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IMPROVED COTTON GIN FEEDER.

The principal difficulty found to exist in inventions of the class to which that illustrated herewith belongs is that, as a rule, they are too complicated for ordinary laborers to understand their workings, while, in addition to this, in many cases the mechanism is troublesome to repair. The cotton gin feeder shown in the engraving, it is claimed, possesses the advantages of simplicity, durability, and adaptability to the labor common to the cotton plantations of the South.

It is an endless belt which conveys the cotton to the toothed drum which, in turn, feeds the material to the breast, B, of the gin. The shafts of the drum and of the roller over which the belt, A, passes, are geared together by the train of wheels and pinions, C, in order to cause them to turn relatively to each other at the proper rate. On the opposite side of the apparatus the drum shaft, by suitable mechanism, is geared to a band wheel, so that the feeder may be driven by a belt from the gin. These gears are so contrived that they may be readily interchanged, so that the driving gear may be placed on either side, as may be required by the gin, which cannot always be arranged in the same relation to the feeder. This adapts the machine for application to any gin.

The driving pulley shaft is arranged on a slide, not shown, which is shifted by a lever for throwing the feeder in and out of gear. D is the apron which delivers the cotton to the gin breast. This is arranged a little in advance of the bed on a pivot, so as to turn freely to accommodate itself to the position of the breast, which has to be raised and lowered at times; also to make a space through which the trash may fall, and sand and dust may be blown by the drum into the trough, E, below. At F are the ventilating slots in the hood for the escape of the light dust caused by the blast of the drum.

Patented through the Scientific American Patent Agency, April 20, 1875, by Mr. F. W. Flynn. For further information address Messrs. W. H. Lockwood & Co., 130 Poplar street, Memphis, Tenn.

Straightening a Tall Chimney.

A high factory chimney in Havre, which during the process of building had, owing to the sinking of one side of its foundation, been thrown out of perpendicular, was recently straightened in the following manner: The earth on the side opposite to that toward which the chimney inclined was dug away to the foundation bed, and for a width of six feet. On the wide lower course, pillars of masonry were erected, which supported a heavy staging, on which some 30,000 paving stones were piled. The effect of this immense load was to cause a sinking of the structure beneath, which, in six weeks, resulted in the straightening of the chimney the top having passed through an arc of 31 inches.

Figures Printed by Lightning.

Persons who are killed by lightning stroke are frequently found marked about the body in a peculiar manner, the lines being grouped into semblance of the trunk and branches of a tree. In case the casualty actually happens anywhere in the vicinity of a tree, the ramifications are attributed to some mysterious property of the lightning, which reproduces on the body (as was stated in a published instance) "the fibers, leaves, and branches with photographic accuracy."

Mr. C. Tomlinson, in a communication to *Nature*, states that the trees have nothing to do with the figures, which are produced directly by the lightning. The same markings may be found in sheets of crown glass by passing over them the contents of a Leyden jar. The writer, however, mentions a variety of curious phenomena in which horseshoes, metallic numbers, etc., have been found reproduced on the persons of people struck in their neighborhood. Mr. C. F. Varley throws light on these last mentioned cases in giving the record of an accidental observation made during the working of a Holtz electrical machine, the poles of which were fur-

nished with brass balls about an inch in diameter. Noticing some specks on the ball of the positive pole, Mr. Varley tried to wipe them off with a silk handkerchief, but in vain. He then examined the negative pole, and discovered a minute speck corresponding to the spots on the positive pole. This pole sometimes exhibits a glow; and if in this state three or four bits of wax, or even a drop or two of water, be placed on the negative pole, corresponding non-luminous spots appear on the positive pole. Hence it is evident that lines of force exist between the two poles, by means of which

which is formed of two cup-shaped vessels (one in the other, as shown) kept normally in equilibrium by the steam pressure; but the raising of the pin releases the pressure on the interior cup, and allows the water to flow off till the balance of the valve is restored. The action appears to be very easy; and the valve will, no doubt, work continuously so long as condensation takes place.

The Mechanical Force of Light.

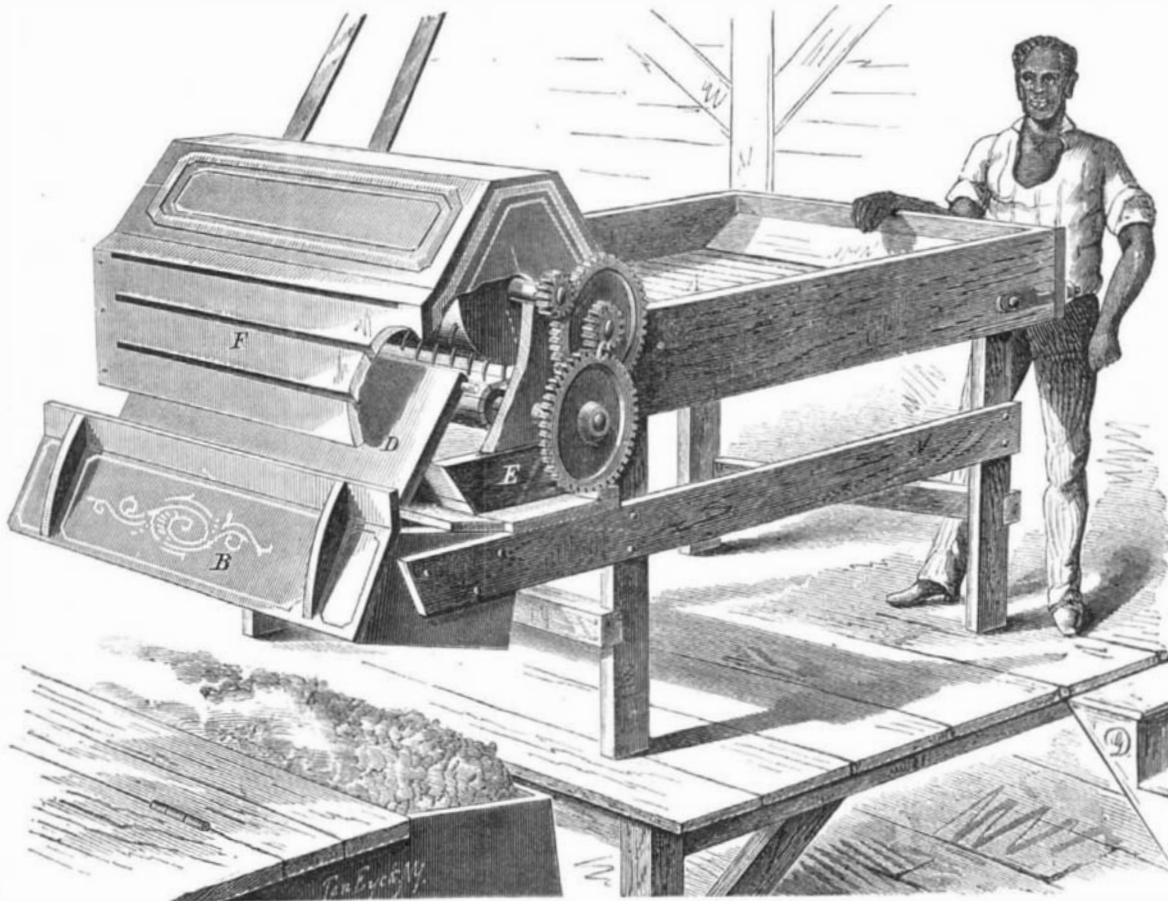
It may not be altogether premature to take a survey of the possible applications of the new power which Mr. William Crookes has shown to be derivable from light. Seeing that, by means of the sun's direct rays, he has been able to cause the vanes of his small radiometer to revolve four times in a second, it becomes evident that, with larger and improved appliances, we may hope to obtain motive power cheaply from a practically inexhaustible source, namely, the sun itself. The fact that luminous undulations are capable of exerting a motive force, of a nature so gross as that required to turn the vanes of a poised cross, will also render the comprehension of the chemical disturbances which are often effected by light, and which are exemplified in the union of chlorine with hydrogen when exposed to sunlight, in the production of the photographic image, etc., a matter of much less difficulty than it was heretofore.

The discoverer of these extraordinary phenomena confesses that he himself is unable to account for them by any satisfactory theory, and wishes to avoid proposing any until a sufficient number of

facts have been accumulated. The facts will then tell their own tale.—*English Mechanic*.

Importance of Crocodile Study.

Professor Huxley has undertaken the duties of the chair of Natural History in the University of Edinburgh for the present summer session, and lately gave his introductory lecture to a large audience. He expressed at the outset a hope that at this time next year Professor Thomson would be among them again, full of health and vigor, laden with the spoils of many climes through which he had traveled, and a sort of zoological Ulysses, full of wisdom for their benefit. He then took a general view of his subject, and put before the class the considerations which resulted from the careful study of a single animal, the crocodile; an animal which was worthy of attentive study, as it might be said that a knowledge of its organization was the key to the understanding of a vast number of extinct reptiles, and the key to the organization of birds; while it helped them to connect the higher with the lower forms of vertebrate life, upon the globe. There might be asked respecting this animal, as respecting every other living thing—first, what was its structure? second, what did it do? third, where was it found? and fourth, in virtue of what chain of causation had this thing come into being?—this last having only been recently recognized as one of those questions which might legitimately be put. He then proceeded to describe the organization of the crocodile—its morphology, physiology, and distribution; and remarked that there were few animals about the palæontological history of which they knew so much, as they could carry back its history through the tertiary and secondary epochs. The answer to the last question constituted ætiology, or the science of the causes of the phenomena of morphology, physiology, and distribution. Here, as in all cases where they had to deal with causation, they left the region of objective fact and entered that of speculation. With their present imperfect knowledge, the only safe thing they could do in attempting to form even a conception of the cause of this extraordinary complex phenomenon was what a wise historian would do—stick by archaeological facts. He pointed out that palæontological facts showed that there has been a succession of forms of that animal to the present day, the oldest being something like the lizard.—*Nature*.

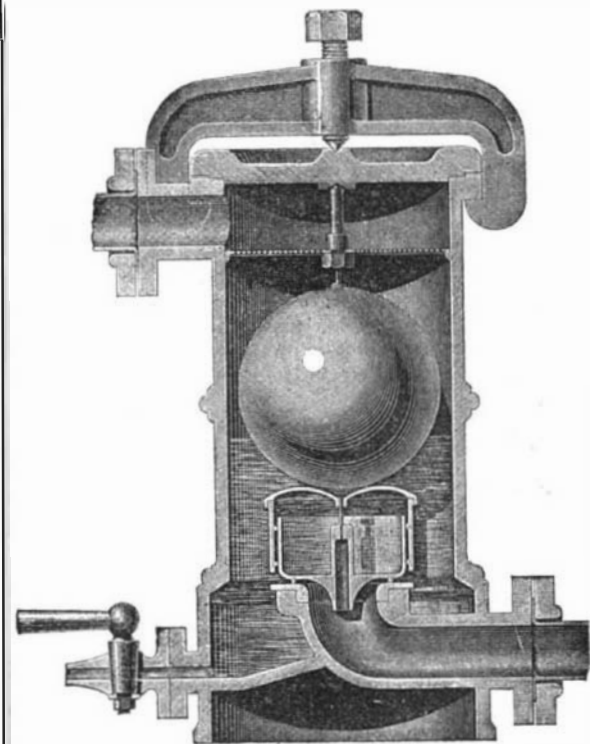


FLYNN'S IMPROVED COTTON GIN FEEDER.

we may telegraph through the air from the negative to the positive pole. And in explanation of the above cases, in which the lightning burn on the skin is of the same shape as the object from which the charge proceeded, all that is necessary is that the object be + to the horse shoe, brass number, etc., the discharge being a negative one.

CONDENSED WATER TRAP.

Mr. A. L. G. Dehne, of Halle, Germany, has patented a very simple trap for removing automatically the water of



condensation from steam heating and other pipes, which will be understood at a glance on our engraving. When the water has accumulated sufficiently to raise the globular float, the pin attached to the float is lifted from the valve,