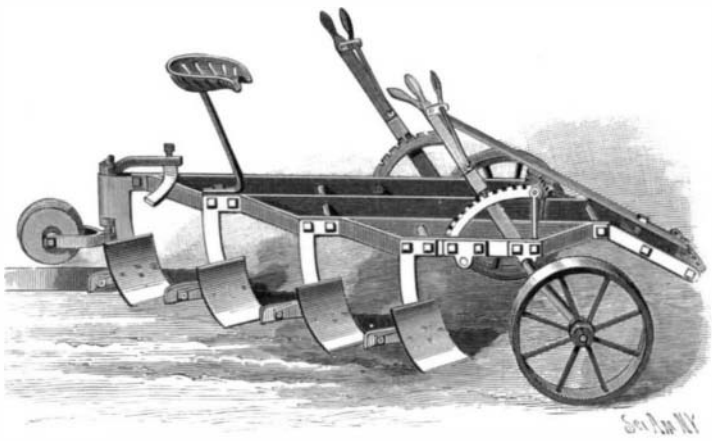
A NEW GANG OR CULTIVATOR PLOW.

Our illustration represents a novel cultivator plow which has been patented by John T. Lucas, of Wasco, Ore., and which is chararacterized by the use of a rear guide-wheel having but slight frictional engagement with the land, and by the use of mechanism for raising and lowering all the shares simultaneously and for leveling the plow.

The body of the plow is composed of two side beams and two projecting intermediate beams. The right-hand side beam is bent to form a series of steps, to which rectangular shares, concaved on their forward faces, convexed on their rear faces, are bolted. One or more shares are provided with landsides.

The landsides prevent the shares from slipping upon



A NEW GANG OR CULTIVATOR PLOW.

hilly ground ; and their shape is such that much of the friction usually met with is avoided. The shares and landsides are especially adapted to three-wheeled plows, the draft being considerably reduced by reason of the small pressure between the land and the bottom of the shares and their landsides.

The rear share differs from the others, in having an integral sleeve which receives a vertical shaft carrying at its lower end a fork in which a beveled guide wheel is journaled. A forwardly extended arm is attached to the shaft, moves over a guide to the right, and is prevented from moving toward the land by a pin with which it engages. The guide-wheel, therefore, requires no attention and need not be operated by hand.

At the front end of the plow a clevis of angular construction is arranged. One member of the clevis is adapted to travel laterally ; while the other member is provided with a series of apertures adapted to receive a draft device. The clevis is laterally shifted through the medium of a hand-lever to vary the drat to and from the land when the plow is in motion.

The plow-frame is provided with separate, parallel axles, formed with crank-arms by which the supporting wheels are carried. A lever is connected with each axle. By means of the lever at the left of the frame and attached to the rear axle, the shares can be raised and lowered ; and by means of the left-hand lever the wheel which travels in the furrow can be raised independently of the landside wheel, so as to level the plow.

SEVERAL prominent railroad men have given a number of cars to be used for religious work, and they are described in a recent number of The Railway Review. The cars are 80 feet long and there is a 50-foot chapel capable of seating a hundred people. They are kept in repair and go through the shops for paint and varnish whenever needed. They are met with almost universal favor by the officials of the railways and they are always given free transportation over any line. The car is really a parsonage, church, choir and chapel combined. A distribution of bibles, tracts and religious newspapers is made among the railroad men and people in destitute places. The cars are enabled to make calls at small towns which are long distances away from the nearest church. The chapel car is specially welcome at the car shops. The pulpit is at one end of the car and the audience is seated as in the ordinary day coach.

A FOUR-SPINDLE HORIZONTAL CAR-BORING MACHINE.

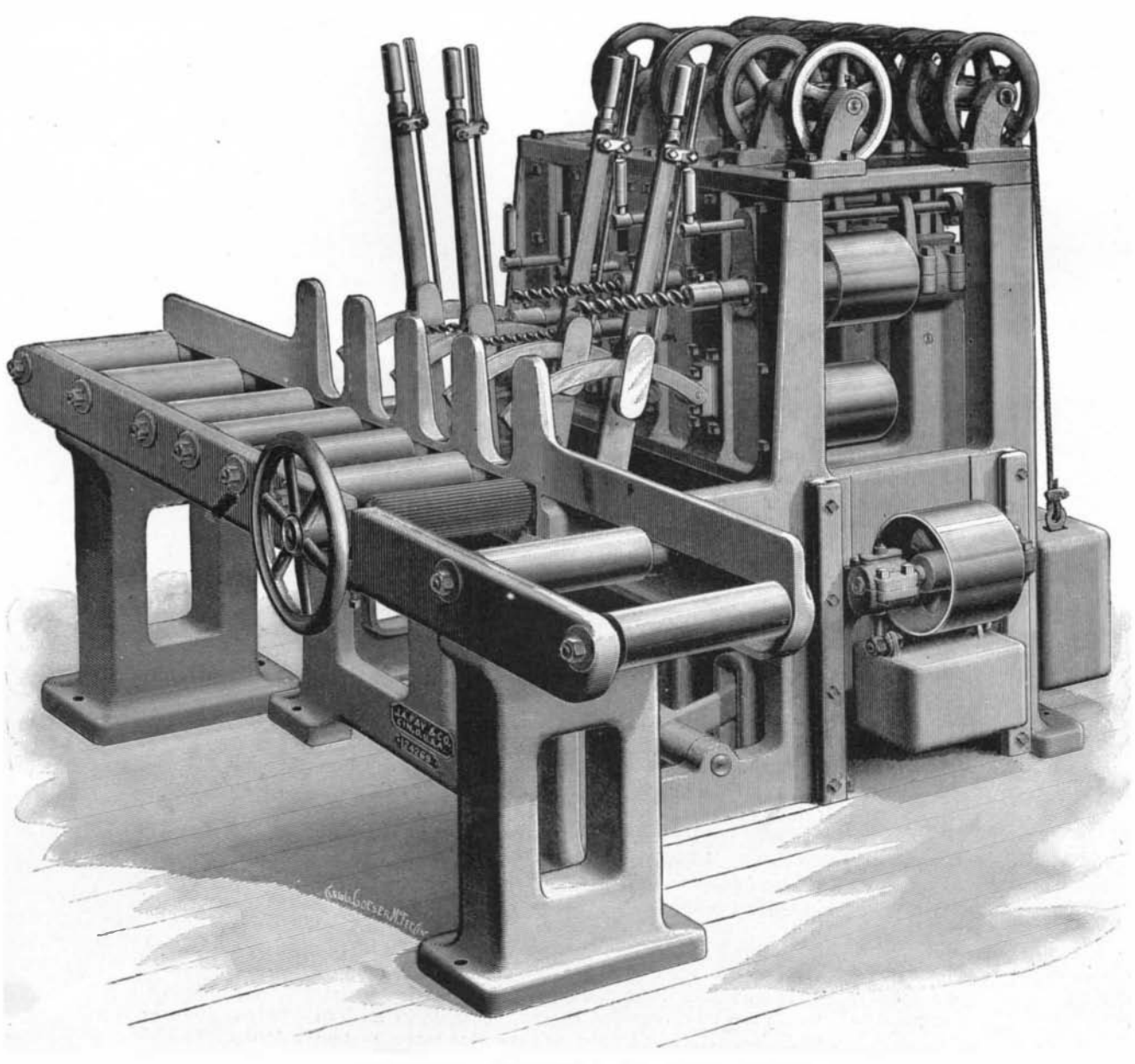
A machine has been constructed by the J. A. Fay Company, 10 to 30 John Street, Cincinnati, Ohio, which is designed to overcome the difficulties met with in operating the car-borers used in the construction and repairing of railway and street cars, agricultural implements, and heavy wagons. In this new machine the driving or belt power of the boring spindles has been so improved that the capacity in boring holes of large diameter has been considerably increased.

The working parts of the machine are all supported by a heavy cored column.

The boring spindles are $1\frac{1}{16}$ inches in diameter and are double key-seated. They have a vertical movement of 13 inches controlled by adjusting levers, and a transverse movement of 16 inches. Abundant belt power is provided for boring holes 3 inches in diameter. The spindle pulleys are 7 inches in diameter by $7\frac{1}{2}$ inches space. The spindles run in heavy self-oiling bearings of gun metal.

For each of the spindle frames there are four gibs whereby the wear is readily taken up. These frames are rigidly supported at top and bottom, are counterweighted, giving them an easy vertical movement, and are adjusted by levers having an automatic locking device consisting of a double-eccentric working against a guide that grips with increasing force when the strain is applied. The spindles are driven by one belt properly adjusted in tension by an automatic sliding tightener. The table is 8 feet long by 15 inches wide, and is supported on two heavy cored stands; its sides are strongly ribbed and carry nine friction rollers, one of which is fluted, and provided with a hand wheel and with a vertical adjustment. The fence on the back of the table has a high support on each side of the boring bits.

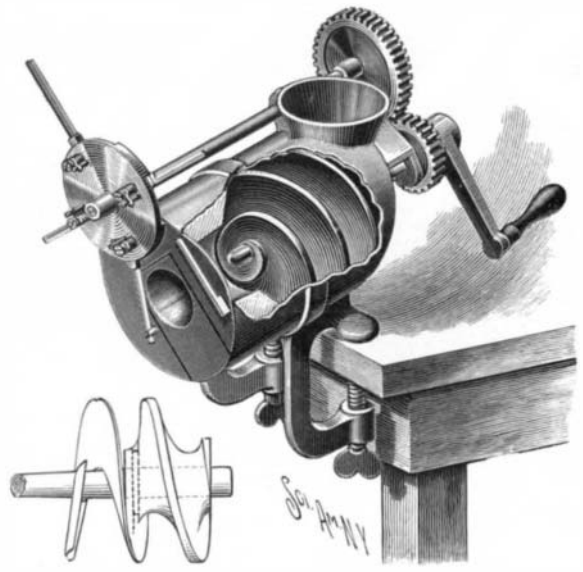
On the top of the frame are two sets of sheave pulleys giving a direct vertical pull on the spindle frame and avoiding any binding. Counterweights on the back have rollers which reduce the friction on the sides of the frame.



A FOUR-SPINDLE HORIZONTAL CAR-BORING MACHINE.

A MECHANICAL BUTTER MOULDER AND CUTTER.

In restaurants and hotels it is customary to form butter into small pats or disks of such size as to answer for one person. A machine, by means of which such pats can be quickly produced, has been invented by



A MECHANICAL BUTTER MOULDER AND CUTTER.

Leopold Linkiewicz, of 176 Graham Avenue, Brooklyn, New York city. The machine comprises an inclined barrel or chamber formed in two parts fastened together by a pin and bayonet-slot connection. One end of the barrel has a hopper for the reception of the butter, and the other end has a discharge opening. Within the barrel a crank-operated spiral is mounted, which is connected by gearing with a shaft journaled above the spiral. The spiral is composed of two parts, one of which is made of wood, and the other of which is composed of a flat plate of spring metal secured by one end to the wooden part, being otherwise unsupported, so that it can be compressed during its rotation by engagement with the sloping end surface of the barrel. The butter is, therefore, compressed and forced toward the wooden screw portion and issues from the discharge opening in a bar of cross-section corresponding with the shape of the opening. The form of this cross-section can be changed by the employment of slides with variously-shaped openings. The shaft above the spiral carries at the discharge end of the barrel a disk on which spring-held knives are pivoted, sweeping past the discharge opening. A pin on the barrel engages the outer ends of the knives to retard them just before passing the discharge opening, so that the butter is cut by a quick, sharp blow. On the side of the discharge opening opposite the pin, a knife-clearer is secured which serves to clean the knives as they sweep around. Butter-pats having variously-formed surfaces can be produced by the use of special knives.

THE government of New Zealand now sends communications by carrier pigeons between Auckland and Great Barrier Island, a distance across the water of 30 miles. The service is controlled by the Post Office Department, and the fee for a single message is one shilling and a stamp for this amount has to be bought at the Post Office.