

Specification of William Strang : separating sewage.

Contributors

Strang, William.

Publication/Creation

London : Great Seal Patent Office, 1869 (London : George E. Eyre and William Spottiswoode)

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A. D. 1868, *28th August.* N^o 2667.

S P E C I F I C A T I O N

OF

WILLIAM STRANG.

SEPARATING SEWAGE.

LONDON:

PRINTED BY GEORGE E. EYRE AND WILLIAM SPOTTISWOODE,
PRINTERS TO THE QUEEN'S MOST EXCELLENT MAJESTY :

PUBLISHED AT THE GREAT SEAL PATENT OFFICE,
25, SOUTHAMPTON BUILDINGS, HOLBORN.

Price 1s. 2d.

1869.





A. D. 1868, 28th AUGUST. N° 2667.

Separating Sewage.

LETTERS PATENT to William Strang, of Glasgow, in the County of Lanark, North Britain, for the Invention of "**IMPROVEMENTS IN ARRANGEMENTS AND APPARATUS FOR DEALING WITH SEWAGE.**"

Sealed the 23rd February 1869, and dated the 28th August 1868.

PROVISIONAL SPECIFICATION left by the said William Strang at the Office of the Commissioners of Patents, with his Petition, on the 28th August 1868.

I, **WILLIAM STRANG**, of Glasgow, in the County of Lanark, North
5 Britain, do hereby declare the nature of the said Invention for "**IMPROVEMENTS IN ARRANGEMENTS AND APPARATUS FOR DEALING WITH SEWAGE,**" to be as follows, that is to say:—

This Invention relates to the dealing with sewage, more particularly in connection with the watercloset system, by means of improved
10 arrangements and apparatus of an extremely simple and inexpensive character, and which are designed to effect the separation of the liquid from the more solid constituents, so that the latter may be the more readily and satisfactorily available for agricultural purposes.

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The improved arrangements and apparatus may be applied with equal convenience either to a single watercloset or to a discharge pipe from a number of waterclosets.

The arrangement and form of the apparatus are susceptible of considerable variation, but an essential feature of all modifications is the providing of a vessel at the bottom of the soil pipe with separate outlets for the liquids and solids combined with the interposing therein of a filtering or separating medium through which the liquids can pass, but which keeps back the solids. The filtering or separating medium is by preference applied in an inclined, vertical, or overlying position, so that the solids tend by their greater gravity to fall away from it into a deeper part of the vessel, in which deeper part the outlet for them is situated. The liquids have access to their outlet through the separating medium only, and the sewage accumulates in the vessel and in the pipe leading down to it until it has a sufficient head to force the liquids through. The liquid outlet is always open, but the solid outlet is generally shut, being opened periodically for the discharge of the solids into any suitable portable or other receptacle. It is most convenient to arrange the discharge for the solids into an ash-bin, so that they may be mixed with or covered by the ashes in order to prevent effluvia, and so as to form a valuable compound manure.

In a simple and convenient modification of the improved apparatus the dwelling-house soil pipe communicates at its lower end with the top of a vessel made with vertical sides and an inclined or rounded bottom. This vessel is divided into two compartments by a vertical partition extending from the top down to within a short distance of the bottom, and the pipe from the closets or kitchen jawbox communicates with what may be termed the inlet compartment. The other may be termed the liquid outlet compartment, and its bottom is partially closed by a perforated plate or some suitable permeable material on which sand or other filtering material is put, and above which the liquid outlet is situated. The discharge outlet for the solids is arranged in connection with the bottom of the vessel, and may consist of a pipe or duct fitted with a valve and leading into an ash-bin, or it may be fitted with a coupling to connect by flexible piping with a tank cart in which the soil may be removed to the country. Both compartments of the vessel are by preference connected by pipes or otherwise with the rain-water pipes, so that effluvia arising from the

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sewage may be thereby conveyed into the upper atmosphere and so be prevented from entering the house. The vessel is, of course, completely closed with the exception of the communications herein-before referred to.

5 The improved arrangements and apparatus are applicable not only for dealing with sewage from waterclosets and kitchens, but also for dealing with any mixture of water and impurities ordinarily discharged into the main sewers.

SPECIFICATION in pursuance of the conditions of the Letters Patent,
10 filed by the said William Strang in the Great Seal Patent Office on the 26th February 1869.

TO ALL TO WHOM THESE PRESENTS SHALL COME, I, WILLIAM STRANG, of Glasgow, in the County of Lanark, North Britain, send greeting.

15 **WHEREAS** Her most Excellent Majesty Queen Victoria, by Her Letters Patent, bearing date the Twenty-eighth day of August, in the year of our Lord One thousand eight hundred and sixty-eight, in the thirty-second year of Her reign, did, for Herself, Her heirs and successors, give and grant unto me, the said William Strang, Her special licence that
20 I, the said William Strang, my executors, administrators, and assigns, or such others as I, the said William Strang, 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,
25 within the United Kingdom of Great Britain and Ireland, the Channel Islands, and Isle of Man, an Invention for "**IMPROVEMENTS IN ARRANGEMENTS AND APPARATUS FOR DEALING WITH SEWAGE,**" upon the condition (amongst others) that I, the said William Strang, my executors or administrators, by an instrument in writing under my, or their, or one of
30 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.

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NOW KNOW YE, that I, the said William Strang, 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 in writing, reference being had to the accompanying Drawings, that is to say :—

My said Invention relates to the dealing with sewage, more particularly in connection with the watercloset system, by means of improved arrangements and apparatus of an extremely simple and inexpensive character, and which are designed to effect the separation of the liquid from the more solid constituents, so that the latter may be the more readily and satisfactorily available for agricultural purposes, whilst the former can be run into sewers and rivers in a purified and innocuous condition.

My improved arrangements and apparatus may be applied with equal convenience either to a discharge pipe from a single watercloset or to a pipe from a number of waterclosets; but it is an important feature of my system that it provides for the interception of the solids of watercloset or other discharges so as to entirely prevent their access to the ordinary street sewers, and that without introducing the expence of an additional set of drains or watercloset sewers. The precise arrangement and form of my improved apparatus are susceptible of considerable variation, but an essential feature of all modifications is the providing of a vessel at the lower end of the discharge pipe with separate outlets for the liquids and solids combined with the interposing therein of a filtering or separating medium of sufficient depth through which the liquids can pass, which keeps back the solids. I prefer to apply the filtering or separating medium in a vertical, inclined, or overlying position, so that the solids tend by their greater gravity to fall away from it into a deeper part of the vessel, in which deeper part the outlet for them is situated. The liquid has access to its outlet through the separating medium only, the head or pressure necessary to make it pass upwards through that medium being simply obtained by the filling up of the vessel and of the lower part of the pipe leading to it. The liquid outlet is always open, but the solid outlet is provided with a valve which can be always kept shut, excepting when opened periodically for the discharge of the solids into any suitable portable or other receptacle, or a portable receptacle may be always connected to the solid outlet, being changed when filled.

My improved arrangements and apparatus are applicable not only for

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dealing with sewage or discharges from waterclosets, privies, kitchens, stables, byres, and the like, but also for dealing with any mixtures of water and solid impurities such as are ordinarily discharged from public works into drains, sewers, or rivers.

5 Various materials may be used for the separating and filtering medium, but I prefer to employ ashes, not only on account of their effective filtering and deodorising action, but also because being obtained from household and engine fires they are produced in the very localities in which waterclosets are situated; whilst instead of as heretofore being
10 troublesome and involving unremunerative expence in their removal they are in my apparatus converted into a valuable manure which may be profitably disposed of.

And in order that my said Invention, and the manner of performing the same, may be properly understood I have hereunto appended two
15 Sheets of explanatory Drawings, to be hereafter referred to, and representing three convenient modifications of my improved apparatus. The same reference numerals are used to mark the same parts in all the Figures.

One modification is shown in vertical section in Figure 1, and in end
20 view in Figure 2, on Sheet 1 of the Drawings, and in this arrangement the dwelling-house soil pipe 1 communicates at its lower end with an inlet 2 into a vessel 3 made with vertical sides and an inclined and rounded bottom 4. Inside the vessel 3, and just above the inlet 2, there is a grating 5, 6, which is made in two parts for a purpose herein-after
25 explained. Ashes or other suitable filtering materials are filled into the upper part of the vessel 3, but a fine grating 7 is provided at one upper corner to prevent their entering an outlet 8 by which the filtered water passes off. An outlet 9 is provided at the lower end of the inclined bottom 4 for the more solid matters, and this outlet is furnished with a
30 screw coupling 10 for attaching the neck of a portable receptacle 11. When changing the receptacle 11 the outlet 9 is closed by an internal valve 12 which is lowered and raised by means of a rod 13. The ashes gradually work down through the grating 5, 6, but may be wholly changed at any time when considered sufficiently charged with the
35 matters which they abstract from the water passing up through them by lowering the lower part 6 of the grating. The upper part 5 of the grating rests on narrow flanges formed on the sides of the vessel 2, and is formed with bars of considerable width apart. The lower grating 6 is formed

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with bars at the same distances apart as those of the upper one, but they are placed opposite the spaces of the upper grating and so as when raised close up thereto to enter between the upper bars and reduce the effective passage through. On lowering the lower grating however the ashes have a much freer passage and fall through. The lower gating 6 is suspended 5 by rods 14 and the ends may be lowered or raised simultaneously or separately. Prongs are fixed in the bars of the lower grating for the purpose of breaking up the ashes above when they mass together.

Figure 3 is a vertical section of a second modification, which resembles the former excepting that it has a single fixed grating 5 for the ashes to 10 rest upon, whilst a door 15 is provided for the removal of the lowermost ashes when these are considered to be saturated; also that the valve 12 and outlet 9 for the solids is constructed in an external valve box 16; also that the filtered liquid overflows by a fine grating 7 all round the upper part of the vessel or box into a gutter 17 leading to the liquid 15 outlet pipe 8.

A third modification is shown in vertical section and in end view in Figures 4 and 5 on Sheet 2 of the Drawings. This differs from the first modification in having the space under the gratings 5, 6, divided into two compartments by a partition 18 and valve 19. In using this arrange- 20 ment the outer valve 12 is kept closed and the inner valve 19 open, so that the solids may collect in the lower compartment, and when it is considered full enough a portable receptacle is connected to the outlet 9, and the inner valve 19 is then closed and the outer one 12 opened for the purpose of transferring the solids to the portable receptacle. 25

If wished the water which comes away from the liquid outlet pipe 8 30 may be passed through a second or several separate and distinct masses of ashes or other suitable filtering materials, after which it will be quite fit for many uses; but if the object is simply to prevent the pollution of street sewers and rivers the water from either modification of apparatus 30 may be at once run into the drain or sewer without being subjected to a second filtering.

It is an obvious advantage of my improved arrangements that they completely avoid the difficulties met with in existing systems in preventing the entrance into dwelling-houses of foul gases and exhalations 35 from drains and sewers, for with them there can be no current or passage of air or gases up through the soil pipes in consequence of the apparatus interrupting and stopping the passage through.

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Having thus particularly described my said Invention, and the manner in which the same is to be performed, I have to state that I do not restrict myself to the precise details herein described or delineated, but that what I believe to be novel and original, and claim as the Invention
5 secured to me by the herein-before in part recited Letters Patent is, the intercepting of sewage before reaching street sewers or other ordinary outlets by improved apparatus, substantially such as is herein-before described, and in which the liquid becomes separated from the more solid constituents and is filtered through ashes or other suitable materials.

10 In witness whereof, I, the said William Strang, have hereunto set my hand and seal, this Twenty-fifth day of February, in the year of our Lord One thousand eight hundred and sixty-nine.

WILLIAM STRANG. (L.S.)

Witness,

15 EDMUND HUNT,
Patent Agent,
Glasgow.

LONDON :

Printed by GEORGE EDWARD EYRE and WILLIAM SPOTTISWOODE,
Printers to the Queen's most Excellent Majesty. 1869.

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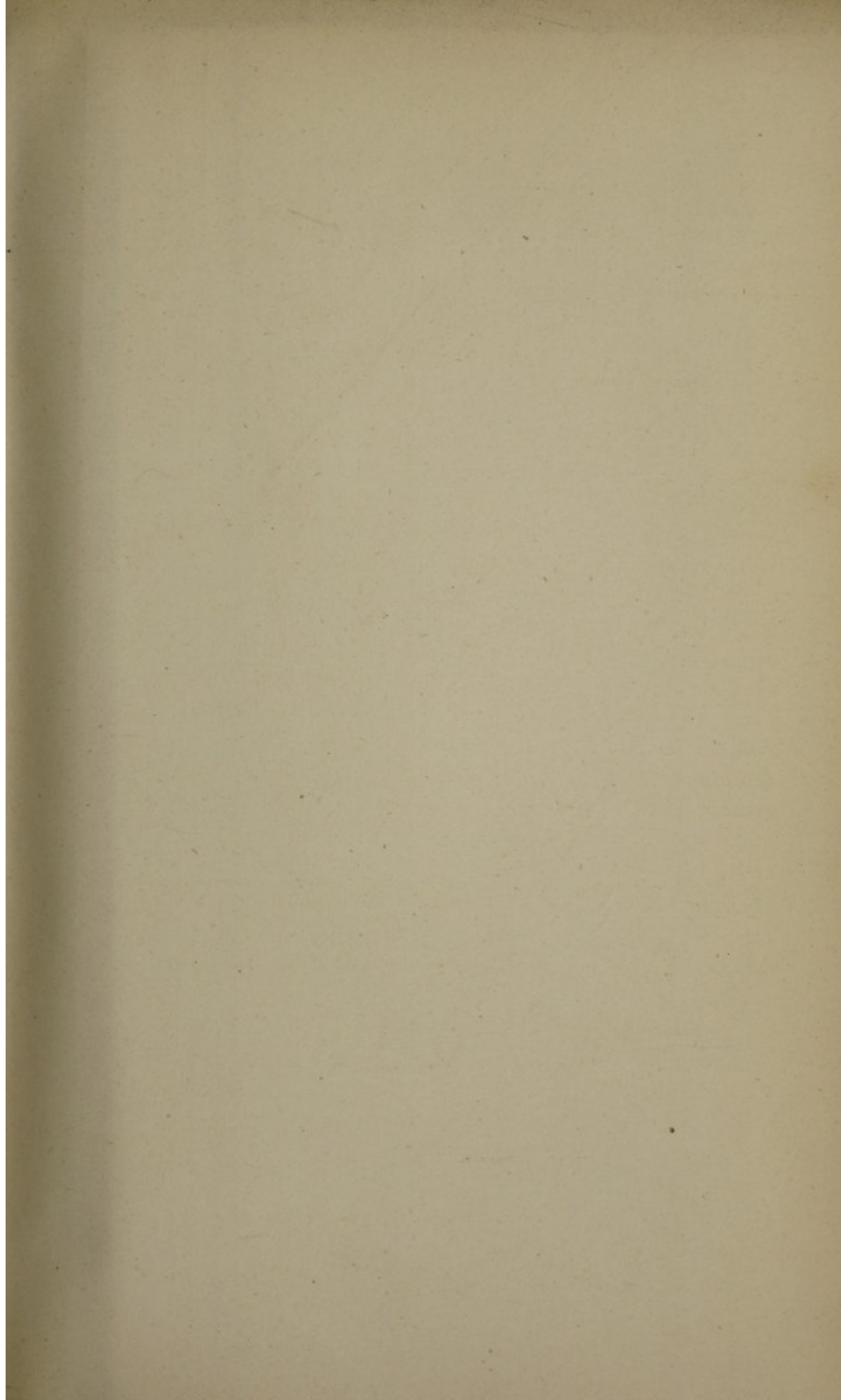
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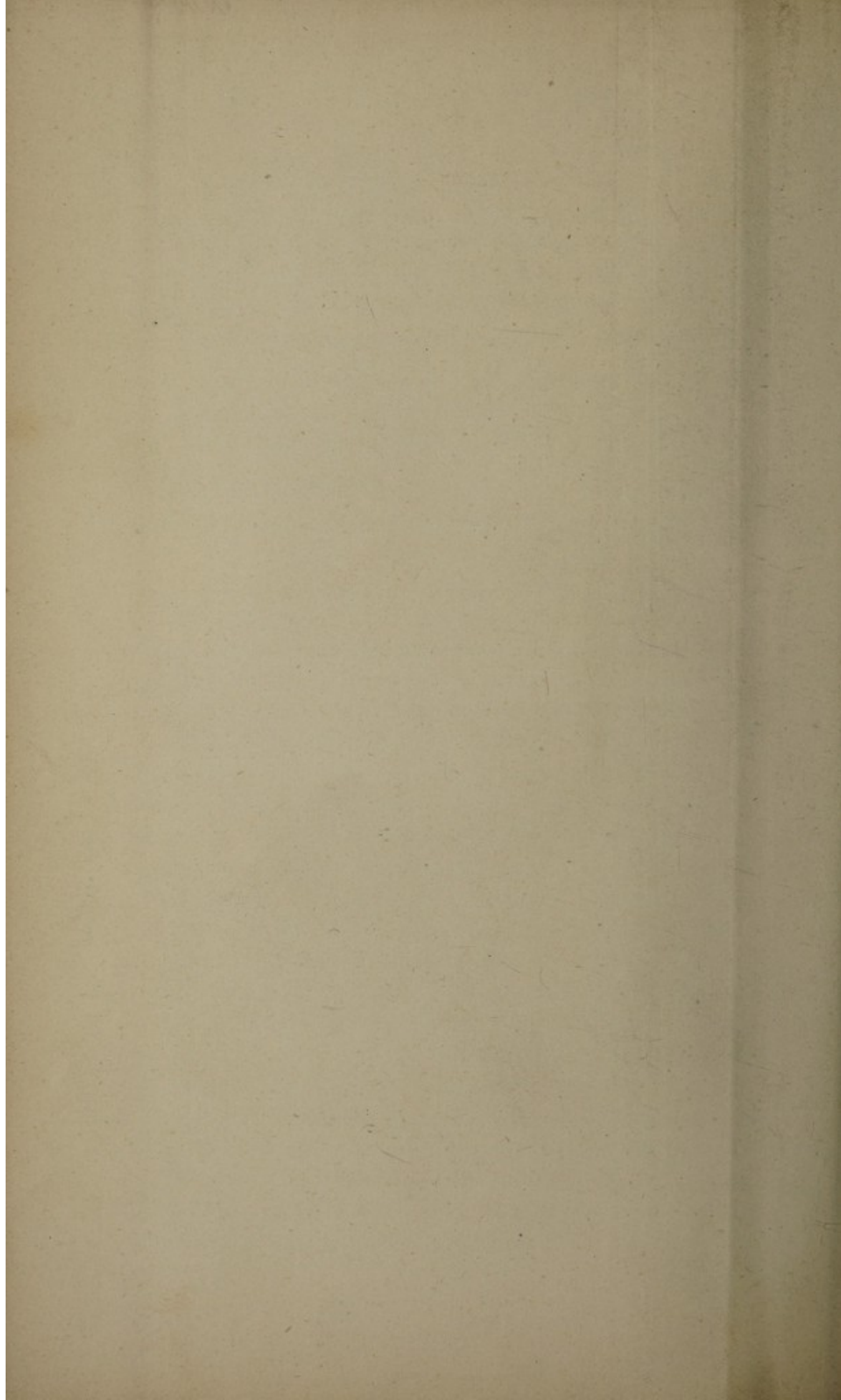


FIG. 1

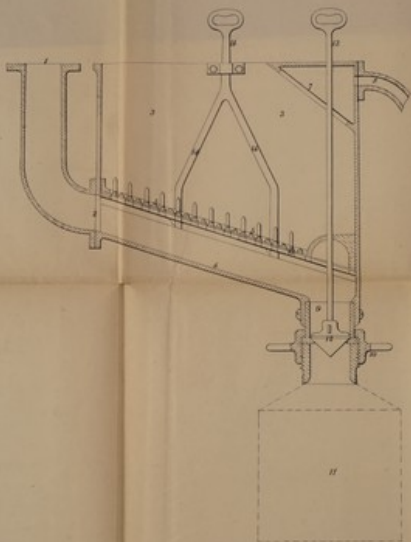
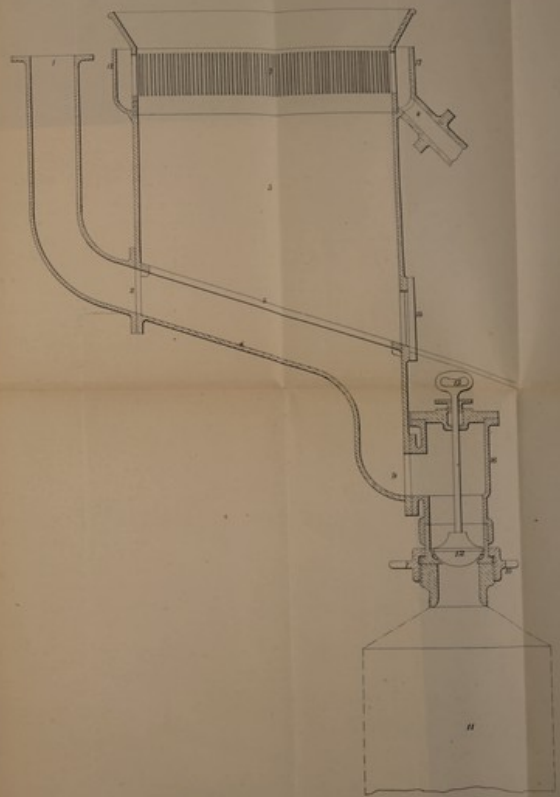


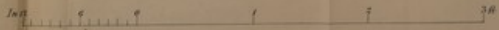
FIG. 2



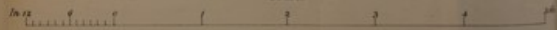
FIG. 3



Scale



Scale



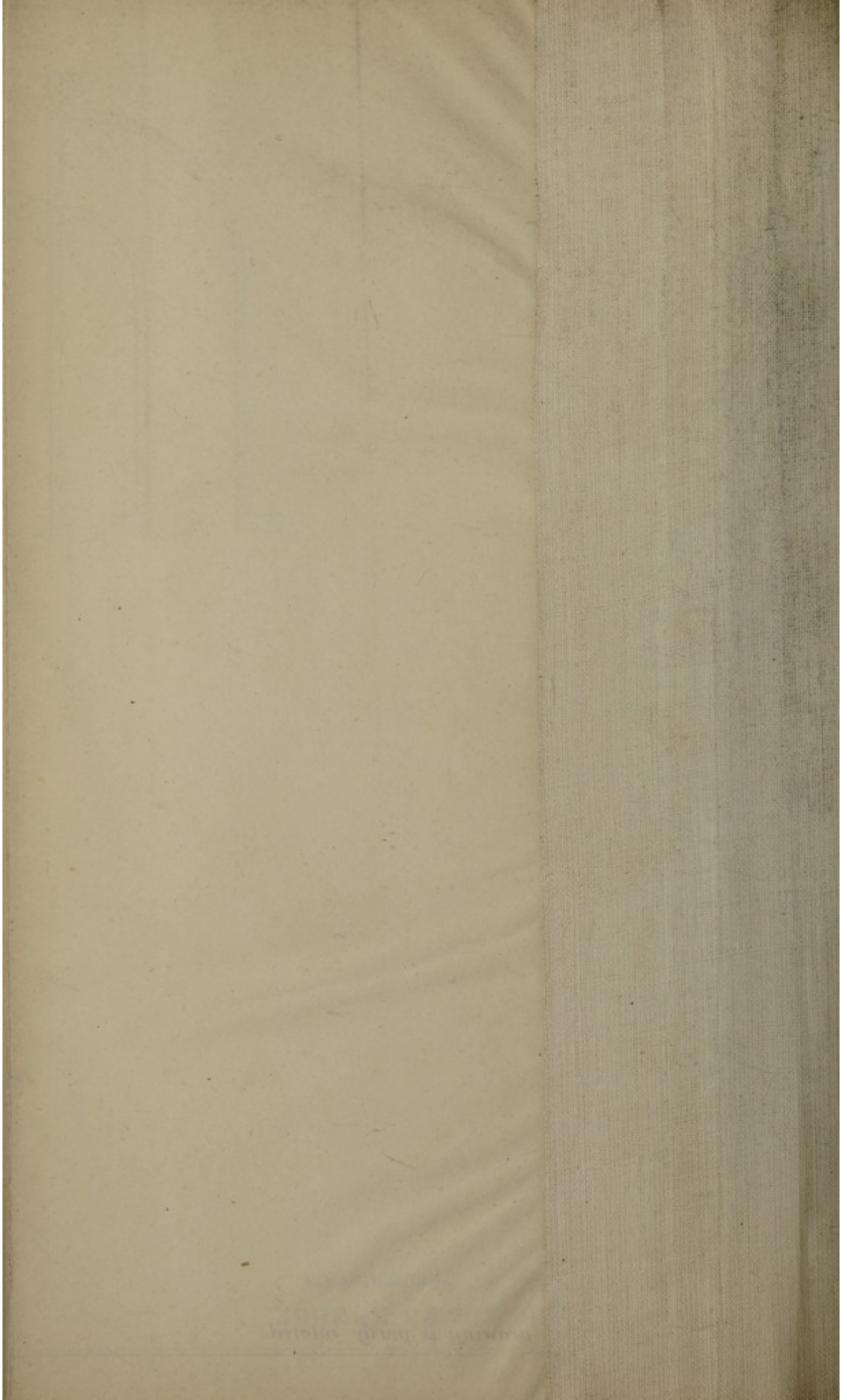


FIG. 4.

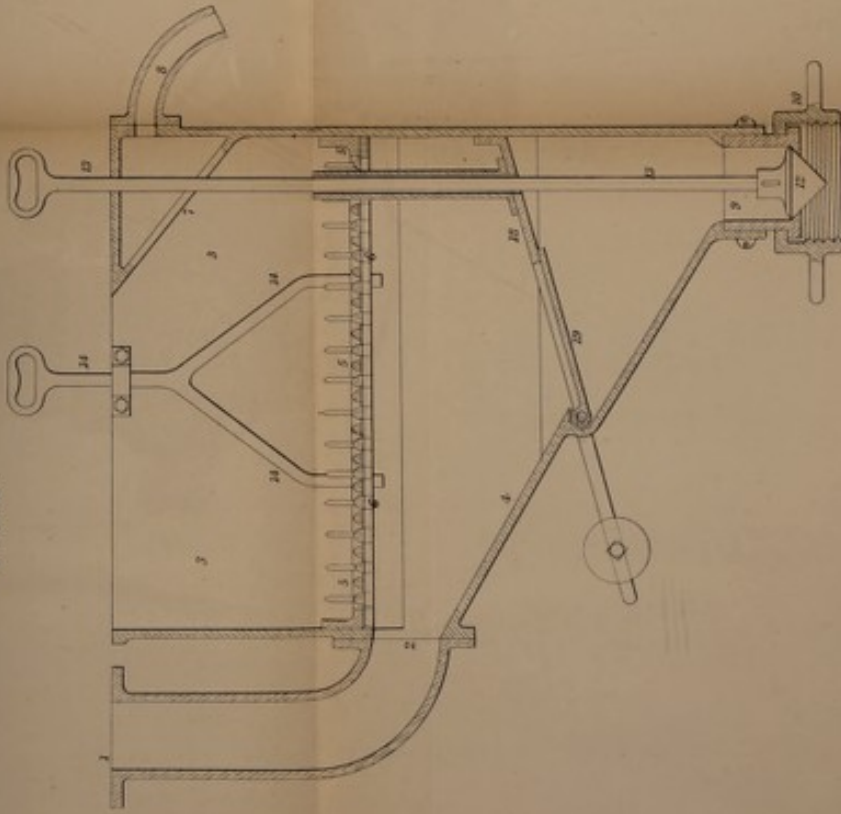
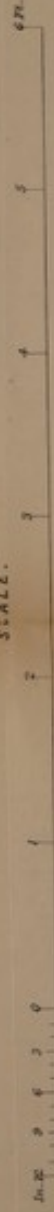


FIG. 5.



SCALE.



The filed drawing is partly colored.

