Scientific American.

THE ADVOCATE OF INDUSTRY, AND JOURNAL OF SCIENTIFIC, MECHANICAL, AND OTHER IMPROVEMENTS.

VOLUME X.] NEW-YORK, SEPTEMBER 8, 1855. [NUMBER 52.

THE
Scientific American,
PUBLISHED WEEKLY
At 128 Fulton Street, N. Y. (Sun Buildings.)
BY MUNN & COMPANY.

O. D. MUNN, S. H. WALES, A. E. BEACH.

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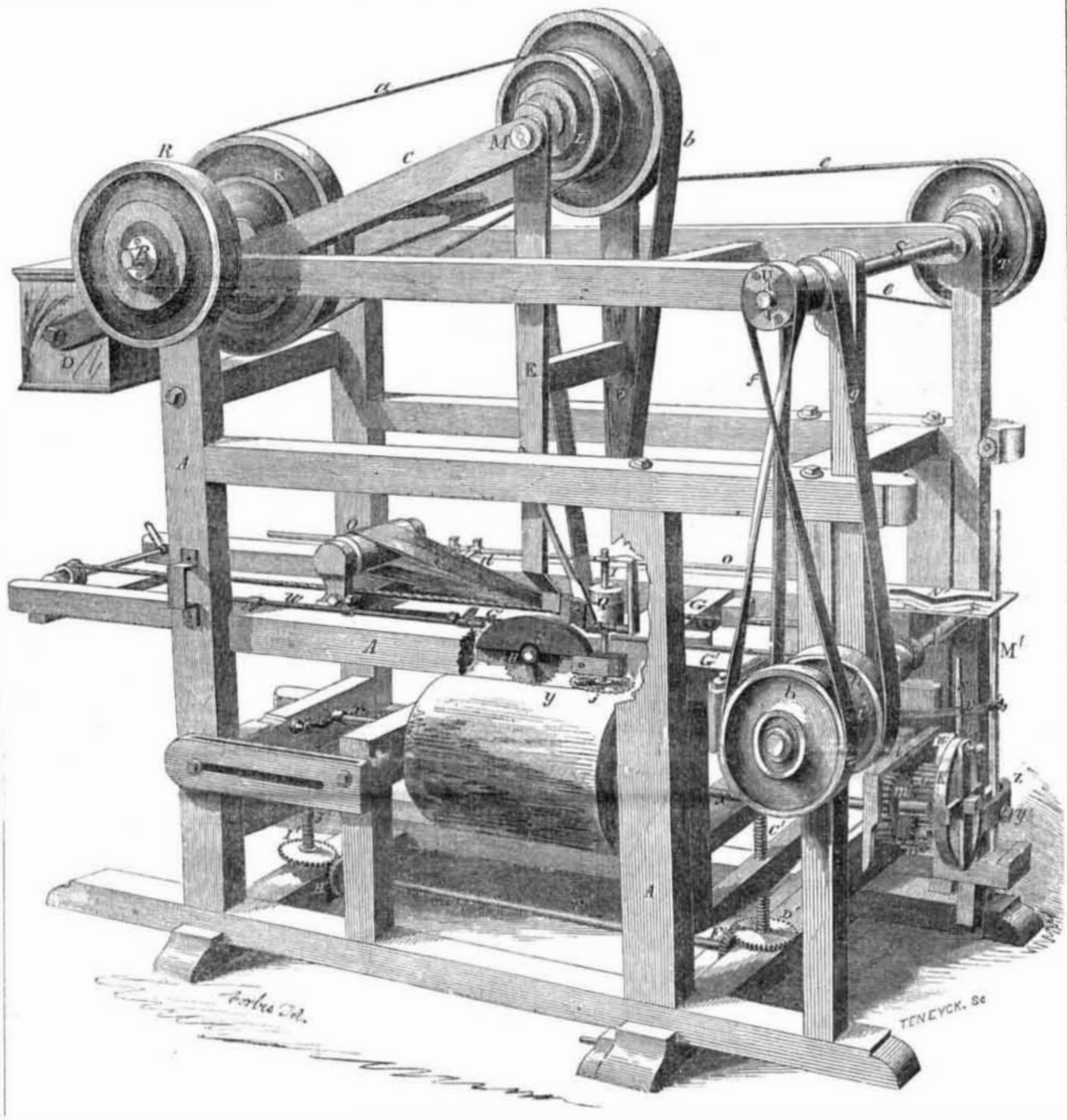
MACHINE FOR SAWING BOARDS, SCANTLING, &c., DIRECT FROM THE LOG.



Sawing Machinery.

This figure is a perspective view of the machine of Benjn. Fulgham, of Richmond, Ind., for sawing out boards, scantling, laths, stuff for hoe and broom handles, &c., direct from the log, or from bolts.

As here represented, it combines improvements for which two patents have been granted, and it is very perfect in its operations. The first patent was obtained on the 19th of Sep., 1854, and illustrated on page 76, this volume SCIENTIFIC AMERICAN. It embraces the features for sawing out stuff by both the forward and backward motions of the saw carriage.—The second patent was granted on the 24th of July last, and its claim, published on page 370, embraces an ingenious method of self-feeding the log to the saws.

A represents a rectangular frame, at the upper part of which is a transverse shaft, B. On this shaft there is hung a vibrating frame, C, on the outer end of which there is hung a counterpoise weighted box, D. To its inner end there is hung the pendant frame, E, which has a saw shaft at its lower end, the said shaft passing through the saw carriage, G, and working in suitable guides attached to the feed frame, G'. The shaft, F, secures the lower end of the pendant frame, E, to the frame, G. The vertical circular saw, H, is secured to one end of this shaft, and to one end of frame, G, is secured a vertical shaft, I, having a horizontal circular saw, J, secured on its lower end. From pulley K, on shaft B, a band, *a*, passes around pulley L, on shaft M. From another pulley on said shaft, a band, *b*, passes around a pulley (hid from view) on the saw shaft, F. This pulley has also a belt, *c*, passing from it around a small drum near the back end of the carriage; another crossed belt, *d*, passes around this drum and a horizontal pulley on the saw shaft I. On the off end of shaft B, there is a pulley from which a belt, *e*, passes around a pulley, T, on shaft, S, at top and front end of the frame, A. There are two other pulleys, U, on the nigh end of shaft, S, from which a cross belt, *f*, and a straight belt, *g*, proceed, and pass over two loose pulleys, *h h*, on the shaft, V, at the front end of the frame. Between the two pulleys, *h h*, there is a clutch, indicated by *i*, but hidden, which is operated by the backward and forward movements of the saw carriage, to throw these pulleys alternately into and out of gear with shaft V, around which passes the cord over pulleys from end to end of the frame, A, to reverse the motion of the shaft, V, and thus make the saw carriage traverse alternately back and forth. This is done by having dogs on the side of the frame, G, which strike studs on the vibrating long rod, *w*, when the carriage has moved to each end; to rod, *w*, is connected a shipper (hid from view,) which operates clutch *i*, and the pulleys, *h*, reverses the motion of shaft, V, and the saw carriage alternately, continually back and forth. The studs on rod *w* can be set to give the carriage a shorter or longer traverse, as may be desired. The vibrating frame, C, allows the pendant frame to travel or oscillate with the carriage, so as to retain the belt, *b*, perfectly taut all the time. This is a very ingenious arrangement. The saws cut while their carriage is traveling back and forth in both directions. The one saw, J, cuts in the log horizontally, the other, H, vertically, so as to cut out a complete board, or plank, or slat, or strip for a hoe or other handle, at each movement of the carriage. The method of operating the saws and the carriage to cut during both motions of the carriage, is embraced in the first patent of Mr. Fulgham. The method of feeding and cutting from the log is that embraced in the second. This is accomplished by feeding the saw frame down the requisite distance at the end of every traverse of the carriage, also to move the log a proper distance so as to take a new cut. The method of doing this we will now describe:

In the permanent frame, A, are two spindles or shafts, *x x*, between which the log, *y*, to be sawed is secured, and receives a proper intermittent rotary motion for every new board or strip to be sawed off. To the outer end of one shaft there is attached a pinion, *m*, which gears into a pinion, *n*, attached to the frame, A. The pinion, *n*, gears into a smaller one, *o*, attached to the end of another shaft (hidden from view,) which has a bevel pinion on its inner end. This bevel pinion gears into a corresponding one on the upper end of a vertical screw shaft, C', which has a bevel wheel, D' at its lower end. This screw shaft, C', passes through a cross piece or bolster at the front part of the frame, G'. The bevel wheel, D', gears into another, E', at the end of shaft, F', which has a corresponding gearing, H' I', at the opposite end. The screw shaft, J', passes into a cross piece or bolster at the back part of frame G'. These screw shafts, C' J', work in nuts in the frame, G', and support it, consequently, as they are moved in one direction, they will feed down or lower the saw frame a certain distance, to make the saws take a cut into each new layer of the log.

The mode of feeding down the saw frame is ingenious and peculiar. To the outer end of the shaft of the cog wheel, *o*, there is secured a wheel, K', having a smooth rim, and adjoining it on the off side there is placed a plate having a bar, *s*, attached to it by a pivot, *t*. This bar has an inclined recess, *s'*, cut in it, in which the rim of the wheel, K', fits. The plate of this bar has a spring, *w*, attached to it, which keeps the edges of the inclined recess binding on the periphery of the wheel, K'. The upper end of bar *s*, passes through a socket, *r*, on the outer end of a small arm, the inner end of which is attached by a pivot to the upright vibrating lever, M'. The upper end of this lever, M', passes through and works in a V-shaped slot in a plate, N', which is attached to the end of the longitudinal rod, O, fitted in guides in frame, G'. The lower part of lever M', is provided with a slot, *z*, through which a pin is inserted, and passing into frame, G'.

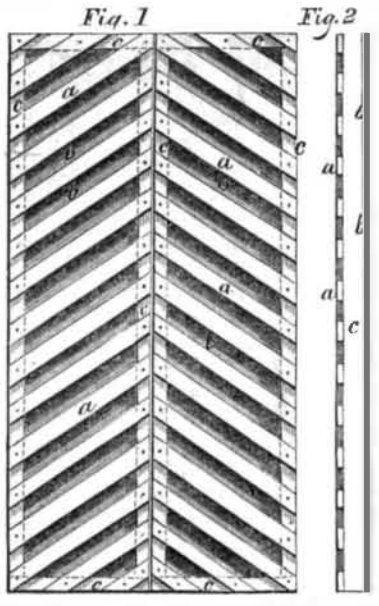
OPERATION—The log, *y*, is centered between the shafts, *x x*. Motion is then given to shaft B, by a band passing over pulley, R, from a water wheel or steam engine, and the saws, H J, are rotated, and the saw frame or carriage, G, drawn along between guides in the frame, G', and the saws cut a strip out of the log leaving a vertical shoulder on it. When the saws in their carriage have reached the end of the log, the clutch, *i*, is operated as has been described, and the carriage moves back, the saws cutting a strip on the return movement also. Just before the return motion of the saw caraiage, G, the plate, N, is shifted forward by a dog on the frame, G, striking a stud on the rod as the carriage is moving. The plate, N', will then push the rod, M', in the V-shaped slot, and make it vibrate, thereby moving the bar, *s*, and the wheel, K', when the log will be turned round a suitable distance on its centers, and the frame, G', which sustains the carriage, G', will be lowered a small distance by the bevel gearing operating the screw rods, C' J', which sustain the frame, and which work in nuts in the bolsters of it. These movements —the log partially round and the frame, G', slightly lowered—feed the log to the saws for the succeeding cut. This causes the log to be sawed in a spiral form from the circumference to the center. The lowering of the frame, G', at every traverse of the carriage, G, determines the width of the stuff to be sawed. Various kinds of stuff, therefore, can be sawed in the

machine by varying these movements. As the saws approach the center of the log, the feed motion necessarily must be increased to saw stuff of an equal thickness, as the log, being the smaller, cannot pass through so much space with the same amount of its shaft's rotation. This is provided for by the lever, M', passing through the slotted plate, N', which is attached to the frame, G', and of course as this frame is depressed, every stroke of the plate, N', will increase the movement of bar s and give it a longer stroke, like a ratchet, to give a greater amount of motion to the shaft of the log and frame, G'. A square bolt may be placed in a frame made for the purpose, and sawed into strips like the log, only it has to be shifted crosswise under the saws, when a series of strips or boards are cut down vertically through it by the depression of frame, G'.

In this machine, laths, hoe, and broom handle stuff, &c., as well as boards, scantling, &c. may be sawn out directly from the log, requiring no re-sawing. The machine is very compact, as it cuts both ways, consequently its carriage is only half the length of those which cut by the log instead of the saw moving. It is self-acting, and can be so arranged by a cut-off plate for the slot in plate N', as to shorten the stroke of the lever, M', for any width of stuff to be sawed. It will be understood that the rod, O O, and plate, N', on it, are operated by dogs striking studs during every traverse of the saw carriage. It is certainly a labor-saving sawing machine, as the log or bolt, *y*, has but to be centered in it, and the machine set in motion, when it will work away until the entire log is cut up, without any handling or work by the operator. We have seen a large working model of one of these machines in operation in this city, and was pleased with its performance. It will be on exhibition at the Fair of the American Institute, to be held in this city in the early part of next October, where all interested in valuable and new improvements in sawing machinery will have an opportunity of witnessing its operations.

More information respecting it may be obtained by letter addressed to J. M. Hutton, Richmond, Indiana.

Chase's Fancy Window Blinds.

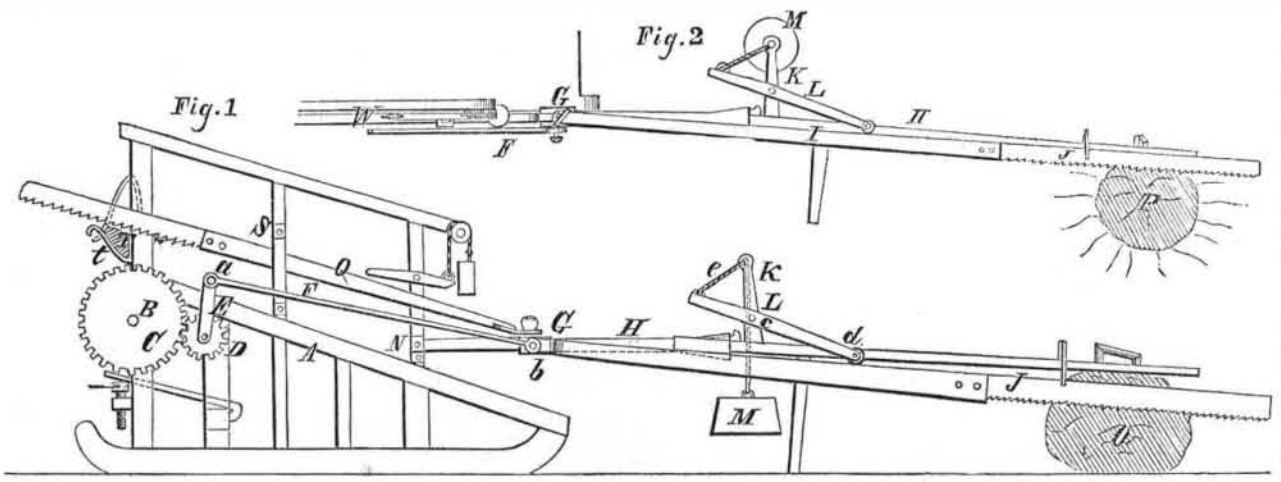


The accompanying figures represent the fancy window blind of Frank Chase, of South Sutton, New Hampshire, for which a patent was granted to him on the 17th of July last.

Fig. 1 is a front view of a pair of blinds, and fig. 2 is a transverse section or edge view. A rectangular frame, *c c c c*, for each blind is made by securing side stiles to the top and bottom rails in any common way. To one side of the frame a series of oblique slats. *a*, are nailed as shown, leaving spaces between them. On the other or back side of the frame, a series of slats, *b*, are nailed opposite the spaces between the slats, *a*. All these slats are nailed in at the same angle, and as each series is secured on the opposite sides of the frame, they allow the air to pass through the spaces between them—which are equal to the thickness of the stiles—but will prevent the direct rays of the sun penetrating into the room, and yet will admit reflected light between the spaces named. These slats, *a b*, it will be understood, are fixed and not the same as the vibrating ones of venitian blinds. They may be put on in different fanciful positions from that shown and yet maintain the same characteristics, such as radiating from a center, forming a star, or nailed horizontally, to present nearly the same appearance as common blinds, the frames being hung in the same manner. Their advantages consist in being easily made, and at a small expense, and in being strong and durable. No tennons, mortises, rods, or wires, are required in constructing them. They are of an ornamental character, and as substitutes, at least, for shutters, their advantages are evident.

More information may be obtained by letter addressed to the patentee, at South Sutton, N. H.

MACHINE FOR SAWING DOWNSTANDING TREES, AND LOGS.



The accompanying engravings are views of a new machine for sawing down standing trees or logs, for which a patent was granted to Matthew Ludwig, of Boston, Mass., on the 17th of July last. Fig. 1 is a side view of the machine, and fig. 2 is a top view of it, shown in a different position from that of fig. 1. Similar letters refer to like parts.

A, fig. 1, represents a suitable framing on which an ordinary inclined horse power is placed, to operate the machine. B represents the shaft of the upper roller of the endless belt, having on one end a toothed wheel, C, which gears into a smaller toothed wheel, D, the axis of which is attached to the framing. The toothed wheel, D, has a crank arm, E, attached to it. To the end of the crank arm there is attached by a pivot, *a*, one end of a connecting rod, F. The opposite end of this connecting rod is attached by a screw, *b*, to a sleeve, G. This sleeve is of a rectangular form, and is fitted loosely on a rectangular bar, H, one end of which is secured to the framing. The opposite end of the bar, H, is attached to the log or to the standing tree to be sawed down, as will be presently shown. I represents a bar, one end of which is attached to the sleeve, G, and the opposite end is attached to a saw, J. To the bar, H, there is attached an arm, K, which has a lever, L, secured to it by a screw or pivot, *c*. The inner end of this lever, L, is provided with a friction roller which bears against the bar, I, and the opposite end of the lever has a cord attached to it, said cord passing through a hole in the outer end of the arm, K, and having a weight, M, attached to its lower end. The inner end of the bar, H, is fitted in a socket, N, attached to the framing, A, so that said bar may be detached from the frame and turned or reversed.

If logs are to be sawed for firewood, the outer end of the bar, H, is clamped in any proper manner to the log represented by O, the log set in a horizontal position. In this case the arm, K, is in an upright position, and the friction roller of the lever, L, bears upon the bar, I, and consequently keeps the saw to its work. The reciprocating motion of the saw is produced by means of the revolution o the crank arm, E, the sleeve, G, working back and forth on the bar, H.

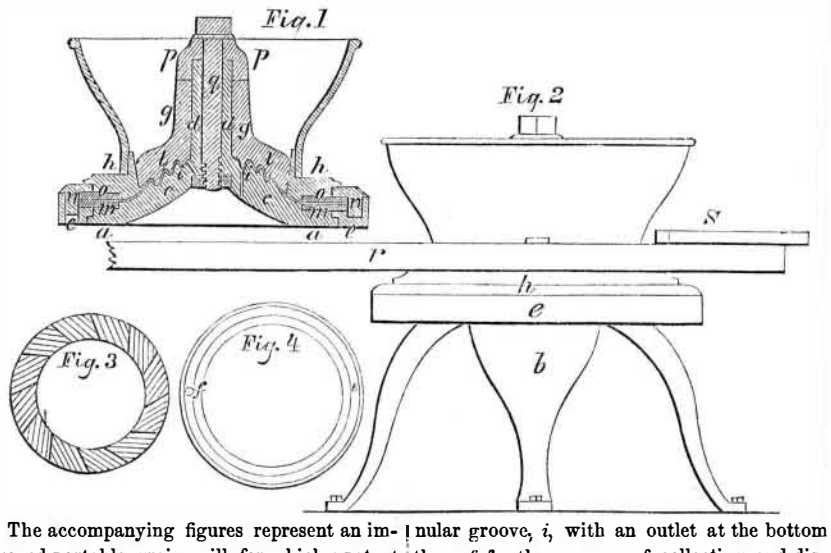
In order to saw down standing trees, the bar, H, is withdrawn from the socket, N, turned, and replaced in the socket. In this case the bar, I, and saw, J, rest upon the bar, H fig. 2, but the friction roller of the lever, L, still bears against the bar, I, and keeps the saw to its work, the saw, of course, cutting in a horizontal direction. The outer end of the bar, H, is clamped to the side of the tree, P.

In order to re-saw the wood into short lengths, another bar, Q, and saw may be attached to the sleeve, G, as in fig. 1, the bar, Q, working in a suitable guide, S, attached to the framing. The lengths of wood represented by T, while being sawed, may rest in suitable hooks, U, at the front of the framing.

This machine is simple, and easily constructed.

More information may be obtained by letter addressed to the patentee, No. 484 Washington street, Boston, Mass.

LEAVITT'S PORTABLE GRAIN MILL.



The accompanying figures represent an improved portable grain mill, for which a patent was granted to Charles Leavitt, of the city of Quincy, Ill., on the 27th of last February. Fig. 1 is a vertical section of the mill, fig. 2 is an elevation, fig. 3 is a plan view of the movable rings, and fig. 4 is a plan view of the annular conductor. Similar letters refer to like parts.

The nature of the invention consists in applying to a portable Corn Mill, (in which the external portion or concave revolves upon a fixed cone) the following improvements: First, the combination of the bed plate, legs or supports, the breaker, and the main pivot, cast in one piece. Secondly, in combination with the foregoing, a lever in two parts, attached to an external revolving concave, constructed and arranged substantially as hereinafter described.

The bed plate, *a*, legs or supports, *b*, ogee breaker, *c*, and vertical main pivot, or journal, *d*, are cast in one piece. Upon a flange projecting from the lower edge of the bed plate, *a*, is placed an annular grooved conductor, *e*, which has an outlet at *f*. Between the top of the breaker, *c*, and the base of the pivot is an annular groove, *i*, with an outlet at the bottom thereof, for the purpose of collecting and discharging the oil from the pivot, *d*, and preventing it from mixing with the meal. A sleeve, *g*, fits upon the pivot, *d*, and revolves thereon, its lower edge resting upon the bottom of the groove, *i*. A top plate or cover, *h*, having a circular opening in its center a little less than the base of the breaker, *c*, is joined to the sleeve, *g*, by four strong arms, *l*. The plate, *h*, extends to the outer edge of the conductor, *e*, and carries on its under side, square, projecting scrapers, *n*, which fit in the conductor and revolve therein. The arms, *l*, are toothed on their under sides to correspond with the teeth in the breaker, *c*, forming together an effective crusher for the corn and cob when ground together. In the space between the base of the breaker, *c*, and the inner edge of the conductor, *e*, are secured by bolts (in such a manner as to be readily removed when required) a flat ring of steel or hardened iron, *m*, with grinding teeth on its upper side, of any convenient form; but it is preferable for crushing or coarse grinding, to use teeth, the transverse section of which presents one side inclined and the other vertical. The mill is run in such a direction that the vertical sides of the upper and lower grinding surfaces shall meet each other. In a groove in the upper plate, *h*, is placed another ring, *o*, of the same size, material, and form as *m*, with the teeth of the same form, and arranged as before described; this is also removed when required. Between the ring, *o*, and the central opening, is a circle of large teeth inclined to the rear, and vertical to the front, and bevelled upwards on their inner edges for the purpose of forcing or crowding the grain on to the rings. It is preferable in grinding fine meal to run the grinding surfaces in such a direction as to oppose the inclined sides of the teeth in one ring to the inclined sides of the teeth of the other; and with that view another pair of rings are made to fit in the same places as the others, with the inclined sides of the teeth reversed. —Upon the top of the pivot, *d*, is a cap, *p*, which rests on the sleeve, *g*. Through the cap, pivot, and bed plate, a screw, *q*, passes, having its nut at the bottom; the object of this screw is to regulate the mill by pressing the grinding surfaces together. Upon a flange on the edge of the central opening is a suitable hopper. Upon each side of the hopper, resting upon the top plate, *h*, and secured thereto by bolts, is placed a piece of scantling extending to about twelve feet from the center of the mill, they there meet at a very acute angle, forming a lever secured to a bolt by which the horses are attached. A board, *s*, extends from one of the ends of the scantling to the other, upon which a man can stand to feed the mill.

This mill is best adapted for crushing and grinding corn and cob together, or by using the rings which present the inclined sides of their teeth to one another for fine meal, &c. If the teeth should wear out or break, fresh rings can be put in at a trifling expense. The annular conductor is a good improvement upon mills of this description, which allow the meal to fall from all parts of the base of the concave. More information may be obtained by letter addressed to the patentee at his residence in Illinois.