NEW FIRE ESCAPE.

The necessity of a permanent and efficient fire escape as a fixture on all buildings not absolutely fireproof throughout, is manifested at every conflagration in cities or large towns or in high isolated buildings, and authorities are recognizing the fact that the only fire escapes thoroughly reliable under all circumstances are those of the class applicable to buildings as permanent fixtures.

We illustrate a fire escape which is probably the simplest, handiest, and safest of this class. It is composed of a vertical iron ladder placed about 18 inches from the wall of the building, supported by side stays. One end of the stay is secured to the building, the other end of the stay being secured to the ladder. Persons can descend on the inside of the ladder with their backs supported by the wall, allowing the free use of their hands, while the side stays prevent them from falling sidewise.

This simple fire escape enables more persons to descend in a given time than any other fire escape now in use. They may descend on the inside of the ladder, on the outside of the ladder, and on the side stays—allowing three persons to escape together.

Balconies are erected on either side of the ladder, at the windows, ready for escape. The floors of the balconies are made of wire mesh work, to prevent the feet of the person from slipping and to prevent the accumulation of ice and snow.

We are informed that this fire escape has been approved by the fire commissioners. It certainly requires very little examination to enable one to see that nothing could be simpler, safer, or cheaper. Many of them have been applied to prominent buildings in Philadelphia, where it is found to fulfill every requirement and is found to not mar the appearance of the buildings to which it is applied.

The invention has been patented by Mr. J. B. Wickersham, of 505 Cherry street, Philadelphia, Pa.

WICKERSHAM'S FIRE ESCAPE.

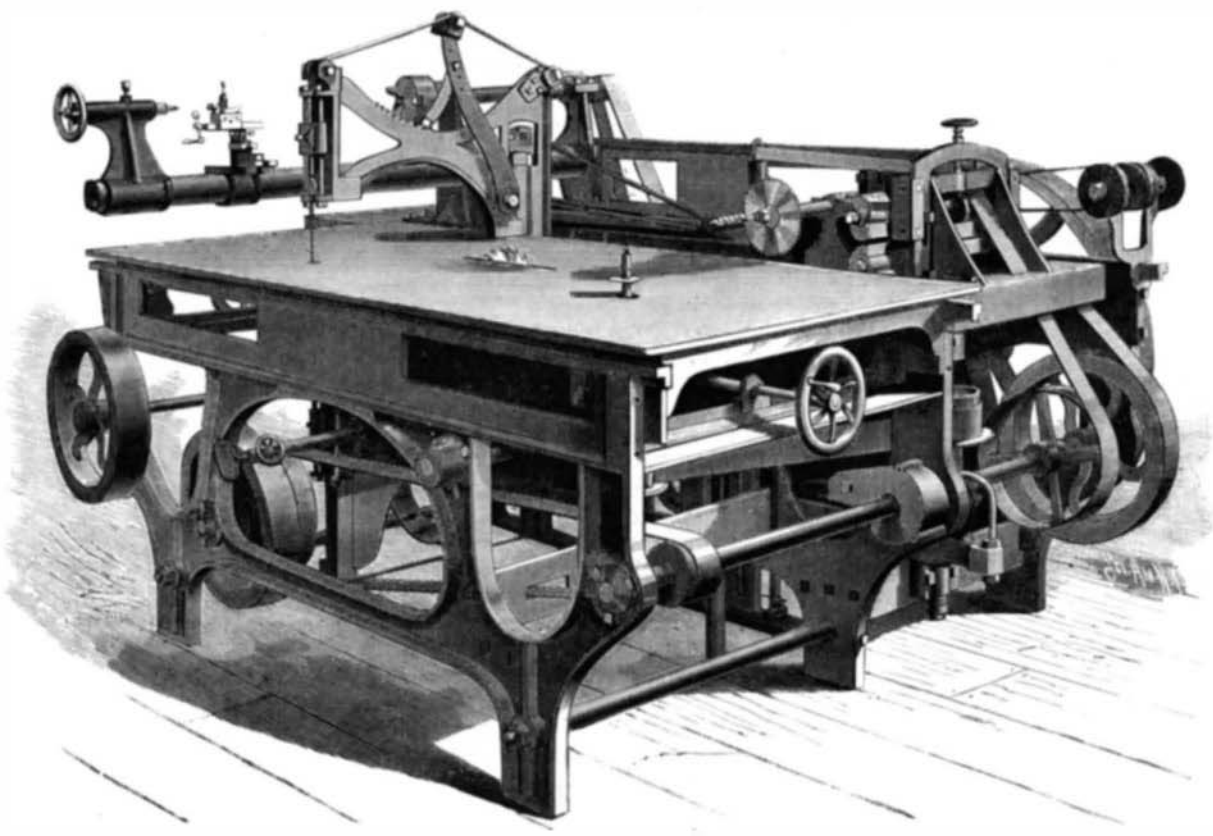
NEW WOOD-WORKING MACHINE.

Among the new and useful inventions we find R. H. Andrews' Complete Wood-Worker, which is shown in the annexed illustration. This machine is a group of general tools, and cannot be called a combination, as all of the eight machines work independently of each other, and are thrown into and out of power by shifting belts and other appliances arranged for that purpose. The machine is light running, owing to the entire absence of cog gear, and the inventor claims that there is no other machine within the reach of the mechanic of moderate means and limited business facilities that will do the same amount and variety of work, considering the amount of floor room required to operate it, and the price at which it can be bought. The cross-cut circular is the ordinary railway saw (saw and table partly shown), with miter attachment, operated through the table under the lathe head. The mortiser, which is partly shown in the engraving, is operated above this table and under the lathe head, a guard or back support for the work being bolted on to the table. The chisel bar can be raised, lowered, and reversed without stopping the machine.

The lathe has fast and slow speed for wood and metal turning, and is similar to the ordinary lathe, except that the bed, when not in use, is pushed back through the support of the lathe head. The lathe mandrel is hollow to admit of a dowel cutter attachment. The lathe as shown in the illustration is rigged for metal turning. The gig saw has no springs, getting its tension by raising the center pulley or ratchet arm or the crane. The crane is pivoted at the back, and when not in use can be swung quarter round out of the way. The circular rip saw is fast in its frame, and when not in use can be lowered below the table by a screw at the end of the machine. This frame carries a ten-inch saw, but when raised will take a sixteen-inch saw for special work. The upright shaper or moulder spindle is screwed on the upright shaft, and can be removed when not in use. The shaper is reversible and gets its lines for work by adjusting the table. The mandrel for boring bit is also used for a butting up saw for work that is too wide for the regular cross-cut.

The tenon cutter gets its lower line for work from the table, upon which is placed a sliding guard or work holder. The upper cutter is put in line by a screw, and is held in place by set bolts. The table is on double inclines, and can be raised or lowered at either end of the machine, and stopped at any point up to four inches. The emery wheels for grinding tools are a simple attachment for convenience. The attachments for sawing dovetails, carving, and a rotary planer for facing up wide stuff, are not shown.

Further information may be obtained by addressing the patentee, Mr. R. H. Andrews, of Washington, D. C.; also see advertisement in another column.



ANDREWS' WOOD-WORKER.

The Disposal of Sewage in European Cities.

In an elaborate report on the sewerage systems of European cities, with special reference to the needs of Philadelphia, Mr. Rudolph Hering notes that London has a complete system of valley line sewers, which follow closely the natural flow lines of water from the surface. In addition it has main drainage works, a system of intercepting sewers which prevents the sewage from entering the Thames, and takes it to a point ten miles below the city and there discharges it into the river at outgoing tides. A portion of the sewage thus intercepted flows off entirely by gravity.

A greater part requires to be pumped; a small portion is even lifted twice before it reaches the outfall. Although the main drainage sewers are capable of taking some rain water, most of it reaches the river directly through the valley line sewers into which the intercepting sewers discharge their surplus during storms.

The general alignment in Paris is partially an intercepting and partially a valley line system, owing to the topography. The sewage is discharged into the river below the city. The irrigation fields, now in preparation, receive about one-fifth of the whole amount. A small portion reaches them by gravity, the rest is lifted nearly thirty feet. The sewage from the higher grounds is intercepted so that it will not flood the lower ones during heavy storms. The sewers along the banks of the Seine are also intercepting.

Berlin has a peculiar system, due to its flat position and the necessity for purifying the entire sewage. The latter is to be collected at twelve different points, to which the sewers converge radially, and from each of which it will be pumped directly to the farms.

Vienna has a natural valley line system, except two intercepting sewers, along the banks of the Wien Creek flowing through the city.

In Liverpool, the sewers partly follow the natural slopes, and partly cross them where it is necessary to intercept the storm water. The sewers finally discharge directly into the Mersey, in front of the city.

In Hamburg, intercepting sewers predominate on account of the necessity of keeping the sewers out of the numerous canals and the Alster lakes. The sewers discharge finally into the Elbe, in front of the city.

In Frankfort, the low grounds near the river made an intercepting system preferable, and it has been carried out in a consistent manner over the whole city. Rain water overflows, however, lead to the river directly from many points. The intercepting sewers discharge below the city.

From a study of the alignments in these cities, it will be noticed that the system of interception is made use of, partially to prevent an undue accumulation of rain water at the foot of slopes, partially to prevent sewage or rain water from flooding low districts, and partially to prevent sewage from flowing into the rivers in front of the cities.

A more detailed study will further reveal that an early concentration of sewage into a few larger sewers is preferable to keeping it more uniformly distributed over the area in a number of smaller ones, and a calculation will show the economy of this.

Finally, it will be clear that the manner of disposal of the sewage depends on the body of water flowing by or near the city. The Thames is capable of receiving the London sewage without injurious effects. The Seine, being much smaller and very far from the sea, is objectionably polluted, and the sewage is therefore to be purified on the sandy plains of Gennevilliers below the city.

Vienna discharges its sewage at present into the Danube canal, but is preparing to lead it into the Danube itself, the capacity of which is sufficiently large to prevent any pollution. Berlin has but a small river flowing by it, which makes purification of all the sewage a necessity.

Hamburg and Liverpool are situated along large bodies of water, and discharge into them without objection.

Frankfort discharges into the Main, but steps are now being taken to purify the sewage, as the danger of pollution by the rapidly growing city is fast approaching.

Commerce on the Congo.

November 12, 1882, is likely to prove an important date in the commercial history of the Congo country, Central Africa. On that day the steamer Harkaway sailed from Antwerp for the Congo River, carrying an assortment of goods for the establishment of trade with the natives of the interior by the International Association, whose agent is Henry M. Stanley. The steamer carried also a number of sheep for acclimation and a selection of European cereals. Mr. Stanley, who is in Nice recruiting his health, will return to Africa early in 1883.

MALLEABLE BRASS.—A German periodical is responsible for the following method of making malleable brass: Thirty-three parts of copper and twenty-five of zinc are alloyed, the copper being first put into the crucible, which is loosely covered. As soon as the copper is melted, zinc, purified by sulphur, is added. The alloy is then cast into moulding sand in the shape of bars.