

# SCIENTIFIC AMERICAN

A WEEKLY JOURNAL OF PRACTICAL INFORMATION, ART, SCIENCE, MECHANICS, CHEMISTRY AND MANUFACTURES.

Vol. XXXI.—No. 2.]  
[NEW SERIES.]

NEW YORK, JULY 11, 1874.

\$3 per Annum.  
IN ADVANCE.

## BALANCED SCREW AND REVOLVING COTTON PRESS.

The several points of merit claimed for the improved cotton press herewith illustrated are simplicity of construction, rapidity, and reliability of action, and the saving in time of pressing effected. These, with other advantages below noted, combine to render the device suitable for employment by cotton raisers, or applicable to the pressing of tobacco, hay, hops, cloth, paper, hair, hemp, moss, cider, wine, rags, straw, and, in brief, to any operation where inventions of similar nature are now employed.

The apparatus, as shown in the illustration, revolves on the pivot, A. The screw, B, having a crosshead which travels in the guides on the upper part of the frame, extends down through a nut, C, on the revolving portion. To the upper portion of the screw is attached a cord which, passing over suitable pulleys, carries a barrel of stones or similar counterpoise.

The nut, C, is made in two sections which, by means of the lever attachment, D, may be closed together or opened at will. When the parts are closed and the lower portion of the press rotated on its pivot, by means of the handles shown, the screw, acting on the nut, is necessarily caused to travel downwards, so forcing down the follower and compressing the material. When the pressure is finished, instead of it being necessary to turn the press in the opposite direction, and so waste time in raising the screw to its former position, the sections of the nut are opened, releasing their engagement with the screw, which is then lifted bodily by pulling down on the counter weight, as represented in the figures on the left. It is claimed that, through the economy of time thus effected, one third more bales per day can be pressed. After the cotton box is filled, the follower block does not require to be turned down three or four feet before reaching the point at which pressure begins, but is lowered or dropped at once, so that the real work commences with the first revolution of the machine.

The press, if desired, can be run by steam power, a belt being placed on the drum under the cotton box. It can be located in the lint room or erected as shown in the engraving, by framing a supporting beam into the gin house and allowing the apparatus to stand near to and outside the buildings. The frame is of iron or wood, as desired, is portable, and occupies no extra space. Five hundred pound bales are readily made with two hands, or any other power may be applied if required.

By a slight change in the adjustment of the nut, the machine can be converted into a trumper press, the screw and follower being used to pound the lint in the box down into its place, thus obviating the injury to the health of the workers who enter the receptacle and tramp the material with their feet.

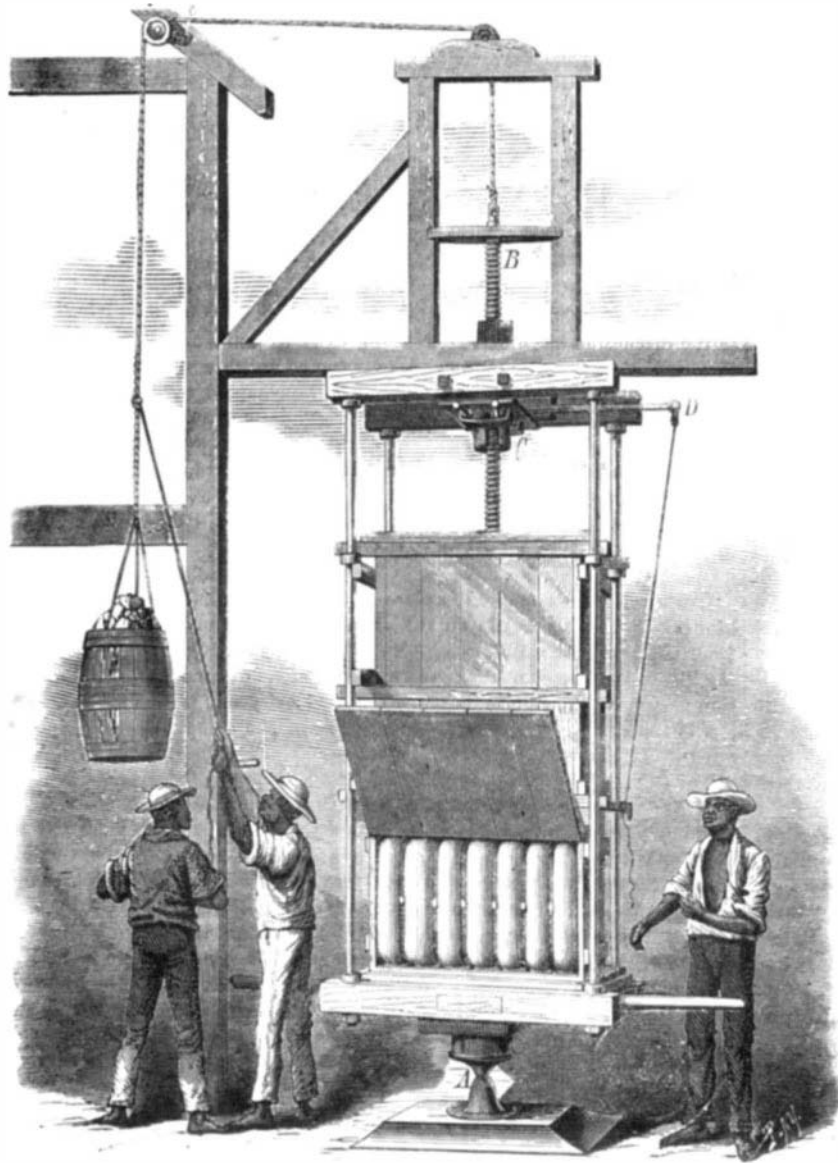
The invention was patented April 10, 1871, since which time it has been modified and improved in many particulars. It is now in successful use in many localities in the South, and gained a premium at the late St. Louis fair. The manufacturers state that other forms of the press, arranged so that the screw works upward, so that the bale may be removed from the top will shortly be offered. July and August being the months in which cotton presses are principally used, planters and others desiring further particulars regarding sale of State and county rights, or for presses, should lose no time in addressing J. H. Woolfolk, Box 295, Vicksburg, Miss. The special agent for Texas, Louisiana, Mississippi, and Alabama, is Dr. D. R. Lemman, New Orleans, La.

### More Machine Honesty.

The "knockdown" system, as the appropriating of fares collected by stage drivers and car conductors is termed, is not, it seems, peculiar to this country. The employees in the London street car lines have been resorting to the same means of increasing their wages. From the fact that people pay fare according to the distance they travel in most of the London conveyances, it will be seen that it is a very easy matter for the conductor to collect a certain sum for the longest ride, but to hand in the amount necessary to pay for the shortest, pocketing the difference.

Mr. Weir, has recently devised an apparatus which, the *London Times* says, works excellently, and which will proba-

bly come into general use in that city. A bronze door is placed across the entrance of the vehicle, so arranged that but one person can pass through at a time. Then in a small locked metal box is a registering apparatus which consists of a slip of paper which is pricked at the entry or exit of each passenger. The needle which makes the mark and the band of paper is set in motion by the opening of the door, so that each passenger is indicated by a separate puncture. In order to denote exactly how many people paying a certain fare are to be accounted for, at every station on the line at which a change in price is made a projection is fixed in between the tracks. Against this, as the car passes over, a small wheel



BALANCED SCREW AND REVOLVING COTTON PRESS

connected with the registering mechanism by a pneumatic apparatus strikes, so that, by suitably moving the indicators, a blank space of some length is left after the last puncture denoting the lower fare. At the end of the journey, the slip of paper is removed, and gives the exact number of fares of every amount for which the conductor is responsible. The conductor is provided with a peculiar key in order to let himself out of the vehicle to make his collections, and an indicator marks each time that he does so. The above appears to be a rather complicated method of making conductors honest, but it may do for London.

### The Spontaneous Combustion of Charcoal.

Professor F. Hargreaves states that the kinds of wood generally used for the manufacture of gunpowder charcoal are the black dogwood, the willow, and the alder. They are all well adapted for the manufacture of charcoal, although the dogwood is always used for the best sporting gunpowder. The wood is converted into charcoal by heating it in iron cylinders.

After the charcoal is taken from the cylinders, it is placed in iron coolers provided with tightly fitting lids, and allowed to stand for 14 hours, by which time it is generally quite cold, when it is sent to the charcoal mill to be ground, and afterwards to be mixed with the other ingredients for gunpowder.

But there are examples where the charcoal has spontaneously taken fire on the day after grinding. This is owing to the fact that charcoal absorbs mechanically within its pores a large quantity of oxygen gas from the atmosphere; and the condensation of all gases liberates heat, and, charcoal being a bad conductor, the heat cannot escape. The amount of oxygen

absorbed by the charcoal varies with the degree of carbonization; the higher the heat, the more gases it will absorb.

The absorption with sticks of charcoal is not so quick as with ground charcoal: hence the spontaneous combustion of stick charcoal does not occur so often.

### Fighting Fire with Explosives.

Western settlers, when a prairie is in flames, find that the only and best means of protecting menaced property is to plow up the ground around the latter for a width of several yards. Over this the fire cannot pass, for the simple reason that it finds nothing upon which to feed. The sole effective

method by which the ravages of any great conflagration can be checked (and the truth was amply demonstrated in Boston and Chicago) consists in following the same plan; and in crowded cities, by destroying buildings adjacent to the burning locality, the latter can be entirely isolated from other portions, so that the fire may be confined to a limited area, on which may be concentrated the entire force of the extinguishing apparatus. The value of this heroic remedy is becoming widely recognized, and in this city a corps of sappers and miners has been organized, comprising fifty-six persons selected from the officers of the Fire Brigade, who are being regularly instructed in the use and nature of explosives, electric fuses, etc.

The first public experiments of the organization recently took place on Ward's Island, in the neighborhood of this city. A number of brick walls were erected, of various thickness, having a depth below the ground of one foot, and built upon a timber foundation. The first wall attacked was 20 inches thick, and the object of the experiment was to show the comparative effects of mining powder and dynamite suspended in cubical boxes against it. Fifty pounds of mining powder barely blackened the bricks, while six pounds of dynamite in a box 5 by 5 inches, cut a hole through the wall of about the size of the box. Then experiments followed in cutting down masonry varying in thickness from 8 to 36 inches, with cartridges containing from one to five pounds of dynamite, the effect being to divide the walls at the marked places with great accuracy. Floors were also torn up with the same powerful material, and finally seven walls were blown to fragments by a continuous line of cartridges arranged in rubber tubes and covered with bags of sand.

The trials were mainly very successful, and showed that by the use of explosives not only could whole buildings, during great fires, be quickly demolished, but, in

smaller conflagrations, the dynamite cartridge could be advantageously used in gaining rapid access to edifices through walls. This proceeding now requires lengthy labor with axe and pick, the flames in the time thus lost often making serious headway.

### The Solar Eclipse of April 16.

A total eclipse of the sun was observed by Mr. Stone, English Astronomer Royal at the Cape of Good Hope, on the 16th of April last. The line of totality passed over the southern extremity of Africa, beginning at Port Nolloth on the west coast of Cape Colony, somewhere about 250 miles from Cape Town, and took a curved path, with the convexity turned toward the north, ending at sunset about half way across.

The day was especially favorable for observation, and the sky was entirely free from clouds. Mr. Stone states that the rose-colored flames extended very nearly around the moon, although, of course, of unequal heights at different parts. The spectrum near the moon's limb was carefully examined in order to discover fresh lines, but none appeared, and hence there cannot be any medium capable of producing sensible absorption of light around the moon.

At the instant of totality the whole field appeared full of bright lines, all the principal Fraunhofer lines being reversed. Mr. Stone's observations tend to confirm those of the eclipses of 1869, 1870, and 1871, and their most important portion is that referring to the visibility of the Fraunhofer lines in the spectrum of the coronal atmosphere, showing thereby that that reflects the light of the photosphere.

A DEATH from hydrophobia recently occurred in Philadelphia about four months after the bite was given.