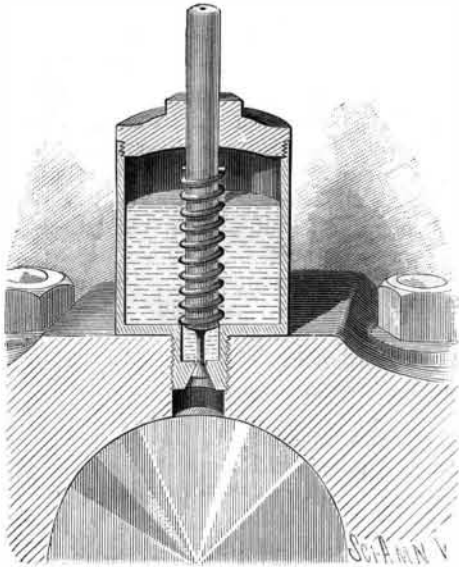


IMPROVED OIL CUP.

This simple and effective device is for supplying oil to the bearings and other moving parts of machinery. The cup is attached to the bearing by a screw neck. The top of the cup is closed by a screw cap, through the center of which passes a spindle having at its lower end a plug valve shaped as shown in the engraving. In the lower end of the neck is a recess, which provides a seat for the valve, and an aperture leads from the recess to an oil chamber formed in the neck immediately under the shoulder of the spindle. A spiral spring acts to lift the spindle and hold the



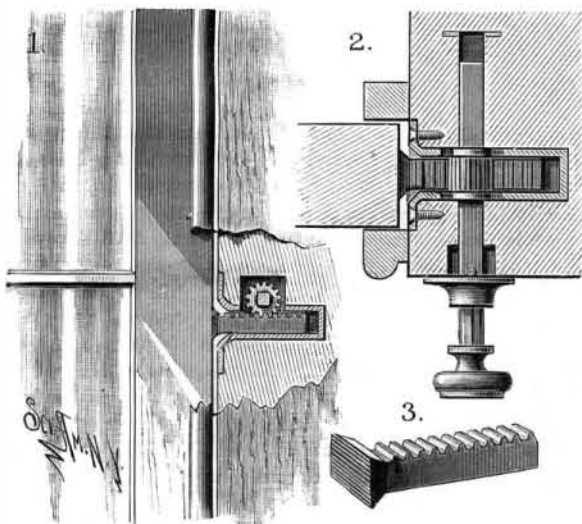
SLANKER'S IMPROVED OIL CUP.

valve to its seat, to prevent escape of oil from the cup. When the spindle is pressed downward, the valve will be lowered and the spindle shoulder will force all the oil from the oil chamber on to the shaft in the bearing. When released, the spindle will be raised by the spring, when the oil will refill the chamber. It will be seen that the size of the oil chamber governs the quantity of oil discharged at each downstroke of the spindle.

This invention has been patented by Mr. F. O. Slanker, of Pomona, Cal.

SASH FASTENER.

This device—the invention of Mr. Richard Gibbon, of Mobeetie, Texas—is for holding a sash at any desired elevation; it is simple in construction, and can be applied to any window. The casing is provided with an end plate and with two side plates; a squared spindle passes freely through lugs on the side plates, and projects from the front side of the window casing, as shown in the sectional plan view, Fig. 2. The spindle also passes through an escutcheon fastened on the casing and having a cogged opening into which a cogged part of the spindle at the knob can be passed. A pin prevents the spindle from being pulled out too far. A bolt, Fig. 3, formed with a rack on its upper edge and with a slightly serrated head on its outer end, is operated by a pinion revolved by the spindle. To hold the sash at any elevation, the spindle is pulled out until the cogged



GIBBON'S SASH FASTENER.

part is withdrawn from the escutcheon, and is then turned in such a direction as to press the bolt head firmly against the edge of the sash. The spindle is then pushed in, when the cogged parts interlock, and the bolt is held in place. The spindle is withdrawn to release the sash. If needed, a small socket can be placed in the sash to receive the bolt when the sash is closed.

OIL stains may be removed from paper by applying pipe clay powdered and mixed with water to the thickness of cream; leave on for four hours.

Plating without Electricity.

A curious phenomenon has been observed by M. Blondlot, and communicated to the French Academy of Sciences. A disk of platinum and a disk of copper, 0.03 meter in diameter, were fixed vertically in front of each other by help of two platinum stands. The disks were three or four millimeters apart, and both were placed inside a bell jar of porcelain, open below. The apparatus was then heated red hot for three hours by means of a gas furnace; and although there was no electric current, it was found that the face of the platinum disk was blackened with a deposit containing copper and platinum. In short, the copper had crossed from the copper plate to the platinum one. M. Blondlot, by repeating the experiment in different gas, found that the nitrogen of the air was the agent in this transport of matter. The nitrogen combines with the copper, and lodges on the platinum, either incorporating itself with the latter or decomposing in contact with it under the influence of its high temperature.

How to Design a Monogram.

Scarcely anything seems so easy as to design a monogram, yet we see very few successful ones, the most of them being a mass of mixed up letters and ornaments of which we can find neither the beginning nor the end. There is a law regulating the designing of everything, and it is this law which the true designer keeps in mind and applies to his work; the effects of obedience to this law, and its violation, are seen as clearly in the design for a monogram as in the design for a cathedral.

First, there should be harmony of composition, that is, the letters should so emphasize, subdue, or control each other that the composition should impress us as compact, appropriate, and, being so, beautiful.

Second, there should be no unnecessary ornamentation; there should be a quiet and peace about the design which will always please the truly artistic. Looking at some designs, we get the impression that ornament was so plentiful that the designers saw no other means of consumption than that of burying his designs in it, for we see that there is a mass of curves, angles, shades, and leaves, but nothing else.

Third, simplicity of lettering is an important requisite, as there should be no possibility of mistaking an E for a G or C, and the boundaries or outlines of the letters should be well defined.

Fourth, the order of sequence of the letters should be carefully attended to.

The common idea is that a certain number of letters are given with which to make a pleasing design, and so far, that impression is right; but there is something beyond this. There is the art of so placing the letters that one can distinguish at a glance the first, the central, and the last letter. Now, the rule to be observed to secure this result is as follows: The last letter of the monogram must be the principal feature, and must be the largest, the boldest, and the heaviest letter; then the first letter must be the next in size, but the lightest in outline and color; then the central letter must be the smallest, and of an intermediate tint. If the monogram is of four letters, the two intermediate must be of the same size, and the second letter lighter in outline and color than the third.—*Art Amateur.*

BASE FOR POSTS.

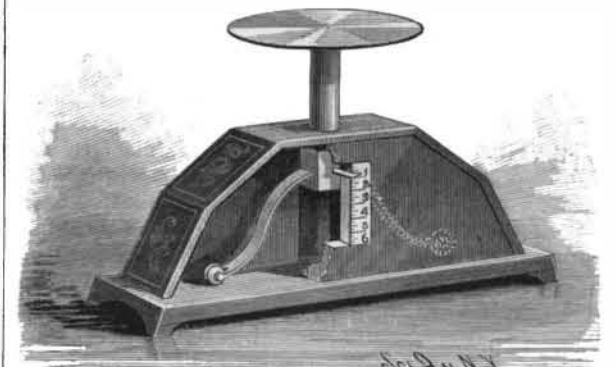
The base for posts shown in the accompanying engraving is simple, cheap, and practically indestructible. It consists of a section of hollow tile provided with a top and bottom cap held in place by one or two bolts. On the top cap, as shown in Figs. 2 and 3, is formed a cup to receive the stake, which is tapered at its lower end, and is allowed to enter until it wedges sufficiently tight in the cup. The cups are provided with side openings, to facilitate the removal of dirt and to allow rain or snow and ice water to run out. When two bolts are employed, as shown in the cuts, instead of a single central one, the bottom of the cup opens into the tile. With this style of a cup, any available stakes, waste lumber, etc., may be shaped to fit within the cups. When used as a base for a trellis, as shown in Fig. 5, in the fall of the year the posts can be lifted out of the cups and laid on the ground; in the spring they can be easily and quickly set up again.

The cup may be formed to receive the end of a piece of ordinary gas pipe, as shown in Figs. 1 and 4. A post constructed in this manner may be used to support barbed or other wire, forming a complete fence, at once indestructible, that will be especially adapted to use in places subject to fires, as in case of railroad fences. The base is easily and cheaply made of fire-clay tile, which is proof against frost and disintegration, and cast iron caps of desirable size and shape.

This invention has been patented by Mr. W. H. Kellogg. Further information may be obtained from Mr. W. A. Forbes, of Kalamazoo, Mich.

SPRING BALANCE.

The spring balance here shown weighs accurately and is very simple in construction. In the center of the case is a vertically sliding block provided with a pointer projecting through a vertical slot in the front of the casing. At the edge of the slot is a graduated scale. A rod projecting from the block through the top of the casing carries a plate on its upper end for receiving the article to be weighed. Secured to the block is a flat curved or bow spring, at the ends of which are rollers that run on the upper surface of the base. When an object is placed on the pan, it presses the rod downward, and thereby the spring is compressed more or less, its ends separating. The pointer shows the weight of the article. When the



WATT'S SPRING BALANCE.

article is removed, the spring contracts and moves the pan upward until the pointer is at the top of the slot.

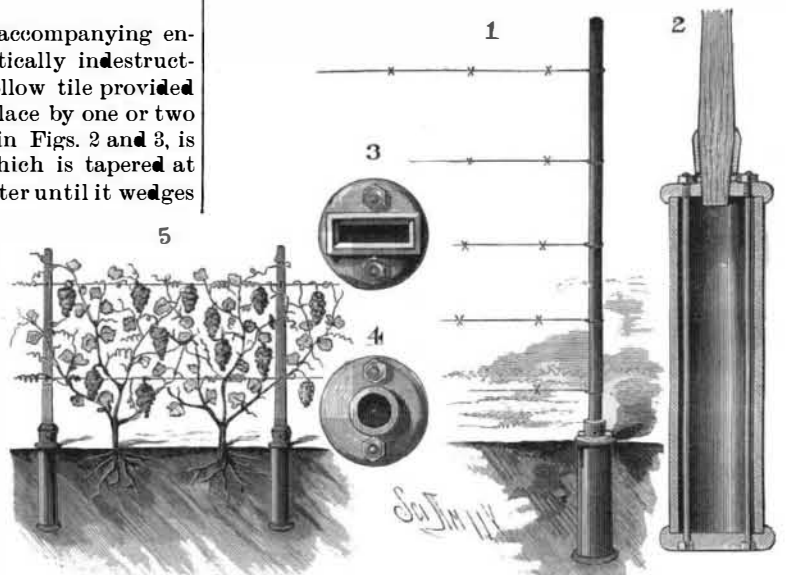
This invention has been patented by Mr. William R. Watt, of Somerville, Tenn.

A Curious Chemical Phenomenon.

A celebrated Parisian belle, says the *Popular Science News*, who had acquired the habit of whitewashing herself, so to speak, from the soles of her feet to the roots of her hair, with chemically prepared cosmetics, one day took a medicated bath, and, on emerging from it, she was horrified to find herself as black as an Ethiopian. The transformation was complete; not a vestige of the "supreme Caucasian race" was left. Her physician was sent for in alarm and haste. On his arrival he laughed immoderately and said: "Madame, you are not ill, you are a chemical product. You are no longer a woman, but a 'sulphide.' It is not now a question of medicinal treatment, but a simple chemical reaction. I shall subject you to a bath of sulphuric acid diluted with water. The acid will have the honor of combining with you; it will take up the sulphur, the metal will produce a 'sulphate,' and we shall find as a 'precipitate' a very pretty woman." The good natured physician went through with his reaction, and the belle was restored to her membership with the white race.

Education.

A bill now before Congress aims to set aside the net proceeds of sales of public lands for educational purposes. Besides the actual receipts, this will include all fees received at the General and District Land Offices

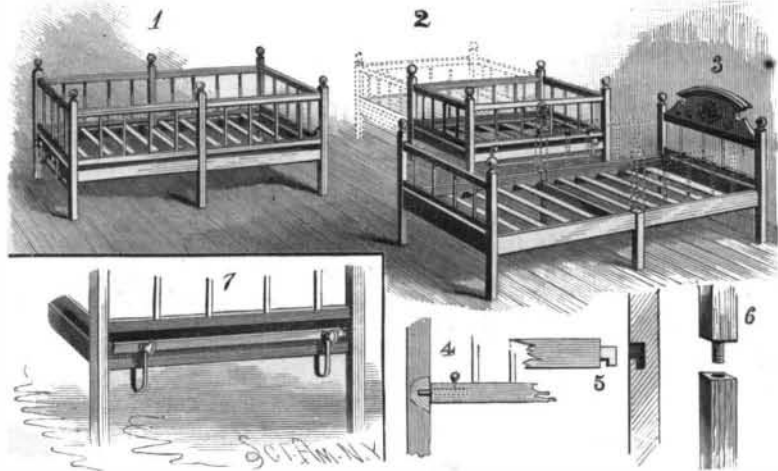


KELLOGG'S BASE FOR POSTS.

and three-fourths of the total moneys paid into the Treasury by railroad companies under the act of May 7, 1878. This money will be apportioned, upon the basis of population between the ages of five and twenty years, to the different States and Territories, and is to be set aside as an educational fund, the interest at 4 per cent to be paid as apportioned. For the first ten years the apportionment of the total sum and the interest on the fund is to be made according to the number of the population of the respective States and Territories of ten years old and upward who cannot read or write, as shown by the last census.

Grips and Brakes for Brooklyn Bridge.

The Committee on Mechanical Appliances have reported to the Bridge Trustees that they have now examined 39 grips, 5 cable lifters, and 26 signal, brake, and grip plans. They have given authority to Mr. George Westinghouse, of Pittsburg, to try his compressed air system on the bridge. He is to bear all the expense of getting up a brake and power to work the present grip, except that the Trustees will make the connections with the cars on the bridge. Mr. Westinghouse is now preparing to fit up a train of four cars with reservoirs of compressed air and the necessary

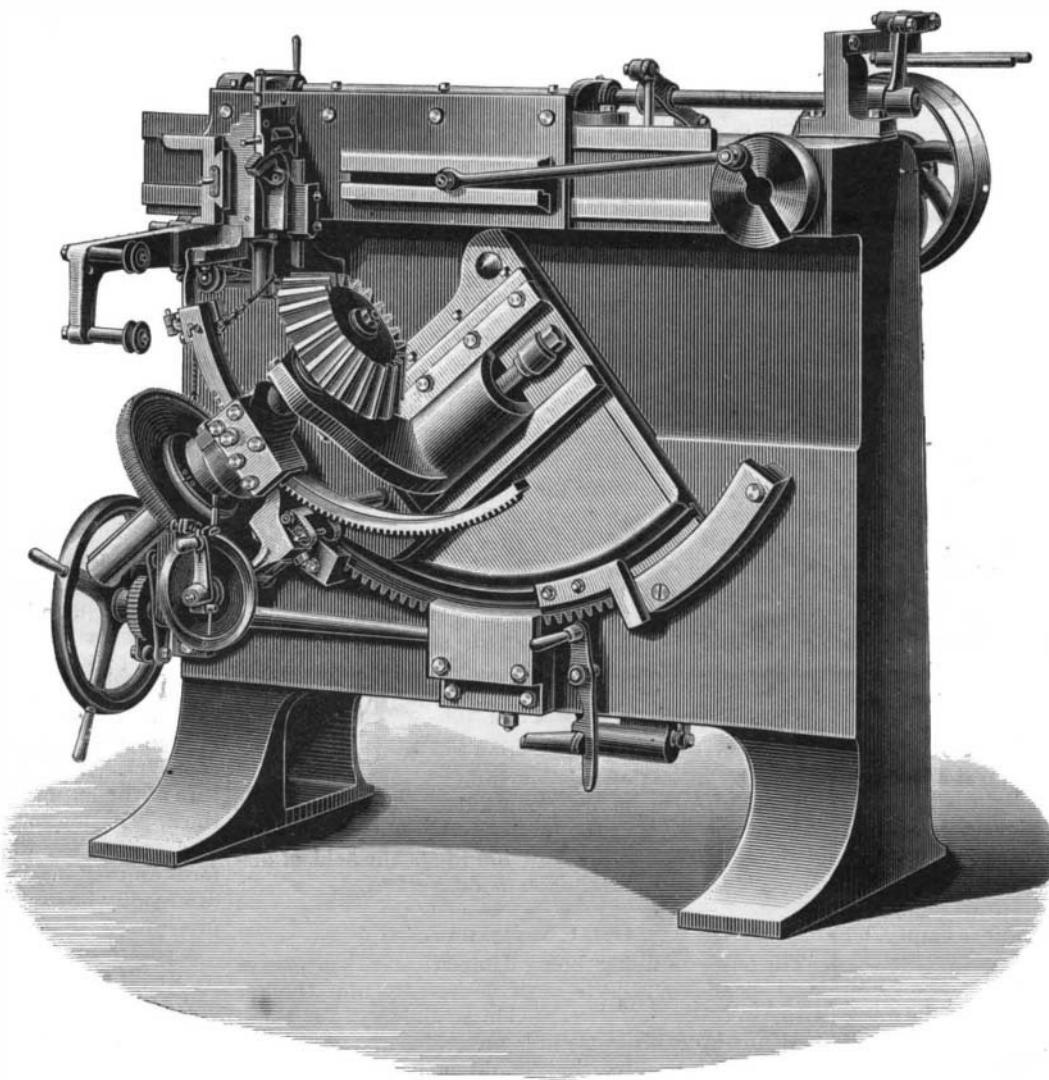


JENKEN'S ADJUSTABLE CRIB AND BEDSTEAD.

machinery to work the present grips and brakes by one person only, in the same manner as locomotive engineers now control the air brakes on railway trains. Having inspected in all about 113 projects and inventions, the committee have ended their examinations.

BEVEL WHEEL SHAPING AND DIVIDING MACHINE.

We illustrate a bevel wheel shaping and dividing machine to cut wheels up to 18 inches in diameter, constructed by Greenwood & Batley, of Leeds, and described in *Engineering*. It is designed to shape the teeth under the guidance of a copy or former, four or five times the size of the desired tooth. The tool is held in a box carried by a reciprocating slide, like the slide of a shaping machine, and has a stroke of about 5 inches. The wheel or bank is mounted on a spindle, the nose of which is covered, and fitted with a steel mandrel to receive it. The spindle is carried on two bearings, of which the upper can be moved in a slide by a screw to adjust the wheel. The other bearing is a long socket, and is itself carried by a bearing on a segmental plate capable of rotation about a point toward which the cutting edge of the tool always travels. The spindle can be moved endwise by the upper bearing to set the blank in the first instance, and can be rotated by a worm and wheel on the lower socket. Attached to this same socket is a curved radial lever, carrying at its extreme end the copy or former, which is kept in contact with a steel guide plate by means of a weight having a cord passing over guide pulleys. The spindle and all its adjustments are carried on the segmental plate, and can be moved by means of a worm and toothed sector to feed the blank toward the tool. This latter travels always in the same straight line toward the apex of the imaginary pitch cone of the wheel, and has no feed motion. The blank is moved in two directions; it is raised toward the tool by the rotation of the sector, and at the same time it is rotated on its axis through a very small angle by the "former" sliding over the guide plate. The cutting pressure of the tool tends to hold the "former" and the plate together. When the tool has reached the bottom of the tooth, the catch motion shown at the lower part of the machine comes into play, and throws off the strap. The attendant then winds back the toothed sector, rotates the blank through the required angle, and sets the machine in action again.



BEVEL WHEEL SHAPING AND DIVIDING MACHINE.

high into the heavens. The lights at the base will be so placed as to illuminate the statue and bring the figure into bold relief on the darkest night. The light of the torch will be 300 feet above water, and should be visible for about twenty-five miles at sea.

AN ADJUSTABLE CRIB AND BEDSTEAD.

The invention herewith illustrated covers a form of adjustable bedstead and crib for children which is simple in construction, but admits of being arranged in several different ways to suit the convenience of a family. Figs. 1 and 3 represent the dimensions of a full-size bed, the former without a head piece, and the latter, as well as Fig. 2, showing in dotted lines its modified forms as a simple or double crib. Fig. 4 shows a simple spring catch by which the end pieces are held perpendicularly in the uprights, and Fig. 5 represents the ordinary manner of holding the side and end pieces in the posts. Fig. 6 illustrates the manner of securing the uprights in the center posts for holding the side pieces and cross divisions, and Fig. 7 represents a cover tucking attachment. The latter may be applied to both sides and ends, and is a variety of goose-necked piece of spring metal, screwed to the bottom side of the cross and end pieces in such way that, by means of thumb screws, a horizontal piece of thin slat is made to firmly bind the cover. In fitting the bed for a double crib, only one mattress and the usual blankets, quilts, etc., are needed, the cross piece being easily raised for adjusting the bedding, and then fitting closely over it, tucking in the children. When the children are too large to use the cribs, the cross piece can be removed from the center

part and the bed can be used lengthwise, the sides remaining to form a protection if desired.

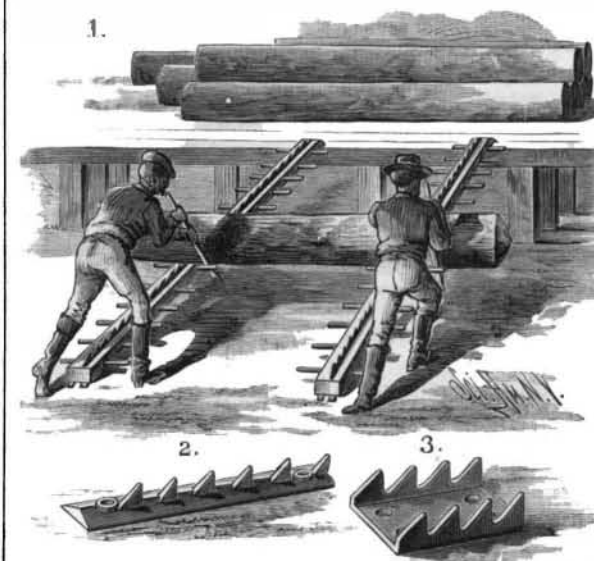
This invention has been patented by Mr. C. A. Jenken, of New Berne, N. C.

Progress of the Statue of Liberty.

The pedestal for Bartholdi's great statue has now been completed. The last piece of stone has been put in place, and the last of the large iron girders to which the statue will be fastened is ready for duty. When completed, the statue will look even grander at night than in the daytime, as its electric illumination will give the figure greater prominence. It is proposed to place four large lights at the base of the statue, one at each corner of the pedestal, and a powerful shaft light on the torch, so arranged that its beams will shoot

SPIKED SKID.

The accompanying engraving represents a skid used for handling logs and heavy timber. The skid is provided with one or more ridges or rows of saw-tooth-like projections upon its upper surface, and with a series of horizontal pins, which serve as fulcrums for the hand spikes by which the logs are moved. The teeth are formed of iron or steel plates, different forms being shown in Figs. 2 and 3. It is apparent that these teeth prevent the logs from slipping or rolling back-



POLLEYS' SPIKED SKID.

ward. By the use of these skids, heavy logs can be easily moved from one level to a higher. The log cannot slip back, and not only are time and labor thereby economized, but the workman is given a chance to rest whenever necessary.

This invention has been patented by Mr. William H. Polleys, of Neillsville, Wis.

Long Distance Gas Transportation.

In a paper upon the long distance transportation of natural gas, Mr. Thos. P. Roberts has expounded, before the members of the Engineers' Society of Western Pennsylvania, certain views which may be briefly summarized as the advocacy of exhaustion instead of forcing as the means of propelling gas through mains. The author depends greatly upon the example of English mine ventilation, by which in some cases a furnace, and in others a fan, draws a current of air through perhaps 40 miles of workings. He refers to the formulæ given in text-books concerning the delivery of air and gases under pressure, to show that friction is always provided for; so that when forcing any expansive fluid has to be resorted to, there is a limit to the length of the circulating system (which may be ascertained by computation) beyond which the fluid will not flow. On the principle of exhaustion, however (which means the progressive reduction of density of the contents of a pipe as it is prolonged from its inlet to the outlet where the exhausting apparatus is situated), Mr. Roberts declares he knows of nothing to stop the onward course of a gas when it has "an inclosed passage continually opening before it." On the other hand, he states that at a certain rolling mill several years ago, the 6 inch gas main proved insufficient for the required supply. Pumping at the supply end was resorted to, and several attempts resulted in failure. Finally, a special Cameron pump made for the purpose was tried. This pump had a 40 inch plunger and 4 feet stroke. It took the gas at the supply end at 30 pounds pressure; and, although in desperation the pump was driven at 250 revolutions per minute, the gas at the delivery end never rose above 15 pounds pressure—thus losing half the pressure in transit, notwithstanding the great compression at the inlet end. Mr. Roberts was unable to say whether the engineers "changed ends" with their pump, and if so, with what results.

To prevent a strong solution of potash from crystallizing, dilute by the addition of water.