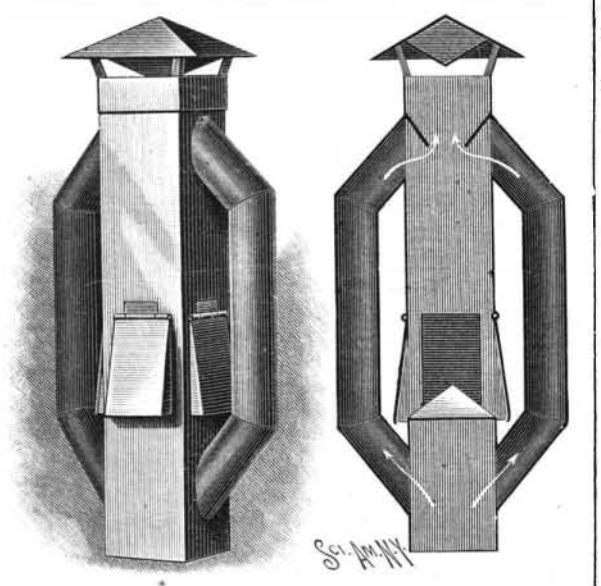
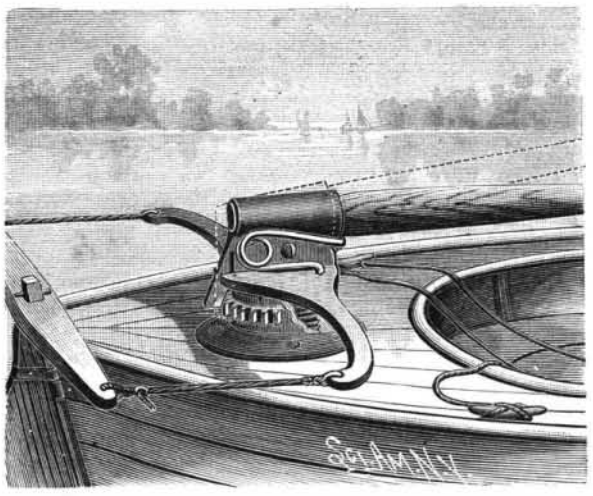
AN IMPROVED CHIMNEY COWL AND VENTILATOR.

A cowl or ventilator constructed to fit upon the top of a chimney or ventilating flue, and prevent down currents from entering the pipes, is illustrated herewith, and has been patented by Mr. John D. Cashill, of Princeton, N. J. Its lower section is connected to the upper section by side pipes or flues outside of the



CASHILL'S CHIMNEY COWL AND VENTILATOR.

main body, providing a free passage for smoke and air from the bottom section to the top of the cowl, as shown by the arrows. The lower section is closed at the top, above the lower openings into the side pipes, and on each of the sides of the upper section is a hinged door opening to the outside air. Above the upper connections of the side pipes with the cowl, and partially closing the pipes, are deflecting plates, which serve to direct currents of air which may enter at the top past the pipe openings, and centrally down to an outlet by way of one of the hinged doors at the sides. There is an outwardly deflecting plate opposite each hinged door, the door to the windward always being closed by the outside air pressure on that side when the wind is blowing, while the opposite one opens freely, to allow



RUSHTON'S LOCKING STEERING GEAR.

of the escape of any air that may be drawn in at the top, and prevent down draught.

AN IMPROVED SHINGLING GAUGE.

A gauge which is designed to enable a shingler to lay a large number of shingles without changing his position on the roof is illustrated herewith, and has been patented by Mr. McGuire Slane, of La Cinta, Territory of New Mexico. The body of the gauge is an angled bar having rearwardly extending arms with a series of apertures, through which are passed screws to secure another bar at the desired distance from the first bar, such distance representing the space between the lower ends of the successive rows of shingles. At the junction of the arms with the main bar are ears between

SLANE'S SHINGLING GAUGE.

which are pivoted levers, as shown in the small figure, the inner end of each lever being forked to receive a pin, A, these pins to be driven in to fix the gauge in position, while the outer end of the lever, B, is made in a form suitable to receive the blow of a hammer, whereby the pin, A, will be withdrawn when the position of the gauge is to be changed. The distance apart of the several rows of shingles is readily regulated by means of the different apertures in the arms, through which screws are passed to fix the position of the rear bar of the gauge, and two taps of a hammer are all that is necessary to remove the gauge and fix it in position again for laying a new row of shingles.

The Electric Light in Medical Investigations.

The electric light is getting to play an important part in medical investigations. With a little "pea light" attached to the end of a slender rod, Sir Morell Mackenzie examines the throat of the German Emperor. The little battery that supplies the electricity hangs around the surgeon's neck. These little electric lights are becoming daily of more practical use. By their aid the surgeon pokes and peeks into places he otherwise would have to manipulate in "by the feel," and achieves results heretofore impossible.

A DEVICE FOR LOCKING STEERING GEAR.

An invention providing steering gear for canoes and light sailing boats, which may be locked in any desired position, is illustrated herewith, and has been patented by Mr. John H. Rushton, of Canton, N. Y. A socket adapted to be attached to the deck of the boat is provided on its periphery with a series of teeth, the interior of the socket being screw-threaded, and fitted with a head having a threaded portion. The head carries horizontal arms with eyes at their extremities, which are connected by cords with levers attached to the rudder post. The head also has vertical ears between which is pivoted the flange of a tapered socket to receive the end of the tiller, there being integral with the flange a downwardly projecting arm adapted to engage the teeth on the periphery of the socket fixed to the deck. A double spring is arranged to bear on a shoulder on the lower part of the tiller socket in such way as to raise the tiller into the position shown in dotted lines whenever it is released by the steersman, the downward projection of the flange at the rear then engaging the teeth on the periphery of the socket fixed to the deck, and locking the tiller and rudder in position, the tiller being designed to move freely in either direction when held down to the position shown in full lines in the illustration.

BINNS' PATENT BANDING SPINDLES.

The illustration shows a method for banding spindles, invented and recently patented by Mr. Leedham Binns, of the Binns' Patent Band Co., 5th and Berks Sts., Philadelphia. The drawing sufficiently indicates the nature and operation of the invention. The claim made for it is as follows:

"It takes 50 per cent less power to drive the spindles. This means a large item in coal, wear and tear on boilers, engines, shafting, belting and connections."

"A firm with 80,000 spindles banded on this plan will save about 300 horse power; allowing 3 pounds of coal per horse power per hour, would save over 1,200 tons of coal per annum, more or less, according to speed of spindles. It is impossible for a band to slip on the cylinder.

"There is double the amount of band contact given to each spindle. It requires less than half weight of banding to drive the spindles.

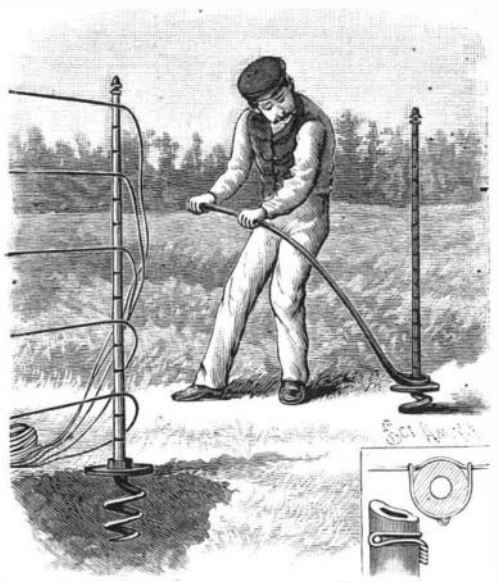
"It drives the spindles more perfectly and up to speed. It spins and twists the yarn more evenly. It requires less oil for lubrication, less wear and tear on the spindles and connections, and the highest rate of speed possible can be obtained."

Test spindles banded on this plan are running at 27,000 revolutions per minute, spinning cotton at 17,000 per minute. The royalty asked is 5 cents per spindle, for full term of patent, or 3 cents per spindle per annum, using without contract.

For further information, apply to the Binns' Patent Band Company, head office, Fifth and Berks Streets, Philadelphia, Pa., U. S. A.—*Textile Record.*

AN IMPROVED FENCE AND FENCE POST.

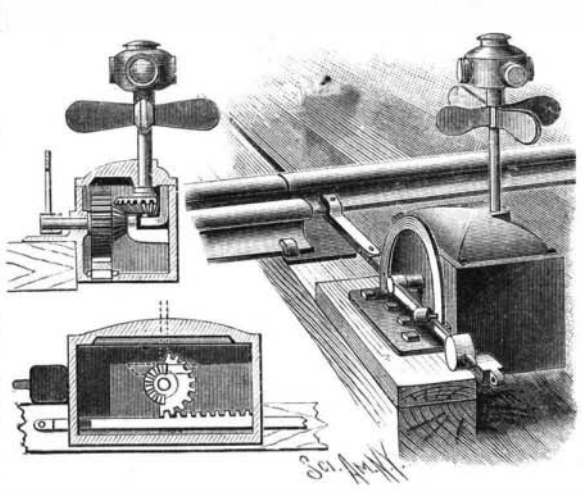
An invention relating to wire fences, and more particularly to an improved form of post therefor, has been patented by Mr. George H. Guile, of Watertown, N. Y., and is illustrated herewith, the small figure showing the manner of attaching the fence wire to the post. The post is preferably made hollow, and tapering upwardly, its upper open end being closed by a knob or head, while at suitable intervals from top to bottom are annular grooves around its periphery, suitable for the running wires to lie therein against the post. The bottom of the post has a screw-threaded portion by which it screws into the socket of an enlarged upper portion or head of an involute helical or corkscrew-shaped point, this head having polygonal sides for the engagement of a wrench to force the screw into the ground, and the screw diminishing in size toward its point, so that it will not loosen the surrounding earth, but firmly and closely embed itself therein. The running wires are held or tied to the post by strips of wire or other flexible material, of band or loop form, the grooves maintaining the wire, in looped form, from any up and down slide. It is obvious that such a fence can be rapidly and easily set up, and, should the position of the posts be affected by frost, they can be readily readjusted without disengaging the wires.



GUILE'S METALLIC FENCE AND FENCE POST.

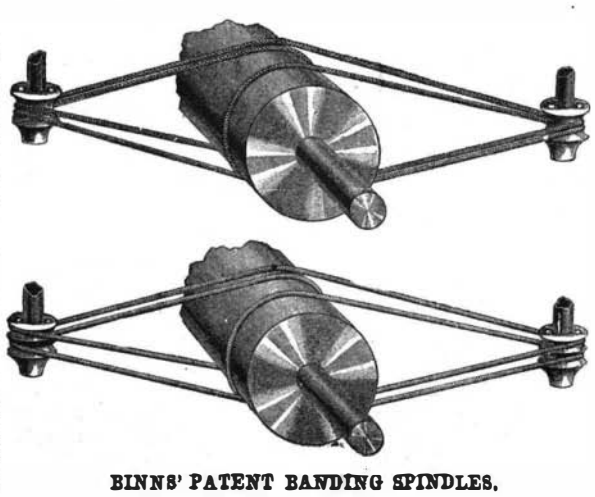
IMPROVED RAILWAY SWITCH STAND AND SIGNAL.

A simple and positive device for operating a signal automatically as the switch is moved is illustrated herewith, and has been patented by Mr. Nathaniel W. Boyd, of Steelton, Pa. The apparatus is mounted on a single tie or sleeper to provide against uneven settling, and may be set up on either side of the track, or with either side presented to the track, all the principal operative portions, as shown in the sectional views, being inclosed in a tight case, to exclude dirt, snow, ice, and other obstructions. In the bottom of the casing are spaced ribs and a friction roller, upon which slides freely a racked bar, which projects through slots and



BOYD'S RAILWAY SWITCH STAND AND SIGNAL.

is connected with the switch bar. Through an aperture in the side of the casing projects a horizontal rock shaft having attached to its outer end a weighted hand lever, sliding on and guided by a segmental bar, near the extremities of which are apertures to receive a padlock, by which the lever may be locked to prevent its being raised or the operative parts of the device manipulated. Upon the inner end of the shaft is a segmental spur gear, meshing with the teeth of the racked bar, and a segmental bevel pinion meshing with a bevel pinion on a vertical signal shaft provided with a four-bladed semaphore and a signal lamp, the colored sides of the lantern corresponding with the colored wings of the day signal. In operation, when the lever makes a one-half revolution, the signal shaft is given but a one-quarter turn.



BINNS' PATENT BANDING SPINDLES.

The First Yankee Engine.

In the biography and diary of Manasseh Cutler, LL.D., of Ipswich, Mass., just issued, is given a description of what is probably the first practical stationary steam engine used in the United States. It appears in the diary of Dr. Cutler as written when the impression was fresh in his mind. It may be called a "Yankee steam engine," having been made under the direction of a Rhode Island man and containing improvements upon its English prototypes. The diarist was on a chaise journey to New York, and his entry is of the date of June 17, 1787. He says:

"To go to the furnace and engine was nearly eight miles out of my way; but my curiosity was so much excited by the description of so singular a machine, the only one in America, that I could not deny myself the pleasure of viewing it. I arrived at the ore beds (iron ore) at 12 o'clock. The engine was at work raising water from a well 80 feet deep. The iron flue is 2½ feet wide by 6 feet long, with a square hearth at the mouth, secured from fire by large, thick iron plates. On the back part of the flue is a winding funnel, which passed into a chimney on the back part of the building.

"Above the flue is placed a wooden boiler, 6 feet in diameter, which is kept constantly full of water when the engine is in motion. The boiler rises above the first story of the building, much in the form of the large cisterns used in distilleries, where it receives, at the top, the condensing cylinder, 2½ feet in diameter, and which is made of plated iron.

"From the cylinder a large worm passes, with many windings, down to the boiler. The valve that passes into this cylinder is more than 2 feet in diameter, and rises and descends by means of an iron rod, made fast to one end of a large beam. Around the top of the boiler are numerous leaden pipes—some connected with the condenser and some not—furnished with stop cocks for admitting or excluding air or water, as necessary in working the machine; but they are too numerous and complicated to admit of any description from a mere point of view.

"A large reservoir of water is placed in the third loft of the house, constantly affording water to the works below, and as constantly supplied by a pump for the purpose, by the working of the machine.

"There are two large pumps in the well, which is 80 feet deep and 23 feet wide. The sides of the well are supported by large timbers, laid horizontal, so as to make the form of the well quintangular, and the ends of the timber are let into one another. The engine raises seven hogsheads of water in a minute, and the flue consumes two cords of wood in twenty-four hours.

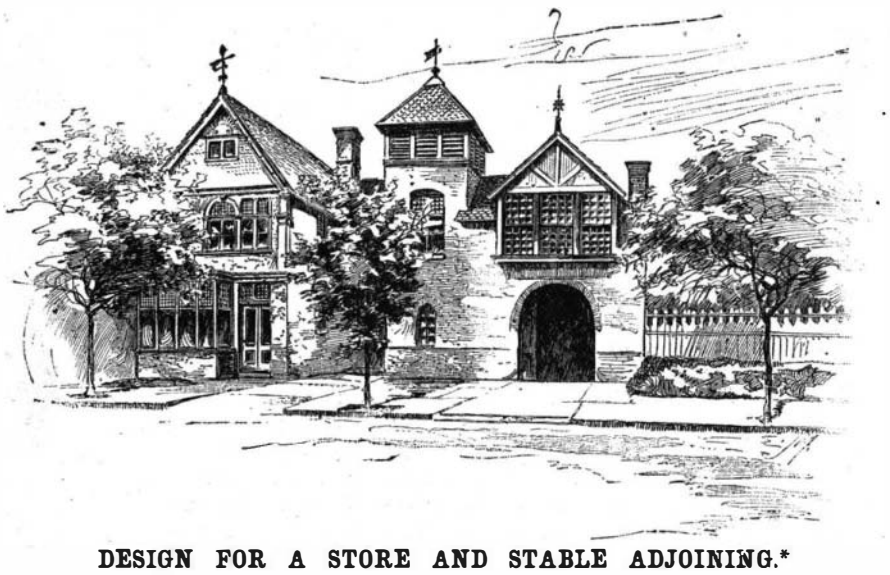
"The immense weight of the beam, the cast iron wheels, large chains, and other weighty parts of the works occasion a most tremendous noise and trembling of the large building in which it is erected when the machine is in motion. By the sides of the well from which the water is drawn are two other wells, 70 feet deep. These are sunk down in the bed of the ore, and in these are the workmen, ten or twelve in number, who are digging ore.

"The large beam is a massive piece of timber, nearly 4 feet in diameter and 20 feet long, being two very large oak timbers nicely forged together. It moves on a large iron bolt in the center, like the beams of a scale, and has two arching timbers at each end, forming the segments of a circle, along which two chains of a prodigious size play as the beam moves.

"One of these chains lead to the piston or valve of the condenser, and the other, at the opposite end, to the pumps in the well. There are four cold water pipes, one feeding pipe, and one venting pipe. By the same motion of the beam which raises the water out of the well, all these pipes open or close by means of stop cocks or valves, as the design of them require.

"The ore is raised in three large buckets, which hold about one ton weight, let down and drawn up by large chains, carried from the well to a large capstan, which is constantly turned by an ox. As one bucket rises another descends. These wells are kept dry by the water continually drawing off into the well where the pumps are fixed, and the pumps keep the water below the height where the men work.

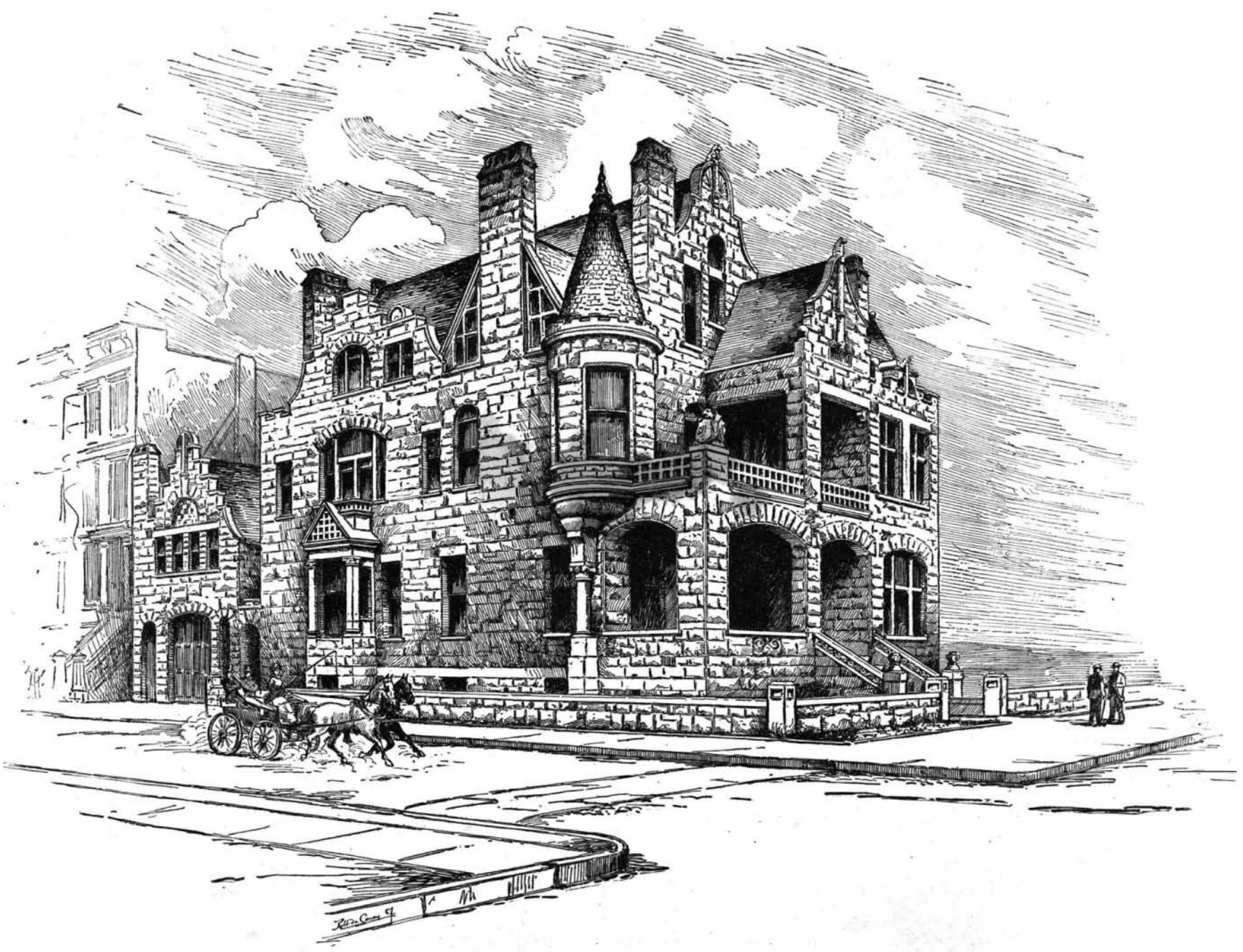
"This curious machine was made under the direction of Mr. Joseph Brown, of Providence, and is a standing proof of the abilities of the able philosopher. The invention was not new, but he has made many valuable improvements in simplifying and making the working of it more convenient above what has been done in Europe. It has cost upward of £1,000 sterling."—*Boston Advertiser.*



DESIGN FOR A STORE AND STABLE ADJOINING.*

* This engraving represents a beautiful private residence, erected last year, at the corner of Sixth Avenue and 119th Street, in this city, and the illustration is taken from the July, 1887, number of the ARCHITECTS AND BUILDERS EDITION of the SCIENTIFIC AMERICAN. The design for the store and stable appeared in the June, 1887, number of the same publication, and also in the *Sanitary Engineer*. The arrangement of the store and stable together will suggest to the country merchant a degree of convenience which but a few are accustomed to, and the general reader will accord to the architect much and deserved credit for producing such a picturesque and well adapted design for so useful and, at the same time, inexpensive structure. In this connection, we beg to call the attention of any reader of the SCIENTIFIC AMERICAN who is about to erect any kind of a building to the fact that he will find, in the back numbers of the ARCHITECTS AND BUILDERS EDITION of the SCIENTIFIC AMERICAN, engravings and specifications of almost every kind of a structure, from a cheap rustic well house to a church edifice costing many thousands of dollars. Thirty-two numbers have been published, and single copies, or the entire number, may be had at the office of this paper and of all news dealers. Price 25 cents each number.—ED.

THE largest railroad station is St. Pancras, London, 700 ft. long, 243 wide, 100 high, covering 10 acres.



RESIDENCE CORNER OF 119TH STREET AND SIXTH AVENUE, NEW YORK.*