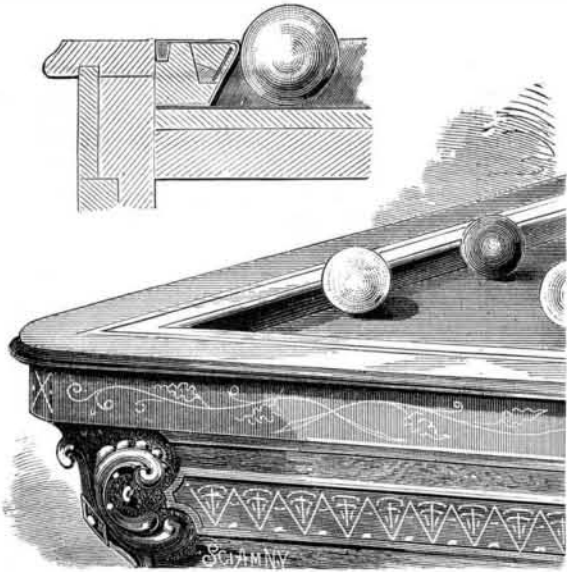


IMPROVED BILLIARD CUSHION.

This is a rubber cushion having embedded in it a ribbon of spring metal for imparting to the cushion an increased and uniform elasticity throughout. The inventor has ascertained that the best spring is made of roll-tempered brass cut straight from the sheets. The metallic ribbon is fitted in a socket of hard rubber or other appropriate material, and its upper edge extends nearly to the face of the cushion, as shown in the sectional view.

The inventor claims that by using roll-tempered brass he is able to produce a superior billiard cushion at a reduced expense, as compared with cushions having the spring made of tempered steel, as straight fire-tempered springs cannot



MAY'S BILLIARD CUSHION.

be produced, and they are not so well suited to the purpose as rolled brass springs.

This invention has been patented by Mr. Samuel May, of 81 Adelaide St. West, Toronto, Canada.

Improved Electric Light.

It is reported that M. Tommasi has made an important improvement in the Jablochhoff electric candle, by rendering the luminous point practically stationary. The candle, it is well known, burns down, and the luminous point is lowered steadily through the hour and a half or two hours during which the candle lasts. This is not a defect of much moment in the lamps on the Thames Embankment; but M. Tommasi has devised a selenium regulator which receives the light from the candle and acts as an automatic elevator of the luminous point. M. Tommasi has also been endeavoring to utilize the peculiar properties of selenium in photography and telegraphy.

A CONVENIENT LEVER HAND CART.

The engraving shows a very compact, convenient, and handy truck or hand cart, designed specially for the trans-



THOMPSON'S BEEHIVE TRUCK

fer of beehives without disturbance of their industrious inhabitants, but also equally well adapted to other uses in which the ordinary wheelbarrow, the platform truck, and the simple hand cart are employed. The great advantage of this truck is that it carries its load low under the axle, and that loading and carrying and dumping are performed with little effort, the load being on nearly the same level in all the operations.

The engraving shows the construction of the truck and the manner of its use. Under the axle are suspended two bars which project forward and form the carrying part. This frame is pivoted to arms depending from the handles,

and is suspended from the axle by a central upright that, by means of guides on each of its two spread ends, controls the vertical movement of the bars. This movement is controlled by the operator by means of a lever in front of him.

After the load is taken on, the lever may be fastened by a hook. The large wheels and the adjustable carrying bars give this truck an advantage over the ordinary small wheeled and rigid truck.

Charles R. Thompson, Fort Omaha, Douglas County, Nebraska, is the patentee of this invention, and communications should be addressed to him for any further information on the subject.

The First Electric Telegraph.

The idea of the practical application of the electric telegraph to the transmission of message was first suggested by an anonymous correspondent of the *Scots Magazine*, in a letter dated Renfrew, February 1, 1753, signed C. M., and entitled "AN Expeditious Method of Conveying Intelligence." After very considerable trouble, Sir David Brewster identified the writer as Charles Morrison, a native of Greenock, who was bred a surgeon, and experimented so largely in science that he was regarded in Renfrew as a wizard, and eventually found it convenient to leave that town and settle in Virginia, where he died. Mr. Morrison sent an account of his experiments to Sir Hans Sloane, the President of the Royal Society, in addition to publishing them anonymously as stated above. The letter set forth a scheme by which a number of wires, equal to the letters of the alphabet, should be extended horizontally, parallel to one another, and about one inch apart, between two places. At every twenty yards they were to be carried on glass supports, and at each end they were to project six inches beyond the last support, and have sufficient strength and elasticity to recover their situation after having been brought into contact with an electric gun barrel placed at right angles to their length about an inch below them. Close by the last supporting glass a ball was to be suspended from each wire, and at about a sixth or an eighth of an inch below the balls the letters of the alphabet were to be placed on bits of paper, or any substance light enough to rise to the electrified ball, and so continued that each might resume its proper place when dropped.

With an apparatus thus constructed the conversation with the distant end of the wires was carried on by depressing successively the ends of the wires corresponding to the letters of the words, until they made contact with the electric gun barrel, when immediately the same characters would rise to the electrified balls at the far station. Another method consisted in the substitution of bells in place of the letters; these were sounded by the electric spark breaking against them. According to another plan the wires could be kept constantly charged and the signal sent by discharging them. Mr. Morrison's experiments did not extend over circuits longer than forty yards, but he had every confidence that the range of action could be greatly lengthened if due care were given to the insulation of the wires.—*Engineering.*

IMPROVED FEEDER FOR COTTON GINS.

We give an engraving of an improved cotton gin feeder recently patented by Mr. Andrew L. Stietenroth, of Natchez, Miss. Feeders as usually applied to cotton gins are placed so far forward as to obstruct the mouth of the feed box, so that convenient access to the gin proper for cleaning the brush and the grate is prevented.

This feeder is calculated to improve the connection between the feed box and the feeder. The gin stand, feed box, and feeder are of ordinary construction and arrangement, except that the feeder is set back on the stand a suitable distance, instead of being placed with its discharge end over the mouth of the feed box as usual.

An endless apron of jointed slats is carried by rollers which are journaled in side bars, the shaft of the rear roller passing through hangers that depend from the feeder, so that the rear end of the apron is supported in position for receiving the cotton from the feeder. The shaft of roller also carries a pulley for receiving power and cause the movement of the apron, and the apron being thus hung on the axis of its driving roller, it can be raised and lowered without disconnecting the power. The forward end of the apron terminates above the mouth of the feed box, and is supported so that the height of the apron may be regulated at will. The front roller of the apron is made adjustable for tightening the apron, and the side bars project above the sides of the apron for retaining the cotton.

By this construction the cotton is fed to the gin by the apron, which can be readily raised to give access to the brush and grate, and for raising the breast board of the gin. The endless apron has its slats closely jointed together, and this prevents the bolls that escape between the carrier and picker roller of the feeder from dropping upon the gin, and prevents the sifting of sand and dust from the cotton upon the boxes and journals. By thus arranging for the convenient cleaning of the brush and grate the danger of fire from neglect of that work is much lessened.

RHODE ISLAND and Delaware together are smaller than the Yellowstone Park.

NOVEL CANDLESTICK, BROILER, ETC.

The engraving shows a novel combination of devices recently patented by Mr. C. B. Tuckfield, of Salt Lake City, Utah. A candlestick, a matchsafe, a toaster, and a broiler are combined in this article. The base is hollowed out to form a receptacle for matches. The vertical rod supports two cross arms, movable up and down on the rod, and held in position by springs and friction blocks. The lower cross arm carries upon one end the candle holder and upon the other end a pan for catching the juices of meats cooked on the broiler. The upper cross arm carries a pan upon one end and a revolving roasting or broiling fork on the other end. The upper pan has a central hole which is located



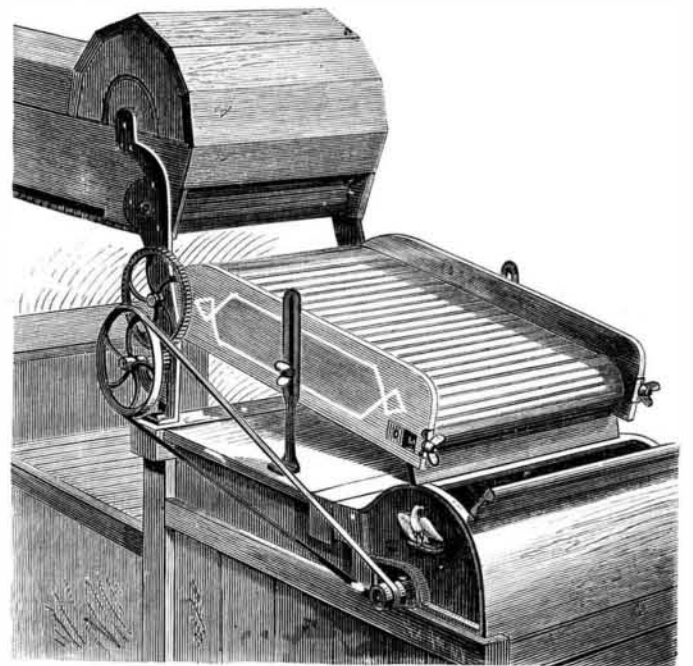
TUCKFIELD'S CANDLESTICK.

directly over the spring candle socket in the lower pan, and answers as a guide to the candle and as a retainer of any grease or paraffine that may drip. The candle socket has holes in the bottom so that the last end of the wick may draw up whatever remains of the material of the candle, and insure the burning of the whole. When it is desired to use the candle for heating purposes, a glass lamp chimney or a cylinder of wire gauze is placed between the upper and lower pan to protect the flame from draughts of air.

The broiling fork is made to turn over the pan below, and the pan is provided with a wire cloth tray to catch cinders and ashes, and prevent them from mingling with the juices of the meat which drop to the pan below. When the device is used as a broiler or toaster, the candle and chimney, also the matches, must be removed.

A Railway Tunnel under an Iron Mill.

The last stroke of work on the big tunnel, 1,650 feet long, under Jones & Laughlin's Iron Works, Pittsburg, has been completed. The tunnel was constructed by the Vanderbilt, Pittsburg, McKeesport, and Youghiogheny Railroad. Its cost will be \$500,000. Over six hundred men were employed on it for a year. The tunnel is one of the engineer-



STIETENROTH'S FEEDER FOR COTTON GINS.

ing feats of the day. The roof is only a few feet below the top of the mill floor, where massive rolls, hammers, and hundreds of men were working. The mill is the largest single mill in the United States, and none of the buildings was injured, and work was not delayed an hour. The ground through which the tunnel passes was mill cinder and slag. For over one hundred feet the slag was so hard it could not be blasted. Heavy weights were dropped on it, and the broken pieces buried in holes where they fell, as they could not be moved, the masses were so large. The road opened for a distance of sixty miles on Sunday for freight traffic.