March 30, 1937. H. S. HUGHES 2,075,522

ICE SHAVING MACHINE

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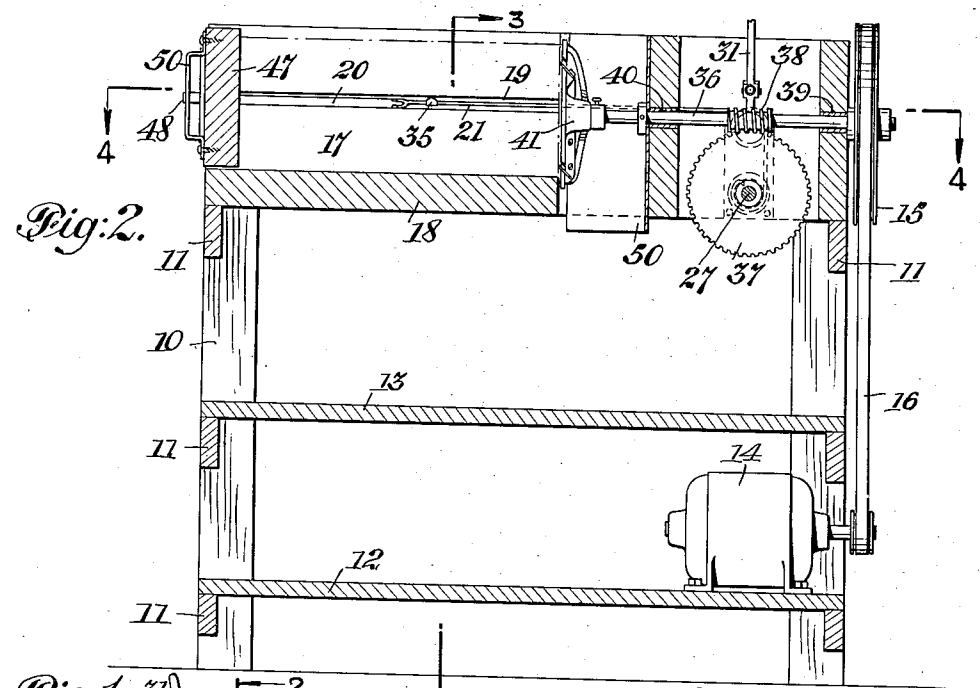


Fig. 2.

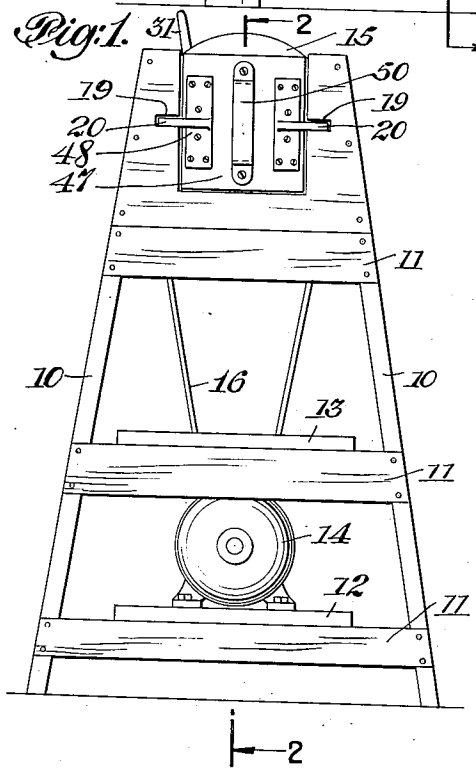


Fig. 1.

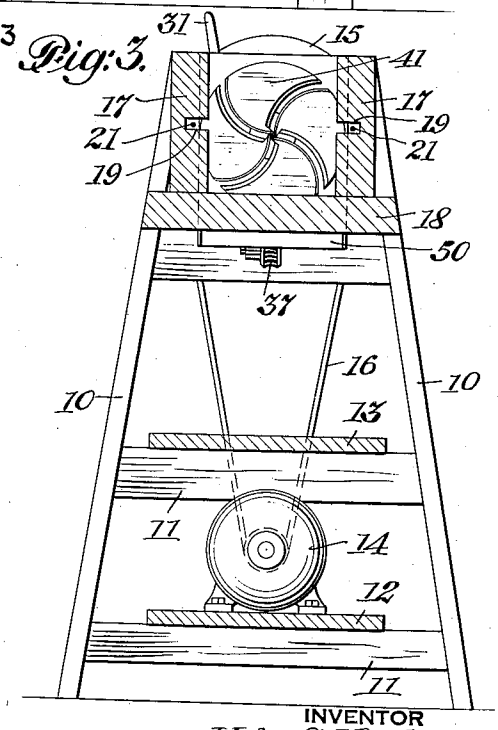


Fig. 3.

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Fig. 4.

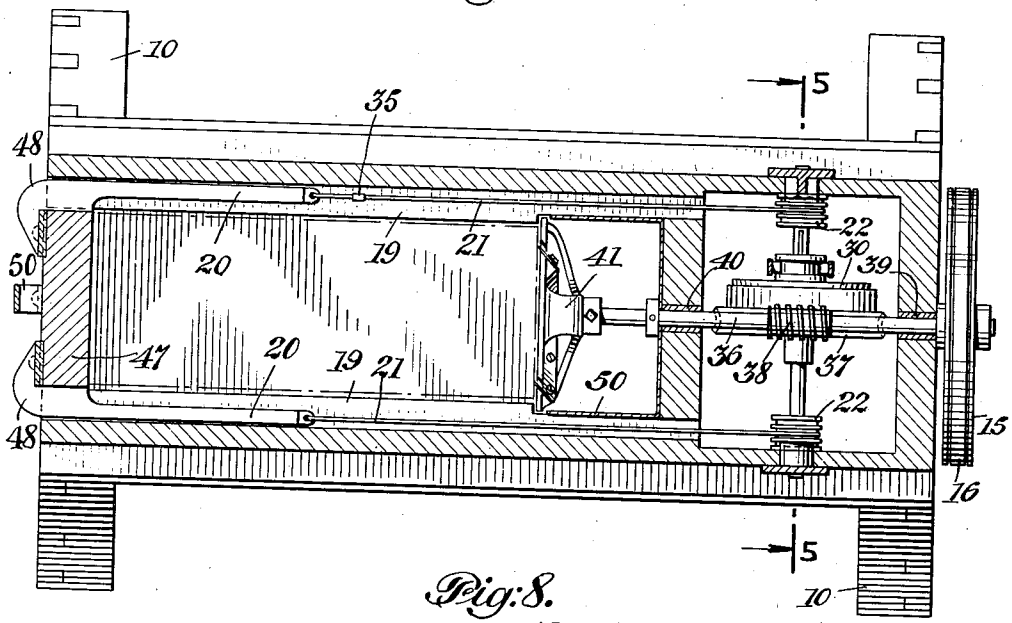


Fig. 8.

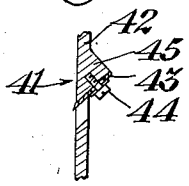


Fig. 5.

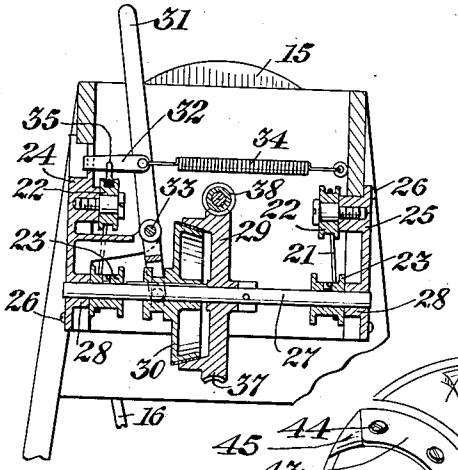


Fig. 6.

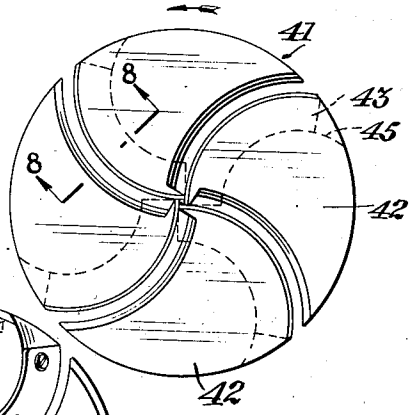
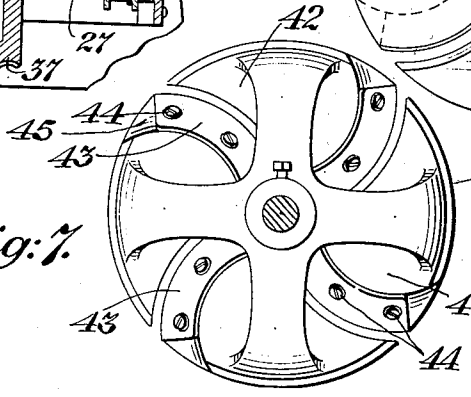


Fig. 7.



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UNITED STATES PATENT OFFICE

2,075,522

ICE SHAVING MACHINE

Hoke S. Hughes, Palmetto, Fla.

Application October 27, 1934, Serial No. 750,270

2 Claims. (Cl. 83—62)

My invention relates to ice shaving machines of the type adapted to prepare crushed ice for use at soda fountains and bars.

A principal object of my invention is to provide an improved power driven machine of this character having means for automatically feeding cake ice against rotating cutter blades at a predetermined and greatly reduced speed relative to the speed of the blades until the cake ice is entirely converted into finely comminuted parts, and means for automatically stopping the feeding mechanism when the operation is completed.

Another object is to provide an improved shaving head construction that may be made of cast metal and which is provided with a plurality of curved blade supporting portions on which curved blades are carried in separable relation. Other and further objects will appear from the following specification.

Referring to the drawings which form a part of this specification:

Figure 1 is an end elevation of a machine embodying my invention.

Figure 2 is a longitudinal sectional view showing the general arrangement of the construction.

Figure 3 is a sectional view taken on line 3—3 of Figure 2.

Figure 4 is a plan sectional view taken on line 4—4 of Figure 2.

Figure 5 is a cross sectional view taken on line 5—5 of Figure 4.

Figure 6 is an elevational view of the cutter head showing the cutting face thereof, and

Figure 7 is a rear view of the cutter head.

Figure 8 is a fragmental section taken on line 8—8 of Figure 6 and showing one of the cutter blades and one of the screws used for holding the blade to the frame of the head.

The machine comprises a frame in which upwardly extending frame members 10—10 etc. at each end of the machine are braced by cross strips 11—11 etc., and are connected by longitudinally extending platforms 12 and 13 respectively. The lower platform serves to support an electric motor 14 which drives a pulley wheel 15 by means of a belt 16. Supported on the upper cross strips 11 and attached ot the uprights 10 are longitudinally extending side walls 17—17, respectively, forming with a floor 18 a trough into which cake ice to be shaved is placed.

At the inner end of the trough a cutter head 41 is carried on one end of a drive shaft 36 which is driven by the pulley 15 and is carried in bearings 39 and 40, respectively. Intermediate its length, shaft 36 carries a worm 38 which meshes with a worm gear 37 formed in the periphery of a clutch member 29 which, in turn, is mounted free on a cross shaft 27. The cross shaft is supported in bearings 28 formed in castings 24 and 25, respectively, which are held in the main frame by lag screws 26. Splined in driving relation on cross shaft 27 and cooperating with clutch member 29 is clutch member 30 engageable by means of shifter lever 31 to drive the cross shaft at a low speed of rotation relative to the shaft 36 and cutter head 41.

The lever 31 is fulcrumed to an arm 33 of the casting 24 and is operable to engage the clutch members against the resistance of a coil spring 34 interposed between the lever and the frame. A latch 32 is pivoted on the lever and is provided with a hook or detent on its free end to engage a notch formed in the casting 24 to hold the clutch members in engagement, the latch falling into engagement with the notch by gravity.

Slidable in the trough is a feeder head or follower 47 having a handle 50. The inner side of each trough wall 17 is provided with a longitudinal groove or slot 19 to support and guide a pair of side rods 20 and wire cables 21 attached to the rods. The rods are provided with flanged ends 48 which are screwed to the feeder head as illustrated in Figure 1. The cables 21 extend from the opposite ends of the rods over a pair of pulleys 22 to a pair of drums 23 into which their ends are suitably anchored. The pulleys are respectively carried by the castings 24 and 25 and the drums are fixed on the cross shaft 27.

The pulley on bracket 24 is positioned directly under the latch 32 and the cable travelling over this pulley carries a cam 35 adapted to lift the latch and thereby cause the clutch members to be disengaged by the spring 34, thus instantly stopping the movement of the feeder head 47. Ordinarily, the cam will be so positioned on the cable that it will lift the latch when the follower has reached a point in its travel just short of the cutter head, thus automatically stopping the feeding mechanism as the disintegration of the ice is completed.

The cutter head 41 comprises spider members 42—42 etc., which are curved as illustrated, and mounted on each of said members is a cutter blade 43 curved to conform therewith and held thereon by screws 44 which extend into a flange 45 having its face at an angle to the face of the head, as illustrated in Figure 8.

An open casing 50 is carried in the frame behind the face of the cutter head to guide the

comminuted ice into a receptacle which may be placed on the platform 13.

In use the machine is operated as follows:

The follower is manually drawn back in the trough and cake ice to be shaved is placed in the trough between the follower and the cutter head. The motor running, the clutch members are engaged by means of lever 31, whereupon the ice is fed against the rapidly revolving cutter blades by the cable drawn follower and reduced to shavings which fall thru the casing 50. If it is desired to arrest the operation at any stage before completion, the clutch may be disengaged by manually lifting latch 32, or the motor 14 may be stopped. As the follower approaches in close adjacence to the cutter blades, the cam 35 will lift latch 32 and permit disengagement of the clutch members by spring 34, thus automatically disconnecting the cross shaft and stopping the feeding mechanism. This operation may be repeated until the desired quantity of ice shavings have been obtained.

It will be noted that because of the large pulley wheel 15, the speed of the cutter head is greatly reduced relative to the motor speed, thus permitting use of an economical high speed motor, and that the speed of travel of the feeder head is greatly reduced relative to the rotational speed of the cutter head by means of the worm gearing.

Having thus described my invention, I claim:

1. An ice shaving machine comprising a frame and a longitudinal trough for cake ice carried thereby, a rotary cutter carried in said trough adjacent one end thereof and a follower in said trough for feeding cake ice against the cutter, said trough having longitudinal grooves formed in the inner sides of the walls, means extending longitudinally of the trough and guided in said grooves and connected to the follower for propelling said follower in the direction of the cutter, said trough being open at the end adjacent the follower and closed by the follower, the latter being removable through the open end of the trough, and means for driving the cutter and said follower in timed relation; the arrangement being such that the entire area of the trough intermediate the cutter and the follower is available for ice in cake form and the means for propelling the follower being housed within and protected by the grooves in the trough walls.

2. An ice shaving machine comprising a frame and a longitudinal trough for cake ice carried thereby and having side walls, a power shaft, a rotary cutter carried thereby located at one end of said trough, a motor for driving said shaft, a worm gear carried by said shaft, a counter-shaft and a worm wheel freely rotatable thereon in mesh with said gear, a clutch for connecting said worm wheel to said counter-shaft, actuating means for the clutch, a pair of cables or pulleys fixed on said counter-shaft, a follower located in the opposite end of the trough for feeding ice to said cutter, a side bar parallel to and lying within the side walls of the trough connected to said follower at each side thereof, means for guiding said bars comprising slots formed on the inner sides of the side walls, a cable connected to each of said bars within the slots and to said pulleys on the counter-shaft, and means carried by one of said cables movable in a path crossing the clutch actuating means for operation thereof.

HOKE S. HUGHES.