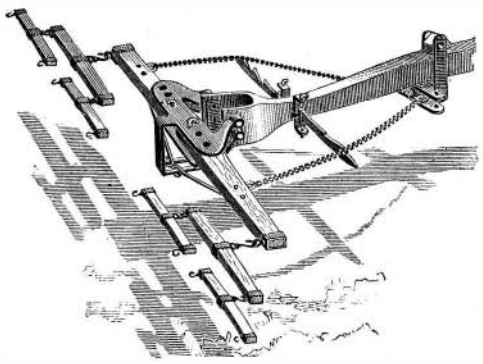
RECENT INVENTIONS.

Carr's Draugh. Equalizer for Sulky Plows.

A device for equalizing the draught between teams of horses, where four horses are used abreast, on sulky plows, has been patented by Mr. Dallas Carr, of Chandlersville, Ill. The device consists in two jaws, forming a double clevis, attached to the front end of the beam of the plow, and so arranged that by means of a series of holes in the jaws the plow may be regulated to run at a greater or less depth, and also to cut a furrow of any desired width. Two



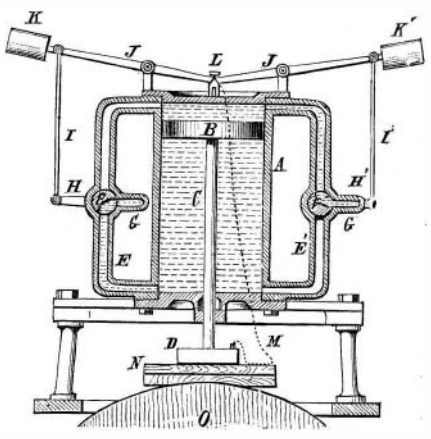
levers of different lengths, to which the draught eveners of the team are secured, are pivoted one on either side of the jaws, and are connected by a chain that passes around a sheave secured on the under side of the draw bar. By this means the draught is equalized between the two beams. Swinging arms, pivoted to the sides of the beam, sustain the chains and hold them so as to draw straight from the equalizing levers. The invention will readily be understood by reference to the annexed engraving.

Brokaw's Block Presser.

An improved presser for pressing the blocks of wood from which pulp for paper is to be made, upon the abrading surface of the cylinder of a pulp machine, has been patented by Mr. Norman H. Brokaw, of Marinette, Wis.

The block, N, of wood is pressed down to the grinder, O, by a block, D, attached to the lower end of a rod, C, on the upper end of which is a piston, B, moving in a cylinder, A. The cylinder is connected at its opposite ends by pipes, E E', provided with threeway cocks, H H', levers, J J', connected by rods, I I', with the valves of the cocks.

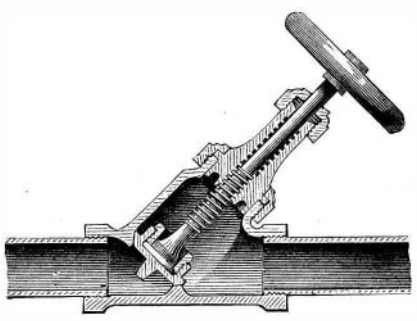
These levers are pivoted to the tops of the cylinders, and



have at their outer end weights, K K'; at their inner ends they engage with a latch, L, at the center of the cylinder. Steam or water is admitted through the pipes, G E, to the cylinder, and the block is pressed down until it is sufficiently cut away, when the latch is released by a chain, M, connected with the presser, D, when the weights fall, reversing the cocks and raising the piston and presser block.

Improved Valve.

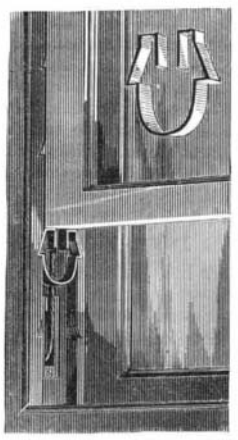
Improvements in globe and check valves have been patented by Mr. Frank P. H. Prox, of Terre Haute, Ind. In the valve, as shown in the accompanying engraving, the body is formed at an angle of about forty-five degrees with the channel of the valve. The valve seat in the channel is placed at an angle to correspond with the inclination of the body, and the valve seat is fitted and ground in the usual



manner. When the valve is opened a nearly straight, unobstructed passage is provided for the fluid, and the friction of the flow of the fluid is reduced to a minimum. In the check valve the stem has a longitudinal aperture opening at its side into the outlet portion of the valve chamber, thereby preventing any retardation in the movement of the valve by vacuum action.

Sash Fastener.

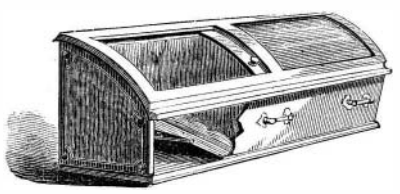
An ingenious fastener for securing sliding window sashes when they are closed, and for supporting them when open, has been recently patented by Mr. William P. Hayhurst, of Argentine, Kan. The window frame has suitably shaped notches arranged opposite each other in the stops between which the sashes of the window slide. The fastening device is shown at the bottom of the annexed engraving, and consists of a thin piece of spring brass or steel bent to form a bow of a proper width to fit into the spaces between the stops over or beneath the sash, accordingly as it is to be used as a fastener or support. On the sides of the bow are projections that. when the fastener is in place, engage with the notches in the window stops. The lower ends of the fastener



rest on the window sash, the portions projecting toward the center of the loop being used as finger-pieces for pressing the device together for inserting in the grooves, the spring of the metal retaining them in place.

Tickner's Burial Casket.

In the accompanying engraving is shown a burial casket that has recently been patented by Mr. John J. Tickner, of Bancroft, Mich. In the bottom of the casket is an inclined head rest, that is fitted loosely. On the under side of the rest is hinged a metal strap having a projection that engages with any one of a series of holes in a plate attached to the bottom of the casket, so that the head rest may be set

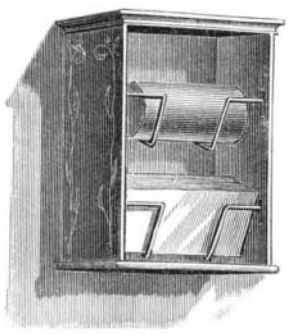


to different inclinations. With this device provision is made for arranging the head and upper part of the body, so as to be more or less elevated, to give the corpse a more natural and life-like position.

One side of the casket is raised, giving the cover an inclined position, so that the body may be viewed from the side of the casket.

Envelope Case.

A novel and very convenient case for holding envelopes has been patented by Mr. Jacob C. Lane, of Elkhart, Ind. The case may be divided in a number of compartments by partitions. A rack made of wire, in the shape shown in the accompanying cut, is secured at its front ends by being hooked into grooves in the sides of the case, and has its rear end inclined upwardly, so that a roller placed on the inclined part, behind the envelopes, serves to support them, and slide them to the front of the rack as they are removed. The case is adapted to hold different sizes of envelopes and postal



cards, and presents the face of the envelope to the view of the user, so that a person sees at a glance the size or denomination of the envelope, and no mistakes are made in selecting.

The Gum Trees of Australia.

The ranges are covered with a dense forest of gum trees, in many places of enormous height, standing with their smooth trunks close together and running up often for a height of 200 feet without giving off a branch.

The light-colored stems are hung with ragged strips of separated bark.

The great slenderness of the trunks of these giant gum trees, in proportion to their height, is striking, and in this respect they contrast most favorably with the Californian "big trees," which, in the shape of their trunks, remind one of a carrot upside down, so disproportionately broad are they at their bases. The large species of gum tree, the tallest tree in the world, is *Eucalyptus amygdalina.*

As Baron von Müller says: "The largest specimens might overshadow the Pyramid of Cheops"

Grisebach, in his account of the vegetation of Australia (A. Grisebach, "Vegetation der Erde," p. 216, Leipsic, W. Engelman, 1872), dwells on the close relation of interdependence which exists between the tree vegetation and the coating of grass which covers the ground beneath it, and remarks that the amount of light allowed by the trees to reach the ground beneath them is rendered more than usually great by the vertical position in which their leaves grow; hence the growth of the grass beneath is aided.

It may be that this, permitting of the growth of other plants beneath them, and consequent protection of the soil from losing its moisture, besides other advantages to be derived, is the principal reason why, as is familiarly known, two widely different groups of Australian trees, the eucalypti and acacias, have arrived at a vertical instead of a horizontal disposition of their leaves by two different methods. The acacias have accomplished this by suppressing the true horizontal leaves and flattening the leaf-stalks into vertical pseudo leaves or "phyllodes."

The gum trees, on the other hand, have simply twisted their leaf-stalks, and have thus rendered their true leaves vertical in position.

There must exist some material advantage which these different trees derive in common from this peculiar arrangement, and the benefit derived from relation to other plants by this means may be greater and more important than that arising from the fact that the vertical leaves have a like relation to the light on both sides, and are provided with stomata on both faces. In support of this conclusion I was told, when at Melbourne, that when the native vegetation was cleared away from under gum trees they ceased to thrive, and in time perished.

I was shown a number of gum trees, not far from the city, scattered over some public land, covered with only short turf, which seemed to be mostly in a dying condition.—*H. N. Mosely, Challenger Notes.*

Telephonic Vibrations.

"Everybody is aware," says M. Salet, in a recent paper to the Paris Academy, "that it is possible to hear through a thin door of pine, words spoken in an apartment that is otherwise quite closed. In this case the sonorous vibrations transmitted by the air agitate synchronously the wooden board, and this in turn transmits its movement to the outer air as a piston would. This familiar experience must have struck physicists, as giving proof of the exquisite sensibility of the ear. The vibrations of the board are indeed very small, hardly greater than those of the membrane of a telephone receiver in action; but these latter are so weak that their existence has sometimes been called in question. They exist, however, and I proceed to give an idea of their amplitude."

The method adopted by M. Salet was as follows: He fixed on the iron diaphragm of a Bell telephone a small glass disk weighing 0·45 gramme, and in front of this was supported a second, furnishing with it Newton's rings. The arrangement resembles that devised by M. Fizeau for study of dilatation. When one speaks at a distance of about six yards from the telephone, or sends into the instrument the telephonic current from a good transmitter (that of Bottcher, *e. g.*), the rings are observed to lose their distinctness, and disappear if the voice be a little forced. They vibrate, indeed, synchronously with the diaphragm, and nothing is simpler than to calculate, from the amplitude of their oscillations, that of the vibrations of the membrane.

It is certain, however, that the surcharge of the diaphragm with the disks must lessen the movements slightly; thus the results obtained err probably by defect rather than by excess.

To estimate the displacement of the rings, M. Salet arranges before the receiver telephone, which is caused to emit a continuous sound, a turning disk pierced with slits, like that of a phenakistiscope. One finds that, with a certain velocity of rotation, the rings reappear with distinctness. On blowing then through the disk, so as to make it act as a siren, it is found that the sound produced is in unison with that transmitted by the telephone. If it be slightly lowered or raised, immediately the rings oscillate, at first slowly, then with such rapidity that they become invisible again. While they oscillate one may easily estimate their displacement; in one experiment, the *la* of the diapason being emitted into the transmitter with the vowel *u* (*ou*), and with moderate intensity, the displacement was nearly equal to the distance of two consecutive rings, and the amplitude of vibrations of the receiving plate would thus be two to three ten-thousandths of a millimeter.

If there be sent into the telephone currents of different intensities, but very weak, and each of which, *e. g.*, does not cause displacement of the rings beyond half the distance separating them, one may, by considering a point of the glass disk, infer from its brightness the intensity of the current. This singular galvanometric process, says M. Salet, might undoubtedly be utilized in the telectroscopic receiver.

Treatment of Diphtheria.

The *Medical Press* says that Dr. Deuker, who, during twenty-four years of very extensive practice in the Children's Hospital, St. Petersburg, has treated upward of two thousand cases of diphtheria, and tried all the remedies, both internal and external, employed in this affection, has obtained the best results from the following method, which he has employed for the last ten years. As soon as the white spots appear on the tonsils he gives a laxative mainly composed of senna, which produces an abundant evacuation. When the purgative effect has ceased he gives cold drinks, acidulated with hydrochloric acid, and every two hours a gargle composed of lime water and hot milk in equal parts. Dr. Deuker affirms that when this treatment is commenced early it is generally and rapidly successful.