulated arm-supports pivotally secured to the shoulder-rests, the articulated leg-supports pivotally secured to the longitudinally-adjust-

able body-support, and mechanism for imparting the swimming-stroke movements to the arm and leg supports, substantially as described.

JAMES EMERSON.

Witnesses:

WM. S. BELLOWS,  
K. I. CLEMONS.