(No Model.)

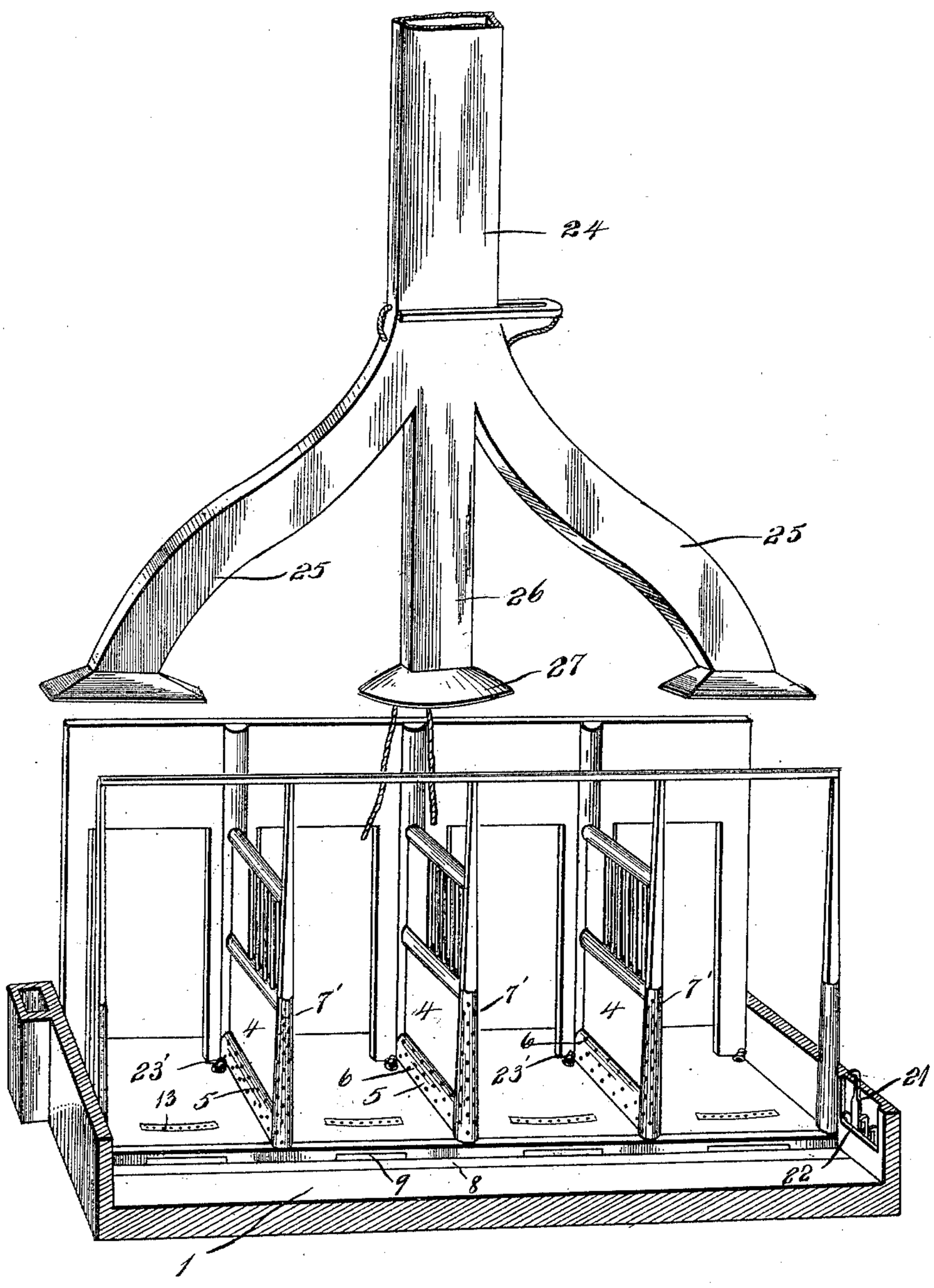
3 Sheets—Sheet 1.

S. F. LINDSTAM.

STABLE.

No. 600,433. Patented Mar. 8, 1898.

Fig. 1



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(No Model.) 3 Sheets—Sheet 2.

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STABLE.

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Fig. 2.

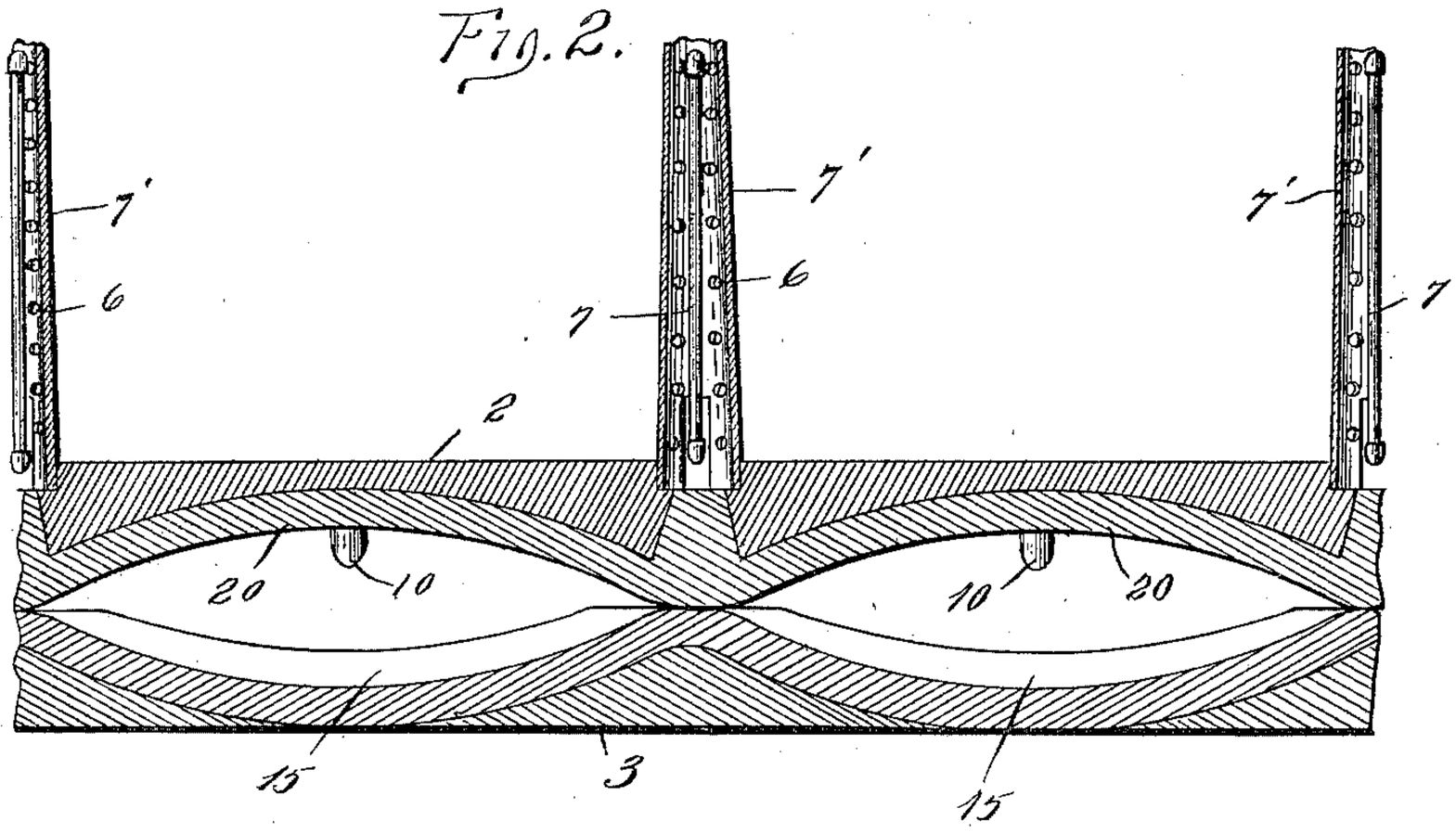
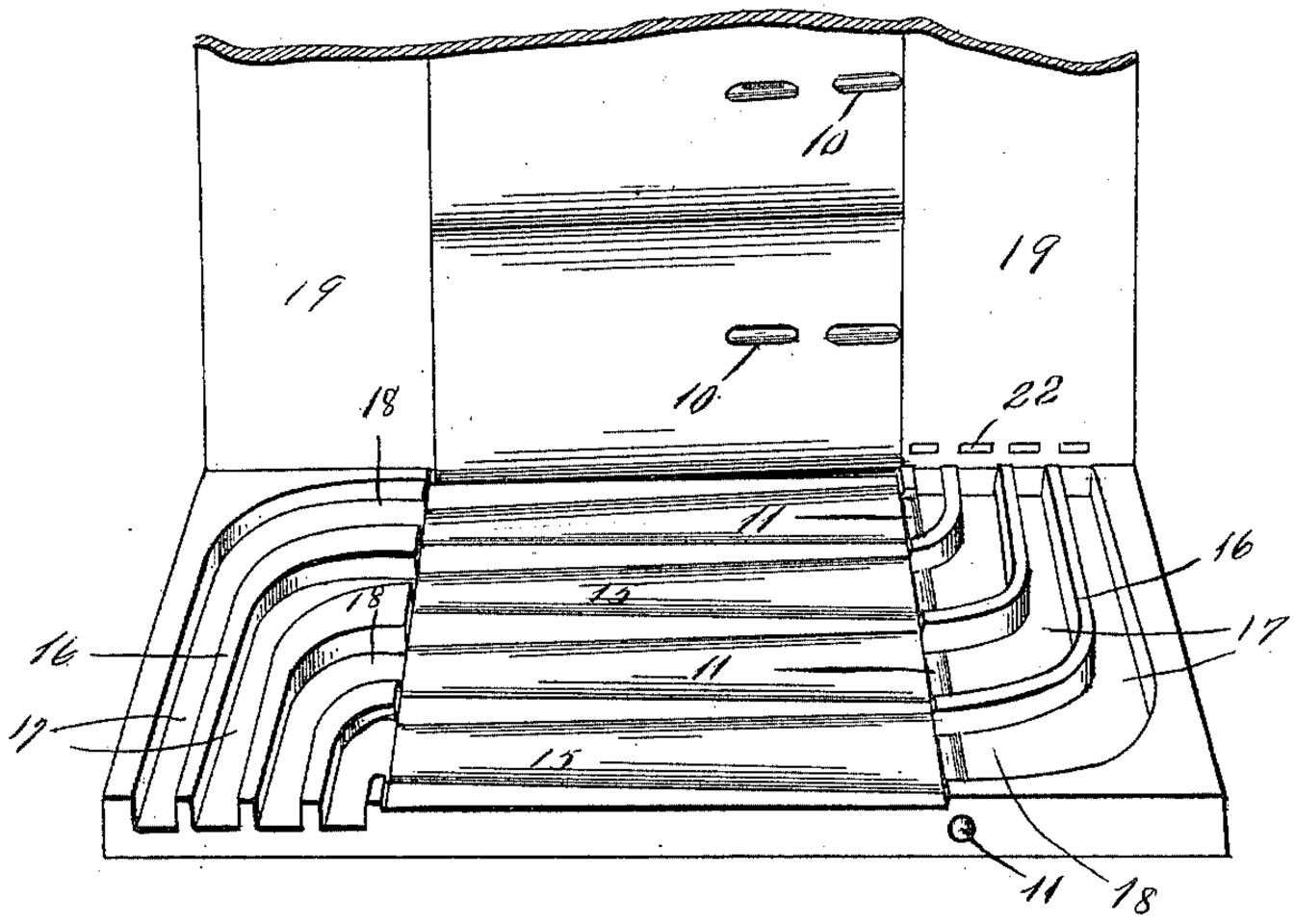


Fig. 3.



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(No Model.) 3 Sheets—Sheet 3.

S. F. LINDSTAM.

STABLE.

No. 600,433. Patented Mar. 8, 1898.

Fig. 4.

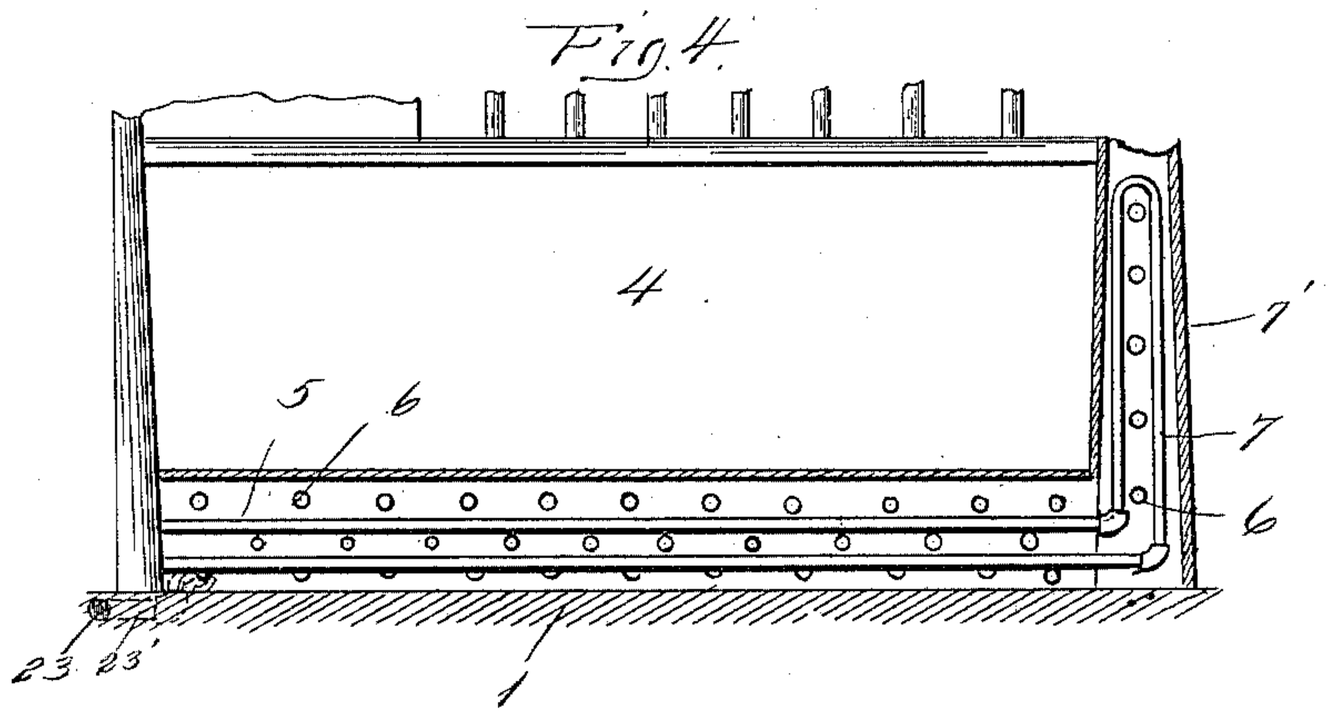


Fig. 5.

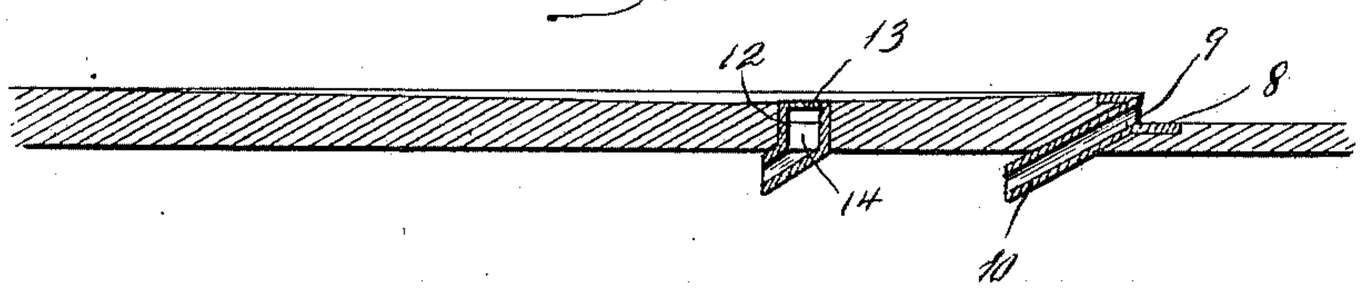
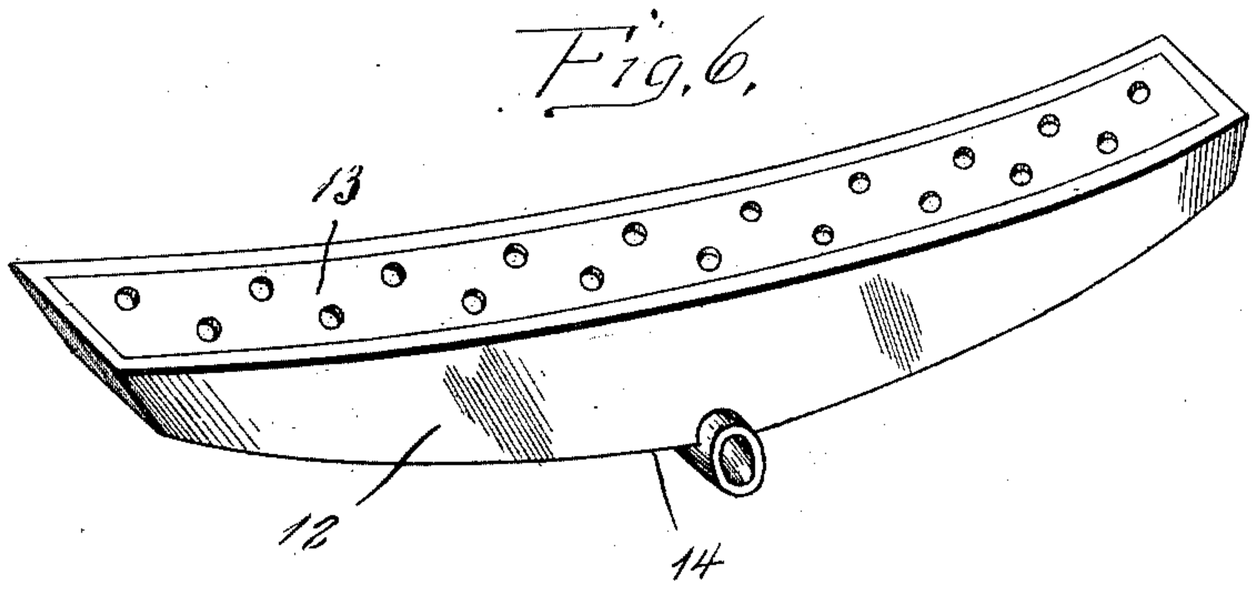


Fig. 6.



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UNITED STATES PATENT OFFICE.

SWAN F. LINDSTAM, OF MINNEAPOLIS, MINNESOTA.

STABLE.

SPECIFICATION forming part of Letters Patent No. 600,433, dated March 8, 1898.

Application filed June 28, 1897. Serial No. 642,642. (No model.)

To all whom it may concern:

Be it known that I, SWAN F. LINDSTAM, of Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Stables; 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.

This invention relates to novel and useful improvements in the construction of stables; and it consists of the novel combination and arrangement of parts thereof that will be hereinafter particularly described.

The object of my invention is to construct a stable in which horses are kept which will be absolutely sanitary and odorless and which will be especially designed for the care of horses used in the fire departments of the cities of the country, where the horses which are kept in such stables are subjected to long and hard runs and almost invariably return to the stable much heated and in cold weather are liable to take cold.

One of the objects of my invention is to provide a construction by which persons in attendance at the stable can, when the horses return from long or hard runs in a heated condition, so regulate the heat of the stable from the point where the radiation of the heat will be most effective to raise the temperature of the stable or of as many stalls as desired and prevent the horses from taking cold, which is often the case in ordinary stables where the stable attendants neglect to properly care for the animal.

A further object of my invention is to construct a perfect system of sewerage and ventilation by which the stable and the individual stalls can be perfectly drained and flushed when desired and the air therein kept in a perfectly pure condition.

Other objects and advantages of my invention will become apparent in the course of the following description, and the points of novelty will be pointed out in the claims.

I am enabled to accomplish the objects of my invention by a simple means illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of a portion of a stable, showing a series of stalls constructed according to my invention. Fig. 2 is a transverse section of the structure, taken through the rear posts of the stalls and through the floor. Fig. 3 is a perspective view showing the adjacent faces of the upper and lower sections of the floor, showing the draining-tubes in the upper section and the construction of the ventilating-flues and draining-gutters in the lower section. Fig. 4 is a longitudinal section taken centrally through one of the partitions between the stalls, showing the means for heating the same. Fig. 5 is a longitudinal central section through one of the stalls to show the means for draining the stall from the rear and from a point near the rear of said stalls. Fig. 6 is a perspective view of the cesspool casing and cover, which is located near the rear end of the stalls and communicates with the longitudinal draining-gutters beneath the floor.

Referring to the drawings, the numeral 1 indicates the floor of the stable, which may be constructed of any suitable material—such as brick, cement, asphalt, or the like—and for convenience in description and illustration I will describe the floor as divided in two section 2 and 3, representing the top and bottom sections, respectively.

To form the partitions 4 between the stalls, I provide housings 5, preferably of cast-iron, extending longitudinally through the entire length of the stalls and perforated, as indicated by the numeral 6.

Within the housings 5 I provide steam-pipes 7, which extend from the heads to the rear ends of the stalls, where they are bent upwardly into the cast-iron posts 7′. Said pipes are connected to any suitable or convenient source of heat-supply, such as steam or hot water, and are adapted to be regulated to regulate the temperature of the stable. The housings for the steam-pipes are firmly secured in the top section 2 of the floor.

The numeral 8 indicates an angle-plate, preferably constructed of cast-iron, which extends transversely of the stalls at the rear ends thereof and is provided with openings 9 at the rear of each stall, which openings terminate on the under side of the top section of the floor in small tubes 10, which are adapted to conduct water from the stable to

the transverse gutter 11, which gutter is provided on the lower section of the floor for the purpose of draining the portion of the floor immediately behind the horses. The said gutter 11 extends throughout the entire length of the stable and leads on a slight incline to some suitable sewer connection, where the obnoxious waters are discharged.

As an additional means for draining the water from the floor of the stalls I have deemed it advisable to provide near the rear end of each stall a cesspool-casing 12, consisting of a perforated top 13 and an inclined bottom 14, which is provided at its lowest point with a tube which discharges upon the inclined longitudinal gutters 15, made in the lower section of the floor, from whence it is carried to the transverse gutter 11 and is thereby carried out of the stable.

The numeral 16 indicates a series of flanges or partitions, forming flues 17, on the lower section of the floor, which permit the circulation of air between the upper and lower sections of the floor. As shown in the drawings, the flues are formed at the front and rear of the stalls and are provided with flaring mouths 18, which are adapted to register with the ends of transverse gutters or grooves 15. Said gutters or grooves extend throughout the entire length of the stalls and are slightly inclined from the front of the stalls to the rear, so that when water is discharged therein it will be carried to the transverse groove 11.

The upper section of the floor at the point where it comes in contact with the partitions between the flues is flat, as indicated by the numeral 19, and is adapted to rest upon said partitions to form said flues; but that portion of the upper section of the floor which is directly beneath the stalls is formed of a series of low arches 20, the bases of which rest on the spaces between the gutters or grooves 15, thus forming continuations of the flues 17, which permits the air to circulate freely beneath the floor of the stable.

The entrance of air into the flues 17 is controlled by a series of slides or gates 21, which are provided at one end of the stable and adapted to work in slots 22.

The numeral 23 indicates a pipe extending throughout the entire length of the stable and which is connected to any suitable source of water-supply and is provided with a series of short pipes 23′, which extend upward through the floor of the stall, preferably in one of the front corners of the stalls, and is there provided with a nozzle which is adapted to be adjusted to flush the floors of the individual stalls. Where the water-supply will warrant, the stalls throughout the entire length of the stable can be flushed simultaneously.

The numeral 24 indicates a ventilating-flue which is suitably supported above the stalls and provided with branching arms 25 and a straight arm 26, all of which are provided with flanges 27 at their lower openings. Said flue is provided with a slide or shutter near its central portion, which is adapted to be opened or closed to control the escape of noxious gases from the stable.

It will be observed that the construction herein described is especially simple, and in practice the fact that the heat is admitted to the stable near the floor of the stalls is found to be very advantageous, for the reason that the radiation of the heat from a point near the floor and between the horses is necessary to maintain the horses in a healthy condition, it being possible to heat the stalls in two or three minutes to a temperature which will be comfortable to the horses upon their return from a long run in a wet, heated, and often muddy condition, thus reducing the likelihood of the animals becoming sick.

By introducing the heat in the manner and at the places described it will be seen that the air near the floor of the stable, where it is necessarily most impure, will be rarefied and caused to ascend above the heads of the horses, where it escapes from the stable through the ventilating shaft or flues 24.

It will further be seen that as the drainage from the stable-floor passes under the door through gutters which are formed of impervious material there will be no absorption, and due to the shape of the gutters it will be caused to be concentrated and carried beneath the floor to suitable sewer connections. Further, the sewer gases and vapors generated beneath the floor will be drawn from below said floor to a point beneath an ordinary suction-pipe leading to the top of the stable, through which said vapors and gases will be liberated at a point where they will be harmless.

I do not desire to be understood as limiting myself to the precise construction shown in the drawings, and many modifications will suggest themselves and be made without departing from the spirit of this invention, nor do I desire to limit myself to the use of any particular material in constructing the flues, gutters, or floors of the stalls and stable.

Having thus described my invention, what I claim is—

1. A structure of the character described comprising a series of stalls formed with a series of partitions, means confined within the base and forward ends of the partitions for heating the stable and stalls, means controlling the heat-supply to heat any or all of the stalls, ventilating-flues and inclined draining-gutters beneath the floor of the stable, slides or gates situated at one end of the stable and adapted to open or close all the flues or any of them, a sink provided with a perforated cover located near the rear of the stalls and communicating with the inclined draining-gutters, an angle-plate at the rear of the stalls having inclined openings therefrom connecting with an inclined draining-gutter beneath the flues, to drain the water from the stable-floor, and shafts above the stalls whereby the ascending vapors will be carried

from the stable, substantially as, and for the purposes specified.

2. A structure of the character described, comprising a series of stalls formed with a series of partitions, steam-pipes in the base portion and rear ends of the partitions, valves controlling the admission of heat to said pipes so that any or all of said pipes can be heated, a flooring comprising an upper and a lower section, the latter being provided with transverse grooves having flaring mouths, and in front and in rear thereof with inclined longitudinal grooves beneath the stall forming continuations of the transverse grooves and forming gutters to drain the water from the rear portions of the stalls, a water-pipe extending through the stable, water-pipes located in the stalls and connecting with the main water-pipe, and means for flushing the stable, substantially as and for the purpose set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

SWAN F. LINDSTAM.

Witnesses:

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T. J. MCELROY.