

(No Model.)

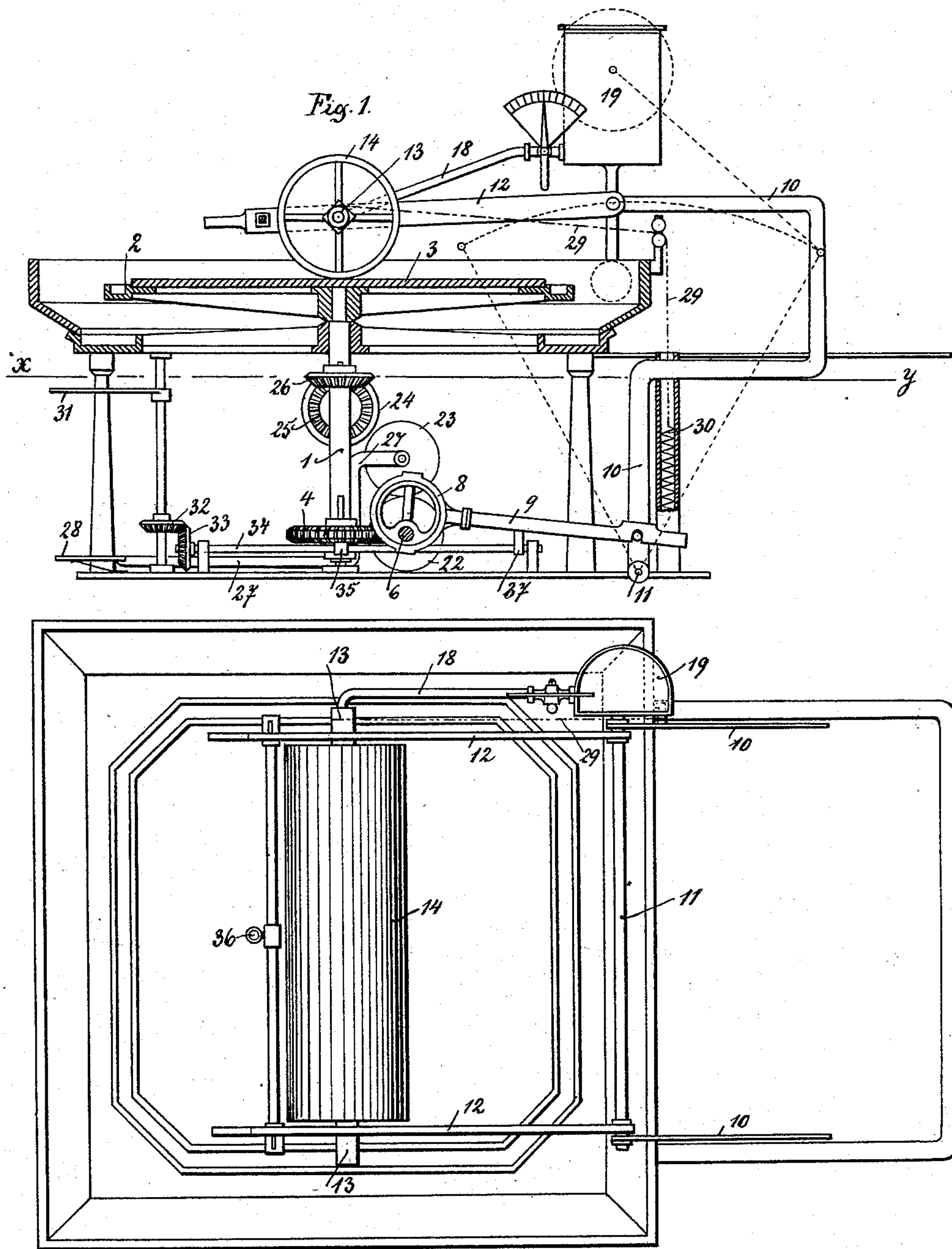
2 Sheets—Sheet 1.

C. KNABE.

MACHINE FOR COLORING LEATHER, SKINS, &c.

No. 477,761.

Patented June 28, 1892.



Witnesses.

Henry A. Knebig  
H. Andersen

Fig. 2.



Inventor:  
Carl Knabe.  
per Heinrich Kade  
Attorneys.

(No Model.)

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Fig. 3.

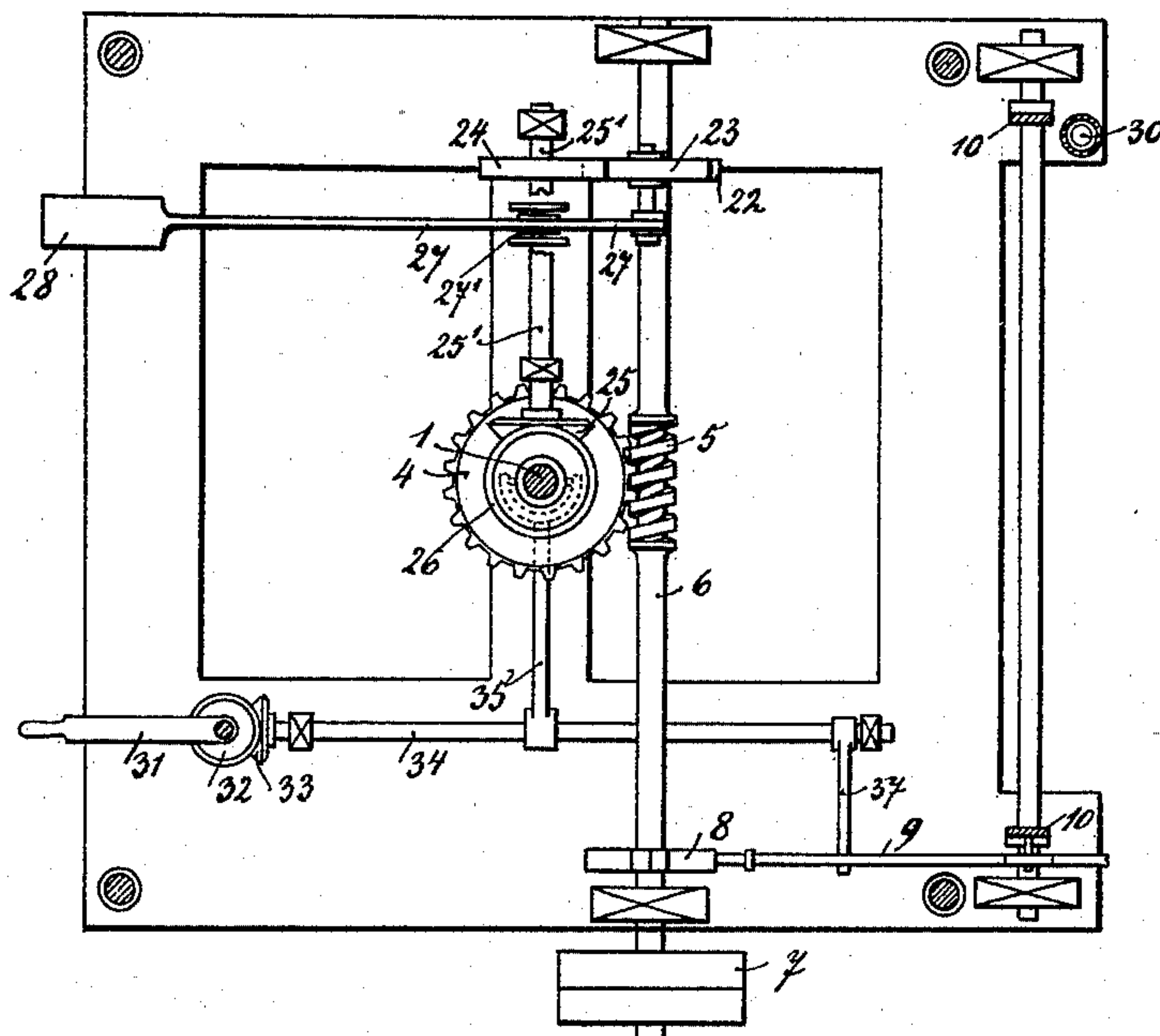
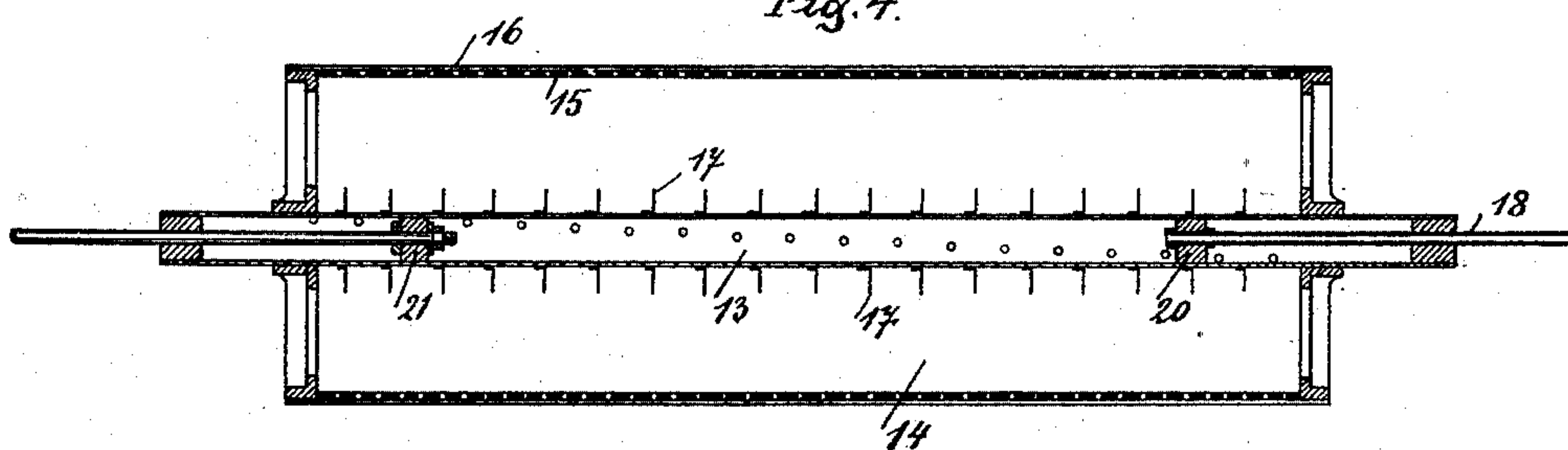


Fig. 4.



Witnesses:

Henry A. Stuebig  
J. H. Anderson

Inventor:

Carl Knabe.  
per Heinrich Lade  
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# UNITED STATES PATENT OFFICE

CARL KNABE, OF OSTERWIECK, GERMANY.

## MACHINE FOR COLORING LEATHER, SKINS, &c.

SPECIFICATION forming part of Letters Patent No. 477,761, dated June 28, 1892.

Application filed December 18, 1890. Serial No. 375,147. (No model.) Patented in Luxemburg September 8, 1890, No. 1,343.

*To all whom it may concern:*

Be it known that I, CARL KNABE, a subject of the King of Prussia, German Emperor, residing at the city of Osterwieck, Kingdom of Prussia, German Empire, have invented certain new and useful Machines for Coloring Leather, Skins, and Like Materials, (for which I have received Letters Patent in the Grand Duchy of Luxemburg, No. 1,343, dated September 8, 1890;) and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to machines for coloring leather, skins, and like materials.

The invention consists in the combination of a rotary table on which the material to be colored is extended with a coloring-drum, which is moved to and fro over the table, whereby it is at the same time set in rotary motion alternately in the one and in the other direction.

In the accompanying drawings, Figure 1 is a vertical section of the machine. Fig. 2 is a top view thereof; Fig. 3, a horizontal section through line *xy* of Fig. 1; and Fig. 4, a sectional view of the coloring-drum, drawn to an enlarged scale.

1 is a vertical shaft carrying table 2, on which the material 3 to be colored is extended. On the lower part of vertical shaft 1 is a worm-wheel 4, which by being slid upward over a feather may be placed out of gear with a screw 5 on shaft 6 and in gear with the same by being slid downward, shaft 6 being driven by a motor through pulleys 7. On shaft 6 is an eccentric 8, in connection through rod 9 with levers 10 10, mounted on shaft 11, so as to oscillate thereon. Levers 10 10 are by their upper ends in connection with side frames 12 12, which carry hollow shaft 13, provided at its circumference with perforations set out in a screw-like or winding line for the outlet of the color or pigment. On hollow shaft 13 is fixed coloring-drum 14, which latter is composed of perforated cylinder 15 and cloth covering 16, surrounding the same. On hollow shaft 13, within perforated cylinder 15, are mounted small disks 17 for the regular delivery of the color passing out through the perforations of hollow shaft 13.

18 is an india-rubber tube, which places this shaft in communication with a vessel 19, charged with color or pigment. At the ends of the india-rubber tube there is a sliding stopper 20, which, like another sliding stopper 21, may be displaced and adjusted within hollow shaft 13, the two sliding stoppers being for the purpose of regulating by their position the delivery of color in the direction of the length of the shaft from the perforations of the same, so that in the case of materials of small area having to be colored only a correspondingly short middle portion of the coloring-drum 14 would be supplied with color.

On shaft 6 is a friction-disk 22, bearing against disk 23, and this against disk 24, fixed on the same shaft 25' as the bevel-toothed wheel 25, engaging with a similar toothed wheel 26, fixed on vertical shaft 1. Friction-disk 23 is carried on bell-crank lever 27, so as to turn thereon, lever 27 turning on support 27' and having at its outer end a foot or treadle plate 28. By pressing down foot-plate 28 disk 23 is brought to bear against disks 22 and 24, so that the rotation of shaft 6 is transmitted through disks 22 23 24 to bevel-toothed wheels 25 26 and through these to shaft 1 and table 2. Upon the pressure being withdrawn from foot-plate 28 this is raised up by means of a spring and disk 23 comes out of contact with disks 22 24. By this arrangement table 2 is driven at a higher speed than when the screw 5 and worm-wheel 4 are used, the higher speed serving when the material is laid upon table 2 and also when the color is being fixed to drive out by centrifugal force any excess water, mordant, and acid. Of course before setting the machine to work at the higher speed worm-wheel 4 is disengaged from screw 5, which may be effected in an ordinary way by means of hand-lever 31, bevel-toothed wheels 32 33, shaft 34, and rod 35.

29 is a cord, one end of which is wound on one end of hollow shaft 13 and the other end of the cord attached to spring 30.

When the machine is to be used, the coloring-drum 14 is raised to the position shown in dotted line in Fig. 1 and the material to be colored extended on table 2. The coloring-drum is then lowered to the working position and the machine set in motion, causing table



2 to rotate, while side frames 12 12, and with them coloring-drum 14, are moved to and fro, the latter rotating at the same time.

It has in practice been found necessary to  
 5 extend the material to be colored as smoothly and evenly as practicable and so maintain it during the coloring process. To this end the coloring-drum 14, in addition to the to-and-fro motion and the rotary motion before re-  
 10 ferred to, has given to it a motion having for effect to diminish its circumferential velocity from the middle position directly over the middle of the table toward the ends of the same—that is to say, right and left—and to  
 15 increase its circumferential velocity from the ends of the table toward the middle of the same. This is done by a pulling force acting tangentially to hollow shaft 13 through cord 29, wound on shaft 13. Cord 29 is so attached  
 20 to shaft 13 that the winding of it thereon by reason of the rotation of the said shaft commences when this moves away from the middle position, therefore from the middle of table 2 toward the ends of the same. Upon the  
 25 winding of the cord 29 the pull on spring 30, connected to one end of the same, is proportional to the shortening of the cord, by which means the rotation of hollow shaft 13, and with it that of coloring-drum 14, is impeded, so that the  
 30 more the cord shortens the more the spring is in tension and the nearer the coloring-drum 14 approaches the ends of table 2. Upon the movement of coloring-drum from the middle of table 2 toward the ends or to the circum-  
 35 ference of the same and from the circumference to the middle the material under treatment will be drawn or pressed out. The increase of friction between the edge of the material and the coloring-drum gives this part a  
 40 greater gloss and more thorough coloring.

From the foregoing it is obvious that the material to be colored should be extended concentrically with the table, so as to correspond to the motion of the coloring-drum, to facilitate which operation this with side frames 12 45 12, in which it is carried, is raised to the position shown in dotted line by means of a cord passing over a pulley fixed to the ceiling or roof of the workshop over the central line of the coloring-drum and attached by one end 50 to eye 36 on a rod connecting the two side frames. The working of the coloring-drum is stopped at the same time as that of table 2, as already described by disengaging worm-wheel 4 from screw 5 through hand-lever 31, 55 bevel-toothed wheels 32 33, shaft 34, and the crank 37 on this latter, which lifts up rod 9 from the pivot of lever 10, bringing this to a standstill.

What I claim as my invention, and desire 60 to secure by Letters Patent, is—

1. In a hide or skin dyeing machine, the combination of a table and means for rotating the same with a coloring-drum mounted on a frame and means for drawing the drum to and 65 fro across the face of the table.

2. In a hide or skin dyeing machine, the combination of a coloring-drum composed of a finely-perforated metal cylinder covered with cloth and a hollow shaft perforated in a 70 screw-like helical line and provided with disks with means, substantially as described, for imparting motion to the drum.

In testimony whereof I have signed this specification in the presence of two subscrib- 75 ing witnesses.

CARL KNABE.

Witnesses:

W. WÖHLER,  
 LYMAN A. SPALDING.