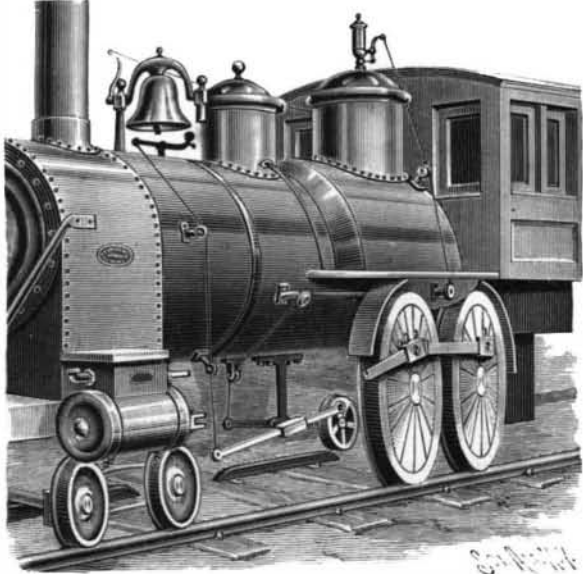


**AUTOMATIC LOCOMOTIVE SIGNALING.**

Appliances for automatically ringing the bell and sounding the whistle of a locomotive, as the train approaches a crossing or other point where it is desired to give warning, are shown in the accompanying illustration, and form the subject of a patent issued to Horace M. Baker, of Carthage, Mo. On the under side of the locomotive is a downwardly-extending bracket carrying a rigidly secured short transverse shaft, on the right hand end of which is fulcrumed a lever with a wheel on its rear end, while the forward end of the lever is



BAKER'S LOCOMOTIVE SIGNALING DEVICE.

connected by a cord passing over pulleys to the lever of the steam whistle. Pivotaly mounted on the left hand end of the shaft is a sleeve in which slides a rod whose rear end is pivotaly connected with the same wheel, while its forward end is connected by a cord passing over pulleys to a lever on the support of the locomotive bell. The lever actuates a supplemental clapper arm to sound the bell, a spring holding the clapper arm normally away from the bell. Arranged along the track is a third rail, which may be a continuous rail or a series of broken rails, these rails having beveled ends, and being so placed that, in the passage of the locomotive, the wheel supported from the bracket will ride upon the third rail, the depression of the lever causing the whistle to be sounded, and the rotation of the wheel sliding the rod in the sleeve and swinging the other lever to ring the bell. The third rails are placed along the track near crossings, and at other places where it is desired to give warning, a continuous rail causing a continuous blast of the whistle and a series of broken rails producing intermittent blasts.

**A NEW ELECTRIC MINING LOCOMOTIVE.**

We present an engraving of a new type of mining

locomotive made by the Baldwin Locomotive Works and the Westinghouse Electric Manufacturing Company, by virtue of the arrangement which these two companies have entered into. The locomotive was built for the Crozer Coal and Coke Company, at Elkhorn, W. Va., in the Pocahontas coal-field. By reference to the illustration it will be seen that the locomotive is very heavy and powerful, as the grade is considerable and the loads are large. The

specifications called for a six-wheel electric locomotive capable of drawing 40 loaded cars up a 2 per cent grade at a rate of 6 miles per hour, developing a draw bar pull of 10,000 pounds. The track gage is 44 inches and the rails weigh 40 pounds per yard. The locomotive will pass through an opening 6 feet 11 inches high above the rails, 10 feet wide at bottom and 8 feet wide at top.

The locomotive shown in the accompanying illustra-

tion weighs 44,000 pounds and has the following dimensions:

|                                 |                  |
|---------------------------------|------------------|
| Diameter of driving wheels..... | 33 inches.       |
| Wheel base (total).....         | 6 feet.          |
| Width.....                      | 6 feet 2 inches. |
| Length (total).....             | 18 feet.         |
| Height (total).....             | 5 feet 6 inches. |

The wheels are of cast iron, spoke type, keyed to axles, which are composed of best hammered iron and provided with journals  $5\frac{1}{2}$  inches diameter and  $6\frac{1}{2}$  inches long. The brakes can be operated from both ends and are of sufficient power to slip drivers; sand boxes are also provided.

The electrical equipment consists of two 100 horse power Westinghouse motors, one controller, one rheostat, two trolleys, two electric headlights, Wurts lighting arrester, switches, etc. The two motors, which are mounted near the center of the locomotive, are of the consequent pole type, similar in construction to those used by the Pennsylvania Railroad on their Mount Holly, N. J., branch. They are series wound and may be operated either in series or parallel. The series arrangement is used for slow speeds and the parallel for higher speeds.

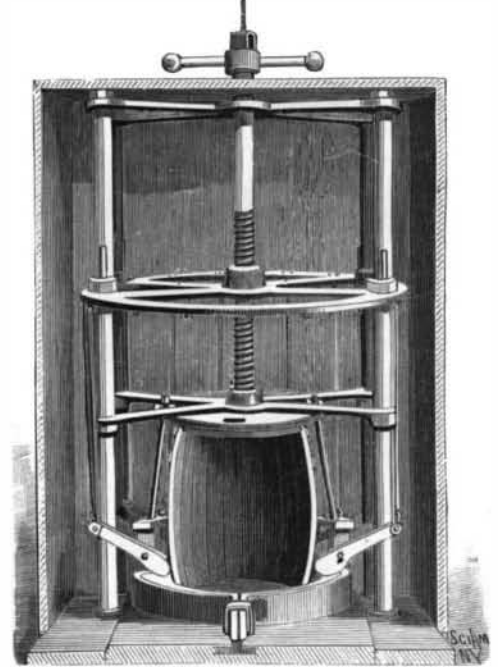
The motors are connected to driving axles by double reduction gears. The controller shown near the front of the locomotive in the illustration is of the commutator type and can be operated from either end by means of a suitable shaft and gear. The change of direction of travel is accomplished by changing direction of rotation of the controller handle, no reversing switch being used. The rheostat is mounted on the rear, as shown, and consists of coiled iron strips mounted in a suitable casing. One electric headlight is placed at each end and two lamps are placed on each side of the locomotive. A switch is provided for changing the connections of the motors from series to parallel and another switch cuts off all current excepting to the lighting circuit, which is provided with a separate switch. The wires connecting the motors, controller and rheostat are inclosed in an iron pipe, thus providing complete protection.

The average speed of the locomotive with the motors in parallel is 6 to 8 miles per hour. As the generating capacity is limited, only 25 cars are at present in use. Mather generators wound for 500 volts furnish the power. They are actuated by a McEwen automatic engine, and the generators also supply a smaller locomotive and electric coal cutters. One trolley arm is provided for each direction in which the locomotive is run. The connecting rods are an interesting feature and doubtless add to the tractive effect. The results obtained are highly satisfactory and this installation adds one more to the already long list of successful applications of electricity to mining work.

**AN IMPROVED BARREL-FORMING MACHINE.**

A machine designed to facilitate the forming or completing of barrels, casks, etc., is shown in the accompanying illustration, and has been patented by John Hauenstein, of New Ulm, Minn. The working parts of

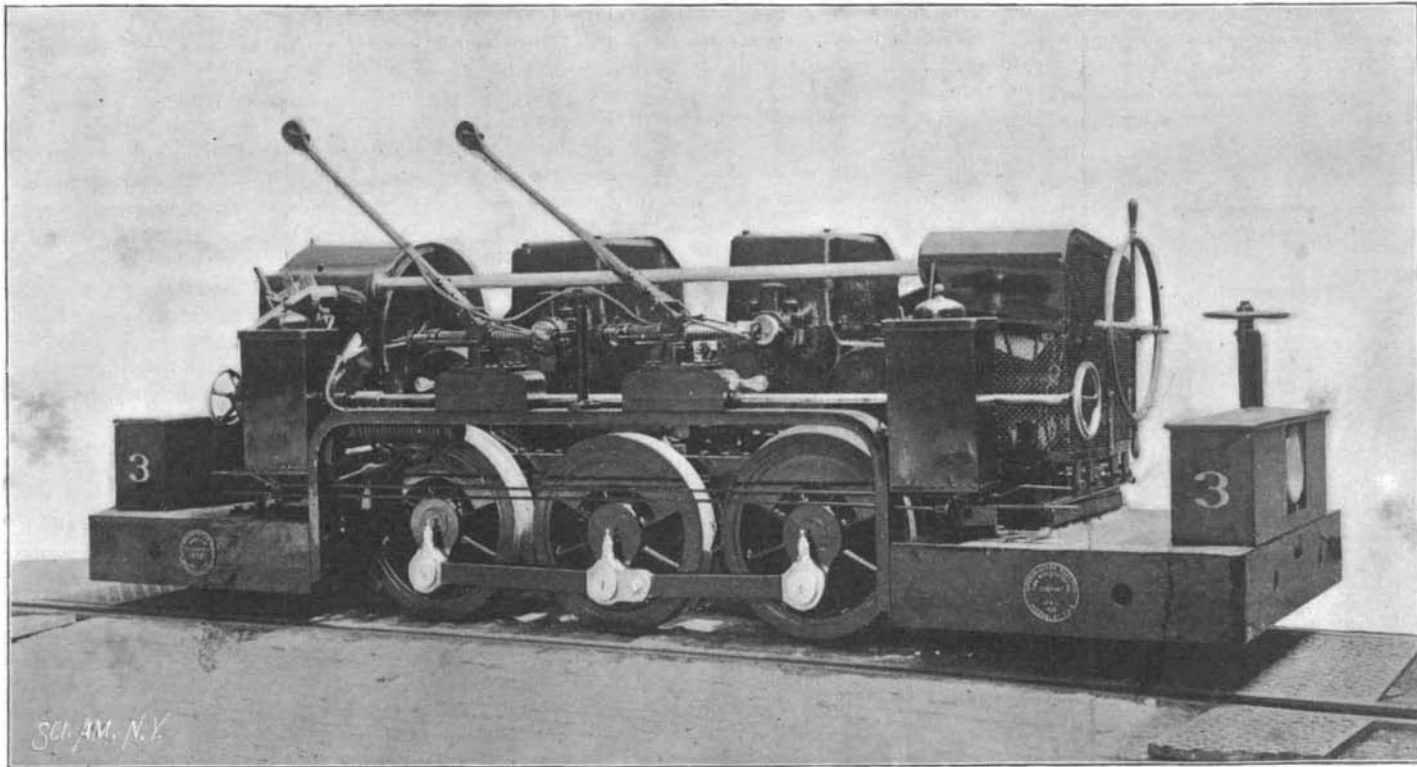
the carriage when it is moved into the machine. Above the carriage is a presser-plate and carrier for a suspended cam ring, the presser-plate having outwardly extended arms having loose connection with the standards of this machine, permitting the plate to move vertically. Above the presser-plate and also movable vertically on the standards, is a screw-plate through which extends the operating screw, the upper ends of



HAUENSTEIN'S BARREL-FORMING MACHINE.

the standards being connected by a spider frame, through which, and through the top of the steaming box, the screw shank extends. The cam ring is provided with a series of openings, in which cam levers are pivoted, the cam ends extending within the ring to operate on the barrel staves, and the lever arms having outer link connections with the screw plate. The cams are arranged quite close together, to present a practically continuous contractible bearing ring. In forming a barrel, the carriage being outside of the steam box, the staves are assembled on it and loosely held together by the upper hoops, a bottom hoop lying in the bottom of the carriage, and the lower ends of the staves extending in a larger circle on the incline above. The carriage is now moved into the machine within the steam box, and after sufficient steaming the cams are lowered and the screw operated to rock them against the staves, whereby the lower ends of the staves are bent to come within the inner diameter of the carriage and hoop, as shown in the illustration, the operation of the screw also bringing the presser-plate against the upper end of the barrel and forcing it downward. When this is finished the cams will be in a position to leave the staves, and the parts being moved upward, the carriage with the barrel may be drawn out of the machine.

To get rid of the odor of iodoforn Herr Apotheker Konteschweller, Roumania, advises (in the Pharm. Centralh.) the use of an alcoholic hexamethylen-tetramin solution, with which he claims it is necessary merely to moisten the hands or the article affected. A "grundliche Enternung des lastigen Iodoformgeruches" is the result—which means that the odor disappears in the presence of



A NEW TYPE OF MINING LOCOMOTIVE.

the machine are intended to be placed in a steaming box, in one side of which is a suitable door-closed opening, outside of which extends a portion of the bed or platform. The carriage and hoop holder comprise two semicircular sections hinged together, the upper surface of the ring-shaped carriage being inclined downward and inward, and the under surface of the carriage has T-shaped legs adapted to engage a guideway or slot in the bed or platform, to properly guide and center

that of the solution named. What an odor of its own it must have! though the name is enough to scare almost anything away.

**AN ELECTRIC COMBINATION.**—A combine of the largest incandescent manufacturers in the United States has been formed. This will virtually put an end to the war of prices which has practically done away with all the profits in this line of business.