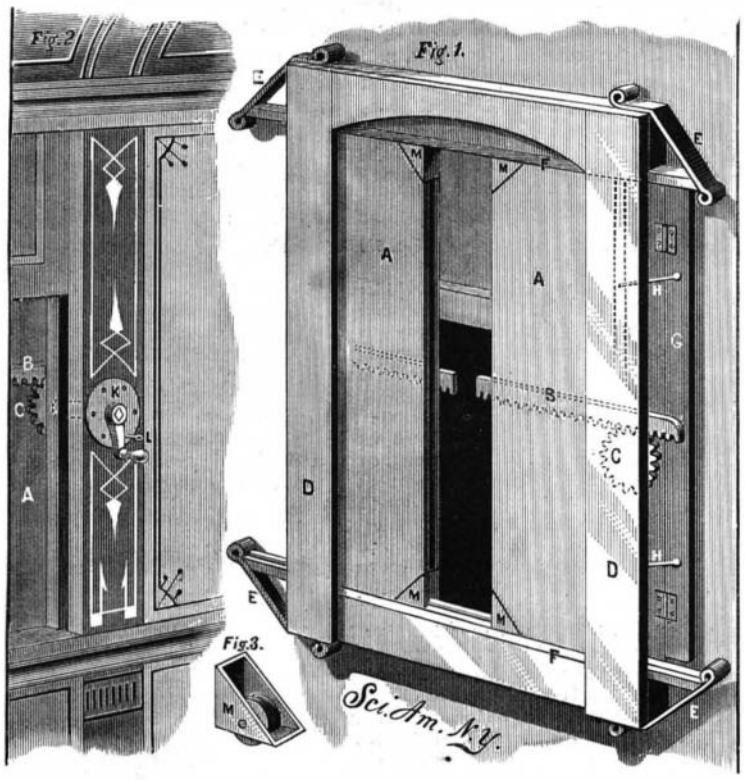
SLIDING WINDOW SHUTTER.

The invention herewith illustrated relates to shutters and blinds for the windows of houses, railroad cars, steam boats, etc. Fig. 1 represents the outside and Fig. 2 the inside of a window furnished with this device. The corners of the shutters are provided with corner castings, M, which serve to protect the corners and which carry friction rollers. Those on the lower corners are grooved so as to fit over a guide cleat on the lower ledge of the window, and those on the upper corners run in a groove in the top ledge. The shutters are thus held securely in place, and the lower ledge is free from any groove in which obstruction might accumulate. Shafts are journaled in the sides of the window frame, and are furnished with cranks at their inner ends by which they may be easily turned. The outer ends of the shafts carry pinions which engage rack bars secured horizontally about the center of the shutters. The bars can be extended beyond the sides of the shutter, in order to increase the distance to which they may be operated. The inner ends of the bars are secured so as to be jointed together when the shutters are closed. The bearings of the inner ends of the shafts are surrounded by plates, K, having perforations in which a pin may be inserted, thereby preventing the crank from being turned.

By this simple mechanism the shutters may be securely locked in either an open or closed position. At the outer ends of the top and bottom ledges of the window are ornamental brackets, E, connecting the ends of the ledges with the ends of the window cap and sill. These brackets form braces, and their ends project so as to form stops which prevent the shutters from sliding off the guide ledges. Plates, D, are secured to the cap and sill outside the sides of the frame, so as to partly cover the shutters and protect the operating mechanism. To the sides of the frame a hinged narrow door, G, reaching to the edges of the plates and forming guards which prevent snow and the like from being blown in. These doors are moved simultaneously with the shutters by cords connecting their outer edges with the outer edges of the shutters. As the shutters are opened the ends of the rack bars push the doors open, and when they are closed the cords draw them shut. As will be seen from the foregoing, all hinges, catches, etc., are dispensed with. The device also permits of the use of iron shutters, which have found favor because of their durability and the protection they afford.

This invention has been patented by Mr. C. T. Cochel, of Uniontown, Md.



COCHEL'S SLIDING WINDOW SHUTTER.

LAPORTE'S HYDRAULIC HAY PRESS.

We have several times taken occasion to remark on the interest that attaches to the compressing of hay and straw as regards reduction in the expense of freight and storage. The constant increase in the production, and the distance from the centers of consumption, fully justify the devising of special apparatus for treating compressible materials, like straw, hay, cotton, alfa, etc., which, instead of being delivered on the spot without profit, can thus be sent to a distance and bring a more remunerative price. Several presses that have been invented in recent years are already rendering great services to agriculture and the industries; yet there still remains a place for new apparatus, as is proved by the hydraulic press constructed by Mr. Laporte and shown in the annexed figure. This machine consists of a large case of wood and iron plate mounted upon two iron wheels and opening at the top by two leaves, while its two extremities are provided with hinged doors that are fastened by bolts, as are also the movable leaves at the top. Upon each side of the compressing case there is placed horizontally a cylinder, throughout the whole length of which there passes a long rod which carries a piston in the middle, and which terminates at cross bars fixed upon two parallel bars of I-iron. These latter have guides connected with the bottom of the cylinder, and support at each extremity two bars which enter the chest through longitudinal openings. These bars thrust the movable plate against the material to be compressed, and are fixed upon the prolongation of the parallel bars at the other end of the apparatus. Each cylinder is served by a double-acting hydraulic pump, which is arranged so as to be maneuvered by means of a double lever or by a motor which actuates a simple lever. In both cases the bearing point of the lever beam is movable in such a way as to permit of the automatic shortening of the smaller lever arm in measure as the piston advances. It follows that the stress to be exerted in order to overcome the increasing resistance of the material submitted to pressure remains nearly the same during the whole time the bale is being compressed.

Each of the pumps is surmounted with a box that contains valves which have plain seats that are made perfectly tight by means of leather washers fitted into circular grooves. On each side there are likewise leather packed cocks, which are actuated simultaneously by a single key, a turn of which, by a few degrees, to the right or left causes the machine to act in the desired direction. Finally, a small reservoir, which is connected with the corresponding pump and is arranged so as to be on a level with the valve box, communicates constantly with the suction pipe of the cylinder, and compensates, through the few liters of water that it contains, for the losses due to evaporation and to the slight leakages that may chance to occur through the packings of the rods.

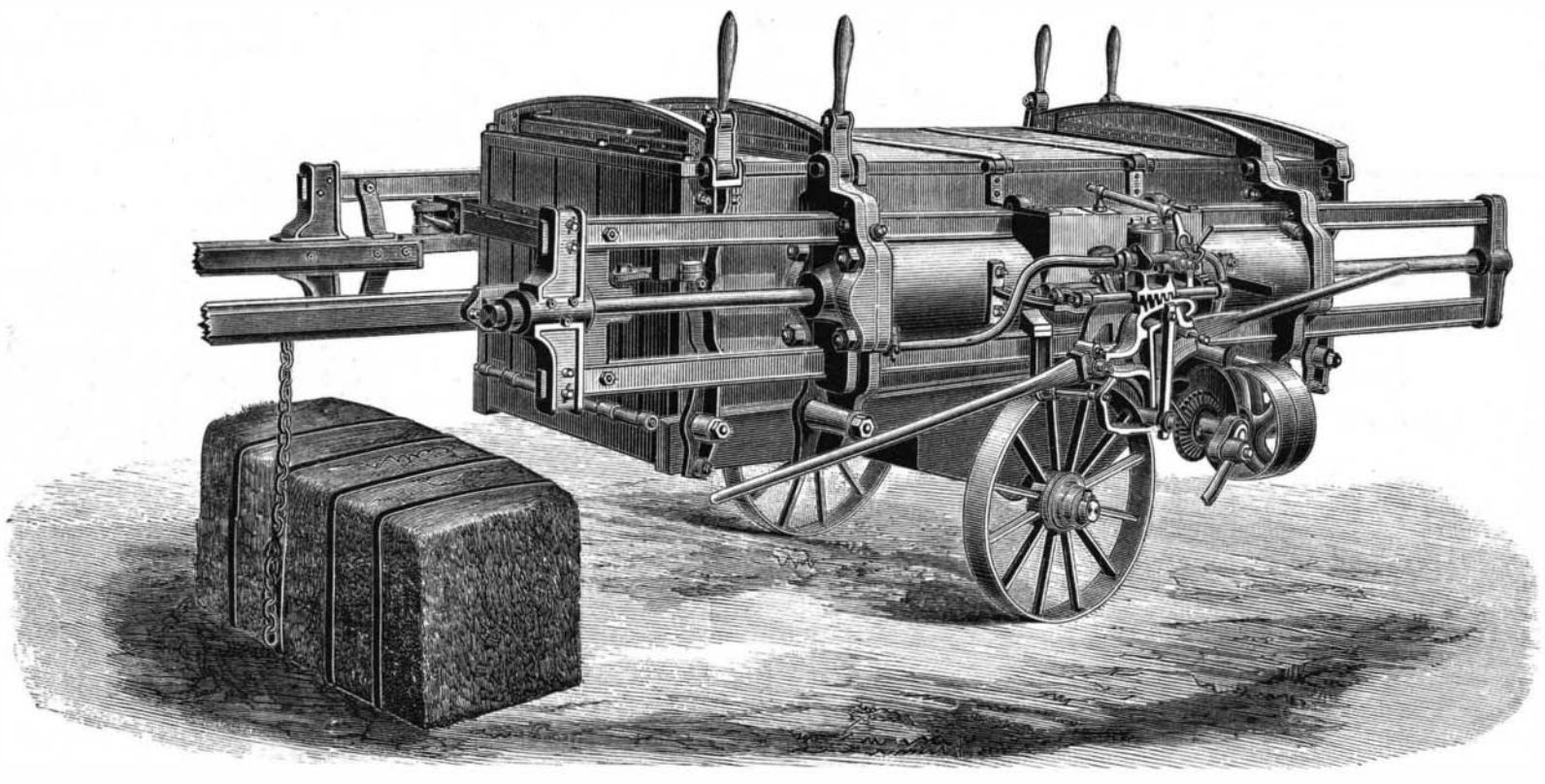
To operate this press without a motor requires the services of six men, who can produce with it from 70 to 80 bales per day, or nearly one every eight minutes. It takes three minutes to compress the bale, and after this the two leaves of the compression case are opened and three of the workmen insert boop irons. In order to facilitate this operation the extremities of each strap are pierced with holes, so that they can be brought into juxtaposition by means of a special tool, after which the two ends are united by means of an ordinary tack, which is driven into the bale. It now only remains to ungear the pumps by turning the cocks in the contrary direction, and to open the hinged doors in order to remove the finished bale.

During this operation the other workmen have filled the other side of the press, and the work thus continues from one extremity to the other without intermission.

By the action of the hydraulic pumps there may easily be obtained a power of 40,000 kilogrammes, so as to permit of furnishing cubical bales of hay weighing from 90 to 100 kilogrammes, and having a density of over 300 kilogrammes to the cubic meter.

All the parts of this apparatus are so constructed as to reduce wear and facilitate its being kept in repair. Being mounted upon two strong wheels, it can be moved to any locality by harnessing an animal to either end. The water in the pumps, being mixed with glycerine, is protected against freezing, and gives excellent results, both as regards the preservation of the parts and diminution of friction.

In cases where two of the presses are employed, the use of a special motor permits of actuating the two apparatus alternately. Each of them is then provided with a mechanism beneath for transmitting motion to the simple levers, and with a safety device for limiting the pressure exerted by the pistons.—*Revue Industrielle.*



LAPORTE'S HYDRAULIC HAY PRESS.

Straw and Wood Pulp.

G. Archbold macerates wood or straw, cut into suitable pieces, in dilute milk of lime, after twelve hours introduces them into a suitable digester, and saturates with sulphurous acid, the pressure amounting to four or five atmospheres.

In two hours the material is so loosened up, that after washing with water and further treatment under pressure with 3 per cent chloride of calcium and half per cent aluminum sulphate dissolved in a little water, the stuff obtained without any further operation has the appearance of cotton, and can serve for the manufacture of fine qualities of paper.

Physical Training in Schools.

Excellence in the gymnasium at Amherst counts in the student's record as does his excellence in mathematics. President Seelye says that this required physical discipline has had the happiest results. "By close statistics, carefully kept, for twenty years, it appears that the health of an Amherst College student is likely to grow better with each year of his college course. The average health of the sophomore class is better than that of the freshmen, and of the junior better than that of the sophomore, and of the senior best of all. This average is shown to come from an improvement in the physical condition of the individual student, and not from the dropping out of the course of those who might be too weak to complete it."