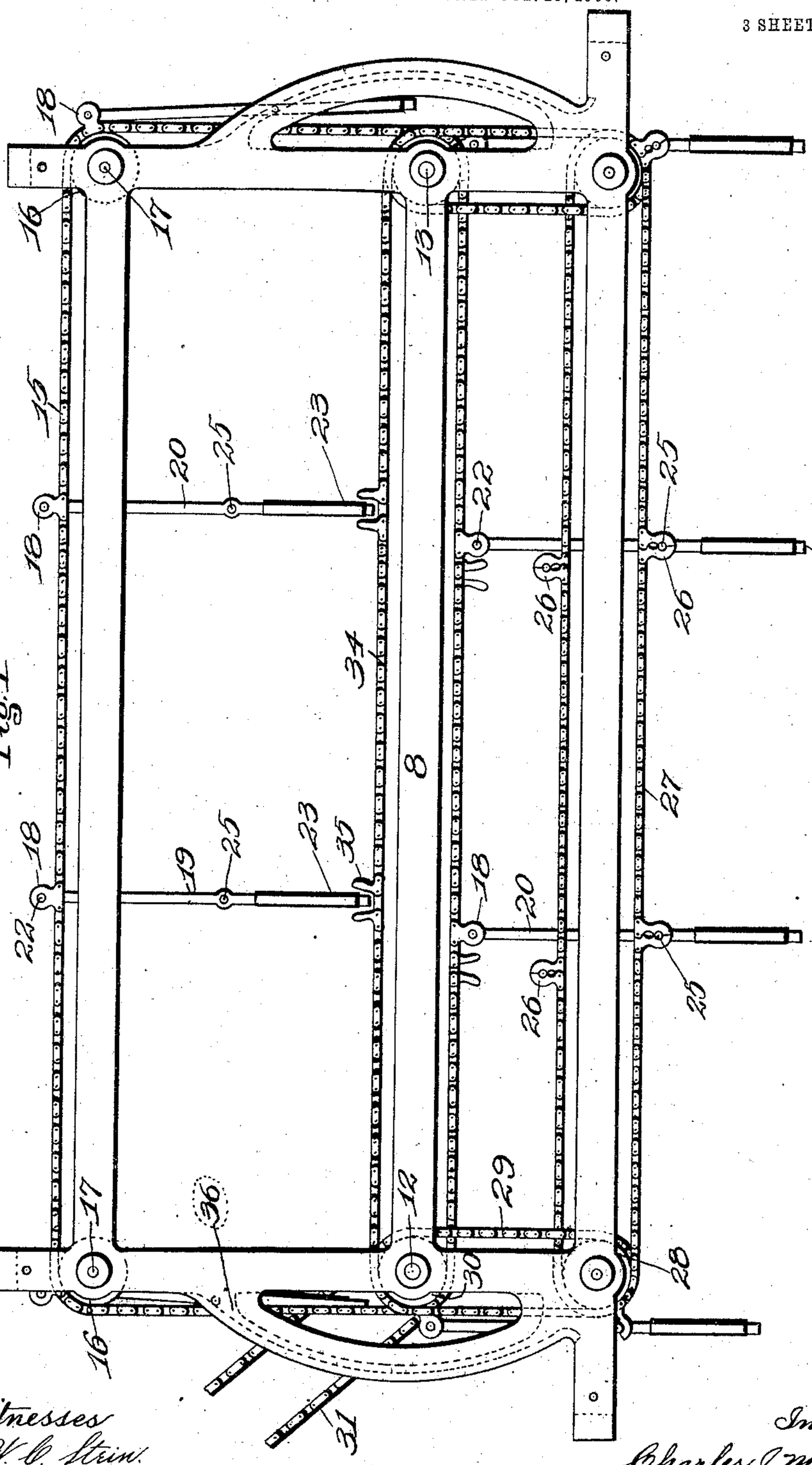
No. 850,383. PATENTED APR. 16, 1907.

C. J. MacRAE.

PROPELLER.

APPLICATION FILED OCT. 26, 1906.

3 SHEETS—SHEET 1.



Witnesses
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3 SHEETS—SHEET 2.

Fig. 2

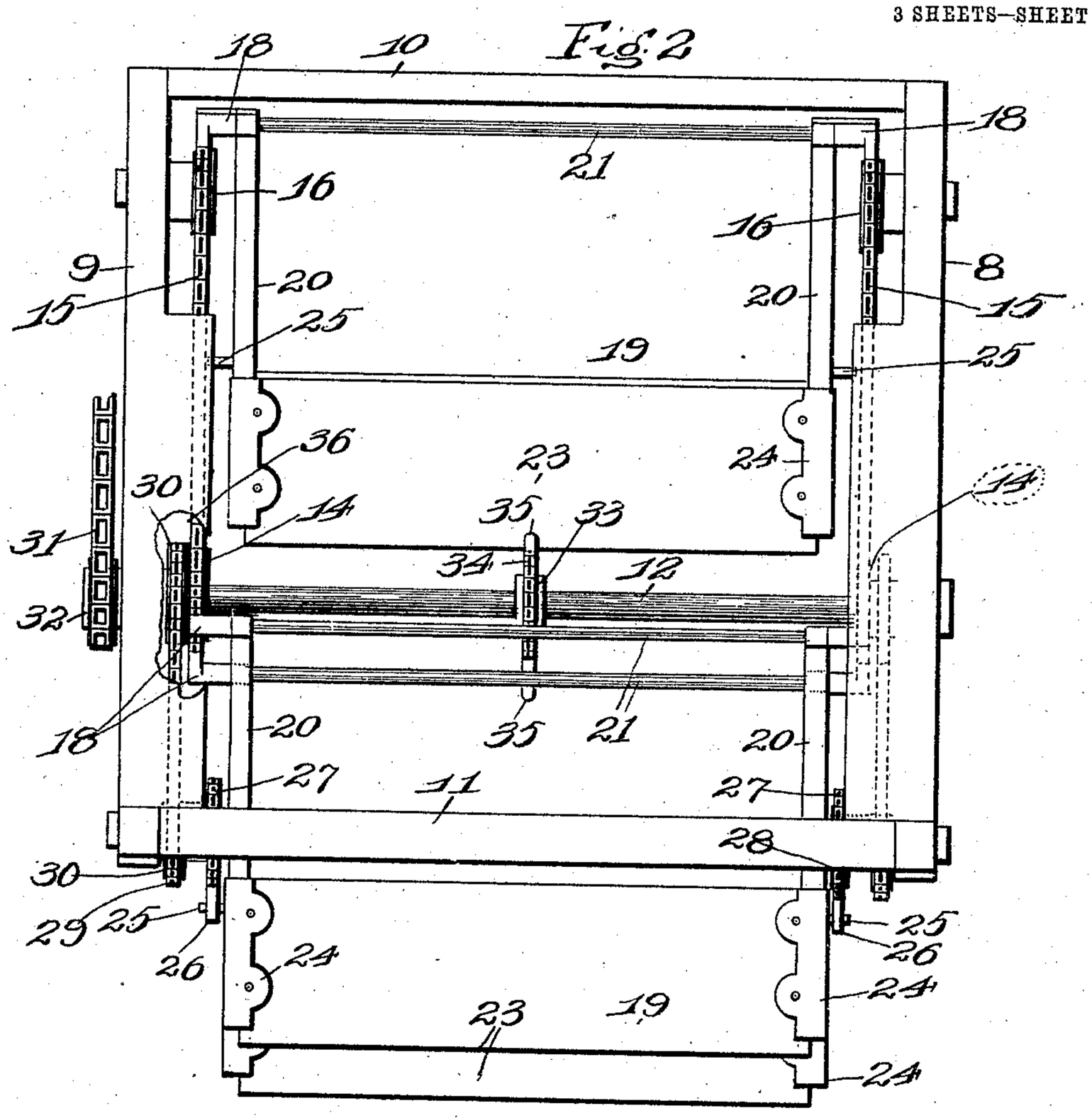
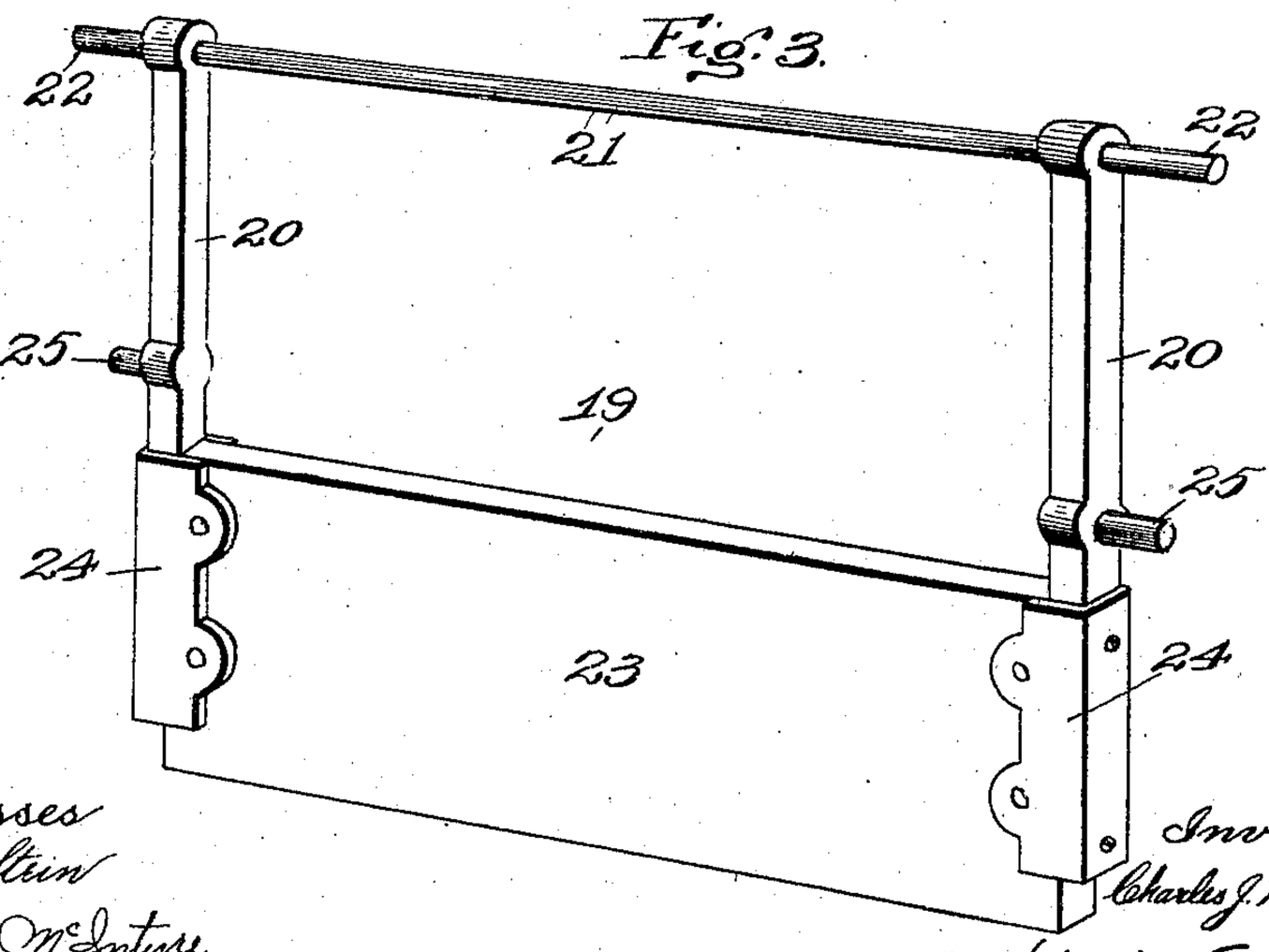


Fig. 3.



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3 SHEETS—SHEET 3.

Fig. 4

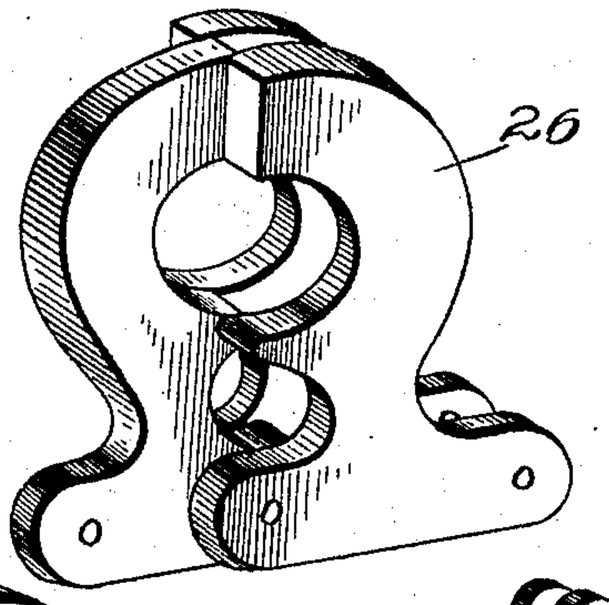


Fig. 5.

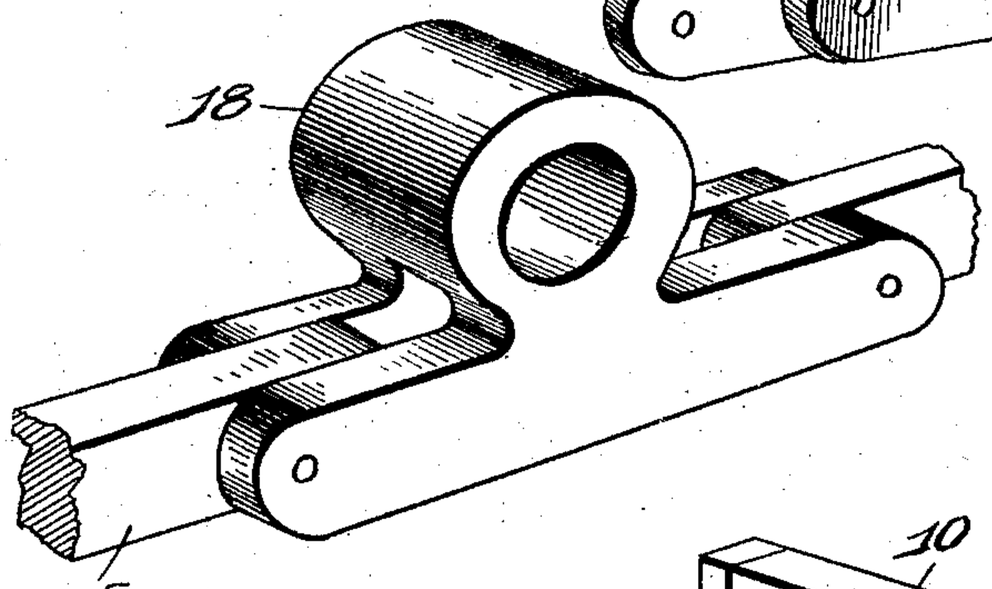
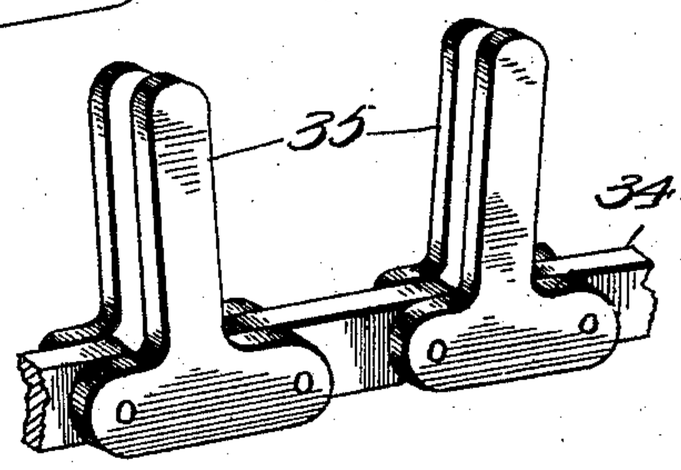


Fig. 6



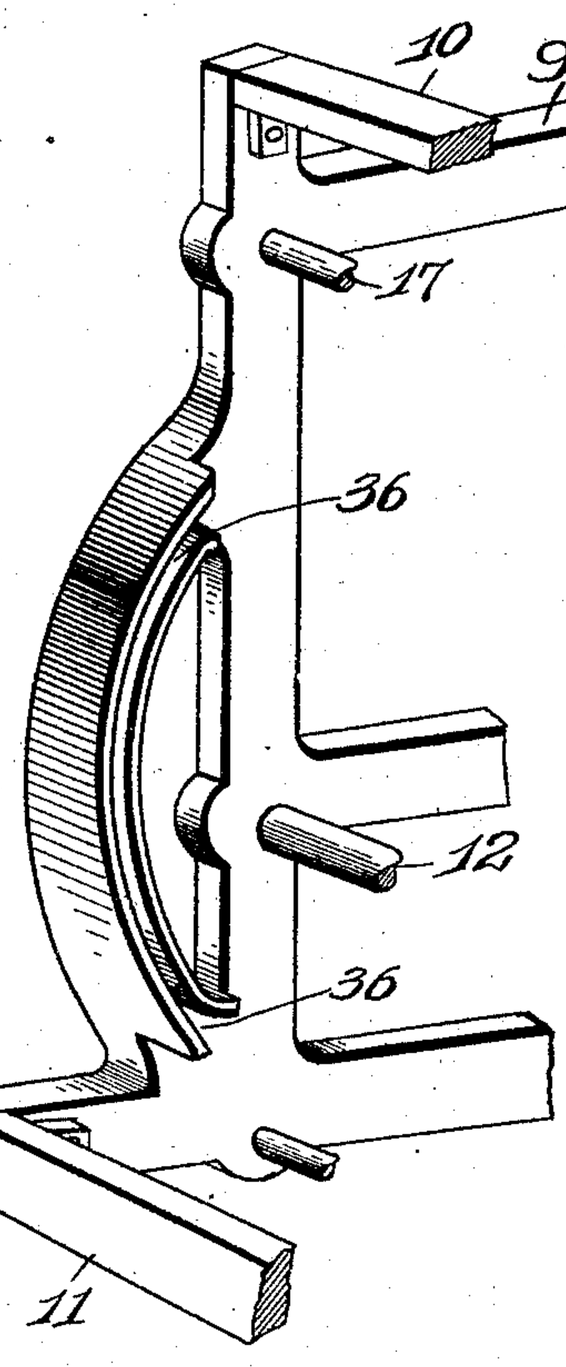


Fig. 7.

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UNITED STATES PATENT OFFICE.

CHARLES J. MacRAE, OF ST. LOUIS, MISSOURI.

PROPELLER.

No. 850,383. Specification of Letters Patent. Patented April 16, 1907.

Application filed October 26, 1906. Serial No. 340,733.

To all whom it may concern:

Be it known that I, CHARLES J. MACRAE, a citizen of the United States, and a resident of St. Louis, Missouri, have invented certain new and useful Improvements in Propellers, of which the following is a specification.

My invention relates to improvements in propellers for shoal-water navigation, and consists of the novel arrangement, construction, and combination of parts, as will be fully hereinafter described and claimed.

The object of my invention is to construct a propeller to be used for propelling steamboats, barges, or any kind of float on shoal water and is so arranged that each bucket will descend in the water, propel the float, and ascend with very little friction, and prevent the trough formed in the water by an ordinary paddle-wheel as is at present in use.

A further object of my invention is that the device can be constructed providing a suitable frame to be placed between the supports used on a stern or side wheeled boat.

The most essential feature of my invention is the construction of a propeller mechanism having endless carriers on which are suspended buckets or paddles which are to descend and ascend in a perpendicular position, so as to overcome as much friction as possible while the said buckets or paddles are traveling through the circuit.

In the drawings, Figure 1 is a side elevation of my complete invention. Fig. 2 is an end view of the same. Fig. 3 is a detail perspective view of one of the buckets or paddles made use of in carrying out my invention. Fig. 4 is a detail perspective view of the clutch made use of in supporting the bucket or paddle in perpendicular position. Fig. 5 is a detail perspective view of the bearing carried by the endless carrier in which the bucket or paddle is suspended. Fig. 6 is a detail perspective view of the guide-prongs made us of in retaining the paddles or buckets in a rigid position while in their uppermost position. Fig. 7 is a detail perspective view of a portion of the frame with parts broken away, showing the passage-way through which the buckets or paddles are guided.

In the construction of my invention I provide a suitable frame consisting of two side sections 8 and 9, each being identical in form, and the same are supported together by the brace-bars 10 and 11. This framework is supported in any desirable manner to the boat or barge. The side members 8 and 9 of the frame are provided with shafts 12 and 13, and upon said shafts are rigidly supported sprocket-wheels 14, one located on each end and over which is passed the endless carrier 15, which also passes upwardly and around a series of sprocket-wheels 16, supported upon trunnions 17, secured to the frame.

The endless carrier is provided with bucket-supporting bearings 18, located at equal intervals apart, and in said bearings 18 are supported the buckets 19. The buckets 19 consist of a pair of side bars 20, connected together by a brace-rod 21, the ends 22 projecting beyond and supported in the bearings 18. Between the lower ends of the side bars 20 is attached the bucket or paddle proper, 23, and the same are supported together by the clamps 24. To the side bars 20 are also provided trunnions 25, the purpose of which is to support the buckets or paddles in a vertical or rigid position when contacted by the clutches 26, formed on the endless chain 27. This chain is passed around sprocket-wheels 28, supported in like manner to the frame as the sprocket-wheels 16, and the said sprocket-wheels, together with the endless chain 27, are placed in operation by a connecting-chain 29, operated by sprocket-wheels 30, located upon the shaft 12 and on the outside of the said sprocket-wheels 14. The entire mechanism is placed in operation by a chain 31, communicating with a sprocket-wheel 32, located upon the shaft 12 and at the outside of the frame; but the said mechanism may be operated in any suitable manner found convenient and desirable.

Upon the shafts 12 and 13 and centrally located are sprocket-wheels 33, over which is passed an endless chain 34, provided with projecting prongs 35, each being so arranged as to come in alinement with and grasp the ends of the buckets or paddles during the operation of the mechanism and retain the said buckets or paddles in a perpendicular position and prevent the same from vibrating while passing between the framework.

The clutches 26, located on the endless chain 27, are so arranged as to meet and grasp the trunnions 25 of the bucket-frame at a proper period and retain the said buckets in a perpendicular and rigid position while the same is traveling through the water, and to provide for this action and operation, so that the said clutches may engage and grasp the trunnions accurately, I provide upon the

frame suitable guideways 36, in which the said trunnions 25 pass while descending and ascending, and the said buckets when reaching the point where the said trunnions are to engage the guideway the prongs 35 while passing over the sprocket-wheel have a tendency to press the said bucket or paddle outwardly in an inclined position and while descending will follow the groove formed in the guideway 36, and immediately upon the trunnion 25 reaching the lowest end of the guideway the clutches 26 grasp the same and steady the bucket or paddle during its travel.

A propeller of this construction can be used in a shoal stream and propel a float with a great deal less power than propelling a float with the present paddle-wheel and at the same time dispenses with the lifting of the water while each bucket or paddle is being removed from the water, and during the operation a great number of paddles are submerged at the same time.

Having fully described my invention, what I claim is—

1. A device of the class described comprising a propeller consisting of a frame, endless carriers, swinging buckets, endless carriers provided with clutches and endless carriers provided with prongs whereby said buckets are guided, supported and retained in perpendicular position during their operation, substantially as specified.

2. A propeller of the class described comprising a frame, sprocket-wheels supported by the frame, endless carriers supported by the sprocket-wheels, buckets swingingly connected to and carried by the endless carriers, trunnions formed on the buckets, endless chains supported by the frame, clutches carried by endless chains, prongs carried by separate chains, said prongs to engage the lower edge of the buckets while traveling out of the water, and the clutches to engage with the trunnions supporting the buckets while traveling through the water, and means for placing the propeller in operation, substantially as specified.

3. A propeller of the class described comprising a frame having guideways, endless carriers supported by the frame, a plurality of buckets carried by the endless carriers and located at equal intervals apart, an endless chain provided with prongs supported by the frame, the said chain operated so that the prongs may engage with the lower end of the buckets and prevent the same from swinging while traveling out of the water, an endless chain provided with clutches secured to the under side of the frame and operated to permit said clutches to engage with trunnions formed on the buckets and support said buckets in rigid position while operating in the water, said buckets while descending and ascending in the frame operate in the guideways formed in the frame, substantially as specified.

In testimony whereof I have signed my name to this specification in presence of two subscribing witnesses.

CHARLES J. MacRAE.

Witnesses:
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WALTER C. STEIN.