## PROTEUJ--THE NEW OPTICAL DECEPIION.

We now redrem the promise made in our impression of the 5th ult., by describing and explaining an optical illusion, whicb, although simpler, is at first sight more astonishing than the famous Pepper's "gbost," and owes its origin, in some degree, to the same sourre. A cavinet - not unlike a sentry-box in form, althongh somewhat wider aud deءper-is brought in on the stage before the spectators, who must be seated in lront, and at a moderate distance from it. It is so arranged that the spectators can see underneath it, to provent the idea being entortained of any possible communication with trap-doors in the stage. The door is opened, and a lamp is let down through the roof (railway carriage tashion), by which the interior is plainly seen. Nothing appears insile but a pillar of the apparent diameter of three or four inches, reaching from top to bottom. The sides and back of the cabinet are papered or painted to imitate wainscot.
A gentleman is now requested to step in and allow himself to be locked up tor a briet space of time. This is done, and in about a minute after, on the door bfing opened, out steps "Venus," not draped in the scanty habiliments in which Grecian sculptors have been accustomed to represent hat lady, unt arrayed in true West-end styie, with satin skirts distended by means of crinoline over an area of some yards. She disoppears at a side door, but presently reappears stating that she has forsotten "Cupid"in the cabinet bebind her. On the door being opened, "Cupid," armed with bis bow and arrow, sprin $上$ s out, and, making his bow, walks off with his Ma. Various other cbanges are effected-such as people entering, and heing found, on the door being opened, to have diso ppearel. Lastly, at the close ol . he eutertainment, an inspection ot the interior is invited.

To enabl? our readers to understand how this optical deception is produced, let them follow us for a moment:-

$A$ and $B$ are ground plans of the cabinet, from which. for the sake of convenience, we cave removed the doors. In A two doors, hinged at the back rorver. open rom the sides and stux up against the pillar in the centrr. One side of these dours is composed of a plate-glass mirror, the other of wood, pained or papered. When the doors are in the position sbown $a^{\prime} A$, any person may be hildin hehind them concealed from the spectators, who are quite unable to discover that the are there, bolievino, as they must necessarily do, from the evilence of their ejes, that the cabinet is empty, This beries is caused by the mirrors being placed at the proper angle, by whirh the sides of the cabinet are reflected forward, and appear, as in tie dotted lines, to be as far behiod the mirror as they are really distant from it at one side. The sides, uber?tore, by thie simple law of refiection, appear to be the back, and when the outer door is closed, any one concealed behind the mirror laced doors mas easily pass from bebind them to the front, and step oul on the outer door being opened.
Before the last person comes out he caretully folds back themirror-doors which fit neatly ints a recess in the sides; and, as the back of these mirrors is made of wood, and painted the same color as the back of the cabinet, it then assumes the form represented in B in our diagram, when any one of the spectators may be invited lorward to examine if it be not really, what it seemed all along to be, an empty cabinet.
This is one of the neatest optical illusions which we have seen, and is even enjoyed better after a knowledge of how the deception is effected than before. It has been invent ed and patented by Messrs Peoper and Tobin,-British Journal of Photography, Feb. 2.

Tiee whole amount of frctional currency in circulation is not far from $\$ 30.0$ :n, 000 ,

## CHESLEY'S GLOBE VALVE.

In all newls-constructed steam engines or steam apparatus of uny kind, sard and scales become looseoed from the inside of the castings and pipes forming the steam passages; and in old ones incrustations and scales from oxidization form and become detacbed, and are frequen!ly lodged between the valve and its seat, permitting the steam to leak in the valres.


Unless such valves are agrain accurately fizted to their seats bv regricding, the steam soon cuts inno them deep grooves and chanrels. The trouble attendiug this operation, in ordilary globe valves is so great thet it is generally foglected until great loss is incurred by waste of steam, and sometimes serious iucidental damages.
The valve bere represented is so constructed 38 to completely overcoms these d ficiculties, and thereby renter it of great value to every one using steam.
Tbe tollowiug explanation will render its operation easily underatood: - In the orditary glo'e valves the ivterior screw-threaded portion of the raised rim or boss, $G$, and the exterior screw-threaded poition of the lint, $H$, are coostrincted of just such leogit that they can only be employed to $h \cdot l d$ the parts togetber, and they becone ent.rely separated in the act of unscreving, beture it is pussinh to disrugare the screv ou the stem of the valve, E, from the interior thread $0^{\prime}$ tue huli, $H$, in which it works. And hence, when the valve requites regrinding it is ne eeseary to strif the wheel or handle from the stem, remove the kub, H , and substitute a faise one, in which a smooth cylndrical perforation takes the plase of the interior screw thread of the hul profer, irequently involving the necessity of disconnecting the valve from the pipes or boiler and a trip to the shop. This is avoided in this ralve by the plan bere described. Instead of termina!ing the exterior threaded portion of the hub, H , in just suflicient length to hold it to its place, it is prolonged downward, forming an annular rim which incloses a recessed chamber, as shown in the engraving. The boss, $G$, is also prolonyed upward to correspond with the hub in the number of its threads.
This construction enables the hub, $H$, to be instantly converted into a stem guide by simply screwing it back to the position shown in the engraving, and then screwing the valve, E, forward sufficiently to release the screw thread of its stem from that of the hub, H. In this condition for regrinding, the stuffing box, I, and the ridge of the interior thread of the hub, $H$, serve as upper and lower guides for the smooth portion of the valve stem, which they hold to its true center, and yet freely permit the rotary and longitudinal motion commonly employed in grinding valves to their seats.
In this improvement the valve stem is guided in the act of grinding by the same parts which serve to kold and guide it in actual operation, so that the chance of disparity between different guides and chanee of centera $i_{2}$ avoitherl.

This invention was patented on Oct, 3, 1865, by Wm. Chesley. These valves are bept constanlly on hand and all orders promptly filled tos the Greenwood Pipe Co., corner of Canal and Walnut streets, Cincinnati, Ohio. Parties desirous of obtaining riebts to manulacture can address the inventor, Wm . Chesley, care Greenwood Pife Cu., Cincinnati, Ohio.

## GARRETT'S HAY FORK.

As the haying season approacbes those interested in relieving themselves of some of the hard work common about that time, will be glad to know where they can obtain the most approved machinery. The power hay fork is certamly entitled to much consideration, for in the list of labor-saving tools there are none more valuable.
The one here illustrated is entirely without machinery; that is to sap, it has no ratchet teeth, sprines, or other devices, but loads and unloarls by a simple direct pull on a rope. The points of the fork are always down and work from below, grasping the hay as a man would with his fingers, taking a good load each time. The forks are opened by a pull on the line, A, and hoisted by the otber one, B, runnirg on tbe pulley; this action also draws the forks together, so tbat they hold the bay between them.
The manulacturers claim that this is a light, durable, and easily managed tool, that it has no projecting points to catch in beains, and that for its office it has no superior. It will elevate barley or oat straw without scattering. The steel in this implement is all made to order and cut in lengths so as to prevent welds.
In order to use the fork the operator steps on the axle, which causes it to enter the bay; he then places the link, which is attached to the end of the rope, $B$, over the hook, as sbown; as the rope tightens the fork will firmly grasp its load, when it is elevated to the proper point, a slight pull with the little finger

will cause it to discharge its load. The fork is warranted to elevate bay as fast as any otber, il properly managed. No pay is required until tbe purchaser is convinced of its merits. The macufucturers have orders now for nearly a thousand.
Patented by D. M. Garrett, of Shelby, Ohio, Aug. 29, 1865. For turther information address Billow, Garrett \& Co., manuiacturers, at that place.

Planting Flower Seeds.-Sow hardy annuals about the 5th of April. Pressa bowl, edge downward into the earth, until you have made a circular drill to the required depth, and plant the seeds in this drill. You may then bury any special manure in the center, and there place the label; when grown, the stalks of the flowers will form a circle, and the effect and mutual support of both will be improved.

Crude saltpeter cannot be used in the manufacture of ganpowder. Tbe crystalline flour, quite free from cbloride, is the best material for the purpose. In France, the amount of chloride is not allowed to exceed $3 \frac{1}{\delta 0} \sigma$. At the Wallham Abbey mills the washing process is carried so far that nitrate of silver produces no precipitate in a solution of the purified ealtonter.

