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IMPROVED FULLING MILL.

A new fulling mill, which has lately come into use in many of the largest hat-making establishments in the country, is represented in the illustration given herewith. Hatters, and makers of felted goods generally, understand the difficulty of making hats or other fabrics out of bodies that have not been well washed, and from which the gum, grease, and soap are not thoroughly discharged after milling. The goods from the mills below described, having been made much quicker, quit the soap fresh and lively, and, it is claimed, are much more easily and cleanly washed than those prepared in the old apparatus. It is also stated that there is less wear and waste to the stock, for the reason that the quicker action to which they are submitted, and the shorter time during which they are under the operation, allow the goods to remain warm until finished, so that very poor, short, or waste stock, that would be injured or destroyed by the old mills, will go through these without being damaged. For the same reason, much less soap is used.

The construction of the machine is very simple, it consisting in a driving shaft on which are located friction cams, A. These impinge against shoes, B, and thereby lift and let fall the heavy hammers, C, which last work upon the stock. Any wear between the faces of the cams and shoes is taken up by the rod, D, which is set up as required. The hammers by this device are given a much more rapid action than is usual, and at the same time a uniform fall or blow, whether the mill be full or nearly empty. The invention can be attached to any of the common falling hammer mills by simply removing the tappet wheels and gears. It dispenses with the pit, leaves the floor clean and level, and does away with the disagreeable noise of the old tappets. No more power is required than for the ordinary mill, and less room is occupied. Finally, it produces one millful in half the time, or two millfuls in the same time in which the old device now produces work, and, in addition, turns out much better work.

For further information, apply to the Patent Fulling Mill Company, Middletown, N. Y.

PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES.

The regular spring meeting of the National Academy of Sciences opened at Washington, D. C., on April 20, with Professor Joseph Henry in the chair. At a business session with which the proceedings began, five new members, Professors R. E. Rogers, Asaph Hall, Alpheus Hyatt, Joseph LeConte, and Mr. L. H. Morgan were elected, after which the regular reading of and debate upon papers presented was commenced. The subjects thus far discussed are not of extraordinarily popular interest; and in fact the learned treatises are rather more ponderous than practical. Our usual brief abstracts will be found below.

Professor Elias Loomis, on

STORMS AND SPELLS OF WEATHER.

said that the progress of storms is not uniform during the day, either in different years or different months. It appears that the average velocity of storms from 4.35 to 11 P. M. is about 25 per cent greater than during the remainder of the day. This excess varies for different months, ranging from 14 to 32 per cent. The maximum diurnal velocity is at about 8 P. M. During the three years last past, the most rapid progress of a storm center observed on one day occurred on February 22 1874, being 1,280 miles, or 53.3 miles per hour;

the least velocity occurred August 21, being 228 miles, or 9.5 miles per hour.

From other investigations, it appears that, when the course of a storm is most northerly, the axis of the rain area is inclined to the storm's path, nine degrees toward the south; but when the course of the storm is most southerly, the axis of the rain area is inclined to the storm's path only four degrees.

Under the head of sudden thermometrical changes, Professor Loomis stated that the quick fall of temperature which frequently succeeds a great storm should be ascribed to the

diffused or unsteady, by the cessation of any undulation across the center of the ligament or black drop. The times, both of formation of drop and tangency of limbs, depend on the definition, the first being earlier, and the latter later, the worse the definition. The same care and attention should be devoted to external as to internal contacts.

Professor George Davidson sent a letter to the Secretary containing recommendations for the next transit, the principal of which was that, to get the best results, observations should be made from great and isolated elevations, where the atmospheric disturbance is a minimum.

One of the most interesting papers read was that of Professor Marsh on the

SMALL BRAINS.

In *dinoceras*, the largest mammal of the eocene, nearly equal to the elephant in bulk, the brain was comparatively the smallest in any known mammal, being not larger than in a tapir. *Brontotherium*, of the miocene, which was about as large as *dinoceras*, had a brain several times as great, and with the hemispheres better developed. In the mastodon, from the pliocene, the brain had greatly increased in size and convolutions, and in a species of this genus from the post tertiary the brain was nearly as well developed as in the living elephant, but not quite as large. A similar increase of brain capacity was shown in the horse family, from *orohippus* of the eocene, through *mesohippus* of the miocene, *pliohippus* of the pliocene, to the existing horse; the same brain growth was shown from the tapiroid eocene mammals, through the miocene and pliocene rhinoceroses, up to those of recent times, and also for the suilline and ruminant mammals. In the monkeys, carnivora, insects, and rodents, the

same law of development of the brain holds equally true, so far as the speaker had continued his investigations, and in the higher of these groups the changes since the eocene were most remarkable.

Mr. Justice Bradley, of the United States Supreme Court, submitted a communication on

A PROJECT FOR CHANGING THE CIVIL YEAR,

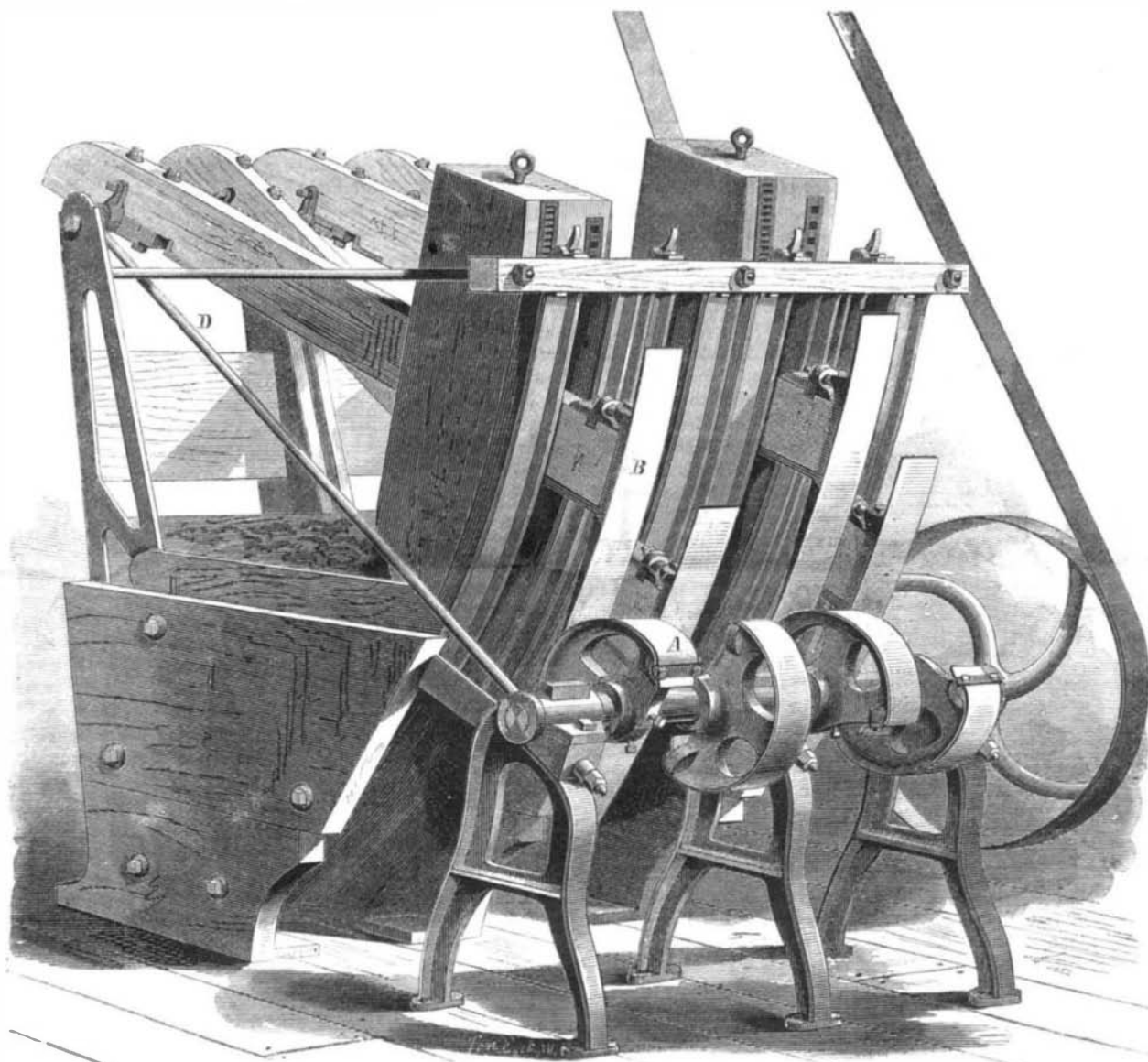
in which it is proposed to make the civil year correspond with the solar year. For the present century the first day of the year would fall on December 21, and the sun would arrive at the cardinal points on the first days of January, April, July, and October respectively.

English Agricultural Machinery at the Centennial.

The English manufacturers of agricultural machinery do not propose to exhibit their products at the Centennial. The reason is that our duties on the importation of foreign devices of this character is from 30 to 40 per cent, and hence is practically prohibitory. As there is no paying trade for the goods in this country, manifestly the producers have no incentive to exhibit, and hence they decline to incur the expense to make a show "to please and instruct others," which will be of no benefit, as they think, to them.

A CANAL project has been formed by which it is hoped to connect the mouth of the African river Betta, on the Atlantic, with the northern bend of the Niger at Timbuctoo, a distance of 740 miles.

It is said that sugar barrels and boxes can be kept free from ants by drawing a wide chalk mark around the top near the edge.



DRAPER'S FULLING MILL.

sudden descent of the atmosphere whose temperature at the time is unusually low.

Professor J. P. Lesley followed with an interesting sketch of the second geological survey of Pennsylvania, which he concluded with a description of the structure of the valley of the Schuylkill, showing that the river had in course of time cut a channel for itself through a mountain 1,500 feet high.

THE REPORT OF THE METRIC COMMISSION

detailed progress during the past three years, and referred more especially to the metrological congress in Paris. Since the completion of the standards, the casting of which has been described in detail, a conference has been called of the nations interested, and this body convened in Paris about a month ago. It has been agreed to establish an international bureau of weights and measures, having its seat in Paris, to be charged with the care of all the delicate apparatus which has been employed in the construction of the standards, and to make future comparisons and verifications.

Professor A. Guyot read a paper on the CATSKILL MOUNTAINS,

in which he stated that the names given to several of the peaks were wrongly applied. On measuring heights, he found to his surprise that several of the mountains exceeded 4,000 feet in height.

Professor Simon Newcomb, on the TRANSIT OF VENUS, remarked that the only phase of internal contact which it is worth while to observe is that of true contact. When the definition is sharp and steady, this phase is marked by the breaking or formation of the thread of light; and when it is