Specification of Edward Jones : draining and collecting sewage, &c.;

A.D. 1858, 26th JULY. N° 1683.

SPECIFICATION

OF

EDWARD JONES.

DRAINING AND COLLECTING SEWAGE, &c.

LONDON:
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A.D. 1858, *26th July.* N° 1683.

Draining and Collecting Sewage, &c.

LETTERS PATENT to Edward Jones, Gentleman, of Olive House, No. 20, Camden Cottages, Camden Town, in the Parish of St. Pancras, and County of Middlesex, for the Invention of "EFFECTING A BETTER SYSTEM OF DRAINAGE, AND THE MACHINERY AND APPARATUS NECESSARY FOR THE SAME, WHEREBY THE SEWAGE MANURE IS COLLECTED AND CONVENIENTLY EXPORTED FOR USE, AND THE NOXIOUS EFFLUVIA PREVENTED FROM CONTAMINATING THE AIR OF POPULOUS CITIES AND TOWNS, AND WHEREBY THE DRAINS MAY BE MORE STRONGLY AND SECURELY BUILT BY THE MANUFACTURE OF A MORE SUITABLE AND BETTER MATERIAL."

Sealed the 25th January 1859, and dated the 26th July 1858.

PROVISIONAL SPECIFICATION left by the said Edward Jones at the Office of the Commissioners of Patents, with his Petition, on the 26th July 1858.

I, EDWARD JONES, Gentleman, of Olive House, No. 20, Camden Cottages, Camden Town, in the Parish of St. Pancras, and County of Middlesex, do hereby declare the nature of the said Invention for "EFFECTING A BETTER SYSTEM OF DRAINAGE, AND THE MACHINERY AND APPARATUS NECESSARY FOR THE SAME, WHEREBY THE SEWAGE MANURE IS COLLECTED AND CONVENIENTLY EXPORTED FOR USE, AND THE NOXIOUS EFFLUVIA PREVENTED FROM CONTAMINATING THE AIR OF POPULOUS CITIES & TOWNS, AND WHEREBY THE DRAINS MAY BE MORE STRONGLY AND SECURELY BUILT BY THE MANUFACTURE OF A MORE SUITABLE & BETTER MATERIAL," to be as follows, and set forth in the Drawings A, B, C.

A is a longitudinal and transverse section of two main drains at the junction of two streets, with grateing and man-hole; B is a transverse and horizontal

section of a drain, shewing improved socket blocks or bricks in its structure, the commencement of each drain with the grateing, No. 4 being made wider to make up for the diminished water-way by the grateing. The Figures in each refer to the same parts, giving different views.

Fig. 1 is a portable cistern made of plate iron, wood, or other suitable material, to be lifted out for emptying, by means of hooks & chains, or cords, as seen in Fig. 2. This cistern, combined with the curved plate, No. 5, as a covering to the drain apperture, & the lower edge diping into water (the other side & ends being set in cement) will constitute a perfect trap, so as to prevent the effluvia or noxious vapours ascending through the grateing of the streets, the cistern being always kept full by the waste waters from the sink of an adjoining house, being conducted to it by a small pipe. This cistern will also serve the important purpose of receiving all the debris of the streets, and prevent the gravel and stones from descending into the sewers. The street scavenger will empty this cistern by lifting it out wholesale by the apparatus, as explained in Fig. 2 (before the same becomes too full), or by any other mechanical means.

Fig. 2 is a similar cistern to be placed serially according to the dimentions of the drains, at the corners of the strees, or near large entrance grateings, and so set within enclosed brick walls that the upper edges shall be upon a level with the bottom of the drain, for the purpose of catching the sewage manure, which will be checked in its onward progress by the grateing No. 4, and precipitated into the cistern, which, when full, will have to be removed and replaced by an empty one. Each cistern will be covered by a lid, and screwed titely down upon the removal of it with its contents, of from half a ton to a ton weight. The removal of it will be effected by the aid of a portable crane for lifting it from the sewer on the cariage, to be conveyed to any railway station by night, or outpost of the town convenient for farmers. That the removal may be effected free of smell to the streets, the communication with the sewers will be cut off before the man-hole entrance is opened. To this end, Fig. 3 are plates made so as to be lowered by means of a screw working in the side of the frame of trap-door, as seen at *a*, the small door being sufficiently wide to admit an opening for a man's arm to enter, for the purpose of pining the screw to the framework of the plates to be lowered, which may be let down by means of the screws working as in a vice, either singly or altogather. The lower ends of the plates or sewer flood-gates being formed to a cutting edge, so that in their descent they will cut through the sewage and acumulated weeds or rubbish in front of the grating, which will act as a filter to purify the water; but, when so seperated, will cause it to

fall into the cistern to be removed therwith. In the event of the water being inconveniently high, a small hand pump conveniently fixed to the side will reduce the water to a proper level, & any liquid sewage which may stand above the cistern, which can be effected (so soon as the flood-gates are down), and the same made to pass away through a small hole in one of theis gates with a door to it. The flood-gate that arrest the water in its course should be tolerably water-tite, the others would not be so particular in their fittings. Upon reopening the flood-gate, an important object will be gained by the rush of water from that part, clensing the sewer of any stopage or acumulations, and prevent danger from explosive gasses by creating a circulation, and causing fresh air to rush in.

Figure 4 of letter B showes a front elevation & section of the grate 4, fixed at the wide mouth of the sewer. The horizontal section of which shows also the improved socket bricks, and the structure of the sewer with them. Fig. 8, 8, are loose plates made to rest upon the edge of the cistern, to shut out the descending water & debris from the space between the cistern & the wall surrounding it, and thus prevent trouble to the men in its removal.

Fig. 9 is a horizontal section of the man-hole, showing the grooves in which the plates or flood-gates are guided up & down. When not in use they will be suspended from the frame of door surrounding the man-hole, which frame is on a level with the pavement.

Fig. 10 is a new form of trap for a watercloset; *a*, *a*, coloured red, are expanding joints made of gutta percha or other suitable elastic material; *b*, *b*, is a leaver, the handle of which, when pulled upwards, causes a depression of the pipe constituting the trap, from the line *c* of water level in the pan to *d*, by which the contents are emptied into the sewer, the leaver also being attached to the valve of the cistern will admit a fresh supply of water to the pan.

Fig. 11 is the trap in its detached form, as made by the manufacturer, with collars or projecting fillets, or beads, for securing the expanding joints more firmly to the pan, and the descending pip communicating with the sewer, the dotted line at *e* showing the lower end of the pan *f*. The socket pipe *q* must be so set as to allow the trap to work freely from the center joint *h*, which joint or hinge may be formed with the trap & pan, or of the elastic matereal forming the expanding joint, or of iron, with a band around the trap and pan.

Letters C & D is an improved machine for making the blocks or bricks to be used in the construction of the sewers, by the use of which they will be more imperveous against sewage water & noxious gasses.

A is the pug mill, with knives for grinding the clay, and an archimedian

screw for forcing out the clay. The plate *b* is set to any given angle to increase or diminish the pressure of the clay through the apperture *c*; *d* is a wire-cutting frame, which is not necessary to describe particularly, the use of which is to cut the layer of clay passing along the endless band, which may be set upon a gradual incline to facilitate its progress by the friction rollers *e*, *e*, *e*. The frame, when brought into action, is depressed a little, when the rack at bottom comes into contact with its counterpart fixed on to the endles band, by which it is carried onwards with the layer of clay during the act of cutting by hand.

f is an end view of the machine for forming the lumps of clay into any given form of block or brick; the letter D is a front view of the same machine with the lump of clay ready to be formed; first, by the descent of the mold *g*, followed by the piston marked by the dotted lines *h*, *h*, *h*. The machine is set in motion by the leavers *i*, *j*. The leaver *i* works the piston or pistons, and the leaver *j* works the molds for delivering the bricks or blocks upon the pallet boards *k*, with holes for the perforaters. The motion produced for the delivery of the blocks or bricks, &c. is as follows:— After the pressure has been given by the action of the piston worked by the leavers *i*, the cams upon the disk *l*, by the revolution of the shaft in the pugmill coming in contact with the leavers, depress or elevate the leavers at the given time required. The first motion for delivering the block is given to the piston by the cam *m*, by which it is raised from the block about an inch, when it remains stationary for a moment or two, during which short period the mold is set in motion by the leaver *j* acting upon the lifting rods *n*, *n*, which lift the mold right above the block, and so coming in contact with the catches *o*, *o*, suspended it to the piston beam; it is then carried upwards with the piston frame or beam, during which time the block or bricks are slided away by a fresh block or lump of clay upon a pallet board replacing it. Upon the descent of the piston with the mold suspended, the lower end of the katches come in contact with the cams *p*, *p*, fixed on the back of the guide rods *a*, *a*, by which they are forced outwards, and the mold being liberated, makes a quick descent before the pistons come in contact with the clay to be pressed into a block or brick. The block, as shown in the end view of machine marked *f*, is made square, but it will be evident by an inspection of the same, that the piston, plate, and pallet board being set to any angle, as shown by the dottid lines *q*, *q*, that the block may be formed to suit any drain of large or small dimentions. Letters *r*, *r*, *r*, *r*, show the blocks partly perforated or made lighter, and by the same not passing through the block or brick as is usually done in the manner of perferated bricks (now largely

manufactured), the blocks or brick will retain greater strength, while at the same time the advantages of quicker drying and burning, and lightness for exporting, will be equally gained. The blocks as they are produced may be conveyed a short distance upon friction rollers, as seen under Fig. *f*. The perforators & pistons, &c., may be covered with a suitable material, or sanded, to prevent adhesion, such as felt, fustian, or flannel will do.

The following are the claims which I prefer, as set forth in the several Drawings and descriptions under letters A, B, C, & D, respectively.

I. I claim the cistern, Fig. 1, for collecting the debris of the streets, and the form of trap effected by the curved plate, and by the hinged flap 5, 5, the one made to bed into a fillet of cement at the top & ends, the others self-acting, and always permanent. The curved plate requiring to be removed for emptying the debris. The edge of each is so made as to dip into the standing waters, which will only pass away at a given level, as shown by the dotted water line *o*.

II. Claim is Fig 2, of similer form to the cistern deescrbed, but larger, which (with the aid of the grateing, Fig. 4), is for the purpose of collecting the sewage manure, as described, together with the manner of raising the same by the use of the side plates, Fig. 3. The lifting apperatus and use of the hand pump as described.

III. I claim the use of the drain trap, as described in Fig. 10 & 11, with the expanding parts, by which action is given to empty the trap of its contents at an instant, free of unpleasant smell.

IIII. I claim the manufacture of blocks or bricks, and other articles by the use of the machinery, as described under letters C & D. The chief feturs of which are, the combination of the parts of the machine for compression & delivery of the bricks upon pallet boards, with holes for perforating the blocks, & the manner of dilivery the same by the action of the leavers in rapid succession, connected with the butting apparatus & the pug mill, togather with the mode of perforating while in the act of compression, as described.

I also claim the combination of the horizontal pistons, with the verticle piston *t* for feeding the molds & compressing the clay into the molds, in which there is a piston with perforators, and a pallet board within the molds, through which the perforators pass, as shewn in mold *y* of machine, letter E. The bricks being delivered out of the molds fixed upon the horizontal wheel, by an alternate motion being given to it from the pugmill shaft, and by the piston in the mold being lifted up by the lower end, with friction roller traversing an inclined plane, or by the action of leavers.

SPECIFICATION in pursuance of the conditions of the Letters Patent, filed by the said Edward Jones in the Great Seal Patent Office on the 26th January 1859.

TO ALL TO WHOM THESE PRESENTS SHALL COME, I, EDWARD JONES, of Olive House, No. 20, Camden Cotteges, N.W., in the Parish of St. Pancras, and County of Middlesex, send greeting.

WHEREAS Her most Excellent Majesty Queen Victoria, by Her Letters Patent, bearing date the Twenty-sexth day of July, in the year of our Lord One thousand eight hundred and fifty-eight, in the twenty-first year of Her reign, did, for Herself, Her heirs and successors, give and grant unto me, the said Edward Jones, Her special licence that I, the said Edward Jones, my executors, administrators, and assigns, or such others as I, the said Edward Jones, my executors, administrators, and assigns, should at any time agree with, and no others, from time to time and at all times thereafter during the term therein expressed, should and lawfully might make, use, exercise, and vend, within the United Kingdom of Great Britain and Ireland, the Channel Islands, and Isle of Man, an Invention for "EFFECTING A BETTER SYSTEM OF DRAINAGE, AND THE MACHINERY AND APPARATUS NECESSARY FOR THE SAME, WHEREBY THE SEWAGE MANURE IS COLLECTED AND CONVENIENTLY EXPORTED FOR USE, AND THE NOXIOUS EFFLUVIA PREVENTED FROM CONTAMINATING THE AIR OF POPULOUS CITIES AND TOWNS, AND WHEREBY THE DRAINS MAY BE MORE STRONGLY AND SECURELY BUILT BY THE MANUFACTURE OF A MORE SUITABLE AND BETTER MATERIAL," upon the condition (amongst others) that I, the said Edward Jones, my executors or administrators, by an instrument in writing under my, or their, or one of their hands and seals, should particularly describe and ascertain the nature of the said Invention, and in what manner the same was to be performed, and cause the same to be filed in the Great Seal Patent Office within six calendar months next and immediately after the date of the said Letters Patent.

NOW KNOW YE, that I, the said Edward Jones, do hereby declare the nature of my said Invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement, reference being had to the Drawings thereunto annexed, and to the letters and figures marked thereon:—

That the particulars of the said Invention, and the benefits to be derived therefrom, may be more clearly understood and appreciated, it is necessary to consider briefly the present state of the drainage of the metropolis, and the acknowledged difficulties to be overcome.

Fig. 1, Sheet No.1, is a plan of streets with air-shafts marked theron *a*, *a*, seen in the center of the great thoroughfares of London, from which, as well as from the hundreds of thousands of inlets, noxious vapours continually arise, from the sewers, and more particularly so in the decline of the year, when a heavy and dense atmosphire prevails, which weighs and presses out the deadly miasms from their hiding places. And as it is invereably the case that the number of deaths greatly increase simultaneously with the altered condition of the atmosphire relatively considered with the state of the sewer gases, the inquiery may well be made as to the real cause of this increase of mortality.

Dr. Letheby, the medical officer of health for the City, in treating of the putrefactive decomposition of sewage observes, "In seeking to know what part of the sewage it is which undergoes the process of decomposition, I have assertained that it is not the liquid part which continues to ferment, but the solid, and this keeps up the putrefactive action for months, evolving large quantities of ammonia, sulfurated hydrogen, marsh gas, and carbonic acid. It is the sedimentary matter, therefore, which is the chief cause of the offensive effluvium. The Dr. again observes, This part of the enquiery is of great importance, for very little can be done in the way of providing a remedy for the sewage miasms untill something is definitely known of their nature and composition; hitherto this subject has been treated emperically, and the suggestions which have been made from time to time for ventilating the sewers and destroying the foul gases, have had no foundation in a right knowledge of the things to be delt with. The history, therefere, of these schemes is a history of unprofetable failures, and of no practical value beyond that of informing us what cannot be accomplished.

We now proceed to describe the remedy which it is believed will be found practically valuable, siniple, and effectual. Fig. 2, 2, are two man-holes, one at each end of the street giving a longitudinal view of a branch drain, and a section of main drain. *a*, *a*, are the man-hole doors; a plan is seen under Fig. 6, with a strong ring to lift the same from its place, when the tanks are to be lifted out. The tanks are made smaller at bottom for the more easy discharge of their contents, and in order to facilitate the same a lose false botton may be set therin. The grating *c*, *c*, *c*, consists of a double row of bars, with a space between to receive a chamber made of wire, into which granulated burnt brick off charcoal will be placed, as a filtering and deodorising medium, by which means the solid sewage is seperated and caused to lodge in the tank; *d*, *d*, are flood-gates made to werk up and down by rack and pinion, to which is attached a ratchet wheel

for the purpose of holding up the flood-gate at any position. These flood-gates when down will cut off the flow of water over the tank, and shut out the effluvia during the operation of removing the tank, which is done as follows:—The man-hole door being lifted of, the man descends by means of the steps, he lets down the flood-gates, and with a small hand-pump he reduces the sewage in the tank to the proper level, where he fixes on the lid, and wedges it down as seen at Fig. 4; *e*, *e*, *e*, are house drains; *f*, is a core with a cord attached, passing over friction pullies for the purpose of clensing out branch drains of small diameter, and where the fall is not sufficient to be self-clensing, at the back of which core is seen an expanding bag or vessel made to collaps by means of elastic bands *q*, *q*, *q*, for pressing out disinfecting fluid; *h*, is a jointed rod made of strong wire for the purpose of passing onwards the loose cord marked *i*, to which the cord will be attached for the next operation. Fig. 3 is a cross section of the man-hole already described with the tank *b*. The tanks containing about one ton of solid sewage to each, will be lifted out by means of a portable crane, 20 to 30 tons of which may be lifted out in a very short time by the aid of a small portable steam engine to work the crane, when they will be conveyed away into the country for agricultural use, while empty tanks will replace the full ones; Fig. 5 is a new description of gully trap combined with a tank for the purpose of removing the road drift or gravel, and thus preventing the same from descending into the drains. These tanks are made taper, into which a false bottom may be fixed, so that the contents may be easily removed. The curved dip plate rests upon a ledge or fillet, and is fastened down by the turn of the handle. When it is thought necessary to ventilate the drains, these gully traps or dip plates may be detached and thrown back. When the tank requires to be emptied the plate is first lifted out. Fig. 6, is another kind of gully trap with movable tank, the trap is formed by the movable or hinged flap, descending below the water line *k*, with space left at the bottom for the water to pass under. The tank is removed by merely lifting up the grating in this case.

In Sheet No. 2, Fig. 7, is shown the adaptation of the drain trap already described, to the purposes of sinks, areas, &c., they will require no brick cess-pool, but are fixed upon the socket pipe, being cast entire with a movable tank, and dip plate either fixed or movable, other parts being equally adjusted; Fig. 8 is a water-closet pan and trap, with expanding joints at *a* & *b*, to allow the pipe end of the trap to descend sufficiently low by means of the leaver, so as to empty its contents, the rod or bar attached to the handle for working the leaver acts upon the star points of a valve or stop-cock *c*, by which a supply of water enters the closet pan, the weight immediately closing the

same, when left free. The flexible joints are made of any waterproof air-tite material, and secured to the respective parts so as to prevent the least smell escaping.

It will be seen that this kind of improved movable trap and pan are capable of being adapted to any kind of portable watercloset, or night commode, or invalid chair, by simply fixing underneath a vessel to slide in air-tite grooves, the same being so adapted with a lid to slide over it, while in the act of being withdrawn, as hown at Fig. 9.

Having thus described the mode of dealing with the sewage matters in the drains and waterclosets, I now proceed to describe the latter part of my Invention, whereby the drains may be more securely & strongly constructed by the manufacture of a better material.

Fig. 9× is a section; Fig. 10 a plan; and Fig. 11 a front view of a compound brick machine, one part working by means of an horizontal wheel with molds, pistons, and palets, and an incline plane underneath the pistons for raising the bricks.

Letter *a* is the pugmill with knives and an archimedian screw, for forcing out the clay to supply the molds; *b* is the molding wheel; *c* are pistons for forcing the clay into the molds. Piston No. 1 wets the molds by descending into it with a sop; No. 2 molds the bricks; and No. 3 finishes it by giving it a final pressure; C× is an horizontal piston for forcing the clay into the mold box, made to slide in grooves. The whole of the pistons are worked by cams suitably adjusted on the disk *f*, *f*. The bricks are molded on palet boards covered with felt, and lifted out of the molds by the alternate motion of the wheel, acted upon by teeth on the disk as seen at *x*. The pistons in the molds having friction rollers, are worked by the incline plane by which the bricks are delivered as hown at letter *e*×; *g* are lumps of clay severed by the cutting wires *h* as the clay passes along on the friction rollers. The virticle molding machine *i* being fed with them by 2 boys, one on each side. This virticle machine is worked by the forked leaver *l*, for giving the pressure, and by the leaver *m* for lifting the mold, and delivering the brick. The operation is as follows:—The forkid leaver first gives the pressure, and then rises an in inch or so, when it becomes stationary, and the leaver *m* coming in contact with the cam on the disk *f*, *f*, the molds are thereby lifted up, and the bricks are forced out by the stationary pistons. A palet board or boards being firs slided under to receive them when they pass on to the rollers *k*. The short leaver markid *n* is connected with the leaver *l*, and with perforaters which are set in motion simultaniously with the pressure given to the clay, and immediately delivered or made to descend when the pistons rise

the first inch, and before the molds are elevated at all. The molds when fully raised become suspended by the catch *p*, and are again liberated by the pistons being elevated, the cams *r* on the side rods come in contact with the lower pert of the catches, by which they are relieved; Fig. 12 are large blocks molded by the same verticle machine, by changing the molds and pistons for constructing sewers as shown in section Fig. 13. It will be easily seen that, by setting the pistons to any angle, wedged-formid bricks can me molded to suit any kind of drain, be the same large or small.

Having now described the nature of my improvements, I would have it understood, that I do not claim the several parts seperately as enumerated; but what I desire to claim as the Invention secured to me by the Letters Patent afforesaid is,—

First, the portable tanks for collecting the sewage and debrise of the streets, togather with the filtering gratings and flood-gates as described, with the mode of effecting their removal.

Second, the gully traps and tanks as described.

Third, the closet pan and trap with flexible joints and aparatus as described for the various purposes.

Forth, the sink and area trap & tank.

Fifthly, I claim the mode of manufacturing bricks as described, by the combination of pistons, leavers, and perferaters, connected with the cutting aparatus for preparing the blocks. I do not necessarily confine myself to the precise modes herein described for effecting the objects set fort, as the same may be varied to advantage.

In witness whereof, I, the said Edward Jones, have hereunto set my hand and seal, the Twenty-sixth day of Jan^{ry}, in the year of our Lord One thousand eight hundred and fifty-nine.

EDWARD JONES. (L.S.)

Witness,

JOSEPH PORTER,

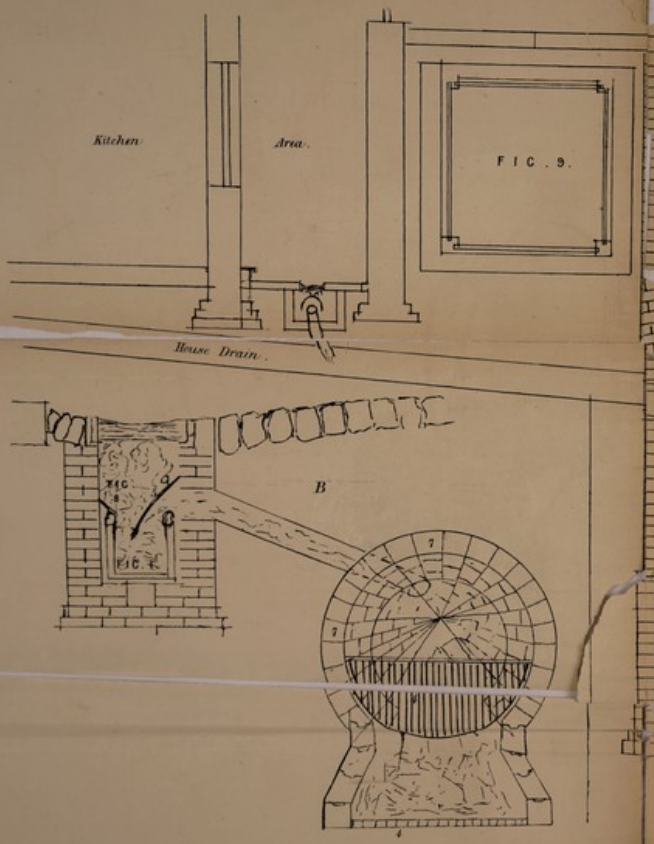
15, York Buildings, Adelphi.

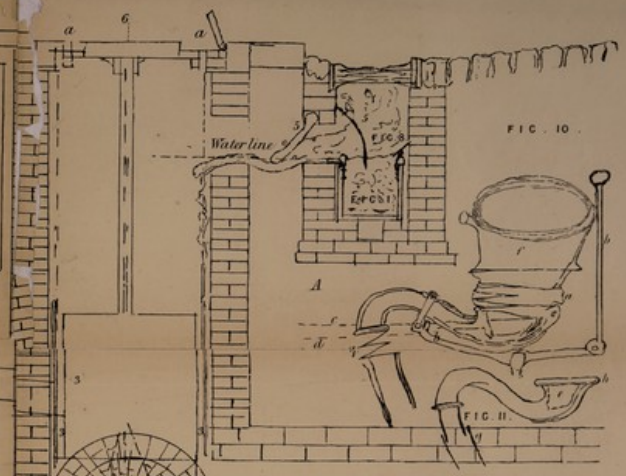
LONDON:
Printed by GEORGE EDWARD EYRE and WILLIAM SPOTTISWOODE,
Printers to the Queen's most Excellent Majesty. 1859.

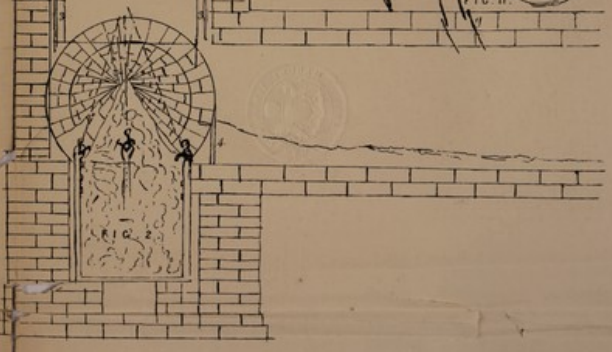
A.D. 1858. JULY 26. Nº 1683.

JONES' PROVISIONAL SPECIFICATION.

SHEET 1
(2 SHEETS)







The drawing left with Provisional Specification is colored.

Drawn on Stone by Malby & Sons.

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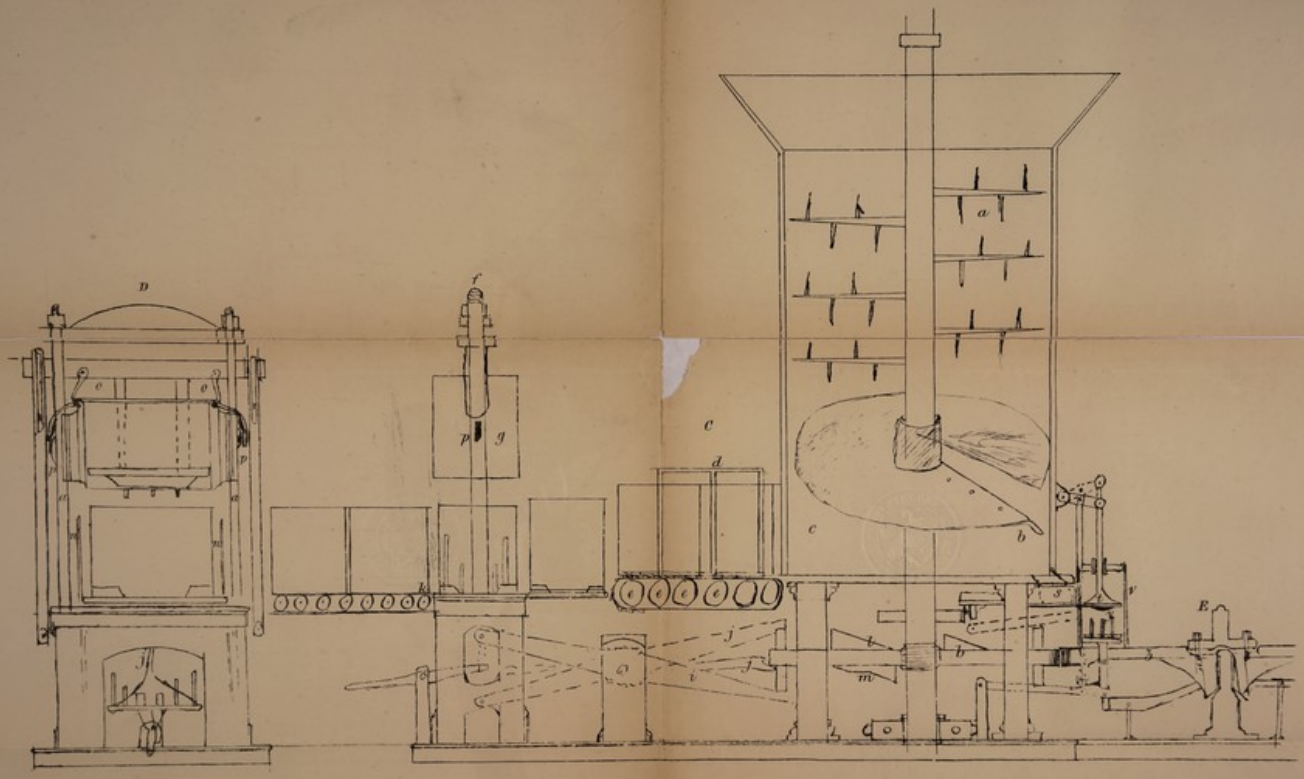

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2 SHEETS /
SHEET 1

FIG. 1.

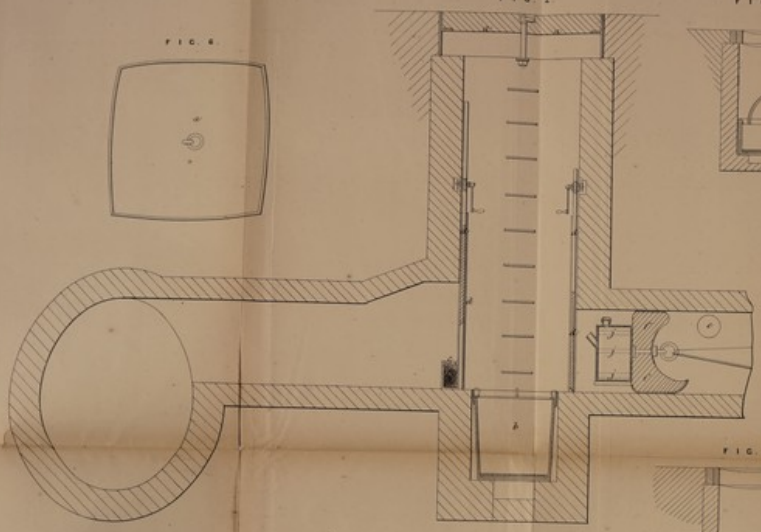


FIG. 6.

FIG. 5.

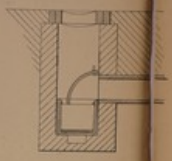


FIG. 2.

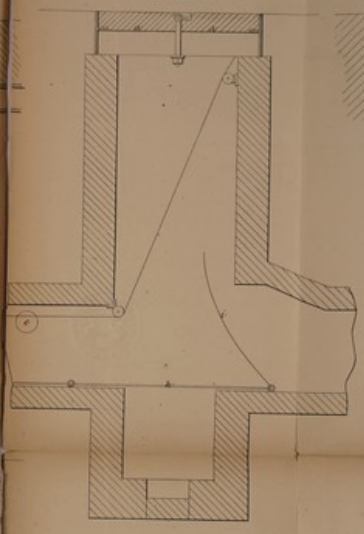


FIG. 3.

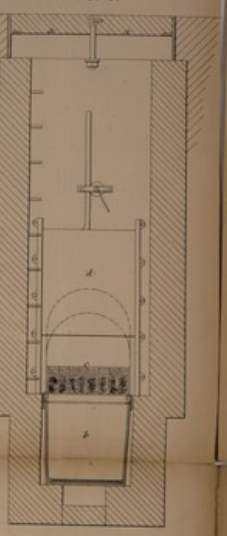


FIG. 5.

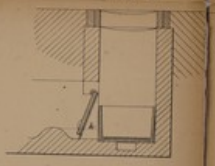


FIG. 4.

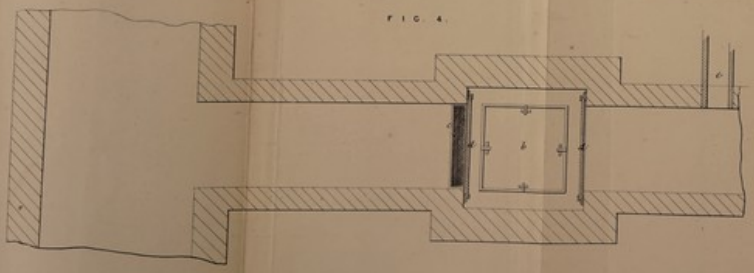
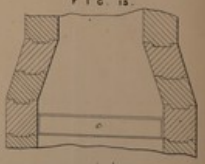
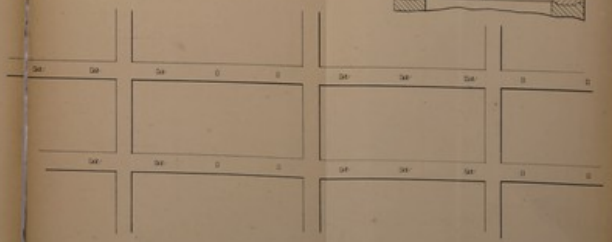


FIG. 15.





The black drawing is not colored.

London: Printed by George Edward Eyre and William Spottiswoode,
Printers to the Queen's most Excellent Majesty. 1858.

FIG. 10.

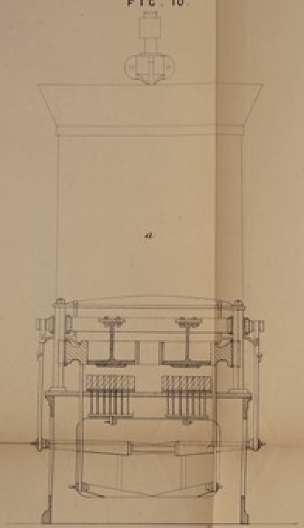


FIG. 12.

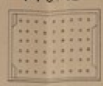


FIG. 12.

FIG. 9*.

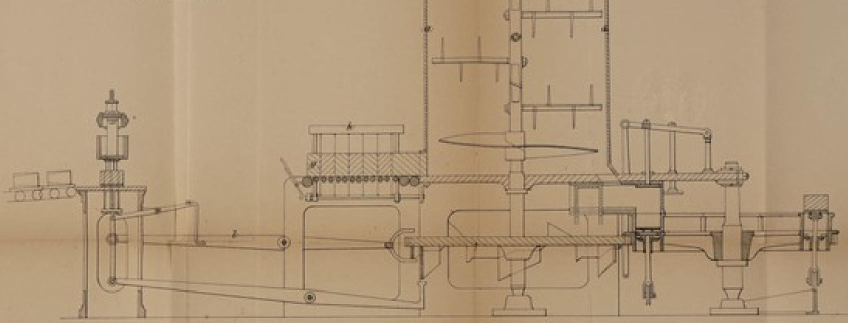


FIG. 7.

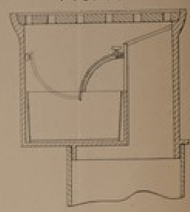


FIG. 8.

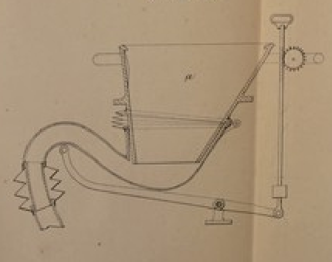
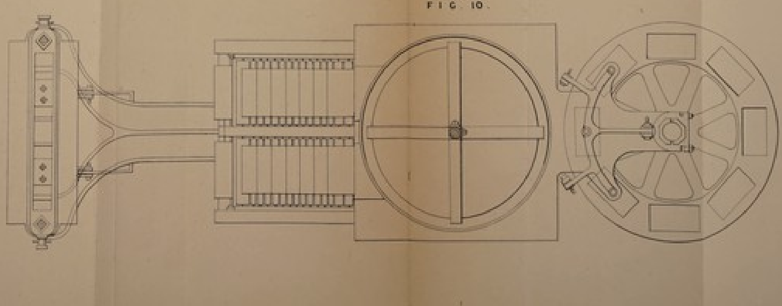


FIG. 10.



The filed drawing is not colored.

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Drawn on Stone by Malby & Sons.