

**NEW MUSICAL INSTRUMENT.**

The novel musical instrument shown in the accompanying engraving is called the autophone, and is manufactured by the Autophone Company, of Ithaca, N. Y. It is a wonderfully simple instrument for one that accomplishes so much. It requires no special skill to operate it, and one kind of music may be played as well as another. The instrument, as will be seen by comparing it with the hand which is operating it, is quite small.

It consists of an upright rectangular board, having on one side a bellows, and upon the other a flexible air chamber, communicating with a set of reeds in the upper edge of the board. Above the reeds there is an apertured plate, and each reed has an aperture of its own. Above the plate there is a shaft carrying a series of thin disks, which serve to hold the perforated music sheet down upon the apertured plate. The shaft is pressed downward at each end by a spring, and carries at opposite ends toothed wheels which engage corresponding perforations in the music sheet.

The music sheet consists of a strip of Bristol board having perforations corresponding to the notes to be sounded. At one end of the shaft there is a ratchet wheel, A (Fig. 2), which is engaged by two pawls, B C, pivoted to an arm extending upward from the bellows. The pawl, B, always engages the ratchet wheel when the bellows is compressed, and the pawl, C, engages the ratchet wheel when the bellows expands, but it does not do so regularly, its movements being controlled by the arm, D, shown in dotted lines.

This arm has a triangular projection at one end, which rubs upon the under surface of the edge of the music sheet and holds the pawl, C, out of engagement with the wheel, A, except at such places in the music sheet as are perforated to admit the end of the arm, D, when the pawl, C, will engage the wheel, A, and assist in moving it forward. This ingenious device is for the purpose of executing the quick notes, and to economize space in the music sheet.

As the music sheet is propelled by the regular working of the bellows, it acts as so many valves controlling the escape of air from the reeds and thus producing the music.

The most remarkable feature of this invention is the regularity and perfection with which the music is rendered. All of the parts are played, and the music is of no mean order. While it is a very amusing thing, it is also of very great utility, for those who are without musical talents can play as well as those cultured in the art, and many who would not feel warranted in purchasing an organ or piano can, at a very moderate outlay, provide themselves with both an instrument and a player. It must also prove of great use in schools and other places, as an accompaniment to singing.

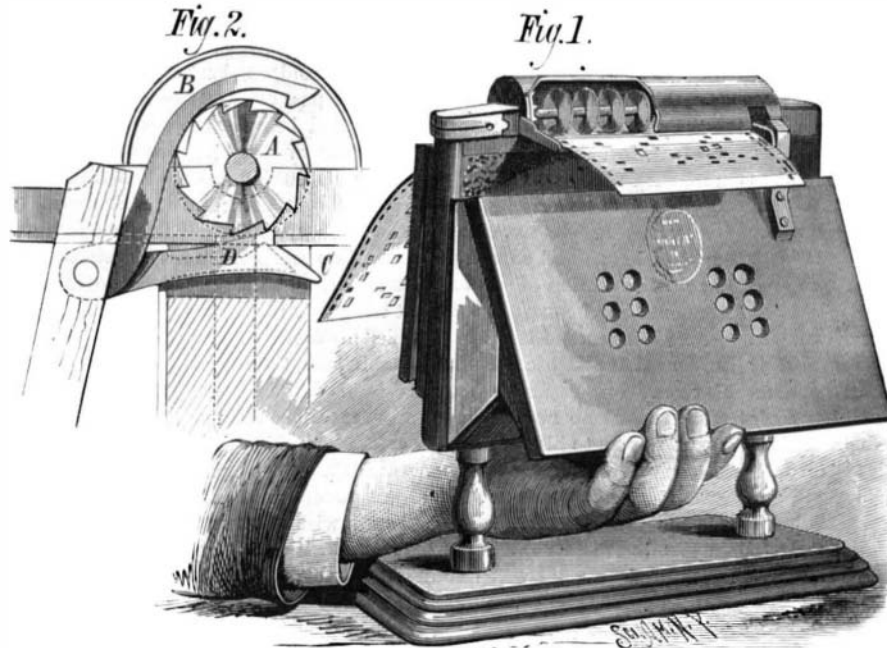
Each instrument is provided with a number of perforated music sheets, and we understand that music adapted to the instrument can be furnished at any time.

**NEW WINDOW CLEANING CHAIR.**

The great danger attending the cleaning of windows, especially in our high city houses, and the necessity of some means for guarding against the falling of servants while cleaning high windows, has led to the invention of the window cleaning chair shown in the annexed engraving. The inventor, Mrs. Henry Dormitzer, of 27 East 74th street, New York city, has received four United States patents on this device, and has also patented it in Canada, England, France, and Austria. The application of the chair will be readily understood by reference to the engraving. It is made adjustable, to adapt it to different kinds of windows, and when it is not in use it may be folded up compactly and laid away.

The platform, A, is of suitable size to sit or stand upon, and is provided with folding sides, B, and a folding back, C. When the sides and back are in the position shown in the engraving, they are retained in place by hooks. A frame, D, hinged to the front edge of the platform, supports the main step, and is provided with two eccentrics that are employed to press two springs against the wall to form a good bearing for the frame. The platform, A, is furnished at each side with a leveling wedge, F, which is moved out or in to adjust the bearing of the platform on the window sill. Below the platform there is a pivoted brace, E, that is drawn with more or less force against the outer surface of the wall below the window sill by a strong rawhide cord, wound around a small windlass, H, located under the front edge of the platform. This windlass is provided with an ingenious lever and pawl arrangement by which the lever, E, may be drawn against the wall with any reason-

able amount of pressure. The lever, E, is adjustable and may be moved to accommodate the device to walls of different thicknesses. The inventor of this window cleaning chair has left nothing out that will increase the safety or convenience of the device. Means are provided for holding cups, pails, etc., in different positions, and an auxiliary step, which folds down upon the main step, may at any time

**THE AUTOPHONE.**

be raised up above the platform, A, to facilitate reaching the upper portion of the window.

This device is easily and quickly applied to any window affording a safe support, and when it is not in use it is folded very compactly, so that it occupies but little room for storage.

THE average amount of time lost to each laborer in Europe on account of sickness, according to Dr. Edward Jarvis, is from nineteen to twenty days each year. That among stu-

dent of twenty-five feet through the instrument, and she repeated after him everything which he said. Another was a little girl who had been deaf and dumb from birth. Using the mute alphabet she informed the teacher in charge that she could hear that one statement of the professor was made in a louder tone of voice than another, but that she could not understand what he said, never having been able to hear such sounds before. In some other cases, however, the pupils upon whom the instrument was tried said, in their mute language, that they were unable to distinguish any sound whatever. It is fair to presume that the instrument will, as have the telephone and microphone, be greatly improved, and that at no distant day it will be of great service to those afflicted by deafness.—*Cincinnati Gazette.*

**Another Audiphone.**

Professor J. W. Graydon, of this city, has for some time past been experimenting with a new invention called the audiphone, which is intended to supplant the old ear trumpet for use by the deaf. There has been an audiphone invented in Chicago, but Professor Graydon claims that his instrument is a great improvement upon that.

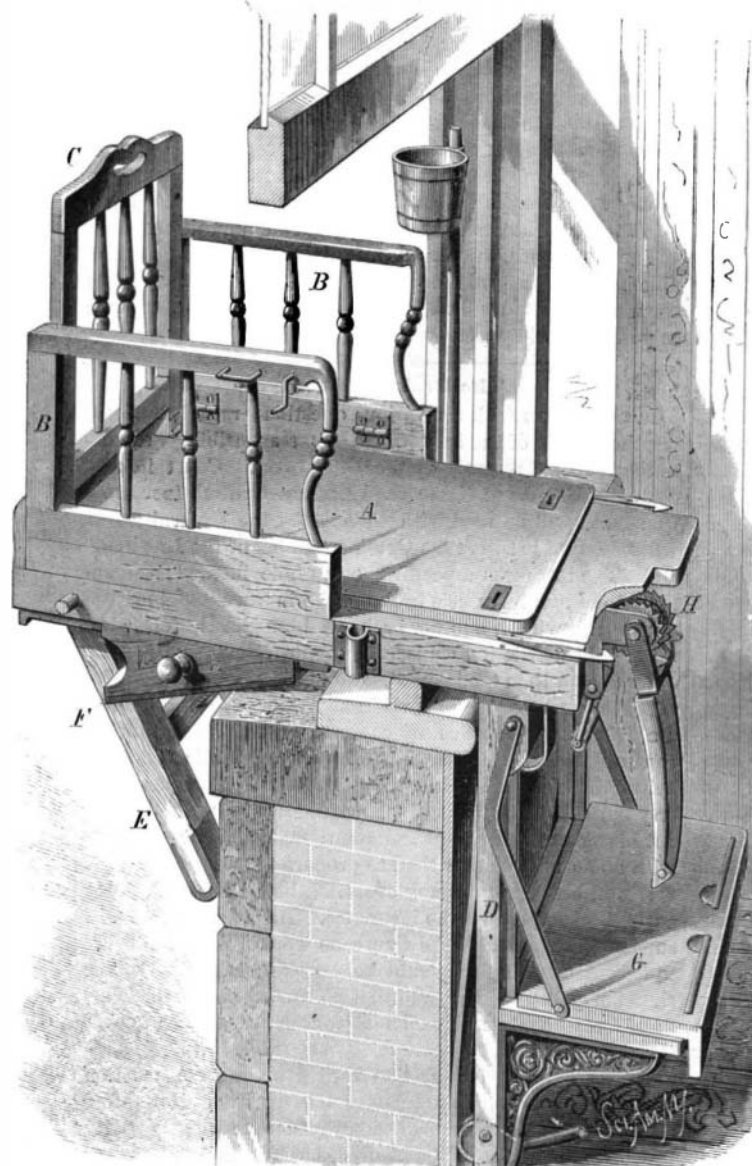
The audiphone, as constructed by Professor Graydon, consists of a small electro-microphone, to the center of the diaphragm of which is attached a cord, which may be of any length, and to the other end of which cord is attached a small piece of wood. The manner of working the instrument is very simple, and can be briefly described as follows. The deaf person takes a firm hold of the piece of wood between his upper and lower teeth, and the party desiring to converse with the deaf talks through the electro-microphone attachment at the other end of the cord, holding the cord taut. The theory advanced is that the sound is conveyed through the nerves of the teeth and the bones of the face to the auditory nerve, which, owing to some defection of the ear caused by disease, is not approachable through the usual channel, thence to the brain. The instrument will only work, however, when deafness has been caused by disease. In case of paralysis of the auditory nerve it is useless. Some very interesting tests of the audiphone were made at the deaf and dumb department attached to the Third Intermediate School recently. Among others was one, a bright looking colored girl, who was entirely deaf.

The professor talked to her at a distance of twenty-five feet through the instrument, and she repeated after him everything which he said. Another was a little girl who had been deaf and dumb from birth. Using the mute alphabet she informed the teacher in charge that she could hear that one statement of the professor was made in a louder tone of voice than another, but that she could not understand what he said, never having been able to hear such sounds before. In some other cases, however, the pupils upon whom the instrument was tried said, in their mute language, that they were unable to distinguish any sound whatever. It is fair to presume that the instrument will, as have the telephone and microphone, be greatly improved, and that at no distant day it will be of great service to those afflicted by deafness.—*Cincinnati Gazette.*

**How the Pennsylvania Railroad is Inspected.**

The annual inspection of the Pennsylvania railroad by the executive officers of the company began October 22, the inspectors traveling in four special trains. The observation trains consist of an engine drawing a hotel and dining room car, and pushing a "gondola," that is, a low, open platform car, with seats raised in tiers, the superintendents occupying the first train, the civil engineers the second, the road supervisors the third, and the division foremen the fourth. Each gentleman is provided with a printed form, on which he marks on a scale of from 1 (very bad) to 10 (perfect) his estimate of each section of the roadbed. The verdict is reached by considering the condition of the track line, and the ballasting, ditching, draining, policing, and neatness of the work. When the trip is completed these cards are made up and an average struck for each section. The highest average indicates to which of the supervisors shall be given the first prize, usually a chronometer gold watch and chain appropriately inscribed, and to which of the division foremen the second prize shall be given. There is great competition for these prizes, and the system begun some ten years ago has been found to be of the greatest value in getting the best kind of work done on the roadbed and line of rail. Most of the superintendents on this trip have intimate practical knowledge of what constitutes a perfect road, for they have served the company of which they are now officers as roadmasters and division supervisors, winning experience and promotion in that way. Last year the inspection was extended over all the leased lines of the company, the superintendents passing over on their trip more than two thousand six hundred miles of the company's track. In doing this, however, they were not able to give the track that close scrutiny which the importance of their errand demanded.

Therefore this year the trip will be confined to the main line and its important branch, the Northern Central Railroad from Harrisburg to Washington and Sunbury. Last year the section south of Newark, a part of Superintendent McCrea's division, won all the prizes.

**WINDOW CLEANING CHAIR.**

dents is from two to five days. According to the Massachusetts Board of Health, during the year 1872, thirteen days' labor was lost by sickness for each productive person in the commonwealth.

AMONG the latest German patent applications there is one for the process of making a green color by oxidizing the sulphide of tetramethyldiamidotriphenylmethan.