Invention of the Iron Frame for Pianos.

In our recent paragraph entitled "A Hundred Years' Progress in Piano Making," we ought to have added the interesting fact that the inventor of the iron frame, now used in all pianos, is still living, in vigorous old age, and is still following his original business of piano manufacturing; we allude to Mr. Conrad Meyer, of Philadelphia, Pa. He is now in the 86th year of his age, and is the senior member of the well known firm of Conrad Meyer & Sons, whose instruments have attained a world wide reputation for excellence.

The iron frame was invented by Mr. Meyer in the year 1832, and in the following year, 1833, he exhibited a piano containing this style of frame at the regular exhibition of the Franklin Institute in Philadelphia. This is fully attested by the records of the Institute, by the makers of the instrument, and by the purchaser of this first piano, Mr. John M. Hood, of Philadelphia. After many years of use this piano finally came back into the hands of the original inventor, and was by him exhibited at the late Centennial Exhibition.

Probable Discovery of a New Element.

MM. Marignac and Delafontaine announced some time ago the opinion that gadolinite contained something more as bases than yttria and the oxides of erbium and terbium. Recently M. Soret has found in the ultra violet spectrum of this substance lines which belong to the spectrum of no known metal, and it seems probable that a new element will before long be thus brought to light.

THE BUFFALO FORGE.

We illustrate herewith a new portable forge, the advantages claimed for which are lightness, strength, compactness, a strong blast, and ease in operating the same, the standard aimed at being the old-fashioned bellows in efficiency without the bulk. Another important feature is the facility of operation by means of the swivel handle arrangement below described, in connection with a combination of ratchet and gear. As shown in the illustrations, the ratchet and gear wheel is revolved by means of a long wooden lever, which is made to swing horizontally as well as perpendicularly on the upright arm which projects from the hearth; this lever is connected by an iron rod with a swinging bar, which hangs on the same shaft as the gear, and which holds two pawls. A downward pressure on the wooden handle moves this bar forward, engages the pawls with the ratchet, and causes the wheel to revolve forward; the return stroke releases the pawls. The proportions of the large and small gear wheels and the large and small pulleys being as 1 to 144, and one man, we are informed, being capable of making, easily, 40 strokes per minute, each causing the gear wheel to make from 1½ to 2 revolutions, an idea of speed obtained can be easily formed.

The machinery is all attached to the hearth, and not to the legs, which makes it very compact. The legs are wrought iron pipe, and are screwed firmly into cast iron sockets projecting from the hearth. The working parts being entirely under the hearth, they are not liable to get wet if exposed to the rain or snow when used in the open air. There is no dead center to overcome when starting up, and it is impossible to revolve the fan backward. The journals are all Babbitted. It is not necessary to fill the hearth with fire clay to prevent the working parts from getting hot, but it can be

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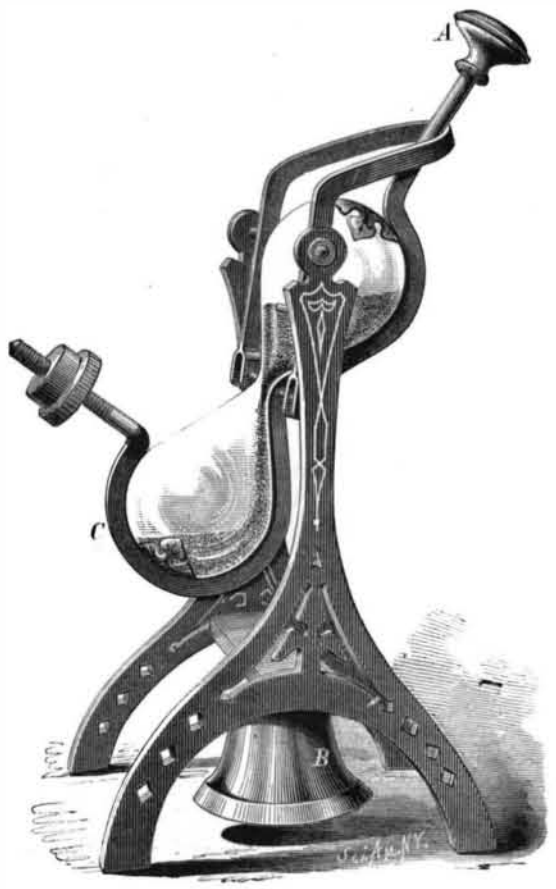
done if desired. Each forge has four drop handles attached to the legs, also an oil can shelf. The long wooden handle has an easy motion, which makes the work of operating very light. It also allows the operator to move about his fire on a radius of six feet or more without interrupting the blast. As to its efficiency, the manufacturers state that they have heated a bar of 2¼ inch round iron to a welding heat in 5 minutes. To keep a slow fire it is only required to turn the lid of the ash box, which is attached to the fan case for the purpose of removing the dust and ashes falling through the tuyere, and a sufficient draught is obtained to keep the fire always ready for use during working hours.

For further information address the Buffalo Forge Company, 78 and 80 Washington street, Buffalo, N. Y.

IMPROVED SIGNAL EGG BOILER.

We illustrate herewith an ingenious device for giving an audible signal as soon as the sand in a sand glass has run out, the object being to give warning when eggs are cooked and to save the necessity of watching the glass. The glass is fixed in a wire frame, as shown, and is provided with a horizontal bar or axis, which passes just behind the middle of the glass, and enters bearings in a swinging frame. Upon these bearings the glass and wire frame revolve freely. The swinging frame is suspended between two standards, as shown, and its object is to render the action of the glass more delicate and also equally reliable, whether the surface upon which the pedestal stands is exactly horizontal or not.



The upper part of the frame is bent back and curved to serve as a support for the glass at a suitable inclination. The movement of the swinging frame is limited by stops on the standards. From the bulb of the glass an extension of the wire frame projects, and this terminates in the hammerhead, A, for striking the bell or other alarm, B, which is hung between the lower ends of the standards. On the arm, C, which is screw threaded, is placed a nut, which serves to regulate the amount of sand that must run out, and consequently the time that must elapse before the upper end of the sand glass will overbalance the other, and thus cause the glass to invert itself.

The action of the glass is as follows: The bulb containing the sand is turned upward and rests against the frame, as shown. In this position the weight of the hammer head brings the center of gravity of the glass above its center of oscillation, and it is consequently topheavy. When sufficient sand has run into the other bulb to bring the glass into a vertical position, it overbalances and becomes inverted. The hammer then strikes and sounds the bell, and the glass remaining in this position, the sand runs back into the first bulb in readiness for use again.

Patented January 22, 1878. For further particulars relative to purchase of patents for the United States, address the inventor, Mr. Joaquim A. de Macedo, Headingly, Leeds, England.

Trade with Brazil.

The cargo of the pioneer steamship Rio de Janeiro, of the new line to Brazil, was decidedly miscellaneous in character, although its value was not great, only about $170,000. Many manufacturing trades were represented. It comprised printing presses, books, and other printed matter, printers' ink and type, straw paper, cards, cotton drills, wool hats, rice machinery, iron machinery, sewing machines, hardware, axes, iron tubes, pig and bar iron, mule shoes, shoemakers' implements, surgical and dental instruments, surveyors' instruments, boots and shoes, rifles and pistols, clocks and watches, ventilators, wheelbarrows, pump fixtures, belting, copper paint, slate ware, furniture, locomotive engine tender, ivory buttons, drugs and medicines, perfumery, beer, cider, starch, flour, butter, oil, canned meats, lard, and other articles.

Bed Bugs in Swallows' Nests.

During a late trip to the Western territories, Professor Leidy, while watching some cliff swallows passing in and out of their mud built nests, was told that these nests swarmed with bed bugs, and that people would not usually allow the birds to build in such places, because they introduce bed bugs into the houses. He collected a number of the bugs from the swallows' nests as well as from the houses. The latter were found to be the true bed bug; the former, the *Cimex hirundinis*. The bugs infesting the bat and pigeon have likewise been recognized as a peculiar species, with the name of *C. pipistrelli* and *C. columbarius*. The habit of *C. hirundinis* was found to be similar to that of *C. lectularius*, the bed bug, in the fact that the bugs during the day time would secrete themselves in the crevices of the boards, away from the nests. After sunset he had observed the bugs leave their hiding places and make their way to the nests. From these observations it would appear as if the bugs peculiar to these animals (swallows and men) did not reciprocally infest their hosts.

THE BROWNIAN MOVEMENT.

It has been known for many years that minute particles of undoubted inorganic origin were found in the field of the microscope to be endowed with a constant movement, lifelike in its nature. Many early physiologists, such as Buffon, Needham, Gleichen, Müller, Spallangani, and others had doubtless been misled by these dancing particles into a belief that a sort of union existed between the inorganic world. John Bywater was the first to publish a statement respecting this phenomenon in 1819, but Robert Brown made it more widely known, and as his papers attracted considerable attention, the behavior of these particles became known as the "Brownian movement." In recent years little attention has been paid to this subject. Microscopists have continually had the phenomenon under their eyes, and it has been often noticed and referred to as one the solution of which might lead to important results.

When writers on the microscope speak of it they say the particles leap and swarm about with an incessant quivering motion, so rapid as to make it difficult to follow the course of a single particle, which probably changes its direction 15 to 20 times in a second.

Professor Jevons, who has devoted many years of study to this matter, has recently published a paper recording his views respecting the cause of this remarkable motion.

By some it has been attributed to rays of light or heat falling upon the liquid, but this idea has been easily and completely disproved. Dr. Carpenter thought it was due to some calorical change continually taking place in the fluid, or to some obscure chemical action, between the solid particles and the fluids, promoted indirectly by heat. Professor Tyndall quite recently attributed this motion of particles to "surface tension."

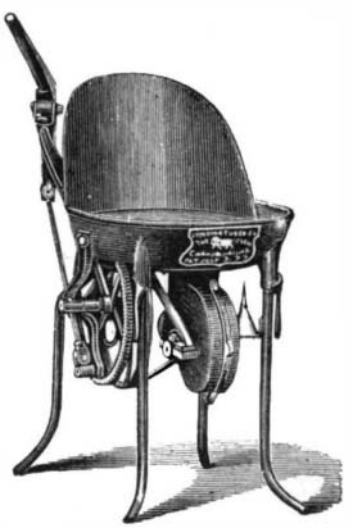
One peculiarity about this motion is its power of continuing without exhausting, for experiments showed that it went on for years, and leaves no doubt that the sediment in many fluids is in perpetual motion, until it finally settles down or attaches itself to the glass.

Almost all substances will show this movement under the proper conditions, but not to the same degree. Professor W. Stanley Jevons, LL.D., M.A., F.R.S., has invented a new name for this movement, and styles it "*pedesis*," from the Greek word πηδησις, leaping, which gives the advantage of the adjective "*pedetic*," from the Greek πηδητις.

To be brief, it may be stated that an extended series of experiments results in the belief that "pedesis" is an electrical phenomenon, and various reasons have been advanced for regarding this conclusion as probable, and as the true solution of this strange movement.

American Association for the Advancement of Science.

The twenty-seventh meeting of the Association will be held at St. Louis, beginning on Wednesday, August 21. The arrangements being made are calculated to render the gathering unusually interesting. Professor Marsh, of New Haven,



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will preside, and the permanent sub-sections of chemistry and microscopy will be under the chairmanship of Professor Clark, of Cincinnati, and Dr. Blackie, of Nashville, respectively. The annual meeting of the Entomological Club of the Association will be held in St. Louis on the day preceding the general meeting.

DR. G. F. WATERS, of Boston, has found in the juice of the milkweed a remedy for suppurating wounds. The time of healing varied from 24 to 36 hours; but in each instance new skin formed completely across. The Doctor states that the only essential point is to dry the wounded surface gently and thoroughly with blotting paper before applying the milkweed juice. After the juice is applied, and while the healing is in progress, a piece of blotting paper is used to cover the surface.