

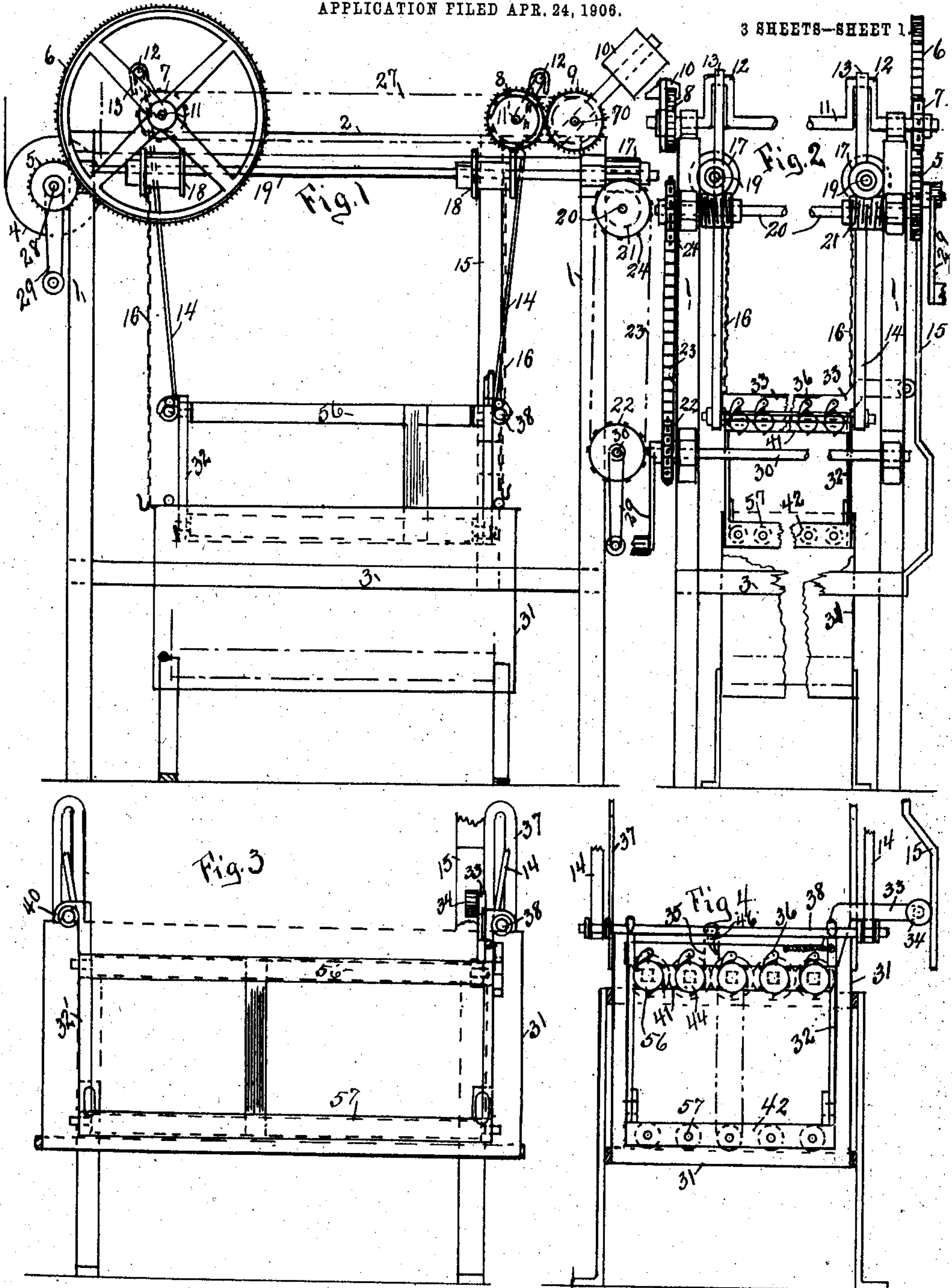
No. 834,284.

PATENTED OCT. 30, 1906.

W. H. FLETCHER.  
DYEING MACHINE.

APPLICATION FILED APR. 24, 1906.

3 SHEETS—SHEET 1.



WITNESSES:

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Arthur Gentry.

INVENTOR.

William H. Fletcher  
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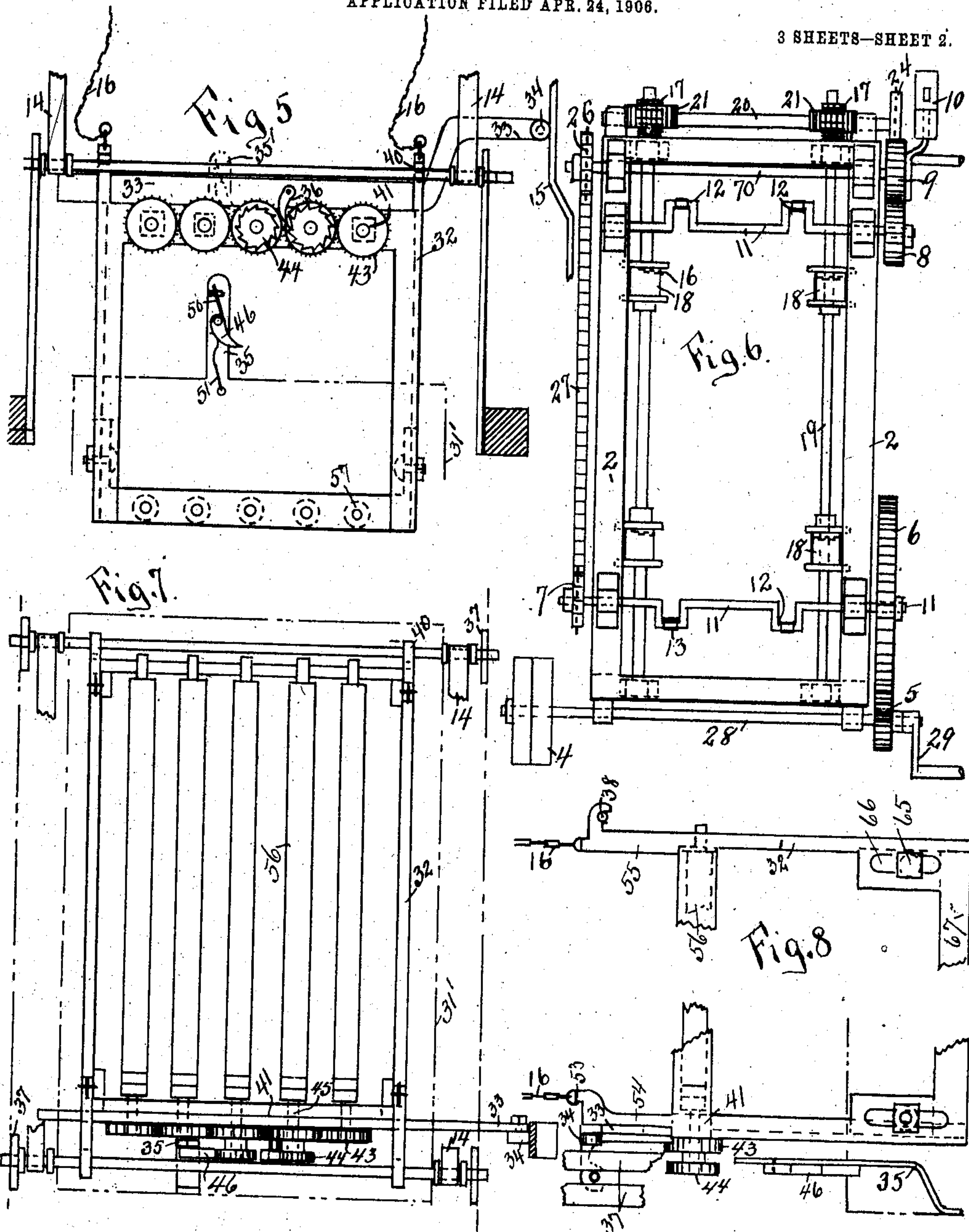
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3 SHEETS—SHEET 2.



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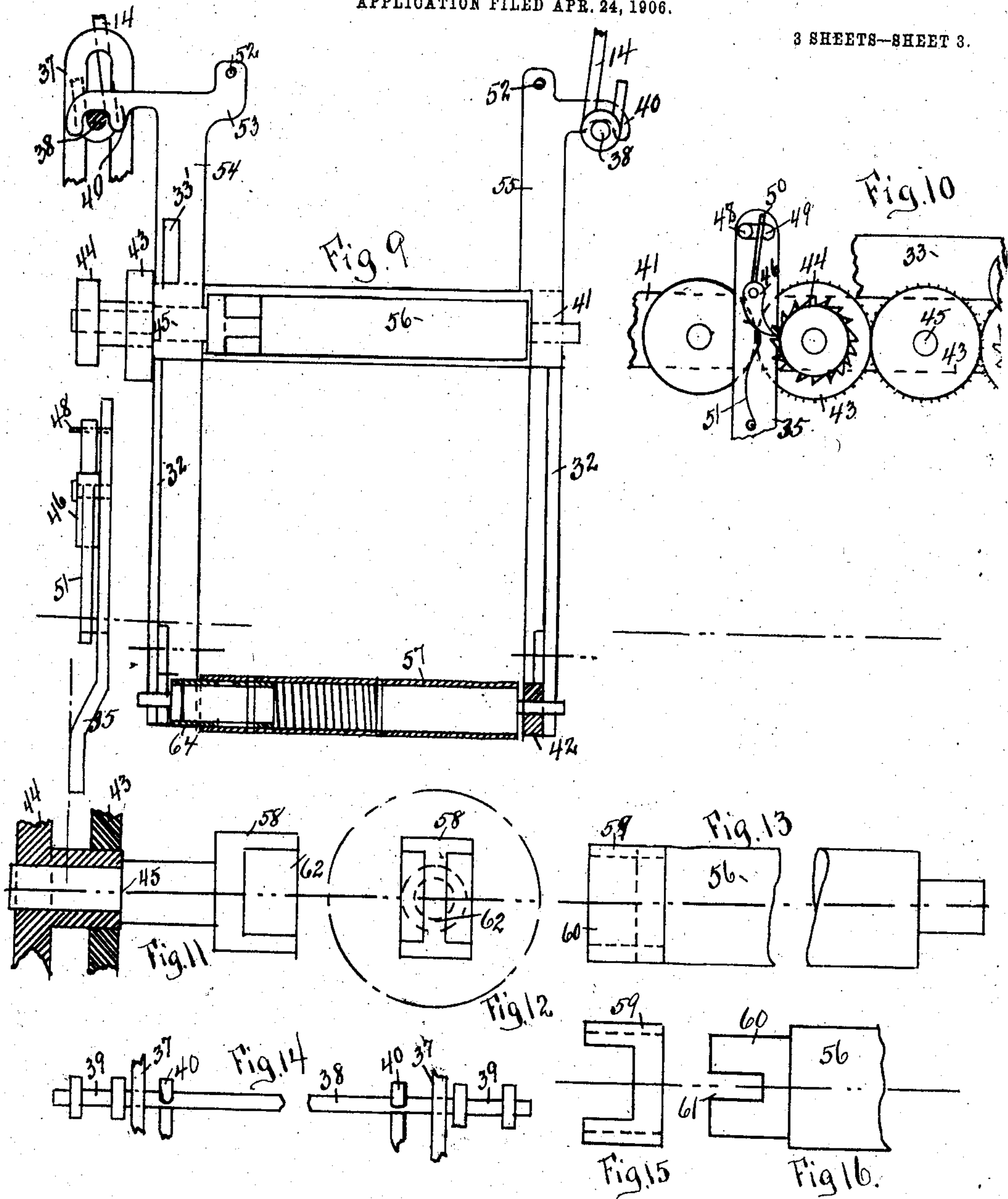
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3 SHEETS—SHEET 3.



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# UNITED STATES PATENT OFFICE.

WILLIAM H. FLETCHER, OF PATERSON, NEW JERSEY.

## DYEING-MACHINE.

No. 834,284.

Specification of Letters Patent.

Patented Oct. 30, 1906.

Application filed April 24, 1906. Serial No. 313,503.

*To all whom it may concern:*

Be it known that I, WILLIAM H. FLETCHER a citizen of the United States, residing at 366 Twelfth avenue, in the city of Paterson, county of Passaic, and State of New Jersey, have invented certain new and useful Improvements in Dyeing-Machines; and I hereby declare that the following is a full, clear, and exact description thereof, which, in connection with the drawings making a part of this specification, will enable others skilled in the art to which my invention belongs to make and use the same.

My invention relates to dyeing-machines; and the object of my invention is economy in labor and liquid, convenient and rapid handling, and uniform dyeing.

In the drawings, Figure 1 is a side view of my invention. Fig. 2 is an end view of Fig. 1. Fig. 3 is a side view of the dyeing-vat with the skein-holder immersed. Fig. 4 is an end view of Fig. 3. The vat is in section. Fig. 5 is an end view of the frame for holding the skeins. Fig. 6 is a plan of the raising and lowering portion of the frame. Fig. 7 is a plan of Fig. 5. Fig. 8 is a side view of Fig. 7. Fig. 9 is an end view showing parts in detail. Fig. 10 is a detail of gearing. Fig. 11 is a detail of parts which hold roller. Fig. 12 is an end view of same. Fig. 13 is a detail of the roller. Fig. 14 is a detail of the rod for lifting frame. Fig. 15 is a detail of end of roller. Fig. 16 is another view of Fig. 15.

In the accompanying drawings, 1 represents the frame supporting the raising and lowering apparatus, 31 the dyeing-vat, and 4 is the driving-pulley for operating the machine.

On the shaft 28, on which the driving-pulley is, there is a gear 5, meshing in a gear 6 on the crank-shaft 11. On the opposite end of the frame there is another crank-shaft, same as the first mentioned 11. This shaft is revolved by means of the gear 9 on the shaft 70 meshing into the gear 8 on the end of the shaft 11'. On the end opposite to the gear 9 there is a chain-gear 26, connected by a chain 27 to the gear 7 on the shaft 11. By this means we get an opposite movement of the cranks on the two crank-shafts. On the gear 9 there is a weight 10 attached in such a position as to counterbalance the weight of the frame with the goods on it.

The dyeing-frame consists of the side por-

tions 32 and the end portions for supporting the rolls 56 and 57. The bottom rolls are constructed the same as shown in a former patent of Wm. H. Fletcher, April 11, 1905, No. 787,285, dyeing-machine, in which one end is pushed in to permit the other end to be removed from the bearing to remove the skeins.

The upper rolls have one end square for the purpose of inserting said end in a similar opening in the back of the gears 43. These gears have a bearing in the piece 41 and mesh in each other, so that the adjacent gears revolve in opposite directions, so that the skeins turning on the rolls would not rub or pull each other should the outside portions touch.

The gears are operated or revolved by means of ratchet-wheels 44, placed on the outside of the gear-wheels 43. These ratchets are acted upon by a number of pawls 36 on a piece 33, which moves in a slide-opening in each side of the frame 32. On the end of this piece 33 there is a small roller 34, which is held against the piece 15 by a spring. When the frame is raised or lowered, the piece 33 moves backward or forward as it passes upward or downward on the slope portion at 15. In this way the rolls are ratcheted around. There is also an auxiliary when more movement is required than the slide will give. There is secured on the top of the vat, a piece 35 to which a pawl 46 is secured. This pawl is held in position to operate by the spring 51, and its movement is limited by a piece 50, which strikes against a pin in the upper part of the piece 35. When the frame is elevated, the pawl 46 engages the ratchet-wheel 44 and gives the additional motion to the rollers with the silk or fabric on. In lowering the frame the spring permits the ratchet-wheel to pass without engaging.

On the sides of the frame there are four pieces with long slots in them, which keep the rods 38 in position and guide them on their up-and-down movement with the aid of collars on said rods. The frame is supported on these rods by the hooked-shaped pieces 40, so that when the rods are raised and lowered by means of the connecting-pieces 14, which connect the cranks 12 with the rods 38, the frame will also be acted on in the same way. This raising and lowering of the



frame with the goods on in the liquid in the vat is for the purpose of keeping the liquid in motion and thoroughly dyeing the goods, the revolving of the rollers with the goods assisting.

To load or unload the frame, the frame is raised out of the vat by means of four chains 16, the ends secured or hooked in the holes in 53 on the frame, and said chains wound on drums 18 on shafts 19 on the upper part of the frame 1. These shafts are operated by worm-gears 21 on the shaft 20 engaging the gears 17 on the ends of the two shafts 19. The shaft 20 is turned by the chain-gear 22 on the shaft 30, turning the chain-gear 24 on the shaft 20 by means of the chain belt 23. There is a handle 29 on the shaft 30 for operating same. The skeins can then be taken from the machine by removing the rolls, as before shown. While this is being done the rods 38 rest in position on the top of the vat, and when the machine is in operation the chains are disconnected and hang free. By this invention the smallest possible quantity of liquid is used and an even dye is obtained. The skeins are not tangled, which would interfere with the winding, and the machine can be very quickly loaded and unloaded.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a dyeing-machine, the frame supporting the rollers the gears and ratchet-wheels attached, the slide with the pawls attached, the piece 15 for operating the slide, the auxiliary pawl 46, spring and piece 50 in connection with said pawl, the hooked portions 53 in connection with the rods 38, the rods 38 and the pieces or slides 37 for guiding said rods; in connection with the removable rollers as and for the purposes set forth and

described in the annexed drawings and specification.

2. In a dyeing-machine the frame supporting the rollers, the ratchet-wheels in connection with the gear-wheels meshing in each adjacent gear to give the skeins on adjacent rolls a motion, so that the portions that would be likely to touch, move in the same direction, the slide with the pawls, the pawl 46, the rod 38, the guide 37; the piece 15: in connection with the connecting-rods 14 and the cranks 12 as and for the purpose of raising and lowering the skeins in the liquid in the vat as and for the purposes set forth and described.

3. In a dyeing-machine the pulley and gear meshing into a gear on the crank-shaft, the crank-shaft the cranks of which operate in connection with the cranks of a second crank-shaft; by means of gears 8 and 9 and chain-gears 7 and 26 and link belt 27, and the counterbalance-weight; to raise and lower the goods in the vat by means of the connecting-rods 14 and rods 38 as set forth and described.

4. In a dyeing-machine the handle 29, the chain-gear 22, the chain 23, the chain-gear 24, the shaft 20, the worms 21, the worm-gears 17, the shafts 19, the drums 18 on which the chains 16 wind, and the lugs to receive the chain-hooks as set forth and for the purpose of raising the frame out of the liquid for the purpose of loading and unloading the same as set forth and described.

Signed at Paterson, in the county of Passaic and State of New Jersey, this 14th day of April, A. D. 1906.

WILLIAM H. FLETCHER.

Witnesses:

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