

(No Model.)

3 Sheets—Sheet 1.

J. M. ROSSE.

FLEXING CHAIN PROPELLER.

No. 304,036.

Patented Aug. 26, 1884.

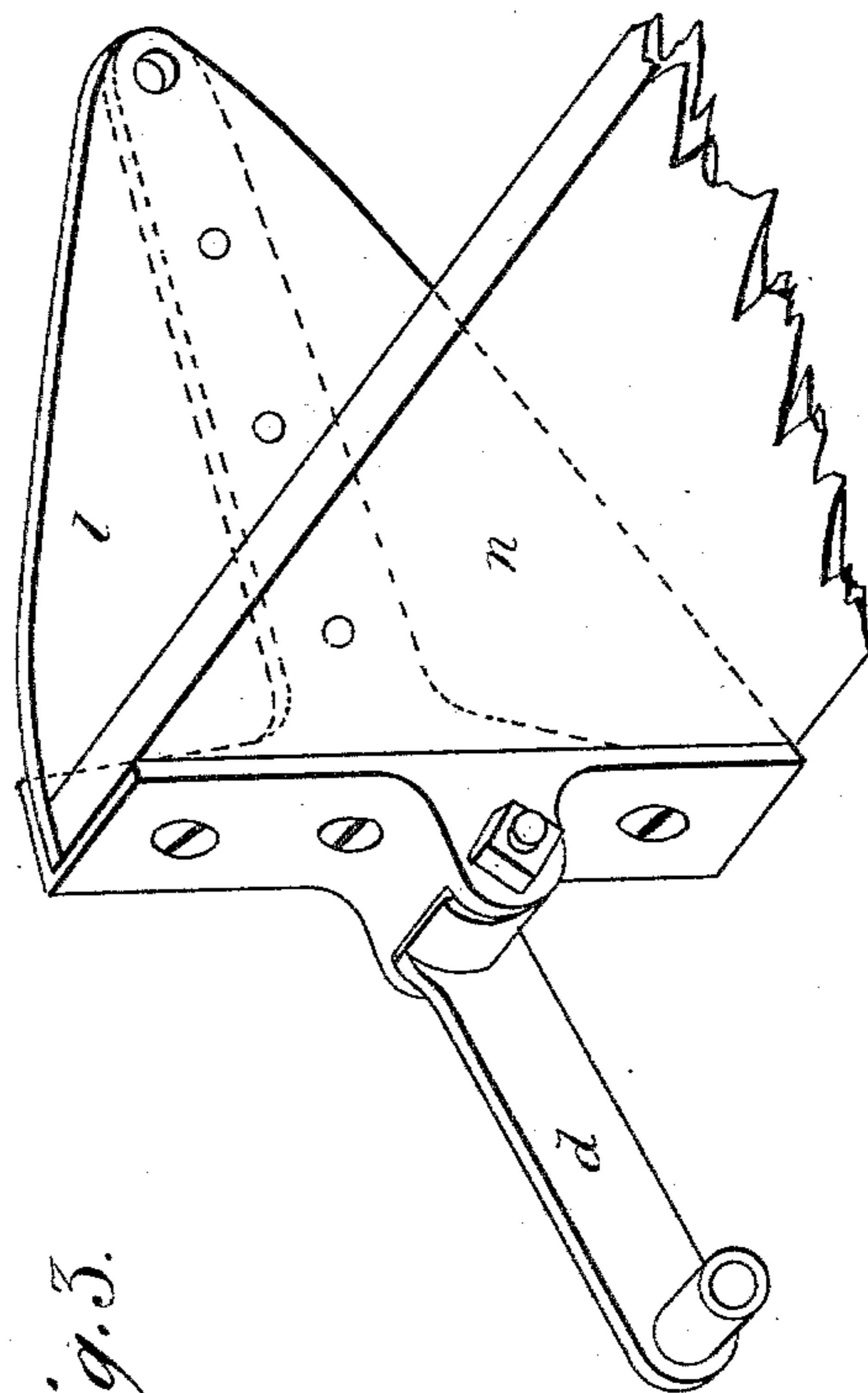
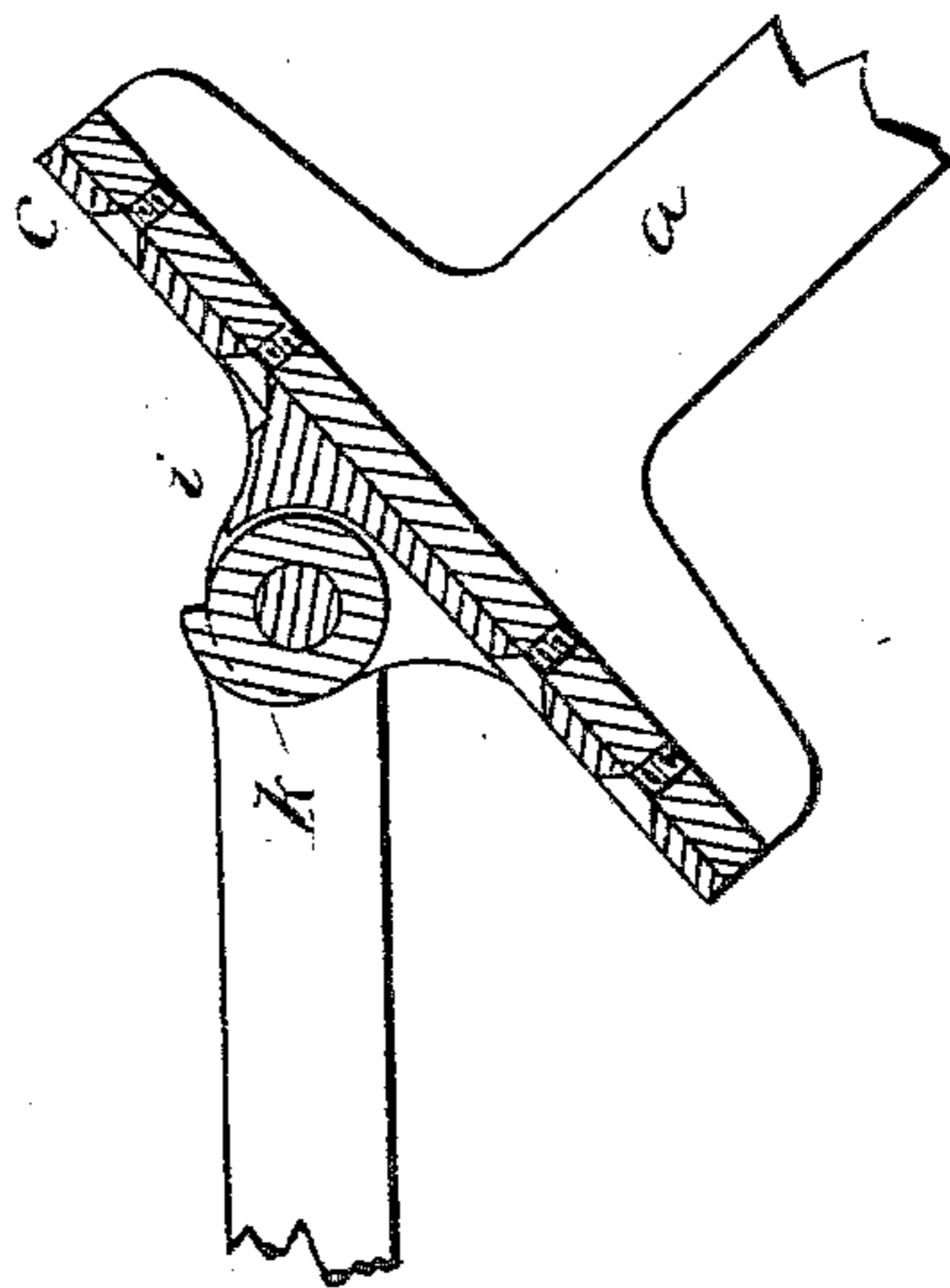
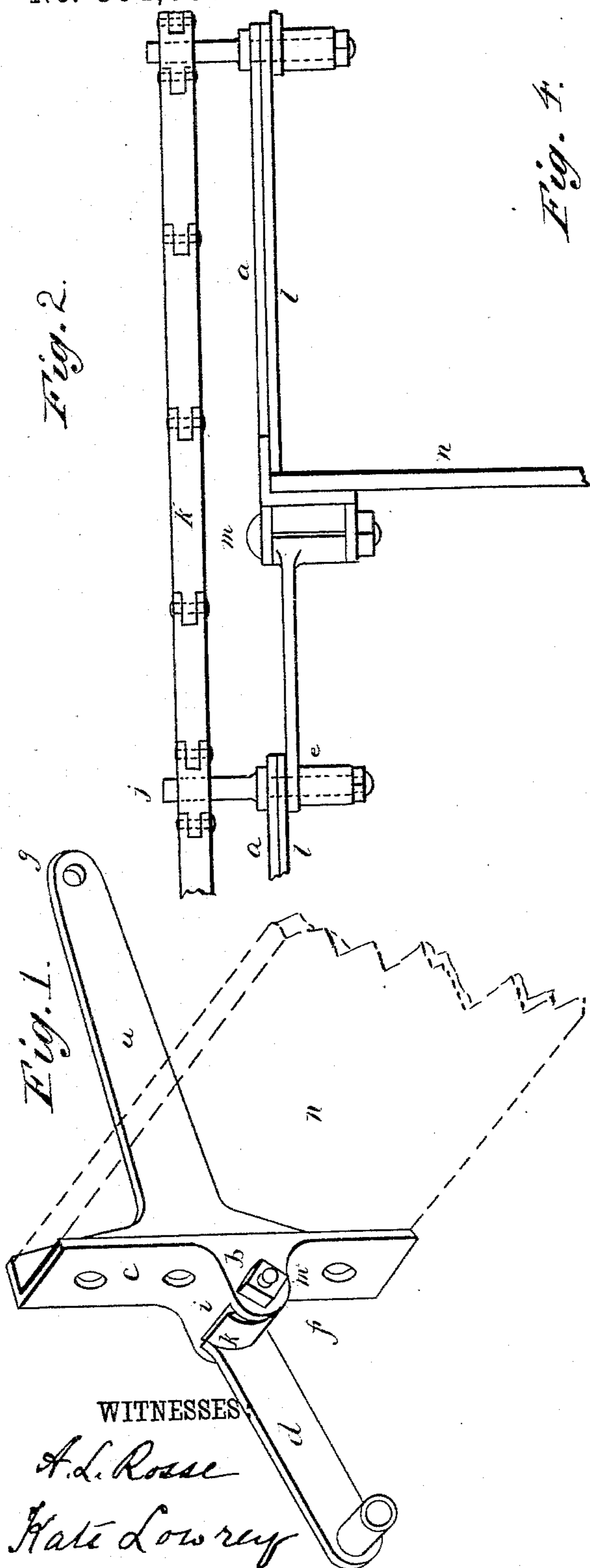


Fig. 3.

INVENTOR:

Mr. Rosse

(No Model.)

3 Sheets—Sheet 2.

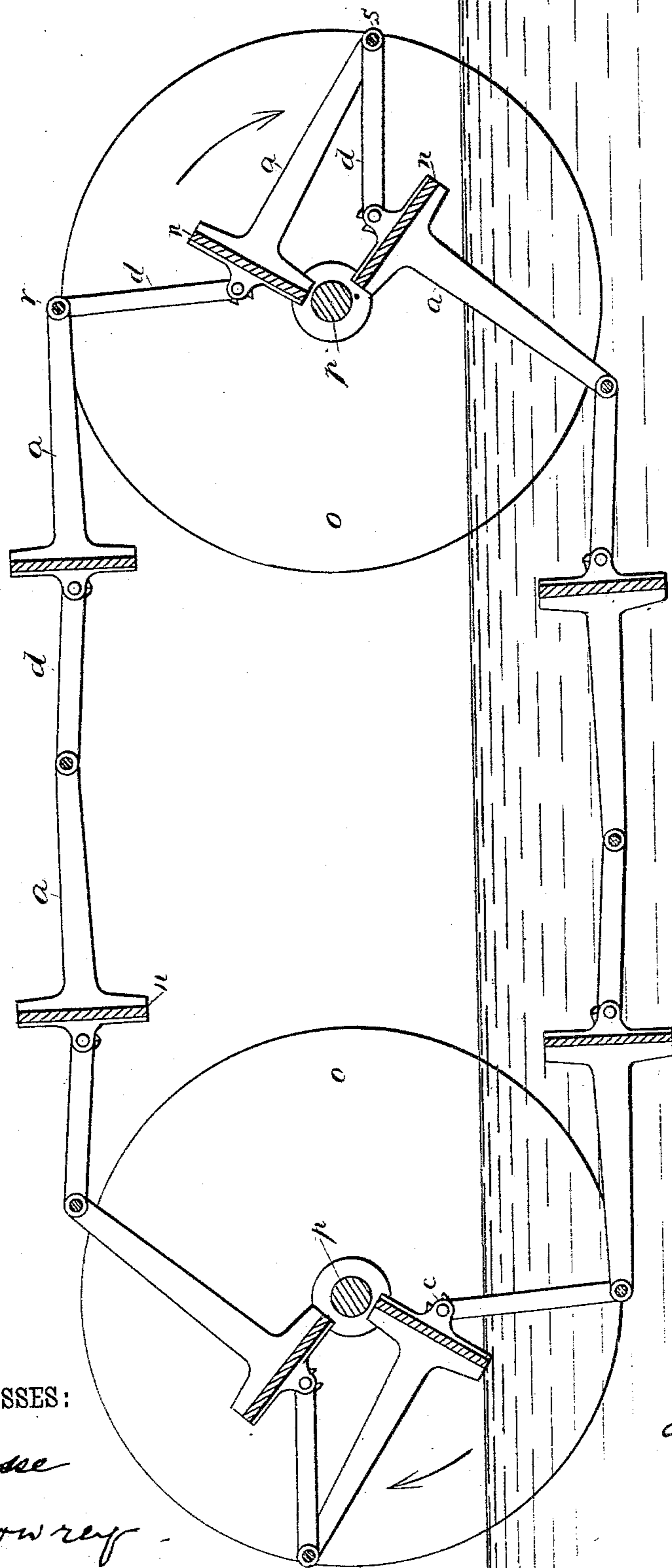
J. M. ROSSE.

FLEXING CHAIN PROPELLER.

No. 304,036.

Patented Aug. 26, 1884.

Fig. 5.



WITNESSES:

A. L. Rosse  
Kate Lowrey.

INVENTOR:

J. M. Rosse

(No Model.)

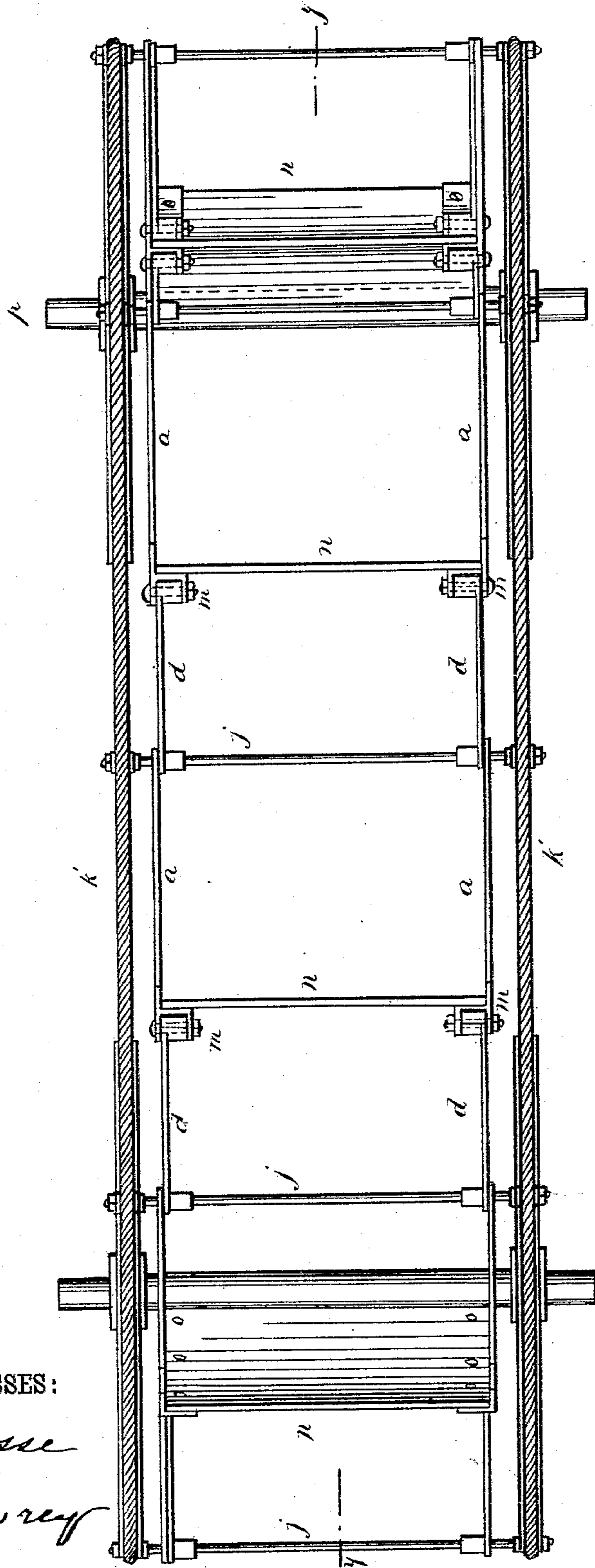
3 Sheets—Sheet 3.

J. M. ROSSE.  
FLEXING CHAIN PROPELLER.

No. 304,036.

Patented Aug. 26, 1884.

*Fig. 6.*



WITNESSES:

*A. L. Rosse*  
*Kate Lowrey*

INVENTOR:

*J. M. Rosse*

# UNITED STATES PATENT OFFICE.

JAMES M. ROSSE, OF TARRYTOWN, NEW YORK.

## FLEXING-CHAIN PROPELLER.

SPECIFICATION forming part of Letters Patent No. 304,036, dated August 26, 1884.

Application filed January 3, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES M. ROSSE, a citizen of the United States, residing at Tarrytown, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Endless-Chain Propellers, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to chain-propellers of the class intended for the propulsion of boats or ships.

The invention consists in the connection of the buckets with each other and with the carrying-chains in a peculiar manner, whereby the links are flexed and the buckets folded in toward the wheel-shafts in passing round the wheels; also, in the construction of said links and connections; also, in certain details herein after pointed out in the claims.

The object of the invention is to simplify the construction and render more certain the operation of chain-propellers.

In the drawings, Figure 1 is a perspective view of the connecting links and clip whereby my buckets are connected, part of the bucket being shown in dotted lines. Fig. 2 is a plan of the same, showing also a section of the endless carrier. Fig. 3 is a view similar to Fig. 1, showing a bucket with a side board. Fig. 4 is a section on line *x x*, Fig. 2, but showing the bucket in inclined position, as when passing round the wheels. Fig. 5 is a longitudinal sectional elevation on line *y y*, Fig. 6, details being omitted, showing the position of the links and buckets with relation to the carrier-wheels. Fig. 6 is a plan of the essential features of the entire propeller.

The reference-letter *a* indicates the link which carries one end of the bucket. This link may be of cast metal, or may be struck up so as to have a flange, *e*, which is the support, against which the bucket *n* is firmly secured by screws, bolts, or rivets. The flange *e* has a clip, *b*, extending from its rear surface. This clip has preferably two ears or lugs, to afford a firm bearing for the bolt *m*, which passes therethrough, and also has a stop, *i*, at its outer portion. The companion link *d* has a loop which passes within the clip *b*, and pivots on bolt *m*, and a projecting shoulder, *k*, which abuts against the shoulder *i* when the links are coupled, so

that the two links cannot be drawn into a straight line; but a chain made up of such links must always be slightly sinuous. Each chain of links *a d* is connected to an endless carrier (which may be a chain, as shown in Fig. 2, or a wire cable, as *m*, Fig. 6, or other flexible belt) by rods *j*, which pass through the aperture *g* in the front of link *a*, and through a boss, *e*, at the rear of link *d*, and is fixed to the endless carrier *k*. It will be understood that a similar arrangement of links is made at each end of buckets *n*, and each set of links is connected to an endless carrier, *k'*, as shown in Fig. 6. The rods *j* may extend entirely across the propeller, as shown in Fig. 6, in which case the bosses *e* on links *d* may be dispensed with; if deemed advisable. Side plates, *l*, may be applied to links *a* forward of the buckets, to prevent side wash. The endless carriers *k' k'* pass around wheels or disks *o o*, arranged on axles *p p*. The two axles *p p* are such distance apart lengthwise of the vessel with which the propeller is to be used as to give a proper length to the chain-propeller and cause a suitable number of buckets to engage the water, as shown in Fig. 5. Two disks *o o* are arranged on each axle *p* at such distance apart as will permit the buckets *n* and their chains of links to pass between said disks, as shown at Fig. 6.

It has been stated that the chain of links *a d* is not permitted to be in a straight line, but the joints are slightly flexed. The points of attachment of the rods or supports *j* to carriers *k*, therefore, will be a little closer together than the united length of the links *a d*. The joint which carries the buckets *n* is bent inward—that is, toward the line uniting the two axles *p p*. The effect of this inward flexure of the links is, when the endless carriers *k* are made to revolve around the wheels or disks *o*, to bend the links still further inward, so that the buckets approach the axles *p*, as shown in Fig. 5. The reason of this is clear, since the distance from *r* to *s*, Fig. 5, by way of the circumference of the wheel which the carriers follow is greater than in a direct line from *r* to *s*. As the rigid links *a d* are already slightly bent inward at the joint near which the buckets are placed, they will be still further flexed as the carriers pass round the wheels, as shown in Fig. 5. The stops *i k* at the joints of links

*a d* are not essential if the carriers are connected, as described, to the links, and if the carriers do not stretch. I prefer, however, to use stops at the joints; but my invention is not limited to the special stops hereinbefore described.

The operation of the device will be apparent from an examination of Fig. 5. When the wheels are driven in the direction indicated by the arrows, the buckets, in entering and leaving the water, will do so at nearly right angles with the surface of the water, and will then move forward in a plane parallel with the surface. The wheel or propeller can be backed with equal facility.

I claim—

1. The combination, in a chain-propeller, of flexible carriers which pass round the carrier-wheels, and chains of rigid links which carry the buckets, said chains being connected to the carriers at distances apart a little less than the full length of the intervening links, and the links between the points of connection being flexed inward, substantially as described.

2. In an endless-chain propeller, chains of rigid links having buckets thereon, said links flexed inward at the joints near the buckets, and provided with stops to prevent the joints

from becoming entirely straightened, combined with endless carriers passing round the carrier-wheels, substantially as described.

3. An endless chain for a chain-propeller, consisting, essentially, of links *a*, having flanges to support the buckets, and projecting clips and stops, as described, links *d*, having stops, as described, and suitable pivots, as set forth, whereby the links of the chain are prevented from assuming a right line, substantially as set forth.

4. The combination of the flexible carriers, the rigid links, arranged as described with relation thereto, and forming the bucket-carrying chains, each alternate link provided with a perforated boss, as *e*, and connections *j*, which form the pivots of the chain-links passing through said bosses and links and connected to the endless carriers, substantially as described.

In testimony whereof I affix my signature in presence of witnesses.

JAMES M. ROSSE.

Witnesses:

A. L. ROSSE,  
HENRY C. GRIFFIN,  
DANIEL D. WILLSON,  
EMMA K. GREENE.