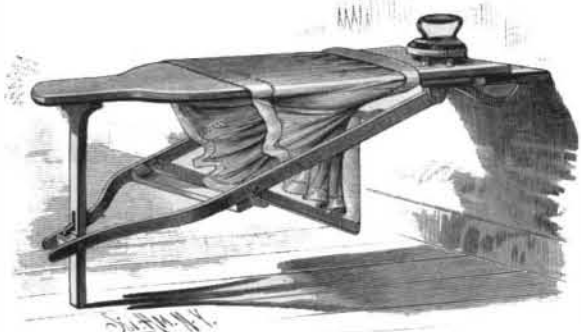


IRONING TABLE.

The ironing table here shown is strong and durable, can be folded very compactly, and is provided with an apron to prevent the articles being ironed from coming in contact with the floor. Pivoted near one end of the board are two bars whose opposite ends are bent toward each other and pivoted to the bottom of a leg having a cross piece at its top. The bars are united by cross pieces, and between them, at the curves, is pivoted a frame on which a piece of fabric is secured; the free end of this frame is supported by a strap. To adjust the table, the edge of the top of a kitchen table is passed between the end of the board and the ends of prongs secured to the



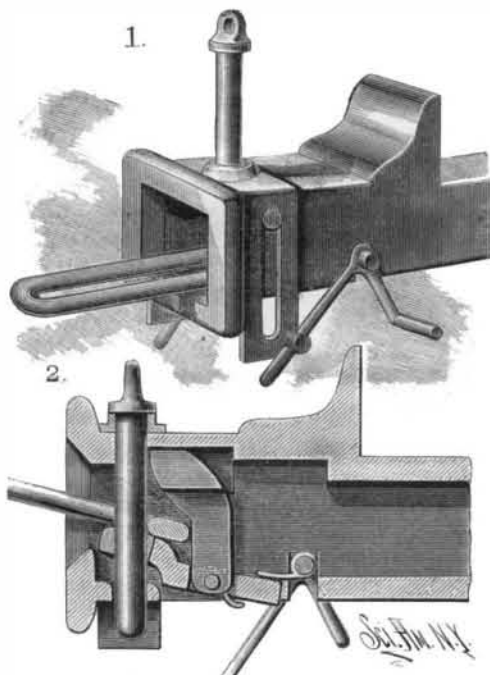
JOHNSON'S IRONING TABLE.

under side of the board. The bars are swung down, and the cross piece on the leg is swung up against the under side of the board. A catch on the leg engages with a cross piece on the lower ends of the bars, and holds the parts in place. The frame drops, and forms a pocket for receiving parts of the garment being ironed. To fold the board, the frame is swung between the bars, the leg is swung on the lower cross piece, when the bars are swung against the under side of the board; a latch then locks the parts in place.

This invention has been patented by Mr. T. N. Johnson, whose address is P. O. box 735, Rome, N. Y.

CAR COUPLING.

The drawhead of the car coupling here shown is in general of the usual construction, and is provided with holes for the coupling pin, the head of which rests upon a collar formed on the middle of a cross piece of a U-shaped frame placed on the drawhead near the front. The side pieces of this frame are slotted to receive guide pins; pins project from the lower ends of the sides of the frame. The link-lifting bar is pivoted in a slot in the bottom of the head, and is made with a fork at its front end. Pivoted in a slot in the lifting bar is a dog having at its upper end laterally projecting guide lugs, which project over curved shoulders on the inner sides of the drawhead near its top. A short arm projects from the lower end of the dog through the slot and under the bottom edge of the lifting bar. Journalled in a transverse recess in the bottom of the head is a shaft having a handle piece and an arm in-



WESTOVER'S CAR COUPLING.

clined downward toward the front, so as to strike the pins on the sliding frame. The coupling link is of the usual construction.

Before the cars are coupled, the pin is rested on top of the dog. The entering link strikes the dog and swings it from under the pin, which drops through the link and couples the cars. By turning the shaft, the entering end of the link can be raised as shown in Fig. 2. To uncouple the cars, the pin is drawn up, when the dog swings under it; or the shaft can be so turned that its arms will raise the frame, which will

carry the pin up with it. The short curved arm on the dog prevents it swinging too far front.

This invention has been patented by Messrs. G. D. and C. H. Westover, of Cadillac, Mich., who will furnish further particulars.

How to Secure Water Supply.

About a year ago I saw some articles in the SCIENTIFIC AMERICAN on storing wind power. One of them, I believe, was for pumping water in a reservoir for irrigation purposes.

I have an idea of using the same force in a still simpler way, provided locality suits the case, viz., to make that untiring fellow, the wind, bring sufficient snow drifts on the most elevated portion of the farm, where, on the lowest end of it, a reservoir is built, into which the water is collected by proper drainage, when the snow melts.

To bring the snow on the desired strip of land, it is simply necessary to build a high fence in a north and south direction, on the east side of which the snow will accumulate in sufficient quantity, almost every winter, to fill a goodsized reservoir, if the obstructive fence is at least from 25 to 50 rods in length; but better than a fence would be a belt of forest trees, of at least two rows of evergreens.

That such a strip of trees planted on the west side of a farm pays many times for its cost in the way of protection to farm crops, I have ample experience.

G. G.

AN IMPROMPTU HEN COOP.

The demand for coops for sitting hens or formothers with young broods of chickens is often unexpected, and frequently this demand exceeds the supply. One of the easiest ways to meet this want is to follow the suggestion of the accompanying cut, and make use of old flour barrels and apple barrels, which are now long since relieved of their winter contents. The barrel should be partly buried in the ground, the exca-



AN IMPROMPTU HEN COOP.

vated earth being thrown back into bottom of same, and a comfortable and sheltered retreat is thus provided. In case the coop is to be the home of a young family of chickens, it is only necessary to add to the barrel a few slats at the opening. If a few nests of this kind are scattered about the yard, they will be found very attractive to sitting hens, who may be supplied with eggs when it is found that they are earnest in their intentions. It is not proposed that this species of nest shall take the place of the old fashioned coop, but it will be found to be a desirable resource in case of emergency.

India Calling for Our Inventions.

A gentleman residing in Calcutta having seen our illustration and description of a separator for wheat in the SCIENTIFIC AMERICAN, writes to this office a long and very interesting letter, giving important statistics relative to the growth and exporting of wheat from India, and suggests that it is a good market for meritorious inventions in the agricultural line, and especially the class pertaining to the cultivation and cleaning of wheat.

He says that "the extension of our railway system has made it possible for wheat to be brought down to our ports in vast quantity, and producers would get much better prices for at least four million tons annually if they had good wheat cleaners."

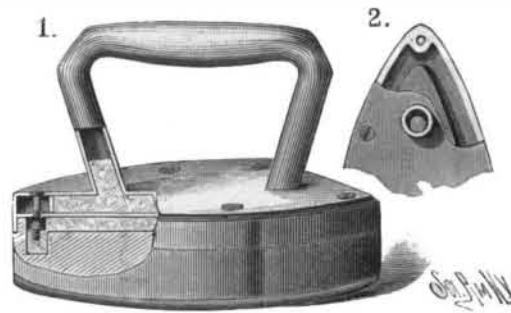
India, China, and Japan, he adds, are advancing rapidly in the path of material progress, and Indian trade has advanced with greater rapidity than that of even America. The writer laments that so few important improvements patented in the United States find their way to India, and promises in a future letter to send his further observations on other inventions most needed in his country.

Curious Request.

Editors are constantly in receipt of curious letters. Here is one of them, sent to the editor of *Harper's Magazine* the other day. It was from a lady who wrote that she was dying, and that her physicians told her she would be dead before the conclusion of Mr. Howells' story, "Indian Summer," then running in the *Monthly*. She was very much interested in it, and did not want to die until she knew how it was going to end, and she begged the editor to let her read the advances sheets, that she might die happy.

IMPROVED SAD IRON.

This sad iron—the invention of Mr. G. S. Castagneto—is so constructed that the heat cannot be reflected from the top or handle, and thus cannot pain the hand of the person using the iron. The space between the top of the cast bottom piece and a sheet metal plate held on the slightly raised edges is filled with asbestos. The edges of this plate are turned up to form flanges, on which rests a metal plate having its edges turned down to form flanges, which rest against the outsides of the others; asbestos is filled in between the plates. On the upper plate is a hollow sheet metal handle, the ends of which are filled with asbestos. In the top of the handle are holes, through which the hot air can escape. The several pieces are held together by



CASTAGNETO'S IMPROVED SAD IRON.

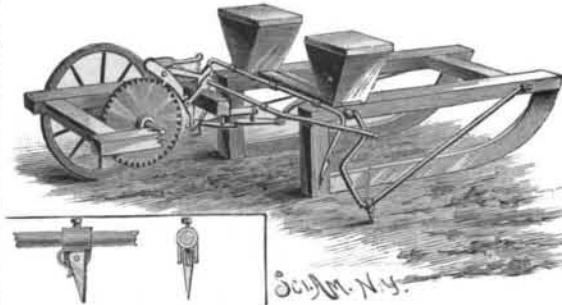
screws. The layers of asbestos prevent the top plate, being heated from the bottom piece, and thereby keep the heat from the hand.

Additional particulars concerning this invention can be had by addressing General Stephen Moffitt, of Plattsburg, N. Y.

HILL MARKING ATTACHMENT FOR CORN PLANTERS.

The engraving represents a hill marking attachment for corn planters, constructed in such a manner as to be operated to mark the ground by the movement of the seed-dropping slide, and raised from the ground automatically as the planter is drawn forward. The forward part of the planter frame and the rear part are hinged to each other. The forward part is provided with channel-opening runners, seed boxes, and a seed-dropping slide in the ordinary manner; the slide can be operated by hand, by a lever or by any of the well known means. The points to mark the ground in line with the cross rows are formed on bent rods journalled to the side bars of the forward frame, as shown in the cut. These points—shown in the small views—are so held as to yield, should they strike an obstruction. The points can be held out of contact with the ground by shoulders formed on the ends of a shaft placed in bearings attached to the ends of the side bars of the forward frame; springs hold this shaft so that they will engage with certainty with the marking bars.

To the middle of the shaft is rigidly secured an arm, which projects so as to be struck by a double inclined projection formed upon the lower side of the seed-dropping slide, thus rocking the shaft and withdrawing the marker bars each time the slide is moved to drop seed. To the marker bars are attached chains leading to the ends of arms projecting from a shaft rocking in bearings on the forward part of the rear frame. Fixed at the middle of this shaft is an arm, in whose forked end is pivoted a lever pawl having a tooth to engage with a ratchet wheel on the axle of the drive wheels.



SHUPE'S HILL MARKING ATTACHMENT FOR CORN PLANTERS.

This pawl is so connected by levers that, when the slide is operated to drop the seed and release the markers, it drops into gear with the ratchet wheel. As the wheel turns forward it carries the pawl and arm with it, and turns the shaft so that the chains will raise the markers until they are caught by the catches. The further movement of the wheel releases the pawl, which is raised by the weight of the arms of the shaft on the rear frame into position, ready to be again dropped when the slide is again moved to drop seed for another hill. A slight change is made when the slide is to be operated by a check wire.

This invention has been patented by Mr. Charles C. Shupe, of Mendon, Ill.

A LARGE gas vein was recently struck at Piqua, Ohio, at the depth of 400 feet.

Lubricating and Cylinder Oils.

An interesting and instructive address on lubricating and cylinder oils was recently delivered by Scott A. Smith before the Rhode Island Engineers' Association, Providence.

He made comparison of different oils, regarding the impurities they contained, and explained the methods employed in refining. He said that for purposes of lubrication, where metal is working upon metal, sperm oil is the best, lard oil second, neat's foot third, and tallow oil fourth. The best grade of animal oil is that which contains the least stearine and no free acid.

Regarding the friction of oils upon their own particles, lard oil is two and one-third times as long in running out of this tube at 70° as sperm; then we must consider that we have the weight of one ounce of oil compared with another ounce moving upon itself. The result, so far considered, is vastly in favor of sperm as a light running oil; but in actual use, where bearings have a stress of 300 pounds and upward to the square inch, then this great difference tends rapidly to disappear.

If you work bearings with 1 pound pressure to the square inch, use sperm; if at 500 to 600, or as a locomotive practice up to 1,200 and more, then you may find lard the best, particularly at about half the price per gallon of sperm. Petroleum, consisting of hydrogen and carbon, is eminently fitted for lubrication, as it contains none of the destroying element—oxygen.

The average quality of petroleum oils has been much improved within a few years, partly for the reason that consumers have exacted a better article, and partly because of the competition of dealers, who have marketed their oils on their merits. It is, I think, not too much to hope for that, within the next ten years, or less, the qualities of pure petroleum oils may be so improved that, with improvements in the shaft bearings of machinery, and some provisions against accidental overheating, all lubrication may be possible with petroleum alone. Use as little animal oil as possible, on account of high cost, waste by careless handling, its active acid qualities, and its tendency to gum.

The gumming of animal oils exists independently of the active principle, and is the result of oxidizing. Petroleum oils have no active principle to neutralize the acid of animal oils.

Petroleum cylinder oils, so made that they will do the best work in any and all engines, are the result of much scientific and practical study, and the processes of their manufacture are very complicated. They contain no acid, and cannot develop any by heat and work. Their flashing point is not less than 400°; gravity, 25° to 28° at 100° Fah.

In conclusion, petroleum cylinder oils have peculiar and distinctive qualities to recommend them for this special use—great heat-resisting power, freedom from all acid qualities, freedom from all tendency to gum,

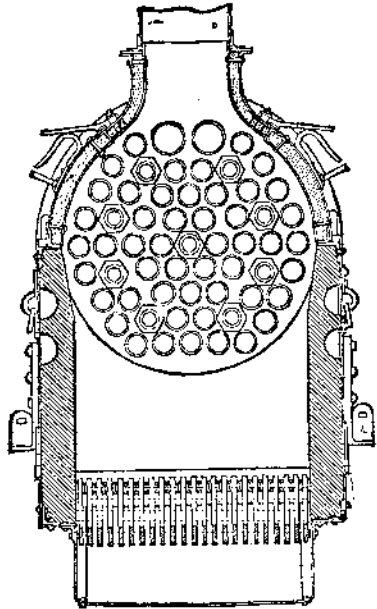
name, or any reference thereto, but simply describe the oil to the best of his ability.

Means can be furnished members by which they can get the cold test, gravity, and flash of the oil now in use.

The reasons why I would exclude the maker's name are these: The prime object should be to get information about oils, and not to advertise them.—*Providence Journal*.

A COMPACT BOAT BOILER.

Our illustrations represent a boat boiler designed by M. V. Cadiat, a French marine engineer. In this boiler the heating surface is derived principally from a group of brass tubes inclined at an angle of 45 deg., and



CADIAT'S IMPROVED STEAM BOILER.

through which the water circulates. These tubes stand immediately in front of the grate and are fixed in two tube plates. A certain number of the tubes are made to act as stays by being fitted with double nuts at the ends. Each of the tube plates has a thickened margin; the upper one is bolted to a spherical steam chamber, and the lower to a smaller chamber or dish, provided with mud hole doors. Two of the tubes which are at the side of the group further from the fire are of a large diameter, in order to provide for the downward current of water. A baffle plate in the dome, at about the water level, aids the circulation by deflecting the stream toward the larger tubes.

The spherical dome carries the safety valve, water gauge, and the like. With the exception of the water gauge all the fittings are grouped upon a special pipe connected to a steam separator inside the dome. This consists of a helical tube of three turns, upon the outer side of which there are a number of small holes, pro-

covered with polished brass. The arrangement of the doors for gaining access to the tubes, and the manner of carrying the chimney, are clearly shown in the engravings.

Engineering says: We are informed by the makers, MM. Edouard Mourraile & Co., Toulon, France, that a trial of one of these boilers has given the following results: The boiler in question had a heating surface of 63 square feet and a grate surface of 2.15 square feet. The pressure was 100 pounds per square inch, and the weight of the boiler and water one ton. It was fitted in a small boat having a single cylinder non-condensing engine, with the exhaust in the chimney. The coal burnt per hour, with easy firing, was 154 pounds, or 71 pounds per square foot of grate surface. This evaporated 921 pounds of water, or 6 pounds per pound of coal. The indicated horse power was 20.

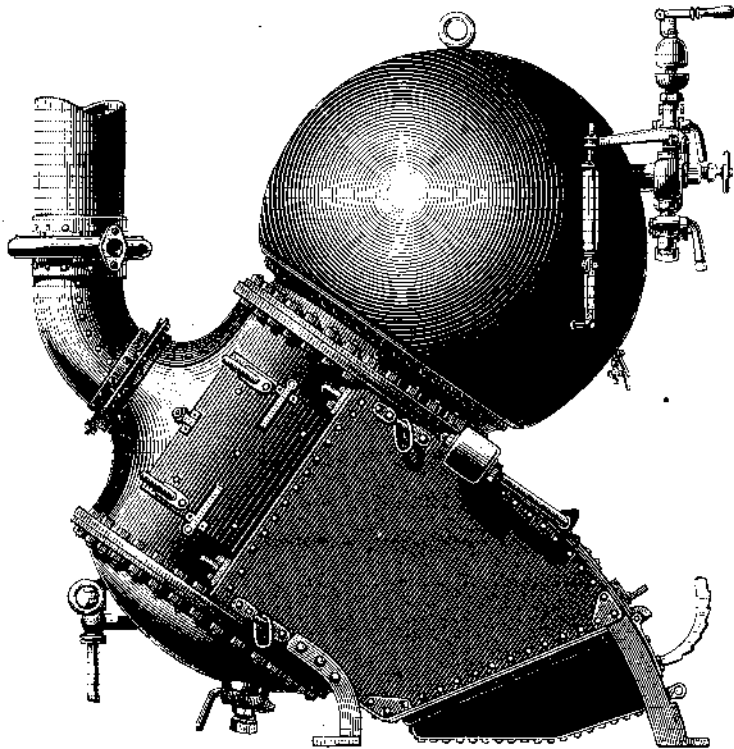
The merit of the boiler lies in its compactness and the ease with which the internal parts can be reached. The entire wear is thrown upon the tubes, which can be easily renewed.

The Utilization of Bagasse.

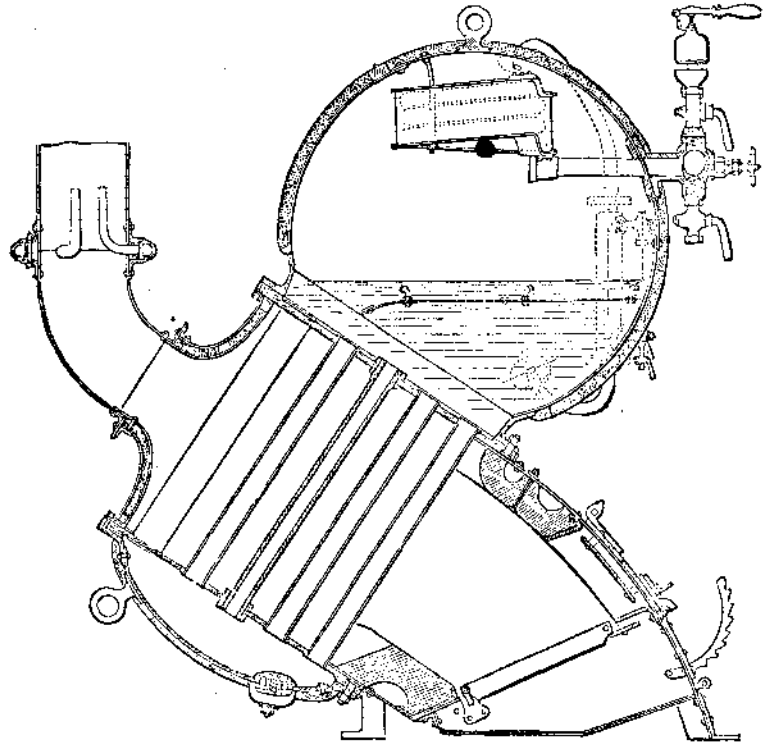
The utilization in sugar making countries of the residual canes—bagasse—for fuel and gas making is an important practical problem which has yet been only partially solved. The great drawback to the profitable combustion or carbonization of this highly carbonaceous material has been the large proportion of water which it contains, as ordinarily treated by mills, presses, etc. It is stated, however, in the *Revue Industrielle*, that M. Pellet has succeeded in devising, to the order of the Fives-Lille Company, a system of dealing with the material which produces, by direct compression, a combustible containing not more than 40 to 50 per cent of water. In this state the waste can be burnt directly in boiler furnaces or carbonized without previous drying. This result is obtained by a preliminary division of the pieces of cane in a special apparatus, whereby the after-compression of the material by presses of any convenient kind may be usefully secured. The compressed material is formed into bricks by the addition of powdered fuel, ashes, or lime. It is cited as a remarkable instance of the utilization of a waste product reacting upon the original value of the material, that this conversion of waste sugar-cane into a useful fuel will render possible a special treatment of the cane, which will result in simplifying processes, saving labor, and increasing the yield of the raw article.

Accidents from Machinery.

It has been settled by a decision of the Supreme Court of Pennsylvania that machinery, once adjusted to its place in a factory, is presumably properly constructed, and may be operated without danger to the operative charged with its care. In case of an action for damages from injuries, there must be direct and conclusive evidence to overcome this presumption. The meaning of this decision to employes in this State



CADIAT'S IMPROVED STEAM BOILER.



and their remarkable property of spreading on heated surfaces.

The speaker suggested that the Engineers' Association might gather in the experience of its individual members in past years with various kinds of oils under the conditions of actual use. I make bold to formulate this plan:

Prepare and have printed suitable directions, with questions to be answered; also, a request for a full account of their experience with oils; with, however, this requirement, that no one shall give the maker's

vided with inclined plates. As the steam and water rush through this pipe the particles of water are, by the centrifugal force, thrown through these holes into the casing, from whence they return to the boiler, while the steam is emitted dry at the bottom of the helix. The boiler is lagged with an envelope which surrounds the upper part of the group of tubes, and is fixed to the inner sides of the tube plates. The furnace is lined with firebrick. Neither the walls of the firebox nor the casing around the tubes adds to the heating surface of the boiler. The dome is covered with felt, and

is that any personal injuries they may sustain from exposed machinery will be at their own risk, so far as legal remedies are concerned. At first sight this may seem a hard thing, but reflection will lead inevitably to the conclusion that no other basis of equity could be found by the court. To make the owner of machinery liable for individual carelessness is to put a premium upon stupidity. The remedies for gross neglect of precautions to secure ordinary safety will never be denied, but the reckless trifler with whirling wheels must run his own risks.—*Phil. Record*.