

Improved Metallic Cotton-bale Fastener.

Metal bands are fast superseding the use of ropes to fasten bales of goods, and especially for the purpose of securing raw cotton. It is well known that a bale of cotton as usually compressed is not readily combustible. It is only when the fastenings become loosened, allowing the cotton to spread and the air to permeate its mass, that free combustion is possible. If the fastenings are of rope—often tarred, or if not, of a loose texture—they soon burn away and allow the elasticity of the cotton to open its fibers to the flame. When the bale is opened the rope is frequently unfit for using again, and as junk, is worth only about 33 per cent of the value of the iron bands. But metallic bands, as used with this fastener, it is claimed, can be used over and over again.

The device consists of clasps, A, of metal—malleable iron being most suitable—in combination with bands, B, of hoop iron. The clasps may be of two forms as shown. Each has its peculiar advantages, although both are constructed on the same principle. In one form one end of the strap is passed through a curved slot, and in this the clasp can be removed by turning only one way. In the other, the perfect C-shaped, both jaws are alike and it can be turned either way, opening from either end of the strap.

The bale, being under pressure, one end of the band is passed around it and bent as shown at C, the other being bent at the proper point when the jaws are slipped through the loop. These loops may be riveted if desired, although the grasp of the fasteners is such that it is not considered necessary. The bearing of each jaw on the loop is perfectly square, as seen, preventing any accidental disengagement. When it is required to loosen the bands to open the bale, it can be done by means of the holes seen in the face of the couplers. By inserting a cotton hook in these the fastener may be easily slipped, when it and the band are ready to again do duty as fasteners.

The device is the subject of patents in this country and Great Britain, a United States patent having been obtained Oct. 20, 1866, and an English patent Oct. 29th, same year. The patentee is desirous of disposing of the entire right, Address Arthur Barbarin, Lock Box 691, P. O., New Orleans, La.

The Composition of Alloyed Metals.

- Below are a few of the alloys commonly used in the arts:—
- Chinese White Copper.*—Copper, 40·4; nickel, 31·6; zinc, 25·4; and iron, 2·6 parts.
- Manheim Gold.*—Copper, 3; zinc, 1 part; and a small quantity of tin.
- Bath Metal.*—Brass, 32; and zinc, 9 parts.
- Speculum Metal.*—Copper, 6; tin, 2; and arsenic, 1 part: or copper, 7; zinc, 3; and tin, 4 parts.
- Hard Solder.*—Copper, 2; zinc, 1 part.
- Blanched Copper.*—Copper, 8, and arsenic, 1/4 part.
- Britannia Metal.*—Brass, 4; tin, 4 parts; when fused, add bismuth, 4; and antimony, 4 parts. This composition is added at discretion to melted tin.
- Plumber's Solder.*—Lead, 2; tin, 1 part.
- Tinman's Solder.*—Lead, 1; tin, 1 part.
- Peewterer's Solder.*—Tin, 2; lead one part.
- Common Peewter.*—Tin, 4; lead, 1 part.
- Best Peewter.*—Tin, 100; antimony, 17 parts.
- A Metal that Expands in Cooling.*—Lead, 9; antimony, 2; bismuth, 1 part. This metal is very useful in filling small defects in iron castings, etc.
- Queen's Metal.*—Tin, 9; antimony, 1; bismuth, 1; lead, 1 part.
- Mock Platinum.*—Brass, 8; zinc, 5 parts.
- Ring Gold.*—Pure copper, 6 1/2 pwts.; fine silver, 3 3/4 pwts.; pure gold, 1 oz. and 5 pwts.
- Mock Gold.*—Fuse together copper, 16; platinum, 7; zinc 1 part.

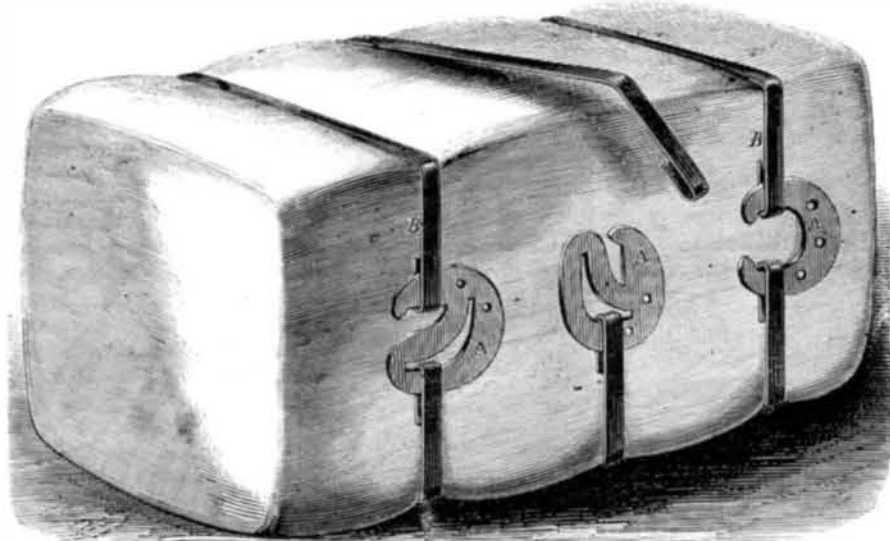
Scientific Snow Storm.

The *Springfield Republican* thus picks up the New York *Tribune* on its very scientific account of our recent snow storm:—"The snow storm in New York must have been astounding. Its effect upon the intellects of the metropolitans may be inferred from the philosophical deduction of the *Tribune*, that 'immense forces, imperfectly explained on the hypothesis of an ever-shifting vacuum, dwell in the atmosphere, and we are continually surprised by their action.' Up here in the country we know that snow is only frozen vapor, and that when the wind blows it drifts, and we are not in the least astonished thereat. The 'ever-shifting vacuum' we suspect to be exclusively metropolitan."

Government Tests for Iron.

During the last few weeks considerable quantities of the plate iron sent into Chatham Dockyard by the contractors supplying that establishment have been rejected by the officials, on the ground of its alleged inferior quality and its failing to reach the standard of excellence insisted upon. The contractors have appealed to the Admiralty on the subject,

and, after a long correspondence and numerous official reports, their lordships have upheld the decision of their officers. The standard of excellence insisted upon by the Admiralty is that the plate iron shall stand a strain of from 20 to 22 tons to the square inch with the grain, and 18 to 20 tons across the grain—a degree of excellence which, under the trials with the apparatus in use at Chatham, the iron rejected has failed to attain. The contractors, however, assert that the iron thus rejected is superior to the standard laid down, and refuse to submit to the dockyard tests, which, they contend, are not to be relied on, inasmuch as the testing apparatus is imperfect. In proof of this they have placed in the hands of the Admiralty reports from two of the most eminent iron testers, in which the samples of iron rejected by the dockyard officials

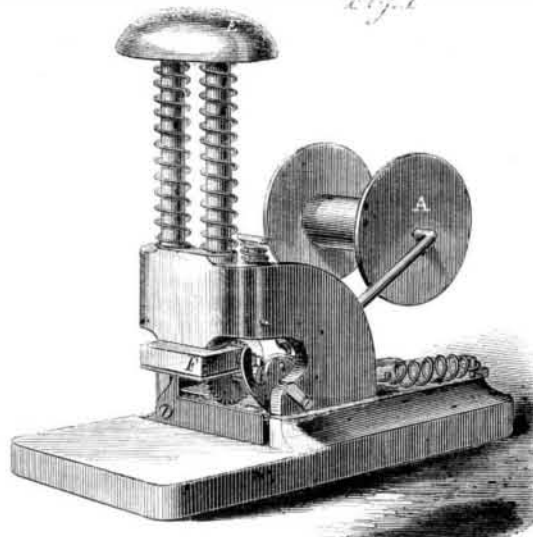


BARBARIN'S METALIC COTTON-BALE FASTENER.

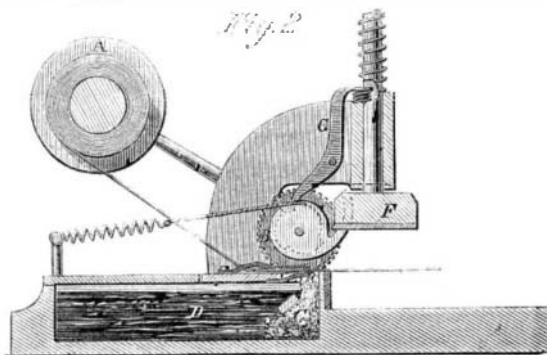
were, on being tested by them, found to be of even better quality than the standard required by the board. Private and perfectly independent tests have likewise been made, and again the results have been adverse to the ruling of the Admiralty officials. Under these circumstances the firm more particularly concerned has intimated the intention of commencing legal proceedings against the Admiralty for the heavy loss they have sustained.—*London Times.*

SILL'S STAMP AFFIXER.

The engraving represents, in perspective and in section, a handy office implement intended to obviate the slow and disagreeable process of affixing stamps. Where the amount of



correspondence is large, or in an office which issues many documents to which stamps are necessary to give them validity, the work of affixing them is not only laborious but very annoying. The friction of the stamps on the tongue and lips induces sores, and the operation, after long exercise, becomes painful.



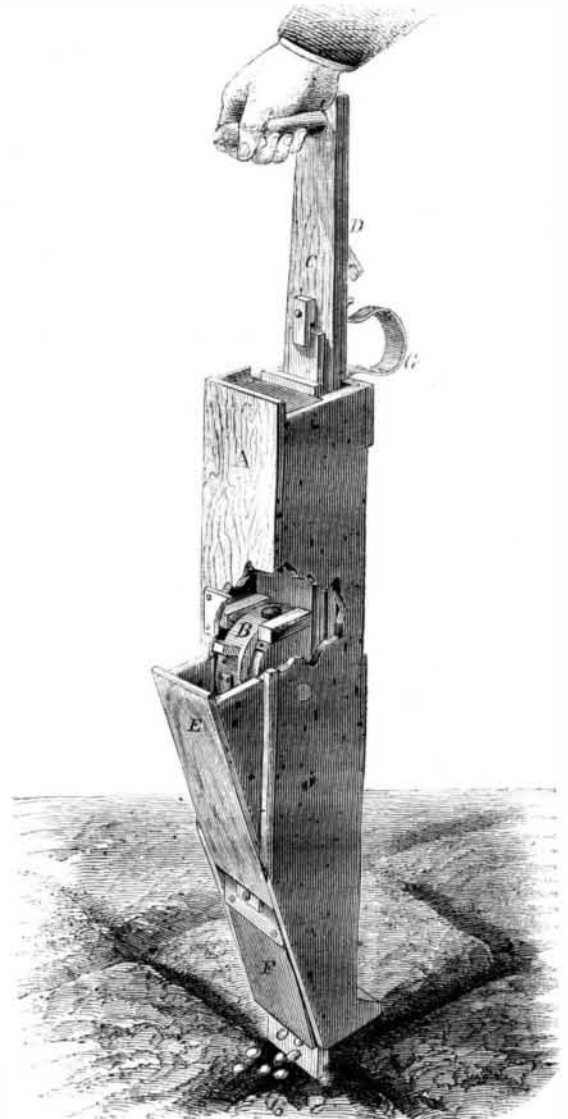
With this machine all this annoyance is obviated. The stamps in slips are wound on the reel, A, and led under the ratchet wheel, B, and over a sponge, C, in the water reservoir, D. By pressure upon the handle, E, the affixer, F, is thrown down and the pawl, G, is actuated against teeth on the wheel, B, rotating it and bringing forward the strip the length of a stamp. The affixer or platen, F, has a steel edge on its inner surface which acts against a fixed steel blade on the platform, the two forming shears for clipping off the stamp.

The pressure downward on the handle, E, not only moves the platen and cutter, but operates the pawl, G, thus rotating the wheel, B, and bringing forward the stamp to position. The upward movement of the plungers does not rotate the feed wheel as the pawl is prevented from acting by a minute coiled spring under its upper end. Its operation can be readily understood by an examination of the engraving.

Application for a patent is pending through the Scientific American Patent Agency, by C. B. Sill, Wilkins P. O., Pa. Address as above or at 308 North Sixteenth st., Philadelphia, Pa.

BATCHELLER'S HAND PLANTER.

Those of our readers who twenty years ago were engaged in the operations of the farm can well remember the wearisome labor of dropping the corn from a bag suspended to the waist, the care required to place every kernel in its proper position, the difficulty of this performance on a windy day, and



the annoyance of seeing the corn come up in straggling blades, some in and some between the hills. All this is obviated by simple implements like that shown in the engraving. We have illustrated the instrument as in actual use, with a portion cut away to show the main working parts. Externally it is a rectangular box the lower part inclined at one side at an angle. The upper portion, A, is a seed receptacle, the bottom of it being formed by the roller, B. This roller is insured a partial rotation as the slide, C, is raised or depressed by the hand, by means of straps secured at one end of the periphery of the roller and at the other to another parallel slide, D, which raises and falls with C. The roller has a depression or cell on its circumference which by the rotation of the roller is presented to the seed in the hopper when the slide, C, is depressed. By raising the slide the roller is turned in the opposite direction and the seed is thrown into the trough, E, and falls to the bottom, where it is held by the spring plate, F, until a downward movement of the plunger opens the plate and permits the seed to escape. A simple device of a friction brush bearing against the periphery of the roller, retains the seed in the sell until it arrives in the proper position to be dropped; the strap, G, with a snug on the roller, determines the length of the reciprocating movement of the plunger, C. No further description appears to be necessary to insure a perfect understanding of the device. It is the subject of two patents obtained through the Scientific American Patent Agency, and dated March 9th, 1858, and Oct. 13th 1863, by H. F. Batcheller, Sterling, Ill., whom address for rights, etc.

A New Anchor.

An anchor weighing twenty-six hundred weight called Martin's self-canting anchor, was lately tested by the Admiralty trial near Newcastle, England, which, after sustaining the full Admiralty proof of twenty-five and five-eighths tons was further tested by an additional strain of fifty per cent, and exhibited no signs of permanent deflection. The anchor is of peculiar shape and construction. Both arms, or flukes, take hold of the bottom and the steadying stock, set at a certain angle, and of a particular form, acts in conjunction with the arms and increases their hold to a great degree, especially on soft and yielding bottoms. As every usually projecting part is brought into action no portion really projects, so that fouling is almost, if not quite, impossible. Alongside the ship it cuts as flat as a board. It is made without welds, being of three separate pieces,

Carbonizing Wood and Blasting Rock with Fire.

We give herewith engravings illustrating processes for carbonizing wood to be exposed to moisture and for disintegrating rock without the use of gunpowder. It was originally proposed by M. L'Apparent but perfected by M. Hugon. It is in use by the French Telegraphic Company, giving excellent results. We condense a description from the London *Mechanics Magazine* translated from the *Annales du Conservatoire Imperial*. The invention consists in a movable and portable furnace and a reflector which is a curved plate, M, Fig. 1, from 12 to 16 inches diameter, mounted on a vertical shaft on the tail piece, C, Fig. 1, of the bench, G, Fig. 2. By means of this tail piece any timber placed upon it and exposed to the jet of the furnace has every part presented to the action of the flame by the reflective powers of the plate, M. The ends of the posts or piece of timber are carbonized by means of the lever, N, Fig. 1, which turns the whole movable support with the plate, M, around the central point, O. Fig. 2, is a vertical section of the whole apparatus and Fig. 3, an elevation. A, is the furnace for coal with a door at the top for introducing the fuel; B, is a movable column supporting the furnace and allowing it to be raised and lowered by the lever, P Q, with the counterpoise, R, or moved horizontally around its axis. D, Fig. 2, is a double bellows injecting air below the furnace through the reservoir, D' and a flexible tube, d; E is a water reservoir; F is a cock for introducing water into the reservoir, D', and f a small pipe for injecting water upon the blast in k. A sleeper or other piece of timber is represented at H, exposed to the flame. The railway company at Vierzon, carbonize 288 sleepers daily with four machines, at a cost of less than one centime per stick.

Fig. 4 shows the application of this device to rock cutting. For this purpose the apparatus is mounted on wheels running on temporary rails c. In the engraving A is the furnace; B is the door for charging it; H is the air blast pipe; F is a cock communicating with a reservoir to regulate the quantity to be injected into the air passage, and G, a valve to intercept the blast. The concern is so arranged that by a lever it can be inclined at any angle to direct the force of the flame upon any portion of the cutting. It takes only about 15 or 20 minutes after starting the fire before the flame blast is sufficiently strong to work effectively. The intense heat, thus generated by the acid of the air blast and the decomposition of the water, rapidly breaks and splinters the rock. The furnace is then removed and cold water thrown against the rock dislodging large quantities of the obdurate material.

It is said that in the hardest rock, as quartz, this apparatus can dislodge triple and quadruple the amount which gunpowder can. It is the application by improved devices of a principle known and used from the earliest times by the most uncivilized of people.

A New Movement for Locomotive Throttles.

It is stated that an engineer of Greenfield, Mass., has invented a new movement to take the place of the common lever on throttle valves for locomotives. In this improvement the throttle is moved by right and left screws attached to a wheel from twelve to eighteen inches in diameter. The throttle valve cannot be moved unless the wheel is moved, and, in attaching the wheel, friction enough is produced by putting a large thumb screw through the yoke or frame so that the wheel will remain stationary at the ordinary pressure of the steam. Two of these valve movements have been applied on locomotives on the Hartford and Springfield Railway, and the engineers find them a great improvement on the lever arrangement.

From this brief statement, which is all we have to guide us in forming an opinion, we should suppose that the action of the device would not be rapid enough for all contingencies. There are cases where the engineer needs to shut off his steam instantly, reverse his engines, and apply the steam again at once, as when an obstruction is on the road and a collision is to be avoided. Whirling a wheel, however rapidly, which actuates a screw, occupies time, and we think some quicker-acting device might be contrived which would be superior to the commonly used lever and at the same time obviate the supposed objections to this.

Wind Mills in New York City.

Minnit, the first Dutch governor, built, according to Moulton, "two or three wind mills at Manhattan, by which corn was ground and boards sawed." One of these, a flour mill, stood on a hill which occupied a part of the present Battery, so near the fort that the latter, which was rebuilt by Van Twiller, in 1633, intercepted the southeast wind, and rendered the mill nearly useless. But one of three wind mills previously erected was in operation in 1638, when Keift came to the government.

On one of their farms, of which they reserved several in different parts of the island, the West India Company erected a "Wint molen" (wind mill) for the use of the town. It stood near Broadway, between the present Liberty and Cortlandt streets. After having gone to decay, it was ordered, in

1662, that there be another erected on the same ground, "outside of the city landport (gate) on the company's farm." "Old Wind Mill Lane," running from Broadway to Greenwich street, and between Cortlandt and Liberty street, upon which it probably stood, was, in Lyne's survey of New York, in 1729, the most northern street west of Broadway, all beyond being the King's farm.

Mills of this class were also built by private enterprise. Jan Teunizen had a wind mill in 1665, which was standing sixty years after, near the corner of Chatham and Duane streets. This mill was then some distance beyond the limits of the city, on the public road.

The bolting of flour, in those days, was usually carried on as a separate business, and in establishments constructed for that purpose, sometimes at a distance from the grinding mill

little repeater is an elegant specimen of Yankee simplicity and mechanical skill. It is used with metallic cartridges, which are inserted at e.

The pistol can be loaded and fired with great rapidity, is simple to the last degree in construction, therefore durable and little liable to disorders. We have yet to see a five-shooter which combines so many practical excellences in so small a space, and is sold for so low a price as this. The "Ladies' Companion" is a decided success and we think will have an extensive introduction. Patented Aug. 28, 1866. Manufactured by the Continental Fire-Arms Company, Norwich, Conn., Charles A. Converse General Agent.

Chunks of Gold.

We copy from a California paper an Alladin-like statement, with comments, on the discovery of gold nuggets. It says that the miners in the Woodside Quartz Mine near Georgetown were "blocking out a nearly pure, solid mass of gold three feet in length. If such a statement had come from a stranger, we should have received it with incredulity, but we can vouch for the sincerity and intelligence of the author of the message. The finding of gold in such large masses in a lode, is without a parallel in the history of mining. The metal in veins of auriferous quartz is usually in small particles, and pieces are very seldom obtained weighing more than a few ounces. Probably the largest piece of gold heretofore taken from any lode in this State did not weigh more than a pound. But our telegram mentions one lump, obtained in the Woodside Mine, weighing 100 pounds, and it is implied that the piece three feet long will weigh very much more. The large nuggets, however, which have been found in the placers, must have come from quartz veins. Australia produced one nugget weighing about 225 pounds; and in 1854 a lump of 160 pounds was obtained in Calaveras county; and this State has produced a multitude of nuggets weighing ten or twenty pounds. All these must have come from quartz veins, and surprise has been expressed by several writers that the particles of the precious metal found in our lode mines are so small. If the accounts from the Woodside Mine should be verified, our largest mass of gold must hereafter be credited, not to placer deposits, but to quartz. It is worthy of note that the *Sonora Democrat* of the 3d inst., asserted that, in the previous week, some Italians had found a streak of gold four inches thick in a quartz mine in Deer Flat, Tuolumne county, and had to cut out the metal with cold chisels. This report was considered so improbable that it scarcely deserved repetition, but it may be true for all that. A number of the quartz mines of the State are yielding better now, at great depths, than ever before, and the confirmation of these statements from Georgetown and Deer Flat would assist to give a new impulse to the branch of mining which must be the chief reliance of our gold miners in the future."

Snow in Cities.

It is curious to note how the same circumstances are viewed in different localities. *The Engineer*, London, says:—"The large masses of snow at present lying in our streets impede the traffic to an enormous extent. Why do not the authorities adopt some measures to remove it? We have seen the scavengers, employed in clearing the street gutters, deliberately throw the snow they had removed into the middle of the street."

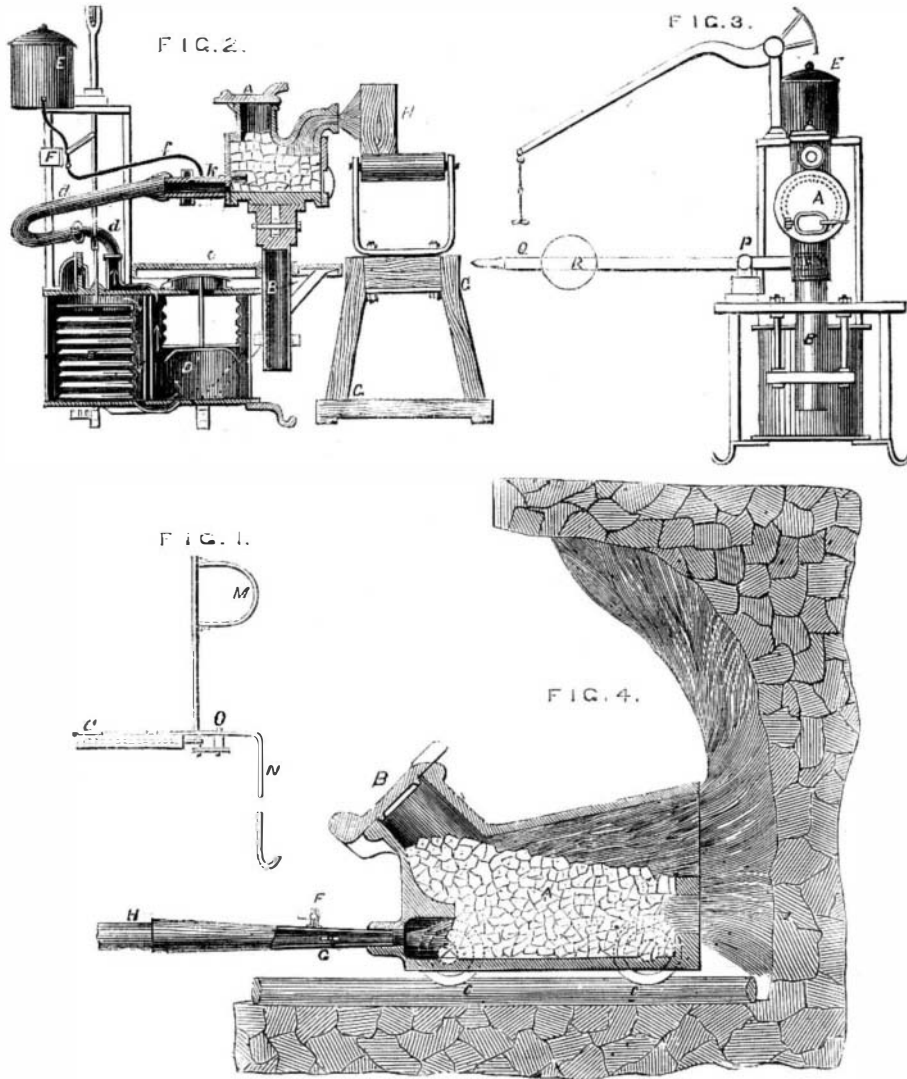
This complaint sounds queer to the dwellers hereabouts. In Boston, if not in this city, the "scavengers employed in clearing the street gutters," are employed for the very purpose of throwing the snow into the streets. That is just where we want it. Where else? Certainly if we clear our trottoirs and gutters for the passage of pedestrians and water, we can do no less than to give the results of our labors to our sleds and cutters. We want snow in our streets. It is easier for horses, more comfortable for men, and profitable to owners of sleigh teams to let.

Cost of a Newspaper.

Some idea of the vast expense attending the publication of a first-class daily paper may be inferred from the annual statement made by the *New York Tribune* Association.

The gross receipts from subscriptions, sales, and advertising, in 1866, amounted to \$909,417. The expenses were \$885,158, showing a net profit of but \$24,259 to be divided among the stockholders.

ITEMS:—The printing paper cost \$418,199. Pressmen and Compositors, \$133,000. Editorial expenses, \$81,775. Correspondence, \$49,300. News by Telegraph, \$58,776. Mailing, counting, and packing papers, \$35,000. Taxes on advertising, \$10,082, besides many other expenses of less magnitude, but which help to eat up the profits of the publishers. In 1865 the receipts were \$816,537, expenditures \$646,107, showing a profit of \$170,430. The combined circulation of the various editions of the *Tribune*, daily, weekly, and semi-weekly, probably exceeds that of any other general newspaper in America.



APPARATUS FOR CARBONIZING WOOD AND BLASTING ROCK.

and often as an appendage to the bakery. During the operation of an Act of the Assembly, made in 1684, giving to New York the exclusive right of bolting flour within the province, mills sprang rapidly into existence in the vicinity of the town, and the manufacture of flour became a principal source of emolument to the city. Two years after, under Governor Dungan, the city received a new charter, giving additional municipal privileges, and confirming the ancient Dutch franchises. A new seal, more rich and elaborate than the old one, was now granted the city, which, as indicative of the principal sources of its prosperity, retained the beaver to represent its ancient commercial interests, and added a wind mill and a flour barrel as emblems of its present industry.

A wind mill once stood on the hill in the rear of the old jail, or the present Hall of Records, and an eminence near the Chatham Theater was called "Wind Mill Hill." In 1760, John Burling advertised for sale a wind mill near Bowery Lane, having two pair of stones.

CONVERSE'S IMPROVEMENT IN POCKET FIRE-ARMS.

Our engraving illustrates an admirable little improvement in pocket repeaters, the invention of Mr. Charles A. Converse,



of Norwich, Ct., which he has very appropriately christened the "Ladies' Companion." It is not much larger than a good sized knife, our cut being almost the actual size of the article. The improvement consists in the use of a short pivot, b, upon which the rear of the barrel, a, turns, and in the use of a ring, c, which clasps the barrel, and while permitting it freely to revolve, secures it firmly to the stock of the pistol. To remove the barrel it is only necessary to loosen the screw, d. This