

**ALLEN'S PORTABLE COMPRESSION RIVETER.**

This riveter is principally intended for beams and girders for bridge building, and forms the rivet head by compressing the end of the rivet into a suitable die. The bars, turning on a fulcrum, contain at one end the dies, and are connected at the other end to a toggle joint, to the center of which the piston rod of a pressure cylinder is attached. The arms C and D, are made interchangeable, so that the machine with arm, C, as represented in Fig. 1, will straddle the edge of girders or beams having six inch angle irons on each side, and when arranged with the lever, D, as represented in Fig. 2, plates may be riveted on to six inch channel iron.

The pressure used in this machine is from fifty to sixty pounds, and the arms are made of sufficient strength to operate on one inch rivets. The weight of the machine complete is about seven hundred and fifty pounds. It can be operated by steam or air, but for the convenience of handling the machine air pressure is recommended.

In consequence of the peculiar construction and arrangement of the elbow or toggle joint between the power employed for operating the machine, and the hinged or pivoted arms which carry the dies, a small ten inch cylinder will produce, at the end of the stroke or when the dies are nearly closed, a pressure upon the rivet of about fifty tons, or about one ton for every pound of pressure upon the cylinder piston.

This machine is in use in the principal bridge and wrought iron works in the country.

Further information in regard to these machines may be obtained by addressing Mr. Henry E. Roeder, manager of Allen Portable Riveting Company, 304 Broadway, New York city.

**The Year's Work of the Signal Corps.**

In his annual report to the Secretary of War, Gen. Wm. B. Hazen, Chief Signal Officer, summarizes as follows the work done by the Signal Corps during the past year:

"This year has been distinguished by additional progress and by decided improvement, which I will briefly recite: The establishment, under your sanction, of a permanent school of instruction at Fort Myer, Va.; the raising of the standard of the *personnel* of the Signal Corps; the systematization of the duties of the Signal Service; the preparation of new instructions for observers of the service; the preparation of new and improved forms for the recording and preservation of meteorological data; the preparation of special bulletins for the press, containing weather information of public interest; the forecasts of weather, of hot or cold waves for periods exceeding twenty-four hours; the forecasts of 'northers' for the interior plateau; the adoption of a new storm signal (the cautionary northwest) for the interior lakes; the arrangement for increase of river service and wider publication of the international bulletin and the monthly weather review, with their accompanying charts; the increased information added to the farmers' and to the railway bulletins; the organization of a service for the special benefit of the cotton interests of the South; the extension of the special frost warning to the fruit interests of the country; the investigations into thermometric standards and into barometric standards; the preparation of new hygrometric tables containing correction for altitude; the revised determinations of the altitudes of Signal Service stations; the computation of monthly constants for the reduction of observed barometric pressures to sea level; the arrangements for original investigation in atmospheric electricity, in anemometry, and in actinometry, and in the last subject, especially with reference to the importance of solar radiation in agriculture and the absorption of the sun's heat by the atmosphere; the co-operation in an expedition to the summit of Mount Whitney, California; the determination of problems in solar physics in meteorology; the preparation of conversion tables for the English and metric systems; the co-operation in the dropping of time-balls at Signal Service stations; the publication in quarto form of special professional papers; the offering of prizes for essays of great merit on meteorological subjects; the organization of State weather services; the new investigation of danger lines on Western rivers; the organization and equipment of two expeditions for meteorological observation and research in the arctic regions of America, one to be stationed at Lady Franklin Bay, the other at Point Barrow, Alaska, both co-operating in this work with a system of stations established in the polar region by international conference; the establishment of a system of stations of observation in Alaska; the arrangements for organizing a Pacific coast weather service; the display at the Paris Electrical Exposition; the experiments for improving newspaper weather charts; the increase

since June 1 of telegraphic weather service, exceeding in value \$34,000 per annum, without additional expense to the United States, and the extension and construction of military telegraph lines.

"One hundred new stations have been established in the cotton belt during the year, the total number of stations of observation in operation June 30, 1881, within the territory of the

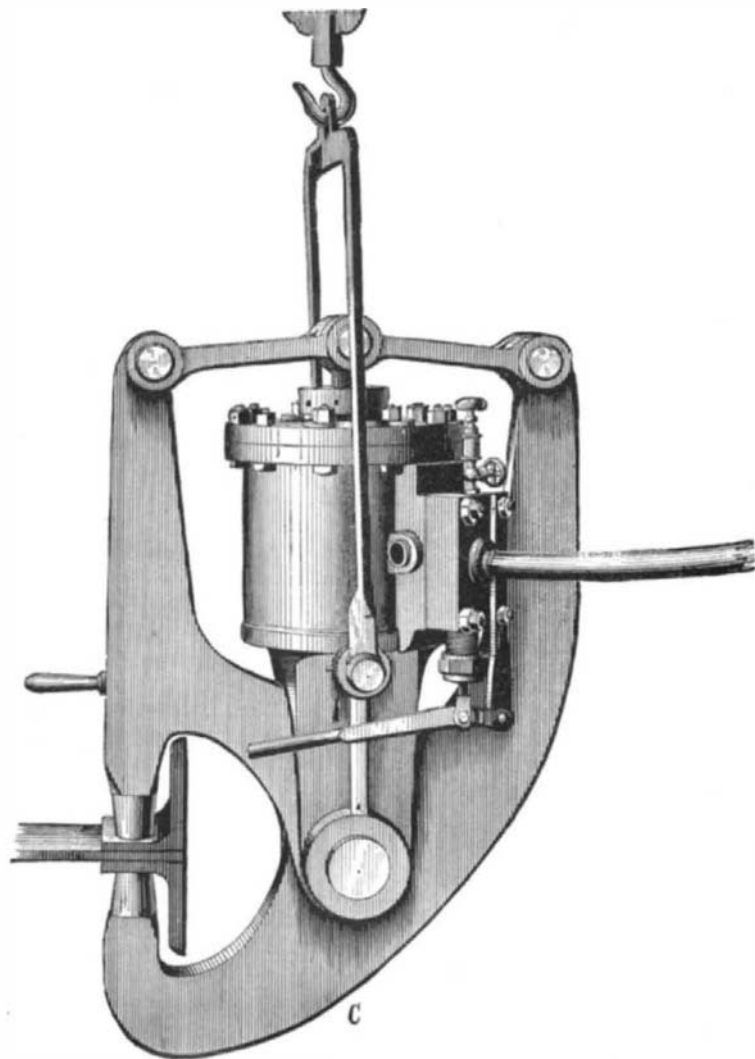


Fig. 1.—COMPRESSION RIVETER.

United States and maintained for the Signal Service being 296. Reports are also received from 17 stations established by the authorities of the Dominion of Canada; also from one at St. John, Newfoundland, and one at York Factory, British America. The cost of maintaining each full station of observation during the year, exclusive of the cost of telegraphing and the pay and maintenance of the enlisted men, has been \$336.73, a decrease since the preceding year of \$45.55 per station."

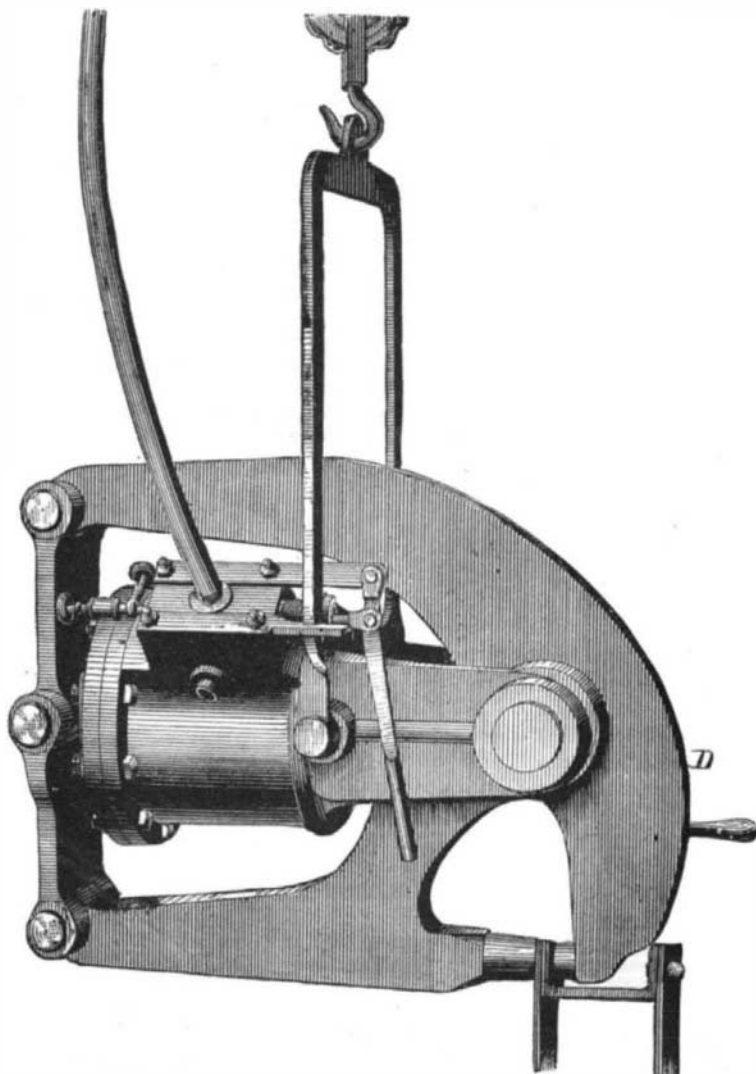


Fig. 2.—ALLEN'S PORTABLE COMPRESSION RIVETER.

**MECHANICAL INVENTIONS.**

An improvement in sewing machines has been patented by Mr. Jacob R. Scott, of Nyack, N. Y. The object of this invention is to insure uniformity in the movement of the presser bar by the upward stroke of the needle bar and secure uniform feed of the material. It is specially designed for use with the boot and shoe machines described in patents Nos. 232,559 and 233,560, so that they may be adapted conveniently for the sewing of hose, where no variation of thickness is required.

An improved carriage spring has been patented by Mr. Ronella L. Doble, of La Grange, Me. This invention relates to the use of a chord rod in combination with elliptical springs, and has for its object to strengthen the springs.

An improved machine for bundling kindling wood has been patented by Mr. William A. Allen, of Jersey City, N. J. This machine forms the bunch of wood into a cylindrical bundle, squares up the end of the bundle, and holds the wood in compact shape until it is tied.

An improved machine for grinding wood for paper pulp has been patented by Mr. Nicolaus Kaiser, of Grellingen, Switzerland. The invention consists in a grinding stone mounted on a suitable shaft and surrounded by a casing, with a series of boxes on the sides for containing the blocks of wood, which are pressed against the sides of the stone by a rack and pinion actuated by a weight, or by springs or hydraulic pressure, whereby the block of wood is converted into a wood pulp.

Mr. Michael Waters, of New York city, has patented a sensitive steam engine governor that will operate, when additional work is thrown on the engine, to instantly open the valves for the admission of a corresponding head of steam into the steam cylinder, so that the usual "slacking down" of the engine on such occasions shall be avoided, and economies in power or fuel and in time be thereby obtained.

Messrs. John L. Metcalfe and John T. Metcalfe, of Quincy, Pa., have patented an improved grain separator. In this machine, the bars of the rake bed connect with the upward incline from the thrashing cylinder by bars, arranged to form a trough, which greatly facilitates the early separation of the grain carried up by the straw. Combined with the main shoe is a supplemental shoe shaken at both ends and having a transverse slot in its bottom fitted with a roller and a comb, whereby a better separation of the clean grain and tailings is effected.

There is also combined, with the fan head or fixed register plate, a detachable box bolted to the fixed head and forming the bearing for the revolving register plate, thereby greatly facilitating renewal and repairs. Combined with the elevator box and elevating belt is a screen shaken by said belt to separate sticks and other foreign bodies from the tailings, and provision is made in a convenient and efficient manner for connecting and disconnecting the straw carrier by the machine while in motion.

A very effective and simple machine for making tent pins has been patented by Mr. Friedrich W. Evers, of St. Louis, Mo. The invention relates to machines for finishing tent pins, that is to say, pointing them, cutting the notch, and shaping the head. In this machine the pins or stakes, cut to size and of wedge form, are first pointed by inserting them singly at their smaller ends, through a rest, into a hollow cutter head on one end of a revolving mandrel. They are then arranged side by side upon a sliding inclined bed, or endless apron, and passed at their larger ends under a pair of cutter heads, secured one in advance of the other on the opposite end of the mandrel, and having a presser bar between them to hold the pins down. The cutters on these cutter heads give the required bevel to the heads of the pins, and cut the inclined notch, also bottom of the notch, thereby completing each pin.

A very valuable improvement in boot and shoe lasting machines has been patented by Mr. Solomon B. Ellithorp, of Rochester, N. Y. This invention is an improvement upon a machine previously patented by the same inventor, and consists in an adjustable construction of certain parts, whereby the machine is more readily adapted to shoes and boots of various sizes. The seat for the heel of the last, and the seat for the toe of the last are both adjustable vertically and longitudinally toward or from each other. Likewise the clamps, which are provided with eccentric levers for adjusting the gripe of their jaws on the leather, are connected with the templet by vertically adjustable hooks, and the templet is adjustable in direction of its length by the levers and devices which control it. Furthermore, the pressing screw bolt, which holds down the last on its seat, is adjustable laterally as well as vertically, so that its pressure may be applied to any part of the bottom of the last.

Mr. Horace L. Kingsley, of Racine, Wis., has