

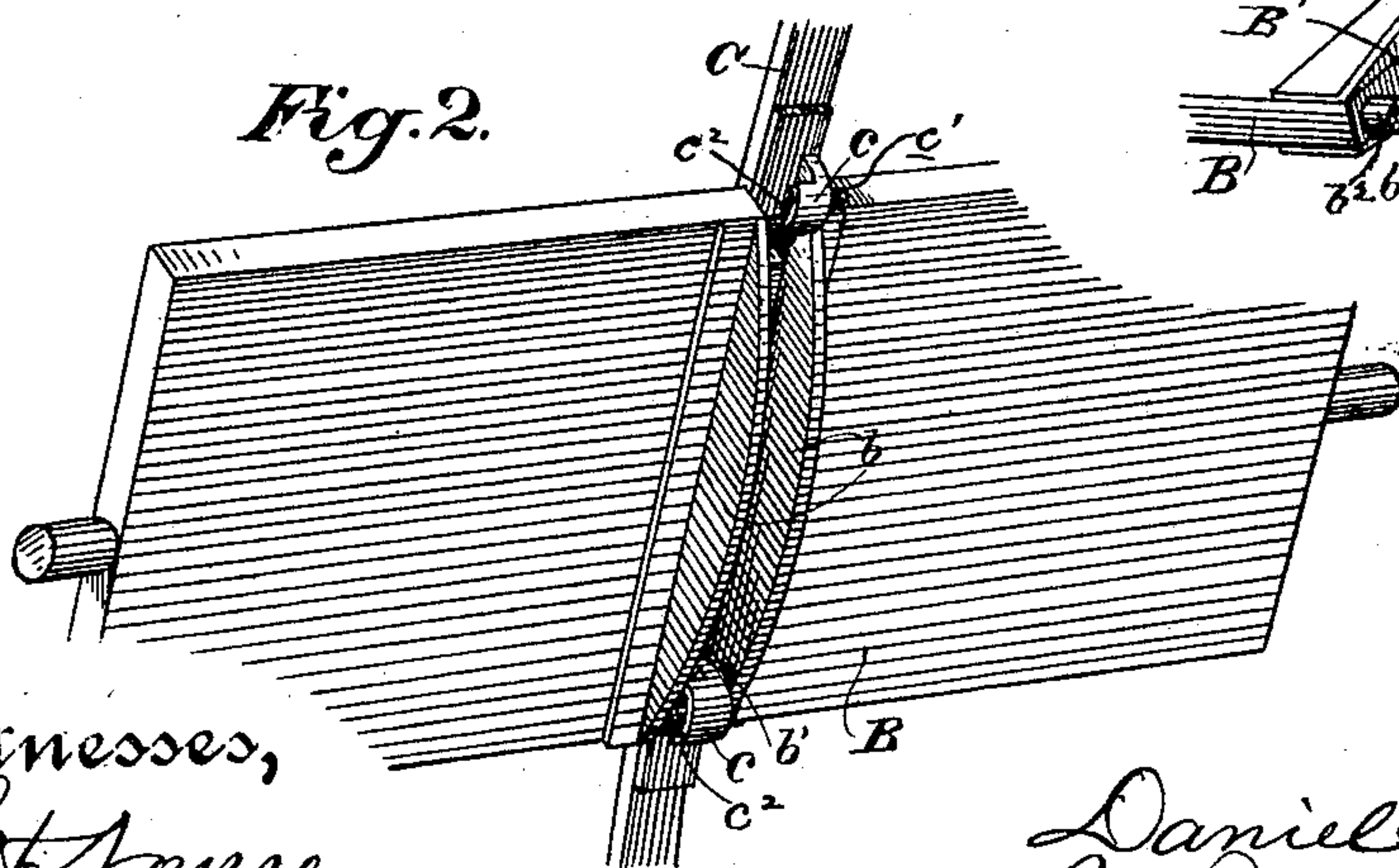
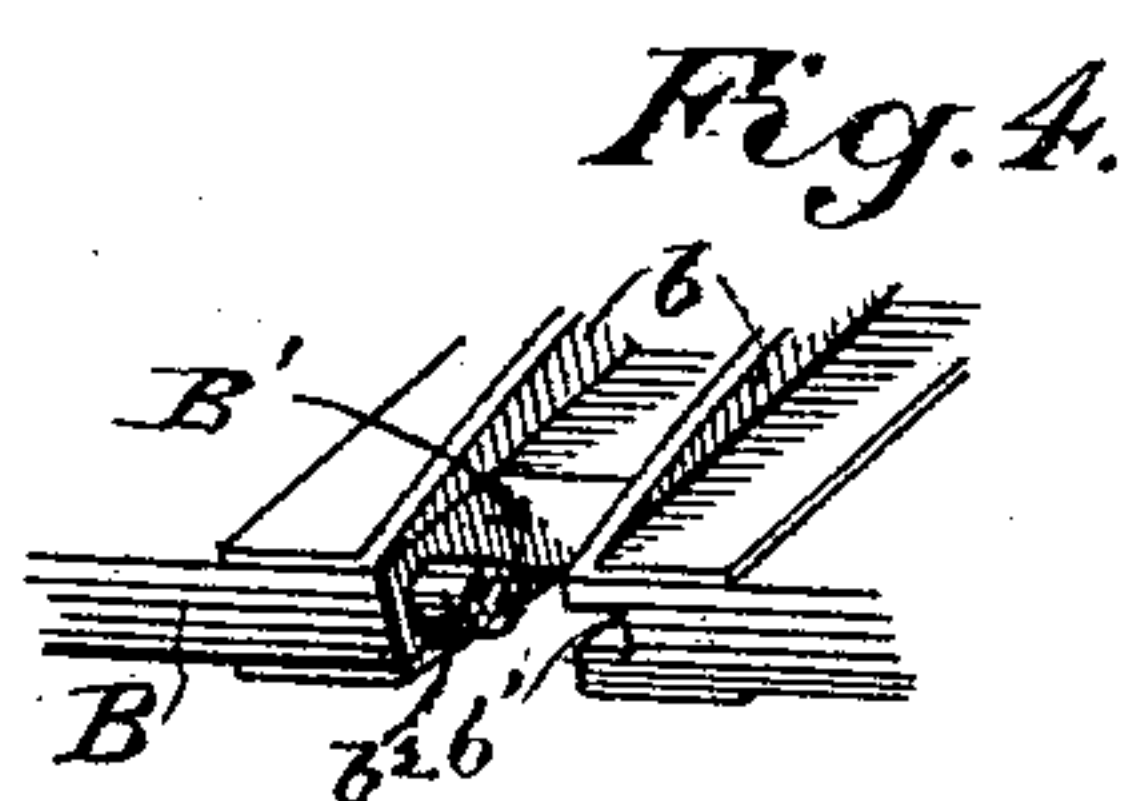
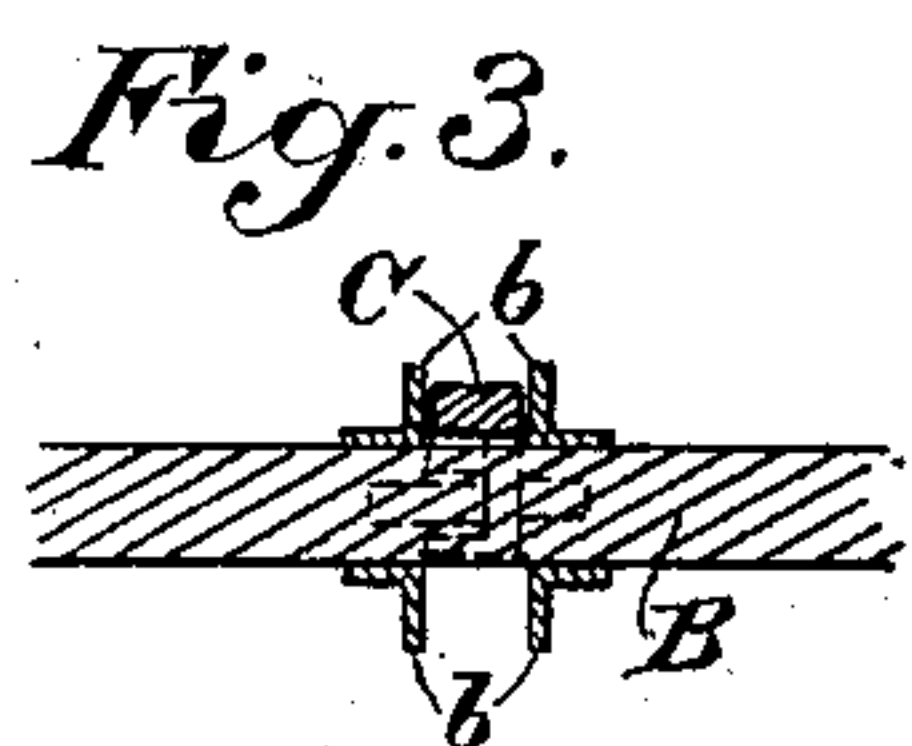
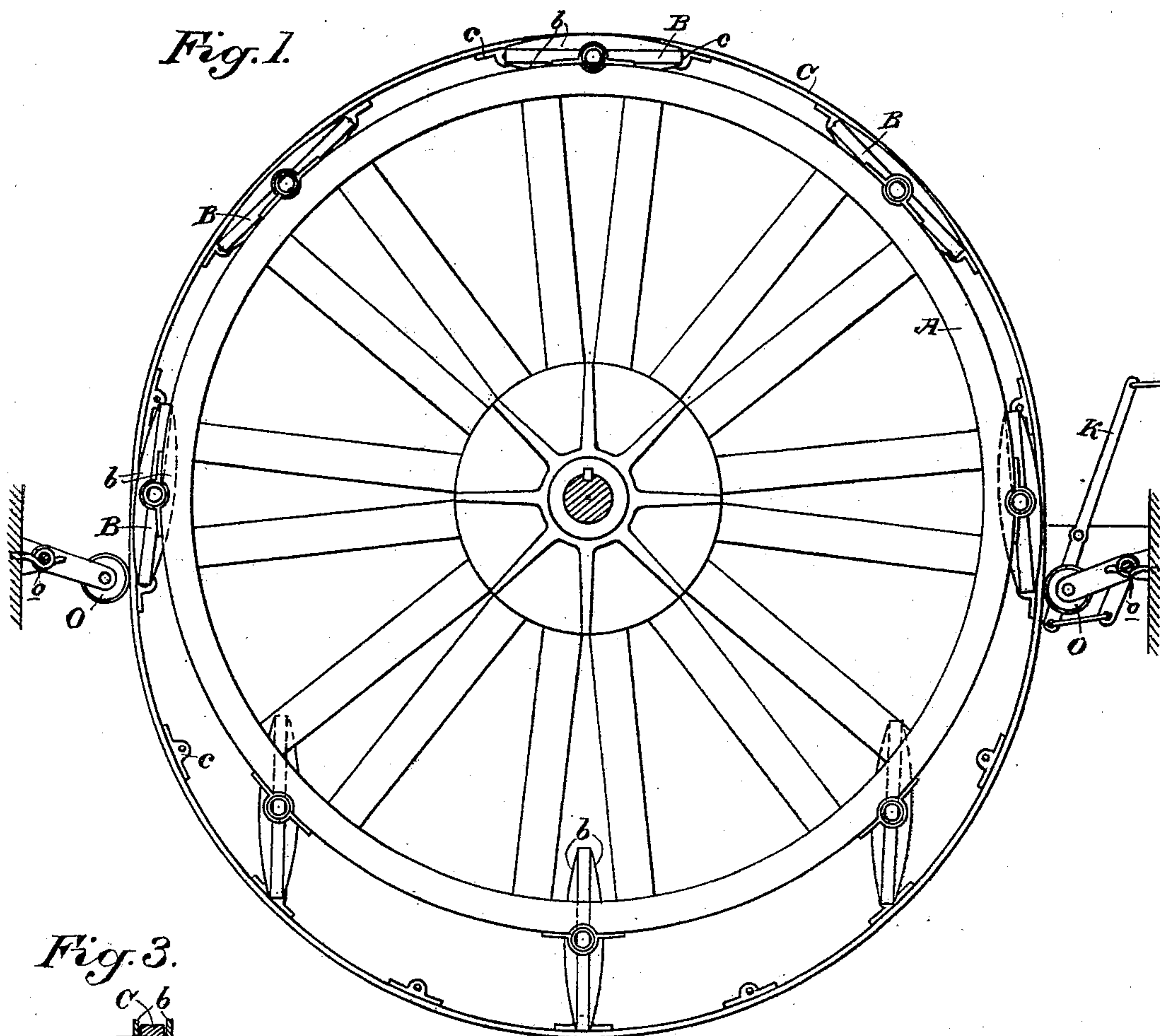
No. 611,007.

Patented Sept. 20, 1898.

D. ABBOTT.
FEATHERING PADDLE WHEEL.

(Application filed Sept. 28, 1897.)

(No Model.)



Witnesses,
J. H. Anse
J. F. Ascheck

Inventor,
Daniel Abbott.
By Dewey & Co. atty.

UNITED STATES PATENT OFFICE.

DANIEL ABBOTT, OF SAN JOSÉ, CALIFORNIA.

FEATHERING PADDLE-WHEEL.

SPECIFICATION forming part of Letters Patent No. 611,007, dated September 20, 1898.

Application filed September 28, 1897. Serial No. 653,296. (No model.)

To all whom it may concern:

Be it known that I, DANIEL ABBOTT, a citizen of the United States, residing at San José, county of Santa Clara, State of California, have invented an Improvement in Feathering Paddle-Wheels; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to a novel device for the propulsion of vessels.

It consists of a wheel having blades or paddles and a mechanism by which said blades are feathered or retained in a vertical position while passing through the water and turned to a position of least resistance while passing through the air.

It also consists in a means for changing the position of the floats so that they may be made to take the position of least resistance while passing through the water, this position being taken by the floats of one wheel, while the other acts in its normal manner for the purpose of more readily turning the vessel.

Referring to the accompanying drawings, Figure 1 is a side view of the wheel. Fig. 2 is a detail of one of the floats, looking at it from the inside. Fig. 3 is a longitudinal section through a float. Fig. 4 is a view of the edge of a float at its central portion.

The wheels of my invention may be constructed of any suitable size and proportions, and they are mounted upon shafts, through which power is applied to rotate them in the usual manner of operating paddle-wheels.

In the present case I have shown the sides or rims A, having the floats B, with central pivots at each end, extending from one of the sides A to the other, where the pivots are journaled, so that the blades may turn upon these pivots.

C is a band, either flexible or rigid, surrounding the wheel outside of the line of floats and having lugs c fixed to it and adapted to engage with corresponding locking grooves or devices upon the floats, as will be hereinafter more fully described.

In the present case I have shown a single band extending around the wheel intermediate between the rims A, and each of the floats has a central portion inclosed by metallic plates b, which form channels or grooves into which the band falls at intervals as the wheel

rotates. Grooves or channels b' are made in the edges of the plates at each side of the floats, and as the wheel revolves the movement of the band with relation to the floats causes the lugs c to alternately engage with and be disengaged from the grooves or slots b'. Each lug c is concave on its interior c² to correspond with the exterior convexity, so as to fit over a roller b² when they arrive in conjunction. The roller b² is opposite the slot b' of the larger opening B', as shown in Fig. 4, and a lug or pin c' projects from the back or opposite edge from the concavity c² and enters the slot b', so as to steady and retain the float in position while the roller b² is temporarily disengaged from the concavity of the lug c, which is the case when by the revolution of the wheel the floats arrive in the position shown in Fig. 2.

Fixed to some permanent point upon opposite sides of the wheel and in the plane of travel of the band are rollers O. These rollers are journaled upon frames or supports which are acted upon by springs o, so that they have an elastic pressure against the periphery of the band. These rollers are situated at or near the horizontal plane of the wheel-shaft, and as the wheel rotates the band travels in contact with the rollers. When the wheel is rotating in one direction, the roller which is behind the wheel, pressing upon the band, causes it to act upon the floats of the wheel, so that the latter are brought into contact flatwise with the band after passing above the pressure-roller, and they retain this position while passing over the top of the wheel until they have arrived at a point approximately in the plane of the axis of the wheel upon the opposite side, when the relative difference of movements of the wheel and the band will have engaged the catches c and slots b' upon the lower edge of the float, thus retaining the float in an essentially vertical position while it is passing through the water in that portion of the arc below the shaft. As it rises upon the opposite side the blade again lies flatwise against the band, and as it passes over the top it advances faster than the movement of the band, and thus engages the front lug c with the notch which is in front of the float, at the same time disengaging the notch and lug at the rear of the

float, so that when the float has again reached a position approximately in the horizontal plane of the wheel-axis the rear lug and notch will have been disengaged and the front lug and notch are engaged and remain so until the float has reached the opposite side of the wheel. This movement of the floats with relation to the wheel-rim gives each float a half-revolution on its own axis, while the wheel itself makes a complete revolution, and the alternate locking of the front and rear edges of the floats allows of this movement, while holding the floats rigidly in vertical position to act upon the water while passing through it. In some cases it is found desirable for the purpose of turning the vessel to change the position of the floats of one wheel while the other still acts directly upon the water. This change is effected by means of a lever K with connections through which it acts upon the frame in which the roller O is journaled on the side from which the top of the wheel is then revolving. This lever may be connected in any suitable manner with the pilot-house, so that by its movement the rear roller is temporarily withdrawn from contact with the band C. The effect when this is done will be to allow the floats to be carried around the wheel for a part of a rotation without reversing, and the result will place the floats in the reverse position from that which they normally occupy—that is, those blades which are passing through the lower arc of the circle and through the water will lie flatwise around the periphery and will present their edges to the water through which they pass and the blades will be turned into a vertical position while they are passing through the upper arc of the circle above the axis of the wheel. It will be seen that if one wheel has its floats disposed in this manner, while the other one has the floats so disposed as to act against the water, the latter will act with much greater power in turning the boat when it is so desired. The floats are again restored to their normal position by temporarily removing the roller in front of the wheel from contact with the band, while the wheel continues to turn. After a portion of the revolution is complete the floats will have again assumed their normal position by the action of the opposite roller. By mounting these rollers upon spring-pressed arms the parts are allowed to yield in case of the collision of the floats with any obstruction, such as floating logs, and the floats will thus be allowed to yield and turn under such conditions and will be prevented from being broken.

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

1. A wheel having blades or floats with central pivots, said pivots being journaled in the rims between which they extend, a band extending around the periphery of the floats having lugs projecting therefrom at intervals, slots formed with relation to said lugs so that

the lugs alternately enter and engage the slots upon opposite edges of the floats and rollers fixed and contacting with the band near the horizontal plane of the wheel-axis.

2. A wheel consisting of rims mounted upon a driving-shaft, blades or floats having central end pivots journaled in said rims, bars extending transversely across the central portion of the floats forming channels upon opposite sides and slots formed upon the edges of the floats, a band surrounding the wheel adapted to engage and lie within the channels of the floats, said band having lugs projecting from it upon opposite sides of the floats at such a distance apart that when one lug engages the slot in one edge of the float, the other lug is disengaged from a slot upon the opposite edge, rollers journaled in spring-pressed frames near the horizontal axis of the wheel adapted to press against the band whereby the latter is advanced at a different rate of speed from that of the wheel, and the lugs are alternately engaged with and disengaged from the edges of the floats.

3. A paddle-wheel having floats with central end pivots about which they are turnable, a band extending around the wheel having lugs adapted to alternately engage slots upon the edges of the floats, said band traveling at a different rate of speed from that of the wheel whereby a lug on the band and the slot in the lower edge of each blade are engaged so as to retain the blade in a vertical position while passing through the water, and disengaged after the blade leaves the water, the lug in front of the blade being at the same time engaged with the corresponding slot therein, so that the blade lies flatwise while passing over the top of the wheel, and a roller or rollers journaled in frames adapted to press against the band as the wheel rotates.

4. A paddle-wheel consisting of rims, a paddle-shaft upon which they are mounted, floats having journals upon their ends turnable in bearings upon the wheel-rims so that the floats are revoluble thereon, channel-pieces fixed to the central portion of the floats having slots formed upon opposite edges of the floats, a band surrounding the wheel and guided by said channel-pieces, said band having lugs adapted to alternately engage the slots in the opposite edges of the floats during each revolution of the wheel, spring-pressed rollers forming contact with the band near the horizontal plane of the wheel-axis, and a mechanism whereby the roller from which the top of the wheel is at that instant revolving may be thrown out of contact with the band whereby the position of the floats upon the wheel is reversed.

5. A paddle-wheel having peripheral floats revoluble upon independent axes, a band surrounding the wheel, spring-pressed rollers journaled in the plane of rotation of, and pressing against the band, locking devices upon the band and upon the floats, said locks

alternately engaging the front and rear edges of the floats, whereby the floats make a half-revolution upon their axes during each complete revolution of the wheel.

- 5 6. A paddle-wheel having peripheral floats revoluble upon independent axes, a band surrounding the wheel, spring-pressed rollers journaled in the plane of rotation of, and pressing against the band, locking devices
10 upon the band and upon the floats, said locks alternately engaging the front and rear edges of the floats whereby the floats make a half-

revolution upon their axes during each complete revolution of the wheel, and mechanism whereby the roller-pressure may be removed 15 from the band, and the relative positions of the top and bottom floats are reversed.

In witness whereof I have hereunto set my hand.

DANIEL ABBOTT.

Witnesses:

S. H. NOURSE,
H. F. ASCHECK.