

# Scientific American

A JOURNAL OF PRACTICAL INFORMATION IN ART, SCIENCE, MECHANICS, AGRICULTURE, CHEMISTRY, AND MANUFACTURES

VOL. 1.—No. 23.

NEW YORK, DECEMBER 3, 1859.

NEW SERIES.

## IMPROVED MOVING TREAD POWER.

Here is the most novel affair that we have had in many a day. It is an entirely original method of applying muscular power to machinery, which will, no doubt, interest mechanicians.

The plan is to set one foot on a band, so as to hold it firmly, and then push the machine along so as to draw out the band from the machine, and thus revolve a shaft about which the band is wound. On lifting the foot, a spiral spring draws the band in; the other foot, meanwhile, operating to draw another band, and thus the shaft is kept in constant motion. The accompanying engravings represent the power applied to a reaping-machine; Fig. 1 being a perspective view of the whole, and Fig. 3 a section of the shaft, pulleys, &c. A is the strap which is in operation, and B is in the act of being relieved from the pressure of the foot, when it will be drawn by the action of the spring, and wound around the shaft. The drum on which the strap is wound is loose on the shaft, and has the pawls, *b b*, pivoted to its side. These pawls catch in the ratchet wheel, *a*, which is fastened firmly to the shaft, so that when the drum is caused to revolve by

drawing out the belt it rotates the shaft; but when the spiral spring turns the drum in the opposite direction, the pawl slips over the ratchet, and produces no action upon the shaft. A bevel gear, *C*, in the middle of the shaft changes the direction of the motion in the machine here illustrated, in order to rotate the cutters. Instead of these revolving cutters, of course, the ordinary reciprocating cutter may be used, if preferred. A loose band passes from the end of one of the hills to the end of the other, and the operator, by leaning against this band, applies his strength in an effectual manner to push forward the machine. In employing horses, ropes may be used instead of straps. They are tied to the animal's fore feet; the horse being harnessed so as to push the carriage before him; or, if deemed preferable, an arrangement may be made to harness the horse in the usual manner, so as to travel before the carriage. In this case, rods are suspended below the shafts so as to bring their ends near the ground, and near the horse's fore feet. Pulleys are pivoted on these ends, and the ropes or bands being brought from the driving-shaft, are passed over the pulleys and fastened to the

horse's hind feet. By either of these modes of harnessing, this plan of applying muscular power may be adapted to a horse-power; the horse to travel at the end of a sweep about a shaft, and the revolving shaft first described to extend along the sweep to the upright shaft at the center

by the action of the horse's foot, and released by lifting it from them. The horse's shoulder is pressed to the collar, *s*, which is firmly held in place by the support, *t*, and thus the muscles have full power in working the limbs.

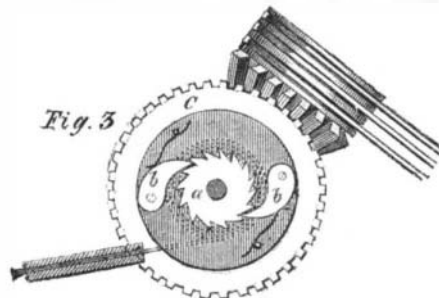
The inventor of this remarkably original contrivance is Louis Koch, of this city, whose patent was issued Oct. 25, 1859. All inquiries in relation to it may be addressed to Koch & Torstrick, 26 Broad-street, this city.

## NEW MATERIALS FOR PAPER.

A few years since, when rags were very scarce and high in price, much attention was bestowed upon obtaining some cheaper substitute. Various new substances were suggested, and quite a number of parties made experiments, and constructed machinery to produce paper from wood; and some very excellent specimens were manufactured from pine shavings. It was found, however, that when rags fell somewhat in price, the processes involved in making paper from wood were too expensive; and, besides, the paper was too brittle for printing, unless mixed with some cotton pulp. The excitement about getting a substitute for cotton rags seems mostly to be considered in the light

## KOCH'S IMPROVED MOVING TREAD POWER.

Fig. 2 represents a plan for applying this invention to a horse-power, in which the body of the horse is stationary and horizontal, each pair of feet moving on a separate inclined plane. The driving-shafts, *d d*, are similar



to those represented in Fig. 3, and the straps passing over the pulleys, *e e*, are fastened to the platforms, *i i*, which rest on rollers upon the inclined planes, *r r*; there being one of these platforms and straps, of course, for each foot, and the platforms having a reciprocating motion up and down the inclined planes as they are drawn

of a commercial spasm, which came and went, leaving things just as they were before. This, however, we are happy to say, is not the case; that excitement has developed good fruits. Of all the substitutes which have been tried to take the place of rags, straw has hitherto secured the best results. The Philadelphia Ledger has been printed for five years upon paper which contains a large per centage of straw; the New York Sun, and several other daily papers, are printed upon such paper; and its manufacture has now reached four and a half million pounds per annum. It is true that it does not make paper of the first quality; but it is very suitable for the purposes to which it is applied.

In addition to straw, another new material for paper claims our attention; it is that of the sorghum saccharatum—the Chinese sugar cane. Paper from its stalks, after the juice was expressed from them, has been made by Mr. M. Nixon, at Manayunk, Pa., and the Philadelphia Ledger has recently been printed upon it. It is somewhat whiter than that obtained from straw, and is of very good texture; it contains 75 per cent. of the cane pulp and 25 per cent. of rags

