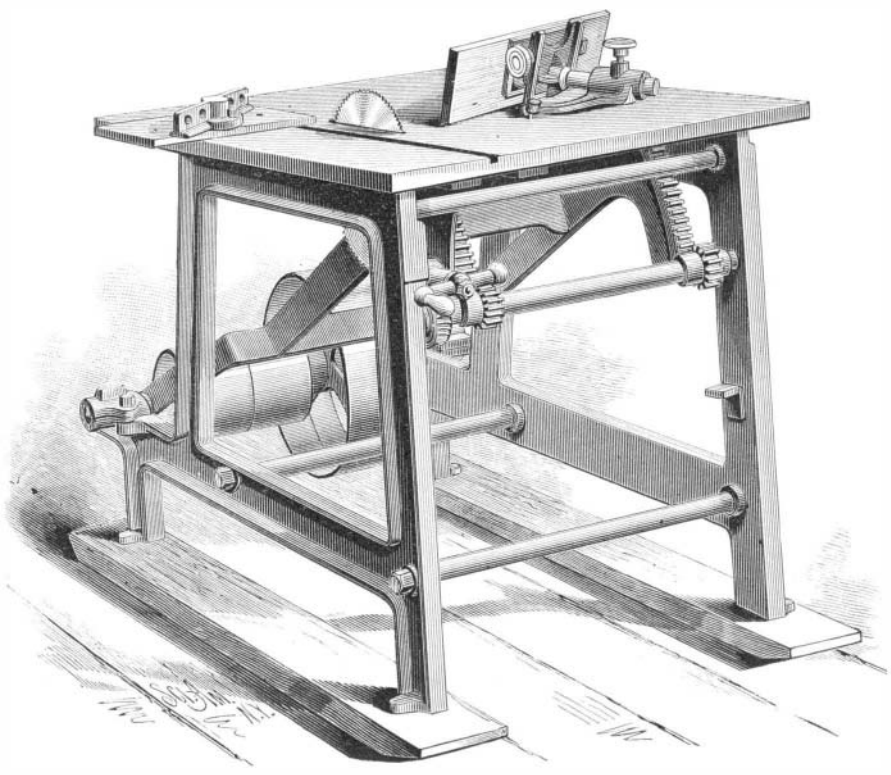
NEW SHOP SAW

The machine represented by the annexed engraving is an improved shop saw which combines all the necessary adjustments for cutting right and left hand angles and slitting at any bevel. The gauges for these purposes are light, simple, and easily handled. The saw mandrel is of steel, 25 inches in length, has long bearings, is hung in a swinging frame—hinged on the counter shaft—giving a uniform and good length belt.

The swinging frame is raised and lowered, by a worm working into a worm pinion, on a shaft carrying two gears that mesh into both sides of the upper end of the swinging frame, thereby securing accurate and positive movement of the saw up and down. The top is hinged at the rear end and may be raised to a perpendicular position. It has a loose throat piece that may be removed for the admission of different sized saws, dadoes, or other tools. The mandrel is fitted at the end opposite the saw to receive a boring bit, and the frame is calculated to receive a boring table. All the adjustment necessary is provided in the arrangement for lowering and raising the saw. A good boring machine is, in this manner, provided at a very slight cost; in fact, the purchaser can bolt a plank on the side of the frame and provide himself a boring table without additional cost.

This saw is very simple, convenient, and strong without being bulky. It is plain but substantial, and withal it has all the conveniences required in a shop saw at a very reasonable cost. It is manufactured only by the Battle Creek Machinery Company, of Battle Creek, Mich., whose reputation for good work is a guarantee of excellence.



PRESTON'S DIMENSION SAW.

Telephone in Church.

A telephone has been placed in the Congregational church at Mansfield, Ohio, the wires leading to the houses of several aged and invalid persons. A contemporary in describing it says it surmounts a floral decoration on the table in front of the open platform, where it is hardly seen. The speaker pays no attention whatever to it, yet every word uttered in the auditorium is easily heard in the rooms of the dwellings which the wires reach. The first message from the minister was from Scripture: "The word is nigh unto thee;" "His word runneth very swiftly."

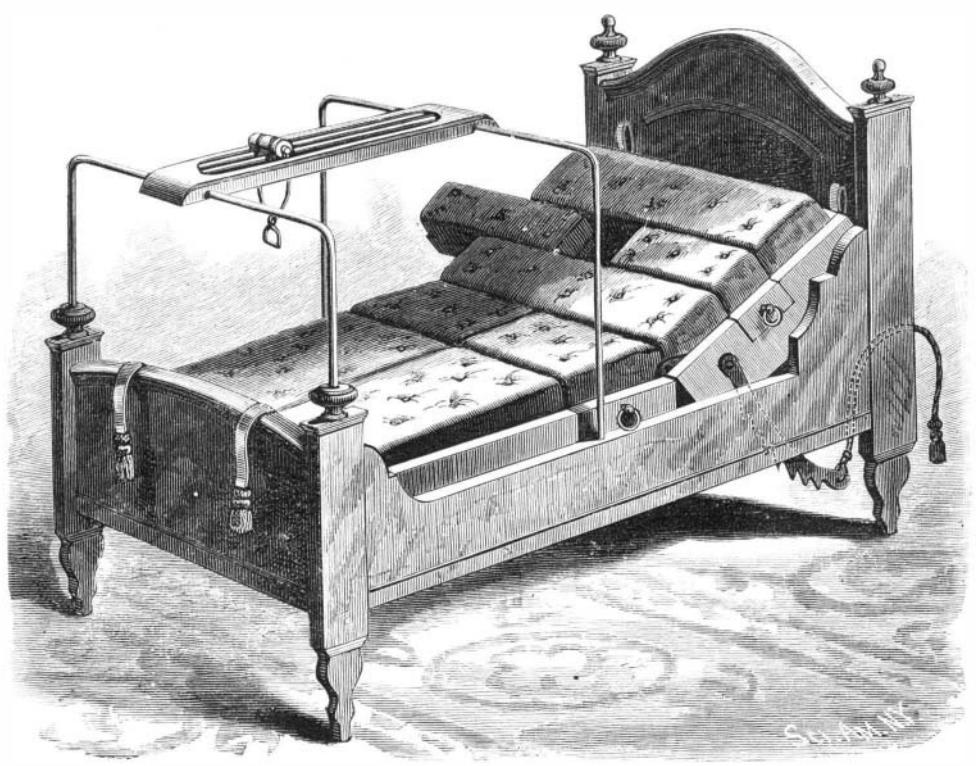
A NEW INVALID BED.

The invalid bed shown in the engraving is the invention of Mr. Wm. S. Groff, of Frederick, Md. It is intended for hospitals and private families, and has been very highly recommended by eminent physicians and persons who have used it. It seems especially adapted to cases of paralysis, fractures of the lower limbs, and to persons who are obliged to keep a recumbent position.

It will be seen by reference to the engraving that the bed bottom is made in several sections. The head section may be raised or lowered, and it is held in any desired position by the curved ratchet bar, which engages a pin projecting from the inner side of the bed rail. The middle part of the head section is made in two pieces, which may be drawn out laterally to admit of ventilation and also to afford a means of treating bed sores. The middle section of the bed is made in two parts, which are removable to admit of the use of an adjustable bed pan without changing the position of the patient. The foot section of the bed is divided longitudinally to give a separate support for each leg, and it may be raised or lowered at pleasure, being held in position by folding legs.

Above the foot section a bar is supported by two bent rods, and is itself provided with a track or ways for the rollers that support a stirrup intended to receive a strap for supporting one or both of the legs.

The inventor also provides a pulley to be attached to the footboard of the bed to suspend the leg by means of a cord and counterweight The pulley has a locking device for retaining the leg in any desired position. A table, not shown in the engraving, is attached to the bed for supporting food, dishes, etc., and for holding books, papers, and writing materials. This table is adjustable, and may be readily attached to the bed or removed. The bed is arranged for the comfort of the patient and for the convenience of the attendant or nurse. Its advantages will be readily admitted by those who have occasion to use an article of this character. Further particulars may be obtained from Wm. Bouldin, Jr., Frederick, Md.



GROFF'S INVALID BED.

Volcanic Eruptions.

In seeking an explanation of the phenomena which Herr Siemens witnessed during a visit to Vesuvius in 1878, the author has been led to some general studies in vulcanology, which have far more than local interest. At the time of his visit, says a writer in the *Nineteenth Century*, steam, or other vapor, was being ejected in explosive puffs from the cone in the center of the great crater. Assuming that steam or gas may be suddenly generated at great depths, it might fairly be expected that its ejection would be accompanied by the outflow of much lava, and that after each explosion sufficient time must be given for the accumulation of fresh lava in the chimney of the volcano before the next expulsion could occur. It may be suggested, indeed, that as water at a very high temperature is dissociated into its components, the magma or molten rock beneath the volcano might contain an explosive mixture of oxygen and hydrogen gases; then on any considerable diminution of pressure these gases would recombine and again form water. It is, however, highly improbable that, under the enormous pressure to which the magma must be subjected, anything like dissociation should occur; for the author's own experiments have shown that a mixture of oxygen and hydrogen, when subjected to a very high pressure, will explode. Dismissing, then, the idea of dissociation, the author is driven to the conclusion that hydrogen gas, or it may be combustible compounds of hydrogen, rise from below, and, mingling with atmospheric oxygen, form an explosive mixture which is burned in the upper part of the volcanic chimney. From the large quantity of steam generated by the explosions, it is probable that hydrogen is the principal combustible constituent of the gases, but it is not easy to decide whether the hydrogen exists in a free state, or combined with sulphur, carbon, and other elements.

Prevention Better than Cure.

The following extract is from an address by the venerable Dr. Samuel D. Gross, recently delivered at the dedication services at the unveiling of the McDowell monument, in Danville, Ky. These words have a practical ring, and were addressed to the young men of the Kentucky Medical Society, who were present in large numbers:

The great question of the day is, not this operation or that—not ovariotomy, or lithotomy, or a hip joint amputation, which has reflected so much glory upon Kentucky medicine—but preventive medicine, the hygiene of our persons, our dwellings, our streets—in a word, our surroundings, whatever and wherever they may be, whether in city, town, hamlet, or country, and the establishment of efficient town and State boards of health, through whose agency we shall be the better able to prevent the origin and fatal effects of what are known as the zymotic diseases, which carry so much woe and sorrow into our families, and often sweep like a hurricane over the earth, destroying millions of human lives in an incredibly short time. The day has arrived when the people must be roused to a deeper and more earnest sense of the people's welfare, and suitable measures adopted for the protection as well as for the better development of their physical, moral, and intellectual powers. This is the great problem of the day, the question which you, as representatives of the rising generation of physicians, should urge, in season and out of season, upon the attention of your fellow citizens—the question which, above and beyond all others, should engage your most serious thoughts, and elicit your most earnest co-operation.

Collodio-Bromide with Gum Guaiacum.

In a note in a recent number of the official journal of the Photographic Society of Great Britain Captain Abney says: "The members of the Society are invited to try a modification of the ordinary washed emulsion process, as it is believed that it is valuable in more ways than one. The modification consists in adding to the washed emulsion one sixth part of alcohol which has been saturated with gum guaiacum. The plate is coated in the ordinary manner, and the film takes a greenish-blue tint when dry. The drying may be done 'spontaneously,' or it may be accelerated by the warmth of a drying room or box; but the temperature should not exceed 120°, since the gum then fuses and the film repels the developer. Those plague spots that refuse to develop have not been found to be present except in one or two plates, and the fact of their presence has been recognized before placing them in the dark slides, since they remain of the ordinary color of the bromide while the surrounding portions are colored, as stated above. It is something to be able to see the spots before development, and on this account alone the addition of this gum is valuable.

To develop, the plate is flooded with alcohol, and then washed and treated with the alkaline or ferrous oxalate developer in the usual manner. The film, being very porous through the removal of the gum, readily takes any amount of density, and it is amenable to intensification with pyrogallic acid and silver nitrate. If a phantom image be developed first by a weak developer it may be built up as the operator may choose. The film has no tendency whatever to leave the plate; even the most horny film becomes glued to the surface, and, as before stated, easily permeable to the developing solutions. The gum acts as a preservative, as will be seen by the simple experiment of dissolving it in alcohol and pouring the solution over a clean plate. On evaporation of the alcohol a hard, transparent film is left.

The keeping qualities of these plates between exposure and development have yet to be tested. If they keep as well after exposure as they do before they will be very useful plates for the tourist. The writer appeals to photographers to try the process, in the hope that it may lead by experiment to the introduction of a really good preservative which may be applied to the plate with the emulsion itself.

"Gum ammoniacum has been already used by Mr. Stillman, but its comparative insolubility is a great drawback to its use as a preservative. Gum guaiacum combines with bromide; hence it is efficient on this score."