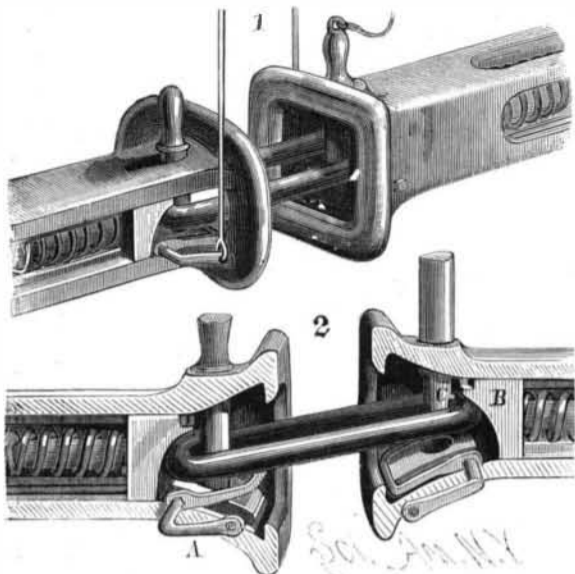


**A NEW SAFETY COUPLER.**

This coupler is both cheap and simple, and can be adapted to any car drawhead now in use that has a hollow back, and in "wrought drawheads," such as are used on the Lake Erie, Pennsylvania, and New Jersey Central railroads. Only three small pieces of casting and a spiral spring are required.

It can be put in an old drawhead without any



McKEEN'S NEW SAFETY COUPLER.

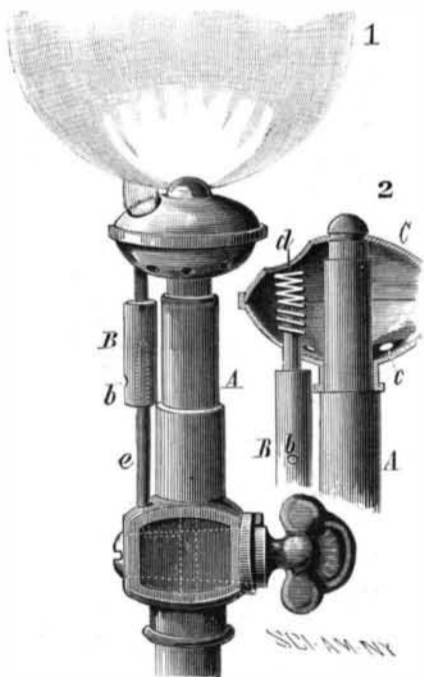
change except drilling two five-eighth inch holes, through which pass two short bolts, holding everything firmly to its place.

Although called a safety coupler, it is nearly, if not quite, automatic, especially in cast steel drawheads (which can be made quite light and not cost more than cast iron). It is merely a modification of an automatic coupler that was patented by the same inventor last spring, with one or two slight alterations to adapt it to the use of a pin instead of a hook, which was inserted in the drawhead.

One great advantage that this has is that it can be safely coupled to any of the old drawheads, whereas, in coupling a strictly automatic coupler to an old drawhead, there is more danger than in coupling two old ones together.

The link is under complete control from the top or side of the car; the pin is made so that it will stand on a follower plate which is pushed back by the link when the cars come together, thus allowing the pin to fall to its proper place.

When it is not desirable to couple, the pin can stand



BROWNE'S SAFETY GAS BURNER.

on top of the drawhead, yet it cannot be taken out or stolen.

This coupler also has a great advantage over one with a solid back, as when a pin happens to be down or the link strikes the opposite drawhead and does not enter the opening, it will not bend or break the link, the spring allowing it to be pushed back its full length into the drawhead.

Any information in regard to it, and of a trial that will soon be made, will be furnished by Mr. T. L. McKeen, the patentee, Easton, Pa., and models of either cast or wrought drawheads will be sent for examination to master car builders or superintendents of railroads.

FLOATING saw mills are common on the lower Mississippi. They pick up the drifting logs, turn them into lumber, and sell the product to the planters along the shore.

**An Icequake.**

Madison lately had a tremor which was due not to a social or other earthquake, nor yet to a dynamite explosion. A disturbance which shook the university buildings was caused by the expansion and contraction of ice in Lake Mendota. Under the influence of intense cold the ice had expanded until the shores could resist the pressure no longer, when the ice burst and doubled up about four hundred feet from the shore, and on a line parallel with it. The sudden release of the shores from pressure caused the tremor. This phenomenon of freezing upon bodies of water having low shores frequently results in the piling up of huge rocks on the edge and the overturning of trees. The shore line of lakes frequently consists of gravel mounds forced up during successive winters.—*Milwaukee Wisconsin.*

**AN IMPROVED FRICTION CLUTCH.**

The mechanism herewith illustrated is intended to supply an improved contrivance for expanding and contracting friction segments carried on the side of a wheel fitted loosely on the shaft, in combination with the inner periphery of a rim or flange of a pulley or hoisting drum keyed fast to the shaft, thus making a simple and efficient friction device for hoisting and other machinery. In our engraving Fig. 1 shows the loose wheel as arranged in connection with the driving pulley, while Fig. 2 is an inside and Fig. 3 a sectional view showing the detail of the friction rim and the devices for expanding and contracting it. The expanding segmental sections have at their ends outwardly projecting flanges or stops, whereby frictional face strips are held thereon, these flanges holding the wood faces against being forced around the rims more effectually than they can be held by rivets. The arms and sliding head which operate the segments of the friction rim, form toggle-jointed levers connecting the segments together, and the links and sliding collar connecting them with the shaft are also toggle-levers, making a double toggle-jointed mechanism adapted for thrusting out the friction brakes with great power. This invention has been patented by Mr. Stockton Bartron, of Portland, Pa., who may be communicated with for further particulars.

**SAFETY GAS BURNER.**

The object of an invention patented by Mr. George W. Browne, of 195 Penn Street, Brooklyn, N. Y., is to avoid asphyxiation in case of blowing out, instead of turning off, the gas. In applying the invention to an ordinary gas burner, a kind of Bunsen attachment, B, is employed, to the upper end of the upper tube of which a coil of soft and spongy platinum, *d*, is applied; the platinum is thus held near the tip of the main burner. The lower tube of the attachment is tapped into the shank of the burner, and the shell is perforated at *b* to admit the necessary supply of air. The platinum is protected from displacement and from currents of air which might deflect the jet of gas issuing from the tube, *d*, by the shell, C, provided with openings to admit air, and also with an opening above the platinum. When the gas cock is fitted in the shank of the main gas burner, as shown in Fig. 1, it is grooved to admit a supply of gas to the attachment when the gas is turned on; when the cock is fitted in the service pipe, an opening is formed to admit gas to the attachment.

When the gas is lighted, the jet from the attachment burns and heats the platinum. Should the gas be blown out, instead of turned off, the jet of gas, *d*, would act to continue the heat in the platinum, which would increase, and in a short time reignite the gas from the attachment; this would instantly ignite the gas from the main burner.

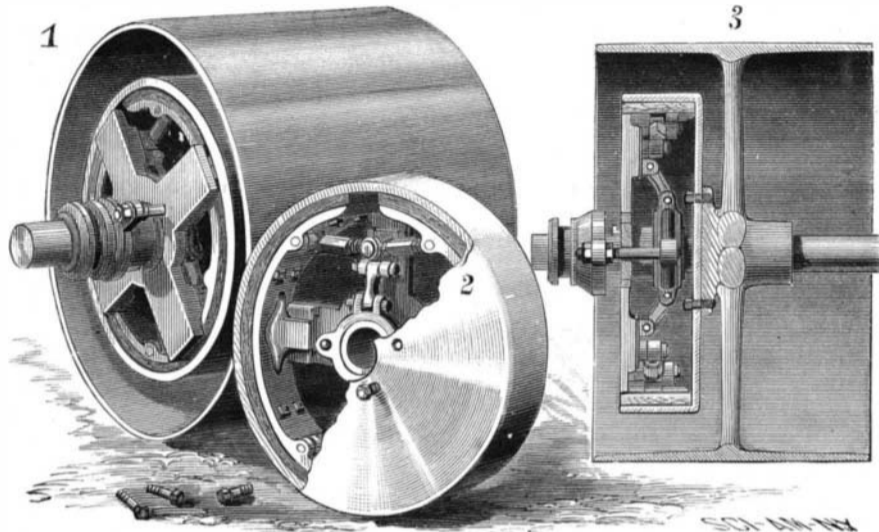
**Iron Straps in Carpentry.**

T. Young, in the *Architect*, states that when it is necessary to employ iron straps for strengthening a joint, considerable attention is necessary that they may be placed properly. The first thing to be determined is the direction of the strain. We must then resolve this strain into a strain parallel to each piece, and another perpendicular to it. Then the strap which is to be made fast to any of the pieces must be so fixed that it shall resist in the direction parallel to the piece. Frequently this cannot be done, but we must come as near to it as we can. In such cases we must suppose that the assemblage yields a little to the pressures which act on it. We must examine what change of shape a small yielding would produce. We must now see how this would affect the iron strap which we have

already supposed attached to the joint in some manner which we thought suitable. This settling will, perhaps, draw the pieces away from it, leaving it loose and un-serviceable. This frequently happens to the plates which are put to secure the obtuse angle of butting timbers, when these bolts are at some distance from the angles, especially when these plates are laid on the inside of the angles. Or it may cause it to compress the pieces harder than before, in which case it is answering our intention. But it may be producing cross strains which may break them, or it may be crippling them. The strap which we observe most generally ill placed is that which connects the foot of the rafter with the beam. It only binds down the rafter, but does not act against its horizontal thrust. It should be placed further back on the beam, with a bolt through it, which will allow it to turn round. It should embrace the rafter almost horizontally near the foot, and should be notched square with the back of the rafter.

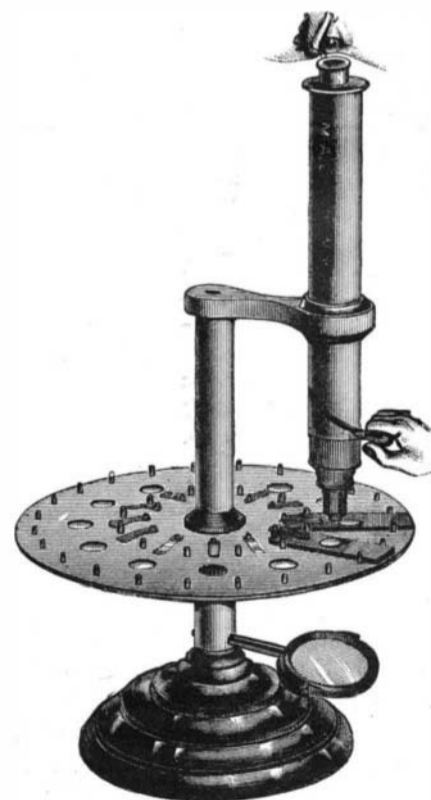
**THE ILLUSTRATOR'S MICROSCOPE.**

The accompanying illustration shows a most con-



BARTRON'S FRICTION CLUTCH.

venient way of mounting a microscope where it is desired to examine in succession a series of objects, either in the class-room, drawing-room, or laboratory. From a substantial metal base a central pillar rises, with an arm at the top carrying the microscope; the pillar also supports a revolving stage, 10 inches in diameter, a mirror beneath the stage illuminating transparent objects, and the total height, with a 10 inch microscope, being about 18 inches. The use of such a microscope stand allows of the arrangement of a series of slides, so that a number of objects can be examined without having to stop for adjustment and focusing for each. This instrument can be taken apart and packed in small space, and readily set up again; and it is made with "society screw" fittings, so that object glasses of



McALLISTER'S ILLUSTRATOR'S MICROSCOPE.

any standard maker can be attached to it. A patent has been applied for on this device by the inventor, Mr. T. H. McAllister, manufacturing optician, 49 Nassau Street, New York.

A LINIMENT of equal parts of oil of wintergreen and olive oil, or soap liniment, is said to afford almost instant relief from pain in acute rheumatism.