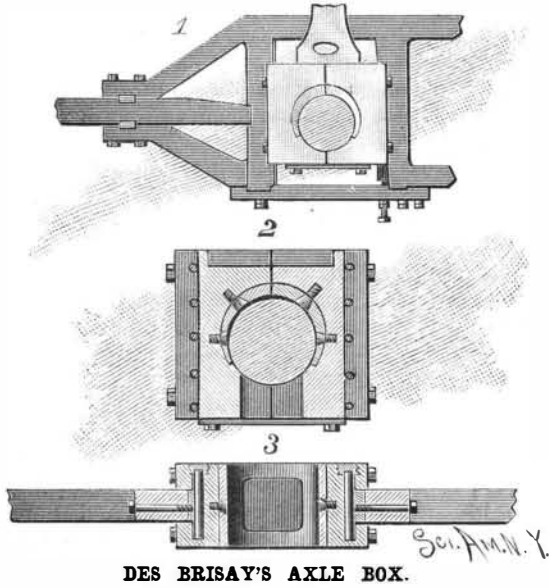


**AN IMPROVED AXLE BOX.**

An axle box specially designed for locomotives, and with which all wear can be easily taken up at any time, is illustrated herewith and has been patented by Mr. James Des Brisay, of Vancouver, British Columbia, Canada. The locomotive frame has the usual vertical arms in which the axle box is held to slide, the latter

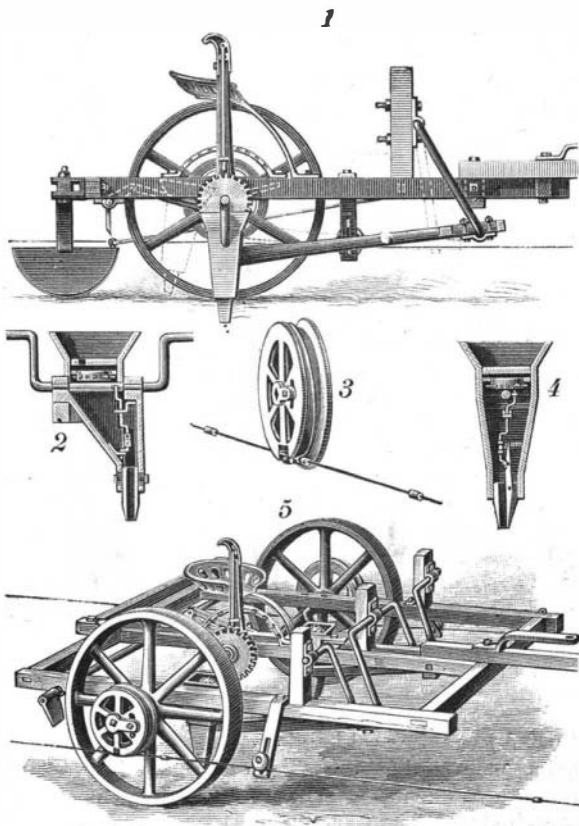


DES BRISAY'S AXLE BOX.

being preferably made in two parts, each carrying one-half of the brass bearing, secured by set screws or other suitable means, and on the inside of one arm is secured a steel plate, while on the inside of the other is held a steel wedge, adapted to be moved up and down by a bolt screwing in the bottom plate against the lower end of the wedge. The wedge and plate are held on the vertical arms by bolts passing through slots, as shown in the sectional plan view, Fig. 3. On each end of the two parts of the axle box are formed flanges fitting on the vertical arms, and in these flanges rollers are mounted to rotate loosely in contact with the steel plate and the wedge, as indicated in Figs. 2 and 3. In the lower part of the box is formed a recess, covered at the bottom by a plate, to be filled with waste or other suitable material which will absorb the oil necessary for lubricating the axle and box. When the axle is in place in the box, the friction of up and down movement caused by the weight of the locomotive is greatly reduced by the rollers traveling on the steel plate and wedge, and the wear is readily taken up by adjusting the wedge by means of the screw in the bottom plate bearing against its lower end.

**AN IMPROVED CHECK ROW PLANTER.**

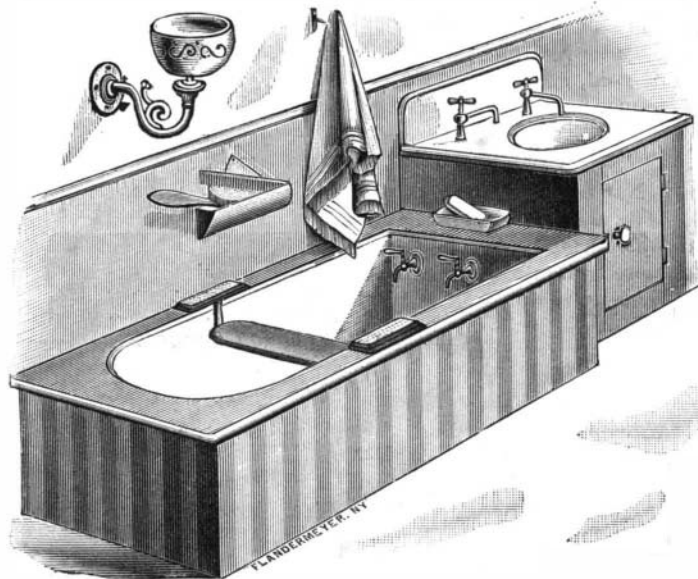
A machine for planting hills of corn or other seed in accurate check row, with economy of time and labor, is illustrated herewith, and has been patented by Mr. John Clark, of Sheffield, Iowa. The frame of the machine is supported by a cranked axle on loose wheels, the tongue being so attached as to allow of vertical adjustment to accommodate the team and keep the main frame level. There are two cranks in the axle, one on



CLARK'S CHECK ROW PLANTER.

each side of the central longitudinal bars of the frame, on which are hung prods having superposed seed-carrying boxes, as shown in the sectional views, Figs. 2 and 4. To each of the prods is fixed the back end of a sway bar, which at its forward end is journaled on the wrist of a crank formed on a transverse shaft, there being two of these cranks in the shaft, both extending in the same plane, and each giving the same throw to one of the sway bars, while the shaft is so journaled that it may be raised or lowered as desired. The prod-carrying cranked axle is rotated to vertically reciprocate the prods by means of either one of two wheels, one at each end of the axle, and outside of the main wheels. These outside wheels are normally locked to the axle, but may be turned either way to adjust the machine and wheels with relation to the buttons on the check row cord or wire stretched along the field, to enter the prods into the earth a little sooner or later, to maintain accurate check row of the planted seeds. One of these outside wheels is shown in Fig. 3, its periphery being beveled downward and inward, and there being journaled in an open transverse slot therein a clutch wheel adapted to engage the buttons on the check row cord, to operate the prods, the check row wire making one complete turn around the wheel, and reeling on to and off from the wheel at its lower edge. To guide the wire to the lateral center of the wheel, grooved guide wheels are adjustably held by arms extending downward and outward from the frame.

The rotation of the wheel by the buttons on the check row wire, as the machine is drawn over the field, rotates the main axle, raising and lowering the prods attached to its crank portions with each revolution, and, as the sway bars of the prods are connected to the cranks of the transverse shaft journaled forward in the frame, the prods are oscillated so that they will extend forward at their bottoms or jaws as they enter the



SLOAT'S SEAT FOR BATH TUBS.

ground, and extend backward as they leave the ground. The prod jaws are adjustable to secure shallower or deeper planting of the seed, which are caused to drop from the seed box into the body of the prod with each revolution, in regulated quantities for planting one hill at a time, the jaws of the prod opening to drop its charge when the prod stands vertically, having entered the ground to the maximum depth for which it had been set, the jaws closing immediately afterward until in position to drop the seed for another hill. During the travel of the machine, and while the prods are swinging between their extreme positions, the prod jaws accommodate themselves to the forward movement in a manner preventing their dragging in or through the earth, whether the planting be deep or shallow. While on the road, or when the machine is not planting, the prod-carrying shaft may be turned by hand and then locked to hold the prods up clear of the ground by means of a hand lever within convenient reach of the driver's seat. A marker is held by a shackle to the rear cross-bar of the frame, being stayed to the front end of the frame by a rod or chain in such way that it may be set to either side of the machine.

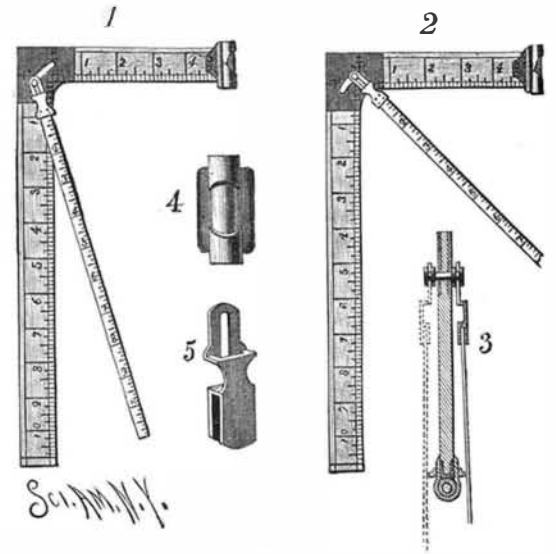
**A SEAT FOR USE IN BATH TUBS.**

An adjustable and sliding seat for bath tubs is illustrated herewith, and has been patented by Mr. George B. Sloat, of No. 1815 North Twenty-second Street, Philadelphia, Pa. The seat proper is preferably made of hardwood, and somewhat shorter than the ordinary width of a bath tub. It is provided at its opposite ends with bent metal arms forming hangers, by which the seat is supported in the bath tub, the lower ends of the hangers being bent to fit and slide within a longitudinal groove in the under side of the seat, where they are secured by thumb screws, being adjusted relatively to the ends of the seat as desired to adapt the seat to bath tubs of different widths.

FISH may be scaled easier by first dipping them into boiling water for a minute.

**AN IMPROVED TAILOR'S SQUARE.**

A square specially adapted for use by tailors and mantuamakers has been patented by Mr. Herman A. Sens, and is illustrated herewith. The inner edges of the plates between the arms of the square are preferably concave, that the square may fit snugly under the arm of a person being measured, and at the intersec-



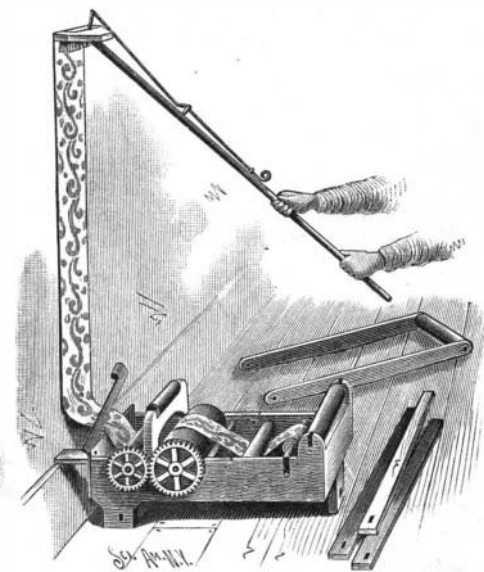
SENS' TAILOR'S SQUARE.

tion of the arms is a segmental slot in which travels a stud or pin having a head and collar upon each side of the center, as shown in the sectional view, Fig. 3. Upon the extremity of the short arm of the square is mounted a spirit level, shown in Fig. 4, enabling the operator to accurately establish the plumb line beneath the arm at the breast, the level being surrounded by an elastic cushion, so that its vial will not break when the square is thrown upon the table. The tape is provided at one end with a metallic ferrule of peculiar form, as shown in Fig. 5, and is attached to the square by the pin traveling in the segmental slot at the intersection of the corners, the pin also sliding in a longitudinal slot in the ferrule, whereby the tape may be carried in the direction of either arm of the square, or within or outside the arms. In other devices of this character the tape measures on the outside of the square, while here it measures on the inside, or directly on the body of the person being measured, thereby avoiding errors likely to occur in making allowance for the thickness of the square.

For further information relative to this invention address Mr. J. L. Hoffman, No. 13 East Fayette Street, Baltimore, Md.

**AN IMPROVED PAPER HANGING MACHINE.**

A machine for conveniently applying paste to the back of wall paper and cutting the paper from the roll in suitable lengths, preparatory to hanging it on the wall, is illustrated herewith, and has been patented by Mr. John F. McAfee, of Pleasant Hill, Mo. In bearings in one end of a suitably constructed frame is a roller carrying the paper to be hung, in front of which is a guide roller, under which the paper passes from the paper roller and thence over a paste roller, the latter having a fibrous covering, and dipping into a paste pan held under it, there being a scraper to remove superfluous paste from the paste roller. The paper next passes under a friction roller, under which is a drip pan, the



McAFEE'S PAPER HANGING MACHINE.

edge of the latter carrying a strip of cloth to even the paste on the paper, which then passes to the knife at the other end of the machine, which is provided with lugs to rest on the top of the mop board of the wall, the relative position of the lugs and the knife being such that the cut-off end of the paper will reach to the top

of the mop board. This machine is designed to be used in connection with an extensible paper-hanging clamp, also patented by the same inventor, and illustrated in our issue of September 8. The end of the paper, after it has been passed through the machine, is fastened in the clamp, when the operator, in raising the end of the paper up against the wall, by the same motion draws the required amount of paper through the machine, pressing its pasted side against the wall by means of the brush with which the clamp is provided, and cutting off the paper as it is attached. Extension legs for the machine and a roller-supporting frame, to assist in carrying the paper, are also provided for use in papering ceilings.

#### Moisture in Houses.

It is stated that the sudden change of the weather recently from cold to warm and damp, observes the *Philadelphia Times*, has caused thousands of dollars of damage to wall paper and other articles in houses. Of course it has, and it is so simply because many people do not study the plainest common sense principles in airing their houses.

One evening lately people went to bed with a hunt for extra blankets because of the sudden and severe chill in the atmosphere. When they rose in the morning, their bedrooms, parlors, dining rooms, etc., were yet chilly from the cold of the previous day, while the outside atmosphere had suddenly become not only warm, but hot and oppressive with dampness.

Inconsiderate people opened their windows and doors because the weather was warm, forgetting that the excessive moisture in the atmosphere would rush in with the warm air and swiftly deposit itself on the cold walls, furniture, etc., and penetrate wall papers, curtains, bedding, and everything within reach that presented a surface colder than the air that carried it into the house.

Of course the moisture loosened and discolored paper; made curtains as limp as a washrag; made beds damp and musty, and generally spoiled everything that water could spoil; but all could have been avoided by following the plain, common sense rule of not opening houses suddenly to suddenly changed atmosphere, carrying an excessive quantity of moisture.

A pitcher filled with cold water and placed in a room in summer will "sweat"—at least that is what it is commonly called. The pitcher does not sweat, because it is not porous and cannot sweat; but the cold water inside of it chills the outer surface, and, as soon as the outer surface of the pitcher becomes cooler than the atmosphere in the room, the moisture of the air will be precipitated upon the pitcher in drops.

This simple illustration should teach all housewives to avoid suddenly opening rooms in a house when the outside atmosphere is warmer than the temperature of the rooms and full of moisture. In all such cases the wall paper, furniture, etc., being cooler than the outside air, will speedily have the moisture of the atmosphere precipitated upon them, and it will require days to restore the house to the dry condition that is essential to health.

There are no arbitrary freaks in the laws which govern the atmosphere surrounding us, and there is nothing abstruse in mastering them. Warm, damp air will ever precipitate its moisture in houses or elsewhere whenever it comes in contact with anything chilled by a cooler atmosphere, and that is the whole story. The only thing to be added is that, when people have thus ignorantly or negligently allowed their houses to become damp, they should light fires and dry them as promptly as possible.

#### AN IMPROVED CUFF HOLDER.

A cheap and practical cuff holder, designed more particularly for ladies' use, while also suitable for use on



PERRY'S CUFF HOLDER.

gentlemen's cuffs, is illustrated herewith, and has been patented by Mr. Charles F. Perry, of Augusta, Me. It is made of a single strip of sheet metal, bent upon itself, as shown in the small view, the holder to be used with a loop made of wire or any suitable material, as shown, secured to the interior of the sleeve.

#### A DEVICE FOR USE IN DARNING STOCKINGS.

A suitably formed support for use in darning stockings, which may also be used as a receptacle for the thimble, needles, etc., is illustrated herewith, and has been patented by Mr. Charles Austin, of No. 30 East Fourteenth St., New York City. It consists of an egg-shaped shell divided into two interlocking sections, one of which is filled with emery, sawdust, or similar material, covered by a piece of suitable fabric secured to the inner walls of the section. This portion forms a needle cushion, from the center of which projects a post forming a thimble support. The other section of the shell



AUSTIN'S DARNING LAST.

is provided with a cushion-like drapery, whereby, when the two sections are united, the thimble, needles, etc., may be retained in position. The shell may be made of gold, silver, plated ware, rubber, ivory, celluloid, papier mache, or other suitable material.

#### Carriage Road to Pike's Peak.

Not the least interesting attraction at Cascade Cañon is its carriage road to the summit of Pike's Peak, which was formally opened on September 12. It is not a mere trail or a wood road, but it is as much of a carriage drive as can be made in climbing Rocky Mountains. It not only furnishes a safe and convenient route to the summit of Pike's Peak, but it affords a view, both in magnitude and magnificence, superior to all others obtained from other trails or roads. One who has been over both the old trail and the new road to the summit of Pike's Peak pronounces the sight to be had from Grand View to be even superior to the view from the summit of the Peak. From Cascade to the summit the drive is seventeen miles and the ride is one of five hours. From the hotel the drive is up Cascade Cañon, through wild and romantic scenery. Eight miles up it passes into Glen Cove, a vast amphitheater with a grassy pit through which course two pretty streams. Near here is what has been termed the Devil's Leap, a precipice 2,500 feet high. Near here, also, is a wonderfully balanced rock, 4 feet thick and 12 or 14 feet across, which may be swayed back and forth with one's hand. Twelve miles from Cascade is the Hayden Divide, and there on a mountain spur from Pike's Peak is the point—Grand View. The traveler is stopped in his journey here by the magnificent prospect before him, and he pauses to look at the great plains stretching far out to the east. He picks out Colorado Springs at his feet, Denver, seventy-five miles to the north, and Pueblo, fifty miles to the south. The course of the Arkansas River is traced. Looking southwest, the observer, if he is fortunate enough to be at Grand View when a train crosses Marshall Pass, may see quite a remarkable sight, for on the Pass, at an altitude of 10,852 feet, and ninety miles away, may be seen the smoke of the locomotive of a railroad train climbing the mountains.—*Plains to Peaks.*

#### Action of Bleaching Agents on Writing Ink.

BY R. IRVINE.

The author made a series of experiments to ascertain whether it is possible to tell the age of writing, and if writing has been executed at one and the same time, and if so at what time. He selected writing one day, six months, twelve months, two years, six years, fourteen, and twenty-two years old, and exposed these writings to the action of a very dilute solution of bleaching powder, specific gravity 1.001. In six minutes the newly written matter had disappeared; in from nine to twelve minutes the writing of six months ago had disappeared; in twenty minutes the writing of two years had partly disappeared; while in a like time the writing of six years ago was not greatly affected, of fourteen years ago very slightly, and of twenty-two years hardly at all. Hydrogen peroxide acts more slowly, but gives more definite results. When writing ink is thus bleached, most of the iron contained therein remains mordanted with the fibers of the paper. Consequently

writing so tampered with can be restored by the application of gallic or tannic acid. In determining the age of any particular writing, the following precautions should be observed:

1. The inks must be those known as ordinary writing inks, prepared from iron and chromium salts and galls.

2. Writing dried by means of blotting paper is more easily removed than writing which is allowed to dry on the surface of the paper.

3. The bleaching solution must be exceedingly dilute, otherwise the action is so rapid and powerful that both old and new writings are removed almost simultaneously.

4. The action must be carefully watched, so as not to be too long continued.

5. Very old writing, which has become brown by age, although it resists the action of weak solutions of bleaching powder and hydrogen peroxide, will show signs of giving way almost instantly when acted on by dilute nitric, hydrochloric, or oxalic acids.—*Jour. Chem. Soc.*

#### Rudolph Clausius.

Rudolph Julian Emmanuel Clausius, the noted German physicist, died at Bonn on the 24th of August. He was born in 1822 at Koeslin, in Pomerania. He began his studies at the gymnasium, and pursued them at the University of Berlin, and then at Halle, where he was made a doctor in 1848. In 1850 he was privat-docent at Berlin, where he at the same time taught in the Royal School of Artillery and Engineering up to 1855. Two years afterward he was appointed by the Swiss Federal Council to the chair of physics of the Polytechnic School of Zurich.

The work of Clausius was purely doctrinal. He made no experiments, and contented himself with applying the results obtained by others to his mathematical deductions. His work was connected with either general mechanics or thermo-dynamics and electricity. It was published for the most part in the *Annals of Poggendorf*.

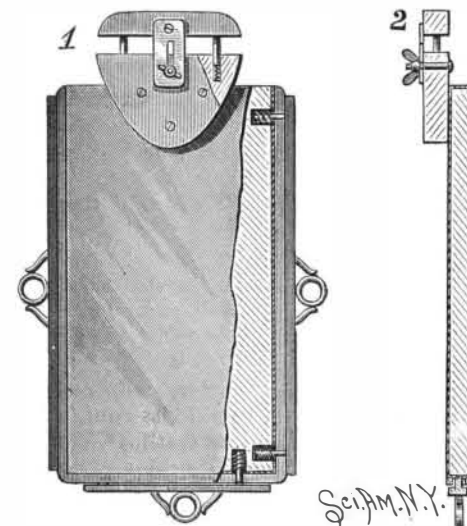
His first memoirs upon the mechanical theory of heat date back to 1850, when he established the proposition upon which he relied to demonstrate the second law of thermo-dynamics, viz., that heat cannot of itself pass from a warmer to a colder body.

The chief memoirs of Clausius were printed in two volumes, which have had a large sale and been reprinted several times.

Clausius was correspondent of the Academy of Sciences from 1859 to 1882, and obtained the Poncelet prize for his works in general. He was a member of the Royal Society of London and of a large number of other learned bodies, and received a multitude of decorations.

#### AN IMPROVED BOSOM BOARD.

A board to facilitate the ironing of shirt bosoms, and which is applicable for use in connection with shirts of different sizes, is illustrated herewith, and has been patented by Mr. Frank H. Argersinger, of Newkirk Mills, N. Y. Layers of fibrous material are stretched over one face of the board, being held thereto by cleats screwed to the two sides and one end. In the outer faces of the cleats are grooves, in the ends of which are recesses extending into the edges of the board, and adapted to receive pins rigidly connected to clamping strips having tongues to fit in the grooves, these clamping strips being normally held against the cleats by spiral springs, and having handles by which they can be slightly pulled out against the tension of the springs. To one end of the board is connected a heart-shaped block having an extensible strip which may be



ARGERSINGER'S BOSOM BOARD.

adjusted to fit the neckband of the shirt to be ironed, the loose material at the sides and ends of the bosom being drawn down between the cleats and the clamping strips and there clamped to place, so that the bosom may be ironed without becoming wrinkled or pulled out of shape.