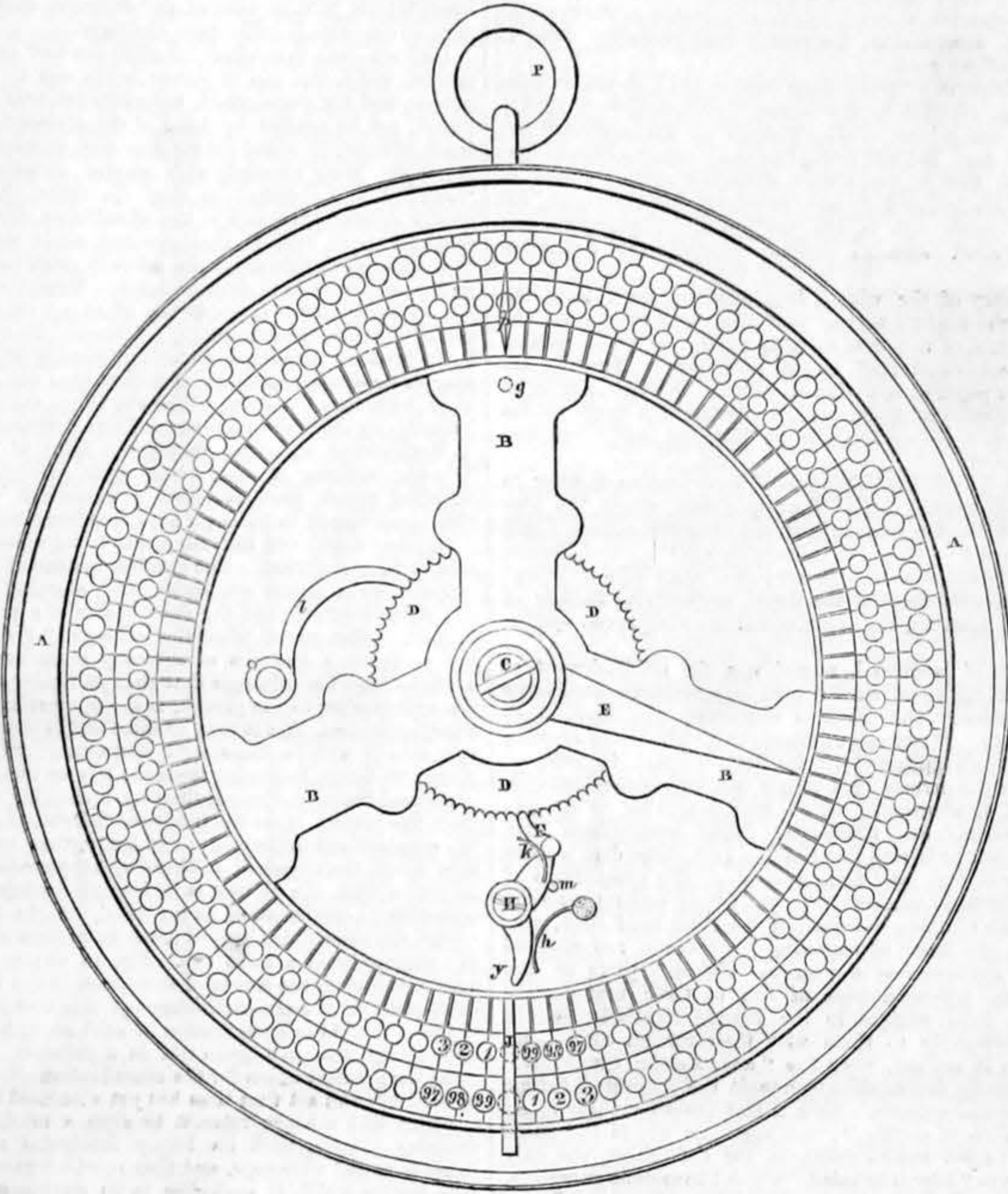


NEWTON'S IMPROVED CALCULATING APPARATUS.

PATENT DATED 30TH MAY, 1855.



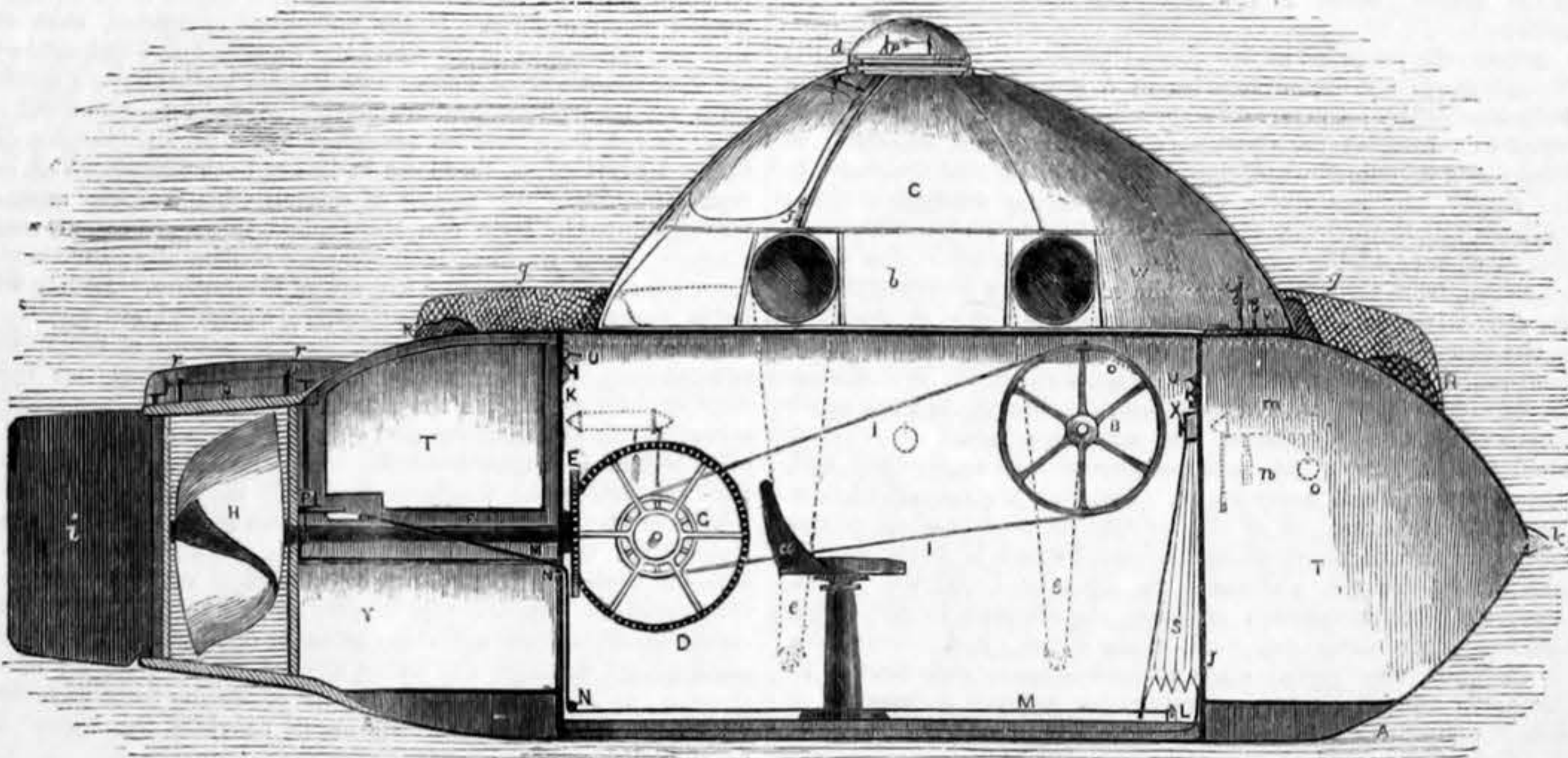
(A Communication.)

This invention relates to a novel construction of apparatus for making accurate additions of long columns of numbers. It consists of a round box or case, shown in the accompanying illustration at A, A, A, provided with three graduated circles or zones near its edge. The two inner of these circles are each divided into 100 equal divisions, and numbered inversely, as seen from "1" to "99." Closely fitting within the inner numerical scale or circle is a metallic wheel B, having its rim divided into one hundred grooves. This wheel revolves round an axle C. Under the wheel B, and lying on the bottom of the box, is a metallic wheel D, having one hundred teeth of concave sides, and an axle also at C, to which an index hand E is attached. Acting in the concave, between the teeth of the wheel D, is a lever F, composed of two pieces, having its fulcrum at H. This lever is held tightly against a stop-pin m, by a spring h, and the end of the lever, acting in the concaves of the wheel D, is held firmly in its place by a spring k. In the scollops of the tooth-wheel D also acts a spring l, which allows the wheel D to pass or turn in one direction only by the action of the lever F. A small metallic bar J is placed at the initial division of the scales to prevent the pin or pencil held in the hand of the operator from passing too far forward. A pin g is also placed in the scale B, which comes in contact with the lever F, at y, once for every revolution of the wheel. An indicator p is also attached to the wheel B, pointing to numbers on the outer scale. A ring P is screwed to the box or

case A, A, A, for the convenience of hanging the machine up when not in use. The operation of adding up a sum by this apparatus will be thus:—The box or case is laid on a table, and the hands E p, are brought round to the initial bar J. When the operator wishes to make additions, he places the point of a pencil or pin in the groove of B, opposite the number marked on the inner circle corresponding with the first figures in the columns, say "48," and brings it to the initial bar J; and thus of the next, say "59." The hand p will then have passed round the circle once and seven-one-hundredths times, and will indicate "7" on the outer scale, but on passing the tail of the jointed lever F, the pin g will come in contact with it at y, and tripping it up will cause the other end of the lever to move the toothed-wheel D the distance of one tooth forward. The spring l will hold the wheel D in position, while the spring h is regaining its original position and pressing back the lever F against the stop m. This movement of one tooth of wheel D is indicated by the hand E, which has moved one division forward on the inner circle, and hence points at "1." The result will be read by the operator, "107." When the operation has been thus continued until all the numbers of a long column shall have been joined or added, the numbers indicated as above described are to be recorded, the hands being again placed at the initial rod J, ready to be again moved for a second calculation. The patentee claims the jointed lever for moving the larger numerical indicator, and the pin or its equivalent for acting upon the lever, substantially in the manner and for the purposes described.

DESCHAMP'S AND VILCOQ'S FREE DIVING BOAT.

PATENT DATED 20TH JULY, 1855.



This invention relates to a diving boat of an entirely new form, and which may be freely directed backwards and forwards at the surface or at the bottom of the water by the operator, shut up in the same, by means of a screw or helix H and a rudder i, both set in motion by means of gear wheels arranged inside, so as to be worked by the hand of the operator, who is allowed to breathe freely and to remain and work under the water for several hours by means of compressed air contained in reservoirs T. This compressed air is diffused at will by means of a manometer in the boat, from which the assistant sucks it by means of the breathing apparatus, and then drives it out through a pipe. The operator can see the ground on which he works through the glass partition of the lantern; he is also allowed to

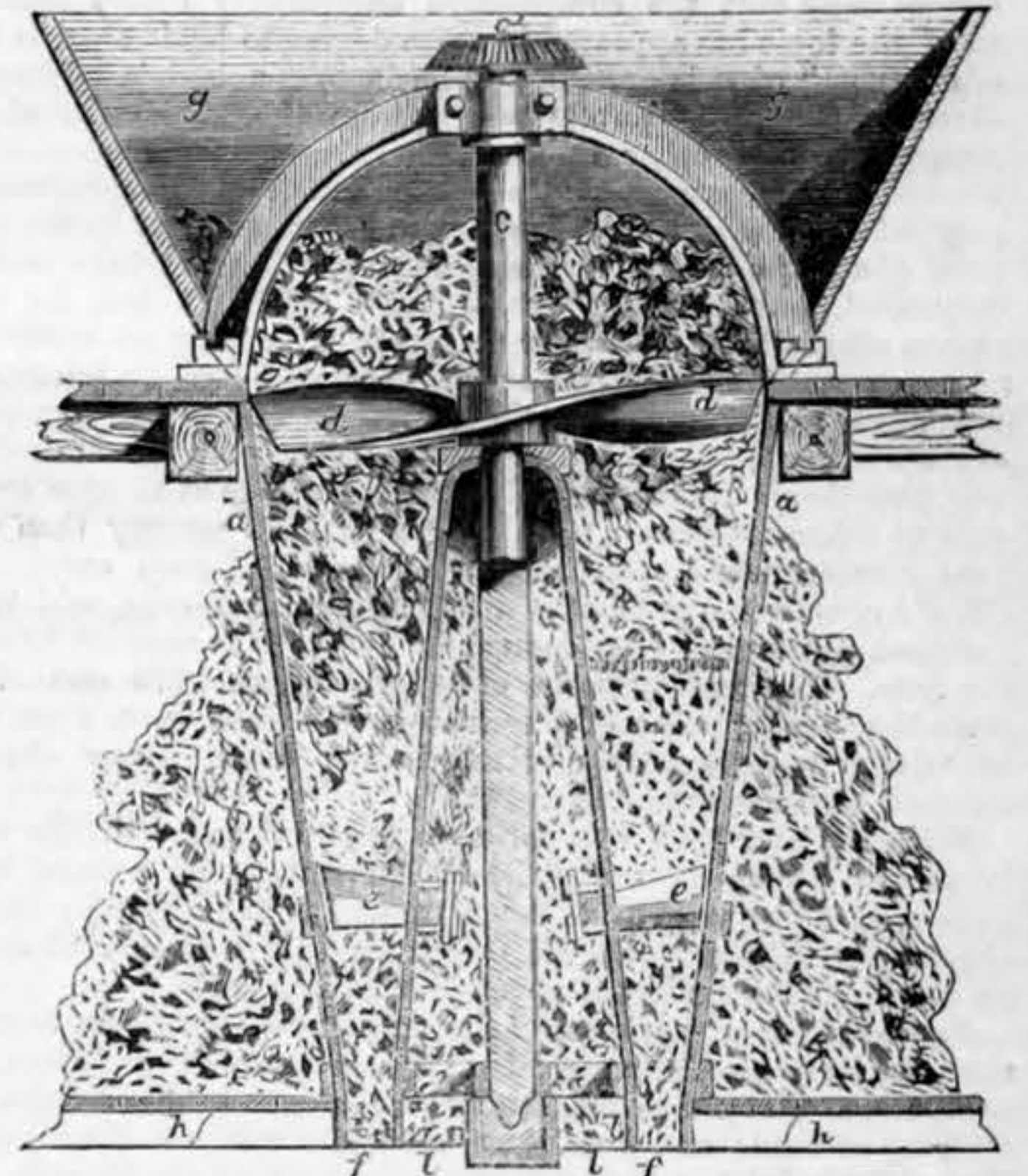
grasp external objects by means of the sleeves e, e. He may have the boat rise up and kept floating a little beneath the surface of the water, and there regulate its buoyancy by means of two gutta-percha hose or chambers, which are filled with compressed air when the boat is desired to rise, the air being let out when the boat is desired to sink. The two said hose are placed at the back and front part of the boat into outside galleries with nets g for protecting the hose, and also for holding and carrying the working tools. By means of this boat, investigations and discoveries may be made at the bottom of the sea. The same may be used also for raising or destroying foundered vessels, for searching fire ships and like incendiary engines, for reconnoitring, &c., without any danger of being discovered.

There is also a water-tight chamber, which contains electric batteries for the purpose of feeding a lamp, that projects light to a very great distance, yet not to be seen above the water. The illustration represents the section of the boat; A, is the diving boat, of copper, being about six feet seven inches long by three feet nine inches high, and two feet six inches wide; b, copper part of the lantern; C, glass part of the lantern; the glass being supported by a frame carefully luted; d, upper part of the lantern, made of round form and capable of holding a lamp; e, india-rubber sleeves lined with leather; the upper part of the lantern is hinged, opening for the passage of the operator, and provided with fastenings; g, galleries with nets for holding the working tools and rigging on the front and back part of the boat; H, screw; i, rudder; k, india-rubber buffer, placed at the front part in order to deaden shocks; L, casing for small bevil wheels serving to work the rudder; m, cylindrical bobbins, provided with ropes, a ratchet gearing, and a pulley for raising the lead ballast; n, lead ballast; o, rings fixed at the front part and back part of the boat for fastening and raising it; p, electric lamp, provided with a reflector for preventing the light from being seen from above; Q, screw frame; R, hose placed at the front part and at the back part of the boat for bringing it up and down; a, turning seat; B, gall chain pulley for working the screw; C, small gall chain pulley working on the driving shaft; D, escapement wheel gearing into the pinion of the screw; E, pinion of the screw; h, journal boxes; I, gall chain; J, frame bars of the front part of the boat for keeping its sides asunder, and increasing the strength of the air chamber; there are also bars for keeping the sides of the boat asunder, and supporting the screw shaft; r, bearings for the gearings being secured on; S, bellows for admitting and letting out the vitiated air, also serving for blowing the hose; T, recipient for containing the compressed air; u, cock for filling the air chambers; V, small cocks for distributing the air; X, small cocks for driving the air into the hose; Y, chamber for containing the electric battery; z, shutting of the entrance. The patentees claim, Firstly, The form of the diving-boat specially as described. Secondly, The mode of working the said boat by means of gear wheels arranged inside, so as to be worked by the operator's hand. Thirdly, The hose by which the boat is made to go up and down, or is kept floating beneath the surface of the water. Fourthly, The arrangement of the sleeves, enabling the operator to work and grasp external objects on all the faces of the boat. Fifthly, The various arrangements and means described, by which the operator is enabled to breathe freely and without any danger. Sixthly, The bellows or blowing apparatus for driving out the vitiated air or the gas evolved from the battery, and serving also for filling and emptying the hose without using any vital air. And, Seventhly, The application of an electric battery for the purpose of lighting the inside and the outside of the boat.

WRIGHT AND GREEN'S IMPROVEMENTS IN THE MANUFACTURE OF BRICKS AND TILES.

PATENT DATED 19TH JULY, 1855.

The first part of this invention consists of a method of screening clay, to separate from it any roots or stones which it may contain, by passing the clay through a pug mill with a perforated barrel, through which the clay is expressed, the clay and roots being discharged at the bottom.



The illustration shows a vertical section of a pug mill, arranged for screening clay according to our invention. a is the iron barrel, which is perforated all over with holes of about 1/4 inch diameter; and b is a hollow cone, similarly perforated, and mounted on the axis c, on the end of which is the bevelled wheel d, which takes into another bevelled wheel driven by any suitable power; e, e, are screw knives, which pug the clay, and force it through the perforations in the barrel a and the hollow cone b; f is an opening at the bottom, through which the stones and roots escape, and are conducted away by a suitable shoot. In connexion with the opening f there are slides, by which it may be more or less closed, according to the proportion of stones and roots contained by the clay under operation. g is a hopper, by which the clay is fed into the mill; h is the floor, on to which the clay which passes through the barrel a falls. The clay which passes through the perforated cone b is brought down by a fixed scraper working in the cone, and falls through the holes on to a floor below the mill. I would remark that, in place of using the perforated iron barrel a, as already described, a barrel of very strong wire-work may be employed; and also in place of using the perforated cone b, the screw knives may be placed directly on the axis c, which in some cases will be the most convenient arrangement. The second part of the invention consists in a method of applying water to lubricate the dies of brick and tile machines. For this purpose the die is lined with plates of metal overlapping each other, and the water is admitted, and passes between the plates so overlapping each other. The third part of the invention consists in finishing the mouldings on bricks formed with mouldings thereon, by bringing them, when in a dry but unburnt state, into contact with a revolving block with a similar moulding on its periphery. For this purpose a block of hard wood may be employed, on to the surface of which a coating of sand is attached by cement; but it is preferable to employ a grindstone, on the edge of which the moulding is turned.

PRESENTATION.—On Friday last, at the close of the Spring Session at Marlborough-house, Mr. W. Binns, the master of the Mechanical Class, was presented with a handsome set of ivory drawing scales, enclosed in a box bearing a suitable inscription, by a few of the day students of that class, as a small token of respect and esteem for his valuable services and kindness to the mechanical students during the Session.