

Penny & Rogers. Crank Propeller.

No 13,041.

Patented Jun. 12, 1855

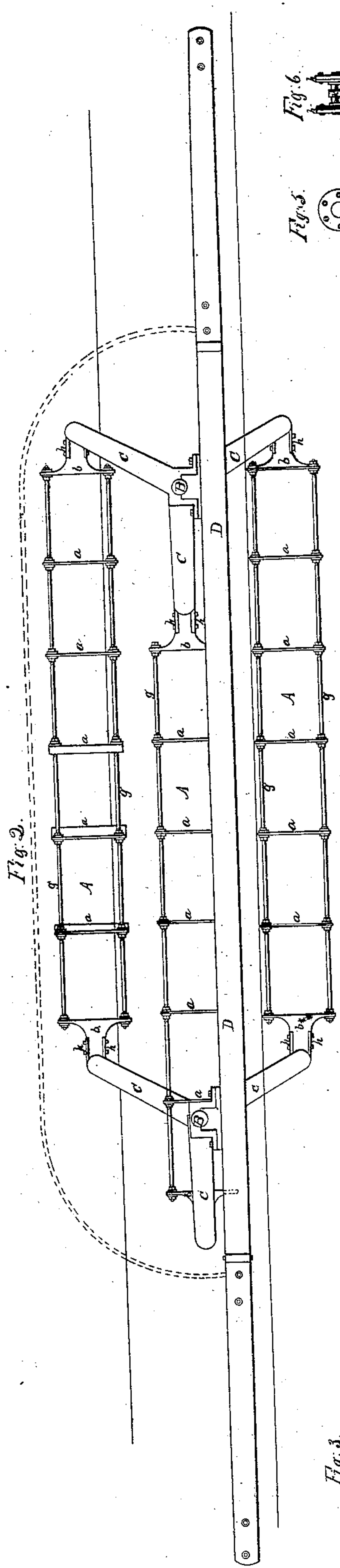


Fig. 2.

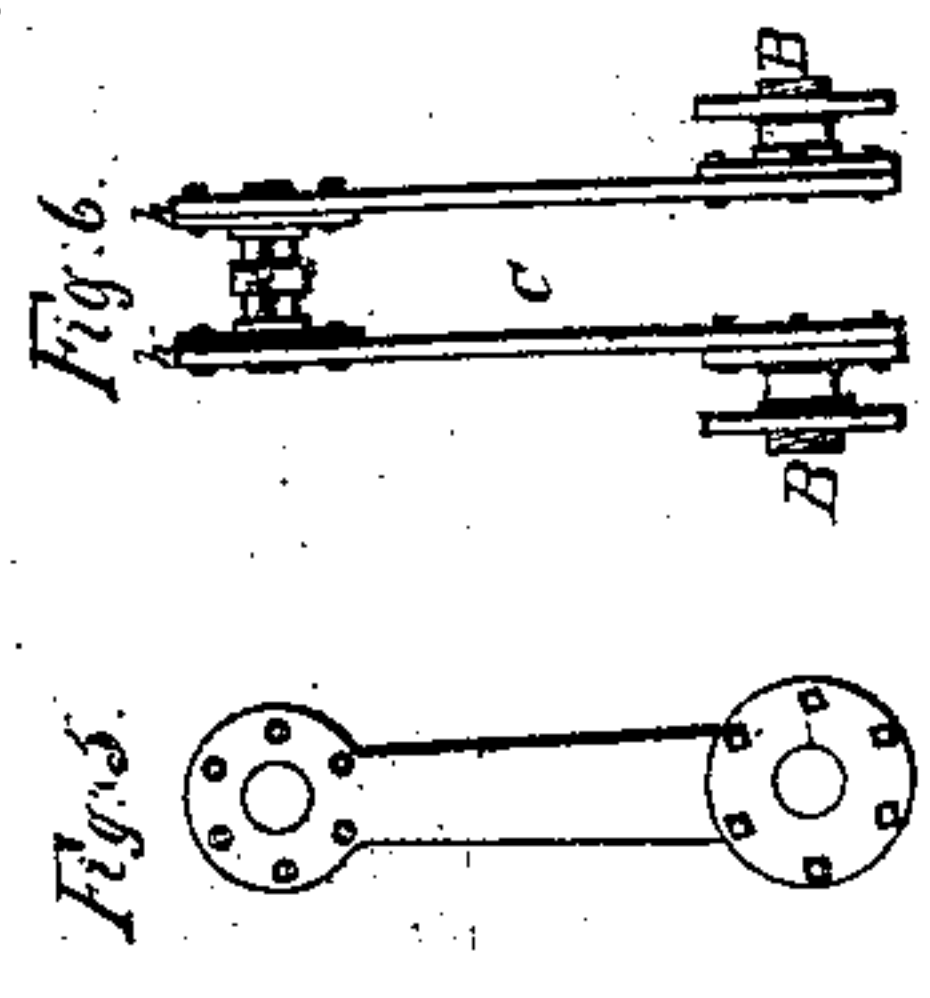


Fig. 6.

Fig. 5.

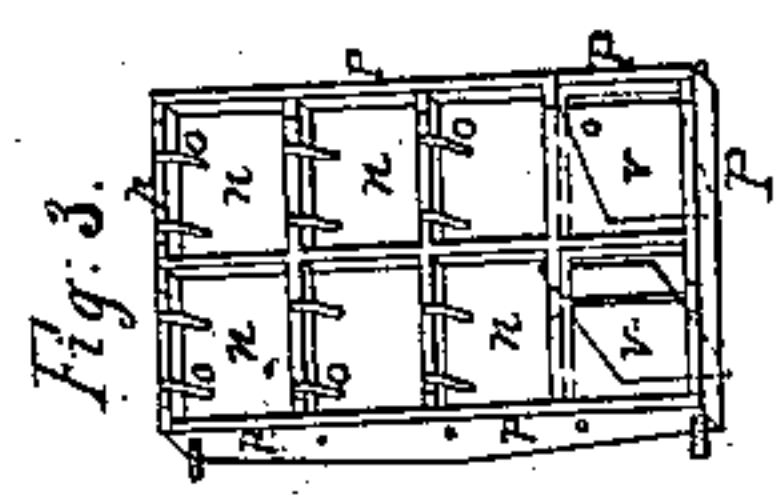
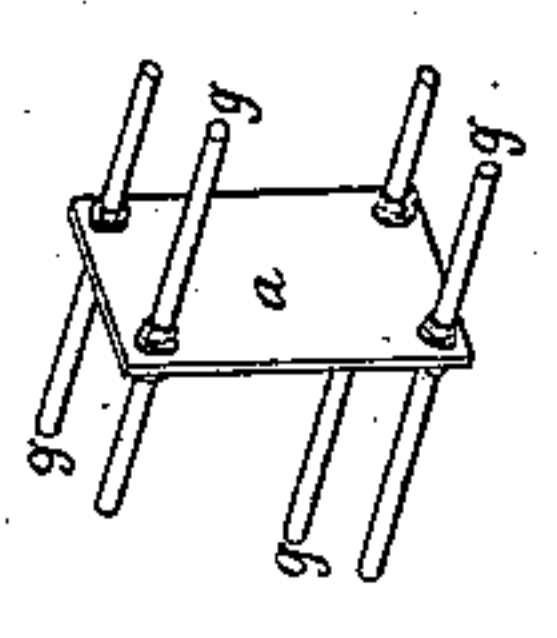


Fig. 3.

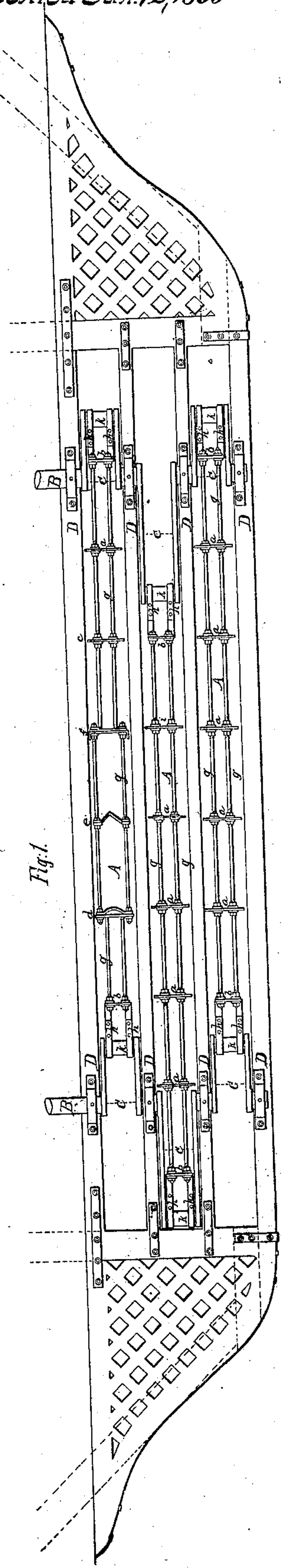


Fig. 1.

UNITED STATES PATENT OFFICE.

JOS. H. PENNY AND THOS. B. ROGERS, OF NEW YORK, N. Y.

PROPELLER.

Specification of Letters Patent No. 13,041, dated June 12, 1855.

To all whom it may concern:

Be it known that we, JOSEPH H. PENNY and THOMAS B. ROGERS, of the city and county and State of New York, have invented a new and useful Improvement in the Manner of Constructing Propellers for Vessels, &c., which we term a "Crank-Propeller;" and we hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 represents a plan of the said propeller, and Fig. 2 gives a side elevation of the same.

The nature of our invention or improvement consists in increasing the extent and strength of the paddle surface of the propeller, and consequently adding to its effective power or force, and in so arranging the different series of paddles, that one set or series shall be constantly acting upon the water, and in so placing them in, or attaching them to the boat, that they shall be protected from injury from collision, &c., and that the boat can be easier and quicker brought to her fastenings and her passengers and freight more readily handled.

To enable others to make and use our invention or improvement, we will proceed to describe its construction and operation.

The propeller consists generally of three separate sets or series of paddles A, A, A, parallel to each other, and lying horizontally, and to which motion is communicated from the shafts B, B, by means of the cranks C, C, C. The number of these series may, however, be increased or diminished. Each series we generally make about twenty-eight feet long, with a depth and width the same as that of the paddles, and when made of that length, each series is intended to contain five or more paddles, beside the connecting heads b, b, which are a strong, solid frame work, wrought or cast, with faces corresponding to the paddles, and which are effective as additional paddles.

Each paddle a, a, a, a, a, is about four feet deep and two feet wide, and may be made either of iron, using ordinary boiler iron, or of wood two or three inches thick to insure requisite strength. The surfaces of these paddles may be made, if desired, of different forms, as represented in Fig. 1,

either flat as c, or curved as d, or angular as e, or with side flanges as f. The connecting heads b, b, are of the same depth as the paddles, but of less width to allow them to pass between the sides of the crank, and they have a greater thickness to give them sufficient strength for the attachment and support of the connecting arms h, h, and the connecting rods g, g, g, g. These rods pass through each paddle, as shown in the figures, which are firmly and unyieldingly fastened thereto, and these rods are also firmly and securely attached to each connecting head b, b. We use two of such connecting arms on each connecting head and generally four connecting rods, but a less number of rods should not be used. Instead however of having the several paddles connected by rods passing through them, as just described, the paddle with side flanges, as shown at f, may be used, and in place of the rods g, g, flat bars, extending along on each side of the paddles, and to which the paddles are attached by strong bolts passing through these bars, and the flanges of the paddles. This arrangement we deem preferable, in actual use, as the several paddles, in case of breakage or injury, can be more easily removed, and new ones substituted. Each series of these paddles, with the connecting heads and rods is thus equivalent to a reciprocating bar, joining each opposite pair of cranks.

The connecting heads b, b, are connected to the cranks c, c, c, by means of the connecting arms h, h, h, h, h, h, which are firmly bolted to the connecting heads, and which embrace the crank pin k, k, k, at the shoulders m, m, m, and by which they are securely kept in their proper position. These connecting arms are also made rather heavier than the adjoining parts, so as to make, with the connecting heads b, b, a firm and sufficient support for the attachment of the connecting rods and paddles. The paddles are generally made solid and of a single piece, but their construction may be varied, as represented in Fig. 3, when the paddle has a frame work p, p, p, p, similar to the sash of a window, to the cross bars of which are hung valves n, n, n, n, which are confined or pressed against the frame work, by means of the springs o, o, o, o. These valves and springs are attached to the back of the paddle, the side of the paddle toward the bow of the boat being called the front, so that for

ordinary uses and under ordinary circumstances, the paddle is equally effective as if the surface was all of one piece, the action of the paddle in the water, as well as the
 5 springs *o, o, o*, tending to keep the valves tightly closed. The peculiar advantage of this mode of constructing the paddle will be most apparent however, in cases of rough and stormy weather, when the vessel is mak-
 10 ing her way against the waves, or when one propeller is submerged. In such case, when a wave or swell strikes against the vessel, and paddles, the springs *o, o, o*, give way somewhat, and the valves *n, n, n*, open, thus
 15 breaking the force of the wave or swell, and decreasing its tendency to check or retard the vessel.

Each set or series of paddles is separate and distinct from the others, and moves in
 20 a separate frame work, the timbers *D, D, D, D*, which furnish bearings for the shafts *B, B* running entirely across the whole length of the propeller, and thus giving additional strength to the whole cranks &c.
 25 and decreasing the liability and probability of injury from accident; and as the shafts *B, B*, have bearings upon each of these timbers *D, D, D, D*, should a single one, by any means, become broken or damaged, the
 30 shafts would still be sufficiently supported and their regular and steady revolutions be less interfered with. The series of paddles leave and enter the water vertically, and the cranks of each series are so attached to
 35 the shafts, in respect to each other, that as one series of paddles begins to leave the water another begins to enter it, thus causing one series to be continually in the water for effective action.

40 The cranks *c, c, c*, are each separate from the other, and are each attached separately to the shafts *B, B*; and they are generally of such a length that the paddles, when in motion, are elevated only about four feet above
 45 the deck or guard of the vessel, thus enlarging the surface or space for freight &c.; or if desired the cranks may be so arranged,

as to have the paddles, in their movements, reach only up to the level of the guard. The cranks are also composed of separate parts, 50 as is represented in Figs. 5 and 6, which are firmly bolted together, so that in the event of the breaking or fracturing of any part, it can be easily removed, and another put in its place. 55

The entire frame work, which supports the propeller, and in which it works, is intended to be placed within the outer sides of the guards, and nearer to the vessel than in ordinary cases, so that the vessel is 60 straighter on its side lines, and can be brought nearer the wharf and freight more safely and quickly landed.

The use of a propeller, such as we have above described, need not, however, to be 65 limited to vessels, but these propellers can be easily substituted in the place of ordinary water wheels, whether over or under shot or tide wheels, and in all these different applications, their superiority will be 70 shown.

We are aware that propellers or paddle wheels have heretofore been made having three throws or series of paddles and also having the paddles enter and leave the water 75 in a vertical position and therefore we make no claim for such general device or arrangement. But

What we claim as our invention, and desire to secure by Letters Patent is— 80

The arrangement, as above described, of the connecting rods *g*, with the connecting heads *b* and the paddles *f*, &c., the connecting rods passing through the connecting heads and the paddles being bolted to such 85 rods so that any one or more can be removed if necessary without interfering with the others the whole being strong and at the same time of light construction.

JOSEPH H. PENNY.
 THOS. B. ROGERS.

Witnesses:

S. D. LAW,
 M. V. B. WILCOXSON.