

be lowered by these very original methods attracted widespread attention in the engineering world; and it is gratifying to the railroad company, and particularly to the chief engineer, to know that in spite of predictions of trouble, the work was carried through with accuracy and dispatch.

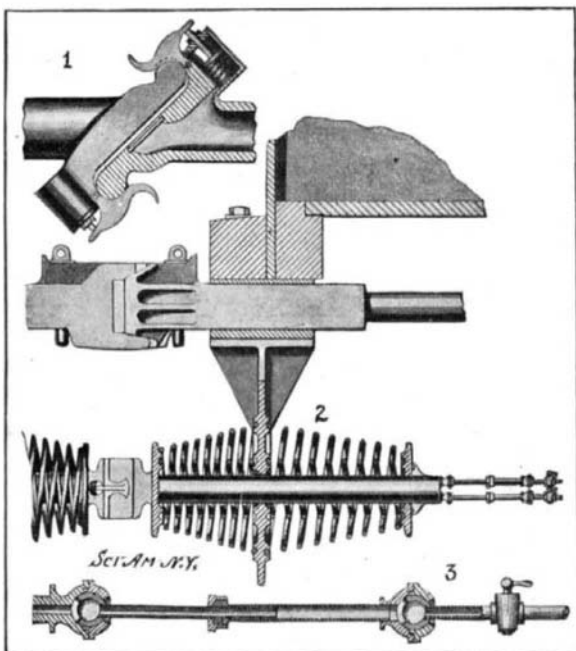
SMOKE CONSUMER.

An improved smoke consumer has recently been invented, which is especially adapted to be applied to boiler furnaces. The device is arranged to supply air and steam to the escaping products of combustion, so that the carbon in the smoke will be consumed, and a more perfect combustion of the gases will be effected. The smoke consumer is situated at the rear of the usual bridge wall of the furnace, where it is partially protected from the heat of the furnace fire. The current of air and steam is discharged from the device in the direction of the current of smoke and gases, so as to obtain an intimate commingling of the two currents, and also cause increased draft through the grate. The smoke consumer consists of a cylinder or shell provided at the top and slightly to the rear with a slot for the discharge of the air and steam. Concentrically arranged within this cylinder is a tube in which the air and steam are combined preparatory to passing into the outer cylinder. The combining tube incloses a steam injector pipe which is furnished at each end with a nozzle. These nozzles are arranged to discharge jets of steam through each end of the combining tube. A pipe entering the lower part of the furnace wall passes up through the center of the combining tube, and supplies it with fresh air. The steam supply pipe enters the smoke consumer through the air supply pipe, and conducts steam from the steam drum of the boiler. The air and steam are thoroughly commingled in the combining tube, and uniformly distributed into the end portions of the outer cylinder, where this commingled current is heated before being discharged into the escaping products of combustion.

This same device may be advantageously used on steamships for ventilating the holds by drawing out the foul or impure atmosphere. A patent for this device has been granted to Annie K. Wilkins, of 520 Sheridan Avenue, Pittsburg, Pa., as administratrix of the inventor, Henry Wilkins, deceased.

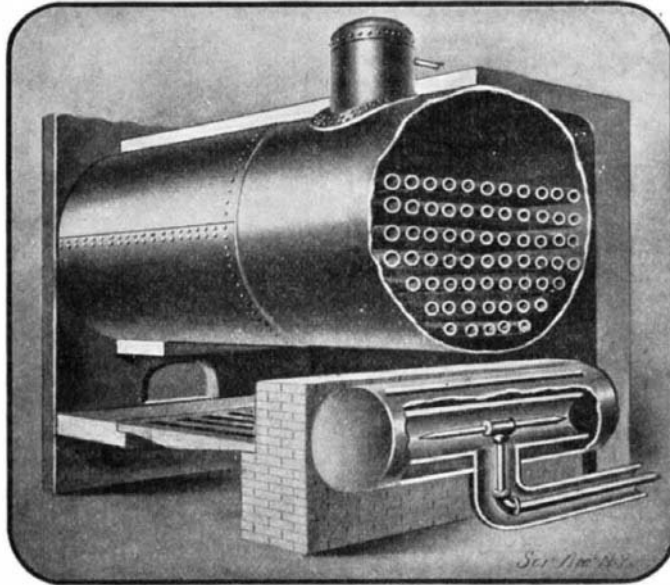
METALLIC PIPE COUPLING.

The ordinary flexible hose connection for line pipes of a train often burst under the pressure of air or steam, and to obviate such dangers Mr. Harry B. Schrader, of Alliance, Neb., has invented a flexible metallic coupling of simple and inexpensive construction. The coupling embodies means for utilizing the air or steam pressure to cause a tight connection between the coupling members. As shown in Fig. 1 of our illustration, the coupling comprises two heads arranged on a transverse incline with each other. Each head is attached to a stem or drawbar having two ports opening through the head, one port being for the passage of the air through the brakes and the other for signaling purposes. Pivotaly connected to each coupling head is a locking latch designed to engage with the other coupling head, as clearly shown in our illustration. The latch is provided with a curved or cam-shaped end, designed to be engaged by the approaching coupling head, thus swinging the latch to open position and permitting the heads to come together. The latch is normally held in closed position by connection with a piston, which is acted upon by a coiled spring. The cylinder in which this piston operates is connected by a small port with the main port of the



METALLIC LINE-PIPE COUPLING.

coupling, so that when air pressure is admitted to the coupling, a portion will enter the cylinder, forcing the piston outward and causing the latch to tightly clamp the coupling together. The drawhead of the coupling passes through an abutment ring depending from the car. Between this and a collar on the stem are two coil springs, and similarly two springs are coiled between the abutment ring and the collar on the opposite end of the stem. A telescoping pipe section connects each port with its respective train pipe. The sections have ball-and-socket connections with the



SMOKE CONSUMER FOR BOILER FURNACES.

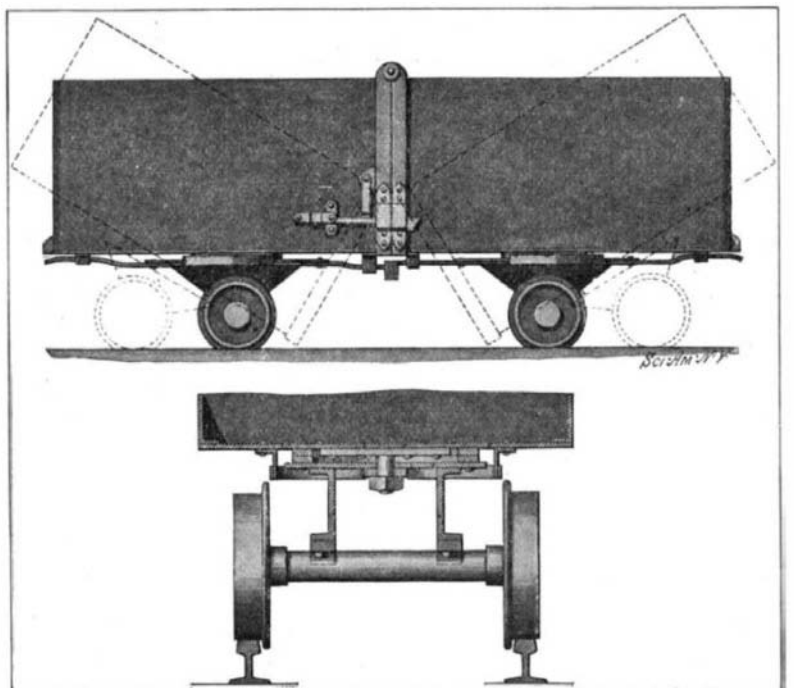
stem of the coupling, which permit perfect freedom of motion to the drawbar.

A LONG-MANED HORSE.

A marvelously-maned mare, whose wealth of silver-gray hair reaches a length of eighteen feet, and surpasses anything of the kind ever heard of in equine history, is owned by George O. Zillgitt, of Inglewood, Cal., who purchased her seven years ago, when she was three years old. At that time her mane was of ordinary length, and it was not until a year later that it began to grow with unusual rapidity. For a number of years this horse was used on the Zillgitt farm in North Dakota. During that time the mane was kept in a net, and was seldom taken down oftener than once a year. The heavy plow collar rubbed against and injured the back part of the mane, but the upper part still remains, and trails out in gorgeous waves of silver when unbound from the braids that are so necessary to keep it from getting tangled. No one has been able to account for this superfluity of hair. The animal has not been given special care. She has been treated quite like an ordinary horse, and the extraordinary growth is simply the result of some strange prank of nature. A month ago Mr. Zillgitt took the horse to California, where she is being used in the family carriage. She is the mother of a colt that seems destined to be even more famous than her parent. Though only a few months old, this colt possesses both mane and tail that reach to the ground.

IMPROVED DUMPING CAR.

A patent has recently been issued on an improved dumping car of the type used in mines for transporting ore from one point to another. The improvements relate especially to the running gear, which is so designed as to facilitate turning curves, and also to the operating devices whereby the car may be readily dumped. As indicated in our illustration the car is made in two sections, each supported by a single truck. These sections are hinged together at the top and are normally maintained in alinement and in horizontal position by a latch at each side. The trucks, which are pivoted to their respective sections, are connected by draw-bars. The connection is such as to permit a limited swiveling movement of the trucks. Normally, however, the trucks are held in alinement by flat springs bearing against the drawbars at each side. When it is desired to dump the cars the bolts or latches at the sides are released and the car section tipped downward to the dotted position shown. As the car sections are hinged at the top they must move apart when tipped, thus permitting the load to be freely discharged. The car sections are not centrally mounted upon the trucks, but their outer por-



IMPROVED DUMPING CAR.

tions overbalance the inner portions, so that after their load has been discharged they will swing up to horizontal position, which position they will normally retain even without the aid of bolts or locks. The inventor of this dumping car is Mr. Edward I. Morey, care of G. E. Collins, 217 Boston Building, Denver, Col.

The Jungner-Edison Accumulator.

M. U. Schoop, in a recent number of the *Elektrotechnische Zeitschrift*, records the results of a comparative study of the familiar lead accumulator and Edison's alkali accumulator. The Swedish chemist, Dr. Jungner, simultaneously with Edison, patented a galvanic combination, based on the fact that nickel oxide fixed in a suitable way on a support constitutes an available depolarizer. Whereas for purposes of transportation, the present lead accumulator presents many drawbacks, the first of which is its heavy weight, stationary lead accumulators, in connection with which both the weight and the space play but a secondary rôle, have arrived at so high a degree of perfection that no other type of storage battery is required for stationary use.

The parallel between the lead and alkali accumulators, though not complete, goes to show that nickel sheets or steel sheets plated with nickel in alkali solution, when exposed to the effect of currents, will not be altered in the least even after weeks, corrosive effects being, as is not the case with the lead peroxide plate, never observed. The author, however, thinks it possible that the active masses present in perforated pockets in the form of compressed powders devoid, it appears, of the adhesive properties of lead salts, would drop from their supports in course of time. The author thinks a diminution in capacity would be avoided by heating the electrodes. The alkali cell would finally be inserted into an automatic charging and discharging device, allowing 200 to 300 charges and discharges being made during one month. As regards the life of lead accumulators, even in the best of accumulators the positive lead support is gradually destroyed by oxidation, the negative mass diminishing progressively in capacity; the need of durability is therefore absolutely in discord with the demand for a small weight. On the other hand, it is inferred from the tables recording the experiments of the author that the alkali storage battery, besides some evident advantages, presents serious drawbacks. The author, however, thinks this type of accumulator to be capable of further development.

A. G.

Building Locomotives in Germany from American Models.

The Bavarian government has decided to construct a large number of new locomotives upon the models of the American locomotives introduced by the railways of Bavaria nearly four years ago. During the next two years forty locomotives of Class B, eighteen of Class C, and twelve of Class D are to be replaced by seventy new locomotives, and 5,000,000 marks (\$1,190,000) are to be expended for this purpose. The two locomotive factories in Munich, the large establishment of Maffei, as well as that of Kraus, are to be favored in the distribution of these contracts.

American locomotive builders should not lose this opportunity to secure renewed orders in Germany, since their locomotives have become the type for those about to be introduced and have proven, after due trial, the most approved models.