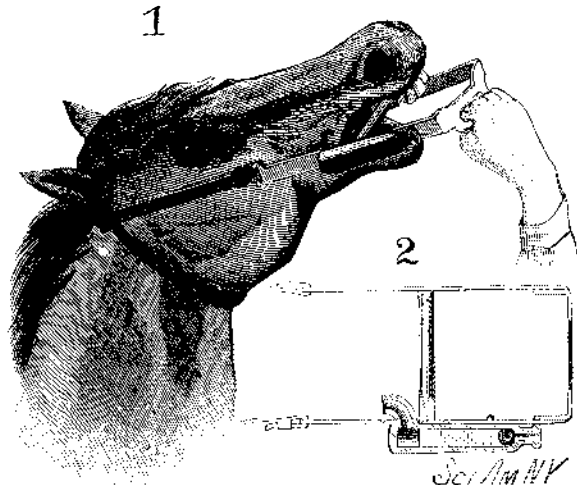


DRENCHING BIT.

The object of the invention herewith illustrated, lately patented by Mr. James F. Marvin, of Fort Apache, Arizona, is to provide a simple and effective device for administering medicine to horses. The bit is formed of two similar side pieces having loops at their upper ends for receiving the ordinary bridle straps, and connected at their lower ends by a cross-piece formed with a handle. Near the middle the side pieces are united by a transverse bar. To one side piece is secured a cylindrical reservoir closed at the top and opened at the bottom, the open end being closed



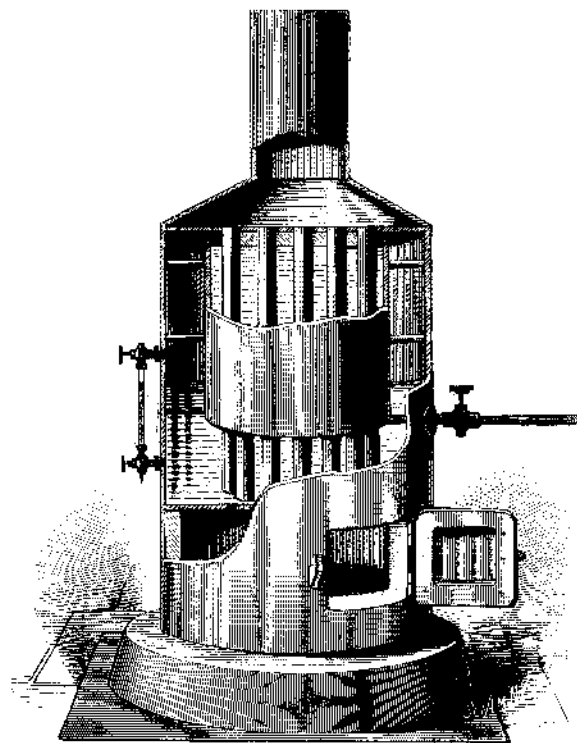
MARVIN'S DRENCHING BIT.

by a ball valve. Projecting from the side of the upper end of the reservoir is a curved spout, shown in Fig. 2. When the bit is in position in the horse's mouth, the middle bar occupies the same position as the ordinary bit bar, and the spout enters the mouth and opens toward the throat. The reservoir is filled through the spout. The horse's head is raised by grasping the handle and pushing up on the bit. The contents then flow out of the spout into the horse's mouth, while air is admitted to the reservoir through its open end, the valve having fallen away from its seat.

UPRIGHT STEAM BOILER.

The accompanying engraving shows an upright steam boiler provided with a suspended reservoir within the boiler, which is kept constantly filled with water by an injector. The boiler is provided with the usual fireplace, and with flues between the top and bottom plates to connect the fireplace with the dome. The reservoir is held between the top and bottom plates by stays, and is open at the top, which reaches near to the top plate, and the bottom is immersed in the water; all the flues pass through the reservoir. An injector passes through the shell of the boiler, and opens into the reservoir near its bottom.

The injector fills the reservoir, and the latter being open at the top allows the water to overflow and fill



THODE'S UPRIGHT STEAM BOILER.

the boiler to the water level, which is indicated by the water gauge. It will be observed that the lower parts of the flues are surrounded by water in the boiler between the bottom plate and bottom of the reservoir, and the upper parts of the flues are surrounded by water in the reservoir up to the top plate. The water in the boiler is converted into steam in the usual way from the fireplace by means of the bottom plate and lower parts of the flues, and the water in the reservoir is converted into steam by the upper parts of the flues, this being the additional heating surface gained

by this improvement. The quantity of water converted into steam is equalized by the injector, by removing which the reservoir can be cleaned.

This invention has been patented by Mr. G. A. Thode, of Holstein, Iowa.

AN IMPROVED TUNNEL STRAINER.

The annexed drawing illustrates a new, cheap, and serviceable article, the subject of a patent recently granted to Mr. Francis O. Butterfield, No. 6 Vine St., Lynn, Mass. It is adapted to household use, for apothecaries for straining liquids, and can also be used in the sink spout, if made of heavy material, to prevent substances other than liquid passing down the spout.

The illustration represents the tunnel strainer placed in the tube of a tunnel. The strainer is by preference made of wire cloth, or other material if desired, rolled into tapering tubular form, so as to fit tubes of any ordinary tunnels. The larger end of the strainer is closed by a metal cap, provided with a ring for convenience in use, also to hang the same up with when not in use. The lower end of the strainer is open, and provided with a metal thimble to shield the wire cloth; and it fits snugly in the tube of the tunnel, so that no liquid can pass through the tunnel tube without first passing through the wire-cloth strainer. For ordinary use it will be about 4 or 5 inches long, about 3 or 4 inches circumference at its larger end, and taper downward gradually to a very small circumference; it being so comparatively small, and the tapering of the strainer being so much less than that of the tunnel, and the strainer taking up so little space in the tunnel that ample space is left between the strainer and tunnel to receive the liquid.

American Expositions.

There is to be a flood of American expositions on the other side of the water next year.

Besides the permanent display of American manufactures and products to be opened in London, another of the same kind, or rather series of them, are to be inaugurated in Rome and the other principal cities of Italy. These are to be conducted under the auspices of the Minister of Agriculture, Industry, and Commerce, the purpose being to give the Italians some idea of American products, so as to develop a trade between this continent and Italy. American manufacturers are also invited by Germany and by other European powers to make displays in their permanent trade exhibitions.

The general interest in this continent thus shown by the European powers does not need much explanation. There is a great desire on their part just now to arrange closer relations with America, not with the United States alone, but with Mexico and Central and South America as well. They recognize the fact that the trade of these two continents is immensely large and profitable, and growing faster than that of any portion of the world. When one or two problems are solved, such as a transit route over the Isthmus and the pacification and development of Central and South America, as Mexico has been pacified and developed, this growth will be far more rapid than it is to-day. The foreign trade of America constitutes about one-fourth of the total trade of the world to-day; it was only one-eighth thirty years ago; it will be one-half in another thirty years.

Europe appreciates this, and is holding out all manner of inducements to the countries of America. England, Italy, and Germany all want American exhibitions, and want to attract American trade. We hold before all these others an American exposition in this city which is devoted somewhat to these same purposes—to securing for the United States the trade of Latin America, to keeping it at home instead of letting it fall into the hands of Europe. It is evident, in these expositions and from many other facts, that there is to be a warm commercial fight for the trade of the Americans. The United States is the first in the field; and if it utilizes the North, Central, and South American Exposition to good advantage, by showing our products and manufactures to all the countries south of us, and by learning something of their resources, we will secure an advantage which cannot be offset by these other expositions. It is a grand field to fight for, and on our victory here depends much of the future prosperity of the country. It is to be hoped that the people of the United States recognize this, and appreciate the very able arguments used by the management of the new exposition, showing how necessary it is to secure the trade, and how much can be done through the coming exposition.—*New Orleans Times-Democrat.*

Mosquito Oil.

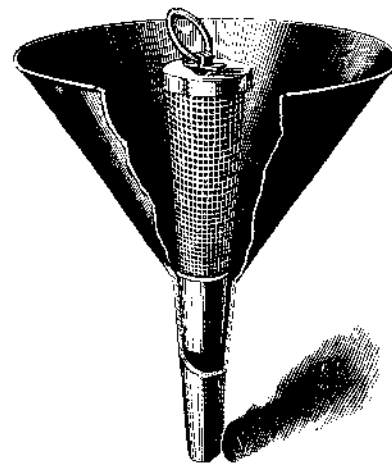
The *Angler* vouches for the effectiveness of the following mixture for keeping off mosquitoes:

- 3—Olive oil.....3 parts.
- Oil of pennyroyal.....2 “
- Glycerine.....1 “
- Ammonia.....1 “

To be well shaken before applying to the face and hands. Avoid getting the mixture into the eyes.

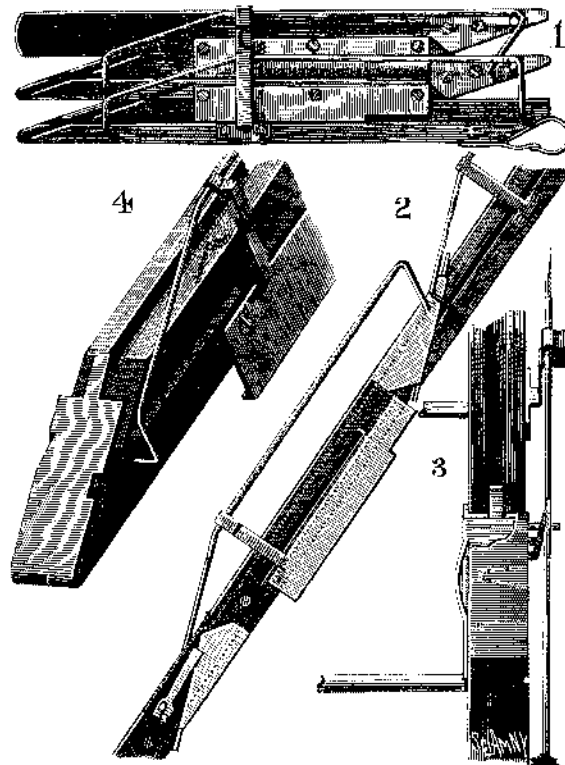
IMPROVED EXTENSIBLE LADDER.

The object of this invention is to facilitate the extension and contraction of the ladder, and provide for automatic and secure locking of the sections in line when extended, and also to promote safety in the use of the ladder as a fire escape, for which service it is especially designed. Fig. 1 is a side view of a three section ladder contracted; Fig. 2 is a side view of the ladder extended for use; Fig. 3 is a front elevation of one of the side bars showing the couplings; and Fig. 4 is an inside perspective view of the lower end of one of the ladder bars. The end of the upper section is pro-



BUTTERFIELD'S IMPROVED TUNNEL STRAINER.

vided with hooks, by means of which the ladder when used as a fire escape may be securely held to a crossbar of a window or the rail of a balcony. The ladder sections are alike, except that the upper one is not furnished with guide plates on its side bars, as are the others, and the lower section has no handrails and has its lower ends pointed to rest on the ground. The meeting ends of the sections are so beveled as to lie fairly upon each other when the ladder is extended. The metal coupling plates are C-shaped in cross section, and fit the beveled ends of the side bars of the sections, as shown in Fig. 4. Between the beveled portion of the bar and the upper part of the plate is a space sufficient to permit the parts of the plates to slide by each other to lock the ladder extended. The end of that part of the plate over the bevel is formed with a projecting lip that enters an opening in the end bends of the plate, thereby making additional interlocking connections to prevent lateral play of the sections on each other. When the sections are extended, spring catches on the side bars of one section lock into notches on the ends of the other, to hold the sections firmly in line with each other. To each side bar of the ladder section is a guide bar so arranged as to guide the upper ladder section down to and in line with the next lower section, so that the coupling plates will engage with each other; these bars also serve as hand rails for persons



PARK'S IMPROVED EXTENSIBLE LADDER.

going up or down. To the opposite side bars of the two lower sections are fastened metal guide plates having inturned flanges at their lower edges, which enter grooves in the outer faces of the side bars of the two upper sections when the ladder is contracted.

It is evident that this ladder, the invention of Mr. Thomas R. Park, of Parkersburg, W. Va., can be very quickly extended for use as a fire escape, and that it can be used for any ordinary service required of a ladder; it will stand firmly, so as to carry as heavy a weight as one having side bars made in one piece.