

Aug. 2, 1938.

E. S. FIELD

2,125,371

SHINGLE MILL

Filed Aug. 29, 1936

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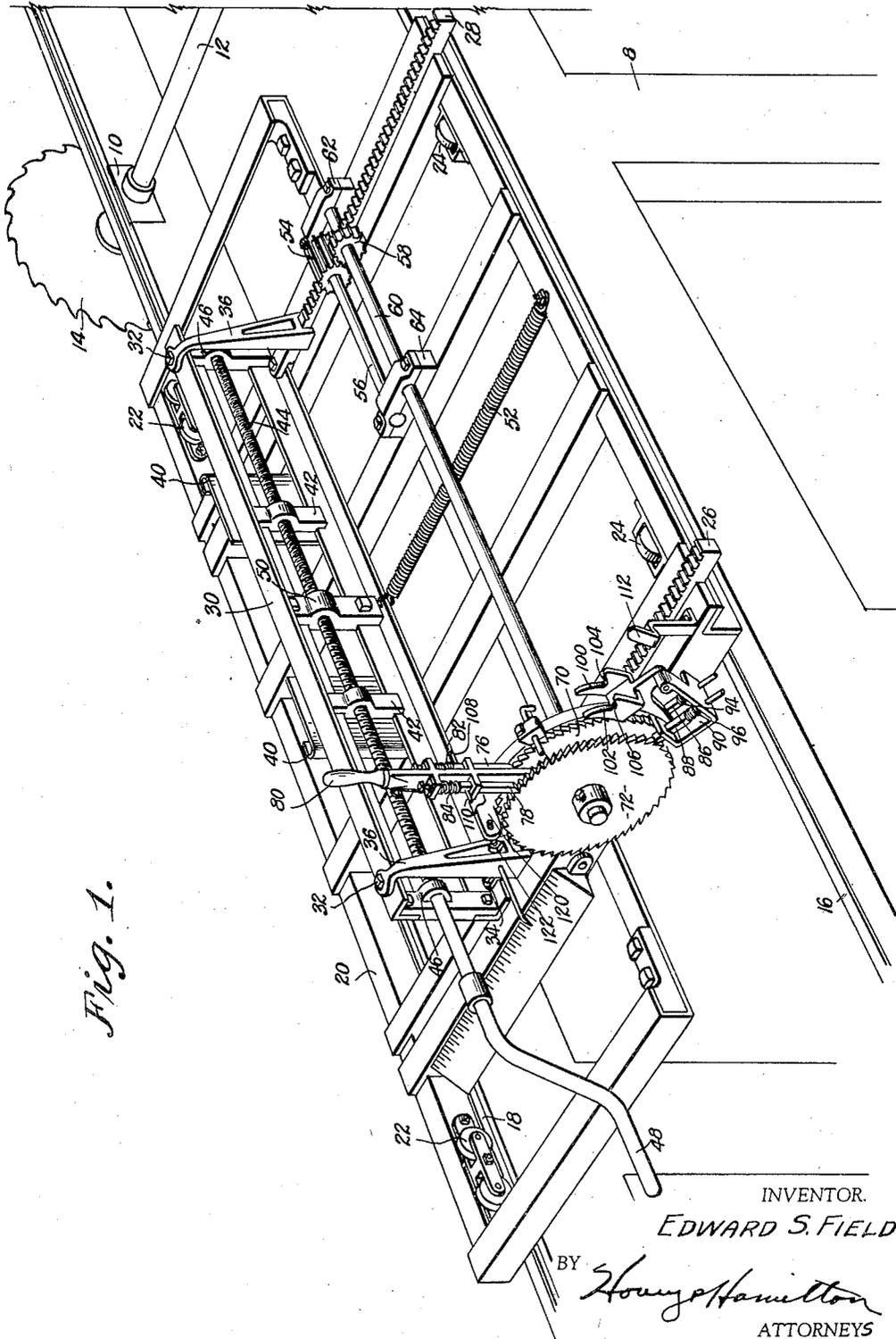


Fig. 1.

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Fig. 2.

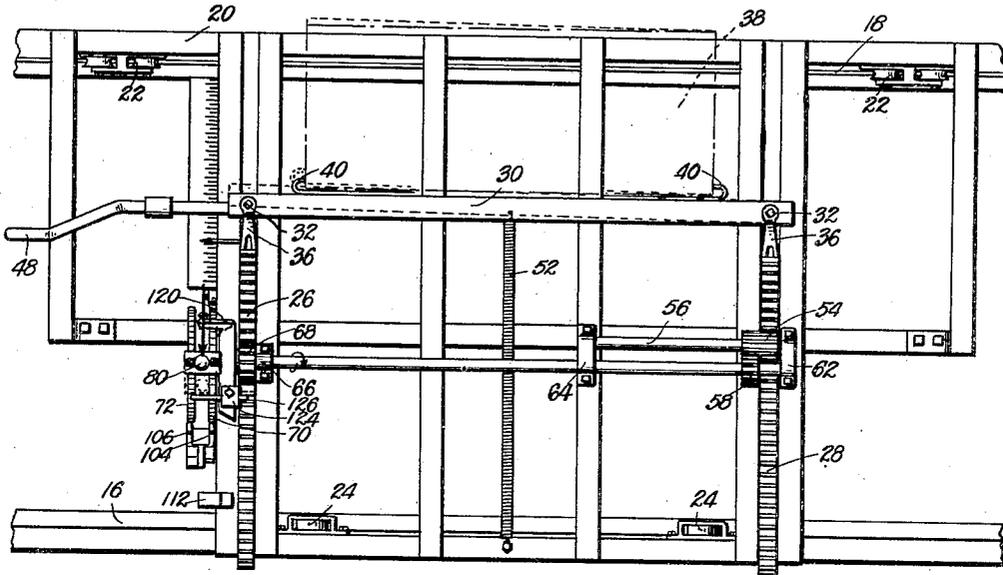
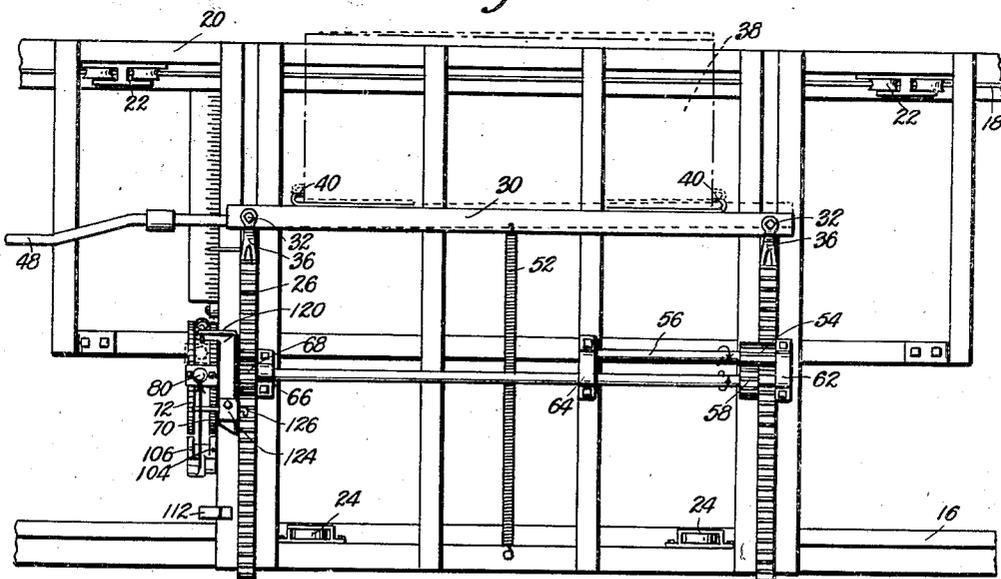


Fig. 3.



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Fig. 4

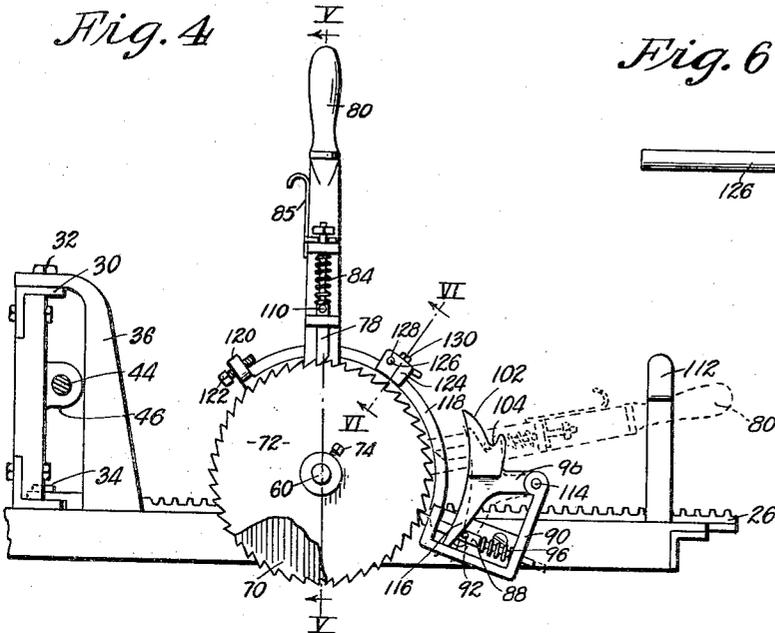


Fig. 6

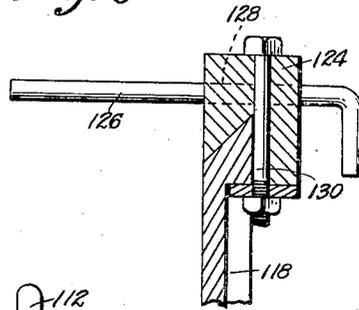


Fig. 5

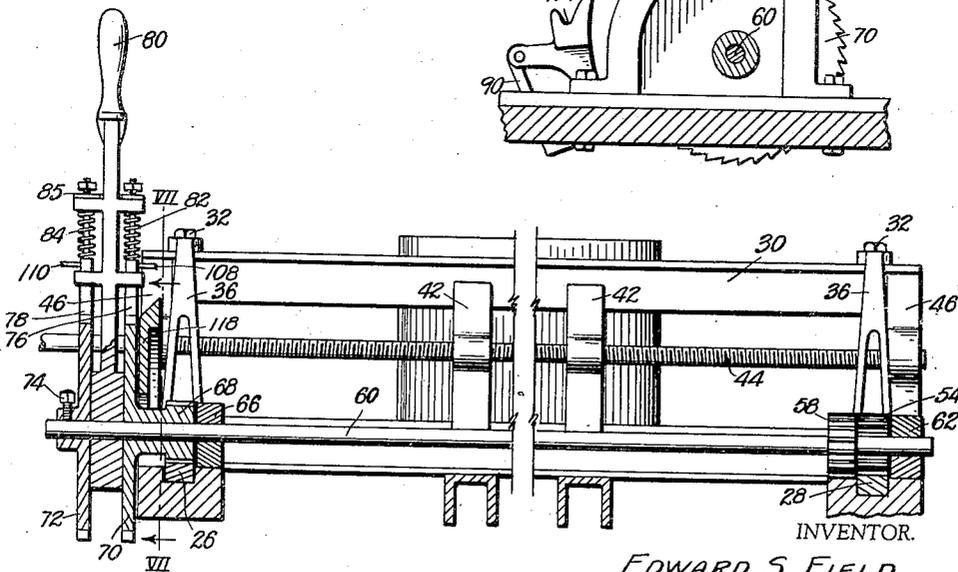
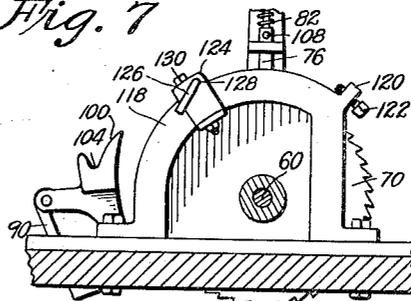


Fig. 7



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2,125,371

SHINGLE MILL

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6 Claims. (Cl. 143—11)

This invention relates to saw mills, and particularly the portion thereof adapted to carry the block being sawed, and mechanism thereon for progressively advancing said block toward the saw as strips are taken therefrom, and the primary object of the invention is the provision of improved mechanism for alternately advancing first one end of the block, then the other, for the purpose of producing shingles.

One of the important aims of the instant invention is to provide unique manually operable mechanism for shingle mills, which will serve to function with a block-carrying member in such manner as to alternately advance the ends thereof for the production of shingles as a lever of the mechanism is oscillated.

A still further object of the invention is the provision in block-advancing mechanism for saw mills, having uniquely disposed ratchet wheels, an operating lever, check pawls for the ratchet wheels, dogs interconnecting the lever and ratchet wheels, and a throw-out member operable to render both the dogs and check pawls inoperative when the lever is moved to the extreme one end of its path of travel.

Minor objects of the invention will appear during the course of the following specification, referring to the accompanying drawings, wherein:

Figure 1 is a perspective view of a portion of a saw mill made in accordance with the present invention.

Fig. 2 is a top plan view of the mechanism, showing the block carried thereby in one position.

Fig. 3 is a similar view, illustrating the block shifted to another position.

Fig. 4 is an enlarged, fragmentary, side elevation of the operating lever and its associated mechanism.

Fig. 5 is a vertical, condensed, central, sectional view, taken along line V—V of Fig. 4.

Fig. 6 is an enlarged, detailed, fragmentary, sectional view, taken along line VI—VI of Fig. 4, and,

Fig. 7 is a sectional view, taken along line VII—VII of Fig. 5.

The features of a saw mill embodying this invention are especially constructed for the production of shingles, and the parts embodying the invention contribute in performing the function of alternately advancing the ends of the wooden block from which the shingles are cut. This action just mentioned and one manner of producing the same is shown and described in U. S. Letters

Patent No. 1,316,555, issued September 23, 1919, to J. F. Bell.

The improvements contemplated by this invention and exemplified by the accompanying drawings attain the same result so far as the production of shingles is concerned, but in a more efficient and practical manner, and the manually operable mechanism comprises parts which render the saw mill easier to operate, more convenient to the operator, and speedier in the production of shingles.

In the drawings, wherein like reference characters designate similar parts throughout the several views, the numeral 8 indicates any suitable supporting frame, having bearings 10 mounted therein to journal a mandrel or shaft 12 for supporting and driving saw 14. Tracks 16 and 18 are along the upper side of frame 8, and a horizontally shiftable frame 20 is movably mounted upon tracks 16 and 18 through the medium of wheels 22 and 24.

The first mentioned wheels 22 are annularly grooved, and preclude lateral displacement of frame 20 as it is being shifted to and fro above frame 8. This movement on the part of frame 20 may be imparted thereto either by manual manipulation thereof or through the use of suitable, well known mechanical means, not here shown. Such movement carries frame 20 past saw 14 and the work of producing shingles is thereby assisted.

Frame 20 should be constructed of metal or other suitable strong and rigid material, and a pair of parallel, longitudinally slidable racks 26 and 28 are carried by frame 20 for rectilinear reciprocation in a direction transverse to the path of travel of frame 20. A block-carrying member or head 30 is in connection with the ends of racks 26 and 28 through the medium of like bolts 32 and 34 and brace 36. Bolts 32 and 34 establish a pivotal connection between head 30 and the respective racks 26 and 28, and the axis of rotation is a vertical one, always remaining in a line perpendicular to the horizontal planes of racks 26 and 28.

Head 30 is especially formed to hold a block of wood 38 in a manner graphically illustrated in Figs. 2 and 3. The means for holding this block 38 for movement with head 30 comprises a pair of jaws 40, each having a bearing 42 in screw-threaded engagement with threaded shaft 44, which is journaled for rotation in bearings 46. This shaft 44 has a suitable crank or similar means 48 so that it may be rotated in either direction for the purpose of moving jaws 40 to-

ward and from each other and therefore to and from engagement with the ends of block 38. The returned portions of jaws 40 may be sharpened to grip the ends of block 38, if desired. A central bearing 50 journals shaft 44 at a point intermediate its ends and the threads formed on shaft 44 are right and left screw threads, so that as shaft 44 is turned in one direction, jaws 40 will be moved toward or from each other, depending upon the direction of rotation.

A spring 52 has one of its ends in connection with head 30. The other end of spring 52 is affixed to frame 20 and a constant pull is therefore exerted upon head 30 at all times. This pull is in a direction away from saw 14 and opposed to the direction of movement imparted to head 30 by the hereinafter described manually operable mechanism. An idler pinion 54, mounted upon shaft 56, is in mesh with rack 28, and pinion 58, mounted upon shaft 60 for rotation therewith is, in turn, in mesh with idler pinion 54. Shaft 60 extends transversely across above racks 26 and 28, and is journaled in bearings 62, 64 and 66, all secured to frame 20. Pinion 68 is in mesh with rack 26 and integral with inner ratchet wheel 70.

As Fig. 5 illustrates, pinion and ratchet wheel 68 and 70 are free to move about the axis of shaft 60, yet are supported thereby so as to be in axial alignment with outer ratchet wheel 72, which is rigidly secured to shaft 60 through the medium of set screw or analogous means 74. It will be observed from Fig. 1 that the teeth of ratchet wheel 70 are facing a direction opposite to the teeth of ratchet wheel 72, and that each ratchet wheel 70 and 72 is engaged by a yieldable dog 76 and 78 respectively, mounted upon lever 80, that is freely carried by shaft 60 for oscillation about its longitudinal axis. Springs 82 and 84 urge dogs 76 and 78 respectively into engagement with the teeth of ratchet wheels 70 and 72 respectively, as lever 80 is oscillated about the axis of shaft 60. Therefore, as lever 80 is moved in one direction, one of the ratchet wheels will be driven, while the other is idle, and as lever 80 is moved in the opposite direction, the other ratchet will be driven as the remaining ratchet wheel is stationary. Trigger 85 engages behind heads formed on dogs 76 and 78 so that both of said dogs may be withdrawn from engagement with wheels 70 and 72 when desired.

Check pawls 86 and 88, supported by a bracket 90, mounted upon frame 20, engage the teeth of ratchet wheels 70 and 72 respectively so as to limit their movement to but one direction. These check pawls have pins 92, extending inwardly toward each other for the hereinafter described purpose, and springs 94 and 96 are associated with pawls 86 and 88 to yieldably maintain the same in engagement with the toothed peripheries of wheels 70 and 72 respectively.

Bracket 90 pivotally supports a throw-out element 98 of unique construction. The upper portion of this element is provided with a pair of opposed cam faces 100 and 102, which terminate in notches 104 and 106 respectively. Laterally extending pins 108 and 110 are carried by dogs 76 and 78 respectively, and when lever 80 is moved to the extreme limit of its path of travel in one direction, these pins 108 and 110 engage cam faces 100 and 102 and travel thereover to positions within notches 104 and 106. The spring detent 112 engages lever 80 when the latter reaches the end of its path of travel and when the lever is so engaged by detent 112, lever 80

will be in the position shown in dotted lines of Fig. 4, and element 98 will be moved down around its pivotal connection 114 with bracket 90. Such movement carries tongue 116 against pins 92 of check pawls 86 and 88 so that they too are moved to positions out of engagement with wheels 70 and 72 respectively. Thus the positioning of lever 80 against movement at one end of its path of travel will completely disengage dogs 76 and 78 and pawls 86 and 88.

Means is provided for limiting the travel of lever 80, and since the amount of oscillation that can be imparted to lever 80 determines the thickness of shingle being cut, this adjustment is a critical one and important. A segment 118, carried by frame 20, is provided with an ear 120 which supports the adjustable screw 122. This ear and screw 120 and 122 are in the path of travel of lever 80 and constitute a stop at one end of said path of travel. A block 124, slidably mounted upon segment 118, and having a laterally extending bolt 126 supported thereby, selectively forms the abutment for lever 80 at the other end of its path of travel. This bolt 126 is secured in place in cross bore 128, and block 124 is likewise rigidly fastened to segment 118 by a set screw 130. Moving block 124 along segment 118 obviously will determine the length of the path of travel of lever 80 from bolt 126 to set screw 122. It is also clear that when it is desired to move lever 80 into detent 112, bolt 126 may be quickly withdrawn from the path of travel of lever 80.

Operation

Head 30 must be advanced with each movement of lever 80 without backward travel. When lever 80 is moved in the direction of the arrow in Fig. 2, inner ratchet wheel 70 is rotated about the axis of shaft 60, pinion 68, integral with ratchet wheel 70, moves rack 26 forwardly so as to advance one end of head 30 to the position shown in dotted lines of Fig. 2. Lever 80 is then against bolt 126 and check pawl 86 is moved inwardly against one tooth of wheel 70. Frame 20 is then moved toward saw 14 and a shingle of the form indicated by dotted lines in Fig. 2 is cut from block 38.

Immediately thereafter lever 80 is moved over against stop 122. Such movement does not disturb wheel 70, but rotates outer ratchet wheel 72 and, therewith, shaft 60, pinion 58, and idler pinion 54. Such action moves rack 28 and therefore, head 30 forwardly to the position shown in dotted lines of Fig. 3. Check pawl 88 has snapped into one of the teeth of wheel 72 and frame 20 is moved past saw 14 to cut from block 38 a shingle of the form shown in dotted lines of Fig. 3. Such action is repeated until all of block 38 has been cut away, and when block 38 has been reduced to a size where it no longer can be advanced to be engaged by saw 14, lever 80 is moved to place behind detent 112, all means of holding wheels 70 and 72 are thereby released, and spring 52 draws head 30 back to a point of beginning where another block may be attached thereto.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. In a shingle mill, having a block-carrying member, a pair of parallel, longitudinally slidable racks pivotally secured to the block-carrying member, feed mechanism comprising pinions in mesh with each rack respectively; a shaft extending across the pair of racks; a pair of ratchet

wheels mounted on said shaft adjacent one of said racks; a lever freely mounted on the shaft and oscillatable about the axis of the latter; and a pair of dogs carried by the lever in engagement with the ratchet wheels respectively to alternately drive the same when the lever is oscillated, one of said pinions being integral with one of said ratchet wheels and free to rotate about the shaft therewith as the lever is moved in one direction to drive the ratchet wheel, the other of said ratchet wheels being secured to said shaft to rotate the same when the lever is moved in the other direction, the other of said pinions being secured to said shaft for rotation therewith, said last mentioned pinion having an idler pinion in mesh therewith and in mesh with the other of said racks.

2. In a shingle mill, having a block-carrying member, a pair of parallel, longitudinally slidable racks pivotally secured to the block-carrying member, feed mechanism comprising pinions in mesh with each rack respectively; a shaft extending across the pair of racks; a pair of ratchet wheels mounted on said shaft adjacent one of said racks; a lever freely mounted on the shaft and oscillatable about the axis of the latter; and a pair of dogs carried by the lever in engagement with the ratchet wheels respectively to alternately drive the same when the lever is oscillated, one of said pinions being integral with one of said ratchet wheels and free to rotate about the shaft therewith as the lever is moved in one direction to drive the ratchet wheel, the other of said ratchet wheels being secured to said shaft to rotate the same when the lever is moved in the other direction, the other of said pinions being secured to said shaft for rotation therewith, said last mentioned pinion having an idler pinion in mesh therewith and in mesh with the other of said racks, the teeth of one ratchet wheel having their faces disposed in a direction opposite to the faces of the teeth of the other ratchet wheel to permit the dog of one ratchet wheel to ride thereover when the dog of the other ratchet wheel is serving to move its ratchet wheel.

3. In a mill of the character described, having a pair of parallel, longitudinally slidable racks, a block-carrying member pivotally secured to each of said racks, and pinions in mesh with each of said racks respectively, feed mechanism for alternately driving the pinions in the same direction to alternately advance the racks in the same direction, comprising ratchet wheels in connection with each pinion respectively, a lever oscillatable about the axis of said ratchet wheels, dogs carried by the lever in engagement with the ratchet wheels respectively to alternately rotate the ratchet wheels in opposite directions as the lever is oscillated, a pair of check pawls in engagement respectively with the ratchet wheels to preclude their rotation in directions opposite to the directions traveled when the lever acts thereon, and means for simultaneously moving all the dogs and said check pawls from engagement with the ratchet wheels when the lever is moved to one end of its path of travel.

4. In a mill of the character described, having a pair of parallel, longitudinally slidable racks, a block-carrying member pivotally secured to each of said racks, and pinions in mesh with each of said racks respectively, feed mechanism for

alternately driving the pinions in the same direction to alternately advance the racks in the same direction, comprising ratchet wheels in connection with each pinion respectively, a lever oscillatable about the axis of said ratchet wheels, dogs carried by the lever in engagement with the ratchet wheels respectively to alternately rotate the ratchet wheels in opposite directions as the lever is oscillated, a pair of check pawls in engagement respectively with the ratchet wheels to preclude their rotation in directions opposite to the directions traveled when the lever acts thereon, and a throw-out cam engageable with the said dogs to simultaneously withdraw the same from engagement with the ratchet wheels when the lever is moved to one end of its path of travel.

5. In a mill of the character described, having a pair of parallel, longitudinally slidable racks, a block-carrying member pivotally secured to each of said racks, and pinions in mesh with each of said racks respectively, feed mechanism for alternately driving the pinions in the same direction to alternately advance the racks in the same direction, comprising ratchet wheels in connection with each pinion respectively, a lever oscillatable about the axis of said ratchet wheels, dogs carried by the lever in engagement with the ratchet wheels respectively to alternately rotate the ratchet wheels in opposite directions as the lever is oscillated, a pair of check pawls in engagement respectively with the ratchet wheels to preclude their rotation in directions opposite to the directions traveled when the lever acts thereon, and a throw-out cam engageable with the said dogs to simultaneously withdraw the same from engagement with the ratchet wheels when the lever is moved to one end of its path of travel, said throw-out cam having a tongue thereon for moving the check pawls from engagement with the ratchet wheel as the dogs are so withdrawn.

6. In a mill of the character described, having a pair of parallel, longitudinally slidable racks, a block-carrying member pivotally secured to each of said racks, and pinions in mesh with each of said racks respectively, feed mechanism for alternately driving the pinions in the same direction to alternately advance the racks in the same direction, comprising ratchet wheels in connection with each pinion respectively, a lever oscillatable about the axis of said ratchet wheels, dogs carried by the lever in engagement with the ratchet wheels respectively to alternately rotate the ratchet wheels in opposite directions as the lever is oscillated, a pair of check pawls in engagement respectively with the ratchet wheels to preclude their rotation in directions opposite to the directions traveled when the lever acts thereon, and a throw-out cam engageable with the said dogs to simultaneously withdraw the same from engagement with the ratchet wheels when the lever is moved to one end of its path of travel, said throw-out cam having a tongue thereon for moving the check pawls from engagement with the ratchet wheel as the dogs are so withdrawn, there being a detent to hold the lever at said one end of its path of travel with the dogs and check pawls in the inoperative position whereby the ratchet wheels are free to move about their axes.

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