

A ROLLER PRESSURE REGULATOR FOR CANE MILLS.

An improvement whereby a uniform and adjustable pressure of the upper roll of a cane mill upon the cane may be obtained, while the roll will yield for a hard substance or an unusually large body of cane, is shown in the accompanying illustration, and forms the subject of a patent issued to Messrs. Samuel M. Malhiot and Camille A. Lejeune, of Albemarle, La. Fig. 1 is a perspective and Fig. 2 a side view of a cane mill provided with this pressure regulator, Figs. 3 and 4 being partial transverse sections. The lower journal boxes are supported in fixed position, while the upper boxes are adapted to slide in the housings, yokes resting on and moving with the upper boxes, while a bolt passes down through each yoke and through the housings, as well as through the base and lower fulcrum bars, a plate, and cross-bars, below which it is keyed. To each of the fulcrum bars is secured a cylindrical steel bar, forming the fulcrums of levers arranged on opposite sides of the machine, the shorter arms of the levers resting upon steel rollers which bear upon the upper face of a plate with side flanges. The flanges retain the rollers in place, and the levers are arranged in two series of three each, their outer ends being connected by a cross-bar. Under each of these cross-bars is a steam cylinder, with its piston rod in contact with the bar. The cylinders are connected by a pipe, through a T in which steam is received from the boiler, the supply pipe having a check valve, a pressure regulator, a throttle valve, and an ordinary safety valve, arranged in the order named, together with a steam gauge indicating the pressure of the steam in the cylinders. When steam is admitted to the cylinders, the reducing valve is made to bring down the boiler pressure to the working pressure required in the mill, and the regulating valve and the safety valve are then set accordingly. A large or small body of cane then passed between the rolls is subjected to a uniform pressure; but when an unusually large body of cane is fed, causing the upper roll to be suddenly lifted, the movement of the pistons causes the check valve to close, and steam is compressed in the cylinders and in the pipes, the safety valve then opening. As soon as the upper roll assumes its normal position, the check valve opens automatically and the work proceeds as before.

A PROPOSED APPARATUS FOR A FALL OF 1,000 FEET.

Here is an idea on the subject of which it is, perhaps, not without interest to learn the opinion of the public, and which we recommend to American engineers at a time when work on the Chicago exhibition is about to

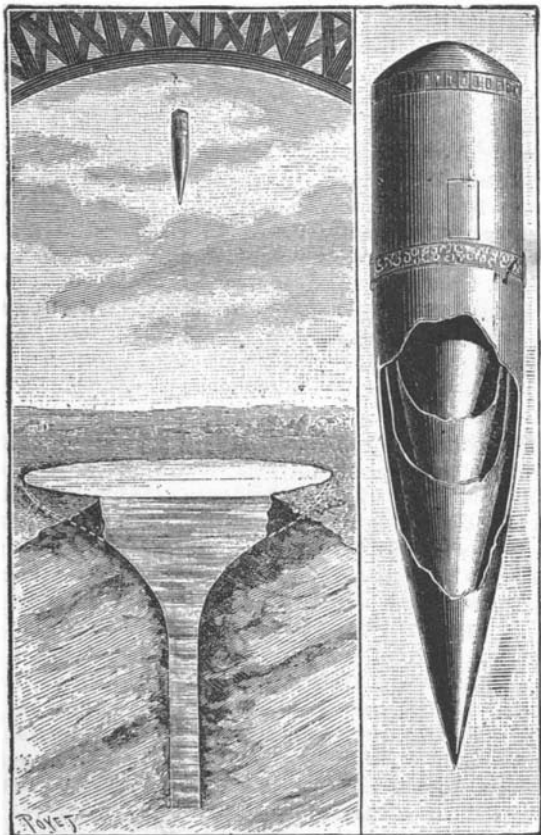


Fig. 1.—CAGE FOR HIGH FALLS IN SPACE AND WELL FOR ITS RECEPTION—DETAILS OF THE SERIES OF CONES.

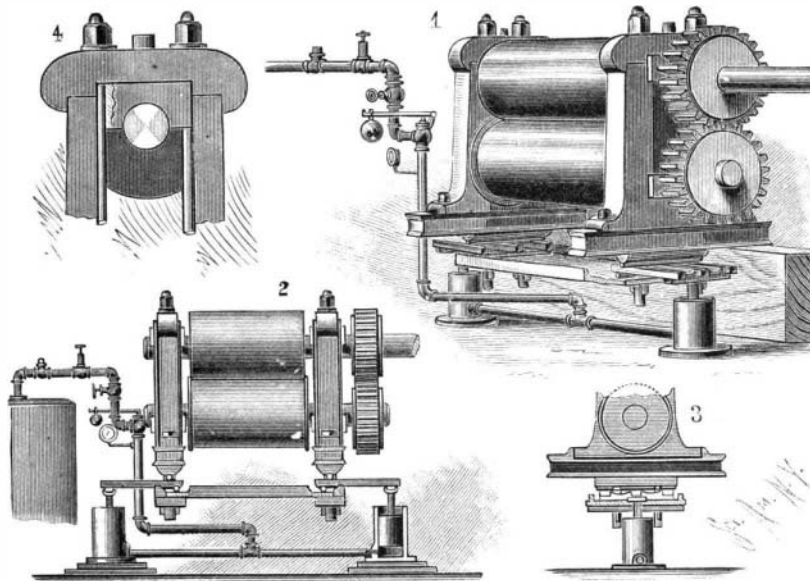
begin. It concerns a class of matters in which the habitual readers of *La Nature* are all particularly competent to fix an opinion. It is a question of a fact that the great towers that are now in vogue would permit of realizing.

Every one knows the peculiar sensation that one feels in falling vertically from a certain height, in rid-

ing down a very steep hill in a sleigh, and especially in descending in an elevator car that is set rapidly in motion. A rapid vertical fall is a source of physiological disturbances that are very keenly felt by many persons. If such a fall assumes an exceptional character of magnitude, it will give rise to a mixture of desire and fear of exposing one's self to it that will constitute a new source of perturbations. These latter are of the same kind as those that a person experiences in rustic swings, toboggan slides, merry-go-rounds, the sight of abysses, etc.

Such is the field to be exploited.

A tower several hundred meters in height and a closed cage constitute the plant. The maneuver is sim-



MALHIOT & LEJEUNE'S PRESSURE REGULATOR FOR CANE MILLS.

ple: The passengers enter the cage, which is afterward allowed to drop freely from the top of the tower. At the end of 100 meters fall the velocity acquired is 45 meters per second, at the end of 200 meters it is 65 meters, and at the end of 300 meters it is 77 meters. Now the fastest trains make scarcely 30 meters per second, and descents into mine shafts never exceed 15 meters per second.

In order to render this maneuver practical, it suffices to receive the passengers safe and sound at the end of the trip, and to have it possible to rapidly raise the cage again. As regards the first condition, that may be realized without accident by giving the car the form of a shell with a very long tapering point, and by receiving it in a well full of water of sufficient depth.

Mr. Charles Carron, an engineer at Grenoble, has analytically studied the conditions in which the punctuation of the water by such a shell would be effected, and the reactions that the passengers would have to support. The conclusions of this study show that there is nothing, either theoretically or practically, opposed to its construction and to its operation in falls reaching three hundred meters. The accompanying figures give the general aspect of such a shell capable of accommodating fifteen passengers falling from a height of 300 meters. The principal dimensions of the installation would be as follows: Internal diameter of chamber, 3 meters; height, 4 meters; height of mattress, 0.5 meter; height of cone, provided with a series of internal cones set one into the other in order to prevent the air from being compressed in the chamber at the moment of immersion, 10 meters; total weight, 11 tons; displacement of the shell entirely submerged, 30 tons; depth of the well, which is in the form of a champagne glass with hollow foot (a form whose profile has been determined in such a way as to prevent the swell produced by the immersion of the shell from extending beyond the limits of the well), 55 meters; diameter at the upper part, 50 meters; diameter from the depth of 28 meters to the bottom, 5 meters. The passengers would be securely seated in arm chairs that exactly followed the contours of their body.

This mode of high speed carriage, for returning from an ascension of 300 meters, would not fail, through its originality, to please a host of amateurs with a new form of excitement. It appears therefore to possess the wherewithal to tempt a bold builder.—*A. Berges, in La Nature.*

Iridescence of Glass.

The iridescent film in glass is partially soluble in water, the remainder being unattacked by hydrochloric acid, but yielding easily to caustic soda. Both solutions contain sodium sulphuric acid and carbonic acid. The portion insoluble in acid can only be silica, no lime being found even by the spectroscope. The film exists only on one side of the glass, and must be formed during the final heating, being probably caused by the sulphurous acid in the burning gases, which acts on the surface of the glass, forming sodium sulphate and silicate, the latter being subsequently decomposed into free silica, which separates out in the amorphous form.—*A. Jolles and F. Wallenstein.*

A Novel Sea Barrier.

On the northern shore of the Duddon estuary, in the county of Cumberland, there has been steadily worked during the last twenty years or more an important mine, producing a large quantity of rich red hematite iron. The ore having been excavated or "won" as close to the sea margin as it has been possible to work without letting down the surface of the land and admitting the influx of the sea, thereby drowning the mine, the company have recently obtained a fresh lease, undertaking to construct a barrier to keep back the sea along that portion of the estuary in front of the mine, in order that they might "win" the ore on underneath some twenty-six acres of the sea bed. To effect this object a massive and substantial sea barrier has now been constructed. This may justly be regarded as unique in character, inasmuch as it is at one and the same time a breakwater and a water tight dam. By means of this work the sea was about three months since finally and successfully excluded from the area above mentioned. This great sea barrier presents an imposing appearance. It is just two-thirds of a mile in length, and for about one-half this length is fully 50 feet in height from the bottom of the foundations to the top of the parapet. At high water of high spring tides there is a depth of rather more than twenty feet against the seaward face of the work; but, being exposed during southwesterly gales to the full force of the waves sweeping up the Irish Channel, backed by the Atlantic rollers, the sea at such times breaks with great violence against the new barrier, as was, of course, expected, and has been provided for in the structure just completed. The engineer of the work is Sir John Coode, and the contract-

ors are the well known firm of Messrs. Lucas & Aird. There is every reason to believe that the anticipation of the directors and shareholders of being able to continue the working of the iron ore over a further period of 25 years may be realized.—*British Trade Journal.*

To Prevent Electricity on the Printing Press.

Wet a cloth with water and wring it out well until it is only damp, then pour a little glycerine upon the damp cloth and wipe the surface of the tympan sheet with it, only on that part of the sheet where the impression is, as it is there that the reaction is effected—at the point of pressure. Do not put on too much glycerine, as it will wrinkle the sheet too much. Simply go over it as you would in oiling the sheet to prevent offset, but do not saturate it. If you find that one application or wiping will not stop the trouble, go over the impression parts again in the same manner. Some kinds of stock are more susceptible than others,

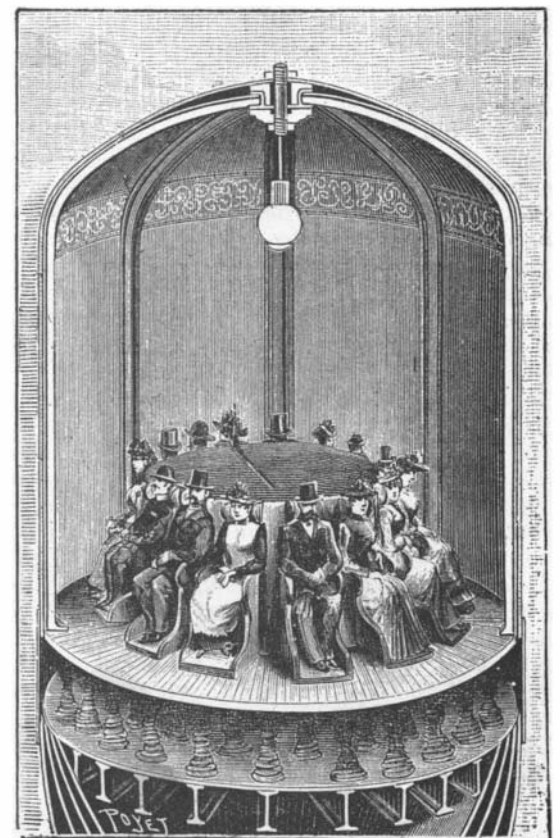


Fig. 2.—INTERNAL VIEW OF THE CAGE.

and call for an additional application.—*American Art Printer.*

PHOTOGRAPHY is being used in the Paris morgue to determine, if possible, identification of the deceased. A photograph on a large scale is taken of the hands and put on exhibition. Persons are frequently identified either by scars of injuries or marks of various kinds which indicate the probable occupation.