SHIPS
PROPULSION
1697 Crank Paddles.

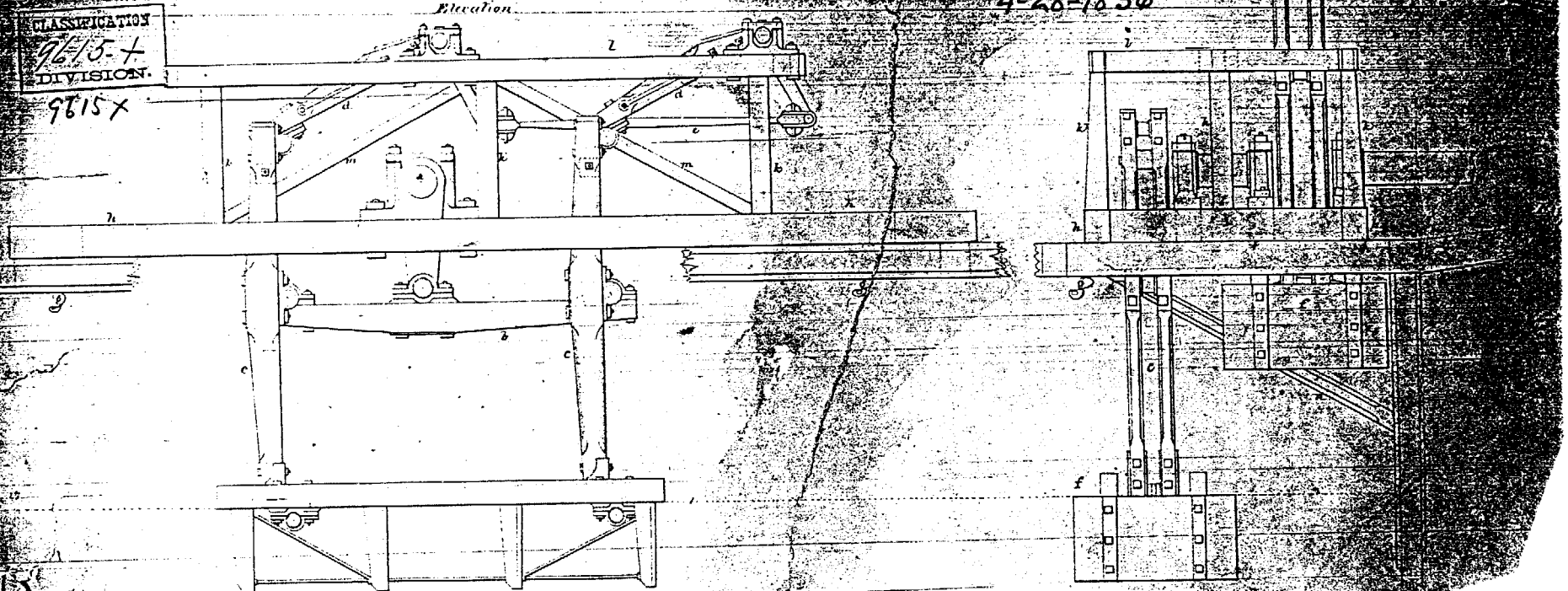
CLASSIFICATION
9615+
DIVISION.
9615X

Pat. Apr. 28 1836

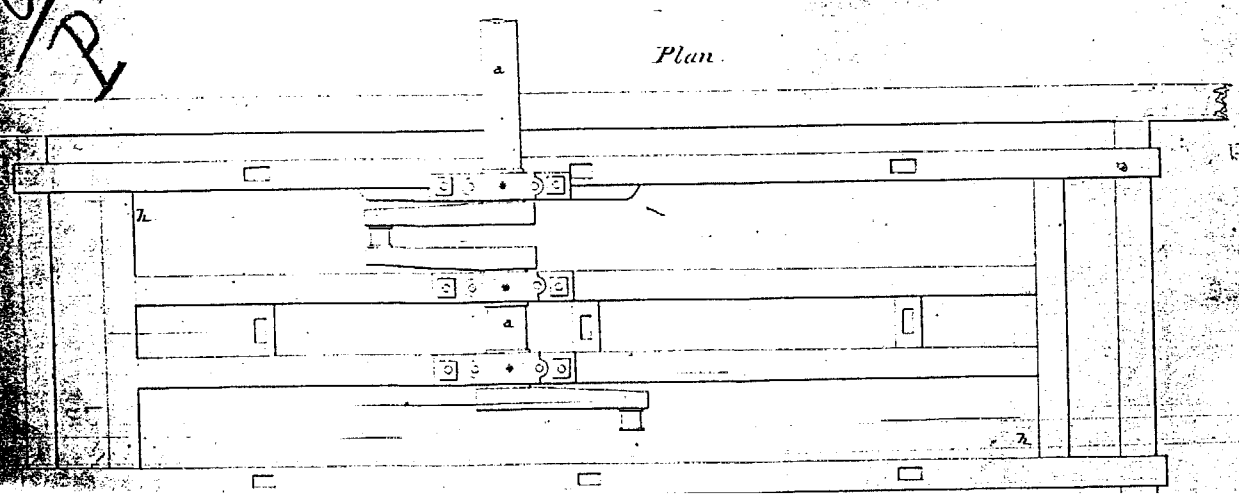
4-28-1836

Elevation

Profile



Plan



References.

a. The main Shaft. b. Connecting rods [illegible]
c. The radius bars. d. The arms on the rocking shaft
for the rocking Shafts. f. the paddle frame [illegible]
g. The guards. h. the main framing. k. The upper
m. Braces to strengthen the frame work. n. Brace

Fig 1. Rocking Shaft, Arm and Brace
Fig 2. Cast Iron wrists for the Radius Bars
Fig 3 and Fig 4. Transverse & Longitudinal sections of the Cast Iron wrist to connect the Radius Bars to the Paddle Frame.

N.B. The same Letters refer to the same parts in all the figures

Apl. 28. 1836 905

John Cochrane, of Baltimore. Md. 9615X

Letters Patent.

The Schedule referred to in these Letters patent and making part of the same; containing a description in the words of the said John Cochrane himself, of his improvement in Steam boat paddles.

To all to whom these presents shall come: Be it known that I John Cochrane of Baltimore in the County of Baltimore, and State of Maryland; have invented a new and useful improvement in Steam boat paddles, and that the following is a full and exact description thereof.

Specification 1st. the paddle boards, are attached by arms to strong frames (the arms having a slot or notch to admit the boards) the frames may contain any convenient number of paddles, say five or six which are to be of the usual dimensions in proportion to the size of the boat. 2d. two of these frames are on each side of the wheel, and act alternately in the water: for inside navigation one paddle frame might be outside of the other: but for outside or ocean navigation or twin boats it might be better for one to follow the other. 3d. the paddle frames are hung by two radius bars at each end (framed together and strengthened by diagonal rods of iron to prevent lateral oscillation) from levers above on rocking shafts to strong iron pins bolted to the paddle frames. 4th these levers lower the paddles into the water while they are acting and raise them, when they are going to fetch a stroke. 5th. The alternate motions of the paddles and levers are effected by cranks.

I claim the invention of the whole arrangement of the above described horizontal paddles and the model and drawings herewith deposited and referred to for further particulars, and are considered sufficient to enable any competent mechanic to construct them. This invention is the result of a thorough investigation of the principle upon which paddles act in propelling Steam boats. it is clear of all the acknowledged defects of the wheels and combines all the desiderata in paddles. In comparing the horizontal paddles with the wheels now in use, the following advantages are manifest. 1st The Horizontal paddles act vertically in the water entering

and withdrawing, but the wheels enter and withdraw obliquely, thereby breaking and lifting the water and causing a useless expenditure of about one third of the whole power. 2ly owing to the number of paddles that are brought to act at once and their vertical position they take such a firm hold in the water that the engine is enabled to impart nearly the whole of its power to the speed of the boat. whereas with the wheels about two thirds of the power is only applied to advantage. 3d the application of power and expenditure of steam are regulated by the resistance with which the paddles meet — to the greatest resistance the greatest power. and when the engine is passing its centres, all the paddles are out of the water and consequently at that time, there is no resistance. But in the wheels the resistance is constantly the same, which reduces the power to about three fourths of what the engine is capable of exerting at the quadratures. 4th The motion can be reversed with greater facility and when necessary all the paddles can be retained out of the water which would prevent many serious accidents to which the wheels are subject, such as running down boats, damaging the paddles or floating logs &c. 5th in outside or ocean navigation they are vastly superior to the wheels for the will work with nearly the same ease to the engine in rough as in smooth water, whereas in rough seas the wheels become swamped, which not only endangers the shafts but is very injurious to the machinery; and as they do not require the paddle boxes to ride higher than the bulwark, they would not present any extra surface to the wind, which is a most desirable property, and are never to be attained by the wheels. 6th they are well calculated for canal tracking. for owing to the manner in which they act they make no surge in the water, consequently would not injure the banks.

7th they would act as most powerful ice-breakers and be completely free from the inconvenience to which the wheels are subject such as carrying pieces of ice up into the paddle boxes which frequently chokes them up and stop them. In short they are superior to the wheels in every respect, and will ultimately bring steam navigation to perfection.

Witnesses,
R. Mayo, Robt. Mills 2

John Cochrane.

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