

PORTABLE PNEUMATIC RIVETING MACHINE.

The old-time way of riveting boiler shells and similar work is fast giving way to the more scientific and economical method of doing it by machinery. Our engraving shows one of the simplest and best machines for this purpose. It is operated by compressed air, and is capable of driving rivets as rapidly and effectively as the larger and more expensive steam or hydraulic riveters now in use. Its operation imitates handwork, but the results are superior to handwork.

Fig. 1 shows the riveter operating on the side of a boiler shell. It is supported in a ring, so that it may be turned to any angle or work in any desired position. The hammer is brought into contact with the rivet head by a rapidly reciprocating piston working in the air cylinder, and the anvil is brought up to its work by the air cylinder between the shorter arms of the levers.

The long arms of the levers are made 63 and 76 inches from center of joint pin to the center of riveter, capable of reaching a rivet 60 or 72 inches respectively from the edge of the plate, so as to operate upon the circular seams of a boiler. The levers are turned in the ring by a worm-wheel to place the machine at any desired angle.

The valve of the riveter is operated directly by the pressure in the cylinder without extra gearing, and so arranged that the length of the stroke regulates itself automatically to correspond with the gradual reduction of the end of the rivet as the head is formed.

The machine is operated with an atmospheric pressure of from 20 to 30 pounds to the square inch, and makes from 150 to 200 strokes per minute. The time required to form the head of a three-quarter inch rivet is about six seconds, and at steady, straight work, allowing for ordinary detention and loss of time, two rivets can readily be finished in one minute.

The machine may be suspended from a bar arranged overhead to allow a longitudinal motion to the riveter when operating on straight seams, but a traveling carriage, capable of a longitudinal and side motion, is preferable, so that when operating against the side of the boiler shell, as shown in Fig. 1 (which is found to be the most convenient way of operating with the machine), the machine can easily be regulated for any diameter of shell.

Among the many advantages claimed for this riveter are its lightness and portability, its rapidity of action, and the great saving of labor in handling the work, beside turning out a better quality of work than can be done by hand.

This machine is one of the objects of interest at the present fair of the American Institute.

Further particulars in regard to this machine may be obtained by addressing Mr. Henry E. Raeder, 304 Broadway, New York city.

American Institute Exhibition Notes.

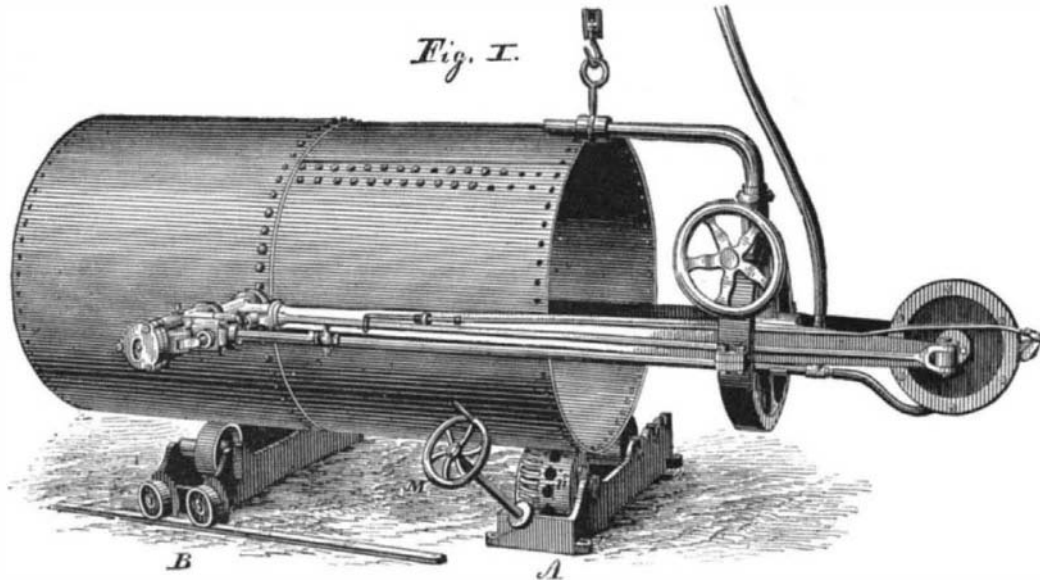
Persons who have annually visited the exhibitions of the American Institute have sometimes complained of sameness, but even to the most casual sightseer who may have had occasion to thus complain the exhibition now open at Sixty-third street and Third avenue must be an agreeable exception. The introduction of nearly one hundred Brush electric lights make night as bright as day, and give colors their real shades. Two powerful steam engines are now driving six large Brush dynamo machines at the rate of about 800 revolutions per minute, and their glory is divided among the hundred lights in and about this large building.

This is the fiftieth exhibition given by this Institute, its first having been in 1838, and annually repeated each autumn, except four, since that year. It would be interesting to canvass the difference in the aspect of the world of science and art then and now. The fifty glimpses of it that these exhibitions have afforded would be a fair panorama of progress in most branches of industry, but space is not now available for even a sketch of the improvements that have appeared during these fifty-four years. It may be safely said that no like period has been correspondingly marked, as the age of improvement in arts and sciences. It is the age of steam, of steel, and of electricity.

To the careful and the special observers from year to year these exhibitions have shown the successive steps in the grand march of improvement in mechanical industries. Each

exhibitor has made some improvement in his specialties, either as to quality of products or facility in producing. From the fireman in his grim attire and with his simple tools, who furnishes the prime force, through all the types of machines that his product moves, and the delicate as well as ponderous products of these machines to the æsthetic and beautiful you may learn the little story of recent technical progress from each.

Among the giants of the exhibition that overcome nature's solid work, destroying instantaneously the cohesion that for ages upon ages has held the solid rocks in form, is the crushing machine, which will give you a noisy proof of its ability to disintegrate one hundred tons in ten hours of blue stone, granite, or quartz. It is the celebrated Blake challenge rock breaker, gnashing 275 times per minute at its uncanny

**ALLEN'S PNEUMATIC RIVETING MACHINE.**

mouthful of "hardtack." It is manufactured by the well-known Blake Crusher Company, of New Haven, Conn.

The Delamater Iron Works, No. 10 Cortlandt street and West Thirtieth street, N. Y., are exhibiting a fine lot of Ericsson's new caloric pumping engines for domestic use in lifting and forcing water from wells and cisterns, or from Croton pipes to tanks on upper floors of buildings in city or country. They can be operated and attended by any one who can use a cooking stove, and they are as free from dangerous vices as the simplest utensil of the kitchen. They vary in capacity from 200 to 1,600 gallons of water raised to a height of 50 feet.

A sample of the new Otto silent gas machine built by Schleicher, Schumm & Co., 3045 Chestnut street, Philadelphia, is exhibited by their New York agent, A. C. Manning,

Vulcanized rubber fabrics for all mechanical purposes are shown in full line by the New York Belting and Packing Company, the oldest and largest manufacturers in this country. They also exhibit fine specimens of rubber-lined cotton fire hose, which receives in the course of its manufacture a vaporous carbolic acid treatment to prevent mildew and rot, to which all cotton goods exposed to wet and dry are otherwise liable. It is known as "cable hose," and is circular wove and therefore seamless. It will stand extraordinary and long-continued internal strain without bursting. Notable among these exhibits are three immense grain elevator belts. One pair called the "Twin Giants" are 36 inches wide, 275 feet long, and weigh 2,800 pounds. A third and still wider is 48 inches wide and 200 feet long, weighing 1,800 pounds. Every variety of vulcanized rubber goods, including the well-known vulcanite emery wheels, can be found at their warehouse, 37 and 38 Park Row, New York.

The Lambertville Iron Works are driving the two remaining Brush dynamo machines with one of their improved steam engines, 12 x 18, making 116 revolutions per minute. This engine is built upon the new plan of overhanging cylinder with heavy bed, has a new style of balanced slide valve and automatic cut-off valve actuated by a common centrifugal governor. It appears to fill the bill of a first-class high speed engine at a moderate cost. Their works are at Lambertville, N. J.

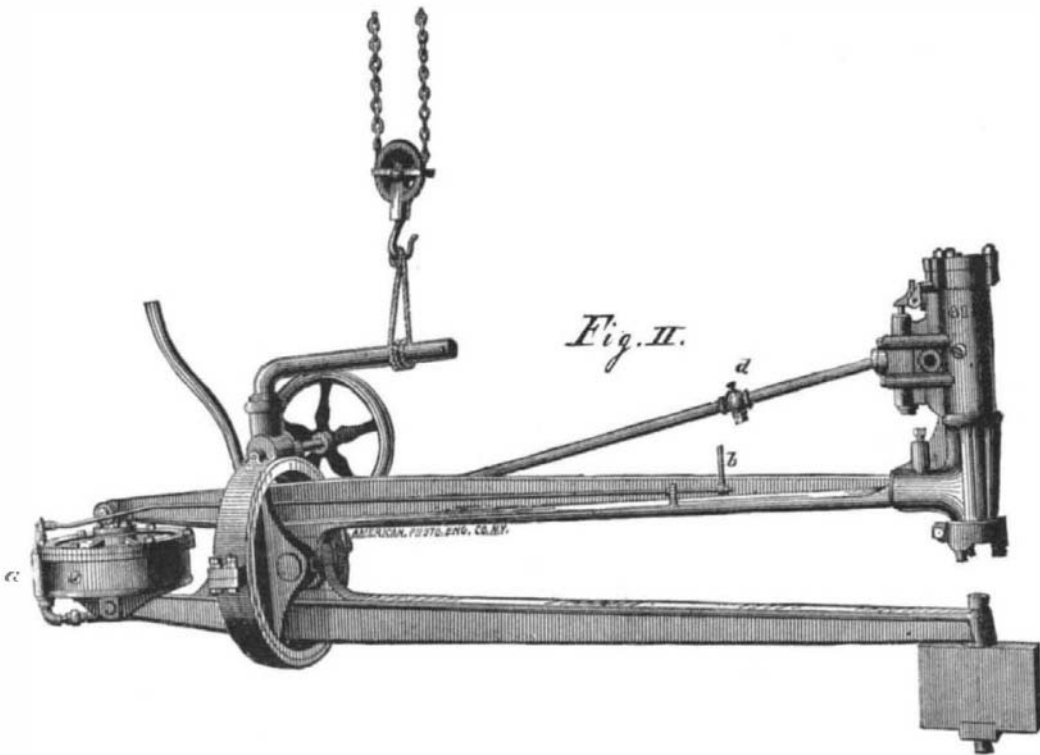
Asbestos has now been put to a great variety of uses, both mechanical and ornamental. It is used for all kinds of non-conducting and fire proof coverings of roofs as well as boilers, steam packing and gaskets of all styles, lining felts and sheathings, paints and cements. These goods have proved a boon to steam users.

All varieties of these articles, as well as the raw and partly manufactured material, are displayed by the pioneer and leader in asbestos goods, H. W. Johns, of H. W. Johns Manufacturing Company, 87 Maiden lane, New York.

The usual fine display of sewing machines is made by E. Remington & Sons, who exhibit their new Remington variety made at Ilion, N. Y., while their type-writer is made at Ilion, Ill.

Successful Moving of a Large Hotel.

At a recent meeting of the Engineers' Club, of Philadelphia, the secretary read a detailed description of the moving of the Hotel Pelham, at Tremont and Boylston streets, Boston, for the purpose of widening Tremont street. This hotel is built of freestone and brick, 96 and 69 feet frontage. The Boylston street wall is supported on eight granite columns 12 feet high, 3 and 4 feet square. There is a basement and seven stories above the sidewalk. Height above tramways on which it was moved, 96 feet. Weight, 5,000 tons, exclusive of furniture, which was not disturbed during removal, as also were not the occupants of the stores on first floor and some of the rooms, the various pipe connections being kept up with flexible tubes. Careful experiments with models showed that if the lower part of the building was firmly braced, there was no danger of shifting in the parts above. The general arrangements consisted of heavy and substantial stone and brick foundations for iron rails and rollers, and the building was forced to its new position by fifty-six screws, 2 inches diameter, half inch pitch, operated by hand against timbers arranged to uniformly distribute the pressure against the building. Much care and ingenuity was displayed in the details of the arrangements and work. Two months and twenty days were occupied in preparation. The moving

**PNEUMATIC RIVETING MACHINE.—SIDE ELEVATION.**

of 38 Dey street. This engine burns common illuminating gas mingled with common air, and is always ready to start by applying a lighted match. It has lately been much improved, and on account of its cleanliness and safety it is popular as a motor for small power in offices and dwellings.

The Hartford Engineering Company, of Hartford, Conn., builders of the Hartford high speed steam engine, have on exhibition, besides a sample of their engine that drives four of the Brush dynamo machines, a full line of the celebrated Medart belt pulleys. They are made with cast iron spiders or centers and arms, and wrought iron rims, which are riveted to properly formed T-ends of the arms. They are an agreeable departure in mill work, being light and strong, as well as the cheapest pulleys now offered.

ing itself was begun on August 21, and finished on August 25, but the actual time of moving was but 13 hours and 40 minutes. The greatest speed was two inches in four minutes. The hotel moved about one-eighth of an inch at each quarter turn of the screws. The whole distance moved was 13 feet 10 inches. Four thousand three hundred and fifty-one days' labor was required for the work. The whole cost was about \$30,000. This is the largest building that has ever been removed, although larger have been raised, which latter is a much simpler and less risky operation. The complete success of this undertaking is shown by the fact that cracks which existed in the walls prior to removal were not changed by the operation. Paper was pasted over them before commencing, that any change might be seen.