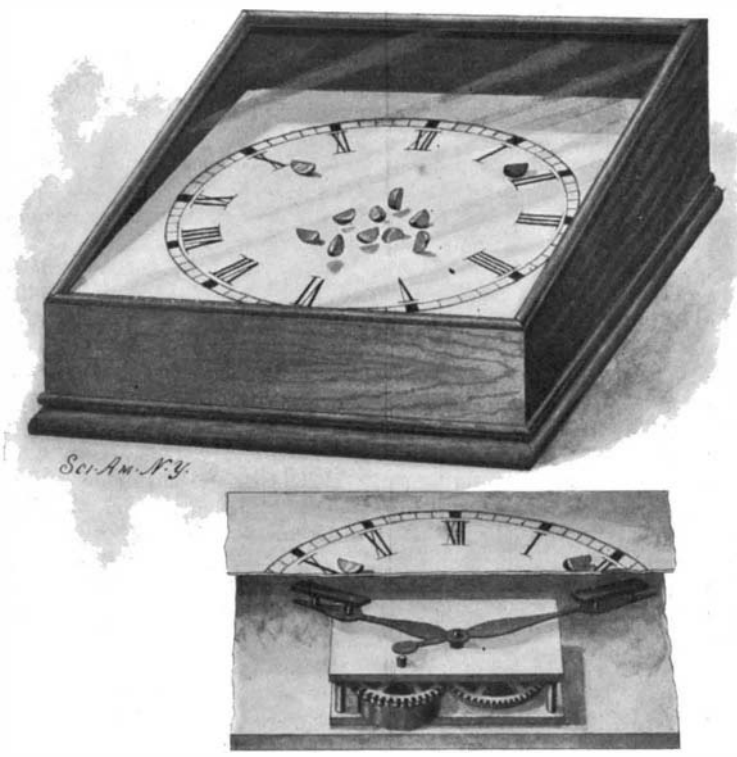
A MEXICAN BEAN CLOCK.

A few years ago public curiosity was excited by the curious beans called the "devil beans of Mexico," which shopkeepers placed in their windows. They somewhat resembled roasted coffee beans in shape and color. They were also known as the "jumping beans," owing to the fact that from time to time they made spasmodic movement which propelled them quite a little distance. The beans grew on a small bush in the Mexican mountains, and it is conjectured that they belonged to the order Euphorbiaceæ. The bean really consisted of three similar pods which formed a single bean. It is usually a third of the bean which was exhibited as a curiosity. On opening the pods it was found that it contained a small larva something like that frequently found in chestnuts. It is this little occupant which gives motion to the bean by its jerks and thumps against the side of its home. If the bean is slightly warmed, it begins to turn from side to side and perhaps, with a sudden jump, turns completely over and stands on one end, and then, by successive jumps, moves quite a distance.

Those who are not in the secret are often greatly puzzled by this strange bean. An enterprising jeweler devised a scheme of utilizing them to make a magic clock. He accomplished this by imitating the shape of two of the beans, making the dummy beans out of soft iron ; one he gilded and the other he silvered. The prepared iron beans were placed with the ordinary jumping beans on a thin white piece of pasteboard, outlined and numbered like the dial of a clock, but devoid of the hands. This dial was located over the works of a large clock which was placed face upward on the floor of the store window. He fastened small magnets to the ends of the hands. The works were of course carefully hidden from view. All that was in evidence was the cardboard clock dial and the jumping beans, among which were the gold and silver painted iron beans. These were placed on the cardboard over the concealed hands with the magnets attached. The magnets were moved by the hands of the clock so that they were almost in contact with the cardboard. As they moved around, they carried the iron beans with them, thus telling the time of day, and the public was greatly interested by the intelligence shown by the two beans, which distinguished them from their lively associates.



A MEXICAN BEAN CLOCK.

A NOVEL FIRE-ESCAPE.

Our engraving gives an idea of a novel fire-escape which has been erected at a Louisville, Ky., school. It consists of a chute and a spiral slide, which is so constructed that it controls the speed of the body descending, the speed being no greater at the bottom than at the beginning of the descent. Escapes of this nature are in use in a large number of factories, schools, and institutions in the South. It is known as the Kirker-Bender fire-escape and is made by the Dow Wire Works Company, of Louisville, Ky.

It consists essentially of an exterior vertical steel cylinder 6 feet in diameter, extending from the ground to the roof and provided with entrances from the building at every floor. The cylinder is a thin shell containing a small concaved spiral surface extending from top to the bottom and forming a continuous chute down which the occupants of the building can easily and rapidly slide to the exit at the ground. The chute is made of steel plates, stamped to a uniform curvature and overlapping each other like shingles at their lower edges. They are riveted to the sides of the shell and are secured to a 3-inch steel pipe which forms the vertical axis of the cylinder; the plates are smooth and polished. The entrances to the cylinders are through rectangular steel extensions riveted to the side and having double-leaved spring doors which open readily by pressure from the outside. The exit is a similar double-leaved spring door, which opens by a very slight outward pressure.

The fire-escape is set about 2 feet clear of the building, and connections are made with it from the windows. In use it is only necessary to pass through the window on to a smooth platform and then open the door by a slight pressure and get on the chute in any convenient position. The tendency is naturally to assume a sitting posture on the spiral surface, and the descent is made feet first. The center pipe is utilized as a standpipe and is provided with fire hose couplings. A firemen's iron ladder is also run up outside to give independent access to the roof. There are a number of buildings in Louisville which have been equipped with this fire-escape. A descent from an escape 61 feet high was made in 16 seconds. On one occasion over 50 people passed through the same escape, and some of them descended head foremost without accident or trouble. At another school 135 people, including a lame boy with his crutches under his arm, descended through it safely in one minute.

As the doors close automatically, smoke and flames are excluded, and it would be possible to pass by a burning story when it would be impassable by an open stairway. The same scheme can be applied to a fireproof shaft in the interior of the building.

A SPIRAL SLIDE STEEL FIRE-ESCAPE APPLIED TO A SCHOOL.

Russian Color-Printing Machine.

The Orloff machine for printing in colors is, in its operation, a departure from any machine hitherto used for a like purpose, says Engineering. It is the invention of Mr. Ivan Orloff, chief engineer and manager of the Russian Government Printing Works, at St. Petersburg, and it possesses many points of interest. In the ordinary flat color printing machine, the successive colors are applied one at a time as each one becomes dry, but the Orloff machine puts down all the colors on the paper at once, so that a great saving of time is effected. The principle of the machine is as follows: The blocks which take the different colors are fixed to a cylinder of large diameter, and each block receives the supply of colored ink intended for it, and as the cylinder revolves, the ink on each block is transferred to a composition roller very similar to an ordinary inking roller. After all the colors have been transferred to this roller, each in its proper position, an engraved block or form follows, and receives a perfect impression from the composition roller. Thus impressed, the form passes on and comes in contact with the paper on the impression cylinder, where it prints all the colors at one operation. The whole of these various transfers are performed during one revolution of the cylinder.

While the blocks pass under the inking rollers, the latter are, at the proper time, lowered by a system of cams so as to come into contact with the blocks which they are intended to ink. The number of colors that can be used is only limited by the number of blocks and the size of the machine. All the operations go on continuously, as the cylinder revolves in one direction only. The number of finished impressions is stated to be about 1,000 per hour. The machine was originally designed for the Russian government to print multi-colored patterns for banknotes, and it appears to be well adapted for this purpose.

We understand that the Russian authorities have thirty-two of these machines at work in St. Petersburg on their new issue of paper money, and also producing banknotes for the Chinese government.

Experimenting on Smoke in Tunnels.

Prof. Mosso has been recently experimenting on smoke in tunnels, the scene of his labors being a long tunnel not far from Genoa, through which some 200 trains pass a day, leaving an immense amount of smoke. Two methods were tried; first compressed air was used. Large cylinders of steel were filled with air and compressed to 750 pounds to the square inch. The cylinders were 5 feet long and 2 feet wide and were strongly built to resist the enormous pressure. These were placed in the tender of the locomotive. In passing through the tunnel the air was allowed to escape. The pure air blew back the smoke and purified the atmosphere. The second method was with compressed oxygen. This was allowed to escape through the cylinders into the fires of the engines, causing complete combustion, and preventing the formation of dangerous gases as well as making the air purer by the addition of the oxygen. The compressed air method is to be adopted, as it is cheaper and almost as good as the oxygen. Of course the best solution would be to run the trains through the tunnel by electricity, as is done in Baltimore.