storage batteries are apparent, especially for lighting steamers and railway trains. They are in successful operation on the trains of the Pennsylvania Railroad and elsewhere, but are hardly adapted as yet for general use, for the reason that they require such intelligent care.

The carbon building is of great size. Here the carbons are made from retort coke. One crusher reduces the coke to egg size, another to the size of buckwheat. It then runs through burr mills and bolting machines until the whole is reduced to an impalpable powder. It is next conveyed to mixing tanks, where it is mixed with adhesive material, after which it is tumbled in roller tumblers until it is ready to be moulded for use. The pressure on each mould is 300 tons. After being moulded, the carbons are "burned" in a reverberatory furnace a week or more, to expel all moisture. Having been assorted for straightness, and inspected and tested for their burning qualities, they are plated with copper and boxed for shipment. The company at this time is making 50,000 carbons a day.

The company employs four expert pattern makers, who are most of the time engaged on new schemes devised by Mr. Brush. A word is here in place as to Brush's electric motor. It is designed to distribute *power* as well as *light*, and under conditions practically the same. This will be a boon to hundreds of small factories, etc., where steam is now used at a disadvantage. The consumer is to turn on electrical power, whether for a sewing machine or a printing press, or for more ponderous machinery, by merely turning a switch, just as a key is turned for starting the electric light from the same arc circuit. In this manner, also, power is to be transported to a long distance from the dynamo by which it is generated.

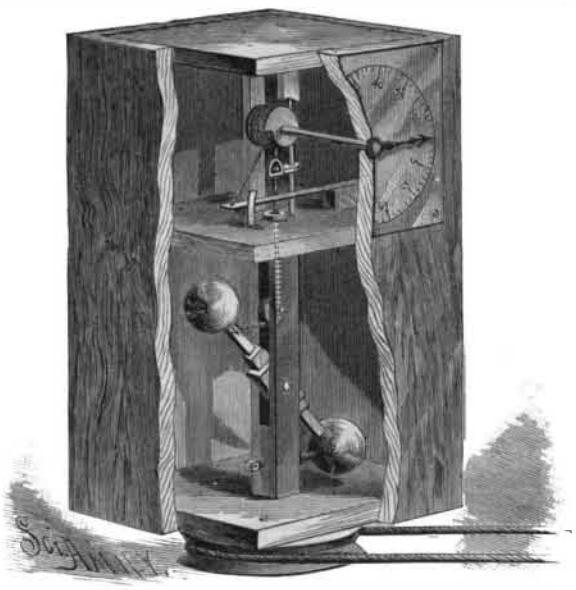
The last building I visited was the "power building." Here are three boilers, of 150 horse power each, and furnishing steam for a large 24 by 48 inch engine. Here is a system of Worthington pumps, Berryman heaters, water tanks, etc. This engine, besides doing other work, drives two great dynamos, the current of which is utilized in the adjacent smelting furnaces of the Cowles Aluminum Company. The smaller one has 600 amperes, and about 50 volts of electromotive force. The larger one is the largest that has thus far been built by the Brush Electric Company. The armature of this great dynamo is 26 inches in diameter, and revolves 907 times a minute, producing a current of 1,575 amperes with an intensity of 46·7 volts. The entire dynamo is 8 feet long and 32 inches wide, weighs about 7,000 pounds, is rated at 125 horse power, and would furnish current for about 1,200 incandescence lamps of 16 c. p. each. Its powerful current is conducted to the furnace room and back by a circuit of thirteen copper wires, each 0·3 inch in diameter, which, as they approach the carbon electrodes, are twisted into a copper cable an inch and a half in diameter. An ampere meter is inserted into this circuit, through whose helix the entire current flows, and on whose dial is indicated the total strength of the current being used at any given moment. A large resistance box also forms part of the circuit, over which passes a heavy copper slide, by means of which the current is readily regulated, enabling the operator to choke off the main flow before breaking it at the switch, thus preventing any serious flashing at the dynamo. Mr. Cowles gave me some astonishing figures as to the practical efficiency of this dynamo in the reduction of refractory ores, and the economical value of the process. The intention is, at an early day, greatly to enlarge their works and remove them to another locality; and in order to accomplish their aims they have contracted with the Brush Electric Company for a new dynamo of immense size, which is now being constructed, and which will be the largest in the world. The machines made on this limited area of seven acres, in the suburbs of Cleveland, have illuminated nearly every city on this continent, and have even been lagely used in other lands than our own. Their brilliant arcs shine in Canada and China, South America and South Africa, Mexico and Madagascar, New Zealand and Australia, India, Egypt, and Japan, and in every kingdom of Europe, and, indeed, have lighted every prominent country of the world.

The officers of the Brush Electric Co. are: President, G. W. Stockly (who is also business manager); Vice-President, J. J. Tracy; Secretary, W. F. Swift; Treasurer, J. Potter; Superintendent, N. S. Possons, and Assistant Superintendent, W. J. Possons, besides a board of directors.

A RESIDENT of Minnesota, who has seen several severe tornadoes, says that their most peculiar feature is the singular sucking movement. Buildings are sucked up into the clouds entire, and come down soon in fragments. After the great Rochester tornado, a farmer twelve miles from town found an uninjured marble top table in his field. Another found a very large sheep that had come from no one knew where and had been deposited in his yard unhurt. The Minnesota man further said that he had seen a board into which wheat straws had been driven until they stuck through on the other side.

CENTRIFUGAL SPEED INDICATOR.

Journaled in a transverse partition and the bottom of the case in which all the parts of the indicator are contained is a shaft, the lower projecting end of which is provided with a pulley. This shaft is slotted to receive a pivoted lever, the arms of which upon opposite sides of the shaft are of equal length and are provided with weights. The journal of the shaft in the partition is made hollow, to receive a rod whose lower end is connected by a cord passing under a pulley hung in the slot with the arm of the lever. The upper end of the rod is attached to a slide moving along a guide rod secured in the casing parallel with the shaft. A cord attached to this slide is wound once around and secured to the drum on the spindle of the indicator. A cord from the free end of a flat spring secured to the partition is attached to the smaller part of a snail secured to the spindle, so that as the cord is wound upon the snail it is received on a continually increasing diameter. A spring, projecting from the partition at right angles to the main spring, bears against the side of the latter with sufficient friction to modify its movement and that of the lever, when the indicator is used for indicating low speeds; but the small spring, being of less length than the distance through which the other moves, the two do not touch during the latter part of the outward excursion of the main spring. Upon the



HERDEN'S CENTRIFUGAL SPEED INDICATOR.

outside of the casing is a dial, in front of which the pointer carried upon the end of the spindle moves. The indicator receives its motion through a belt passing from the machinery whose speed is to be indicated around the pulley. As the shaft revolves, the centrifugal action of the weights tends to bring the lever into position at right angles with the shaft. This action of the weights is opposed by the spring through the connections as described. When the speed is increased, the action of the weights tends to put the spring under greater tension, and by unwinding the cord on the drum and winding the cord on the snail, the spring secures a greater advantage over the weights. When low speeds are indicated, the tendency of the lever to vibrate under the light pull of the spring is opposed by the bearing of the small spring against the side of the other.

This invention has been patented by Mr. Henry Herden, of Wellsboro, Tioga Co., Pa.

What Work Is.

I was riding up town in a Third Avenue car the other day when a butcher's boy, a lad some 14 years of age, in a hickory shirt and with a battered Derby hat on the back of his head, stepped airily upon the back platform and hung his basket on the handle of the brake. He had sandy hair cut close to his head. He was very much freckled, his eyes were pale blue, but keen in their expression, and his nose was of the genus pug. He was smoking a cigarette. For some time he shared the privileges of the platform alone with the conductor, who began talking to the boy about the wrongs of the conductors and their right to strike.

"What are you givin' us?" said the boy; "yer call it hard work to stand out here on the platform and yank a bell? When you ain't doing that, you are inside taking fares, and knockin' 'em down, too. That ain't no work. Jest you begin at 4 o'clock in the morning, like me. Open the shop, sweep it out, clean ice-cold fish out of the refrigerator, and never get no chance to warm yourself; then lug big baskets of meat up to the top of flats all day long, and be cussed by the boss because you don't move round faster. That's work. You fellows have struck it soft, you have. You can't talk to me. I ain't no greenhorn." And he jumped off the car and went down the street whistling "The flowers that bloom in the spring."—*Phil. Record.*

Correspondence.

How to Prevent Anvil Noise.

To the Editor of the Scientific American:

I notice an item in your paper of April 17, on noiseless anvils. It is advised to set in lead or sand. I find by setting the anvil on a piece of plank say two feet square, and hanging that by the corners to the wall above with small ropes, you will get scarcely any noise and no jar, and the anvil is as solid as if placed upon a block. J. L. P.

Owego, N. Y., April 25, 1886.

A Home-made Ash Sifter.

To the Editor of the Scientific American:

I send you this bit of information for the women who, like myself, read the SCIENTIFIC AMERICAN.

To sift cinders, cover your sifter with an old apron or rag. Seize it thus covered, and shake without lifting the edge of the rag.

In case of wind, tread on the edges to keep them down. A few stones applied at the corners will do as well.

I have found the above device a thousand times more practical than any of those cumbersome and dear apparatus which are found in most hardware stores. J. A.

Washington, D. C., May 4, 1886.

A Texan Meteorite.

To the Editor of the Scientific American:

The article on the "New Mass of Meteoric Iron, from Independence County, Arkansas," which appeared some time ago in the SCIENTIFIC AMERICAN, was read with great interest by the officers stationed at this fort.

The appended postscript, requesting readers to communicate through your paper any knowledge they might possess of the existence of masses similar in nature to the one described, and also to report all meteorites that may fall in their vicinity, accompanying their information with specimens, prompted me to send to you a sample of a mass of meteoric iron which I secured while serving in Texas in 1882.

As to the history and manner of discovery of this rare specimen, I will here give it to you as briefly as possible.

On the morning of June 10, 1882, being stationed at Fort Duncan, Maverick County, Texas (a military post situated on the left bank of the Rio Grande), as I was returning to the garrison from a trip in the vicinity, I casually noticed a round bowlder that presented a very metallic appearance. I examined it closely, found it in truth to be a metallic body and a specimen worthy of careful preservation. It being on the land of a Mr. Wieste, I did not remove it at the time I discovered it, but later I persuaded Mr. Wieste to visit with me the place where the mass lay, and inquired if he knew anything concerning it, or of its nature. He stated that "he did not know what it was or where it came from, and if I wanted it, I was welcome to it." It was then that I, for the first time, attempted to lift it, and found it exceedingly heavy for its small bulk. Unlike the plan of the boys who "rigged up a drag of poles and bark" for the removal of the Arkansas 94 pound meteorite, as stated by Mr. Hindman, I had one of the privates (Mr. Brand) of our company carry the mass to our camp. After his task, which was a very tiresome one, was completed, he remarked that "he would not care to carry about with him many such specimens of Texas rocks." I early arrived at the conclusion that the mass was meteoric iron, as it possessed all the characteristics of such bodies.

The photograph which I send to you shows a broad view of the meteorite, and also its resemblance—as expressed here at the camp—to the "shape of a ham."

I have found it to weigh ninety-seven and one-quarter pounds, and to be twelve inches long, ten wide, and six inches thick. Its specific gravity is equal to that of wrought iron, *i. e.*, 7·522. Small pieces cut with a chisel from a pointed and much abraded part of the mass were malleable to a high degree, whether heated or cold.

Like all meteoric irons, this mass is also isometric in crystallization, which is proved by etching a smoothed surface.

Its color when polished is unusually white, more like that of quicksilver; much whiter than is common to meteoric iron.

Owing to the presence of a small percentage of nickel, it has thus far resisted all corrosion or oxidation. A surface of five inches length, which I polished nearly four years ago, remains at this time very free from rust.

The outer surface has the commonly observed black coating, or crust, always found on meteorites.

C. C. CUSICK, U. S. A.

Fort Lyon, Bent County, Colorado.

[We duly received the specimen. It is a very interesting example of meteoric iron.—ED.]