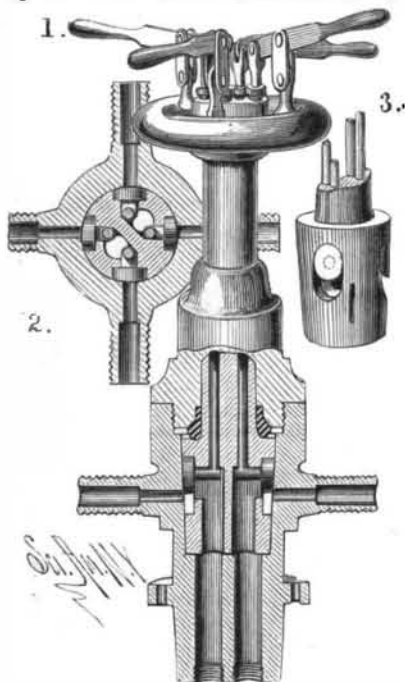


COMPOUND VALVE.

Fig. 1 is a sectional elevation, Fig. 2 is a transverse section, and Fig. 3 is a side view of the plug detached, of a compound valve invented by Mr. George W. Appleby, of Cohoes, N. Y. The body is made in two parts for convenience of manufacture; the upper part carries and serves as a guide for the stem of the plug, and a packing ring inserted between the plug and the inner end of the upper part prevents escape of the liquid in that direction. The lower part is slightly tapered inside to form a seat for the plug, and is formed with separate inlet passages and with four outlet bibs. The plug has two passages, each connecting with two branch passages opening out at the side of the plug, as shown in Fig. 2.

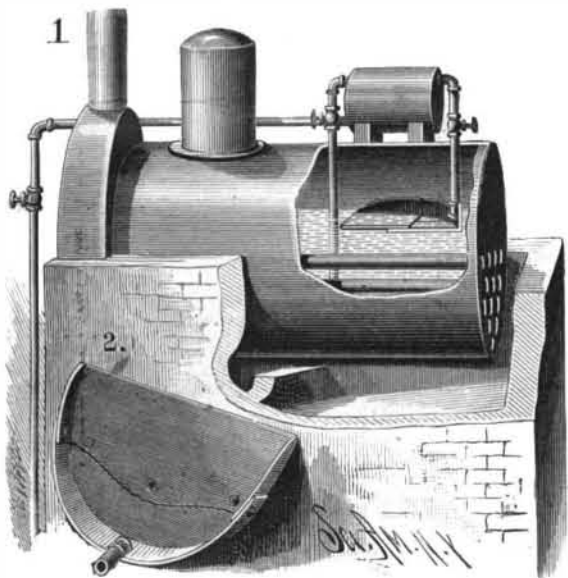


The side of the plug at the passages is countersunk, to form seats for slide valves carried by stems that pass through the plug stem and out at the end, where they are packed. On the hand wheel of the plug stem are posts carrying levers severally connected with the valve stems for use in moving the valves up and down. By opening either

valve, the fluid is allowed to flow from one inlet to one outlet, and out at two bibs when the other valve at that side is raised. The same result can be obtained by moving the valves at the other side of the plug; thus both deliveries can be used at once. Either two of the bibs can be connected with either inlet by turning the plug on its seat. By this means two liquids can be delivered at once or either alone. The valve is adapted for use on boilers for discharging either steam and water, or both, for heating apparatus, and for other similar purposes.

BOILER CLEANER.

The engraving represents an improved device for removing impurities from water in boilers to prevent the formation of scale. The skimmer is flat, and has an upwardly projecting flange on its rear rounded edge; it is shown detached in the lower part of the cut. On the bottom of the skimmer is a plate which also increases in width from its rear to its front edge, and has flanges forming continuations of the one on the main plate. According to the diameter of the boiler, a longer or wider extension plate is used, so that the ends of the front edge will be close to the sides of the boiler, to prevent the escape of any sediment. The lower end of a tube having a valve is held on the flange a short distance above the skimmer, the upper end of the tube being connected with the



ESTELLE'S BOILER CLEANER.

top of a settling drum on the boiler. At the opposite end of the drum is a pipe provided with a valve and leading back into the boiler. At the same end the drum is connected at its bottom with a blow-off pipe having a valve. The impurities in the water rise and float on the surface in a thin layer. The circulation carries these impurities over the skimmer, and with the water up through the pipe into the drum, where they settle. The clear water passes through the other pipe back into the boiler. At suitable in-

tervals the settling drum is emptied through the blow-off pipe. This invention has been patented by Mr. Henry Estelle, of 544 First Avenue, Louisville, Ky.

HOSE TOWER AND FIRE ESCAPE.

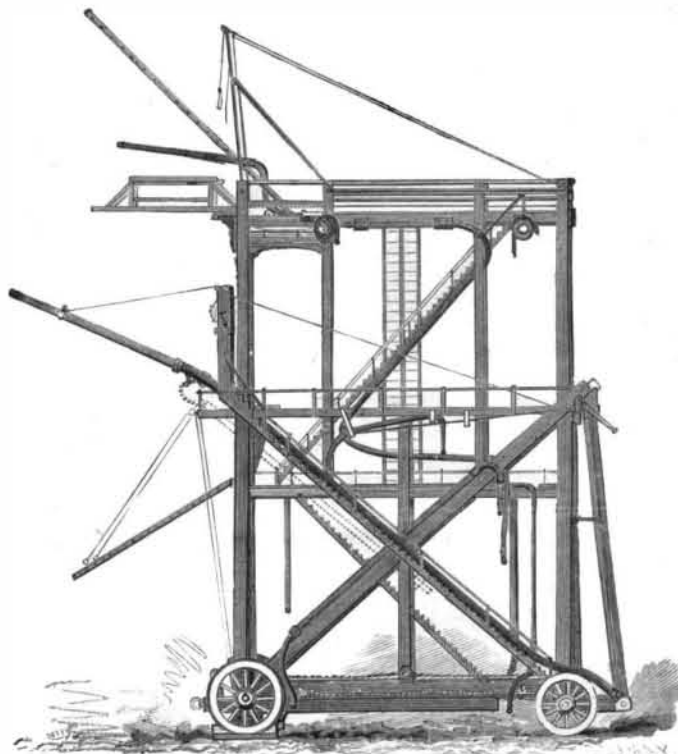
By means of the apparatus shown in the accompanying engraving—recently patented by Mr. William M. Ward, of Harbor Grace, Newfoundland—a large volume of water may be thrown down from a height on the fire, instead of from the ground, thereby giving the firemen greater command. The apparatus can be erected to a considerable height, and can be connected with buildings to permit persons to descend. The base of the tower is formed of heavy side pieces uniting two axles; on the base are six uprights, two at each end and two at the middle, all securely and rigidly braced. Between each two end standards is a vertical screw spindle provided at the bottom with a pulley; around these two pulleys passes a heavy chain, so arranged as to turn both spindles the same way. In grooves in the inner sides of the corner standards move uprights of a vertically sliding frame; these uprights are united by a top and bottom platform. The heights of the frames are such that when the upper frame is lowered its top will be slightly above the top of the bottom frame. The screw spindles pass through nuts on the end pieces of the bottom platform of the sliding frame, so that by turning the screws the upper frame can be raised or lowered. A staircase extends from the rear of the bottom platform of the upper frame to the front part of the top platform. A staircase is hinged to the under side of the bottom platform of the sliding frame, and when the latter is raised the staircase is inclined upward from the front to rear. On the side of each diagonal, extending from the front upward to the rear, is a staircase, and single or double vertical ladders connect the top and bottom platforms of the upper frame. At the rear end of the top platform of the lower frame is formed a balcony, at one side of which a short tower is erected at the upper end of one staircase. On top of the tower is a windlass, operated by a crank and carrying a rope connected with the free end of a long nozzle on the end of a large hose extending up one diagonal brace. The hose and nozzle are united by a joint piece, so that the nozzle when not in use can be folded against the under side of the brace, as indicated by the dotted lines in the engraving.

By means of the windlass the nozzle can be raised or lowered. A hose extends along the brace on the other side of the frame and, is connected with a nozzle pivoted on a swivel standard, and which can be operated by aid of a properly arranged rope. A ladder on the end of the bottom platform of the upper frame can be held at any inclination by a rope; when not in use, the ladder is placed in a pocket formed on the under side of the bottom platform of the lower frame. Below the rear part of the top platform of the upper frame is a windlass, the rope of which is secured to the lower end of a ladder that can be raised through a trap door in the platform; this ladder can be held at any desired inclination. At the rear end of the top platform is a projection, and a bridge slides in suitable grooves; this bridge is long enough to extend from the frame to the windows of a house. On top of the apparatus is hinged a derrick pole, by means of which, and ropes, the sliding ladder can be brought into the desired position. Near this ladder is a swiveled nozzle on a hose leading to the ground. Additional hose tubes are placed on different parts of the frames, the lower ends extending to the ground, so that they can be easily coupled with engines or hydrants. The rear end of the frame is provided with rollers, so that it can be shifted laterally. It will be seen that the apparatus is so planned as to enable the firemen to throw water directly upon the fire from any desirable location, and provides a means of escape from windows in the upper stories.

erties of the flowers are probably overrated, judging from what we have learned from a gentleman who has seen the plant in its native country. The plant could probably be obtained from any American florist.

ROCKING CHAIR.

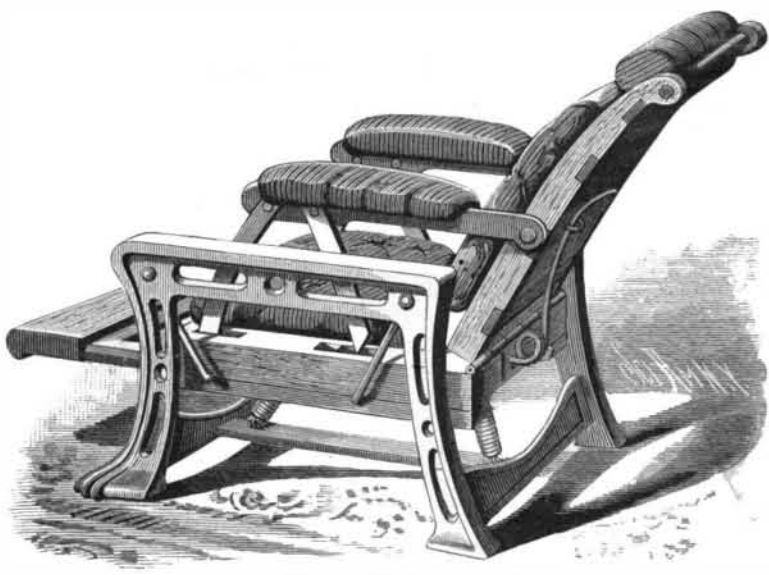
The rocking chair herewith illustrated, recently patented by Mr. N. G. Franzen, of Randolph, Kan., has a combined rocking and swinging motion, and may be used in sitting or recumbent positions. The side frames



WARD'S HOSE TOWER AND FIRE ESCAPE.

are so constructed and united, as clearly shown in the engraving, as to form a substantial frame, open clear through from front to back in the upper part to give room for the chair body. The body consists of a seat and back hinged together, and having arm bars pivoted to the back and to links pivoted within recesses formed in the upper edges of the side bars of the seat. A suitable spring secured to the end of the seat acts to swing the back forward on its hinge, and pawls hinged to the arm bars are adapted to enter notches in the upper edges of the seat bars, to lock the back firmly against backward pressure brought upon it by the occupant in swinging or rocking the chair. To support the chair body so it may rock or swing in the frame, U-shaped hangers are employed, the shanks of which incline toward each other at the same side of the chair, and are pivoted to the opposite side frames, the seat resting on the cross bars of the hangers; the bearings are so formed as to permit the cross bars to turn freely. The front and rear ends of the seat are connected to springs, the lower ends of which are secured to a tie plate, as shown.

These springs prevent the body from swinging too far either way, and as their normal tendency is to contract, they will always carry the seat to the middle position.



FRANZEN'S ROCKING CHAIR.

THE SHOE BLACK PLANT.—The "Chinese shoe black plant," *Hibiscus rosasinensis*, is a native of India, China, and other parts of Asia. In its native countries it forms a tree twenty or thirty feet in height. In our climate, and in that of England, it is not hardy, and is cultivated simply as a greenhouse plant, for the sake of its beautiful flowers. These flowers contain a quantity of astringent juice, and, when bruised, rapidly turn black or deep purple. They are said to be used in Java for blackening shoes, whence the popular name. But the blackening pro-

The opposite side bars of the seat have grooves formed in them, in which the side bars of the foot rest slide, so that it may be drawn out at any time, or be pushed in. The occupant of the chair, by pressing against the back, can rock the body on the pivots and cross bars of the hanger, the front and rear springs giving the return motion in opposite directions. An easy and agreeable combined rocking and swinging movement is thus produced. By shifting the side pawls the slant of the back can be adjusted as desired.