Aug. 2, 1938. E. S. FIELD 2,125,371

SHINGLE MILL

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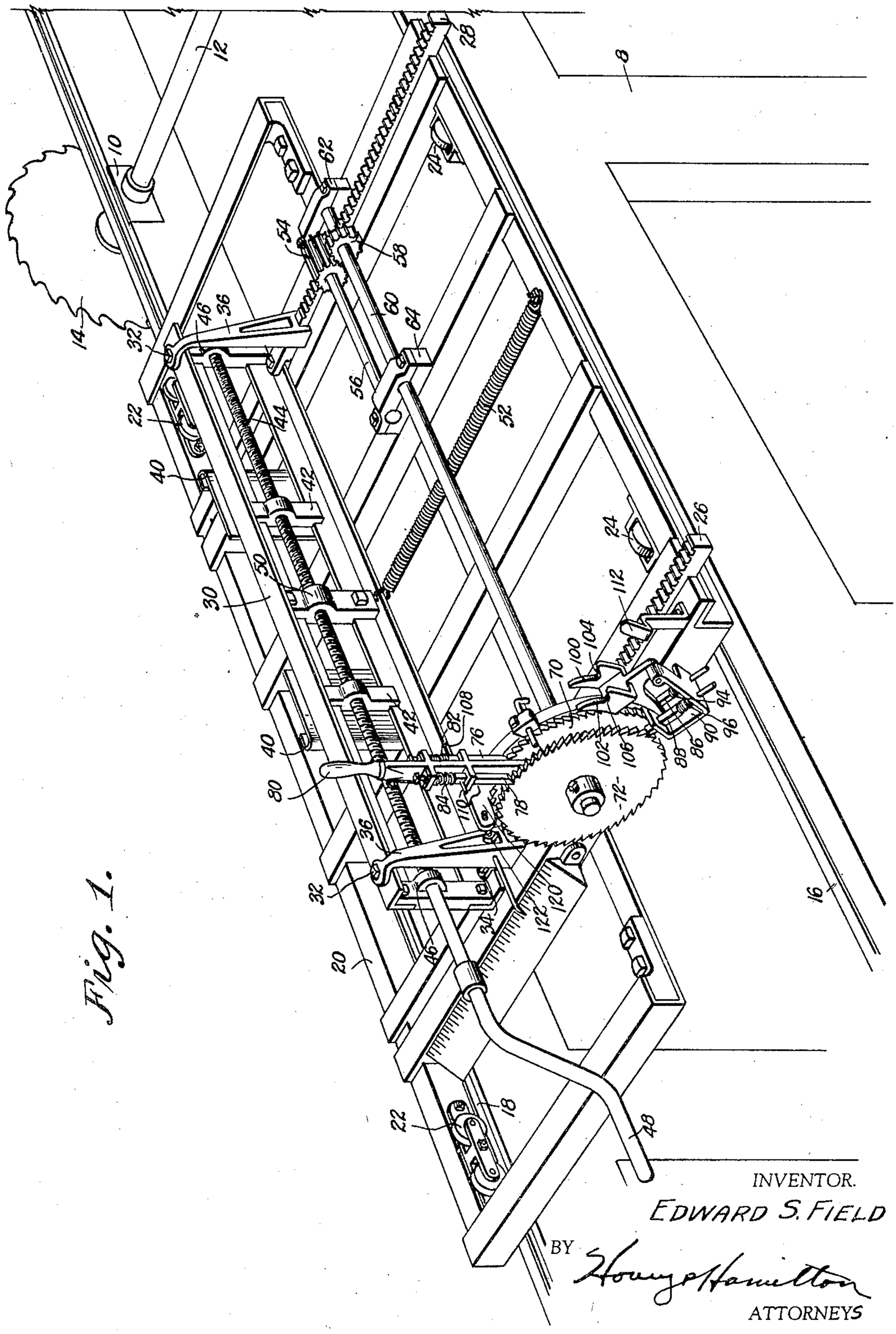


Fig. 1.

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Fig. 2.

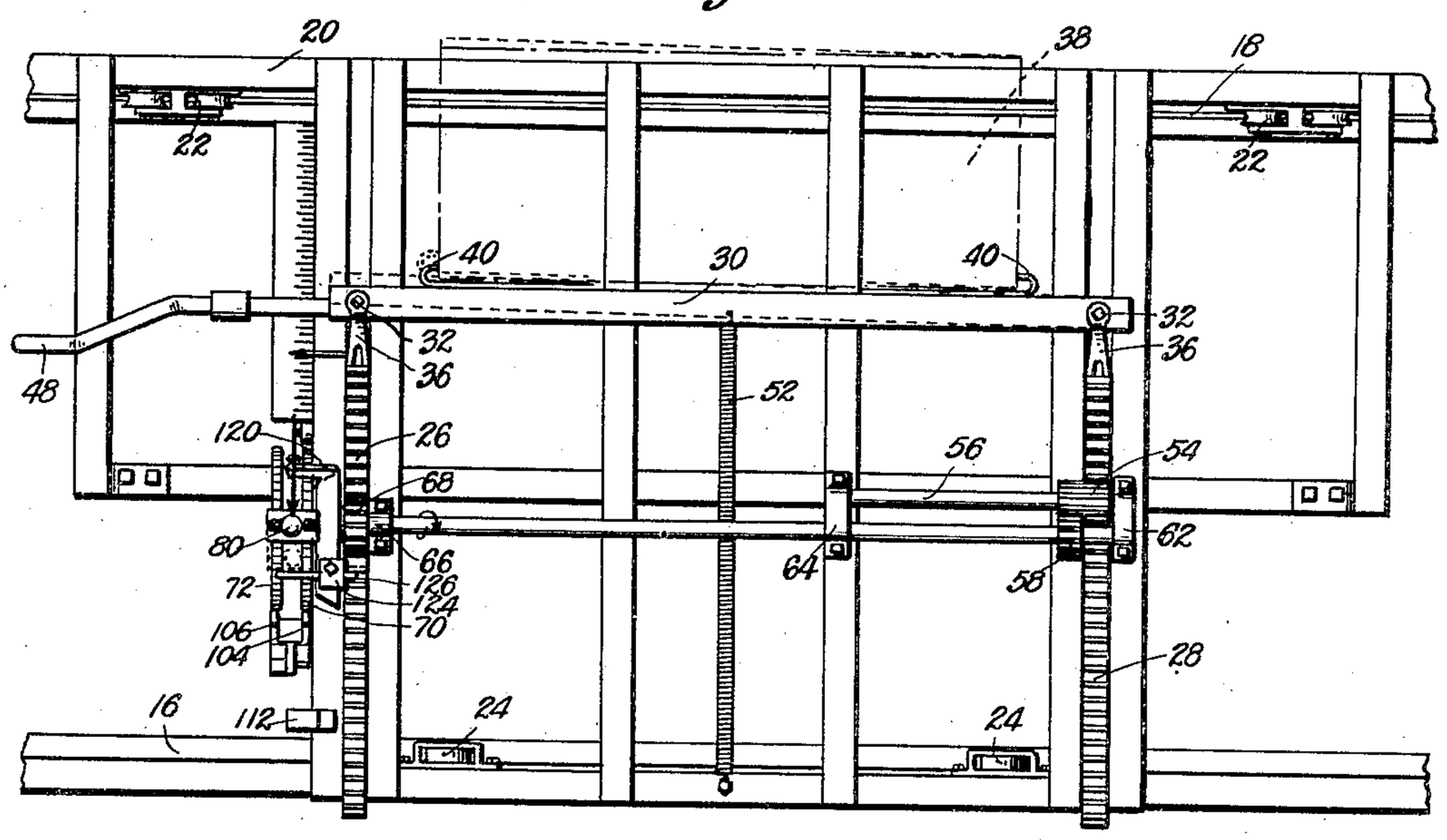


Fig. 3.

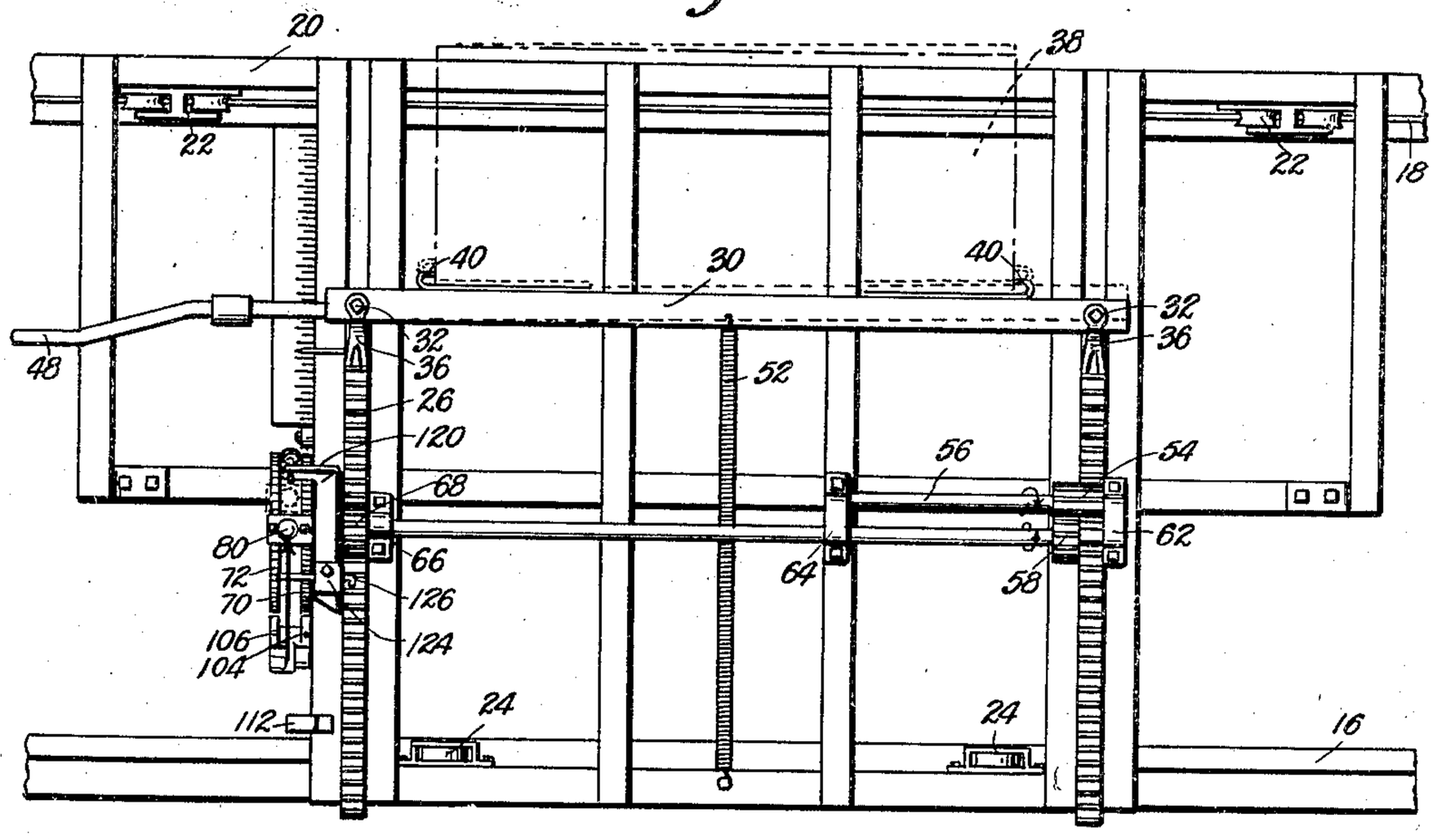


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Fig. 4

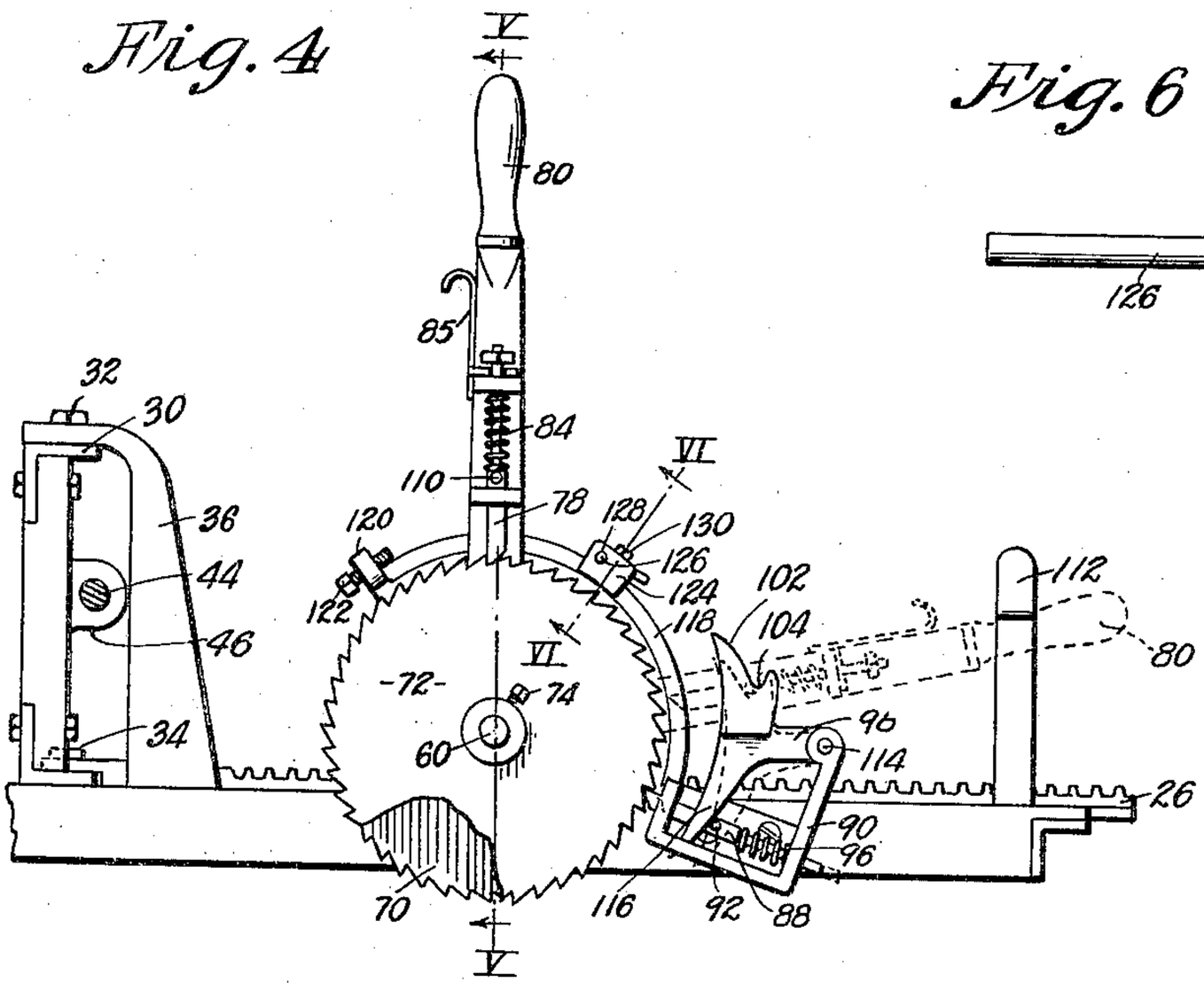



Fig. 6

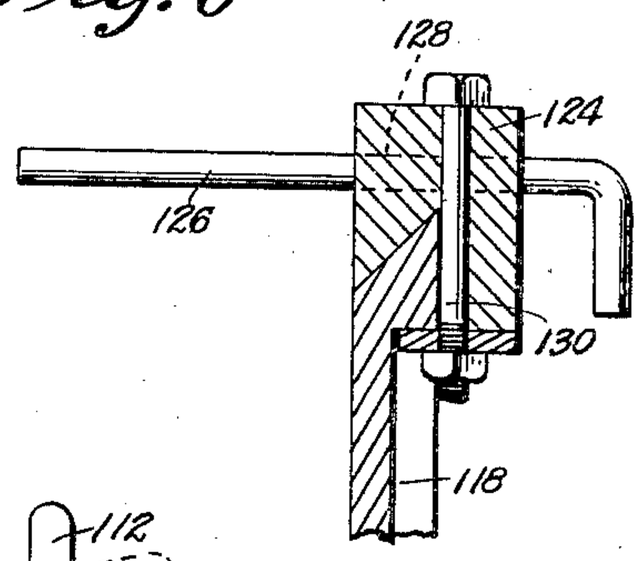



Fig. 5

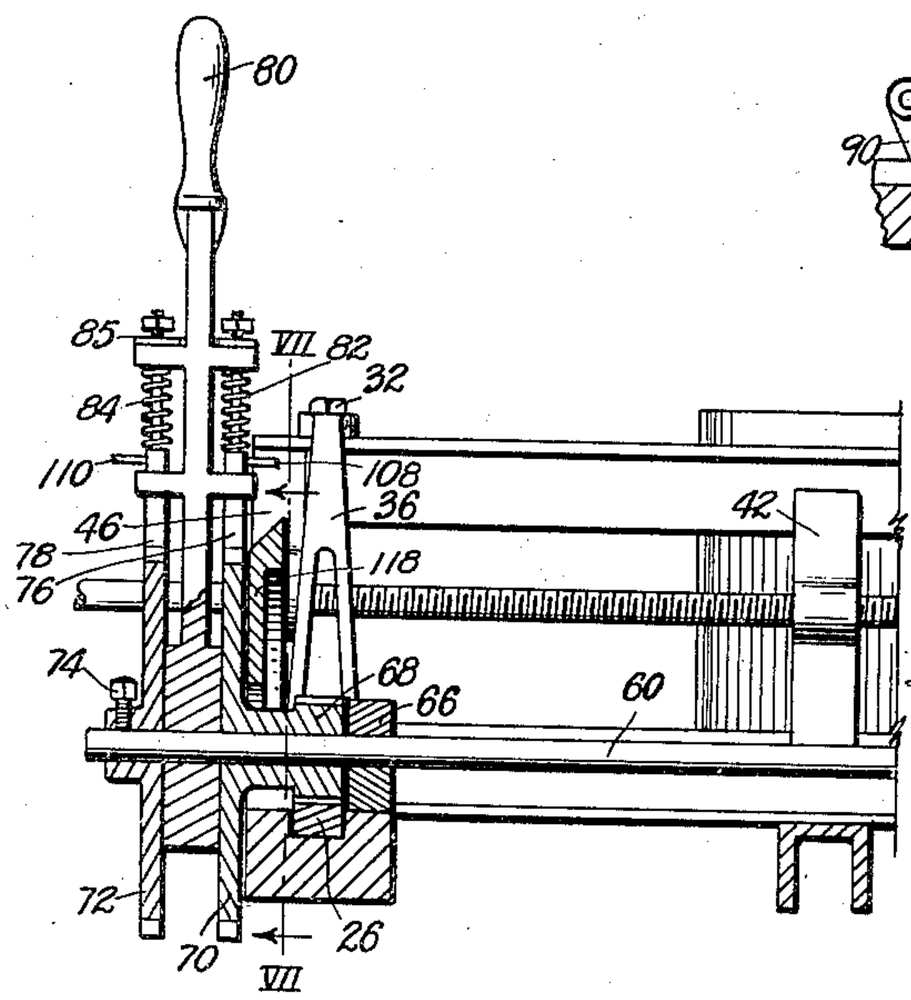
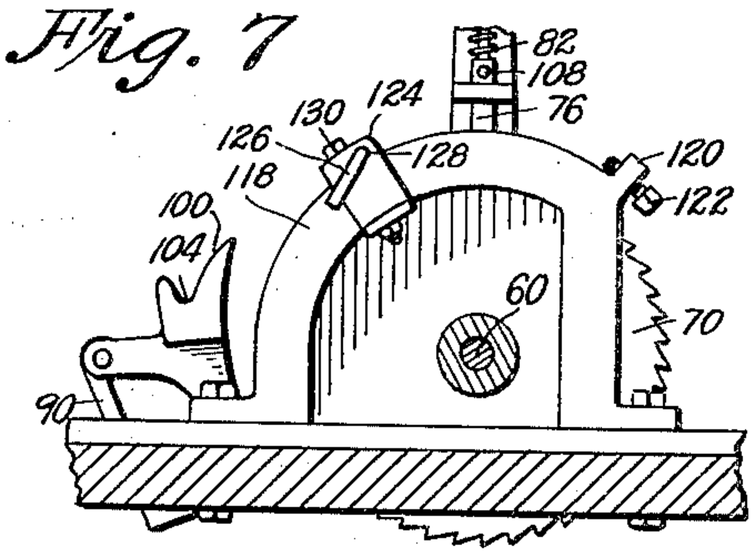
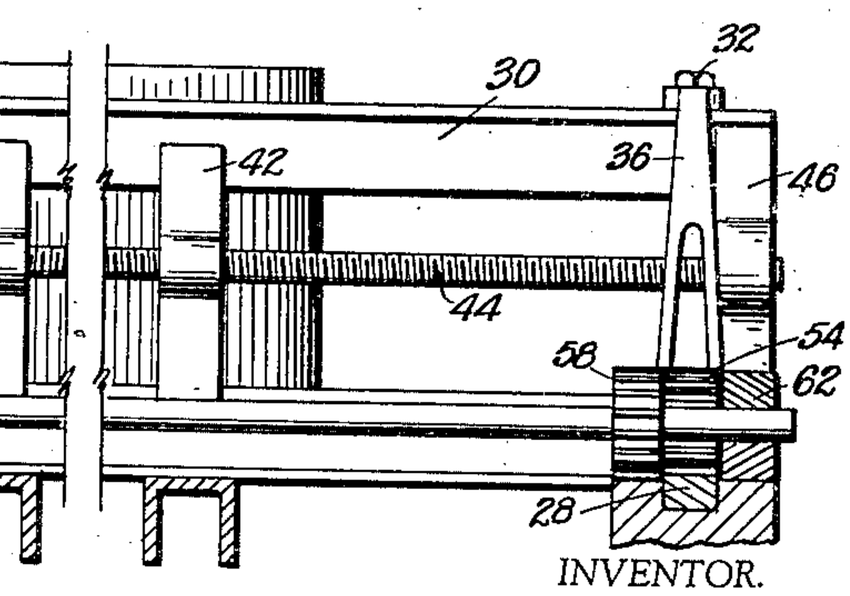



Fig. 7

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Patented Aug. 2, 1938 2,125,371

# UNITED STATES PATENT OFFICE

2,125,371

## SHINGLE MILL

Edward S. Field, Kansas City, Mo.

Application August 29, 1936, Serial No. 98,486

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 journalled 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 inturned 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 journalled 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, thess 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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