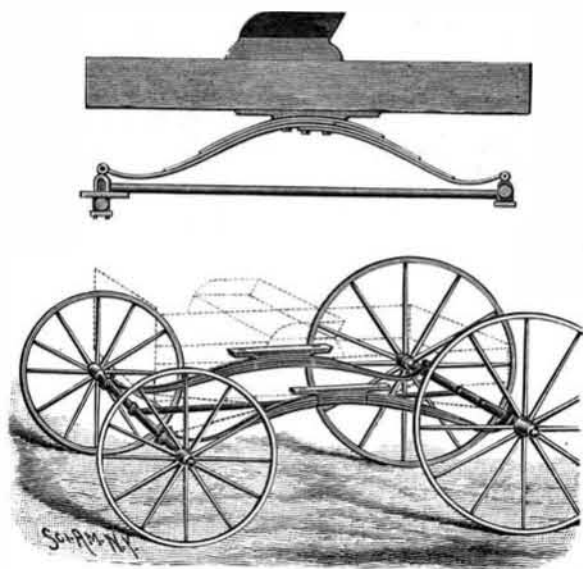


## AN IMPROVED VEHICLE SPRING.

The accompanying illustration represents a novel construction of side springs for wagons, which has been patented by Mr. James F. Thomas, of Alexandria,



THOMAS' VEHICLE SPRING.

Neb. The springs are bent laterally inward at the middle parts, and there secured to the vehicle body or a cross-piece on its bottom, the springs thence diverging in straight lines outward, and being clipped to the front and rear axles. Each of the springs is strengthened in its rear by adding a half leaf beneath the other leaves, this leaf being secured at its forward end by the usual center bolts, and extending backward to form part of or connect with the clip coupling on the rear axle. The clips or couplings with which the spring is connected at its outer ends with the front and rear axles are bent where the connection is made to present skew-joints or knuckles, adapted to conform to the laterally diverging portions of the spring. This spring is designed to combine all the advantages of both end and side springs, holding the body of the vehicle substantially level when the load may be very unequally placed.

## African Goats.

A pair recently brought from Africa has been added to the Central Park collection of animals.

"There is no particular value attached to the animals, except from their rarity," remarked Director Conklin. "They are the first pair of Morocco goats probably that ever found their way to this country. They are young, in their second year, quite gentle, as you see, and will eat out of your hand. But if startled, all their inherited wildness comes out. I never saw such animals. They seem to have muscles of rubber, from the way they jump. I have never had so much trouble with the most dangerous animals we have here."

"The jumping of the thoroughbred hunters in Madison Square Garden a few weeks ago doesn't begin to compare with that of these goats. I put them in a yard having a fence eight feet high, but they jumped it so easily that now I have a fence ten feet high."

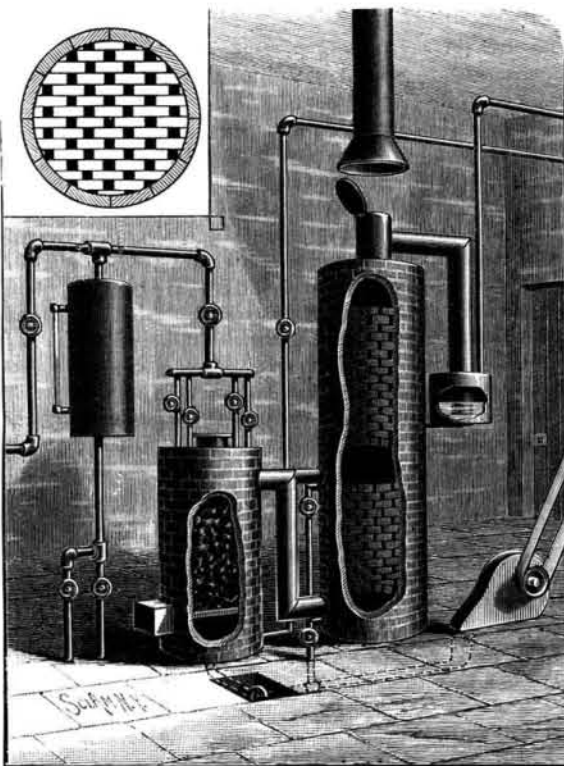
"The space within their inclosure is so limited that they cannot get a good start to go so high, or I would not trust them with anything less than a fifteen foot fence. Then, they are getting accustomed to these quarters and are not so easily alarmed as they were, but I think, if startled, they might still clear this fence. Their leap is peculiar. They crouch a little, give a short jump in the air, and as they strike the ground, bound upward again as if they were shot from a catapult. The muscles of their legs are extremely tough, but the legs are not adapted for great rapidity or endurance in running. They have been developed by generations of climbing on the Morocco hills. As these goats get older and their bodies in captivity become heavier, they will probably become less active. Possibly our native goat has lost his faculty of high jumping, if he ever had it, since he became partly civilized and accustomed to a diet of brown paper."

## AN IMPROVED GAS MANUFACTURING APPARATUS.

The illustration herewith represents an apparatus for the rapid and economical manufacture of water gas from oil, steam, and coal, which has been patented by Mr. John A. McCollum, of Riverside, Cal. In this apparatus, the furnace is charged, through a door at the top, with coal or coke, there being at the bottom a door leading to the grate bars, under which discharges a blast pipe connected with a blower. A series of pipes are arranged to spray oil into the top of the furnace, these pipes being connected with a tank at the left, while the tank itself is connected at the top with a pipe from the storehouse, and at the bottom with a pipe admitting water under pressure, and also providing for the escape of water, when the valves are properly turned for either purpose, the water pressure being made to force the oil into the furnace and spray it upon the fire. From the upper end of the furnace extends a

horizontal pipe, having two branch pipes leading into a double "fixing" chamber, one pipe leading to a bottom fire-place and the other to a fire-place about midway of the chamber, fire-bricks being arranged in checker-fashion, as shown in the small view, above each fire-place. In the upper end of the chamber is an outlet pipe leading to a smokestack, and having a valve on its outer end to cut off the smoke-pipe connection, while from the same pipe extends horizontally, and then downward, a discharge pipe leading into a "washer," which has the usual outlet pipe. A pipe conveying live steam from a boiler is connected with the apparatus, being passed vertically through the branch pipe between the furnace and "fixing" chamber, to discharge steam on the under side of the furnace grate bars.

In operation, the coal or coke in the furnace having been ignited, the combustion is forced by an air blast from the blower, a portion of this blast being also at first discharged into the two fire-places of the fixing chamber, while the valve leading to the smoke-pipe is open. The checker bricks having become about a straw color, the air blast is shut off, and the valve leading to the smokestack closed, while the steam is admitted, being superheated on passing through the branch pipe from the furnace before its discharge under the grate bars. At the same time the oil from the supply tank is caused to spray on the top of the fire, whereby light and heavy hydrocarbon gases are formed, which mix with the hydrogen gas, carbon monoxide and carbon dioxide produced by the steam passing through the fire, this mixture passing through

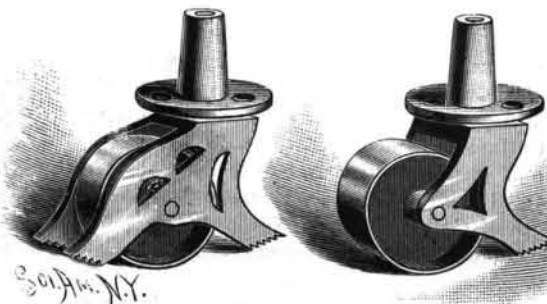


McCOLLUM'S GAS MANUFACTURING APPARATUS.

the bricks of the "fixing" chamber, and making an enriched or carburated water gas, which passes into the washer to be further treated in the usual manner.

## AN IMPROVED SAFETY CASTER.

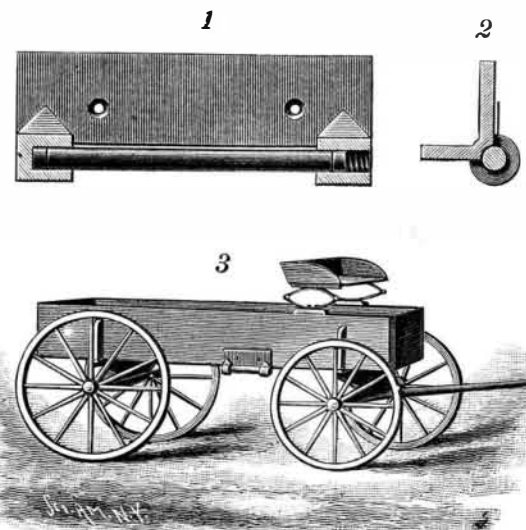
A simple frame or horn, making a socket for casters in chairs or other articles of furniture which will tend to prevent their tipping over, is illustrated herewith and has been patented by Mr. James J. Sullivan, of No. 59 Second Place, Brooklyn, N. Y. It often happens, as a caster is ordinarily attached to a chair, that a person sitting in the chair and slightly tipping forward will cause the chair to roll back from under him, and similar results will follow when the chair is tipped too far back, both being accidents which this invention is designed to prevent. The frame in which the wheel is journaled has at its base horizontally aligning integral arms or lugs, at each side of the wheel bearings, and projecting beyond the periphery of the wheel. These may be made to project from one or both sides of the bearings, as shown in the different views, and are adapted to immediately stop the further progress of the wheel after a chair has been slightly tipped, the feet of the projecting lugs then coming in contact with the floor or carpet.



SULLIVAN'S SAFETY CASTER.

## IMPROVED WEAR IRON FOR VEHICLES.

The accompanying illustrations represent a wear iron for taking up the wear of the wheels against the body of a vehicle, as in turning. It has been patented by Mr. Jacob M. R. Gedney, of Little Falls, N. J. The



GEDNEY'S WEAR IRON FOR VEHICLES.

device consists of a plain friction roller, preferably made of chilled steel, mounted to turn in bearings formed on an angle plate adapted to be attached to the body of the wagon, Figs. 1 and 2 showing a sectional side view and a cross section of the device. The roller is held detachably in place by a set screw working in one of the bearings against the corresponding end of the roller, a cylindrical rubber or other yielding block or spring being interposed at each end bearing of the roller to prevent all rattling. The angle plate attached to the body of the wagon has a concave bearing or seat on its apex or ridge, throughout its length, in line with the bearings of the roller, whereby the roller will be supported, and there will be no danger of its being bent or broken by a blow of the wheel in turning the vehicle.

## Contrast of Colors in Nature.

Nature is very sparing of showy contrasts of warm and cold colors. Red and blue are very rare, and of yellow and blue the cases are but few, and black and blue are found in lepidoptera more often than white and blue are seen in our flora or fauna. It is not uncommon for one of two strong colors to be overcast with a tinge of its fellow, or for both of them to be reconciled by a common touch of black or of some third color, or for one of them to be lightened by a dash of white, while the other is lowered by as much black, and so red, off-hued with black—russet and green up-brightened with white—often meet in the autumn in dead and dying patches of fading leaves. It may be shown, I believe, by the refractions of light in crystallized gypsum that brown is the complementary color to lavender-gray; and how true to herself is nature we may go forth and see, in the fall of year, in the dead and curled leaves of the mugwort, or meadow sweet, which are beautiful even in their death, with one side brown and the other the brown-matching gray; and, if brambles be cut in the leaf-green season, their two surfaces soon wither into the harmony of gray and brown.

And what use are we to make of these hues of nature? They are warrants for a gray mantle under locks of brown hair, or a brown bonnet or trimmings, or a gray room wall with brown furniture; and if, in a hot summer's day, I see the dark leaf-shades playing on the gray bark of a young beech, I can boldly lay darkish leaf shades on a wall of the beech bark's hue; or if, after the winter rains, I find a barkless pole in railings, tinted with the palest blue-gray, and on breaking off a splinter of it I find its inner wood of its true color of pale brown-yellow, why should I not take the inner tint for my wall and the outer one for the skirting? Or, if I pick up a piece of lichen of dull green on one side and dull gray on the other, why should I not bind my book in one color and lay on it a lettering piece of the other? Nature is the best school of art, and of schools of art among men those are the best that are nature's best interpreters.—W. Barnes, in *The Architect*, London.

## Oiling the Waves.

Almost every vessel that encounters heavy seas reports, on reaching harbor, that oil was used in calming the waves with great success, and had it not been for the oleaginous liquid, the ship and all on board would certainly have gone to the bottom. Notwithstanding these multifarious statements, the percentage of vessels lost appears to remain about the same. Even if the oil has no great effect on the angry waters, it certainly produces a powerful influence upon the imaginations of the mariners. They believe it adds to their safety, fears are allayed, good judgment is preserved, and all hands work intelligently.