much lessened. Another part of this invention consists in constructing percussion fuses with a quantity of sand, or emery, locked up, or shut off from communication with the fulminate, so that the same is not in danger of explosion until the shot strikes the object aimed at. There is also an improved arrangement for preventing windage of the shot and obtaining rotary motion of the projectile through the gun, all of which are additions to the long list of improved projectiles for which the war has created a demand.

Sewing Machine.—Patentees: F. W. Grote and C. O. Tietjen, of New York City.

This invention consists in a novel device for extending the loops of the upper or needle thread on the under side of the material sewed and carrying the locking thread through them. Also in a novel construction of the feed apparatus; also an improved "take-up" for drawing up the slack of the loops of the upper thread through the cloth sewed. Also an improved arrangement of the tension; these several parts constitute a new and efficient sewing machine.

Attaching Metallic Eyelets to Cloth, &c.—Patentee: Charles E. Howard, of Bridgewater, Mass.

This invention relates to an improved method of applying and fixing metallic eyelets securely in cloth, leather, or other material. The machine is self-feeding, and by placing a number of eyelets in a box and working a treadle with the foot, the eyelets are delivered under a die which closes them over. All the motions are obtained from the treadle, and the work is most expeditiously performed. An engraving of this machine may be seen on page 33, Vol. VII. (new series) of the SCIENTIFIC AMERICAN; large quantities of them are now being made to order.

Boiler for pulping Vegetable Substances.—Patentees: W. F. Ladd, of Tarrytown, N. Y., and S. A. Walsh, of New York City.

In this improved apparatus the material to be reduced to pulp is treated either with or without alkali, and is at all times submerged in the liquor or solution employed in the boiling process. By an arrangement of a perforated diaphragm in the boiler the material is kept at a certain point while the liquor rises above it, and the heat is applied either by a coil of steam, or by a travelling furnace arranged to run back and forth under the boiler; this furnace can be removed when it becomes necessary to stop the boiling; the contents can then be discharged through a gate into any suitable receiver.

Projectiles for Ordnance.—Patentee: C. W. Stafford, of Burlington, Iowa.

This patent covers what is known as the "Stafford shot and shell," a projectile which is now much used in Government service. These shot and shell are steel bolts, solid for the shot and bored out for the shell, surrounded by a wooden casing to reduce windage, and obtain increased velocity of the bolt by having a small punching area, combined with a large superficial area exposed to the action of the charge. There is also a peculiar flange at the base which is packed with twine or hemp and saturated with tallow. This prevents windage and, in connection with the flange, causes the shot to rotate in the bore of the rifle. An engraving of these shot and shell can be seen on page 209, Vol. VII. (new series) of the SCIENTIFIC AMERICAN.

Obtaining Printing Surfaces, Dies and Substitutes for Photographic Negatives.—Patentees: Paul Schulze, and Frederick W. Billing, of Brooklyn, N. Y.

The object of this invention is to procure a cheap substitute for wood engraving, so that by the aid of the electrotype process surfaces can be obtained which may be printed from. To this end a composition of various substances is employed which may be coated on glass, metal, or precious stones, and by subsequent processes, such as washing, being submitted to the action of acids, etc, the drawing is brought out in relief or the design is sunk in the material worked as may be desired without cutting any of the design by hand. Processes of this nature are exciting much interest at this time, and it is believed that ere long the costly and slow labor of wood engraving will be superseeded by quicker and cheaper methods.

Machinery for cutting Corks.—Patentee: Isaac Goodspeed, of Norwich, Conn.

This ingenious invention relates to an improved means of cutting bottle or other corks out of slabs of the same, either cylindrical or of any desired taper. This is done by the use of changeable patterns attached to the spindle carrying the cutters. The cutters are applied to the spindle so that they have a motion lengthwise, while they and the pattern also have a rotary motion given by the carrying spindle. By using double patterns, so that the cutters are held at different distances from the carrying spindle, a shell or ring-shaped cork may be cut without waste as the centre cork can be used for a stopper also. There are also ingenious arrangements for adjusting the cork-bark and holding it while worked upon, which renders this machine a most useful one.

MISCELLANEOUS SUMMARY.

STATISTICS OF ARDENT SPIRIT MANUFACTURE.—The total value of all kinds of distilled liquors made in the United States in 1860, was $24,243,171. The State of New York stands first of all the States as the manufacturer of whiskey, highwines and alcohol. Illinois stands next and Ohio next. Kentucky, where all the "Bourbon" is supposed to come from, makes but 3,000,000 gallons of whiskey, highwines and alcohol. The whole country produces less then 3,500,000 gallons of gin and brandy per annum, and about 4,000,000 gallons of what is called New England rum. The total value of malt liquors manufactured in the country, in 1860, was $18,001,125. New York manufactures more malt liquors than any other State; Pensylvania stands next, Ohio and California are the great wine-producing States as yet; the former producing, in 1860, 562,640 gallons, and the latter 494,516 gallons.

A PHILADELPHIA exchange represents that the coal companies are busily enlarging their facilities in every direction, and that the product of coal in 1864 will be greatly increased. The article concludes thus:—"Not only Pennsylvania capitalists, but those of New England and New York, are actively engaged in the enterprise. The price of coal must fall." [No doubt it will, in summer, when no one wants it.—EDS.

A TERRIBLE accident lately occurred in St. Louis, at the launch of an iron-clad. The vessel went off the ways suddenly, and the anchor being thrown over, several persons were caught in the coils of the chain attached to it and drawn overboard. Only one of them, however, was drowned.

ANOTHER death from inhaling nitrous oxide gas, recently occurred in Vermont. The victim was a young girl, seventeen years of age, remarkably robust in constitution and health. Deaths from the employment of this agent seem to be multiplying rapidly.

APPLICATIONS have been filed with the Controller of the Treasury Department for 215 National Banks. This new system of banking is becoming very popular; and at the rate it is progressing, it must soon altogether supplant the State system.

MR. G. LEVERICH, of Trenton, N. J., is the *agent*, simply, of Powers's Rifling Machine, recently illustrated in the SCIENTIFIC AMERICAN (page 113), and not "sole agent and maker," as therein stated.

A LARGE fire which recently occurred in Gloucester, Mass., was only checked by the timely arrival of a steam fire-engine; the hand-engines being frozen up and disabled.

$15,000,000 worth of gold dust, it is reported, is now in Idaho territory, awaiting transportation to the States.

FOUR "blockade-runners" were recently destroyed off the coast of Florida and North Carolina, by the *Sassacus*, a new naval vessel.

ENGINEERS desirous of entering the Volunteer Navy may apply immediately, in person, to the Chief Engineer of the Yard.

The Iron Propeller "Havanna."

Messrs. Neafie & Levy, of Philadelphia, Pa., are now building a large iron propeller of 1,336 tuns; the length of the vessel is 240 feet, breadth of beam 34 feet, and depth of hold to spar deck 22 feet; draft of water at load line, 15 feet 6 inches. The frame is constructed of wrought-iron plates, 7-8ths and 1-16th thickness on an average, and is fastened with 3-4th rivets 2½ inches apart; the floors are shaped something like the letters Z and an inverted L, and are molded 4 inches, sided half an inch. The frames are 18 inches apart at centers. There are also three water-tight bulkheads, and the beam-ties on the spar deck are of wrought-iron plates.

The ship is to be driven by one of Mr. John Baird's engines, having a vertical cylinder of 60 inches diameter, and 5 feet stroke of piston. There are two tubular boilers in the hold, having water bottoms and lagged with felt. The propeller is cast-iron, is four-bladed, and is 15 feet in diameter. The ship is built according to the most approved principles, and is expected to be creditable to all concerned in her construction.

RECENT SOUTHERN INTELLIGENCE.

Since our last issue we are in receipt of a file of Richmond and North Carolina papers, from which we select the following items:—

Gold is quoted by the Richmond *Examiner* at twenty-two hundred per cent premium and silver at nineteen hundred. One hundred dollars in gold will buy $2,200 of Confederate Seven-per-cent Bonds!

THE bakers have increased the price of baker's loaves from fifty cents to one dollar; and at the same time, decreased the bulk and weight to about half the former size. Flour in Richmond is $250 per barrel, sugar $7 to $8 per lb."

"THE Richmond quotations of prices current go all over the Confederacy; and in a great measure regulate the value of produce everywhere. If flour goes up in Richmond any day ten dollars a barrel, it will go up in Buchanan the next day about the same amount; although, but for the Richmond rise, the price in Buchanan might have remained stationary for six months. The case is the same with all commodities, including money. Distance and circumstance may modify the proposition as to particular localities; but, as a general rule, the market quotations at a great centre of commercial operations and intelligence like Richmond, exert a controlling influence over prices throughout the Confederacy."

"A DOZEN cases of runaway slaves are almost daily reported to the police. The abscondings of slaves are increasing in number and frequency, and the owners of such migratory and uncertain property must look to their whereabouts."

"RICHMOND is the Southern 'Mecca,' and everybody a pilgrim, it would seem. The hotels are full; the boarding-houses are overflowing. There is nothing to eat and not a room for rent, yet everybody has a contented stomach and a couch to stretch himself upon. It has, ever since the war, been a mystery what important business brings everybody and his kin to Richmond. One would suppose the stupendous price of living would drive them away or hurry them back, if they must come. On the contrary it woos them, and foolish people rush into Richmond like crazy craft into the vortex of a mælstrom. What it is they find so attractive in Richmond is an inexplicable puzzle to sensible, plodding folks. It may be for the experience of the indescribable sensation of living at the rate of twenty or fifty dollars per day at the hotels; of drinking 'blue ruin' at the rate of two dollars at the restaurants; of being pulled up every half-hour by the 'conscript hawk' or driven distracted by the music of the iron keys of the Jeff. Davis pianos; or being robbed once in every twenty-four hours, with the nightly chance of a knock-down or a tumble into the Basin. If these are not the attractions, our query 'What brings so many idle people to Richmond?' is still unsolved."

"MANY of the fattest and bravest men in the Confederacy are afraid to go into the army lest they should be unwieldly or incapable of rendering service. This is a mistake. Some exceedingly fat men are now in the service. Gen. Humphrey Marshall served for two years. But to set the matter at rest, we need only cite the example of Chiapin Vitelli, one of the ablest generals who accompanied Ava to the Netherlands. Stroda says of him: 'He was equally distinguished for his courage, his cruelty and his corpulence. The last characteristic was so remarkable that he was almost monstrous in his personal appearance. His protuberant stomach was always supported in a bandage suspended from his neck; yet, in spite of this enormous impediment, he was personally active on the battle-field, and performed more service, not only as commander but as subaltern, than many younger and lighter men.' Be of good cheer, therefore, fat men; procure your bandages, and go in!"

Improved Press for Printing for the Blind.

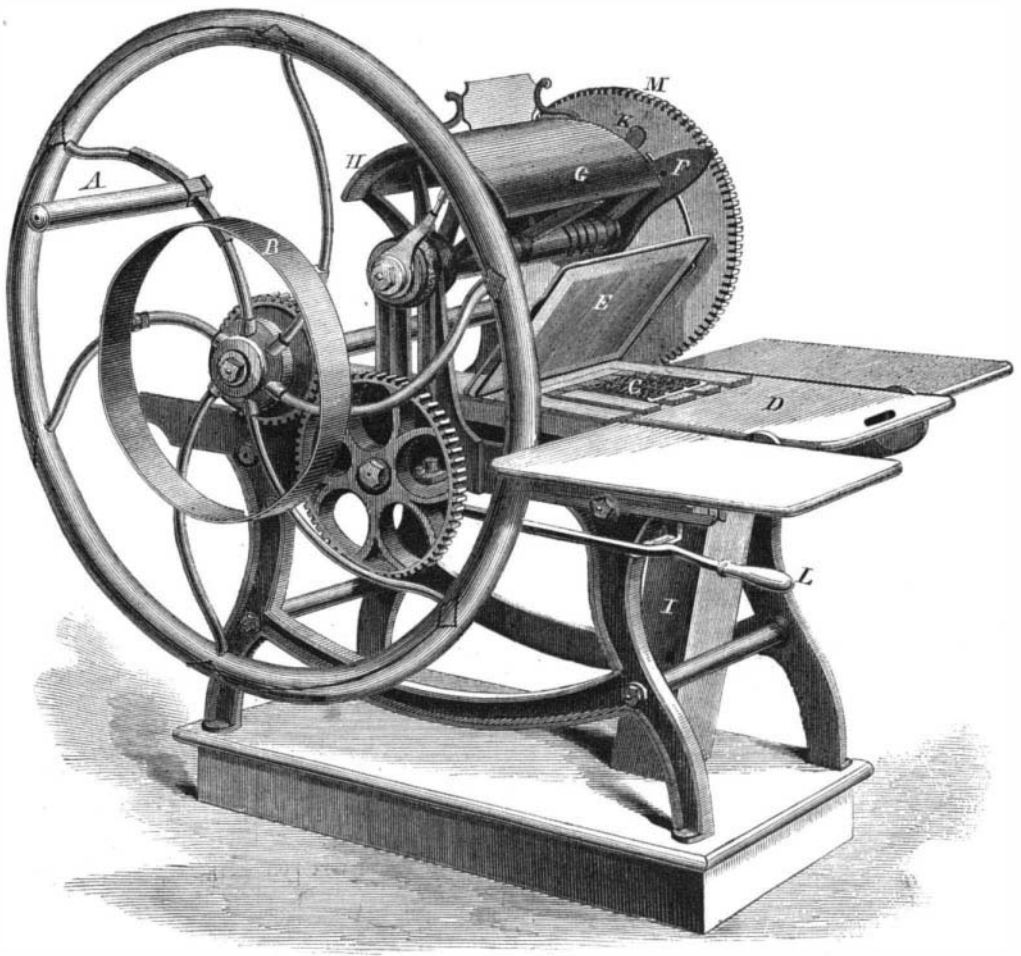
The annexed engraving represents an improved press for printing for "the blind;" this press was recently invented and manufactured by Stephen P. Ruggles, of Boston, and it was exhibited at a meeting of the Massachusetts Institute of Technology, on the 10th of Dec., 1863; said press being much larger and far superior to those first built by him, for the same purpose, many years since.

The press now illustrated was invented and built expressly for the American Printing-house for the Blind, in Louisville, Ky., which institution has a large fund subscribed, to be expended in giving books to all the blind persons in the United States.

The press is put in motion by turning the fly-wheel by means of the crank, A, or by a belt on the pulley, B; the fly-wheel moving in one direction all the time. The sheet to be printed is placed on the form of type, C, which rests on the bed, D, and over which the india-rubber tympan, E, shuts down as said bed moved forward. The cam, F, as it revolves, with the gear wheel, M, comes in contact with a lever, which causes the bed to start very slowly from its state of rest, but increases its speed so that it soon acquires the same velocity as the surfaces of the cylinder (not seen in the cut) and the segment of the cylinder, G, between which it passes for the impression to be made on the paper. When the rear end, H, of said segment, has passed its lowest center, the bed is relieved and drawn back to the position shown in the engraving, by a weight attached to said bed by a strap; said weight running down in the inclined spout, I. The strap is wound on a snail-shaped pulley to give said weight its greatest power of leverage to start the bed back quickly, and its least power to resist the bed's motion forward. The cam, F, may be so adjusted on the gear wheel, M, that only a small portion of the segment, G, will be brought into use when a small form is to be printed, thereby allowing the press to run very rapidly and yet afford sufficient time to lay the sheets to be printed. The journals of the shaft of segment, G, run in eccentric boxes, to which the levers, K K, are attached, and by moving said levers, back or forth, said shaft and said segment may be raised or lowered to regulate the impression. L is the throw-off shipper, and is so related to the lever with which the cam, F, comes in contact, that the bed may, when desired, be prevented from starting forward, for an impression, while all other parts of the press are in operation.

On another page (149) will be found an article headed "What invention has done for the blind," which our readers will find interesting.

Further information can be had by addressing S. P. Ruggles, 152 Washington street, Boston, Mass.



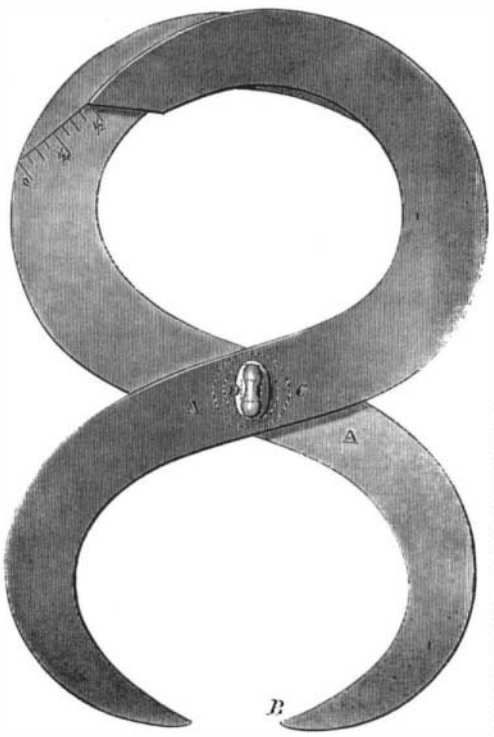
NEW PRESS FOR PRINTING FOR THE BLIND.

Big Pig.

We do not generally find room in the Scientific American to record all the achievements of our agricultural friends, in the way of huge vegetables, prize animals, &c.; but, for once, we are compelled to confess ourselves unable to do justice in type to the most enormous hog we ever set eyes upon. This beast looked (he is dead now) more like a polar bear than a pig, his live weight being 1,355 pounds, and his age four years; his back was waist high to an ordinary man, and his length nearly six feet. His ham would not go into a barrel, and must have been a heavier load than any ordinary person could stagger under. Two tusks curved gracefully outward from the under jaw of this hog, and would have been very long, no doubt, if they had not been broken off. The hide and hair of this ponderous animal alone remains for mankind to gaze upon, his flesh is scattered among the "gentiles." In the *American Agriculturist* Office his swineship's stuffed effigy may be seen, at morning and at evening, gazing at the California pear, a fit companion in size for him. This big pig was raised by Mr. Benham, of McLane County, N. Y., and is part Berkshire and part Byfield stock.

Morse's Self-Registering Calipers.

Perhaps the tool most universally employed by machinists is a pair of calipers; from taking the size of



a drill or a rod, up to turning a shaft, they are in constant requisition, and are quite indispensable. The instrument herewith illustrated is of the class known as registering calipers, and by a very simple arrangement of a scale on each side of one pair of the legs, A, the distances of the points, B, are accurately measured. This is a very convenient form of self-registering calipers, as the workman can see, by a glance at the scale, the size required, without being obliged to carry a rule in his pocket. The construction of the calipers will be readily understood by every mechanic at a glance, and it is unnecessary to dilate upon this point. The joint, C, is not riveted but has a thumb-screw, D, which screws into the washer on the opposite side, thus affording a ready means of keeping the joint in good order; there are no projecting points, or other details, about these calipers to render them liable to catch in or wear out the pocket, and we recommend the calipers to our mechanical readers who use such instruments. The invention was patented on Nov. 8, 1863, by Wm. A. Morse. For further information address him at Box 2,897, Boston, Mass. [See advertisement on another page.]

Profits of Steamboating.

When Cornelius Vanderbilt was a young man, his mother gave him $50 of her savings to buy a small sail-boat, and he engaged in the business of transporting market-gardening from Staten Island to New York city. When the wind was not favorable, he would work his way over the shoals by pushing the boat along by poles, putting his own shoulder to the pole, and was very sure to get his freight into market in season. This energy gave him always a command of full freights, and he accumulated money. After a while he began to build and run steamboats, and he is now reputed to be worth more than nineteen millions of dollars, after making the Government a present, as a free gift, of a steamship that cost $800,000!

India-Rubber Extension Case Before Congress.

We learn from Washington that parties are at work to obtain from Congress an extension of Goodyear's india-rubber patent right. This right has already had two extensions, and the company has amassed twenty-five millions of dollars. It is now proposed to give it a seven years' further lease of extortion upon the people and Government of the United States, and a chance to accumulate twenty-five millions more. This is one of the biggest patent-right operations of the times. The Government is obliged to pay enormously for everything manufactured out of this patented rubber fabric in the shape of soldiers' blankets, clothing, and the numberless articles of comfort and convenience required for the use of soldiers in the field, whereas, if their manufacture were left open to competition, the cost would be greatly less. Why do not the newspaper correspondents in Washington watch and expose these things? If the correspondents of the Associated Press were worth a button they would do so without a hint from any quarter.

[We copy the above paragraph from the *New York Herald*. Outside of those who are engaged in the manufacture and sale of india-rubber goods, there is scarcely a person in the country who does not pay more or less tribute to the gigantic india-rubber patent monopoly; consequently nearly the whole population is interested to prevent the extension of the patents. We think we are safe in saying that the india-rubber patents are by far the most valuable of any now existing. We shall refer to this subject again with a hope that we may be able to defeat the scheme.—Eds.