

## THE SCIENTIFIC AMERICAN--COMMENCEMENT OF VOLUME XV.

This is the initiatory number of Vol. XV., new series, and with it we send greeting to our numerous subscribers. What the SCIENTIFIC AMERICAN has been in the past is our readers' assurance of what it will be in the future. We might fill columns with the favorable notices we receive, not only from our exchanges, but by private correspondence, but we prefer that our works speak for themselves.

We design to sustain the character of this journal as a means of instruction and improvement, and a medium through which the student of practical science, and the mechanic, can reach those devoted to kindred pursuits.

The results of experiments in science as applied to the useful arts; the details of mechanical improvements; the successive triumphs of mind over matter; the discussion of questions involving valuable principles and their useful application; the furnishing of practical information desired by correspondents; illustrations and descriptions of new inventions, and a general *resumé* of the progress of science and art, are among the objects of the SCIENTIFIC AMERICAN.

We remind our subscribers that now is the time for renewing their subscriptions, as, after the lapse of a few weeks, it is often difficult to furnish the back numbers. The same remark applies equally to those designing to become subscribers.

## Iron-clad Ships.

In reply to a question put by Mr. Laird, in the House of Commons, the other evening, Mr. T. G. Baring said: "Her Majesty's Government are 'aware that there are several ironclads belonging to foreign Governments on the Pacific and North American stations,' and that some of those vessels carry cast-iron guns which throw very heavy shot. With respect to the future movement of her Majesty's armored ships, I must beg to be allowed to say that they must be determined from time to time by the Executive Government. I may mention, however, that the *Fluorite* has been sent on an experimental trip to the North American station. Twelve-ton guns have not yet been placed on board any armored ships. They have been found to work as well as broadside guns, have been adopted into the service, and will be supplied to our armor-plated ships as soon as carriages are ready. The alterations of the *Scorpion* are being carried on precisely as all work is carried on which is not urgently required. They have only been interrupted by pressing demands on account of ships wanted for service, but I am afraid they are not likely to be completed for some considerable time.—*Engineering*."

## Honors to Mechanical Engineering.

At the commencement of the University of the City of New York, held on the 21st at Niblo's Garden, the degree of Doctor of Physical Science (*Doctor Physicis Artibus*), was conferred upon Mr. Erastus W. Smith, the well-known engineer of Harlem Bridge and of various corporations. Mr. Smith is also superintending the construction of the *Dunderberg* for the Government contractor, Mr. W. H. Webb. This is the first instance of the conferring of this degree in this country.

A NOTEWORTHY fact in connection with the present difficulties on the Continent is, that all countries likely to be engaged in the war have increased their supply of coal to an enormous extent. Italy has been importing coal lately in such large quantities that the freights on the east coast have greatly advanced, and vessels can scarcely take the coal with sufficient rapidity. This supply is for the Italian navy. Austria has also increased her supply of coal very largely, although it would appear that her navy is not to be actively engaged in acts of aggression upon Italian merchantmen. Prussia has also largely increased her supply, and the same remark will apply to Russia and France.

VESUVIUS GETTING LIVELY.—People who live in the neighborhood of Mount Vesuvius say that the volcano is again exhibiting signs of internal commotion. The small cone recently threw quantities of stones into the air, and on the large cone two new

craters have been formed. A considerable body of lava has also flowed from the small cone.

## NEW INVENTIONS.

**REGISTERING APPARATUS FOR PRINTING PRESSES.**—JAMES KIRK, Dover, Del.—In printing upon both sides of a sheet, whether for newspapers, books, or other work, it is essential that the impressions on the two sides of the sheet register; in order to effect this, pins or points are generally used in giving the second impression, to fit into holes made in the sheet at the time the first impression is given it. Several plans have been devised for facilitating the adjustment of the sheet upon the pins or points, and the withdrawal of the latter from the former, in feeding the sheets to the press for the second impression, and this invention relates to an improved means for accomplishing that object.

**GAGE COCK.**—C. L. FRINK, Rockville, Conn.—This invention consists in the arrangement of an elastic and flexible perforated valve, in combination with the hollow screw spindle of a gage cock and with a tapering seat, so that by forcing the valve down in its seat, the channel in it is closed and the escape of water or steam from the interior of the boiler is prevented; and by moving the valve back from its seat the central channel or passage in the same is opened and the steam or water from the boiler is free to discharge.

**SOCKET FOR WATER GAGES.**—C. L. FRINK, Rockville, Conn.—This invention consists in the arrangement of a safety cock in line with the channel leading from the lowest socket of a water gage to the water space of a steam boiler, in combination with the ordinary blow-off cock at the bottom end of the socket, in such a manner that by opening the safety cock before the blow-off cock is opened a jet of solid water is forced through the socket at right angles with the bore of the glass tube, and thereby the steam is prevented from blowing through the gage when the blow-off cock is opened, and the danger of breaking the glass tube is avoided.

**STREET RAILWAY CAR.**—F. W. JENKINS, Brooklyn, N. Y.—The object of this invention is to prevent the occurrence of accidents to persons, who, by carelessness or mischance, happen to fall under the cars, across the rails, and in front of the car wheels, while the cars are in motion.

**LANCING IMPLEMENT.**—GEORGE J. CAPEWELL, West Cheshire, Conn.—This invention consists principally in a peculiar formed cap for the casing of the instrument in which the knife blade is arranged, whereby the instrument when placed upon the animal with such cap over the vein which is to be lanced, the vein will be firmly and tightly held in the proper position for the knife to act upon it.

**WATCHES.**—ARTHUR WADSWORTH, Newark, N. J.—This invention relates to that class of watches, for the winding and setting of which no key is required, and in which both operations are performed by simply turning a part of the pendant of the watch case.

**WASHING MACHINE.**—JOHN C. FELLOWS, South Adams, Mass.—The object of this invention is to produce a washing machine which will be economical in construction and easy to repair, and which is easily operated without requiring the expenditure of much power or much skill.

**GANG PLOW.**—JAMES B. HUNTER, Ashley, Ill.—This gang plow consists in an improved means for adjusting the plows, higher or lower, as may be desired, and also for adjusting them laterally, whereby furrows of greater or less depth and width may be made, in an improved means for raising the plows out of the ground, as is necessary in drawing the machine from place to place, turning at the ends of a field, etc., and in an improved means for adjusting the points of the shares more or less obliquely in a downward direction, and in an improved manner of attaching the plow beams to the machine in order to lighten the draft.

**SNAP-HOOK.**—A. HANNY, Keokuk, Iowa.—This invention consists in a snap-hook which is cast with an eye of considerable size through its shank, and with points in its under side, which points are to be turned down to secure the spring to the hook, the spring passing through the eye and springing in a recess cut for it in the extreme end of the hook, by which construction it is believed that much is saved in material and expense of casting and fitting the parts.

**SHOVEL PLOW.**—PAUL DENNIS, Schuylerville, N. Y.—This invention consists in the employment of adjustable wings of twisted or curved form, applied to the plow in such a manner as to be capable of being reversed or changed in position from one side of the plow to the other, in order to cast the earth outward from the plow, or inward to fill the furrow.

**BOLT-HEADING MACHINE.**—A. B. GLOVER, Derby, Conn.—This is a machine for forming heads on bolts and consists in a novel arrangement of forming dies in connection with two upsetting dies, whereby the heads of bolts may be perfectly formed, and by an automatic movement of the several parts throughout the whole operation. The heading dies are so operated as to be brought consecutively over the bolt and forced down consecutively on the bolt, and the finishing heading die made to operate twice upon the bolt in order to finish the head. Means are employed for actuating the holding dies so that the bolt and screw may be firmly held during the heading operation, and instantly released after such operation is performed. It also has a clutch-operating mechanism for automatically disconnecting from the driving shaft as soon as the heading operation is completed.

**BOOT AND SHOE STRETCHER.**—WILLIAM FREDERICK, Ashland, Pa.—By means of this instrument boots and shoes may be stretched either at the toe or instep, or in both places at the same time. It consists of a stretching last, formed in two parts, hinged together at the toe by a treble-jointed hinge, and operated by a rod, pinion wheel, rack and pulley, or pulleys, for the purpose of stretching the toe of the boot or shoe.

**FAUCET OR STEAM VALVE.**—RUSSEL BURTON, South Adams, Mass.—The object of this invention is to furnish a faucet for restraining or permitting the passage of liquids or steam through a pipe; and consists of a conical chamber formed on said pipe and extending both above and below it, having a conical plug fitting

into it, being pushed up against the cover by the action of a spring making it steam-tight, and the wear being compensated by forcing down the plug by means of a screw cover.

**RAILROAD SPITTOON.**—W. G. SMITH, Carlisle, Pa.—This invention consists of a self-cleaning spittoon, which is let into the floor of the car, and the bottom and cover of which are so connected that closing the cover opens the bottom and discharges its contents, and opening the cover closes the bottom and leaves the spittoon ready for use.

**CUTTING GREEN CORN.**—JONATHAN BURT AND LEONARD F. DUNNE, Oneida, N. Y.—This invention relates to a device for cutting green corn from the cob, whereby the work may be quickly performed, and in a perfect manner. It consists of a series of cutters, scrapers, and guides, attached to a tube, and used in connection with a sliding frame provided with an adjustable center rod.

**STRAW CUTTER.**—CLARK POLLEY, Sinking Springs, Ohio.—This straw cutter is so constructed that the knife is forced up against the bed plate while making the cut, by direct pressure, thus compelling it to make a clean cut.

**SMUT MILL.**—R. C. SWANN, Brownsville, Ind.—This smut mill or scouring device is for the purpose of cleaning grain, and can be applied to an ordinary farming mill, thrashing machine, or fitted up in a flouring mill. It consists of a perforated bed or screen, having a reciprocating motion imparted to it, and a series of fixed pressure rollers having the bearings of their journals in springs, which cause the rollers to press upon the screen, the roughness of the latter in connection with the surfaces of the rollers, which are also rough, subjecting the grain as it passes over the screen to a sufficient scouring action, which loosens or detaches the smut and dirt.

**FERRY BRIDGE GATE.**—LEWIS P. DECKER, Brooklyn, N. Y.—This ferry bridge gate is so constructed as to be operated simultaneously and from any convenient position. It consists in the construction and arrangement of the gates, and the combination of a ratchet bar and gear wheels with each other, and with the shafts to which the gates are attached.

**MACHINE TO MAKE HINGES.**—JEAN BAPTISTE EVRARD AND JEAN PIERRE BOYER, Paris, France. (A. Berthoud, 248 Canal street, New York, is the assignee).—This machine is for manufacturing butt hinges, made of two halves, each half being made of a piece of sheet metal cut out and doubled up, so as to form loops through which the wire can be passed that serves to unite the two halves of the hinge. The two strips of metal required for the two halves of the hinges are fed automatically to the punches, to the cutters, and to the devices for doubling up the pieces forming the loops, pushing the two halves together, inserting the wire and cutting off the same; and, furthermore, a carriage is applied which forms the bearings for a series of countersinks placed in such a position that by their action all the holes in each hinge are countersunk simultaneously, and the hinges on being delivered from the machine are complete and ready for immediate use.

**APPARATUS FOR KNEADING DOUGH.**—GEO. W. SANDERS, Springfield, Vt.—This invention consists in combining a kneading board and roller in such manner that the roller may have a universal motion, whereby a convenient and easily operated device for kneading dough is produced.

**GAVEL-DISCHARGING DEVICE FOR HARVESTERS.**—WILLIAM ZIMMERMAN, Oskaloosa, Iowa.—This invention relates to a new gavel-discharging device for harvesters, whereby gavels of greater or less size may be discharged, as desired, and the device made to operate with certainty and in a perfect manner. It is designed to operate in connection with an endless apron, a means used on some harvesters for discharging the cut grain from the machine.

**SILL STRIP FOR DOORS.**—JEREMY K. LINDSLEY, Goshen, Ind.—The object of this metallic strip is not only to protect the sill from becoming worn, but also to prevent rain or moisture or the wind from passing under the door, thus also acting as a weather strip; it being so formed that it can be applied to the sill of the door and there retained in place without the use of screws or other fastening devices.

**IRRITATION INSTRUMENT.**—FRED. KLEE, Williamsburgh, N. Y.—This invention consists in the application to an irritation instrument of a regulating screw, whereby the points can be so adjusted as to penetrate the skin of the patient to a greater or less depth as may be desirable; and in the arrangement of a diaphragm of leather or other suitable material at the bottom end of the cylinder containing the pricks so that when said diaphragm is saturated with the liquid to be introduced in the skin, the whole operation is effected by causing the pricks to pass through the diaphragm just before they enter the skin of the patient.

**COATING BRICKS.**—FRANK JONES, Boston, Mass.—This is a process of coating evenly any necessary portion of bricks with mastic or cement so that it will be of a uniform thickness, thereby greatly lessening the tendency of the mastic to peel off after being exposed to the action of the atmosphere as when applied in the usual manner.

**CLOTHES POLE.**—F. W. TILTON, New Bedford, Mass.—This invention consists in constructing a clothes pole with a double-hooked end so that the line can be readily inserted between the hooks and withdrawn at pleasure, and when placed therein it will be firmly supported; and also in whatever direction the wind may blow, or how often it may change, the line will always be in a position in the double hooks, which will prevent it from becoming detached from the pole.

**CLEANER FOR RING TRAVELERS.**—WELCOME JENCKS, Manchester, N. H.—The object of this invention is to prevent the waste from lodging in the traveler and breaking the thread, as it will do if not removed during the operation of spinning.

**SAFETY VALVE.**—C. L. FRINK, Rockville, Conn.—This is an arrangement of a swinging supporter so combined with the stem and lever of a safety valve that the supporter will accommodate itself to the position of the lever, and the lateral strain on the valve stem will be diminished or avoided.

**CIDER MILL.**—S. J. HOMANS patentee, patent issued June 5th. The inventor may be addressed at Newburgh, N. Y., not at Wal den.