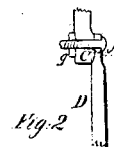
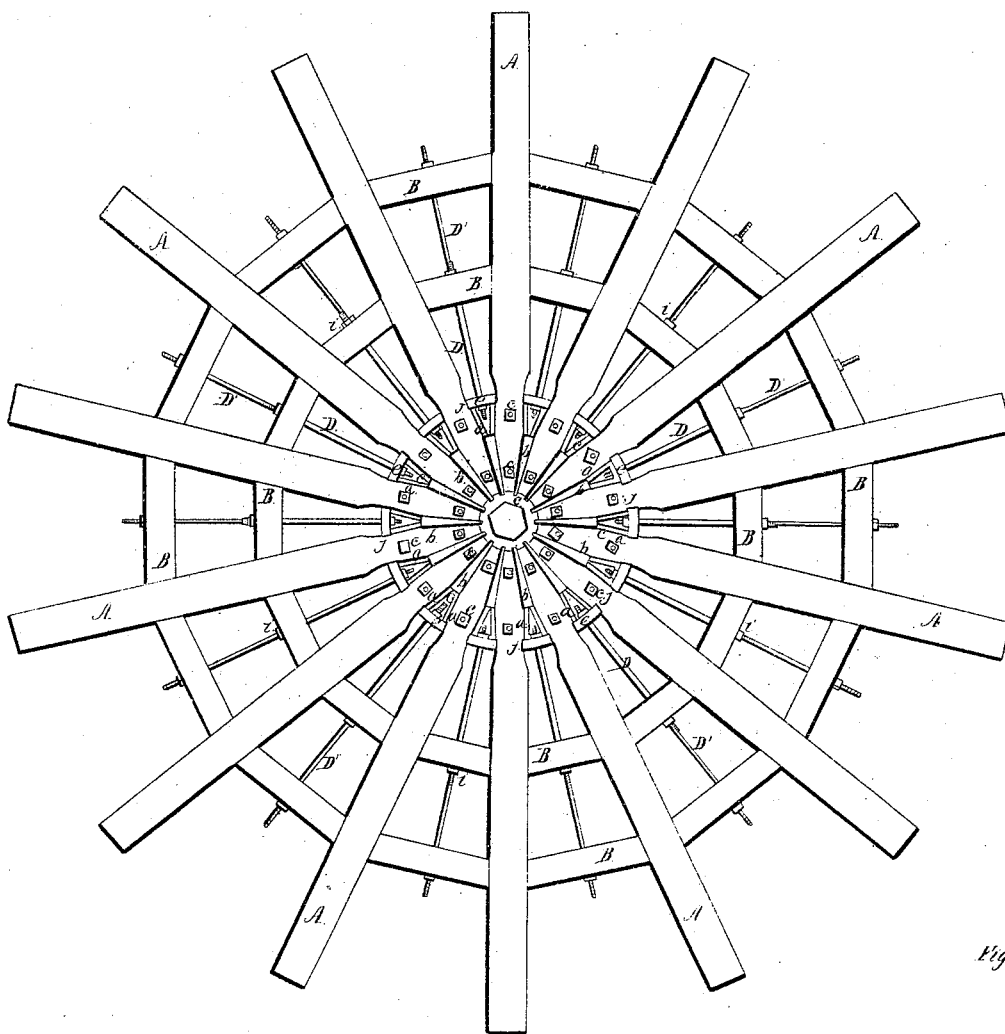


W. F. Julian,
Paddle Wheel.

N^o 2117

Patented Jun. 7, 1841.



UNITED STATES PATENT OFFICE.

WILLIAM F. JULIAN, OF HARTSVILLE, INDIANA.

IMPROVEMENT IN THE MANNER OF BRACING THE ARMS OF PADDLE AND WATER WHEELS.

Specification forming part of Letters Patent No. 2,117, dated June 7, 1841.

To all whom it may concern:

Be it known that I, WILLIAM F. JULIAN, of Hartsville, in the county of Bartholomew and State of Indiana, have invented a new and Improved Mode of Framing and Bracing the Arms of the Paddle - Wheels of Steam Vessels and of Water - Wheels of Various Kinds, by means of which improvement I combine great strength with lightness, and at the same time am enabled to replace a crippled arm in about one-fourth of the time ordinarily required in effecting that object; and I do hereby declare that the following is a full and exact description thereof.

In the accompanying drawings Figure 1 is a geometrical view of a set of arms with their braces and exhibiting the manner of connecting the respective parts with each other.

A A are the arms, of which there may be any desired number.

B B are the braces, a series of two being represented as used, but the number may be varied at pleasure.

C C is a cast-iron center plate, such as is usually employed to receive the inner ends of the radiating arms, and which in my improved mode of bracing receives also the heads or inner ends of the bolts by which the bracing is to be effected. The inner ends of the arms are received within recesses adapted to them by the projecting ledges *a a*, which rise from the plate C C to about two-thirds (more or less) of the thickness of the arms, allowing a sufficient depth above them for receiving the wedges *b b b*, which are driven in between the ends of the arms after they have been braced up, by which wedges the arms are firmly trussed together. The arms are secured to the plate C C by screw-bolts *c c c*, of which I usually pass two through each arm.

D D are the brace - bolts by which the braces B B are strained up. The heads or inner ends of these bolts are made fast to the center plate C C near to its periphery.

In Fig. 1 a flange *e e e* is shown as rising from the edge of the plate and having holes through it for the bolts to pass through and secured by nuts on the inner side of the flange. I sometimes omit this flange and form an eye on the end of each bolt, through which and through the plate C C a screw-bolt passes, by which the truss-bolts are made fast to the plate. This arrangement is shown

in Fig. 2, where one of the truss-bolts, the screw-bolt, and a part of the center plate are shown in section.

f is the head of the screw - bolt passing through the eye of the truss-bolt D and the plate C and fastened by the nut *g*.

The braces B B have short tenons on them which are received into shallow mortises in the edges of the arms A A, made long enough to allow the braces to be drawn toward the center. Screw-nuts *i i'* upon the bolts D D are made to bear upon each of the braces. The outer sections D' D' of the truss-bolts are made smaller than the inner that the nuts *i'* may be allowed to pass readily over them. I cut a gain *j j* on the edges of each of the arms to receive projecting pieces cast on the ledges *a a* or the flanges *e e*, which aid in securing said arms in place. It will be readily seen that by this arrangement either of the arms may be taken out and replaced with perfect facility and that without disturbing the contiguous arms and braces. The usual manner of attaching the braces to the arms is by spikes which have to be drawn out and new braces put in or the old ones cut, for the purpose of giving them sound ends—a proceeding which is extremely troublesome and injurious to the timber, which trouble is in great part and the injury to the timber wholly avoided.

Having thus fully described the nature of my improvement in framing and bracing the arms of paddle - wheels and also of water-wheels of various kinds, what I claim therein and desire to secure by Letters Patent is—

1. The within-described manner of inserting and of drawing up the braces by means of brace-bolts attached at their inner ends to the circular plate which receives the end of the arms, said bolts being furnished with screw-nuts which are to bear against the middles of said braces, as described and represented, the braces being inserted and retained in place by means of short tenons and left free to slide within the arms, as set forth.

2. In combination with the foregoing mode of bracing by means of the brace-bolts, the employment of the wedges between the inner ends of the arms.

WM. F. JULIAN.

Witnesses:

THOS. P. JONES,
B. K. MORSELL.