S. BUMPUS.

SAWING MACHINE.

APPLICATION FILED OCT. 14, 1914.

1,266,916.

Patented May 21, 1918

3 SHEETS—SHEET 1.

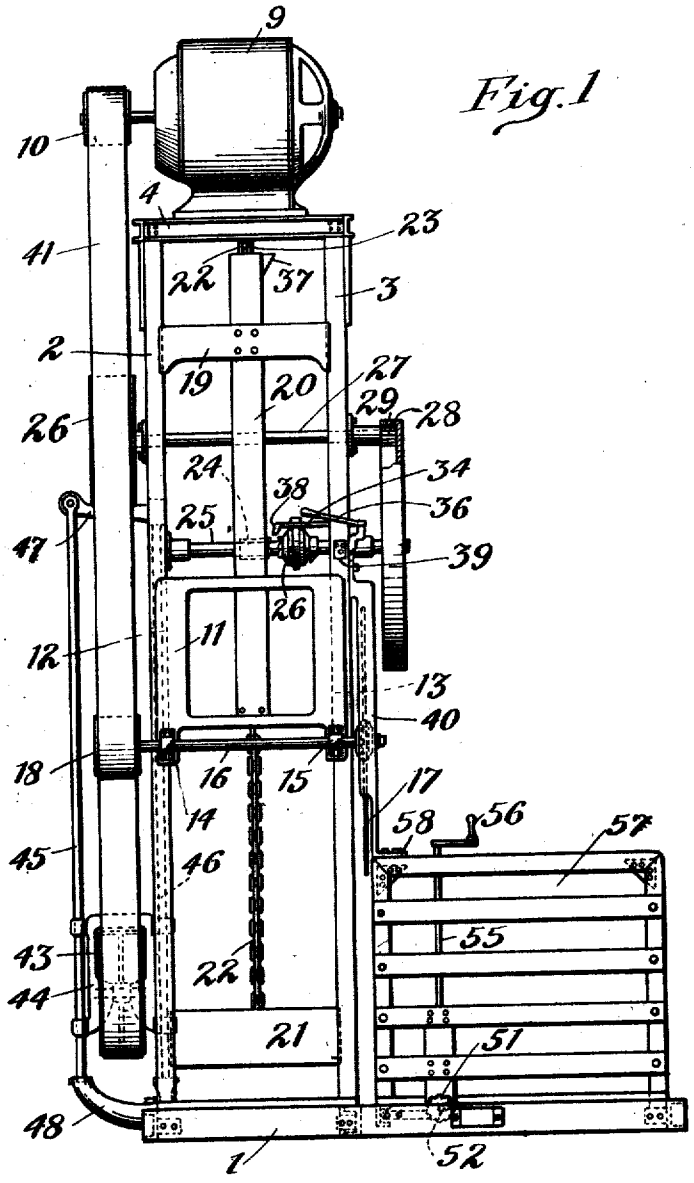



Fig. 1

Witnesses

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3 SHEETS—SHEET 2.

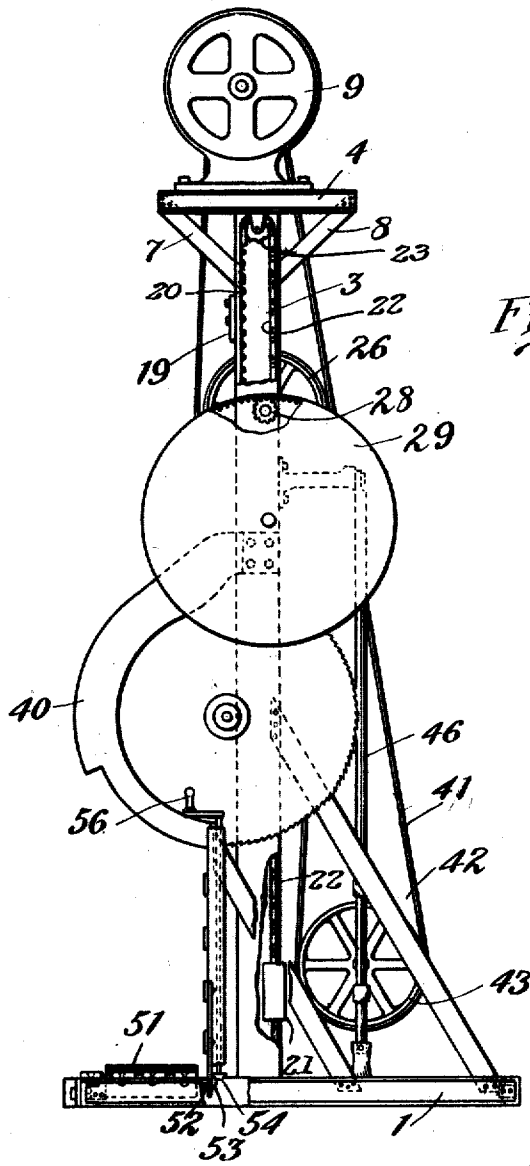



Fig. 2.

Witnesses

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3 SHEETS—SHEET 3.

Fig. 5.

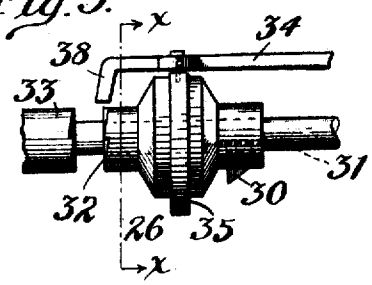



Fig. 6.

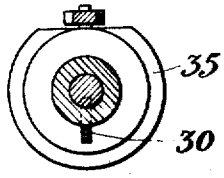



Fig. 4.

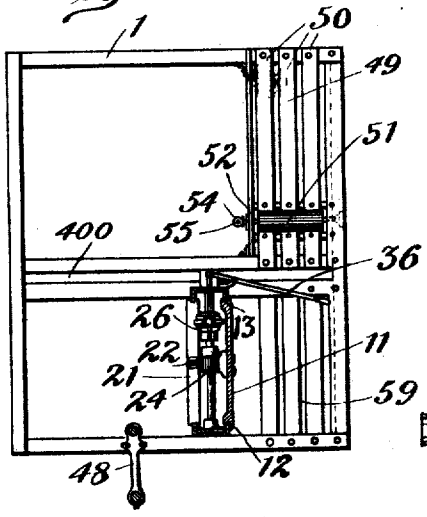
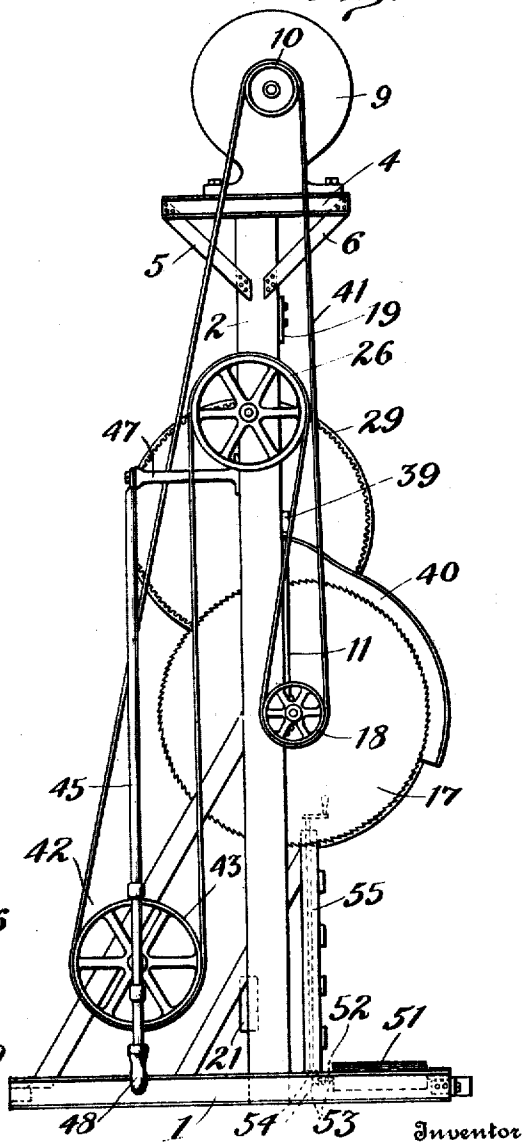



Fig. 3.




Witnesses

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# UNITED STATES PATENT OFFICE.

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## SAWING-MACHINE.

1,266,916. Specification of Letters Patent. Patented May 21, 1918.

Application filed October 14, 1914. Serial No. 866,660.

*To all whom it may concern:*

Be it known that I, SAMUEL BUMPUS, a citizen of the United States, residing at La Fayette, county of Christian, State of Kentucky, have invented certain new and useful Improvements in Sawing-Machines, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention relates to sawing machines and more particularly to a machine for sawing ice.

The object of the invention is to provide a machine of the above type adapted to do heavy work with efficiency and safety to the operator, while the parts are arranged with a view of obtaining maximum simplicity and economy in construction and a completed structure requiring but little skill for its maintenance and repair.

A further object of the invention is to provide a machine of the above type in which the operating mechanism is well removed from the work, and the working bed or space and its vicinity is normally left clear and free of any power driven moving parts.

Other objects of the invention are to provide an economical scheme for the transmission of power to the various driven parts, to provide an efficient arrangement of coöperating feed mechanisms partly automatic and partly under the control of the operator, and to provide various structural features particularly applicable to a machine of the type described.

My invention is illustrated in the accompanying drawings in which:

Figure 1 is a front elevation.

Fig. 2 is a right side elevation.

Fig. 3 is a left side elevation.

Fig. 4 is a top plan view partly in section and with portions omitted for the sake of clearness.

Fig. 5 is a detail view of a clutch mechanism.

Fig. 6 is a section on the line $x$—$x$ of Fig. 5.

Referring to the drawings, 1 is a rectangular base frame on which is erected vertical supports 2 and 3, preferably channel irons which support at their upper extremities a motor platform 4 built up of channel irons and rigidly braced to the vertical supports 2 and 3 by suitable brace members 5—6 and 7—8, respectively. The motor platform supports a suitable source of motive power such as the electric motor 9 which is so positioned that its driving pulley 10 extends out to one side of the main supports. A tool carriage 11 is mounted to slide vertically between the uprights 2 and 3 and for this purpose is provided with ways 12 and 13 engaged by the front flanges of the channel iron supports 2 and 3 respectively. The carriage 11 carries at each side of its lower portion the bearings 14 and 15 of the saw shaft 16 to which the saw blade 17 is rigidly secured outside of and to the right of the support 3, and which is rotated by a pulley 18 secured thereto where it projects outside of and to the left of the upright 2. In order to prevent chattering or binding of the carriage in its movements up and down the supports, a suitable guide 19 is provided which slidably engages the forward flanges of the channel iron supports in the same manner as the carriage 11 and is spaced apart from and rigidly connected with the carriage by means of the rack 20. The carriage is normally held in its raised position by means of a weight 21 connected with the upper end of the rack through the chain 22 over the sprocket wheel 23 mounted on the bottom of the motor platform 4 (Fig. 1.) Suitable grooves or channels are provided in the side edges of the weight which fit over the rear flanges of the uprights 2 and 3 and act as guides in the movement of the weight. The carriage 11 is moved downward against the pull of the weight by means of the power driven pinion 24 (Figs. 1 and 4) which is mounted loosely on the constantly rotating shaft 25 and is adapted to be operatively connected with said shaft through the clutch mechanism 26. Motion is transmitted to the shaft 25 from the pulley 126 by way of the shaft 27, pinion 28 and internal gear 29. The clutch mechanism 26 (Figs. 1, 4, 5 and 6) is slidably mounted on the shaft 25 but connected to turn therewith by means of the key 30 and elongated keyway 31, and is slid to and away from the pinion 24 so that its toothed portion 32 will engage or be disengaged from the complementary toothed portion 33 carried by the pinion, by means of the operating arm 34 pivoted to the swivel ring 35. The operating arm 34 is adapted to be actuated manually, either way, by the hand lever 36 (Fig. 4) and automatically, for disconnecting the clutch, by the cam 37

mounted near the upper end of the rack 20. This automatic operation of the actuating cam is accomplished through the cam action of the cam 37 on the complementary cam member 38 of the operating arm when the carriage reaches its lowermost position. The upward movement of the carriage 11 is limited by means of a suitable positive stop mounted in its path and on a fixed portion of the machine such as the stop 39 mounted on the support 3. A saw guard 40 is mounted on the support 3 and so positioned as to shield the entire saw blade from the operator when the tool carriage and saw are in the raised position and to shield that portion of the saw which is not covered by the material being operated on when the saw is in any of its lower positions.

Power is transmitted from the motor pulley 10 to the feed mechanism pulley 126 and saw pulley 18 by means of the driving belt 41 which is of sufficient length to allow a slack loop 42 extending downward at the rear of the machine and passing over the slack pulley 43. See Fig. 3. The slack pulley is mounted in a bearing frame or block 44 slidably mounted on a pair of vertically disposed guide rods 45—46 (Figs. 1 and 3). The guide rods are held rigid and in fixed relation to the frame work of the machine by means of the upper and lower cast arms 47 and 48. The slack pulley 43 together with its block 44 slides loosely on the guide rods and rests with its entire weight in the bight of the slack loop 42 so as to keep a constant tension on the driving belt. The work table or platform 49 is preferably built up of metal strips such as 50 with spaces between for drainage and has counter-sunk in its surface a feed or friction roller 51 mounted to turn with the shaft 52 and on an axis transverse to the work platform and the saw blade. The shaft 52 is turned by means of the bevel gears 53—54 (Figs. 2 and 3), crank rod 55 and the hand crank lever 56. The crank rod and crank lever are mounted on the back or inside of the fence or guide 57. This fence is preferably built up of angle irons and strap irons and is located on the far side of the work platform so as to act as a guide for the work. In order that the roller 51 may engage the work with sufficient friction to feed it under the saw, its surface is fluted or otherwise roughened as indicated (see Figs. 1 and 4). For the sake of rigidity and to keep the parts in fixed relation, the lower end of the saw guard is bolted at 58 to the upper left-hand corner of the guide fence 57. The discharge platform 59 is a continuation of the work platform 49 and is also preferably built up of spaced strips.

The operation of the machine is as follows: The motor 9 is started and transmits its motion through the driving belt to the feed and saw pulleys 126 and 18, respectively, which causes both the clutch 26 and saw blade 27 to rotate, with the various parts of the machine in the positions indicated in the drawings. A piece of ice is then placed on the work platform 49 so as to rest on the feed roller 51 and against the guide fence 57 and is fed in under the saw blade at a suitable distance to the left thereof according to the thickness of the slab to be cut. This feeding in of the ice is accomplished by the operator turning the crank handle 56 whose motion is transmitted through the crank rod 55, bevel gears 54—53, shaft 52 and feed roller 51 to the cake of ice resting thereon. After the ice has been fed in under the saw, the operator throws the handle of the clutch lever 36 to the right which in turn throws the clutch cam 34 to the left carrying with it the clutch mechanism 26 and throwing the toothed portion 32 of the clutch mechanism into engagement with the complementary toothed portion 33 on the pinion 24. The pinion 24 is thereupon set to rotating and feeds the rack 20 and with it the tool carriage 11 downwardly against the pull of the weight 21. As the tool carriage feeds down, the saw moves down with it out of the guard 40 and through the cake of ice until it passes into slot 400 and so cuts through the cake of ice, at which point in the operation the cam 37 on the upper end of the rack bar engages with the cam 38 on the clutch throwing the clutch over to the right and out of engagement with the toothed portion 33 of the pinion 24. The pinion 24 then turns idly on the shaft 25 permitting the rack 20 and carriage 11 to ascend back to normal position under the pull of the weight 21, and as soon as the saw blade rises clear of the cake of ice, the machine is ready for cutting another slab. This cycle of operation is repeated for each slab cut, the cut slabs being either removed separately or pushed over onto the discharge platform 59 by the feeding in of the cake of ice and removed in gangs.

It will be noted that the clutch mechanism 26 is always under the control of the operator thus affording him means for restoring the saw blade at any time in the cycle of operations or for causing the saw blade to move back down through the ice before it has moved all the way up to its normal position. In short, the operator can vary both the length and limits of the cutting stroke, at will, which gives a flexible control and renders the machine useful for cutting blocks of ice of various sizes.

The machine is here shown in its simplest possible form compatible with efficiency and strength, although various modifications falling within the scope of the appended claims are contemplated.

Having thus described my invention what I claim and desire to secure by Letters Patent is:

1. In an ice cutting machine, a vertically movable cutting tool, a work platform in the path of said tool for feeding work thereto, a guide fence extending upwardly from the rear of said platform and toward the tool in the direction of the feed, and a stationary shield or guard for said tool mutually holding and held by said guide fence to form a rigid structure.

2. In an ice cutting machine, a vertically movable cutting tool, a work platform in the path of said tool for feeding work thereto, a guide fence extending upwardly from the rear of said platform and toward the tool in the direction of the feed, and a stationary shield or guard for said tool mutually holding and held by said guide fence to form a rigid structure, together with a feed roller mounted in said platform and operating means therefor mounted on the rear side of said guide fence.

3. A sawing machine comprising a base frame, a pair of beams mounted vertically on said base frame, a motor platform mounted on the upper ends thereof, said motor platform holding and bracing said beams in parallel alinement, a double set of slideways carried by said vertical beams, a tool carriage and counterweight therefor mounted each on one of said sets of ways, a saw carried by said carriage and driven by said motor, means for feeding the saw carriage up and down, a driving shaft for said feeding means mounted in said beams between said sets of ways, and a clutch controlling the connection between the said driving shaft and the feeding means mounted on the driving shaft.

In testimony whereof I affix my signature in presence of two witnesses.

SAMUEL BUMPUS.

Witnesses:
ED L. WEATHERS,
S. WESLEY BUMPUS