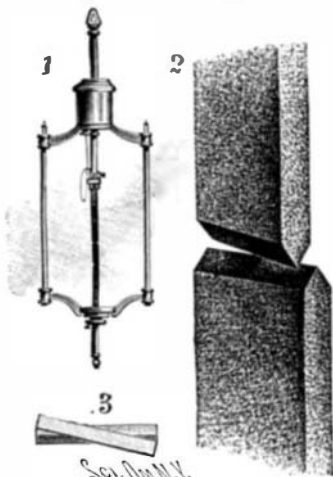


**PROF. THURSTON'S ARC LAMP IMPROVEMENT.**

Some trouble having been caused by the irregular working of the arc lamps on the campus at Cornell University, from the carbons occasionally shaking past each other and jamming together in windy weather, Prof. Thurston has made an improvement obviating the difficulty, for which a patent has recently been issued. The invention consists in arranging the carbons in planes intersecting at a small angle, as shown in Figs. 2 and 3. In practice it is designed that the angle shall be just sufficient to prevent the carbons from passing each other, and not so large as to make any material difference in the length of the arc formed between the center and the ends of the carbons. It is said that experience with this improvement has shown it to be very satisfactory and useful.



**AN IMPROVED ARC LAMP.**

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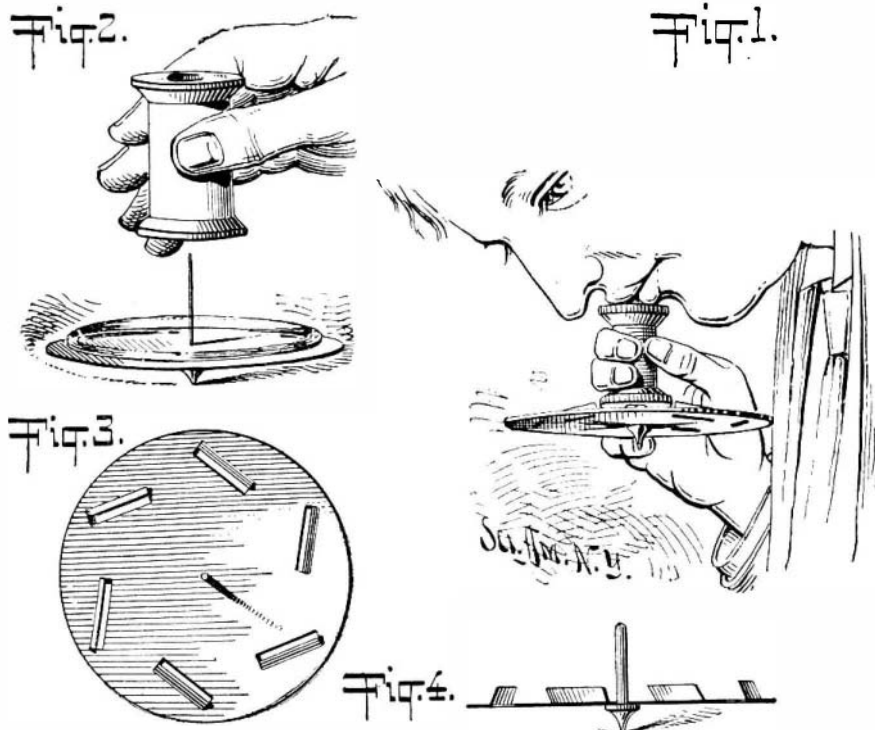
**A NOVEL TOP.**

Although the top has been modified in many different ways as to form, material and methods of spinning, the one shown in the engraving appears to have novel features which distinguish it from any of its predecessors.

It consists of a cardboard disk, having a series of oblique slots symmetrically arranged; the cardboard being cut entirely through on one of the longer and two of the shorter sides of the parallelogram, the cardboard thus detached being turned up at right angles to the plane of the card, to form oblique wings or vanes. In the center of the disk a large common pin is secured by means of sealing wax, the head of the pin being allowed to project about a quarter of an inch to form the pivot of the top.

A common spool is used as a mouthpiece for setting the top whirling. The spool is held to the mouth, the pointed end of the pin is inserted loosely in the bore of the spool and the disk is held up by very light pressure of the finger on the pivot. As soon as the disk is blown upon, the finger may be removed from the pivot, when the disk will be revolved rapidly by the impingement of the blast of air on the vanes, at the same time the lateral streams of air issuing between the spool and the disk create a partial vacuum between the disk and spool, and atmospheric pressure exerted on the under side of the disk sustains it, so that the top really revolves in air and with very little friction.

As soon as the blowing ceases the top drops, but it continues to revolve on its pivot. It is perhaps needless to say that, to secure good results, the surface on which the top spins after it drops should be a piece of



**AN AIR-PROPELLED TOP.**

glass, a glazed plate or some other hard, smooth, surface suited to this purpose.

Fig. 1 shows the method of spinning, Fig. 2 the top after it is dropped, Fig. 3 is a plan view and Fig. 4 is a diametrical section of a metal top having a wooden spindle of the form shown.

G. M. H.

**Photography and Astronomy.**

There are good reasons for expecting hot summers this year and the next two years, and this presents pleasing expectations to photographers, especially as we have had no summers worth mentioning for a few years past. Every eleven years there is a maximum of sun spots, indicating great disturbances in the solar orb, and in looking back over old meteorological records, it has been noticed that such periods are almost invariably accompanied by hot summers. Although this point does not rank as an established fact, accurate records not extending over a sufficient time, it is one considered to deserve attention by those competent to judge. These remarks are our own; nothing was said recently, at Greenwich, on this somewhat speculative matter, when the annual visitation of the Royal Observatory took place, and some two or three hundred persons inspected the work which is being carried on, and the many instruments employed for the various observations.

The report, which was presented by the Astronomer Royal, shows that, owing to various structural alterations, some interruption has been occasioned to the astronomical observations. During the year ending May 10, 1892, photographs have been taken of the sun on 219 days, and the gaps which have necessarily occurred, owing to the presence of cloud, have been filled by photographs from India and Mauritius. The solar activity has increased in a remarkable manner during the past year. While there were 175 days without spots in the year 1890, there were only 21 such days in 1891, and since 1891 (March 28) the sun has not been free from spots on a single day on which it has been observed. The number of groups visible on the disk at the same time, and their average size and complexity, have all greatly increased during the last twelve months, the group of February 5 to 18 being the largest ever photographed at Greenwich. This group has had an unusually long life, appearing first on November 15, 1891, and persisting till 1892 (March 17). In the year 1891 there were five days of great magnetic disturbance, but there were also twenty other days of lesser disturbance. A very large magnetic disturbance occurred on February 13-14, commencing about a day after the large sun spot was on the central meridian, and there are numerous other instances of magnetic disturbances at times of sun spot activity, clearly establishing a very intimate connection between the two phenomena.—*Photography (London).*

**Simple Diet in Obesity.**

The *Journal de la Sante* attributes to a medical officer of the French army the latest "cure" for obesity, which is strangely simple in its carrying out. The form of diet was simply a restriction to one dish at each meal, irrespective of what that dish might be, and no matter whether the quantity consumed was greater or smaller, it was made to satisfy the desire for food to the full at each meal. No supplementary dishes, such as soups, desserts, or condiments, were allowed; one single dish, and that taken plain, was found to satisfy the appetite much sooner than a variety of dishes, even if the quantity was apparently smaller and on almost an abstemious scale. This regimen was employed also in the case of a lady whose *embonpoint* threatened too rapid increase with good results, and without any discomfort in the observance of the restrictions. In fact, in one or two instances the reduction of corpulence has seemed to go on too rapidly, and it has been deemed best to take means for restoration, in a measure, of that which has been lost. Under this system, as under most others, adds *Popular Science News*, the excessive imbibition of liquids has to be forbidden, care being taken not to enforce the abstinence from water, especially to the point where symptoms of circulatory depression arise from insufficiency of volume of blood in the vessels.

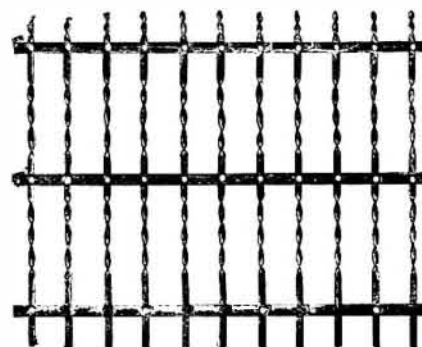
**New Lead Alloy.**

A new alloy of lead, very malleable and almost unattacked by acid, has been proposed by M. Worms for the manufacture of accu-

mulator plates. He takes 945 parts of lead, 22 of antimony, and 13 of mercury. The lead is first smelted, the antimony is added, and the mercury is introduced at the moment of pouring into the ingot mould. A species of amalgamated lead is thus obtained which can be rolled in sufficiently thin sheets.

**A LIGHT AND DURABLE FENCE.**

The fence shown in the illustration is designed to be constructed of metal, in an expeditious, convenient, and inexpensive manner. It forms the subject of a patent issued to Mr. Julius Baker, of No. 8 New Grant Street, Pittsburg, Pa. The top and bottom rails are preferably L-shaped in cross section, and they have aligning longitudinal slots in their horizontal portion through which the pickets are passed, each picket having an offset or projection near its upper end resting against the lower face of the upper rail. The offset is made by indenting one side of the picket with a suitable instrument, to produce a projection on the other side, and a central tie rail is adapted to be attached to the series of pickets by rivets. In making the fence the pickets are first passed through the slots of the lower rail and then twisted, some of the pickets being bolted to the lower rail, and, after riveting the central rail in place, another twist is made in the pickets before they are passed through the top rail, which rests on the offsets, the pickets being then bolted to the upper rail and their upper ends twisted.



**BAKER'S IMPROVED FENCE.**

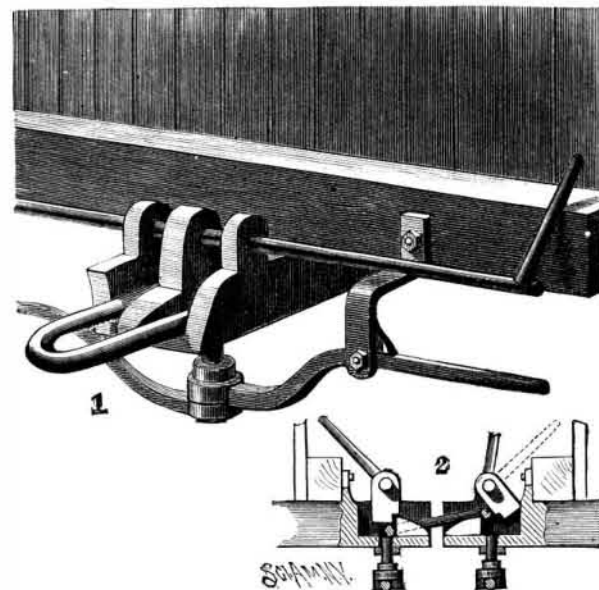
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**Ants, Black and Red.**

We presume editors of newspapers have more inquiries for some remedy for the expulsion of ants than for almost anything else. The *New York Observer* has a correspondent who solves the problem as follows; "Having had years of torment with ants, both black and red, we lighted upon the following remedy, which with us has worked like magic: One spoonful tartar emetic, one spoonful of sugar, mixed into a thin sirup. As it evaporates or is carried off, add ingredients as needed. A sicker lot of pests would be hard to find. Whether they impart the results to the home firm or whether all are killed, I trow not. Certain it is they do not pay us a second visit. For ants on the lawn, a spoonful of Paris green cut with alcohol and made into sirup with sugar and water can be placed on pieces of glass or crockery—cover from domestic pets—and the slaughter will be satisfactory."

**AN IMPROVEMENT IN CAR COUPLERS.**

The illustration represents an automatic link coupling in which the link engages a lug on the floor of the drawhead, simple means being provided for holding the link in position and for disengaging it for uncoupling. The improvement has been patented by Mr. William Greenlees, of Brookland, District of Columbia. When the cars are coupled the link is held, as shown in Fig. 1, by a swinging block or weighted arm attached to and operated by a transverse rod, with a lever arm at each end near the side of the car. In coupling, the link, held in horizontal position in the drawhead of an approaching car, rides up on the lug, pushing back the swinging block and dropping behind the lug,



**GREENLEES' CAR COUPLING.**

as shown in Fig. 2. The uncoupling is effected by operating the transverse rod, by which the block is swung back out of the way, and then pushing down upon a link lifter, pivoted in a bracket or hanger beneath, when a vertically-moving push rod raises the end of the link.