J. K. JENSEN.

ARRANGEMENT FOR TRIMMING CLAY PIPES.

APPLICATION FILED JULY 14, 1914.

1,132,851.

Patented Mar. 23, 1915.

5 SHEETS—SHEET 1.

FIG. 1.

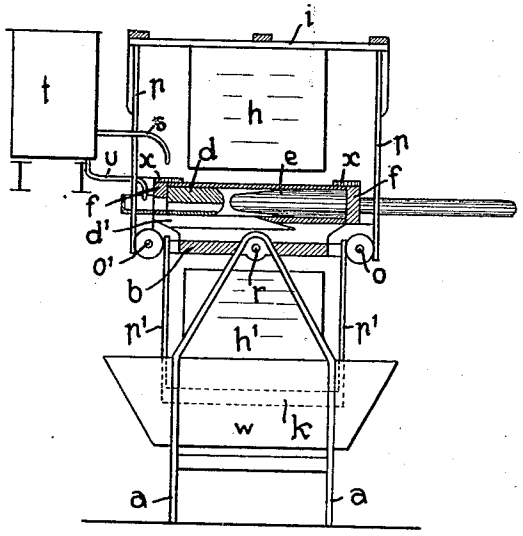


FIG. 2.

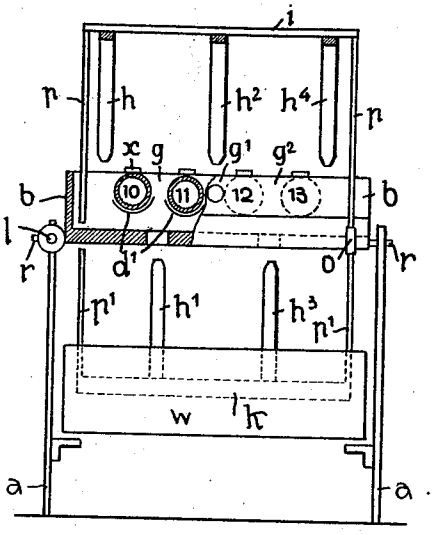
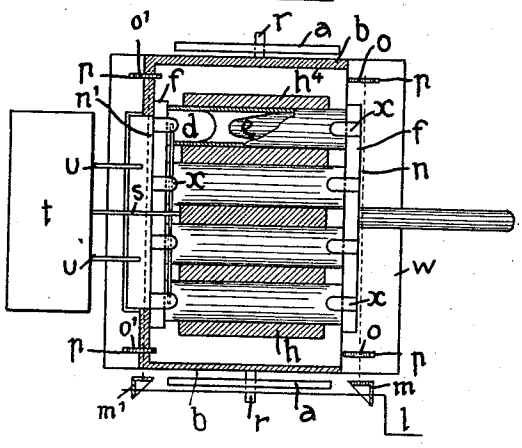


FIG. 3.



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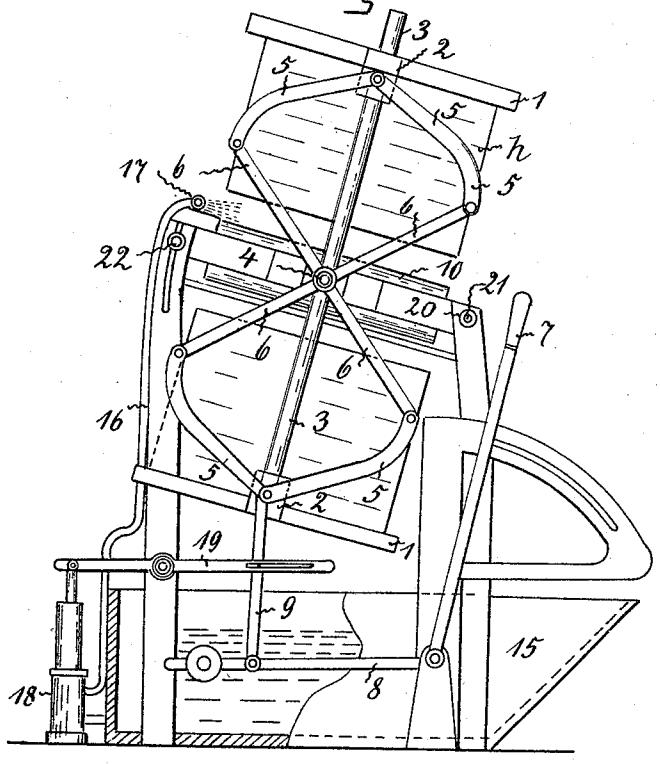
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5 SHEETS—SHEET 2.

Fig. 4.



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ARRANGEMENT FOR TRIMMING CLAY PIPES.

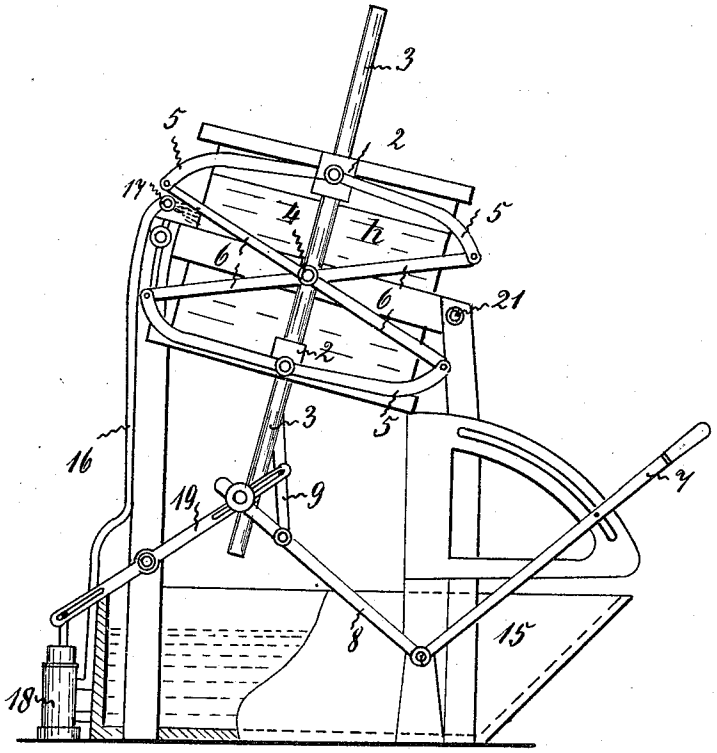
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5 SHEETS—SHEET 3.

Fig. 5



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ARRANGEMENT FOR TRIMMING CLAY PIPES.

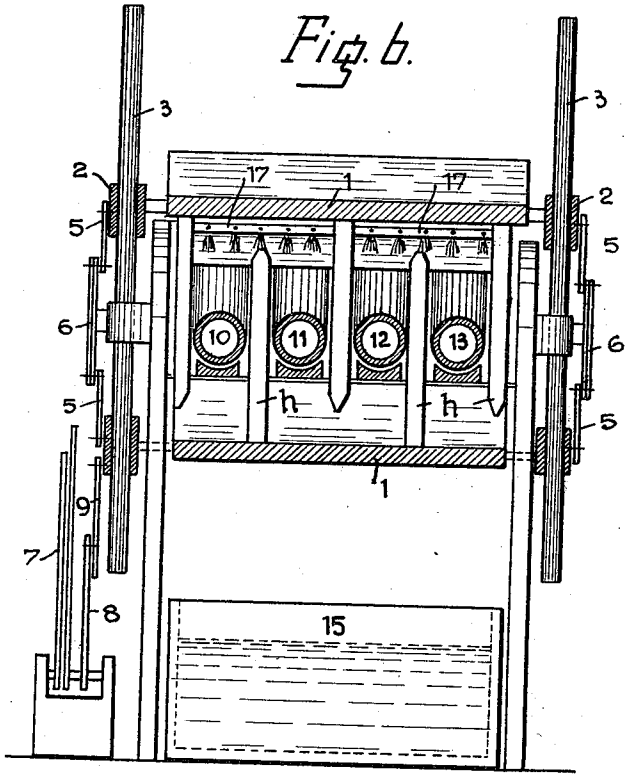
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5 SHEETS—SHEET 4.

Fig. 6.



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ARRANGEMENT FOR TRIMMING CLAY PIPES.

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5 SHEETS—SHEET 5.

Fig. 8.

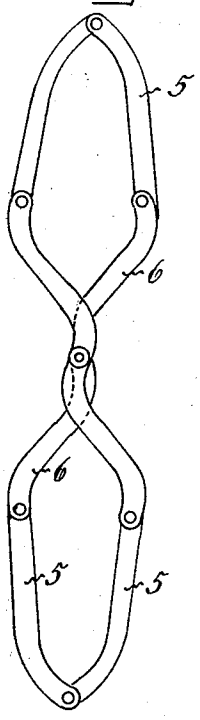


Fig. 9.

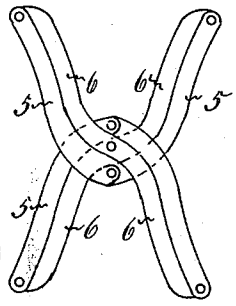
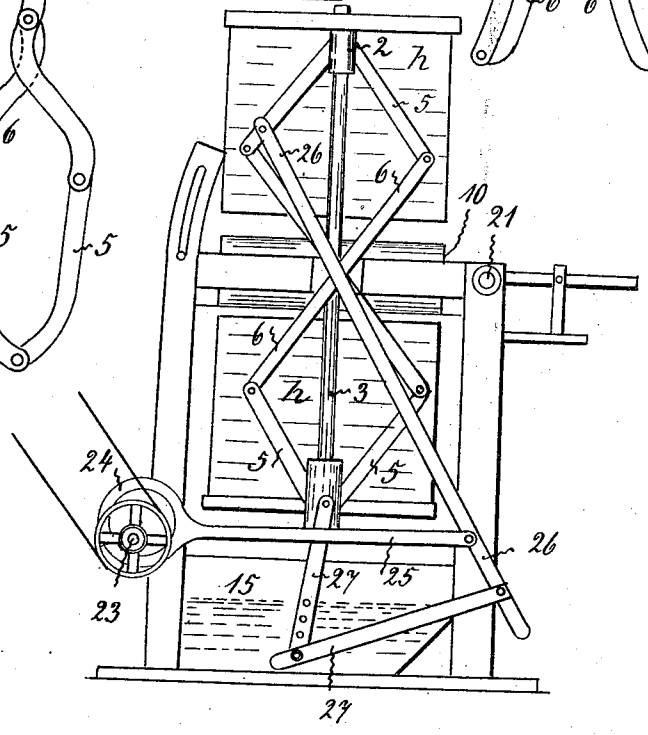


Fig. 7.



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ARRANGEMENT FOR TRIMMING CLAY PIPES.

1,132,851. Specification of Letters Patent. Patented Mar. 23, 1915.

Application filed July 14, 1914. Serial No. 850,944.

To all whom it may concern:

Be it known that I, JENS K. JENSEN, a subject of the King of Denmark, residing at Klützow, Pommerania, Germany, have invented certain new and useful Improvements in Arrangements for Trimming Clay Pipes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

This invention relates to an arrangement for trimming clay pipes by means of which said pipes may be trimmed at one operation on the inside and the outside and at the ends.

The essential feature of the present invention consists in the pipes being placed on stationary or revolving spindles and completely trimmed, during one single operation, on the said spindles, both on their inside and their outside by being rolled between movable plates, while the two ends are smoothed by means of scrapers fitted to the cross pieces of the spindles.

The advantage of the new machine consists in that the rolling or trimming, in other words, the smoothing and equalizing of the ends, and the stretching of the whole pipe is performed simultaneously. The rolling of the pipes, moreover, has the advantage of equalizing the structure of the material of the pipes, so that they will not warp during drying.

The movable plates for smoothing the pipes may obviously be arranged in several different ways, so long as they are made movable either in a horizontal or a vertical direction with tangential contact with the exterior surfaces of the pipes.

In the accompanying drawing several forms of the invention are exemplified, in which plates movable in a vertical direction (up and down) are employed for smoothing the pipes.

Figure 1 is a front elevation of the machine, partly in section; Fig. 2 is a side elevation of the machine, also partly in section; Fig. 3 is a plan thereof; Fig. 4 is a side elevation of a trimming machine in which the rolling plates are moved apart by lazy tongs, the said tongs being shown in extended or outer position; Fig. 5 is a like arrangement with the plates in their inner position; Fig. 6 is a front elevation of the machine, partly in section. Fig. 7 is a side elevation of the machine arranged for mechanically driving the lazy tongs. Figs. 8 and 9 illustrate a modification of the lazy tong structure which allows a rapid collapse and long travel.

According to the present invention the arrangement consists of a frame a of the machine, and a tray b pivotally journaled therein for receiving the pipes 10, 11, and so on, to be trimmed. In the said tray b are mounted stationary mandrels d, and beneath these mandrels are provided guide plates d^1 for the pipes 10, 11, &c., which by means of a carrier or portable mandrel e are placed on the mandrels d. During the trimming operation these carriers e rest with their ends f on the frame of the tray b.

The pipes are so disposed next to each other as to leave intervening spaces g, g^1, g^2 free, in which the smoothing plates h^1, h^2, h^3 move. Plates h and h^4 are intended for smoothing the outermost pipes. The plates h, h^2 and h^4 are fitted to an upper frame i above the pipes, while the alternate plates h^1 and h^3 are fitted to a lower frame k arranged beneath the pipes. The plates h^1 and h^3 fitted to the lower frame k and the plates h^2 and h^4 fitted to the upper frame i move in opposite directions, so that when the upper plates move downward the lower plates move upward, and the pipes are thereby rolled between the plates alternately to the right and to the left as the two frames move to and from one another respectively. The plates h and h^1 will smooth the pipe 10, the plates h^1 and h^2 the pipe 11, the plates h^2 and h^3 the pipe 12, and so on. While the pipes are thus being rolled, their ends are simultaneously trimmed, for which purpose the ends f on the carriers e and the stationary mandrel d are provided with suitably shaped blade-like scrapers x.

The smoothing plates h to h^4 are operated by means of a crank handle and suitable gearing or the like. The driving crank l is fitted to the top of the frame a of the machine, and on each end of its shaft is fitted one or a pair of bevel gears m m^1 which drive the shafts n and n^1. To these shafts are fitted gear wheels o and o^1 respectively, which engage in racks p on the upper plate-

carrying frame i and racks p^1 on the lower plate-carrying frame k, respectively, so that when the crank l is turned the smoothing plates will be vertically reciprocated.

Water is supplied from tank t by pipe s to the exterior of the pipes being trimmed, and by pipes u to a trough n^1 through the hollow mandrels d to the interior of the pipes. The excess of water falls into a tank w.

In the hereinbefore described form of construction the rolling plates are reciprocated by means of rack and pinion gears, which has the disadvantage that the whole machine is very heavy, owing to the rack and pinion gear, and is therefore also rather unwieldy, because it requires too much time to operate the rolling plates by means of the rack and pinion mechanism. This disadvantage may be obviated by coupling the two sets of rolling plates together by means of a system of levers in the form of lazy-tongs, so that when the said tongs are closed up the two sets of plates approach each other, and are moved apart when the lazy-tongs are extended. This simple arrangement only requires small power and permits of an extremely rapid movement of the plates toward and from each other. This modification is illustrated in Figs. 4 to 9.

The rolling plates h are secured to frames 1, to the sides of which sockets or sleeves 2 are fitted and by which the frames are guided along rods 3. The two levers 6, 6, are pivotally connected at 4, and to their ends one end of the rods 5, 5, are pivoted, the opposite ends of which rods are pivoted to the upper and lower frames 1, carrying the rolling plates. The levers 6, 6, and 5, 5, are closed up and extended by means of a lever 7, which acts by means of rods 8, and 9, on the lower frame 1 connected to the lazy-tongs. When the lever 7 is moved downward the plates h, h are closed together, and the pipes 10, 11, 12, 13, between them will be rolled and smoothed. In the form exemplified in the drawing the middle levers 6, 6, are pivotally fitted at their crossing point on a pin 4. The arrangement may, however, also be such that the rods 6, 6, are not connected to each other at their crossing point.

As it is necessary for producing smooth pipes that the pipes be abundantly watered, water is drawn by a pipe 18 from a tank 15 and forced through a pipe 16 and a spray pipe 17 to the pipes 10, 11 and so on, to be smoothed. The pump 18 is operated by means of a lever 19, which is articulated at one end with the plunger of the pump, and at the other with the rod 9 for operating the lazy-tongs. When the lever 7 is pressed downward the two sets of plates h h approach each other, and at the same time the pump plunger which has been driven downward forces water through the pipes 16 and 17 onto the pipes 10, 11, 12, 13, and this water runs along said pipes and along the inclined bed 1 and drops from the forward edge of the bed back into the tank 15 below. The slanting position of the pipes 10 to 14 is obtained by the frame 20 of the machine being pivotally and adjustably fitted on the pins 21, while the other end is guided in a curved slot 22 and may be there rigidly fixed by means of screws.

In the constructional form shown in Fig. 7 a crank or an eccentric 24 is fitted on a driving shaft 23, and a rod 25 of said crank or eccentric 24 acts on levers 26, 27, for operating the lazy-tongs 6, 6—5, 5.

In Figs. 8 and 9 is shown a construction of lazy-tongs with inner and outer members 6, 6 and 5, 5 bent in a peculiar manner. The inner members extend for a short distance only behind the fulcrum in a straight direction. Thence each member is bent off in an opposite direction, so that lines drawn through their centers will cross each other at an angle of about 120 to 130°, whereupon the ends of the members are again bent back in a direction opposite to the first bend at an angle of about 120° to 130°. The outer members 5, 5, of the tongs have the usual shape, and at the end at which they are fitted to the frame carrying the plates, they are bent in such a manner that when the tongs are closed, as shown in Fig. 9, the outer members 5, 5, will lie close up to the inner members 6, 6. This arrangement has the advantage that the inner members can move over each other, and that the outer members 5 can fit into the inner members 6. This allows of the tongs having a large stroke, so that the rolling plates may be made of a comparatively great length, so that at each stroke the pipes are revolved several times.

I claim—

1. Machine for trimming clay pipe, comprising stationary mandrels for receiving the pipe to be trimmed, movable plates, means for moving said plates into contact with said pipes to roll them, and scrapers acting on the ends of the pipes and trimming the ends of the pipes being rolled between said plates.

2. In a machine for trimming clay pipes, portable and stationary mandrels for holding the pipes to be trimmed, movable plates, means for moving said movable plates into contact with said pipes to rotate them, and scrapers on the ends of said mandrels to trim the ends of the pipes being rolled between said plates.

3. In a machine for trimming clay pipes, two sets of spaced plates, the plates of one set alternating with those of the other set, a plate of each set arranged for simultaneous action on a pipe, means to rotatably sup-

port pipes between a pair of plates and means to move the plates to rotate the pipes.

4. In a machine for trimming clay pipes, two sets of vertically arranged spaced plates, the plates of one set alternating with those of the other set, a plate of each set arranged for simultaneous action on a pipe, means to rotatably support pipes between a pair of plates and means to move the plates to rotate the pipes.

5. In a machine for trimming clay pipes, two spaced plates, means to rotatably support a pipe between the plates and means to move said plates in opposite directions into contact with said pipes to roll the same.

6. In a machine for trimming clay pipes, two sets of spaced plates, the plates of one set alternating with those of the other set, means to rotatably support each pipe between a plate of each set, each intermediate plate of each set having contact with two adjacent pipes and means for moving the plates to and fro to rotate the pipes.

7. In a machine for trimming clay pipes, two sets of spaced plates, the plates of one set alternating with those of the other set, means to rotatably support each pipe between a plate of each set, each intermediate plate of each set having contact with two adjacent pipes, and means for moving the plates to and fro to rotate the pipes, and means to supply water to the surfaces of the pipes as they are being rotated.

8. In a machine for trimming clay pipes, two sets of reciprocable plates, the plates of one set alternating with those of the other set, and lazy-tongs for moving the sets of plates to and from one another.

9. In a machine for trimming clay pipes, two carriers, a set of vertically arranged plates on each carrier, the plates of one set alternating with those of another set, sleeves on each carrier, guide rods on which said sleeves slide, lazy-tongs connecting the carriers, and means to operate the lazy-tongs.

10. In a machine for trimming clay pipes, two carriers, a set of plates on each carrier, sleeves on each carrier, a guide rod for said sleeves, a pair of levers 5 pivotally connected to each carrier and crossed levers 6 whose ends are pivotally connected to said levers 5, and means for operating the levers.

11. In a machine for trimming clay pipe, the combination with reciprocable co-acting plates for rolling pipe between them; of lazy tongs comprising a middle pair of levers pivoted together and bent to diverge on opposite sides of their pivot point and whose ends are similarly but oppositely bent, a pair of end levers pivoted together at one end and curved toward each other at said end, the opposite ends of said pair of levers being articulated to one end of the middle pair of levers, and a similar pair of end levers articulated to the opposite end of said pair of middle levers.

12. In a machine for trimming pipes, two sets of alternating reciprocable plates, lazy-tongs for reciprocating said plates, means to supply water between the plates, a pump to supply water to said means, and levers for actuating said lazy-tongs and pump.

13. In a machine for trimming clay pipes, two alternating sets of reciprocable plates, means to rotatably mount pipes between a plate of each set, lazy-tongs to reciprocate the plates, means to distribute water to the pipes, a tank to receive the excess of water from said pipes, a pump arranged to pump water from said tank to said distributing means and mechanism to operate both the lazy-tongs and pump.

14. In a machine for trimming clay pipes, two sets of reciprocable spaced plates, the plates of one set alternating with those of the other set, a stationary mandrel between each pair of plates to receive one end of a pipe, a portable mandrel to support the other end of the pipe, scrapers to engage the exterior surface at each end of the pipe and arranged between the plates, and means to supply water to the surfaces of the pipes being trimmed.

In testimony that I claim the foregoing as my invention, I have signed my name in presence of two subscribing witnesses.

JENS K. JENSEN.

Witnesses:
HENRY C. A. DAMM,
EMIL SCHMIDT.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."