

J. Molyneux.

Dredger.

Nº 25,704.

Patented Oct. 4, 1859.

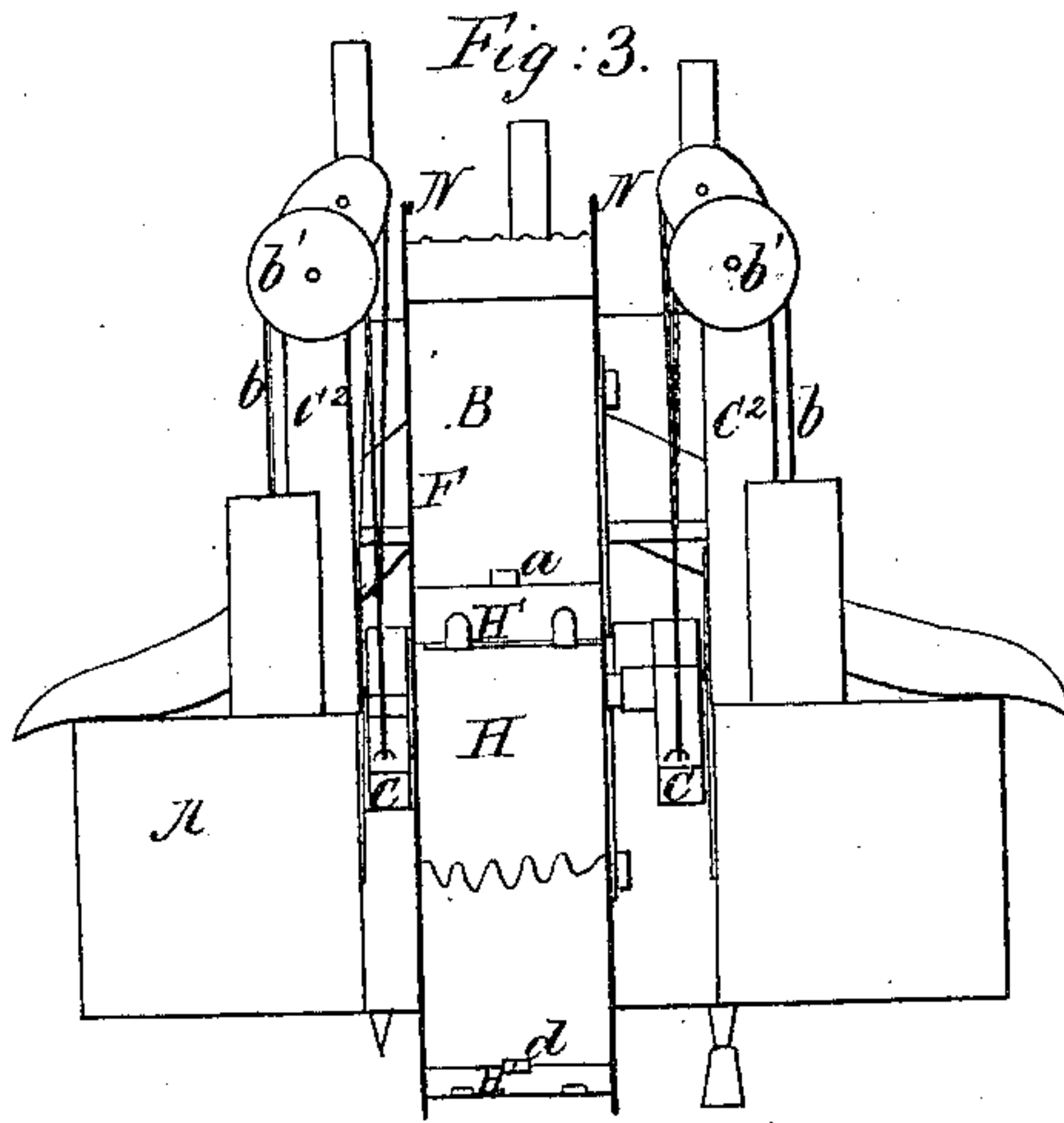


Fig: 2.

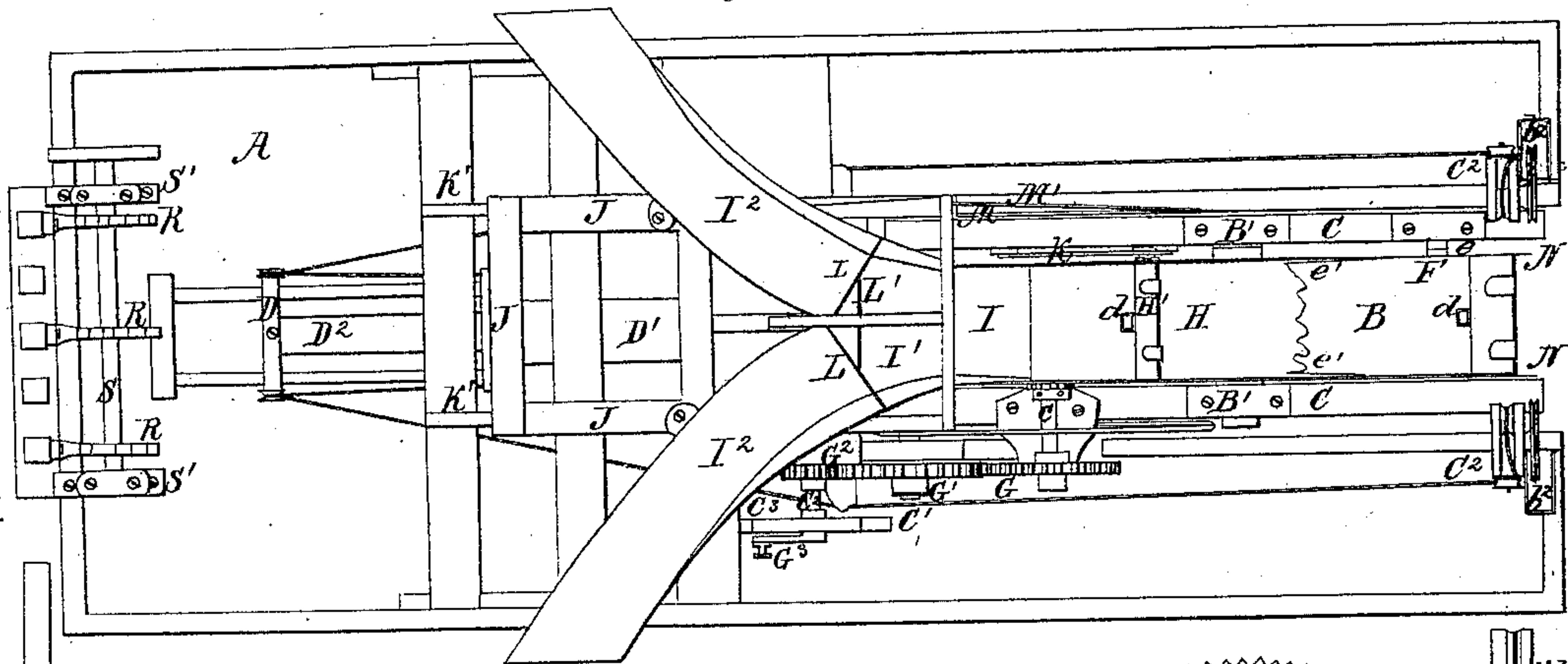


Fig: 5.

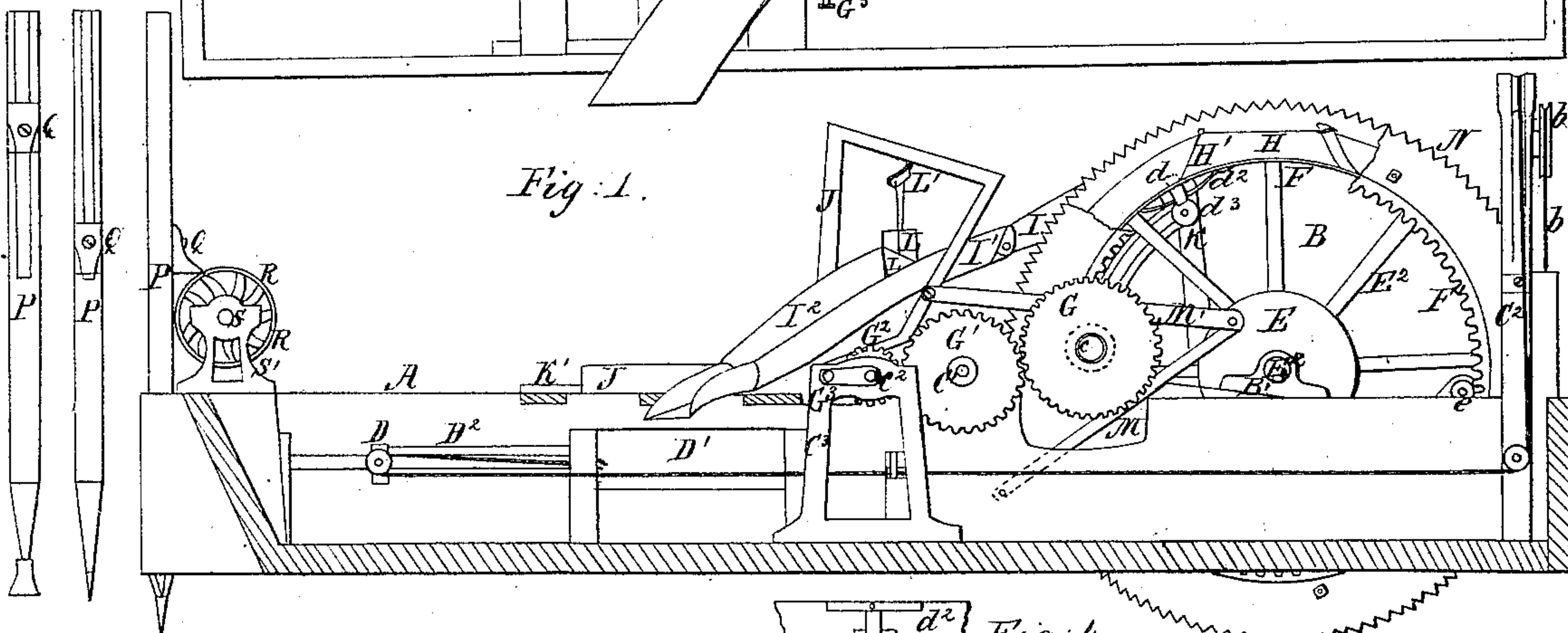


Fig: 1.

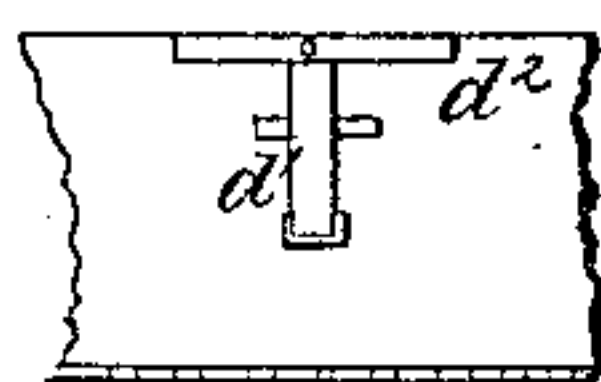


Fig: 4.

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UNITED STATES PATENT OFFICE.

JAMES MOLYNEUX, OF BORDENTOWN, NEW JERSEY, ASSIGNOR TO THE BORDENTOWN MACHINE CO., OF SAME PLACE.

ROTARY DREDGING-MACHINE.

Specification of Letters Patent No. 25,704, dated October 4, 1859.

To all whom it may concern:

Be it known that I, JAMES MOLYNEUX, of Bordentown, in the county of Burlington and State of New Jersey, have invented a new, useful, and Improved Dredging-Machine; and I do hereby declare that the same is described and represented in the following specification and drawings.

To enable others skilled in the art to make and use my invention I will proceed to describe its construction and operation, referring to the drawings, in which the same letters indicate like parts in each of the figures.

Figure 1, is an elevation with the side of the boat omitted to show the interior. Fig. 2, is a plan or top view. Fig. 3, is an elevation of the rear end.

The nature of my invention consists in the combination and arrangement of devices for raising, lowering, and holding the frame that carries the dredging wheel in such position as may be required, and in a vibrating or hinged chute arranged to be raised while the dredging bucket passes under it, and then lowered to receive the contents of the bucket. And in arranging a series of arms on the dredging wheel, to raise the chute and allow the bucket to pass under it. And in arranging the chute to traverse on ways so that it may be adjusted to the dredging wheel. Also in the arrangement of some levers and links to traverse the chute when the dredging wheel is raised and lowered. And in arranging some bars to traverse perpendicularly, which are armed with picks or chisels to operate on the bottom of the river and loosen it, and prepare it for the dredging wheel. Also in a shaft and wipers to raise said traversing bars and let them drop to pick and cut up the bottom of the river being dredged.

In the accompanying drawings A, is the boat carrying the dredging machine which boat is made in the form shown in the drawing, that is with a recess in the rear end for the dredging wheel B, the axle of this wheel turns in boxes B', B', fastened on the levers C, C, which vibrate on the shaft C' which is properly fastened to the sides of the recess in which the wheel B, turns. The ends of the levers C, C, are held up and raised and lowered to adapt the wheel B, to its work, by the ropes or chains a, a, which pass over pulleys in the tops of the standards C², C²,

and under pulleys on the side of said standards, and are led forward around pulleys on the ends of the crosshead D, and are fastened to the arms on the cylinder D', as shown in Fig. 1.

D', is a cylinder properly fastened to the boat, and provided with a piston D², carrying the crosshead D, and its pulleys which draw the ropes a, a, as water is forced into the cylinder D', by a pump or otherwise, to raise the wheel B, and the cylinder D', may be provided with a stop cock to draw off the water, whenever it is desirable to lower the wheel. The crosshead D, traverses on the rods a', a', arranged parallel with the cylinder for that purpose. The ropes b, b, are fastened to the levers C, C, and pass over pulleys b', b', on the standards C², C², and have heavy weights b², b², fastened to them to counterbalance the weight of the levers and wheel B.

The wheel B, may be constructed as follows, by fastening two disks E, of metal to the shaft E',—and fastening arms E² to the disks, to which arms the rim F, is fastened, so that the edges of the rim project each side beyond where the arms are fastened to it, and under this projecting rim on one side, I fasten the internal gear F', by which the wheel is turned by a pinion on the shaft c, shown by dotted lines in Fig. 1. The shaft c, turns in boxes fastened to the lever C, so that the pinion shaft is always held the same distance from the wheel shaft E' whether the wheel be raised or lowered. The shaft c, is turned by the gear G which is fastened to it and is driven by the stud gear G', which turns on the lever shaft C', so as to allow the gear G, to rise and fall without getting out of gear with the gear G'; and the gear G', is turned by the pinion G², on the shaft c², which turns in the frame c³, and in a box fastened to the side of the recess in which the dredging wheel turns, and is provided with a crank G³, to which the link of a steam engine may be applied, which engine may be arranged in the boat just forward of the crank, and the boiler to supply it with steam may be arranged on the opposite side of the boat from the engine, so that one will balance the weight of the other. At each edge of the rim F, there is a perpendicular rim, forming a large groove on the periphery of the wheel which is covered at proper inter-

vals by stout iron plates, which form dredging buckets as shown at H, Fig. 1, where the perpendicular rim is broken away to show the bucket H. The front edge of this bucket is armed with strong teeth as shown in Figs. 2, and 3, which are designed to penetrate and dig up bottoms of rivers, and remove the matter dug up, so as to deepen the channel for navigation. The door H', is hinged to the rear end of the bucket H, so as to open outward and is locked by the spring bolt d , which works up through the rim of the wheel just behind the edge of the door H'. The bolt d , is on the lever d' , arranged to vibrate in the interior of the wheel, and the bolt is pressed out by the spring d^2 , so as to lock the door H', but after the door passes the end of the chute I, the roller d^3 , depresses the spring d^2 , and the end of the lever drawing the bolt, so that the mud in the bucket presses the door open and runs down into the chute I. After the mud has passed out of the bucket the door falls down, and as the wheel turns the end of the lever d' is depressed by the roller e , so as to draw the bolt in and let the door close, and then let it spring out again to lock the door fast. Fig. 4, represents a portion of the inside of the rim of the wheel B, showing the lever and spring that marks the locking bolt. The frame K is fastened to the lever C, and has a curved slot in it, in which the stud of roller d^3 , may be fastened so as to draw the bolt when the bucket is above the chute as before mentioned, or as the bucket rises out of the water so as to discharge the mud in the water to be removed by the current of water passing the boat.

The frame J, J, is made in the form shown in the drawing and arranged to traverse on the ways K', K', fastened to the beams of the boat. This frame K, supports and carries the chute I', which has two branches I², I², leading over each side of the boat; so that the mud will pass from the buckets of the wheel through the chute and its branches into scows on either side of the boat; the gates L, L, arranged in the branches of the chutes, are connected to the opposite ends of the lever L', so that when one is shut the other is open. The upper end I, of the chute is hinged to the portion I', and is raised by the arm e' , which is placed just before the bucket for that purpose, so as to let the teeth of the bucket pass under it, and as the bucket passes out from under the chute it falls down so as to receive the contents of the bucket when the door is opened to discharge it.

The levers M, M, have their lower ends fastened to the sides of the recess as shown in Fig. 1, and extend up through staples in the levers C, C, and are connected by the links M', to the frame J, so that as the

wheel and levers C, C, are lowered, the chute and frame J will be drawn toward the wheel; and as the levers C, C, are raised the chute and frame are pushed back so as to always hold the chute in a proper position in relation to the wheel.

The dredging wheel B, is armed with saws N N bolted to the perpendicular rims as shown in Fig. 1, so that they may be removed when not needed to saw off sunken logs, roots, stumps, etc., or to stir up the hard earth or pan at the bottom of the river being dredged. At the front end of the boat I arrange a series of bars to traverse perpendicularly, and arm their lower ends with points, picks, or chisels to dig up and loosen the hard earth or pan at the bottom of the river being dredged; and the chisels may be used to chop sunken logs, stumps or other obstructions, and prepare the bottom for the dredging wheel. These bars P, P, are provided with brackets Q, Q, which may be adjusted higher or lower upon them, so as to be acted upon by the wipers R, R, so as to let them fall and strike into the mud and hard earth and prepare it for the dredging wheel. The bars P, P, are shown separately in Fig. 5. The wipers or cams R, R, are fastened to the shaft S, which turns in standards S', arranged for that purpose and may be operated by a belt or gearing from the engine that turns the dredging wheel.

The boat may be urged forward while dredging by side wheels, screw propellers, warped from an anchor or towed by another boat as may be preferred.

By arranging the shaft of the dredging wheel on levers it may be raised or lowered while in motion easier and with facility. Besides if the wheel grounds when it is not in motion and the tide falls, the wheel will hold up the levers while the boat sinks down around it without injury to the boat or wheel. And whenever it may be desirable, the dredging wheel may be raised and the levers C, C, secured in some convenient manner to hold it up; when the ropes or chains may be unhitched from the levers and used to hoist sunken logs, rocks or other obstructions, and being operated by the hydraulic cylinder and piston, it may be worked with great power.

I believe I have described and represented my improved dredging machine, so as to enable any person skilled in the art to make and use it. I will now state what I desire to secure by Letters Patent, to wit—

1. I claim the combination and arrangement of devices substantially as set forth and described, for raising, lowering and holding the levers C, C, which support and carry the dredging wheel as required.

2. I claim the saws on the dredging wheel, for the purposes set forth substantially as described.

3. I claim a chute hinged substantially as described so that it may be raised when the bucket passes under it, and lowered to receive the contents of the bucket, substantially as described.

4. And in combination with a hinged chute I claim the arm *e*, on the wheel B, just before the bucket for the purpose of raising the chute and allowing the bucket to pass under it.

5. I claim a chute arranged to traverse on ways, so as that it may be adjusted to the dredging wheel.

6. I claim the levers M and links M' arranged to operate substantially as described

for the purpose of traversing the chute as described for the purposes set forth.

7. I claim the traversing bars P, P, armed with picks or chisels and arranged to operate on the bottom of the river, in advance of the dredging wheel, substantially as described.

8. I claim the shaft and wipers in combination with the traversing bars carrying picks, chisels, etc., for the purposes specified substantially as described.

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Witnesses:

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