

NEW COTTON PICKING SHADE.

The annexed engraving scarcely requires description, as the purpose and advantages of the invention will be readily seen. Cotton picking, at best a laborious occupation, becomes irksome when conducted under a burning tropical sun; and a device which will afford to cotton pickers an efficient protection from the influence of strong sunlight and heat should receive attention. Such a device is shown in the accompanying engraving, and it must prove beneficial to both laborers and employers, for without a doubt more work can and will be done when a protection of this kind is afforded. The invention consists simply of a protective shade of cotton cloth, mounted on a light frame provided with wheels, which facilitate its movement along the rows of cotton to be picked.

This invention was recently patented by Mr. J. C. Benthall, of Schulenburg, Texas.

A Silver Fossil.

The *Bulletin* of the Geological Society of France describes an ammonite of silver, found in a silver mine at Caracoles, South America, by M. Fremier, who was for some time director of the mines at that place. This remarkable specimen was found with a number of other ammonites belonging to the two species *A. peramatus* and *A. plicatilis*, which had not been mineralized with silver salts. The ammonite in question, however, had been entirely replaced by chloride of silver, which had been partially reduced to the metallic condition. Light is thrown by this specimen upon the origin of the native silver which occurs in the Caracoles mines; for it is only fair to infer that this metal has, in like manner, been reduced from the state of chloride.

PUMPING SYSTEM FOR HYDRAULIC PRESSES.

There are two objections to the use of hydraulic presses as ordinarily arranged. One is, that the press works at a uniform rate of speed throughout the entire distance traveled by the platen, and therefore of necessity works slowly; the other is, that the press must be near the source of power to work to the best advantage.

The accompanying engraving represents an improved system in which these objections are not found, and which renders the hydraulic press applicable in many places where without these improvements it could not be used. It also increases the capacity by giving a greater supply of water under pressure during the early part of the operation of pressing.

The pump shown in the engraving has two pistons, one of which is larger than the other, and designed to be applied at the beginning of the operation of pressing, to supplement the smaller one, and to accelerate the plunger of the press by forcing large quantities of water into the press cylinder. When the prescribed limit of pressure for the larger pump is reached, the pump is thrown off by means of the lever seen at the side of the press in the background. This lever is connected by bell cranks and shafts with the cam seen under the relief valve lever of the larger pump; the heavy finishing pressure is given by the smaller pump.

The valves to these pumps are of large area, and are so arranged that they may be readily taken from their seats to remove any foreign substance, or for the purpose of refitting, should it become necessary. All of the parts subjected to wear are capable of being easily "taken up," and the machine is constructed on the interchangeable plan. By employing a set of valves shown in the middle of the engraving, the pump may be placed in any convenient position, no matter how far distant from the press. The press will then be controlled by these valves, while the pump is allowed to run continuously.

Pumps are made on this plan with four or six plungers. By modifying the arrangement of the valves, several presses may be conveniently operated with a two-plunger pump.

We are informed that a large number of these pumps are

in use on a great variety of work in all parts of the United States, giving good satisfaction. Many of them are in the hands of parties having little mechanical skill.

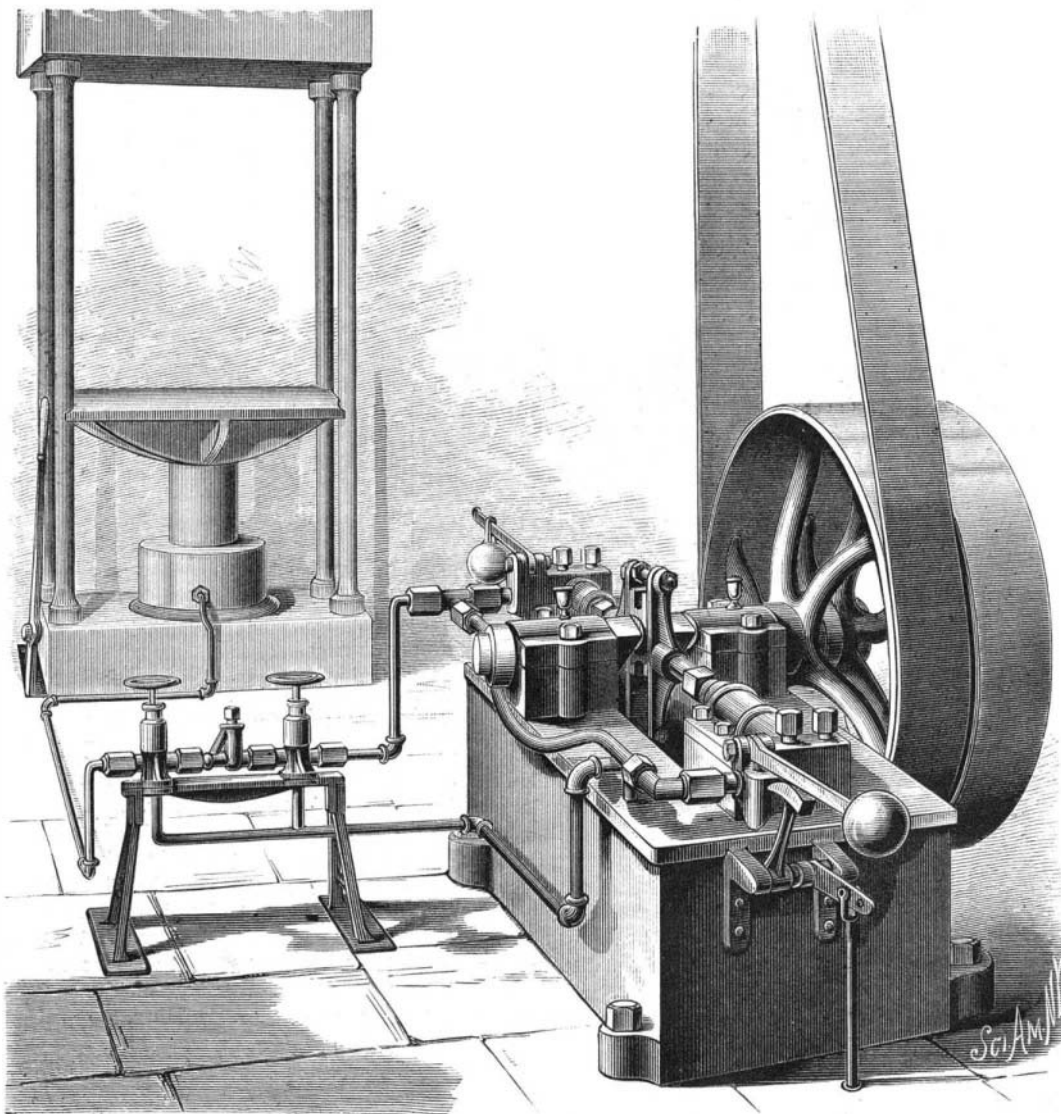
For further particulars address E. Lyon & Co., 470 Grand street, New York City.

Rapid Photos.

At a recent meeting of the Edinburgh Photographic Society an interesting lecture was delivered by Mr. W. H. Davies on "Rapid Studies from Nature," during which he introduced a number of screen pictures from instantaneous

**BENTHALL'S COTTON PICKING SHADE.**

photos, representing movements of life in various forms. Among the pictures thus shown were the Muybridge horse pictures, from California, heretofore shown in our paper. These photos represented the various positions of the horse's feet in the act of stepping, and were taken while the animal was going at a 2:40 gait. The lecturer, after complimenting the American photographer who took these remarkable pictures, added: "I may mention that the general speed of a fast trotting horse is about two and a half miles a minute!" Our cousins across the water are so unaccustomed to the sight of fast trotters that perhaps it is not surprising that the lecturer's statement should have been received as correct.

**IMPROVED PUMPING SYSTEM FOR HYDRAULIC PRESSES.**

Their ideas of the speed of American horses must have made a most rapid advance.

The House Committee on Patents have decided to report adversely on the application for an extension of the patent on the Miller platform and coupler, on the ground that the patent has run long enough, and that the patentee has received sufficient remuneration already.

How to Get Rid of Rats in Mills and Granaries.

Millers are well aware of the terrible annoyance occasioned by rats in the mill and warehouse, and may find a useful hint in the following, from a note presented to a French industrial society, by M. Benner. The *American Miller* translates:

"Every one understands the ravages caused by rats in warehouses, storehouses, granaries, and the like. The amount of damage inflicted by these guests is appreciated by those engaged in pursuits the establishments of which suffer periodical invasions by the rodents. Their annual

depredations cost millions of money. To destroy these animals, traps of all kinds have been employed and poisons of every description of undoubted deadly power. But the instinct of self-preservation in these unwelcome guests renders them inefficacious, and often injures domestic animals. Lately, one of my friends related to me the following, which took place in a large mill operated by his father. There the rats live, in a happy quiet, for the reason that the proprietor of the establishment has discovered by experience that each time he attempted to destroy them by traps or poisons, no longer contenting themselves with a diet of grain and flour, they became aggressive, and appeared to take vengeance by gnawing into the bolts and sacks in the course of a single night.

"Like every industry which uses a water course, mine had suffered particularly from the periodical invasion of rats, which, at the approach of the rigorous season, took up their winter quarters in the warmest parts of the establishment. At this time they quit their burrows on the banks of the stream and invade the premises, gradually working up from the basement to the loft. For years I tried every means to accomplish their destruction, but to no purpose. One day when the work of repairing a wall of masonry, which supported the engine, called me below, I saw that the limestone upon which the platform of the cylinder rested had been gnawed down to the cement. This warm and dark passage had served as a retreat for the rats who raided the establishment.

The idea struck me to suffocate them in their den. I took some moist chloride of lime, which I passed into each opening, and when all the rat holes were covered with paste, I sprinkled over it a small quantity of oxalic acid. The mason immediately filled up all the openings, but not before some of the rats, disturbed by the freeing of the chlorine gas, had escaped.

"During the winter which followed, I was able to see that the rats were a little less numerous in that part of the establishment. Encouraged by this partial success, I carefully sought out the rat holes on the ground floor and went through a similar operation, with the difference that I used liquid chloride, which I poured into the rat holes until the liquid flowed back to the opening. Then I poured in hydrochloric acid diluted with water, after the earth or masonry had absorbed the greater part of the first liquid. By this mixture a violent escape of chlorine gas is produced, and the rats were invariably asphyxiated. When the operation was completed, the holes were filled up to prevent the coming of other inhabitants. That year I noticed that the rats had disappeared from the ground floor, but I could still hear them in the ceiling of the other stories. I sought all the openings by which the rats penetrated between the ceiling and the floor, and prepared pieces of sheet iron of a size sufficient to cover each hole completely. Then I placed several

handfuls of cotton at the bottom of the opening in such a way as to cover the greater part of it, and dipped a piece in the moist chloride of lime and dropped it upon the first layer destined to absorb the liquid part. Then I sprinkled on some powdered oxalic acid, and alternately introduced the chloride and the acid until the entrance was filled, and then I nailed on the piece of sheet iron. This operation was gone through with in each story, and the result was complete; all the rats perished from the fumes of chlorine.