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Straw and Corn Cutting Machines.

The advanced state of agriculture has produced a demand for improved machinery and appliances, by which the preparation of feed and the cost of raising stock can be reduced to a more economical system. Hence it has been the study of numerous inventors how to construct a machine for cutting hay, straw, etc., in a first-class manner, and in combination will reduce even corn stalks and the coarse material usually found in feed, fine enough for all kinds of stock to eat, requiring that class of feed, and that the machine will not destroy the tender parts while reducing the coarser portion to a proper degree of fineness. That the machine will not be cumbersome and too complicated in construction, as well as to be too difficult to keep in running order, and too laborious to operate; to perform these several operations at once, also that it will meet the wants of all requiring that class of machinery, such as paper manufacturers, collar makers, egg packers, stock breeders, dairymen, farmers, liverymen, and numerous others.

The machines illustrated on this page, manufactured by J. Dick & Bros., Canton, Ohio, embrace the foregoing requirements in practical form:

Fig. 1 is a fair representation of the No. 1 Dick's superior hay, straw and cornstalk cutter and splitter, arranged for horse or steam power. It has a pulley on the main shaft to receive a belt. It will cut from 3,000 to 5,000 lbs. per hour, according to the material and length of cut. It has two sets of feed rolls and two boxes. It is so arranged as to cut on both sides of the main shaft; by this device the knives cut from two boxes instead of one. This machine cuts 19 inches wide and three inches thick, with 12 inches long. The cut can be changed to eight different lengths, between one-quarter and one-eighth inches. The shear plates are made adjustable, and are independent of the working parts. In case of wear they can be readily taken out and ground and are easily replaced and adjusted. All the working parts are encased, to prevent straw, etc., from getting in contact with the machinery, also to guard against accident. The encasing is all independent of the frame of the machine and can be readily removed if desired. This machine is built with two or three knives as the purchaser may wish.

Fig. 2 gives a perspective view of the machinery and the arrangement of folding the feed boxes over the machine. Each of the feed rollers are set, driven independent of each other by endless space chains, so as to give them perfect freedom in adjusting themselves to the irregular thickness of material passing between them. In the cutting of corn stalk, especially with the ear on, it is difficult to feed even thickness, as it often happens that on one end of the feed roller several corn stalks and ears of corn will pass between them, at the same time on the other end of the roller will be comparatively nothing. By this device of driving the feed rolls, the machine cannot be injured by over feeding. The tension springs that give pressure to the feed rollers are made of tempered steel and are mounted underneath the feed roller, pressing on the center of cross-bars. These cross-bars are hinged to iron rods which are connected with the bearings on each end of the feed roller; by this arrangement the ever-changing position of the rolls is not interfered with by the tension springs. The feed gears are made interchangeable and can be changed *vice versa*. By this device a great many different lengths of cuts can be made with but few wheels. All the working parts are made to take up in case of wear. The feed gears are provided with a new plan for keeping them lubricated; the oil is applied through the center of the bearings, and cannot go to waste unless passing through the bearings first and performing its duty.

Figure 3 gives a view of the fly wheel as constructed for all the machines, hand and power, of different sizes. This wheel is mounted on the main shaft; on this shaft is mounted the driving pulley and the bevel pinion that gives motion to the feed gears. On the fly wheel is placed the whole cutting apparatus—

the knives, two or three in number, as the case may be, is supported on adjustable supports. These supports are provided with inclines or clutches and are made to revolve on similar inclines on the spokes of the fly wheel. By partly revolving these supports the knives can be adjusted to or from the shear plates, as the case may require, and firmly secured in their proper position by two strong bolts passing through each knife, the supports, and the arm of the fly wheel. The knives are straight blades. This form of knife is readily adjusted and easily kept in order.

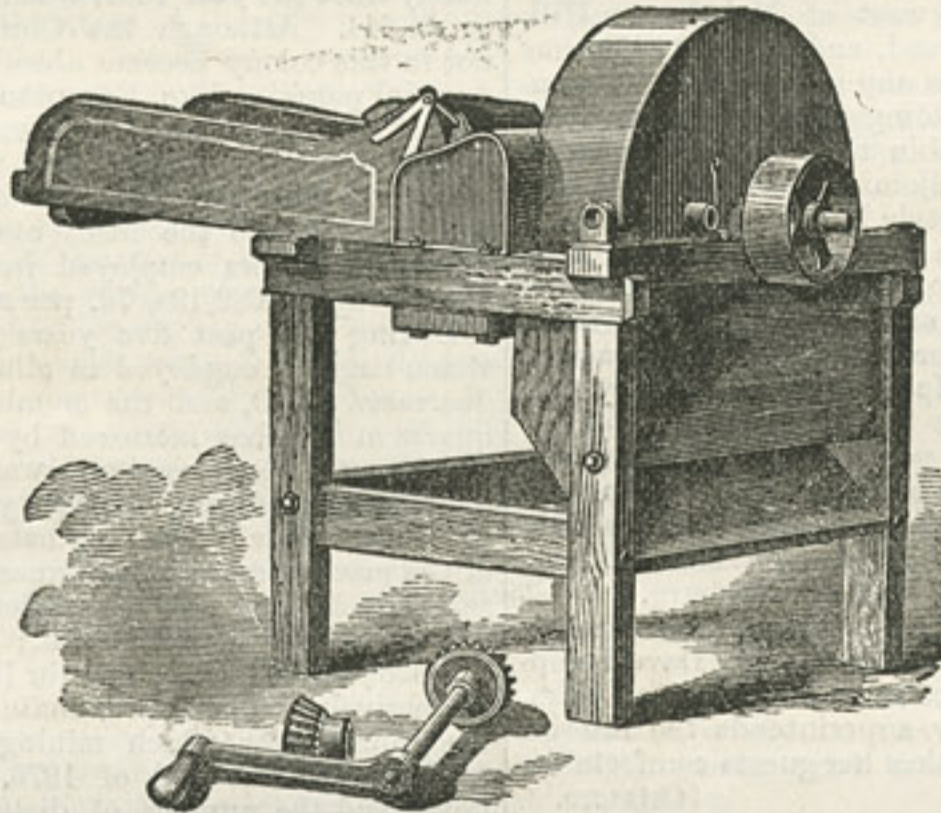


Fig. 1, Dick's Straw and Corn Stalk Cutter and Splitter.

Preceding the cutting knives are a series of steel blades, arranged on curved bars. These blades are set closely to each other so as to cut, split and crush corn stalks, ears of corn, and all coarse material into minute particles. These blades operate at a right angle, or nearly so, with the cutting knives, and are arranged in curved lines from the main shaft. By this device the blades precede each other and will operate easy, and cannot clog up so as to prevent

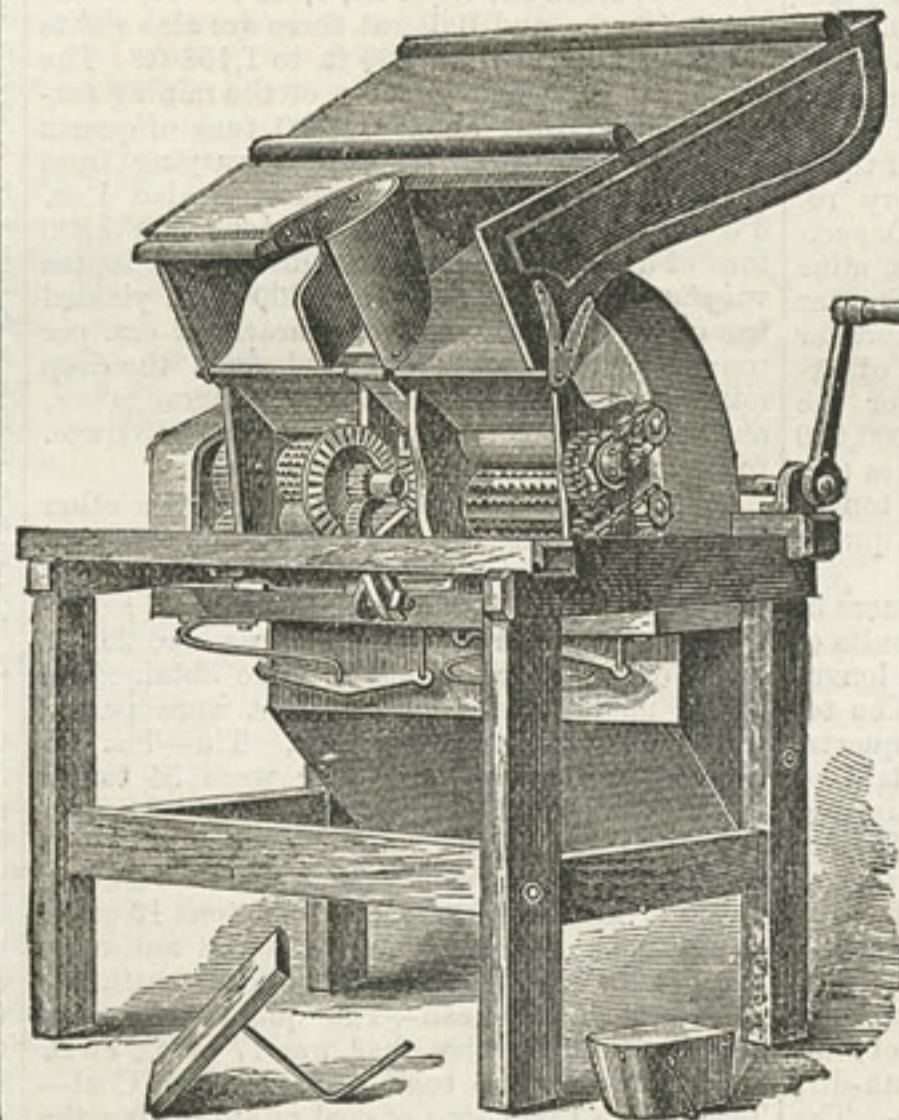


Fig. 2, Perspective View of the Mechanism.

them from performing this work. For cutting hay, straw, etc., these splitter bars are not required and can be readily detached by loosening two bolts in each bar, thus leaving only the cutting knives attached to the fly wheel. The main bearings are filled with babbitt metal in all the machines, and can be readily refilled in case of wear.

THE Water Commissioners have decided to recommend the Blue lakes scheme for supplying San Francisco with water.

New Mining Districts.

At a meeting of miners at Royal City, on the 25th ult., it was unanimously agreed on the vote of the miners to segregate that district from Bristol district, the new district to be called the Jackrabbit mining district. The boundaries of the Jackrabbit mining district to be bounded on the southeast by the Highland mining district, on the northwest by the Last Chance district, on the south by the summit of

The Hayden Surveys.

The work done by the Hayden Geological and Geographical Survey has been probably better appreciated by the people at large than any similar work ever done in the United States. As a general thing the public seems to be opposed to the expenditure of public moneys for things of this kind, for the results attained do not seem to the average mind to be commensurate with the expense. Of course this conclusion is erroneous, as any well-informed person knows. However, in this case, the survey has been, and is, very popular with all classes of people, and the reports have been properly appreciated by all. To scientific men they are of deep interest as the sections of country examined by the survey have been entirely new, and the discoveries important. The publications have been issued in first-class style and are satisfactory in every respect. To show how the work of the survey is appreciated abroad we publish the following extract from a letter from J. Barrande, the eminent paleontologist of Prague, Bohemia, to Professor F. V. Hayden, the chief of the survey:

In 1876 I received of you a series of various publications, for which I beg you to accept my warmest thanks. Among those publications there are two which are especially distinguished by their extent and the accompanying illustrations. One is Mr. Meek's last work on the invertebrates of the cretaceous and the tertiary formations of the upper Missouri; the other is Mr. Cope's work on vertebrates of the cretaceous lands in the West. These two magnificent quarto volumes give the measure of the grand plan which is to immortalize the work of your United States Geological Survey of the Territories.

You have laboriously and successfully conducted that survey over an immense area, and you continue to do it with an equal success in the co-ordination and the publication of the incomparable mass of observed facts. I am happy to have the chance to express to you my congratulations for this double success.

The beauty of the plates and the typographical luxury of your two large quarto volumes honor the artists of your country, and contribute to ennobling the monument erected by you to science. That monument will testify that the supreme legislature of the United States, by exercising a sovereign munificence in the name of a great nation, well understands that a narrow parsimony would be very much out of place and show very little patriotism in regard to securing a national glory. After all, pacific glories of science cost much less than bloody laurels, and secure more desirable sympathies among other nations. Honor to your intelligent legislators! The day will come when they will show you more positively their gratitude.

HALE & NORCROSS.—The total expenses of running the Hale & Norcross works, underground and on the surface, for the month of September was \$16,820.13. There were consumed for running the pumping engine alone 521 cords of wood, or an average of 17½ cords per day; in all 655 cords were consumed. On the 1st instant there were on hand at the works 1,061½ cords of wood. The number of days' labor performed was 1,464½; and the average wages per day was \$4.41½. During the month the pump was stopped 47 hours and 16 minutes, or one hour and 34½ minutes per day. The pump made 299,420 strokes during the month, being an average of 6 97-100 per minute, and hoisted 14,976,000 gallons of water.

THE mine owners of Gold Run have concluded to discharge all the Chinese in their employ, and work their mines in future exclusively with white labor at reduced wages. The wages paid miners to be \$35 per month, and furnished with board and sleeping apartments. It is said Mr. Stone, Superintendent of one of the Gold Run mines, is now working the men he employs on this lay-out, and the miners working the Hayden mines at You Bet are hired on the same terms.

the mountain to the valley. This district is in Lincoln county, Nevada, and has lately attracted considerable attention.

Fine Gold Gulch district has been formed at Fine Gold Gulch, 35 miles northeast of Borden, Fresno county. C. E. Strivens has been elected Recorder. The boundaries of the district are as follows: Commencing at John Williams' ranch; thence west to Harbert's mill; thence in a westerly direction to Johnson's ranch;

thence to the San Joaquin river; thence up the San Joaquin river, following the meanderings of the stream, ten miles, and from thence north-erly to the place of beginning.

THE Los Angeles *Republican* says: Captain Kraszynski, of Andrew station, informs us that on Friday last the well on the Pico district known as "Pico No. 2," struck oil at a depth of 200 feet, and at last accounts was flowing 300 barrels per day.

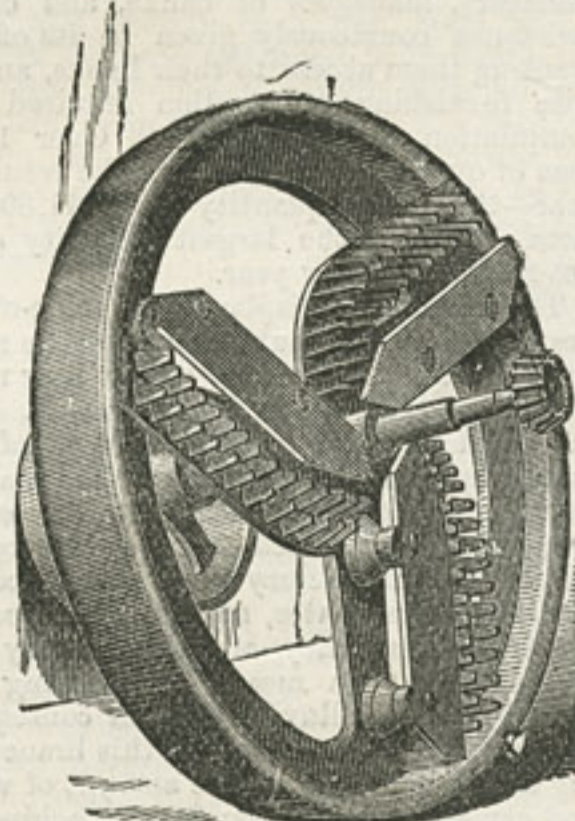


Fig. 3, The Fly Wheel.