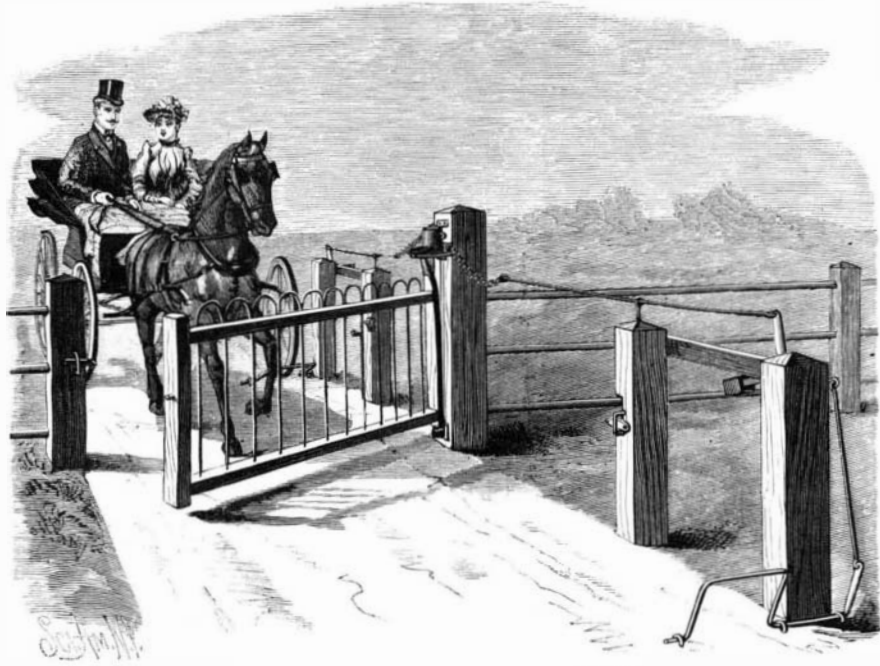


AN AUTOMATIC GATE OPERATING DEVICE.

A gate opening and closing device, which will be automatically operated by an approaching and departing vehicle to open and close the gate, without the necessity of any one getting out of the carriage, or the aid of a gatekeeper, is shown in the illustration, and has been patented by Mr. Silas Portis, of Monrovia, Ind. On a pintle supported by the swing post is pivoted at the bottom one stile of the gate, the upper end of the stile being pivoted in an arm sliding on a curved rod secured to the upper portion of the post, and the



PORTIS' AUTOMATIC GATE WORKER.

arm having an upwardly extending portion embraced by a staple secured to a revoluble drum. The free end of the arm is within a semicircle formed by the curved rod, and the upper pintle of the stile projects through the staple, so that when the latter swings it bears on the pintle and on the upwardly extending portion of the arm. On the drum are reversely wound chains extending to opposite sides, their free ends connected with rods connected at their outer ends in each direction to one arm of a weighted lever pivoted on a post at the side of the road, this lever being connected with a rod bent to form a crank in the path of the wheels of a vehicle. By this arrangement, when the chain at one side is pulled, as by the pressure of a vehicle wheel on the first crank, the drum is revolved in a direction to open the gate, and when the chain at the other side is pulled, from the pressure of the vehicle wheel on the second crank, the drum is revolved in the opposite direction to close the gate. The latch gate post has a recess in its side next the gate in which enters a lug on the outer edge of the gate as the latter is swung open, there being a central stop in the recess against which the lug strikes, and on opposite sides of the post adjacent to the recess are latches which swing in vertical keepers. Alongside the carriage way also are posts with similar latches to engage the free end of the gate when it swings open. As the approaching vehicle operates the crank and the chains are pulled, the combined movements of the arm and pintle swing the upper portion of the stile so as to raise the free end of the gate and lift the lug over the latch, swinging the gate open, when it automatically latches, or similarly closing it as the vehicle passes over the second crank.

Further information relative to this improvement may be obtained of Messrs. Taylor & Bennett, Monrovia, Ind.

TO DARKEN OAK.—Oak for decorative work is produced by fumigating the material with ammoniacal vapor, which effectively produces the dark coloring so much desired. In accomplishing this, the method consists in placing the material to be darkened in an approximately air-tight room in which no light enters; or for small work a packing box will suffice, the joints or cracks to be well pasted over with paper. In this room or receptacle for depositing the furniture or other articles is placed a flat porce-

lain or earthen vessel filled with ammonia, the vessel containing the liquid being, of course, set on the ground or floor, that the fumes or vapor may strike to advantage the articles to be darkened; if the apartment is large, two or more vessels containing ammonia may be employed, and allowed to remain until the desired effect is secured. The ammonia does not touch the oak, but the gas that proceeds from it acts in a peculiar manner upon the tannic acid contained in the oak, browning it so deeply that a shaving or two may actually be taken off without removing the color. The depth of shade depends upon the quantity of ammonia used and the duration of exposure.

SNOW SHOE EXERCISE IN THE GERMAN ARMY.

There are now being made in certain corps of the German army some very interesting experiments relative to the introduction of snow shoes, to permit of marching and service on a campaign in the severest weather.

The snow shoes used by the German soldiers are the same as those that have been employed for centuries in the countries of the north of Europe—Norway, Lapland, etc. They consist, as may be seen from our engraving, of a thin strip of wood about a yard in length, a little wider than the foot, turned under and curved

at the extremity and shod with iron. Every one uses them in Norway, and the results obtained are truly wonderful. During the deepest snows the rural postman owes to them the possibility of continuing his service, not only without delay, but with amazing rapidity. The hunters of the country, provided with snow shoes, pursue the hare and dispatch it with a simple blow of the cane. The Norwegian soldiers, it is unnecessary to say, could not remain strangers to this national sport. So, since the middle of the last century, there has existed in their country companies of light infantry broken in to marching on snow shoes and capable of rendering the greatest services in case of a winter campaign. At present all the Norwegian corps of infantry annually perform maneuvers upon the snow with the aid of these shoes, and, in their cantonments, even get up racing matches on snow shoes.

The foot soldiers of the Dutch army are exercised in the same way upon the frozen canals that abound in their country.

Finally, in the Russian army, certain corps (the sharpshooters of the imperial family and the Finnish sharpshooters) are provided with analogous snow shoes.

Not wishing to remain in a state of inferiority in this regard, in face of his neighbors, the Emperor of Germany has had snow shoes tried in the Eighty-second regiment of infantry, stationed at Goslar, upon the confines of Hanover and Brunswick.



SNOW SHOE EXERCISE IN THE GERMAN ARMY.

A model platoon, composed of non-commissioned officers under the direction of an officer, has been trained in the use of the snow shoe, and, thus shod, has executed long marches in the mountains near the city, and all the imitations of battle possible.

Our engraving represents one of these exercises, the platoon making a march forward in battle.—*Illustration.*

AN IMPROVED SKETCHING APPARATUS.

The device shown in the picture, to facilitate drawing in correct perspective, forms the subject of a patent issued to Mr. Thomas A. McFarland, of Portland, Oregon. The glass plate on which the sketching is done is cross-ruled with lines so close together that they can hardly be counted, producing a ground glass drawing surface with transparent sight spaces. The plate is inclosed in a frame, to the ends of which are pivoted metallic strips, by means of bolts and wing nuts, the other ends of the strips being bent backward and attached to wooden legs. On the under edge of the frame is a slotted bar in which are eyes to receive a roller to which is clamped an adjustable central leg. To this slotted bar is also clamped an arm on which a head rest is adjustably held, the head rest being thus made adjustable both vertically and hori-



McFARLAND'S SKETCHING DEVICE.

zontally. The sketching thus effected by pencil or crayon on the glass surface may be afterward traced off on tracing paper or cloth.

Perfume in Flowers.

1. The essential oil is generally localized in the epidermic cellules of the upper surface of the petals or the sepals. It may exist on both surfaces, especially if the parts of the flower are completely hidden in the bud. The lower surface generally contains tannin or pigments derived from it.

2. Chlorophyl seems in every case to give rise to the essential oil. The transformation is easily understood if we admit, as it is now generally done, that the parts of the flower are merely leaves modified for a new function. The chlorophyl is thus turned away from its object, and is transformed either into persistent tannin derivatives or into essential oils.

3. The development of the perfume of the flower is not perceptible until the essential oil is sufficiently liberated from the intermediate products, and it is present to some extent in an inverse proportion to the production of tannin and of pigments in the flower. This will explain why flowers with green petals have no odor; why white or rose-colored flowers are most frequently odoriferous; why the Compositæ, which are rich in tannin, have their well known disagreeable odor.—*E. Mesnard.*

A Noble Woman's Worthy Act.

Mrs. D. W. Bishop, a wealthy lady of this city, sent her check to this office a few days ago for \$107.50 with instructions to furnish a copy of the SCIENTIFIC AMERICAN to every police office in the city during 1893. There are forty-three stations, including the five attached to our public parks.