

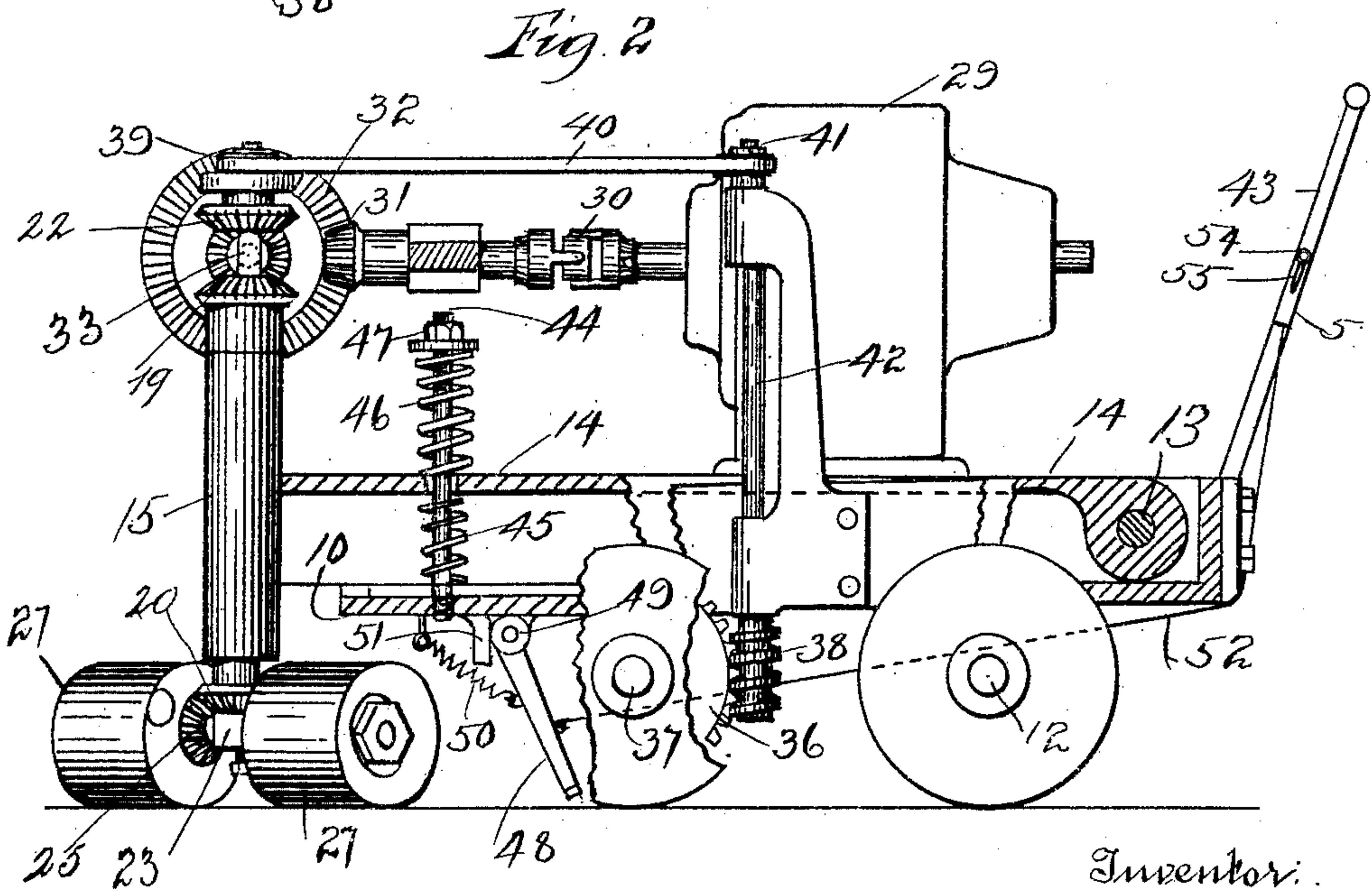
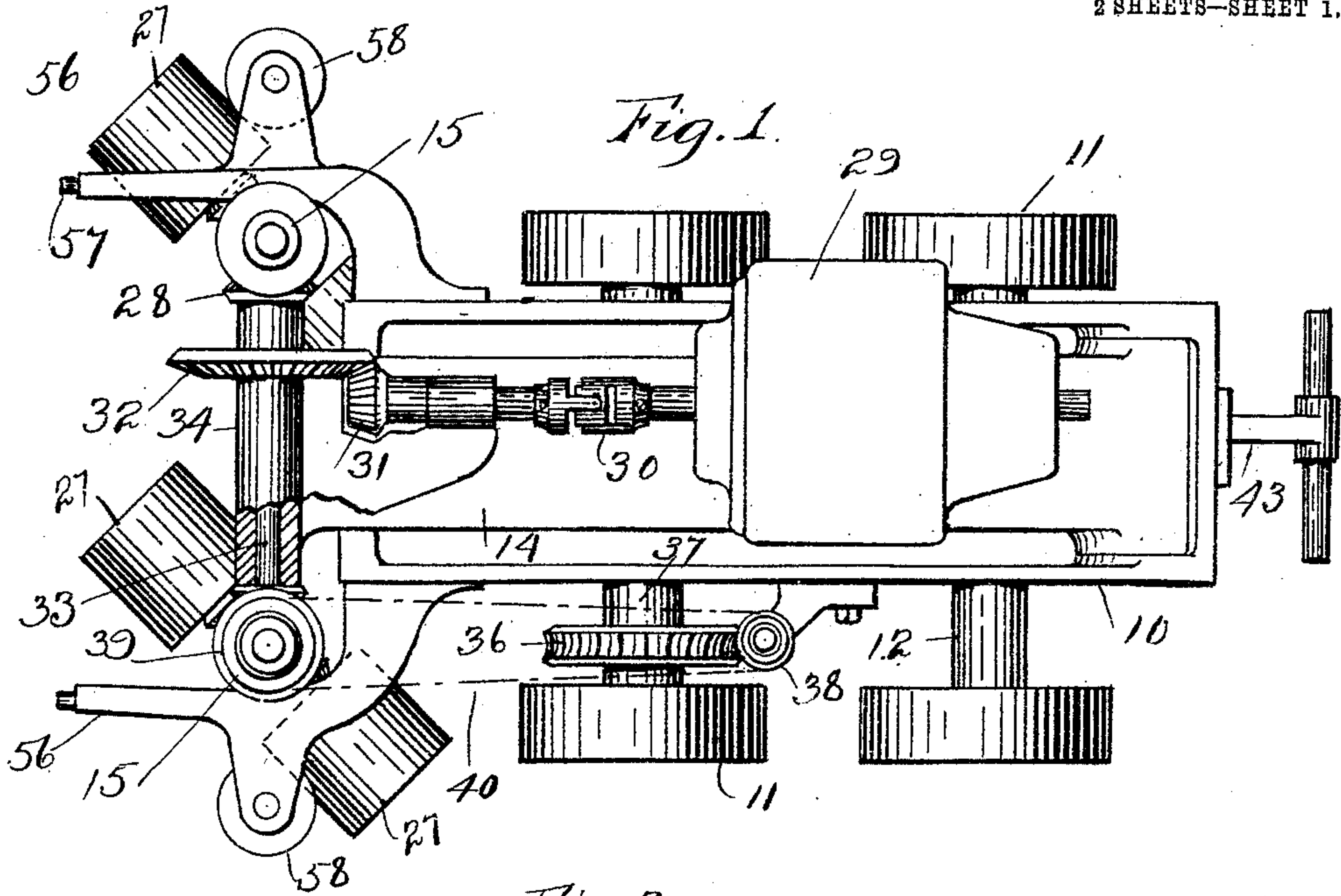
SURFACING MACHINE.

APPLICATION FILED DEC. 22, 1906. RENEWED NOV. 9, 1908.

915,752.

Patented Mar. 23, 1909.

2 SHEETS—SHEET 1.



Witnesses

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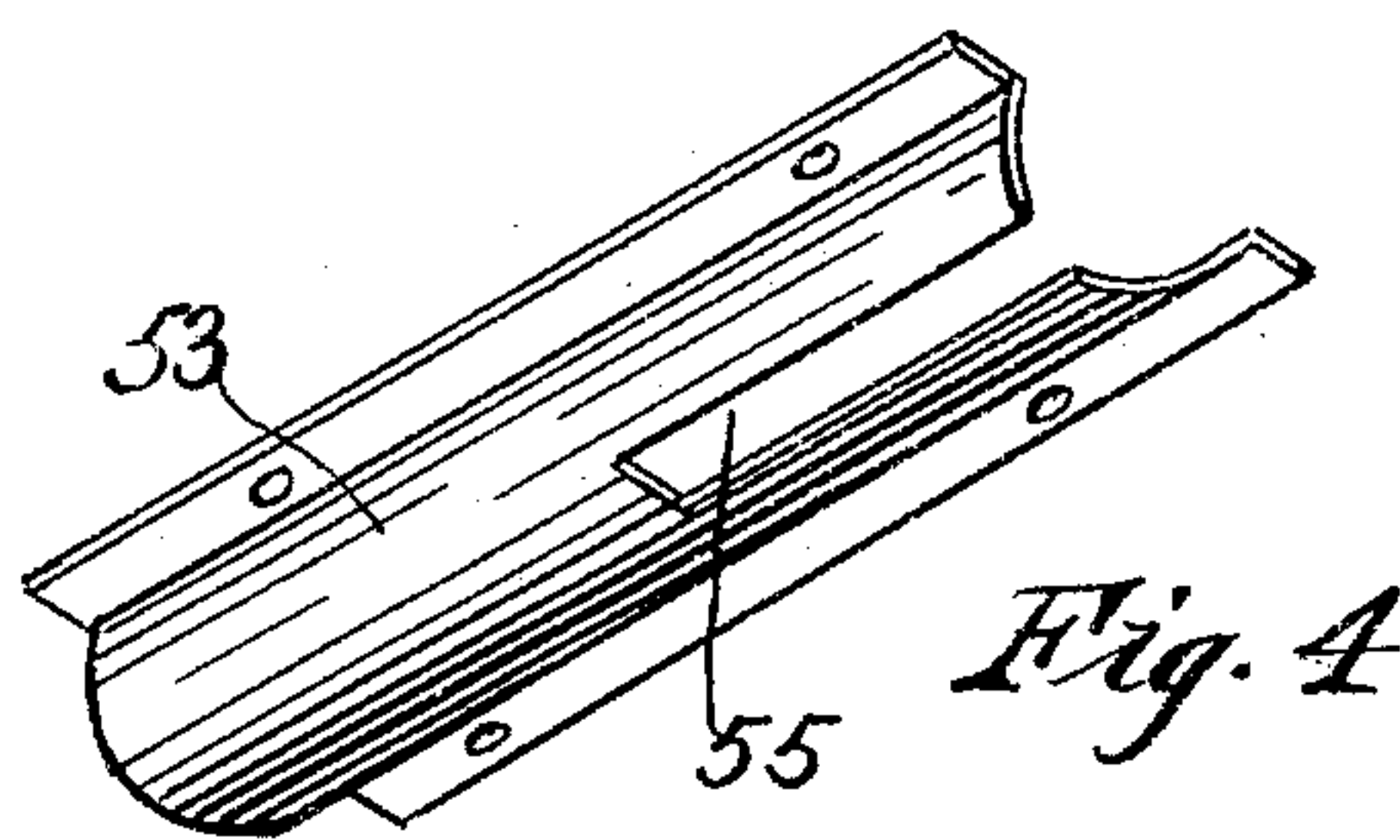
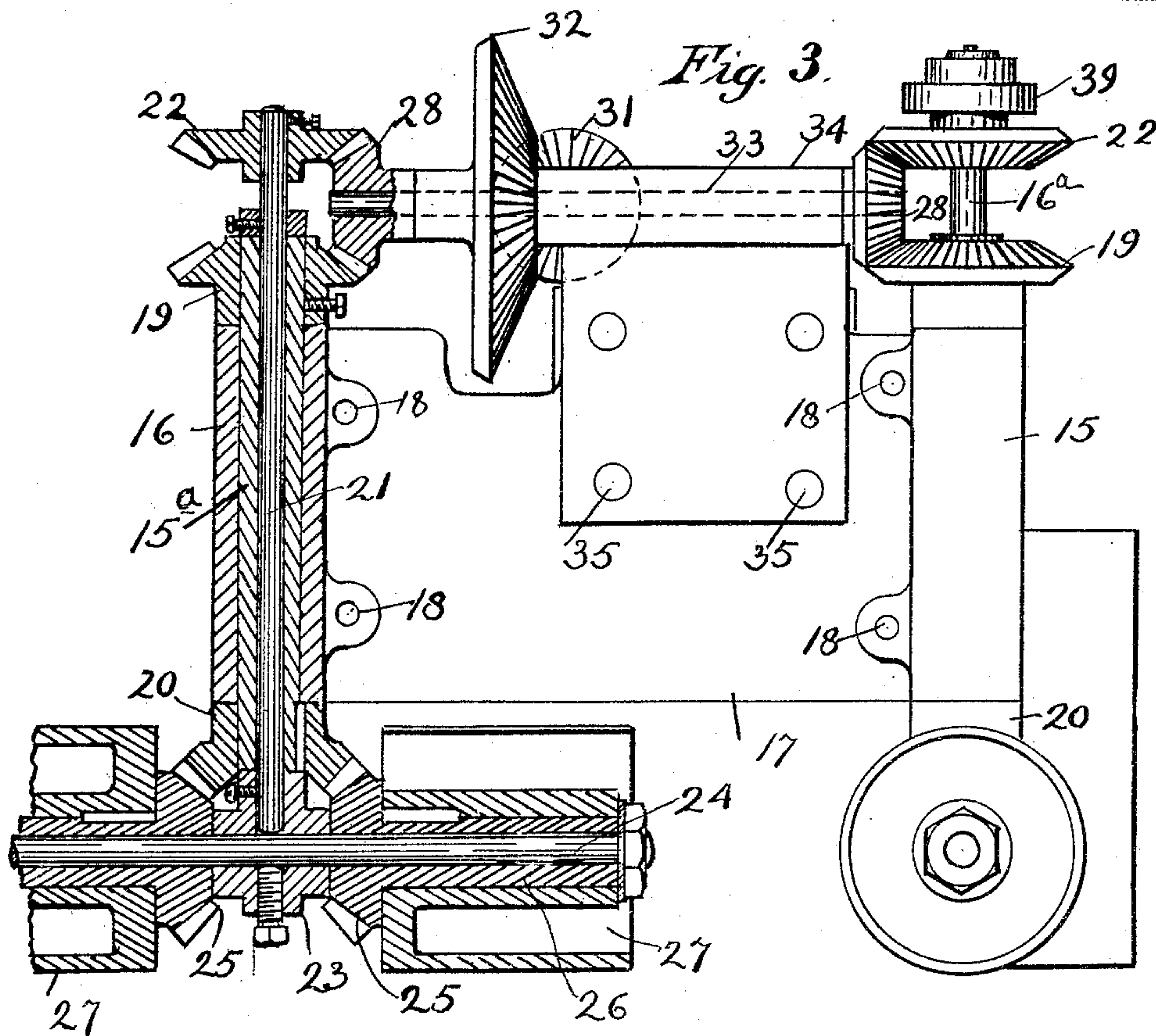
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

HANNA EDLUND, OF PROVIDENCE, RHODE ISLAND, ADMINISTRATRIX OF CLAUS A. EDLUND, DECEASED; JOHN DORAN, ADMINISTRATOR DE BONIS NON OF SAID CLAUS A. EDLUND, DECEASED, ASSIGNOR OF ONE-HALF TO EMIL BERNSTROM, OF PROVIDENCE, RHODE ISLAND.

SURFACING-MACHINE.

No. 915,752.

Specification of Letters Patent.

Patented March 23, 1909.

Application filed December 22, 1906, Serial No. 349,020. Renewed November 9, 1908. Serial No. 461,746.

To all whom it may concern:

Be it known that I, HANNA EDLUND, administratrix of the estate of CLAUS A. EDLUND, a citizen of the United States, residing at Providence, in the county of Providence and State of Rhode Island, hereby make application for patent for certain new and useful Improvements in Surfacing-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to certain new and useful improvements in surfacing machines and pertains more particularly to that class of machines employed in planing, sand-papering, polishing or otherwise dressing the surface of floors, bowling alleys and the like.

The invention has for its object to produce a simple machine of a portable character that will abrade, grind or polish the surface of a floor or the like. An essential feature of the machine being that it operates automatically and very rapidly and dresses a floor accurately and smoothly, leaving the same straight and true and does this work without the aid of a skilled attendant. The abrading or dressing heads are adjustably mounted on a carriage and may be driven by a motor or in any other desired manner.

One of the features of the invention when sand-paper or polishing rolls are used in the dressing heads, is that two rolls are mounted in each head, both rolls being held to rotate around a common center (which is the upright spindle), also to rotate around their own axis. By revolving the rolls in a horizontal plane a true, even and level surface is sure to be obtained, while to rotate the rolls around their own axis brings into action the surface of the material all around the roll. Instead of using sand-paper rolls in the rotating heads, cutters may be used therein for planing the floor if desired, or polishing material may be applied to the rolls to wax or polish a floor in finishing.

The essential feature of the present invention is to increase the efficiency or abrading power of the machine which increased efficiency is accomplished by doubling the speed of the abrading rolls without increasing the speed of the driving motor. By this means, which is that of rotating the contact gear in a direction to the travel of the rolls, the abrad-

ing capacity of the machine is practically doubled.

The invention is fully set forth in this specification and more particularly pointed out in the appended claims.

In the accompanying drawings: Figure 1—is a plan view of a surfacing machine illustrating the improvements thereon. Fig. 2—is a side elevation of the machine partly in section. Fig. 3—is a front elevation showing the arrangement of the heads and the driving mechanism for the floor dressing devices and the means by which the dressing rolls are given their accelerated motion around their own axis as they revolve around their common center, one of the heads being in section. Fig. 4—is a bracket which is attached to the handle, said bracket being for the purpose of receiving and retaining the cord which is used in the operation of the supporting leg.

Referring to the drawings 10 is the body of the machine constructed somewhat similar to an ordinary wagon body consisting of a box frame having sides and end pieces, said body being mounted on four wheels 11—11 to roll on ordinary axles 12. Pivoted at its rear end 13 to the rear of said body portion is the apron or platform 14 that extends forward out through the suitable opening in the front end of the body portion which forward end is held to be adjusted vertically therein, on the front end of this plate is secured the two operating heads 15—15. These heads are similar to each other in construction each having an upright hollow shaft 15^a held to rotate in the bearing 16 that is secured to the front plate 17 of the swinging apron by means of the bolts 18—18. To the upper end of this hollow shaft is secured the beveled gear 19 and to the lower end of the said shaft is secured the gear 20. Passing directly through this hollow shaft is the center shaft 21 on the upper end of which is fixed the downwardly facing gear 22, and to the lower end of this shaft is fixed the block or supporting member 23 in which the horizontal roll shaft 24 is permanently held. Rotatably mounted on this horizontal shaft 24 and on either side of the supporting member 23 are mounted the beveled gears 25—25 each meshing into the said gear 20 fixed to the lower end of the rotatable hollow shaft 15^a. These gears 25 are each provided with

a long hub 26 on which to mount their respective sand-paper covered rolls 27—27. By this construction when the upright shaft 21 rotates the horizontal shaft 24 carrying said two rolls is also caused to rotate around the axis of said upright shaft, and as the gears 25—25 mesh into the gear 20, even though this gear 20 were held in a fixed position, the said gears 25—25 and the rolls mounted on the same would be rotated around the axis of the horizontal shaft as they revolve around their common center which is the upright shaft. But in order to increase the velocity of these rolls around their own center the hollow shaft is caused to rotate in the opposite direction from that taken by the center shaft 21 thereby practically doubling the speed of rotation of said rolls on their own axis. To accomplish this result the beveled gear 28 is arranged to engage both the gear 19 and gear 22 rotating each in opposite directions.

Power may be applied to run this machine from any convenient source, but an electric motor 29 is preferably used for this purpose mounted on the carriage and adapted to receive its current through a flexible cord (not shown) from a lamp socket, battery, or any convenient supply, and transmits its motion to said heads through the universal joint connection 30 and gears 31 and 32 to the horizontal shaft 33 to each end of which is fixed the driving gears 28—28. This shaft is mounted in the bearing 34 secured to the front plate 17 by means of the bolts 35.

This machine is caused to move along the floor by means of the worm gear 36 that is mounted on the wheel shaft 37. This gear is caused to rotate by the worm 38 which worm is driven from one of the upright shafts 16^a through the pulley 39, mounted on the upper end thereof, belt 40, small pulley 41 and upright shaft 42.

At 43 is the handle by which the machine may be guided by the attendant. At 44 is an upright bolt or rod secured to the bottom of the body portion and extending up through the plate or platform 14. Between the plate and body 10, is located a spring 45 of sufficient tension to raise or support the free end of the said platform and its connected heads. Above the platform is another coil spring 46 whose tension may be adjusted by the nut 47 to overbalance the tension of spring 45 and so lower or adjust the height of bearing pressure of the said working rolls with relation to the surface they are acting upon, at the same time providing a resiliency to the heads between the two springs rendering the same in a measure flexible that it may yield to accommodate itself to any undue strain caused by bunches or unevenness in the floor.

It is found in practice desirable to raise the abrading rolls from the floor when re-

placing the sand-paper on the surface of the same. In order to do this a leg 48 is pivoted at 49 on the underside of the body of the machine. This leg is normally drawn forward by the tension of the spring 50 into an upright position to rest against the stop 51. When the leg is not in use it is withdrawn from its vertical position to hang clear of the floor in the position shown in Fig. 2, by means of the cord 52 which is led to the rear of the machine and up through the bracket 53 (see Fig. 4), its end being attached to the ring 54 that spans the upper end of this tubular bracket to hold the cord in its contracted position. When it is desired to release the leg the ring 54 is carried outward from the upper end of the bracket and allowed to pass down through the slotted portions 55, the forward end of the machine may then be raised and supported on said leg.

At 56 are forwardly extending arms tipped at 57 with rubber or other flexible material to form a buffer to prevent the abrading rolls from touching the wall on the front of the machine. At 58—58 are also rubber or other flexible wheels extending from the sides of these arms to prevent the abrading rolls from coming in contact with the wall at the side of the machine while in the process of working close to the sides and ends of the room.

In operation the attendant presses down on the rear handle 43 of the machine raising the forward end and at the same time disengages the ring 54 allowing the leg to take its vertical position and support the forward end of the carriage, including the rolls, clear of the floor.

The construction of this improved surfacing machine is very simple, comprising a body 10 mounted on four wheels 11. An apron or platform 14 is pivoted in the rear of said body portion and is adjustably held at its opposite end to work vertically through the front portion of the body frame. On this apron is mounted the abrading or dressing rolls two in each head running in opposite directions.

An essential feature of this invention is the accelerated speed imparted to the abrading rolls by a comparatively slow running driving motor which feature working in combination with a pair of operating heads running in opposite directions produces an exceptionally efficient machine for dressing floors or the like. In practice it is found to be impossible to operate such heads in a practical manner except they are balanced by working against each other. Then again the rolls in each head have a double rotation one around their own axis and the other around a common center. In revolving on their own axis they are preferably caused to turn against the rotation of the contacting surfaces of the rolls thereby increasing the speed of said sur-

face and so increasing the working capacity of the machine.

Two sets of dressing rolls have been shown and described but this invention is not restricted to the use of rolls for this purpose as
5 abrading or polishing heads of any construction may be used, neither is this invention limited to the use of two sets of heads, and these heads may be used in pairs, one pair
10 constituting a set and any number of sets may be used without departing from the spirit or scope of the invention. Neither is the invention restricted to the precise construction and arrangement of parts herein
15 shown and described nor to the various details thereof, as the same may be modified or re-arranged in various particulars, one practical embodiment of which has been herein illustrated and described, without attempting to show all of the various forms and
20 modifications in which this invention might be embodied.

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

1. In a surfacing machine, the combination of a frame, two separate sets of floor dressing rolls supported in said frame, each set being operated to revolve about a separate center and in opposite directions, a central gear for each set, a gear on each roll of the set engaging its central gear, means for revolving the rolls in each set in a horizontal plane around its central gear, and means for
30 rotating said central gear in an opposite direction.

2. In a surfacing machine, the combination of a vertical hollow shaft rotatably mounted in suitable bearings, a gear fixed to
40 said shaft, a central shaft mounted to rotate in said hollow shaft, horizontally arranged dressing rolls carried by said latter shaft, a gear attached to each of said rolls meshing with the gear on the hollow shaft, and means
45 for rotating the hollow shaft and the central shaft in opposite directions.

3. In a surfacing machine, the combination of a frame, a pair of grinding heads supported in said frame each head comprising a
50 vertical hollow shaft rotatably mounted in suitable bearings attached to said frame, a pinion fixed to said shaft, a center shaft rotatably mounted in said hollow shaft, means connected to said central shaft for carrying a
55 pair of horizontally arranged dressing rolls, a pinion connected to each roll and meshing with said pinion on the hollow shaft, means for rotating the hollow shaft and the central shafts in opposite directions, and means for revolving the rolls in each head in opposite
60 directions around their respective centers.

4. In a surfacing machine the combination of a vertical hollow shaft, a gear fixed to said shaft, a central shaft in said hollow shaft, a
65 supporting member fixed to said central

shaft, a horizontal shaft in said member dressing rolls carried on said shaft, a gear connected to each of said rolls meshing with the gear on the hollow shaft, and means for turning said latter gear and said central shaft
70 in opposite directions.

5. In a surfacing machine the combination of a vertical hollow shaft, a gear fixed near the lower end of said shaft, a second gear fixed near the upper end of said shaft, a central shaft in said hollow shaft, a gear fixed near the upper end of said central shaft, horizontal dressing rolls carried by said central shaft, a gear connected to each of said rolls meshing with the lower gear on the hollow
75 shaft, and a driving gear for engaging the upper gears on both shafts whereby the same are turned in opposite directions.

6. In a surfacing machine the combination of a carriage, an apron pivoted to said carriage, a set of floor dressing rolls mounted on said apron, a central gear, a gear on each roll engaging said central gear, means for revolving said rolls in a horizontal plane around
85 said central gear, means for rotating said central gear in an opposite direction to that of the rolls, and means whereby said apron may be raised and lowered to regulate the pressure of said rolls on the surface to be dressed.

7. In a surfacing machine, the combination of a carriage, an apron pivoted to said carriage, two separate sets of floor dressing rolls mounted on said apron, each set being operated to revolve about a separate center and
90 in opposite directions, a central gear for each set, a gear on each roll engaging said central gear, means for revolving said rolls in a horizontal plane around said central gear, means for rotating said central gear in an opposite
95 direction to that of the rolls, and means whereby said apron may be raised and lowered to regulate the pressure of said rolls on the surface to be dressed.

8. A machine of the character described comprising a carriage, an apron pivoted in said carriage, two separate sets of floor dressing rolls mounted on said apron, each set of said rolls adapted to be rotated in a horizontal plane and in a direction opposite to the
100 other, means whereby said apron may be raised and lowered to regulate the pressure of said dressing rolls on the surface to be dressed, and means whereby the forward end of this carriage and the abrading rolls may be
105 raised and supported clear of the surface to be dressed.

9. In a surfacing machine the combination of a carriage, a plurality of sets of grinding rolls supported on said carriage, a plurality
110 of floor dressing rolls in each set, each set being operated to revolve around its own center, a central gear for each set, a gear on each roll engaging said central gear, means for revolving each set of rolls in a horizontal plane
115 120 125 130

4
around its central gear, means for rotating
said central gear in an opposite direction to
that of the rolls, means for raising and lower-
ing said rolls to regulate the pressure of the
5 same on the surface to be dressed, and means
including a worm gear and worm for auto-
matically moving said carriage over the sur-
face to be dressed.

620,100
In testimony whereof I affix my signature
in presence of two witnesses.

HANNA EDLUND,
Administratrix of the estate of Claus A. Ed-
lund.

Witnesses:

JOHN ERIKSON,
HOWARD E. BARLOW.