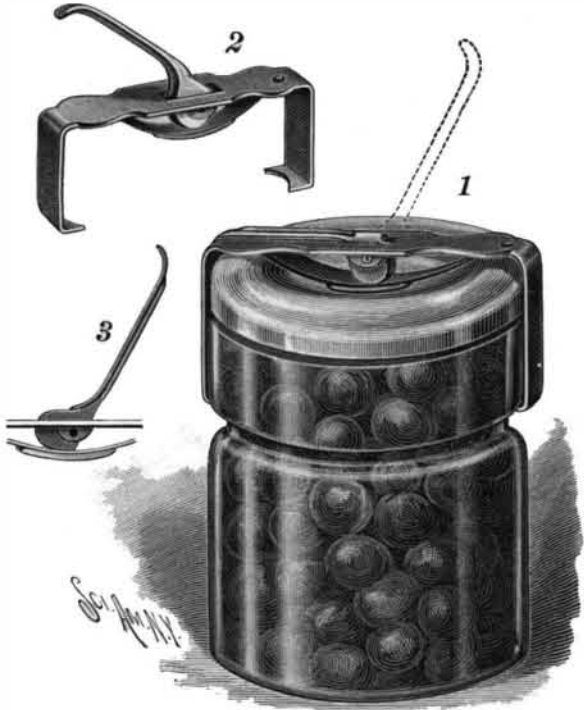


AN IMPROVED FRUIT JAR CLAMP.

The illustration represents a strong and inexpensive clamp, readily applicable to a fruit jar and cap, and adjustable to make a watertight seal, so that the jar may be held submerged without permitting water to run into it. The clamp has a yielding fastening device which permits any gas or steam that may be gen-

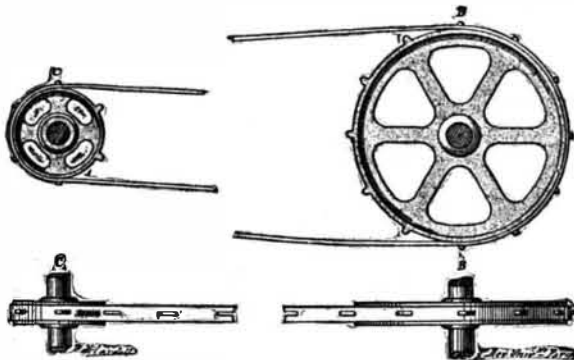


DILWORTH'S FRUIT JAR CLAMP.

erated to escape, but it may be quickly adjusted to bind the cap rigidly in place and make a hermetical seal. The improvement has been patented by Mr. Henry C. Dilworth, of No. 563 Greenwich Street, New York City. The main clamping piece has inturned flanges which fit beneath the rim ordinarily found on fruit jars, the cap resting on the usual gasket, and on the under side of the clamping piece is a flat curved spring, one end of which is fastened to the clamping piece, and there being centrally on the underside of the spring a cushion, to prevent the spring from contacting directly with the cap. In a central slot of the clamping piece is pivoted a locking lever carrying cams adapted to bear centrally upon the spring. In the illustration, Fig. 1 represents the clamp applied to a fruit jar, the cam pressing firmly upon the spring when the locking lever is turned down, and at the same time drawing upon the main clamping piece to firmly lock the cap and make a hermetical seal. In the different positions of the locking lever indicated by the dotted lines and in Figs. 2 and 3, the cams are released from engagement with the spring, and the clamp may be readily slipped on or off the top of the jar. With this adjustment the spring presses down on the cap with sufficient force to prevent water from running into the jar when it is submerged for cooking or other treatment, although the pressure is not so great but that gas or vapor generated may escape without breaking the jar. Patents have also been obtained for this invention in Canada and the principal European countries.

A RIBBON SUBSTITUTE FOR BICYCLE CHAINS.

The advent of the safety bicycle rendered some means of connecting mechanism a necessity; gear wheels, bevel wheels and the chain and sprocket wheel were all tried, and at the present time the latter system appears to be the most popular. The chain, however, has marked disadvantages, such as weight, difficulty of properly cleaning and lubricating, and, lastly, on account of the liability to fracture at one of the many joints. The wire cable, in spite of its light-



A RIBBON SUBSTITUTE FOR BICYCLE CHAINS.

ness and strength, has not been applied practically to bicycles on account of the imperfection in the means proposed to assure adherence on the pulleys. The metallic ribbon has several advantages to recommend it, as its lightness, flexibility, its strength, and its absence of joints. As with the wire cable, it was found that it was very difficult to secure good adhesion on

the pulleys unless the ribbon was very taut, which, of course, detracted from its strength. These difficulties were obviated by using a special ribbon made from a steel analogous to that used in piano wire, and at regular intervals orifices are cut. The sprocket wheel engages the ribbon with the aid of these holes. The relative size of the wheels is the same as usual. The number of teeth on the sprocket wheel is decreased. The ribbon can be cleaned in a moment. For our engraving and the above particulars we are indebted to the Revue Universelle.

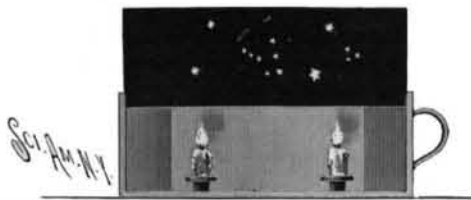
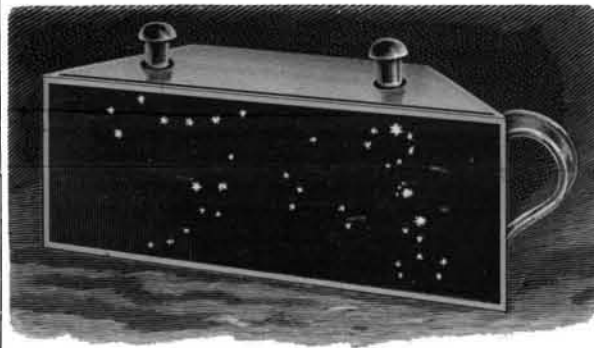
The Electric Railway in Chicago.

Electric lines now connecting with the business center of Chicago, either completed or under way, give a grand total of 500 miles. The benefit of such transportation facilities to a city can hardly be over-estimated, for the speed of travel will average nearly eight miles per hour or twice that of horse car lines. Since the opening of some of the new electric lines, a few weeks ago, a great improvement has been noticed and favorably commented upon by nearly every one. In the outer portions of the city, or six, seven and eight miles from the business center, the number of new buildings being erected would lead a person to believe that there was a boom in building. Residence as well as business property has increased noticeably in value.

The operation of the trolley lines is almost perfect, as the cars run smoothly and without delay, there being very few accidents to persons or machinery. About six months from now the city limits in any direction can be reached from the business center by street car lines in about one hour. The benefit to the city on account of the time thus saved will be inestimable. The lines already projected will bring every block within the city limits within easy walking distance from the car lines.—Stationary Engineer.

AN ASTRONOMICAL LANTERN.

With the simple form of lantern shown in the illustration, and easily made small maps or charts of the star groups, a great deal of instruction and entertain-



A LANTERN AID TO STAR OBSERVATION.

ment may be realized. The lantern body may be of tin or wood, with flues to afford the necessary ventilation, and in one side has slideways, to facilitate the placing of the diminutive star charts in position in the side of the lantern. The lantern may be readily carried in the hand, and an illuminated chart thus representing any particular group of stars in the heavens greatly facilitates the finding of the group, furnishing most interesting and very simple star lessons. For the charts or maps, a simple blue print is found quite sufficient, where regularly prepared slides are not obtainable, and such prints may be made from originals prepared by the observer, or copied from any of the numerous publications in which star maps are given.

Paste.

J. H. Baldock, in a discussion on the use of starch as a mountant, pointed out that the starch must be brought into a state of disintegration, not solution, the usual plan being to make it into a cream with cold water, and then, while constantly stirring, pour on boiling water until thickening takes place. More complete disintegration is obtained, however, by subsequently boiling for a few minutes, while a clearer jelly is obtained, and better keeping properties are secured. The paste should not be too thick, and if not made fresh at the time of using, should be boiled well, and have a little borie or salicylic acid or oil of cloves added as a preservative. Alum is objectionable in starch paste for photographic purposes. H. D. Gower said he prepared a paste that kept well by adding an ounce of starch to half a pint of water and heating, with constant stirring, until thickening occurred. Heat for a few minutes longer, remove

from the source of heat, add half an ounce of glycerin and, when nearly cold, half an ounce of methylated spirit. A few drops of oil of cloves or other essential oil may be added if desired, but this is not necessary.—Photography.

A DOUBLE ROTARY TOY WINDMILL.

The attractive toy for children represented in the illustration has been patented by Mr. Frederick Beaumont, Jr., of No. 1307 Franklin Street, Kansas City, Mo. It has two wheels, one inside the other, which

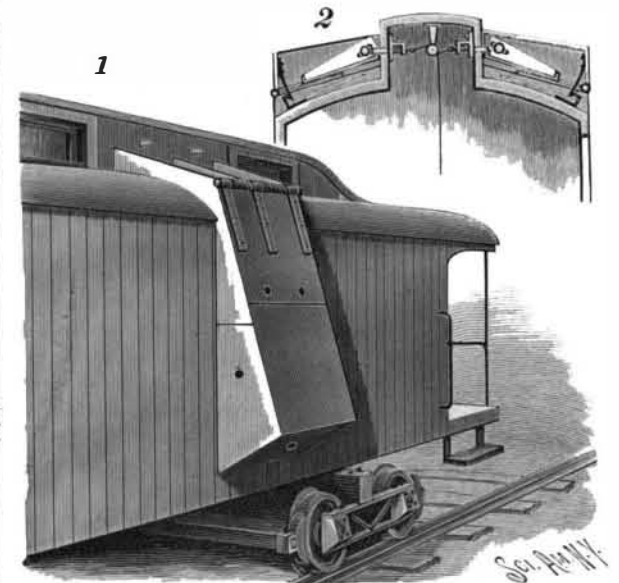


BEAUMONT'S TOY WINDMILL.

revolve in opposite directions at the same time. The small figure is a side view of the device. The wheels and vane may be of wood, tin, paper, celluloid, etc., and in bright colors, and the vane presents obvious advantages for use for advertising purposes.

A BULLETPROOF DOOR AND WINDOW SHIELD FOR MAIL AND EXPRESS CARS.

This improvement, for preventing the felonious entrance of train robbers to mail and express cars, has been patented by Mr. Charles G. Ingalls, of Waucesau, Mich. It consists of a two-part shield of plate metal, shown applied and in lowered position over a car door in Fig. 1, while Fig. 2 is a sectional view representing the shields for opposite doors folded up on the roof of the car. The upper section is strongly hinged to the side of the car body, the hinges having their joints connected by a single pintle rod around which is a coiled spring, to aid the quick descent of the shield when required. The side edges of both sections are flanged and tapered, a flange on the lower edge of the lower section joining the side flanges, and the lower section having an overlapping contact with the adjacent portions of the upper section, there being duplicate spring-jointed connections between the lapped portions of the sections. There are pivotal connections between the lapped portions of the shield sections, which are retained in close contact when the shield is lowered by spring latch hooks. The shields are held in their folded position on the car roof, with the lower section imposed on the upper section, by detent hooks and a locking mechanism arranged to permit the simultaneous release of both sections upon the pulling of a cord or band which hangs pendent in the car, the shields being then instantly thrown into a depending



INGALLS' CAR PROTECTOR.

and locked position, as shown in Fig. 1. In each of the shields are perforations through which occupants of the car may shoot at would-be train robbers.

EXPERIMENTS are being made in the German army with the use of an aluminum pontoon. It can easily be carried by four men.