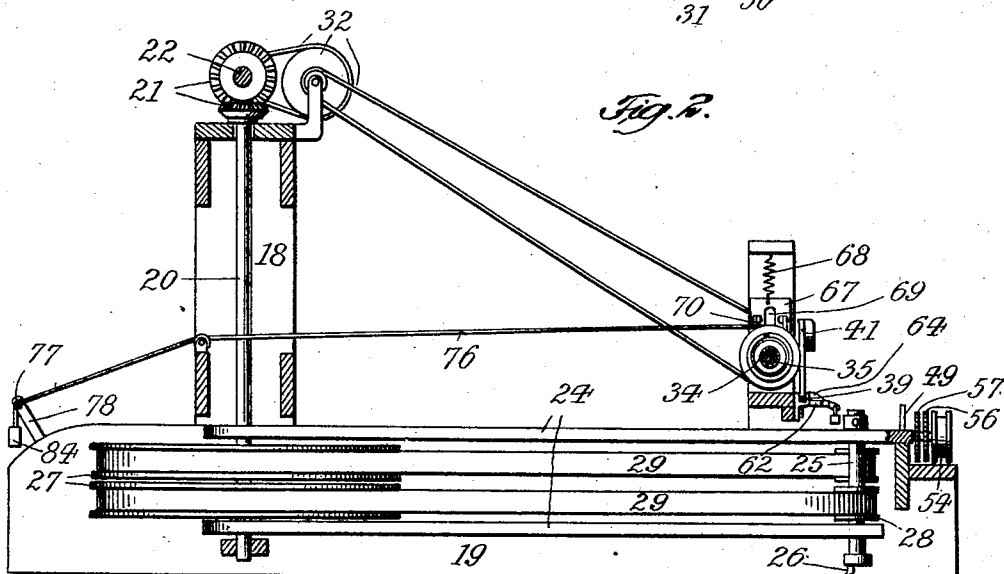
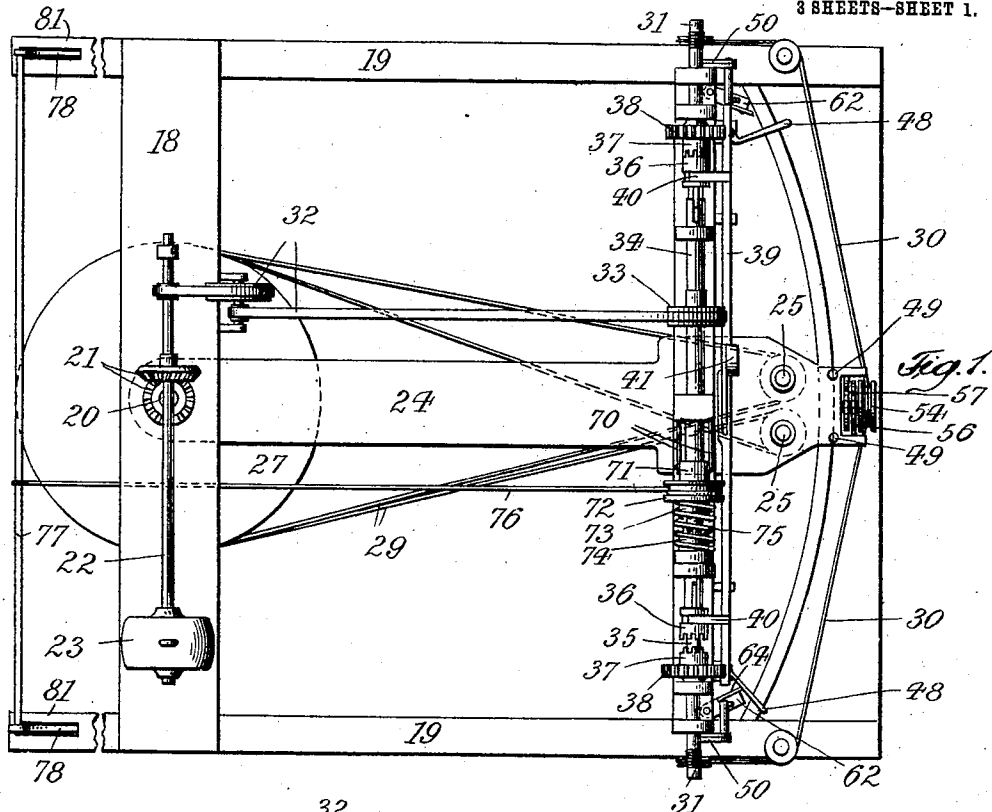


F. SCHULDES.  
PLANING MACHINE.  
APPLICATION FILED APR. 15, 1910.

968,198.

Patented Aug. 23, 1910.

3 SHEETS—SHEET 1.



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3 SHEETS—SHEET 2

Fig. 3.

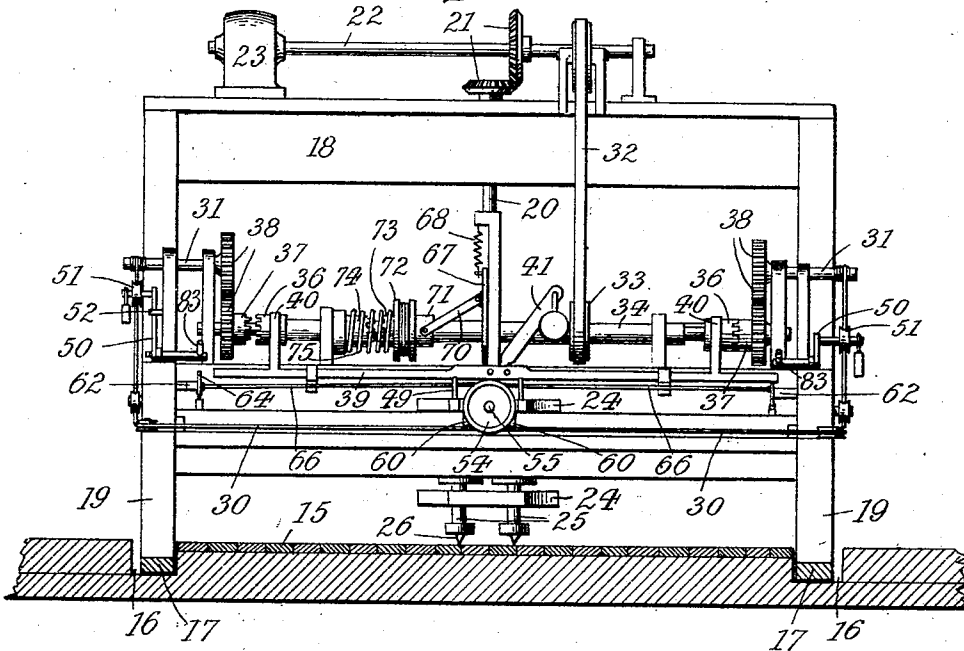


Fig. 4.

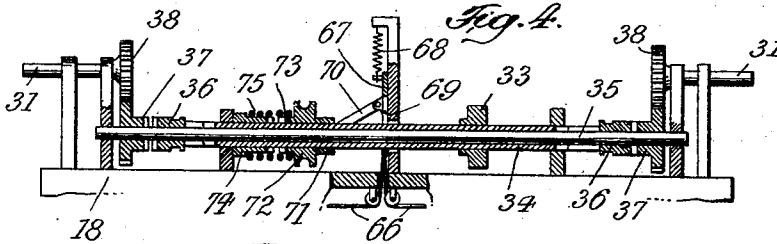


Fig. 5.

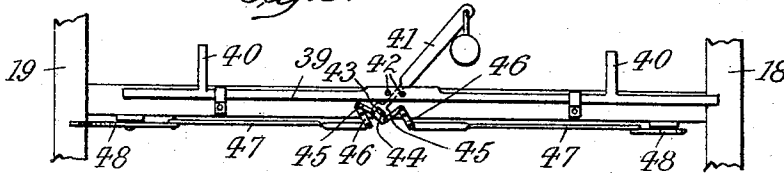
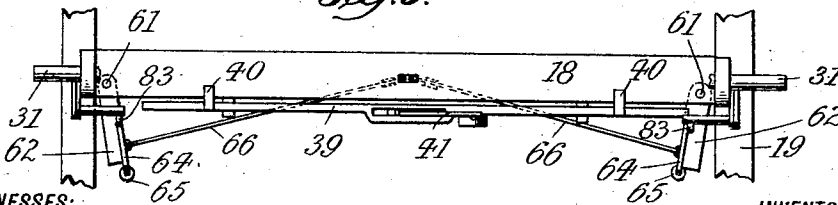


Fig. 6.



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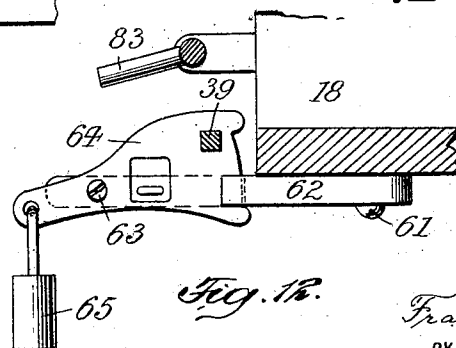
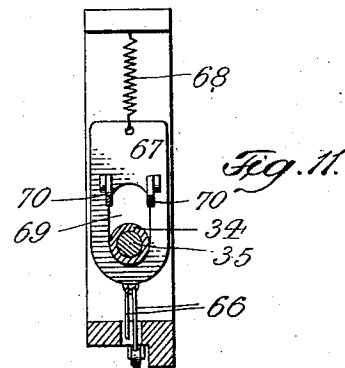
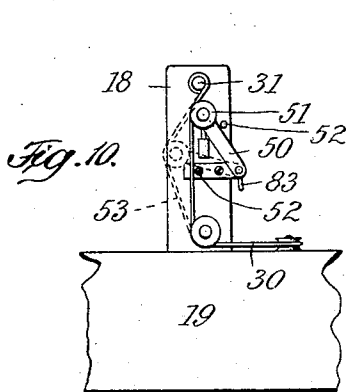
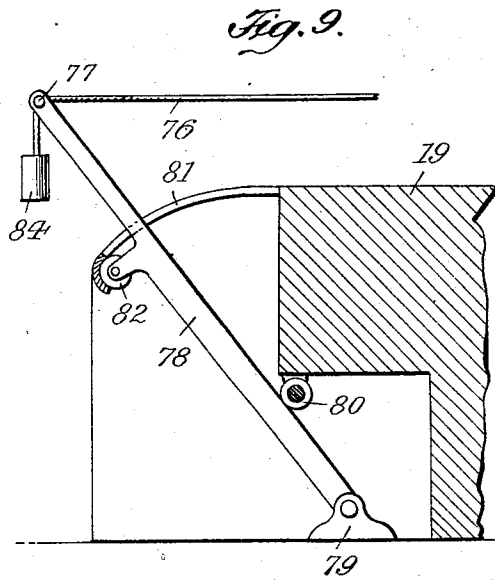
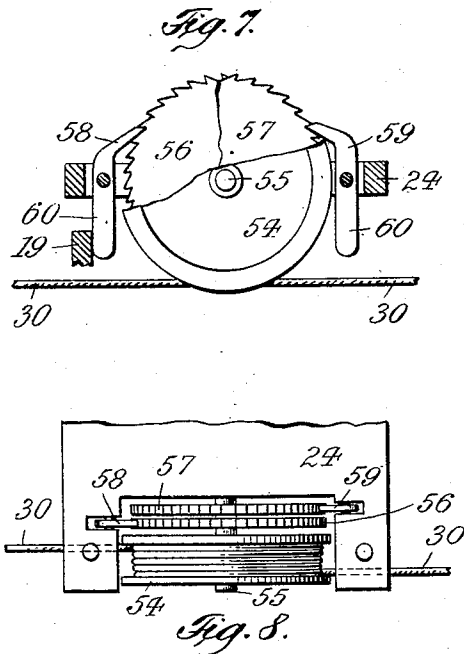
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# UNITED STATES PATENT OFFICE.

FRANZ SCHULDES, OF NEW YORK, N. Y.

## PLANING-MACHINE.

968,198.

Specification of Letters Patent. Patented Aug. 23, 1910.

Application filed April 15, 1910. Serial No. 555,583.

*To all whom it may concern:*

Be it known that I, FRANZ SCHULDES, a citizen of the United States, residing at New York city, Bronx, county and State of New York, have invented new and useful Improvements in Planing-Machines, of which the following is a specification.

This invention relates to a planing machine of novel construction for automatically leveling extensive wooden surfaces in a quick, uniform and effective manner.

In the accompanying drawing: Figure 1 is a plan of my improved planing machine, Fig. 2 a vertical longitudinal central section thereof, Fig. 3 a front elevation, Fig. 4 a detail of the clutch shaft, Fig. 5 a detail of the shipping bar and cooperating parts, Fig. 6 a detail of the carriage feed mechanism, Fig. 7 a detail of the rope locking mechanism, Fig. 8 a plan thereof, Fig. 9 a detail of one of the feed legs and adjoining parts, Fig. 10 a detail of the tension device, Fig. 11 a detail of the slide, and Fig. 12 a detail of the latch mechanism.

The drawing shows the planer applied to a bowling alley 15 provided with the usual gutters 16 into which are temporarily placed planks 17 for supporting the planing machine. It is to be understood, however, that the device may also be used for leveling floors or other extended wooden surfaces.

Briefly stated, the machine comprises a carriage or sled which is intermittently advanced along the surface to be planed. To the sled is pivoted an oscillative horizontal arm carrying rotating planing tools and adapted to sweep in consecutive arcs over the surface to be attacked. This arm is reciprocated in such a manner that it will dwell for a short time at its points of reversal during which period the forward feed of the carriage takes place. In this way successive segments of wood are removed until the entire surface is uniformly planed.

The carriage or sled hereinabove referred to is shown to consist of a frame 18 having lower horizontal runners 19 adapted to engage planks 17. In the rear part of frame 18 is journaled an upright shaft 20 intergeared by wheels 21 with the shaft 22 of an electric or other motor 23 mounted on frame 18. It is obvious however that shaft 22 may be manually operated in suitable manner if desired.

Upon shaft 20 is fulcrumed near the lower

end thereof an oscillative arm 24 shown to be composed of an upper and a lower member. In the forward end of arm 24 are supported the spindles 25 of a pair of cutting or planing tools 26. These spindles are rotated from shaft 20 at an increased speed by pulleys 27, 28 and belts 29 located intermediate the two arm-members.

The arm 24 is oscillated by means of a pair of ropes 30 diverging from the front of the arm and wound upon a pair of arbors 31 journaled in frame 18 and adapted to be alternately rotated in the following manner: Shaft 22, by speed reducing gear 32 and pulley 33, turns a sleeve or power shaft 34 mounted on spindle 35. To each end of sleeve 34 is slidably connected by a groove and feather a first clutch member 36 cooperating with a second clutch member 37. This second clutch member is adapted to turn arbor 31 by gear transmission 38, the construction being of course such that when one clutch 36, 37 is opened, the other clutch is closed. Clutch members 36 are simultaneously reciprocated in the same direction by means of a shipping bar 39 having a pair of fingers 40 which operatively engage said clutch members. Shipping bar 39 is influenced by an over-balanced lever 41 flanked by a pair of abutments 42 of such bar. Lever 41 has an eye 43 which receives a pin 44 of the sled frame and which is by links 45 and levers 46 connected to a pair of draw bars 47. To the outer ends of the latter are pivoted angle levers or tappets 48 arranged in the paths of pins 49 extending upwardly from arm 24.

It will be seen that when arm 24 arrives at the end of its stroke it will, by pin 49 and tappet 48, push the cooperating bar 47 inward, thereby throwing over lever 41. This latter in turn will by shipping bar 39 so operate clutch members 36 that while one clutch is opened, the other clutch is closed, as will be readily understood.

In order to cause arm 24 to dwell for a short time at the end of its stroke, the following means are provided: At some distance below each arbor 31, there is pivoted to the sled frame a weighted lever 50 carrying a roller 51, the play of the arm being limited by stops 52. Roller 51 is in engagement with rope 30, the correlation between the parts being such that when lever 50 is lowered, rope 30 will be bulged, (dot-

ted lines, Fig. 10) or in other words the path of the rope is shorter when the arm is raised than when it is lowered.

The operation is as follows: When arm 24 moves to the right, the left clutch 36, 37 will be opened, and as the left arbor 31 is thus thrown out of gear, the previously raised lever 50 will, by gravity, descend and unwind part of the rope from arbor 31 so as to produce the desired bulge 53. Lever 50 will retain this lowered position until arm 24 arrives at the opposite end of the stroke, and the left clutch is closed. As the left arbor is thus rotated, it will on winding up rope 30 cause the latter to swing up lever 50 and thereby take the slack out of the rope before the latter can exert a pull on arm 24.

It is desirable to provide a yielding connection between arm 24 and ropes 30 so as to avoid a straining of the ropes after the arm 24 has arrived at the end of its stroke and before the clutch is completely opened. This yielding connection is obtained by a drum 54 fast on a spindle 55 journaled in the forward end of arm 24 and upon which ropes 30 are wound. Upon this spindle are also fast a pair of ratchet wheels 56, 57 the teeth of which extend in opposite directions and are normally engaged by pawls 58, 59 having tails 60. When arm 24 arrives at say its extreme left position the tail 60 of pawl 58 will strike runner 19 so that its ratchet wheel 56 is released and drum 54 is liberated to permit an unwinding of rope 30, while pawl 59, will remain in engagement with its wheel 57. On the return stroke of arm 24, pawl 59, holds drum 54 against rotation, while pawl 58 will reengage wheel 56.

The means for imparting an intermittent advance movement to the planer at the end of each stroke of arm 24 are as follows: To each side of frame 18 is pivoted at 61 a horizontal lever 62 to which in turn is pivoted at 63 a vertically movable latch 64 weighted as at 65. Latch 64 when raised is in the path of shipping bar 39 so that the latter at each of its strokes swings by said latch the corresponding lever 62. Levers 62 are by ropes 66 connected to a slide 67 which is influenced by a spring 68 and is slotted as at 69 to accommodate sleeve 34 and spindle 35. Slide 67 is by links 70 connected to a ring 71 slidable on sleeve 34 and abutting against a pulley 72 also slidable on said sleeve. Pulley 72 is provided with the movable member 73 of a clutch the fixed member 74 of which is fast on sleeve 34, while a spring 75 tends to open the clutch. It will be seen that when shipping bar 39 moves, say to the left, the left lever 62 will be swung outward and thus by rope 66, slide 67, links 70, ring 71 and clutch 73, 74 couple pulley 72 to sleeve 34 so that in this way the pulley will be rotated by the sleeve. Pulley 72 is by rope 76 and cross bar 77 connected to a pair

of legs 78 the lower ends of which carry pivoted shoes 79 supported on planks 17. Legs 78 contact with rollers 80 of frame 18 and are guided during their movement by arched guards 81 engaged by pulleys 82. It will be seen that when pulley 72 is coupled to sleeve 34 in the manner above described legs 78 will by ropes 76 be swung forward and will thus be forced against rollers 80 to effect a step like forward movement of frame 18.

For uncoupling pulley 72 from sleeve 34, there is secured to lever 50 a pin 83 which upon the up stroke of said lever bears against the upper edge of latch 64 and thus swings the latter on its fulcrum 63 out of alinement with shipping bar 39. In this way lever 62 is liberated and spring 68 is free to raise slide 67 so as to open clutch 73, 74 and uncouple pulley 72. A weight 84 suspended from cross bar 77 will now swing legs 78 backward to slide shoes 79 forward along planks 17 and into position for effecting the next forward step of the sled.

I claim:

1. In a planing machine, a frame, an arm pivoted thereto, means for oscillating the arm, means for effecting a temporary dwelling of the arm at the stroke-terminals, a planing tool pivoted to the arm, and means for rotating said tool.

2. In a planing machine, a frame, an arm pivoted thereto, means for oscillating the arm, means for arresting the oscillating means at each stroke-terminal, to cause a temporary dwelling of the arm at such terminal, a planing tool pivoted to the arm, and means for rotating said tool.

3. In a planing machine, a frame, an arm pivoted thereto, a pair of arbors journaled in the frame, means for alternately rotating said arbors, a pair of ropes connecting the arm with the arbors, means for alternately bulging said ropes, a planing tool pivoted to the arm, and means for rotating said tool.

4. In a planing machine, a frame, an arm pivoted thereto, a pair of arbors journaled in the frame, means for alternately rotating said arbors, a pair of ropes connecting the arm with said arbors, a pair of weighted levers pivoted to the frame, pulleys carried by the levers and adapted to be projected into the paths of the ropes, a planing tool pivoted to the arm, and means for rotating said tool.

5. In a planing machine, a frame, an arm pivoted thereto, a pair of arbors journaled in the frame, ropes connecting the arm with said arbors, first clutch members intergeared with the arbors, a shipping bar operable by the arm, second clutch members actuated by the shipping bar, means for rotating the second clutch members, a planing tool pivoted to the arm, and means for rotating said tool.

6. In a planing machine, a frame, an arm pivoted thereto, a pair of arbors journaled in the frame, ropes connecting the arm with said arbors, first clutch members intergears 5 with the arbors, tappets adapted to be engaged by the arm, an overbalanced lever operatively connected to the tappets, a shipping bar adapted to be engaged by the lever, second clutch members actuated by the shipping bar, and a rotatable cutting tool pivoted to the arm. 10

7. In a planing machine, a frame, an arm pivoted thereto, a pair of arbors journaled in the frame, ropes connecting the arm with said arbors, first clutch members intergears 15 with the arbors, second slidable clutch members adapted to engage the first clutch members, a shipping bar operable by the arm and having fingers adapted to engage the second clutch members, and a rotatable cutting tool pivoted to the arm. 20

8. In a planing machine, a frame, an arm pivoted thereto, a pair of arbors journaled in the frame, ropes connecting the arm with said arbors, first clutch members intergears 25 with the arbors, second slidable clutch members adapted to engage the first clutch members, a shipping bar having fingers adapted to engage the second clutch members, an overbalanced lever engaging the shipping bar, a pair of draw bars connected to the overbalanced lever, tappets on the draw bars, a pin on the arm adapted to engage said tappets, and a rotatable cutting tool pivoted to the arm. 30 35

9. In a planing machine, a frame, an oscillative arm pivoted thereto, a drum journaled in the arm, a pair of ropes engaging said drum, a power shaft adapted to be coupled to the ropes, means for locking the drum to the arm, and a rotatable cutting tool pivoted to the arm. 40

10. In a planing machine, a frame, an oscillative arm pivoted thereto, a drum jour-

naled in the arm, a pair of ropes engaging the drum, a power shaft adapted to be coupled to the ropes, a pair of opposed ratchet wheels operatively connected to the drum, a pair of pawls normally engaging said wheels, means for alternately disengaging the pawls from said wheels, and a rotatable cutting tool pivoted to the arm. 45 50

11. In a planing machine, a frame, an arm pivoted to the frame, a shaft for oscillating the arm, a pulley adapted to be coupled to the shaft, a rope engaging the pulley, a pair of legs operatively connected to the rope, and a rotatable cutting tool pivoted to the arm. 55

12. In a planing machine, a frame, an oscillative arm pivoted thereto, a shipping bar controlled by the arm, a pair of levers adapted to be actuated by the shipping bar, a clutch controlled by the levers, frame-advancing means controlled by the clutch, and a rotatable cutting tool pivoted to the arm. 60 65

13. In a planing machine, a frame, an oscillative arm pivoted thereto, a shipping bar controlled by the arm, a pair of levers adapted to be actuated by the shipping bar, a slide operatively connected to the levers, a clutch controlled by the slide, frame-advancing means controlled by the clutch, and a rotatable cutting tool pivoted to the arm. 70

14. In a planing machine, a frame, an oscillative arm pivoted thereto, a shipping bar controlled by the arm, a pair of levers, latches fulcrumed thereto and adapted to be engaged by the shipping bar, means for tilting the latches, a clutch controlled by the levers, frame-advancing means controlled by the clutch and a rotatable cutting tool pivoted to the arm. 75 80

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