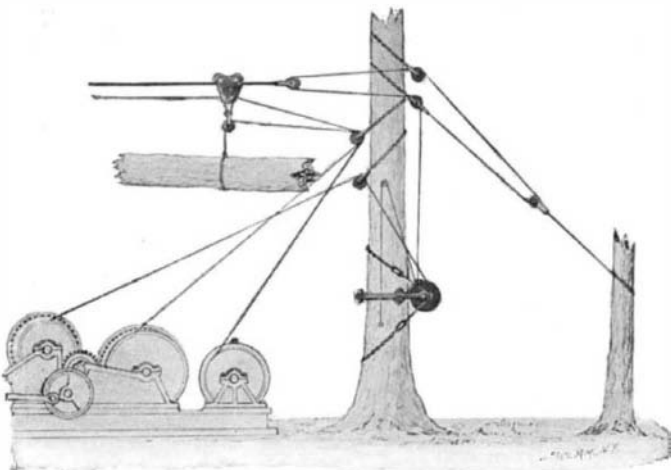


ropes pass upward over pulleys formed on the wheels which travel on the cables. The compensating drums are of a double cone shape, and are spirally grooved to receive the coils of the ropes, the number of coils on each drum being equal to one-half the number of turns of the spiral groove. The compensating pulleys are disposed at an angle with the axes of the cable wheels, for the purpose of holding the ropes at all times in alinement with the pulleys. When the carriage is in motion, the pulleys rotating with the cable wheels cause the ropes to unwind from one-half of each compensating drum and onto the other half. On the ascent, each rope unwinds one strand toward the drum's greatest diameter, when the other strand winds onto the drum's smallest diameter. As the carriage ascends, the grade is constantly increasing, and the purchasing power is in the same ratio increasing in favor of the strand that is unwinding toward the greatest diameter of the drum. This power is transmitted to the pulleys, and assists in revolving the cable wheels, thereby assisting in propelling the carriage up grade. The reverse holds true on the down grade. That is, the carriage is raised toward the cable wheels on the down grade at a gradual rate and then lowered on the up grade at an accelerated rate. By varying the positions of the rope coils on the forward and rear drums, it is evident that the forward end of the platform may be made to rise more slowly than the rear end on the descent, and *vice versa* on the ascent, thus keeping the platform in horizontal plane.

As the ropes wind on and unwind from the drums there will be a lateral movement of the carriage, and in order to keep the center of gravity of the load at the same point, a compensating movement is provided as follows: A rack formed on each end of the platform is engaged by a pair of spur gears secured to a shaft, which is rotated by worm gear connection with a pair of the compensating drums, as shown in our detail view.

A TENSION REGULATOR FOR OVERHEAD CABLES.

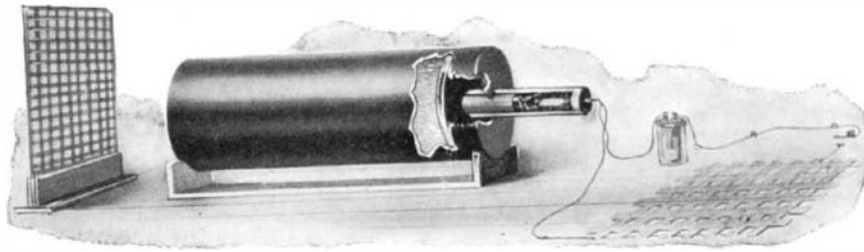
The accompanying illustration shows a new tension regulator invented by Messrs. John F. McKay and David J. McKay, of Bowie, La., which is adapted particularly for regulating the tension of overhead cables used in lumber camps for transporting logs through the forest from place of felling to the railroad. The improved apparatus is capable of safely manipulating cables of the largest size and greatest length, and will permit of rapid change when it is desired to shift the position of the cable lines. It will also relieve the strain on the hoisting drum after the cable has been placed under a desired tension. It will be observed from our illustration that the main cable is secured to the strap of a running block which may be adjusted toward or away from the supporting tree by means of a tension cable which, through suitable tackle leverage, is connected to a tightening drum. The tension cable is fastened at one end to the strap of a standing block secured to the supporting post or tree, and thence passes in succession over a tail block secured to an anchor post or stump, a second guide block secured to the tree, the block on the main cable, and back to the first standing block, over which it passes to the tightening drum. The latter is supported in a U-shaped frame, provided with two arms which extend on either side of the supporting tree, and which may



A TENSION REGULATOR FOR OVERHEAD CABLES.

be firmly secured thereto by means of a chain and a locking hook. The device is further strongly braced by guy chains, as shown. The tightening drum is formed with two barrels, the smaller one to receive the tension cable, and the larger one for a second cable, wound in the opposite direction, which passes to the winding drum of the skidding engine. When the latter cable is wound up on the winding drum, it rotates

a tightening drum and thereby places a tension on the main cable. A dog engaging a ratchet on the tightening drum takes the strain of the tightening cable when the drums are at rest. A most important feature of the invention resides in the manner of securing the blocks and cables to the tree, whereby the probability of an accident due to the falling of any portion of the overhead structure is almost entirely avoided, thus eliminating to a large extent the danger

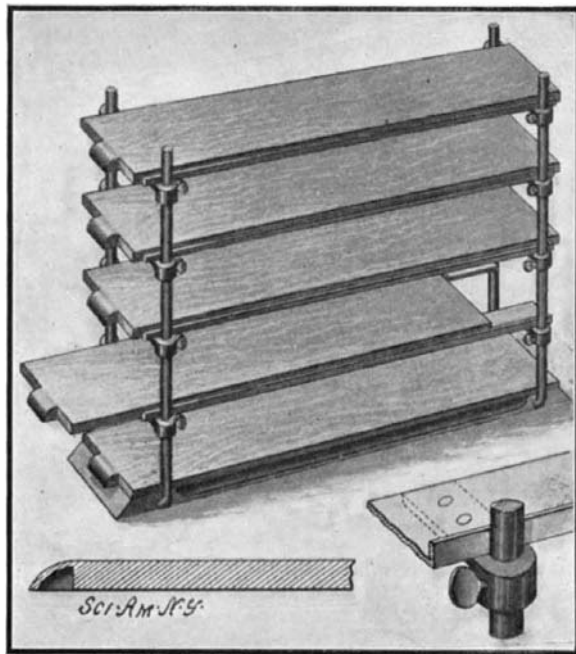


DEVICE FOR DISTRIBUTING NOXIOUS FUMES.

heretofore incident to work in the vicinity of overhead structures.

A CLOTHING RACK.

In clothing stores considerable confusion is apt to arise from the promiscuous piling of clothing of all sizes on the same counter or table. This confusion is usually the result of a lack of suitable storing facilities. In order to ameliorate such conditions, Mr. John A. Hockersmith, of Norfolk, Nebraska, has invented an improved clothing rack of simple construction,



TROUSERS RACK FOR CLOTHING STORES.

in which trousers of different waist and inseam measurement may be placed and separated as to sizes, thus making it convenient to quickly find a garment of any desired size. As shown in our illustration, the trousers rack consists of two U-shaped rods, which form the uprights on which the shelves are supported. The horizontal portions of the uprights fit into grooves in the bottom of the baseboard, and are secured thereto by screws. Brackets are adjustably mounted at desired intervals on the uprights, to which they are secured by the tightening of thumb screws. Rigidly connected to opposite brackets of a side are flanged plates, on which the shelves are mounted to slide. Each shelf is formed with a handle at one end, and on these handles different sizes of waist and inseam measurements may be placed. An important feature of this improved rack is the fact that the space between the shelves may be varied at will, according to the quantity of clothing which is to be carried by the shelves.

William F. Oesterle, who recently graduated from the Indiana University, and O. W. Brown, an assistant of chemistry at the same institution, have invented a process of smelting ore by electrical means which is said by them to represent great economy over the present method of doing this work. Instead of the cumbersome clay retorts now in vogue around smelting works, these gentlemen make use of a furnace of their own design, and the metal runs out in streams while the ore is being treated. The roasting of the ore, now a source of considerable expense, will be entirely done away with, and an enormous saving of labor will result. Mr. Oesterle says that with his furnace four men will produce as much ore in a given time as one hundred men now do. Mr. Oesterle is thoroughly familiar with the subject, as his father has a large zinc plant at

Marion, Ind. This invention was begun while the junior Oesterle was attending the high school, and he took a special course at the Indiana University in electro-chemistry for the purpose of completing the details of the process. Here he confided his plans to Mr. Brown, and since they have worked together.

DEVICE FOR DISTRIBUTING NOXIOUS FUMES.

The usual type of burglar alarm is arranged to sound an electric gong and arouse the occupants of a room or building on entrance of a burglar, but such an alarm obviously affords little, if any, protection for isolated buildings such as country stores, or the like, which are unoccupied during the night. For such buildings, what is needed is a device which will cope with the intruder himself, and not merely sound an alarm. We show herewith the method of dealing with such a case invented by Mr. Lyman M. Beckes, of 609 Main Street, Vincennes, Ind. It consists in a means for distributing noxious fumes in a room or building on entrance of the burglar, so as to overcome the man and prevent him from carrying out his unlawful designs. The noxious material, which preferably consists of formaldehyde, is held in a light steel cylinder, closed by a cork at one end and by a wall at the other. A small tube closed at its outer end is threaded into this wall, and serves as a holder for a charge of gunpowder. A plunger in the cylinder is formed with a shank which fits into this tube against the powder. A fine heating wire inserted into this charge is connected in series with an electric battery circuit. The circuit, however, is normally open, but is so arranged that by stepping on a door mat or in some similar way, the burglar will complete the circuit, igniting and exploding the charge, which will force the plunger and cork out, and discharge the formaldehyde. By arranging a screen before the muzzle of the cylinder the material on striking the meshes will be considerably diffused, and the rising fumes will make it impossible for the burglar to remain in the room and retain consciousness.

AN IMPROVED PORTABLE TENT.

We illustrate herewith an improved portable tent which is light and roomy, very strong and durable, and capable of erection very quickly in a storm-proof and reliable manner, either on rocky, sandy, or loam soil. The use of ridge poles, upright and inclined posts, and the numerous belaying pegs usually employed is entirely dispensed with, and in their place a pair of detachable frame arches and several anchors are used. Each frame, as shown, is made up of two straight and two curved wooden sections, and is braced by a rod formed at the ends with pins, which fit into sockets in the ends of the frame. The frame sections are held together by metal socket pieces or couplings. In erecting the tent, the two frame arches are spaced apart at a suitable interval, and the tent cover is drawn over them. This covering is made with strapped seams, and is approximately semi-cylindrical in shape, with tapered ends, as illustrated. The latter are secured by pegs driven into the ground, and guy ropes extend from the top of the frame arches to a suitable anchorage on each side of the tent. If the tent is erected on rocky ground, a hook may be used to anchor the guy ropes, but in sandy ground the anchor is formed of a metal plate, from the periphery of which



IMPROVED PORTABLE TENT.

several wire strands extend to a common ring, to which the guy rope is secured. The tent covering is formed along its edge with an outwardly-extending flange, and the door of the tent opens into one or both of the tapered ends. Curtains separate the main body of the tent from these tapered ends. The inventor of this improved tent construction is Mr. Frank H. Gotsche, 416 Hoffmann Avenue, San Francisco, Cal.