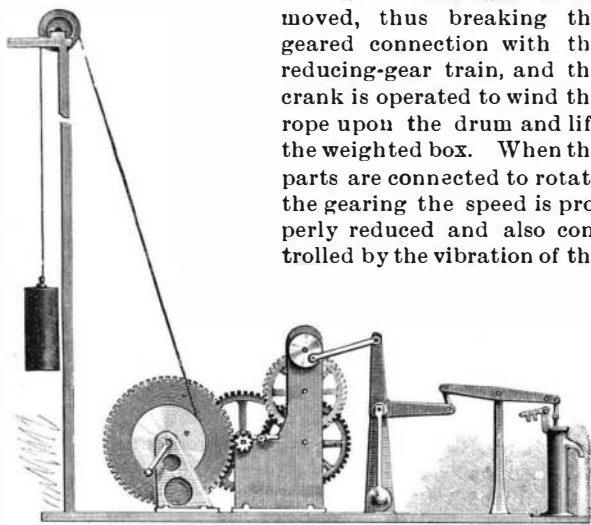


A SIMPLE MECHANICAL MOTOR.

The illustration represents a device, patented by Mr. Charles C. Henderson, whereby power may be stored for subsequent use to pump water, or for other service, the motor being also a useful adjunct to a windmill, furnishing power when the mill does not run. The motor mechanism is supported by three bracket stands upon a suitable base, a transverse main shaft carrying a drum and master wheel, while a second shaft, adapted to be operated by a crank, carries a pinion whose teeth engage those of the master wheel. A large, loose spur wheel on the shaft by the pinion is adapted to be secured to the shaft by a pin, and to the rear of this shaft is a countershaft having a small pinion engaging the spur wheel. Adjacent to the pinion on the countershaft is a larger gear wheel meshing with a pinion on a cross-shaft journaled higher up in the standards, this shaft carrying a spur-wheel engaging a pinion on a crank-shaft having at its outer end a crank-disk. A pitman loosely connected to a crank-pin on the disk is also connected to a bell-crank rock-arm carrying a pendulum rod, the arm being also connected by a short link with the walking beam of a pump. A rope attached to the drum extends up over a pulley mounted at the top of a derrick, a weight or a box containing heavy material being attached to the free end of the rope, the amount of the weight being sufficient to cause a proper movement of the gearing and the working of the pump plunger. When power is to be stored, the pin securing the large spur-wheel

**HENDERSON'S MOTOR FOR DRIVING PUMPS.**

on the second shaft is removed, thus breaking the geared connection with the reducing-gear train, and the crank is operated to wind the rope upon the drum and lift the weighted box. When the parts are connected to rotate the gearing the speed is properly reduced and also controlled by the vibration of the

pendulum, which is made adjustable to suit the size of the pump and the length of the stroke. To stop the motion of the pump at any time a latching dog is provided, which may be hooked to a pin on the walking beam.

Further information relative to this improvement may be obtained of the Henderson-Maddock Motor Co., Goldendale, Washington.

The Glow Worm Caves of Tasmania.

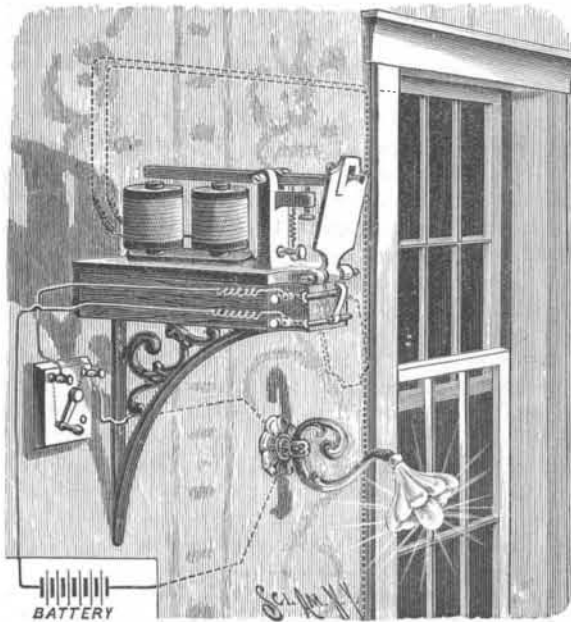
At the meeting of the Royal Society of Tasmania in June, an account of some fine caves that have been discovered near Southport, Tasmania, was given by Mr. Morton, who had visited them. They are situated about four miles from Ida Bay, and a fairly good road leads to them. The entrance is through a limestone formation. A strong stream flows along the floor of the chambers. The first chamber reached by Mr. Morton and those who accompanied him showed some fine stalactites, and along the floor some fine stalagmites were seen. On the lights carried by the party being extinguished, the ceiling and sides of the caves seemed studded with diamonds, an effect due to millions of glow worms hanging to the sides of the walls and from the ceilings. Further on, several chambers were explored, each revealing grander sights.

The time at disposal being limited, the party had to return after traversing a distance of about three-quarters of a mile, but from what was observed the caves evidently extended a distance of three or four miles. The only living creatures seen were the glow worms. These caves, under proper supervision, should become, Mr. Morton thinks, one of the great attractions of the south of Tasmania.

AN electric ventilator for supplying a building with fresh air, either cold or warmed, as desired, is so arranged that the electric motor sets the ventilator revolving, which sucks cool air in. When warm air is desired, a current is sent into a network of fine wire possessing a high resistance, and through the network the air is obliged to pass; the current heats the wires and the air becomes heated. The movement of a commutator is sufficient to change the character of the air supplied by the ventilator. This system is capable of considerable adaptation, and it is stated that the hygienic results are uniformly good.

AN ANNUNCIATOR FOR BURGLAR ALARMS, ETC.

A circuit-closing attachment for annunciators, by means of which an electric lamp will be lit when the annunciator drop falls, is shown in the illustration.

**FOUTS' ANNUNCIATOR.**

It has been patented by Mr. Lambert F. Fouts, of Trinity Mills, Texas. In a standard projecting from the base plate on which the electro-magnet is mounted is fulcrumed an armature lever, extending over the magnet and through a mortise in the annunciator drop. The drop is pivoted to incline slightly forward, and so that it will fall by gravity when released from the catch on the outer end of the armature lever, which is held down and normally out of contact with the magnet by a spring. Supported within the path of the drop, as it falls when released by the catch, is a contact spring attached to one of the wires in a circuit in which is included, as shown, a battery, an electric lamp, and a switch. The improvement is designed for use in a burglar alarm or other signal system, and the circuit-closing devices and battery are connected with the terminal wires of the magnet in the usual way, so that when a sufficient current is thrown upon the magnet by the opening of a window or door, the armature lever is tilted to release the drop, which in falling strikes the contact spring, as shown in dotted lines, closing the circuit and causing the lamp to become luminous. The lamp is afterward extinguished by opening the switch.

AN IMPROVED STALK CUTTING MACHINE.

The illustration represents a machine patented by Mr. Robert N. Brownlee, and especially adapted for cutting cotton stalks or corn stalks, and other similar field work. The main frame, pivoted to the axle, is preferably held to incline slightly forward from the vertical, and is kept in an approximately fixed position by a rod extending from the front of the frame to an eye on the tongue. Two vertical shafts are carried by the frame, a bevel pinion on one of the shafts meshing with a large gear wheel on the axle, while the upper end of this shaft carries a gear wheel meshing with a pinion on the other shaft, which carries a series of saws arranged one above the other. The shafts are revolved by the revolution of the axle as the machine is moved, and both shafts are provided with rods designed to swing the stalks inward in position to be cut by the saws, guides being also provided to carry the stalks against the saws as the machine is drawn along. Secured to the tongue adjacent to one side of the frame is a rack, the teeth of which are engaged by a pin sliding in a keeper on the frame, whereby the incline of the frame may be accurately fixed. Any desired num-

**BROWNLEE'S STALK CUTTER.**

ber of saws may be arranged on the saw shaft, according as the stalks are to be cut into finer or coarser pieces, the tops of the stalks being first engaged by the upper saws, and each succeeding saw cutting them off in course.

Further information relative to this invention may be obtained of Messrs. Brownlee & House, Bend, Texas.

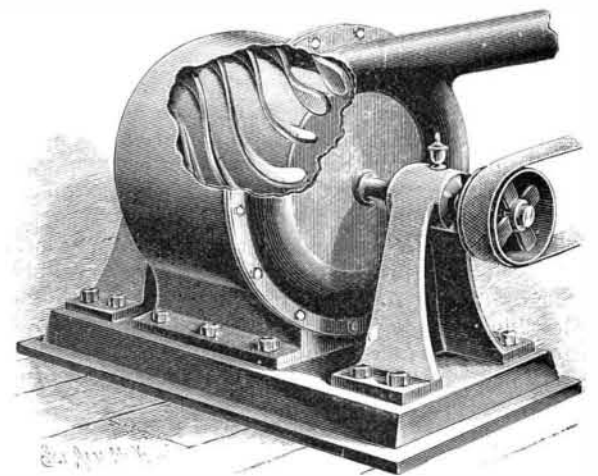
The Martinique Cyclone.

Respecting the destructive cyclone which visited Martinique on the 28th of August last, *La Nature* says: The curve of a Richard barograph shows that the barometer commenced to fall about 2 P. M., when it stood at 29.92 inches, while between 7 and 8 P. M. it fell from 29.72 inches to 28.70 inches. The wind at this time, too, reached its greatest violence, and continued with hurricane force for several hours, passing alternately from northeast to south. The recovery of the barometric pressure was equally rapid, the reading being about 29.70 inches before 10 P. M. M. Sully, of Saint Pierre, writes that the lightning was constant, with varying intensity before and after the passage of the center. The sound of the thunder was scarcely perceptible, owing to the howling of the wind and the noise caused by the falling roofs and houses. Globular lightning was seen on all sides during the hurricane; the country folks speak of globes of fire which traversed the air for several minutes, and burst about two feet above the ground. All the towns and villages were greatly damaged, the crops destroyed, and that usually verdant country presented the appearance of the depth of the most severe winter. The deaths are said to be 420 in number.

The Martinique hurricane, it appears, moved west-northwest along a somewhat irregular track, crossing over Puerto Rico, Turk's Island, Crooked Island, and lower Florida, finally dying out in the northeastern gulf.

AN IMPROVED VENTILATOR OR BLOWER.

The illustration represents a blower of simple and durable construction, designed to be very effective in

**LAFITE'S VENTILATOR OR BLOWER.**

operation for readily exhausting foul air, gases, etc., from rooms, or for forcing or pumping air or liquids to any desired place. The wheel within the casing has a cylindrical drum on the periphery of which are secured helicoidal wings or blades extending beyond the face of the drum into an annular chamber on the rear end of the casing, to close the latter at this end, the front end of the casing being open. The cross section of the annular chamber is preferably semi-spherical, and the ends of the blades or wings are semicircular, to fit into the chamber, from which leads an outlet pipe. The blades are preferably made of steel, copper, or like material, to be sufficiently elastic to vibrate when the machine is at work, when the air or other material is drawn into the open end of the casing by the action of the helicoidal wings, whose shape is designed to give an increasing velocity to the fluid until it reaches the point of discharge in the annular chamber, where it is forced into the outlet pipe by the extended semicircular ends of the blades. When the machine is to be used as a pump, the open end of the casing is closed and connected with a suction pipe.

Further information relative to this improvement may be obtained by addressing the inventor and patentee, Mr. Emile G. Lafite, in care of Messrs. Brooks & Co., Santiago, Cuba.

Car Lighting.

At a recent meeting of the New England Railroad Club the subject of debate was the lighting of railroad cars. The drift of opinion seemed to be that mineral oil lamps, with oil at 300° fire test, furnished the most brilliant, safe, and economical light. Cost to equip a car with five Sherburn lamps, \$165. Next to this came the compressed gas system—the Pintsch system being the one most extensively used. Cost to equip a car, \$400. The gas is carried in tanks under the floor of the car. The compression is from 90 pounds to 225 pounds to the square inch.