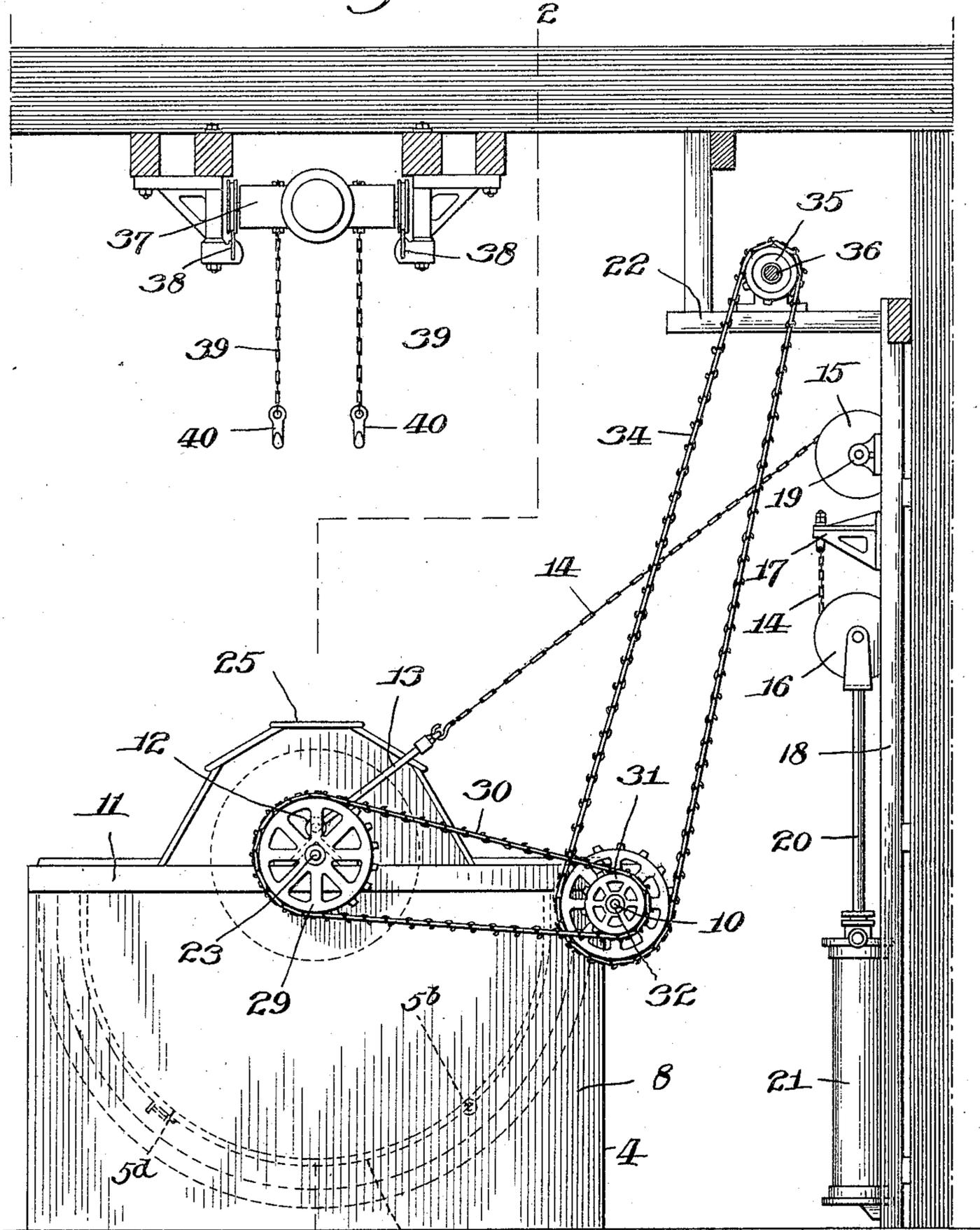


R. P. SMITH.
DYEING MACHINE.

APPLICATION FILED DEC. 30, 1903.

4 SHEETS—SHEET 1.

Fig. 1.



WITNESSES:

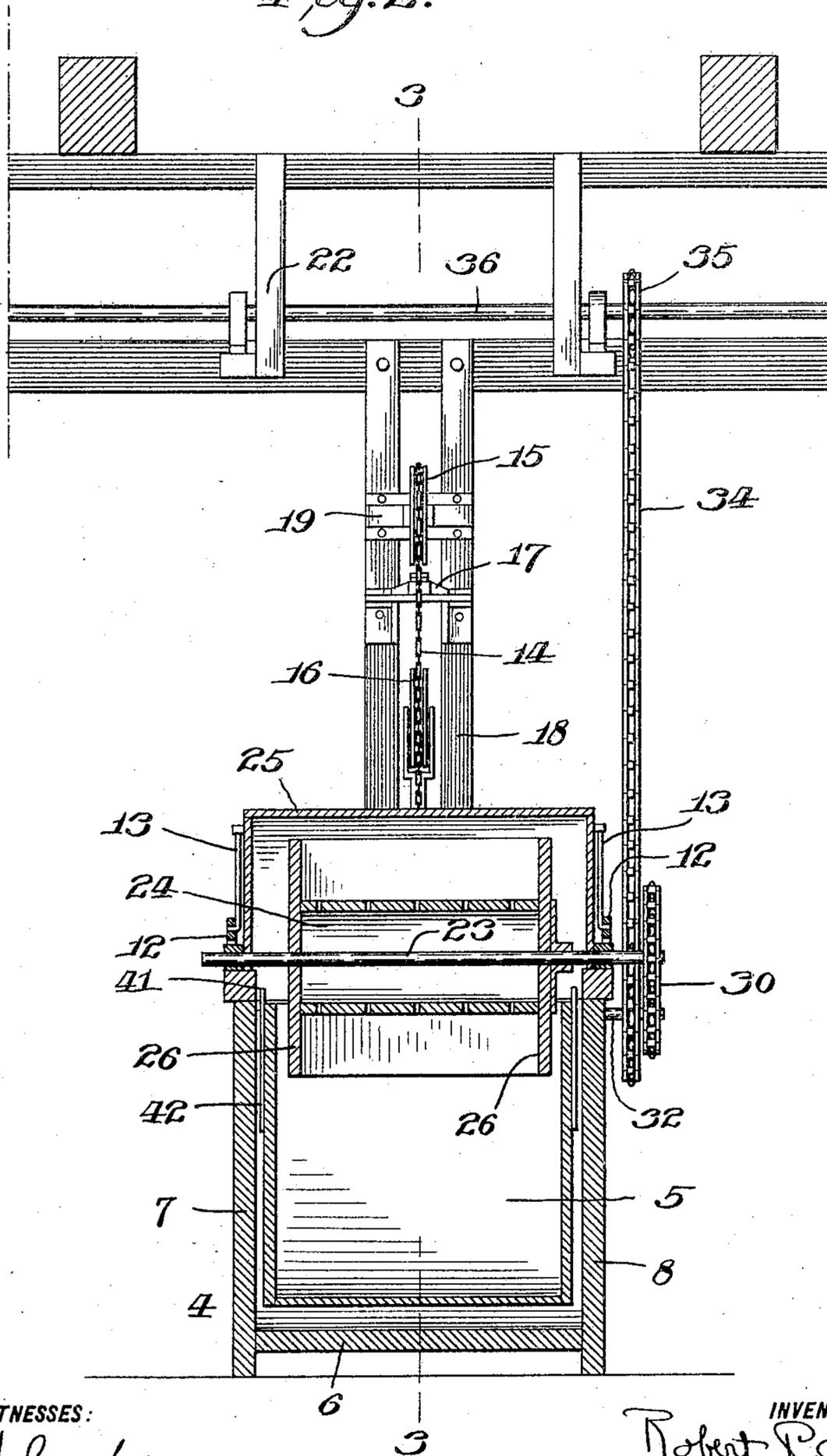
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Fig. 2.

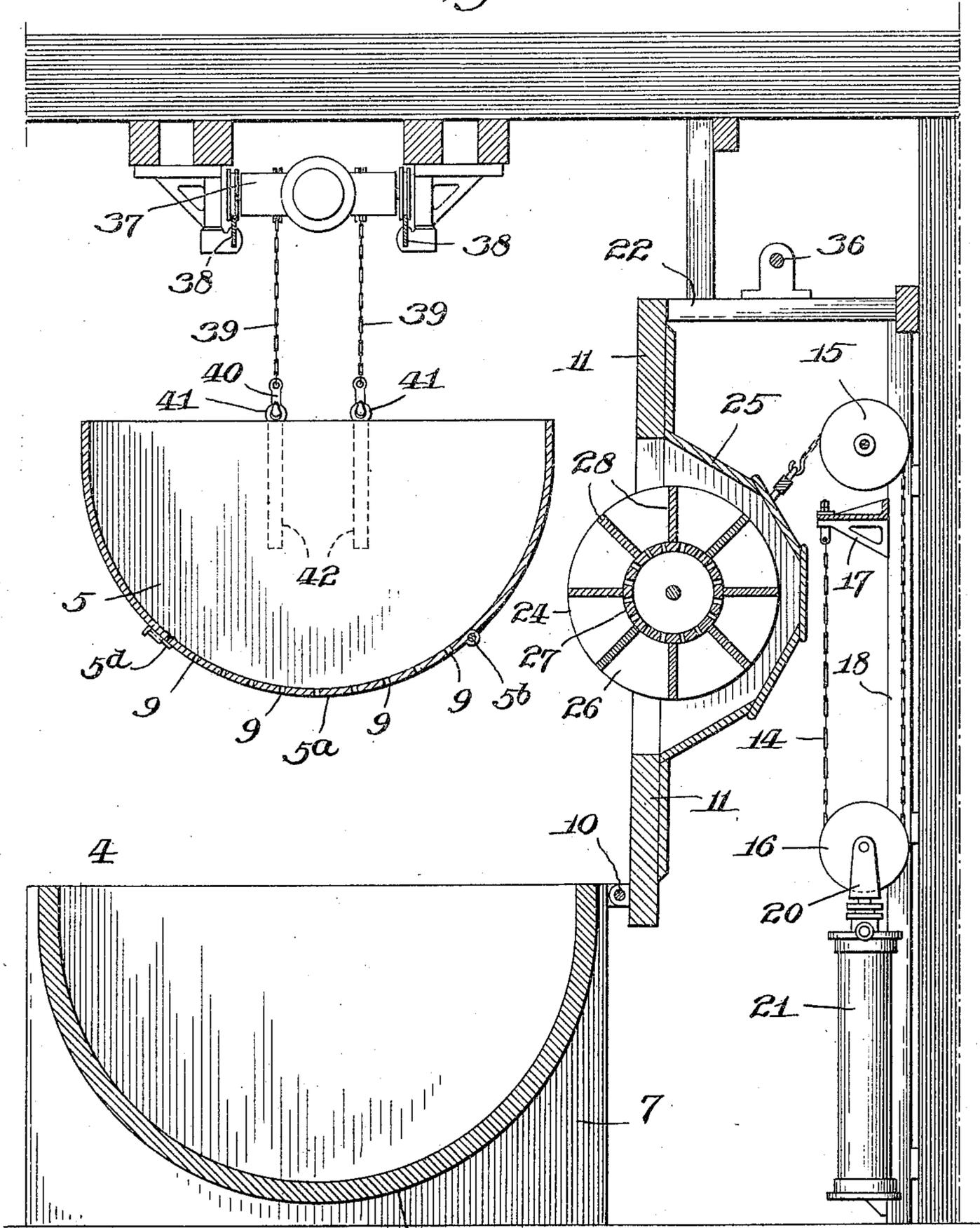


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Fig. 3.



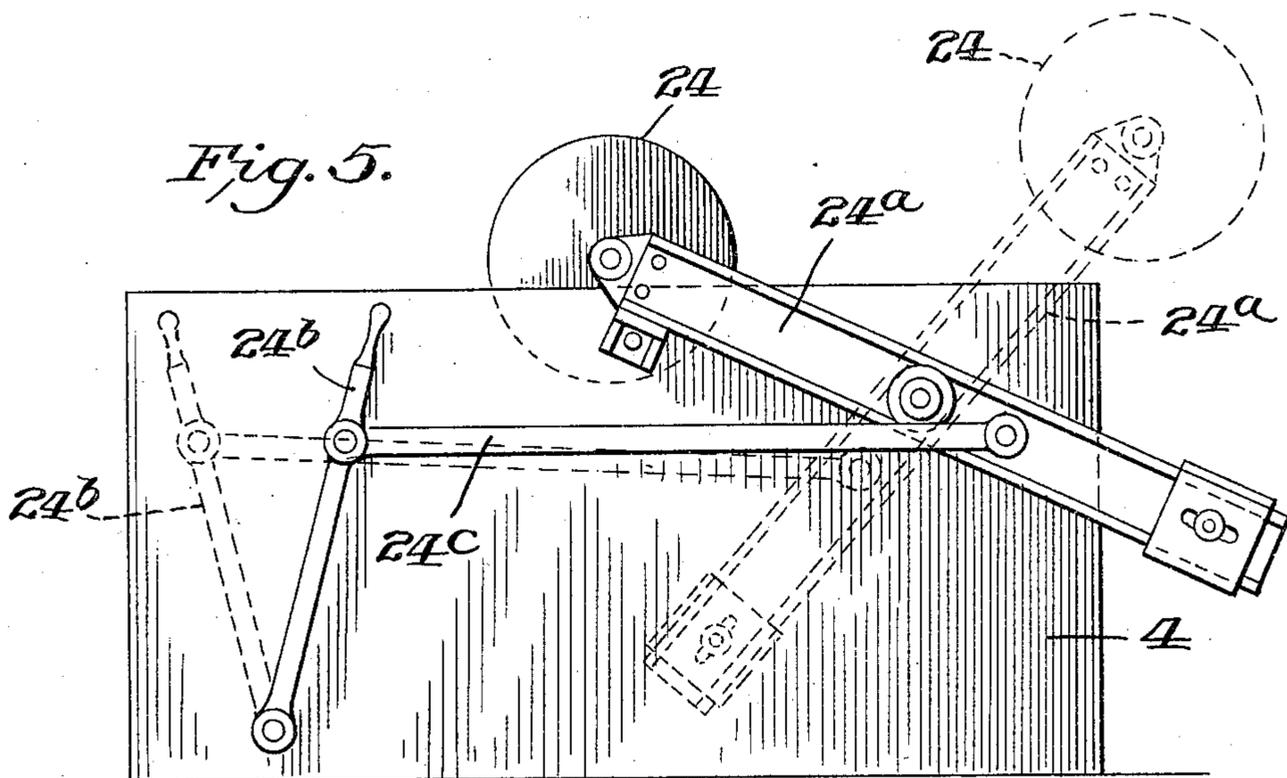
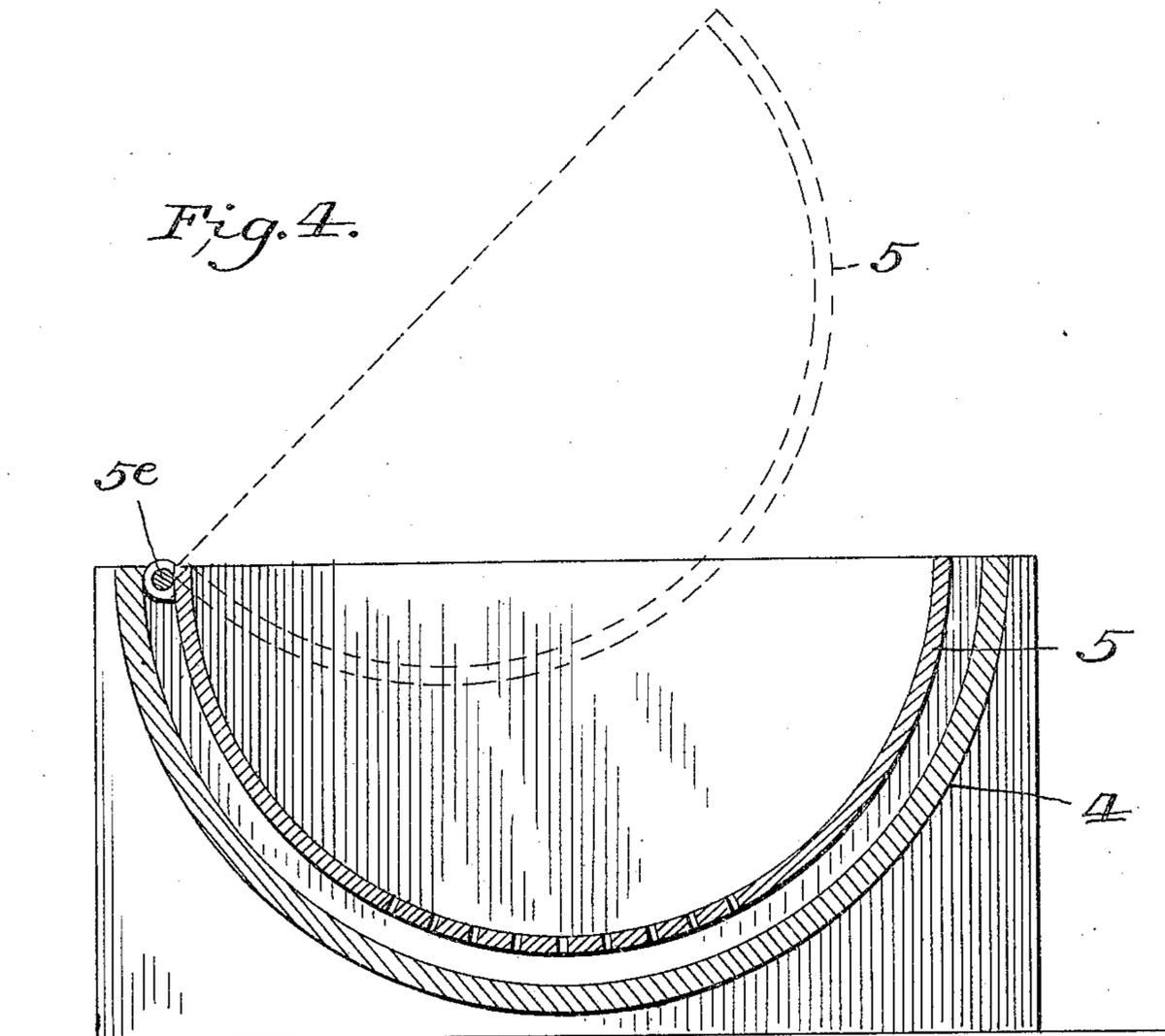
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DYEING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 794,560, dated July 11, 1905.

Application filed December 30, 1903. Serial No. 187,101.

To all whom it may concern:

Be it known that I, ROBERT P. SMITH, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Dyeing-Machines, of which the following is a specification.

This invention relates to dyeing-machines, and has for its object to provide a simple and efficient means whereby the articles to be dyed may be expeditiously subjected to a dyeing solution and removed therefrom and, if desired, subjected successively to a number of different solutions.

The invention consists in the novel construction and combinations of parts, which will be hereinafter fully described and claimed.

In the drawings, Figure 1 is a side elevation of my improved dyeing-machine. Fig. 2 is a sectional elevation as on the line 2 2 of Fig. 1. Fig. 3 is a sectional elevation as on the line 3 3 of Fig. 2. Figs. 4 and 5 are modifications referred to hereinafter.

4 designates a suitable tank adapted to contain the dyeing solution, and 5 a suitable receptacle to contain the articles to be dyed and adapted to be introduced into or removed from the tank 4. This tank may be of any shape and size for its intended purpose. In the present instance it comprises the body portion 6, semicircular in cross-section, and the end walls 7 8, closing the ends of the semicircular body portion and forming suitable supports for the tank. The receptacle 5 is preferably of the same general shape as the interior of the tank, but slightly smaller in dimensions, to the end that it may be readily introduced into or removed from the tank 4, as desired. The top of the receptacle 5 is open, and it is provided with a hinged bottom 5^a, pivoted, as at 5^b, and held in place by a suitable bolt 5^d. The bottom of the receptacle is provided with perforations 9 for the admission of the dyeing solution when the receptacle is introduced into the tank 4.

Pivotally connected to the tank 4, as at 10, is a cover 11, resting upon and extending

over the top thereof. This cover 11 is adapted to be swung upwardly on its pivot 10 to the position shown in Fig. 3 to permit the receptacle 5 to be introduced into and removed from the tank 4. This may be done either manually or by suitable mechanism—such, for example, as the following: Pivotally connected to the respective sides of the cover 11 by means of suitable brackets 12 is a yoke 13, having connected thereto one end of a chain 14. This chain extends over a pulley 15, then under a pulley 16, and is attached at its other end to a bracket 17, projecting from a standard 18. The pulley 15 is journaled on a bracket 19, secured to the standard 18, and the pulley 16 is carried by the upper outer end of a piston-rod 20, projecting from a suitable pneumatic cylinder 21, the inner end of the rod 20 being attached to a piston within the cylinder, to the end that when compressed air is introduced to the cylinder 21 above its piston the rod 20 and pulley 16 will be forced down, thereby drawing upon the chain 14 and raising the cover 11 to the position shown in Fig. 3, the cover 11 coming in contact with a framework 22, which limits its movement.

Journalled in suitable bearings on the cover 11 is a shaft 23, carrying an agitator 24, one part of which extends into a hood 25 on the cover 11 and the other part of which extends into the tank 4 and receptacle 5 when the cover 11 is in the down position. In the present instance the agitator comprises a pair of end heads 26, connected by a cylinder 27 and having extending therebetween a series of blades 28.

One end of the shaft 23 extends outwardly and is provided with a sprocket-wheel 29, which is connected by a chain 30 to a similar wheel 31, mounted on a shaft 32, which forms the pivotal connection of the cover 11 within the tank 4. The shaft 32 is provided with a sprocket-wheel 33, which is driven by a chain 34 from a sprocket-wheel 35, mounted on a driving-shaft 36, to which power may be applied in any convenient manner to rotate the agitator 24, and thereby agitate or circulate

the articles to be dyed and the dyeing solution within the receptacle 5.

It will be observed that the axis of rotation of the wheels 31 and 33 is in alinement with the pivot 10, in consequence of which a driving mechanism is provided for the agitator 24, which will not be affected by raising and lowering the cover 11.

The operation of the machine may be briefly described as follows: The articles to be dyed are placed in the receptacle 5, the cover 11 is raised either manually or by the described mechanism, and the receptacle is introduced into the tank 4, the dyeing solution in the tank entering the receptacle through the perforations 9. This being done, the cover 11 is lowered and power is applied to the drive-shaft 36, which through its described connections rotates the agitator 24, which agitates or circulates the articles to be dyed and the dyeing solution within the receptacle 5, thereby thoroughly subjecting the articles to be dyed to the dyeing solution. After the articles have been agitated in the dyeing solution a sufficient length of time the power is removed from the drive-shaft 36 and the cover 11 is raised to the position shown in Fig. 3, thereby permitting the receptacle to be raised out of the tank 4, during which operation the dyeing solution in the receptacle 5 drains through the perforations 9 back into the tank 4. By disengaging the bolt 5^d from the hinged bottom 5^a the latter may be opened and the dyed articles removed from the receptacle through the opening thus provided.

In dyeing establishments it is the practice to subject the articles to be dyed to various different solutions. Therefore I employ a series of machines like the one hereinbefore described and arrange them side by side. Each machine being the same I have deemed it unnecessary to illustrate more than one herein. I also employ a traveling crane 37, of any approved construction, which I mount to travel upon an overhead trackway 38, arranged to extend along and above the series of machines. The crane 37 is provided with suitable mechanism for raising and lowering a series of chains 39, the lower ends of which are provided with hooks 40, adapted to engage eyes 41 at the upper ends of bars 42, secured to the respective sides of the receptacle 5. Thus it will be seen that by the employment of the crane 37 the receptacle 5 may be readily transferred from the tank of one machine of the series to the tank of another.

In Fig. 4 I have illustrated a modified construction wherein the receptacle 5 is pivoted, as at 5^e, to the tank 4, to the end that the receptacle may be swung on the pivot 5^e in being removed from the tank 4, and thereby inverted to discharge the dyed articles.

In Fig. 5 I have shown another modified form, in which the agitator 24 is carried by a pair of balanced levers 24^a, one on each side

of the tank 4. In this construction the levers 24^a may be moved to raise the agitator from the top of the tank by a suitable hand-lever 24^b, which is connected to one of the levers 24^a by a suitable bar 24^c.

While I have herein shown and described my invention in a desirable and practicable form, yet I do not limit myself to this particular construction, as the same may be greatly modified without departing from the invention.

I claim—

1. In a dyeing-machine, the combination of a tank to contain liquid, a perforated receptacle to receive the articles to be dyed, said receptacle being adapted to be introduced into and removed from said tank, and an agitator arranged within said receptacle and adapted to be operated to circulate or agitate the articles to be dyed.

2. In a dyeing-machine, the combination of a tank to contain liquid, a receptacle to contain the articles to be dyed, said receptacle being adapted to be introduced into and removed from said tank, an agitator adapted to be operated to agitate the articles to be dyed, means adapted to be operated to move said agitator into and out of said receptacle, and connections between said means and agitator.

3. In a dyeing-machine, the combination of a tank to contain liquid, a receptacle to receive the articles to be dyed, said receptacle being adapted to be introduced into and removed from said tank, a frame movable toward and from the top of the tank, and means carried by the frame and adapted to be operated to agitate or circulate the articles to be dyed.

4. In a dyeing-machine, the combination of a tank to contain liquid, a receptacle to receive the articles to be dyed, said receptacle being adapted to be introduced into and removed from said tank, a frame movable toward and from the top of the tank, and an agitator rotatably mounted on the frame and adapted to agitate or circulate the articles to be dyed.

5. In a dyeing-machine, the combination of a tank to contain liquid, a receptacle to receive the articles to be dyed, said receptacle being adapted to be introduced into and removed from said tank, a pivoted frame movable toward and from the top of the tank, an agitator rotatably mounted on the frame and adapted to agitate or circulate the articles to be dyed, a wheel having its axis of rotation in substantial alinement with the pivot of the frame, operative connections between said agitator and wheel, a drive-shaft, and operative connections between said shaft and wheel.

6. In a dyeing-machine, the combination of a tank to contain liquid, a receptacle to contain the articles to be dyed and provided with openings therein to permit the liquid of the tank to pass into and out of the receptacle,

said receptacle being adapted to be introduced into and removed from said tank, and a rotatable agitator located within said receptacle and adapted to be operated to agitate or circulate the articles to be dyed, the axis of rotation of said agitator being substantially horizontal.

5
10
15
7. In a dyeing-machine, the combination of a tank to contain liquid, a receptacle to contain the articles to be dyed and provided with openings therein to permit the liquid of the tank to pass into and out of the receptacle, said receptacle being substantially semicircular in cross-section and being adapted to be introduced into and removed from said tank, and a rotatable agitator located within said receptacle and adapted to be operated to agitate or circulate the articles to be dyed, the axis

of rotation of said agitator being substantially horizontal. 20

8. In a dyeing-machine, the combination of a tank to contain liquid, a receptacle to receive the articles to be dyed and being provided with a hinged bottom, said receptacle being adapted to be introduced into and removed from the tank, and an agitator arranged within said receptacle and adapted to be operated to agitate or circulate the articles to be dyed. 25

In testimony whereof I affix my signature in presence of two witnesses. 30

ROBERT P. SMITH.

Witnesses:

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RALPH H. GAMBLE.