

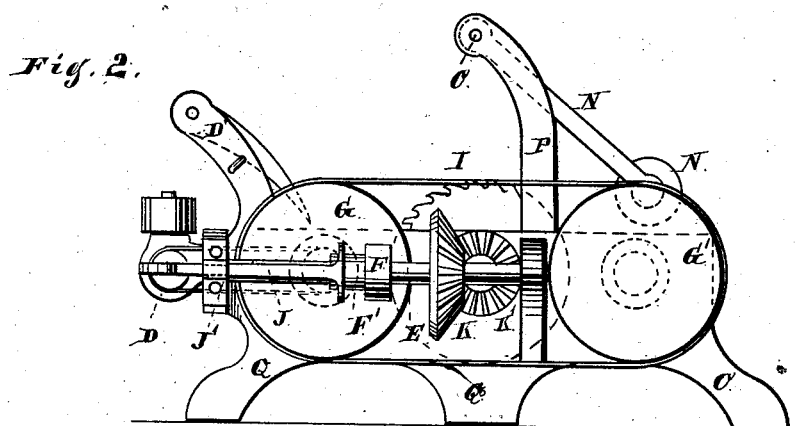
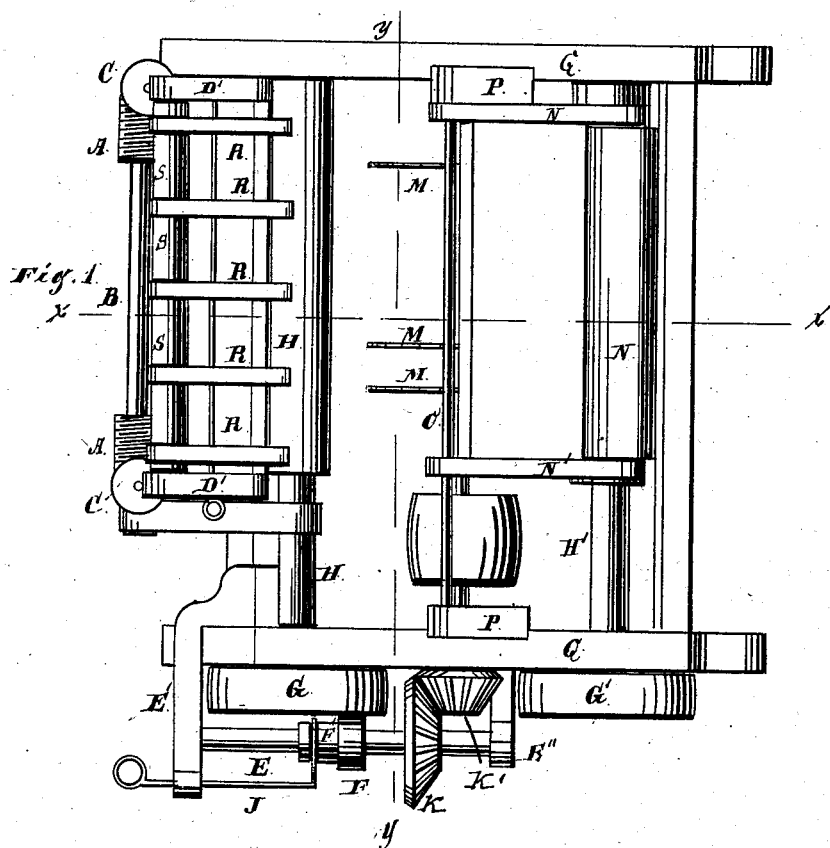
(No Model.)

2 Sheets—Sheet 1.

F. McDONOUGH.
EDGER SAWING MACHINE.

No. 259,703.

Patented June 20, 1882.



Witnesses:
Albert H. Adams.
Edgar T. Bond

Inventor:
Frank M. Donough
By West & Arnold
His attys

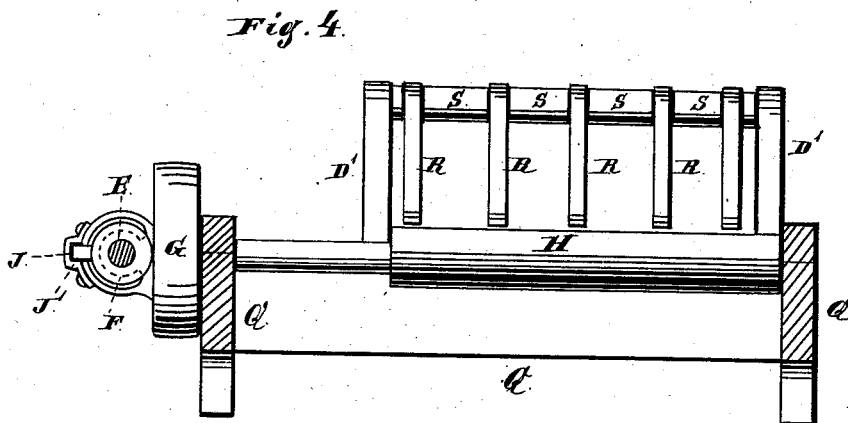
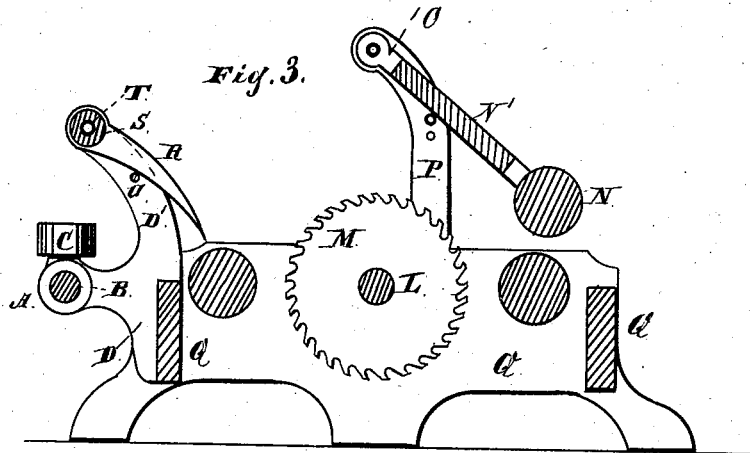
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UNITED STATES PATENT OFFICE.

FRANK McDONOUGH, OF EAU CLAIRE, WISCONSIN.

EDGER SAWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 259,703, dated June 20, 1882.

Application filed August 15, 1881. (No model.)

To all whom it may concern:

Be it known that I, FRANK McDONOUGH, residing at Eau Claire, in the county of Eau Claire and State of Wisconsin, and a citizen of the United States, have invented new and useful Improvements in Edger Sawing-Machines, of which the following is a full description, reference being had to the accompanying drawings, in which—

Figure 1 is a top or plan view; Fig. 2, a side elevation; Fig. 3, a vertical longitudinal section on line *x x* of Fig. 1; Fig. 4, a vertical cross-section on line *y y* of Fig. 1, looking toward the front of the machine.

This invention relates to devices primarily designed for use on what are known or termed "edgers," or machines for removing the bark and waxy portions from slab-boards through the medium of circular saws; but such devices can also be applied to and used with other forms of sawing-machines used for other purposes.

The principal objects of the invention are to secure a better and more uniform gaging of the width of strips to be cut off and insure the same gage throughout the entire length of strip; to secure an increase in or a diminishing of the feed in a simple and reliable manner and by means which can be readily and quickly adjusted to produce the desired or required rate of speed for the feed, and by which the feed can be easily reversed and be made to operate in either a forward or backward direction, as desired; to prevent injury to persons operating the machine in case the edge or strip which is being ripped off should break and be thrown back by the action of the saws, as is sometimes the case, and to improve generally this class of machines in the several features named and have the devices by which the desired results are obtained simple in construction, easily operated or adjusted, and perfect in their operation. These objects I accomplish by the construction and arrangement of mechanism which is fully and clearly illustrated in the accompanying drawings.

The screw or worm wheels or pulleys A are located inside of the side pieces of the framework, at the front of the machine, one at each end of the shaft B, which shaft is supported or has its bearing at each end in the supports or brackets D, secured in any suitable manner to the end pieces of the frame. These wheels, as shown, are located and arranged so that their

top surface will be in the same horizontal plane as the top surface of the feed-rollers, so that the worm or screw on their exterior face will bear or press against the lower face of the board or piece being operated on and force and keep the edge of such board or piece against the gage, pulley, or roller C, one of which is located to act in conjunction with each screw or worm wheel and keep the board or piece running in a straight line, so that the saw will cut the strips straight or in a parallel line. These wheels A might be arranged so as to operate on the upper face instead of the under face of the board or strip and keep the edge of the board or piece in contact with the gage-roller, and the gage-roller might be located in a suitable slot formed in the support D, or in the frame, instead of being located on top of the support, as shown. By means of these worm or screw wheels or pulleys it will be seen that the material which is being operated on will be forced or pressed outward continuously, keeping its edge in contact with the gage-roller on that side, so that the line of travel will be straight the entire length of the board or piece without any liability of the cut running in or out, as is the case when held by hand, and the gage-rollers act as rolling bearings for the lumber when the screws or worm draw the same against said gage-rollers, thereby preventing the lumber from binding against the latter, and avoiding undue friction. These screw or worm wheels or pulleys may be secured to the shaft in any suitable manner, so as to be firm and unyielding, and they are to be driven or rotated at a higher rate of speed than the speed of the feed-rollers, so that their action will be faster than the feed, and thereby keep the edge of the board or piece firmly against the gage or roller, and they might have the worms or screws on their exterior surface of the form shown, or of any other form that will act in an outward direction to carry the board or piece correspondingly and keep its edge in contact with the gage or roller.

The shaft E is mounted in suitable arms or supports, E' E'', standing out from the side of the main frame sufficiently far to bring the shaft E in correct relation to the roller-pulley. On this shaft, near its forward end, is secured a bevel-cog or friction gear, K, arranged to mesh with a similar wheel, K', located on the end of the shaft or arbor L for the saws, which shaft is driven by belt or other power.

Between the wheel K and the rear bearing of the shaft E, and on the shaft, is located the friction wheel or pulley F, the face of which is arranged to be in contact with the side face of the pulley or wheel G, which wheel is located on the end of the shaft of the feed-roller H. The wheel or pulley F is mounted on the shaft E so as to slide forward or back, and may be held in position so as to revolve with the shaft by means of a spline or feather, or in some other suitable manner. This wheel or pulley F has a rearward extension or hub, F', in which is a groove which receives the forked end of a lever or bar, J, which bar extends back and passes through a support or guide, J', located on the rear support, E', and its projecting end is formed so as to be grasped by the hand, and by means of this bar or lever J the position of the friction-wheel F can be changed on the shaft E so as to bear on the side face of the wheel G at either side of its center and farther away or nearer to its center. When bearing against the side face of the wheel forward of a vertical line passing through the center thereof the feed-rollers will be advanced or rotated in a direction to carry the board or piece onto the saws, and when made to bear on the side face of this wheel or pulley G, on the opposite side of the vertical line passing through its center, the feed-rollers will be given a reverse movement, drawing the board or piece away from the saw, and the distance from the center at which this friction-wheel F is made to bear against the side face of the pulley or wheel G will regulate the speed, and consequently the feed. The farther away from the center that the friction bears and the nearer the periphery of the wheel G the slower will be the speed of the feed-rolls. By this arrangement it will be seen that by simply taking hold of the arm or lever J and moving it forward or back, as required, the friction F can be made to bear at any desired point on the side face of the pulley or wheel G, and by thus changing its position the feed of the rollers can be changed so as to advance the board or piece slowly or rapidly, as may be required, and that the feed can be changed in the same manner, so as to be either a forward feed or a backward feed, to carry the material into the saws or away from the saws, as required.

The feed-rollers H and H' are located, arranged, and operated in the usual manner, and, as shown, the feed-roller H' is driven by a belt, I, passing over the pulley G, and a corresponding pulley, G', located on the end of the feed-roller H', and the arbor or shaft L, with the saws M, is also constructed, arranged, and operates in the usual manner for this class of machines, this shaft L and the feed-rollers being supported in the frame-work Q, as usual, which frame-work may be of the form of construction shown, or of any other form suitable to receive and support the operating devices.

The pressure-roller N is of the usual and ordinary form of construction, and is suspended

by arms or a frame, N', from a rod, O, located in the upper ends of standards P, which standards, at their lower ends, are attached to the frame-work, the roller lying rearward of the saw M and operating in the usual manner of rollers of this class.

Forward of the saws, and at the front of the machine, are located the fingers, arms, or pawls R, one or more of which may be used. As shown, five are provided. These arms, fingers, or pawls may be made of wrought-iron, steel, or other suitable material, and may be bent and curved in the form shown, or in any other suitable form. As shown, they are suspended from a rod or shaft, Y, which shaft is mounted or secured in a stationary manner in the upper ends of the arms or standards D', and between the pawls of this rod or shaft are washers or sleeves S, by means of which the guards are held apart in such manner as to allow them to swing freely on the rod or shaft. The free ends of these guards are made somewhat sharp, and the length of each guard is such that these free ends will ride on or come in contact with the upper face of the board or piece which is being operated on, and in place of several guards a single guard having its free end made wide and provided with points or teeth might be used.

As shown, the support for the shaft B and for the rod Y are made in a single piece; but these supports may be made of separate pieces, if so desired, and, as shown, a cross-rod, U, is provided, extending from standard to standard D', and located at a proper point for the guards to strike against and prevent them from falling, so as to swing too far back and interfere with the introduction of the board or piece.

These guards, fingers, arms, or pawls act as follows: As the board or piece is advancing in the direction to be ripped or sawed the free ends of the fingers, arms, or pawls will rest on the upper face of the board or piece without interfering with the advance movement thereof; but in case from undue friction or other cause, the board or piece should be given a backward movement the ends or points of these fingers, arms, or pawls will be forced into the board by reason of their form and the relation which they have to the board or piece, thereby preventing the board from being carried back to any great extent; and in case the board, after it leaves the fingers, arms, or pawls, at which time it has only a few inches to travel before it is entirely sawed or split, should be broken by the pinch of the saws, or from any other cause, such piece or strip is naturally thrown back by the action of the saws; but instead of passing straight back, as would be its natural course, this broken-off piece would strike against the forward face of the fingers, arms, or pawls and be glanced or thrown in an upward direction, so as to pass above and clear of the operator, who would be protected thereby from the danger of being injured, as is often the case when these fingers, arms, or pawls are not used to act as guards. It will also be

noticed that these fingers or arms or pawls will prevent the board from being raised by the action of the saw, which would be the case in event of breakage of the board or piece by reason of the saw running in or out or deviating from a straight line, which causes sufficient friction to raise the board on top of the saw, from whence it will be thrown back with great force, so that these arms, fingers, or pawls not only prevent the broken piece from flying back and injuring the operator, but they also act to hold the board down and prevent it from rising to a considerable extent, so as to be caught and thrown back by the saws.

As shown, the shaft B is driven by a belt from the feed-roller H; but it may be driven in some other suitable manner, and, no matter how driven, it should be given an increased speed over the speed of the feed-roller.

The operation of the machine in sawing or ripping need not be described, as it does not differ from that common to this class of machines, except in respect to producing a straight parallel cut and the changing of the feed, as described.

Guards or stops similar to the fingers or pawls R can be arranged at the rear of the machine to prevent flying pieces from doing injury at that end, such guards or stops being formed in a manner similar to the fingers or pawls at the front of the machine, and being arranged in such relation to the board or piece being operated upon as to allow such board or piece to pass freely beneath them, by which arrangement both ends of the machine will be protected or guarded against injuring the operator by the flying pieces.

The features of holding the strip or board against the rotary guide or pulley and of changing the feed by means of a sliding friction bearing on the face of the driving pulley or wheel are both very desirable, and by their use the working qualities of the machine in respect to straight cutting and perfect feed are largely increased, the devices by which a straight cut and a proper feed are attained being simple in construction and reliable in operation.

In operating with this class of machines it often happens that a change of speed in the feed is desirable for various reasons. This change, by using the friction-wheel, can be quickly obtained, as all that is necessary to be done is to move the friction and cause it to bear on the pulley which drives the feed-rollers, accordingly as a slow or fast feed is required or a front or back feed, the changing of the position of the friction in relation to the center of the drive pulley or wheel effecting these results in an efficient and reliable manner without expenditure of any great amount of labor and requiring only ordinary skill to make the change.

What I claim as new, and desire to secure by Letters Patent, is—

1. In an edger or sawing machine, the combination of a rotary shaft provided at its end

with a screw-thread or worm, with a gage-roller journaled to rotate in a horizontal plane at the outer portion of the screw-thread or worm, and constituting a rolling bearing for the material, which is drawn up against the same by the said screw-thread or worm, substantially as and for the purpose described.

2. In an edger or sawing machine, the combination of the shaft B, journaled directly at the receiving or front end of the machine, and provided with a screw-thread or worm, A, the gage-roller C, journaled to rotate in horizontal plane adjacent to the outer portion of the said screw-thread or worm, and the feed-rollers H, arranged in rear of the said shaft and driven independently of the same, said screw-threaded or worm shaft rotating at a greater speed than the feed-rollers, whereby the material is drawn up against the rotary gage, which affords a rolling bearing for the same, all substantially as described.

3. In an edger or sawing machine, the shaft B, journaled directly at the receiving or front end of the machine, and provided at each end with a screw-thread or worm, A, in combination with the gage-rollers C, journaled to rotate in horizontal planes at the outer portions of the screw-threads or worms, and the feed-rollers H, arranged in rear of the said screw-threaded or worm shaft and driven independently of the same, said shaft rotating at a greater speed than the feed-rollers, all substantially as and for the purposes described.

4. In an edger or sawing machine, the supports D D, arranged directly at the receiving or front end of the machine, at opposite sides thereof, in combination with the gage-rollers C C, journaled on the said supports to rotate in horizontal planes, and the shaft B, also journaled in said supports and provided at each end with a screw-thread or worm arranged adjacent to and coacting with the gage-rollers, all substantially as and for the purpose described.

5. In an edger or sawing machine, the combination, with the arbor carrying the circular saw or saws, and the feed-rollers located in front of said saw or saws, of the horizontal shaft E, journaled at its ends in bearings at one side of the machine-frame, pinions by which said horizontal shaft is rotated directly from the saw-arbor, a friction-wheel, G, fixed directly to the arbor of one of the feed-rollers, and the horizontally-adjustable friction-wheel F, for imparting motion directly from the said shaft to the said friction-wheel on the feed-roll, all substantially as shown and described.

6. The combination, with the feed-roller H, of the swinging fingers or pawls R, located upon the shaft T, and the sleeves S, arranged between said fingers or pawls, substantially as and for the purpose described.

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Witnesses:

A. R. BERGH,
C. W. CULBERTON.