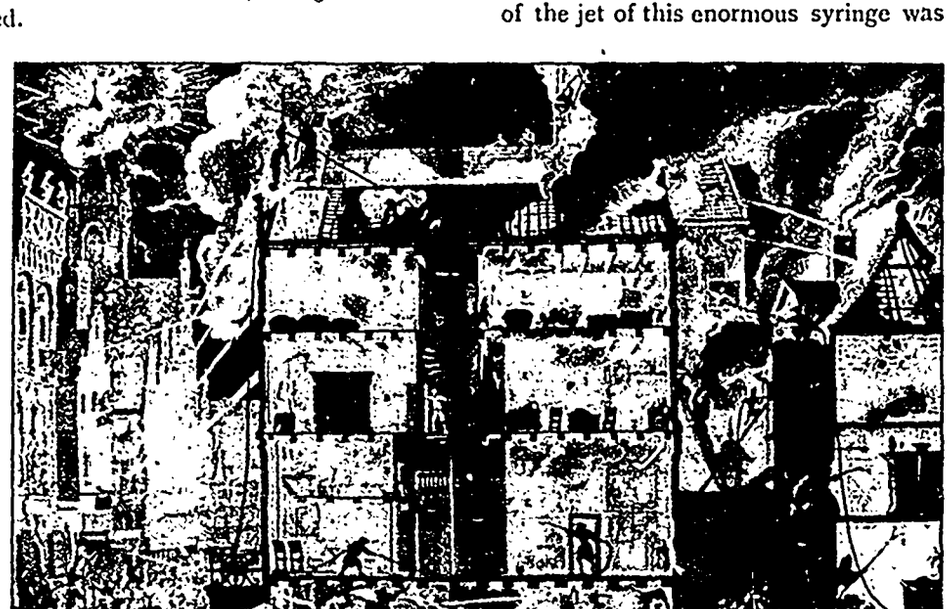
in the Navy Yard; a short suction was fixed to it and put into the Bosphorus, men were set to work it, the Navy Yard was soon inundated and the Bosphorus begun to run dry. 'Mash Allah!' said he, 'very good, but it will require a sea to supply it with water. It won't do for us, for there is no sea in the middle of the city.'" They, therefore, have thought best to stick to their squirts, and to let the fire spread until the wind changes, or is tired of burning.

Sandys, in the beginning of the 17th century, visited Constantinople, and speaks of the frequency of fires in that city; he observes: "It is not to be marvelled at, for the citizens dare not quench the fire that burneth their own houses, because officers are appointed for that purpose." He is silent respecting the instruments then used.



This picture represents the new inventions of the Van der Hides, two brothers in Amsterdam, Holland. The inventions are of date 1672 and show new styles of fire pumps, flexible hose pipes, etc. From an old copper plate in possession of the author.

When the useful arts began to excite attention, the defects of portable syringes were too apparent to be neglected, hence in the early part of the 16th century several attempts were made to remedy them, by those noble spirits who burst through the prejudice that had so long consigned the subjects of practical mechanics to the mere makers of machines as one unworthy of a philosopher's pursuit, and from the cultivation of which no distinction, save such as was allied to that of a skilful artisan, could be derived, a species of fame from which professors of philosophy shrunk, like Plato, with feelings of horror. To render the syringe an efficient fire engine would seem to be impossible, except by converting it into a forcing pump, and in that case it would be no longer a syringe. As long, therefore, as such an idea did not occur to engineers, they had no resource but improve the "squirt" as well as they could, and however hopeless the task may now appear, it was not only attempted, but to a certain extent accomplished, and with considerable ingenuity too. It is described in Besson's "Theatre," and must, therefore, have been invented previous to 1568, the date of the permission to print his work.

In this engine several defects of the "hand squirts" are avoided, as the necessity of inverting the instrument to refill it by plunging the nozzle into the vessel of water, the small quantity contained in the former and the consequently incessant repetition of the operation and interruption of the jet, and the difficulty of directing it on the flames with certainty or precision. Besson (if he was the inventor) therefore greatly enlarged the capacity of the cylinder, making it sufficient to contain a barrel, or more, and as a matter of necessity, placed it on a carriage. To eject the water uniformly, he moved the piston by a screw, and when the cylinder was emptied it was refilled through the funnel by an attendant, as the piston was drawn back by reversing the motion of the crank. When recharged, the stop-cock in the pipe of the funnel was closed and the liquid forced out as before. As flexible pipes of leather, the "ball and socket" and "goose-neck" joints had not been introduced, some mode of changing the direction of the jet of this enormous syringe was necessary. To effect this, it is represented as suspended on pivots, which rest in two upright posts; to these are secured two semi-circular straps of iron, whose centres coincide with the axis, or pivots, on which the syringe turns. A number of holes are made in each, and are so arranged as to be opposite each other. A bolt is passed through two of these, and also through a similar hole in a piece of metal, that is secured to the upper part of the open end of the cylinder, and thus holds the latter in any position required. The iron frame to which the box or female part of the screw is attached, is made fast to the cylinder, and it is through a projecting piece on the end of this frame that the bolt is passed. By these means any elevation could be given to the nozzle, and the syringe could be secured by passing the bolt through the piece just mentioned, and through the corresponding holes in the straps. When a lateral change in the jet was required, the whole machine was moved by a man at the end of the pole. To the frame jointed feet were attached, which were let down when the engine was at work. "In the middle ages during fires women used to fetch water in brazen pails to assist."

Considering the age when this engine was devised and the objects intended to be accomplished by it, it certainly has the merit of ingenuity as well as originality. It will be obvious to every practical mechanic that engines of this kind, of large dimensions, must