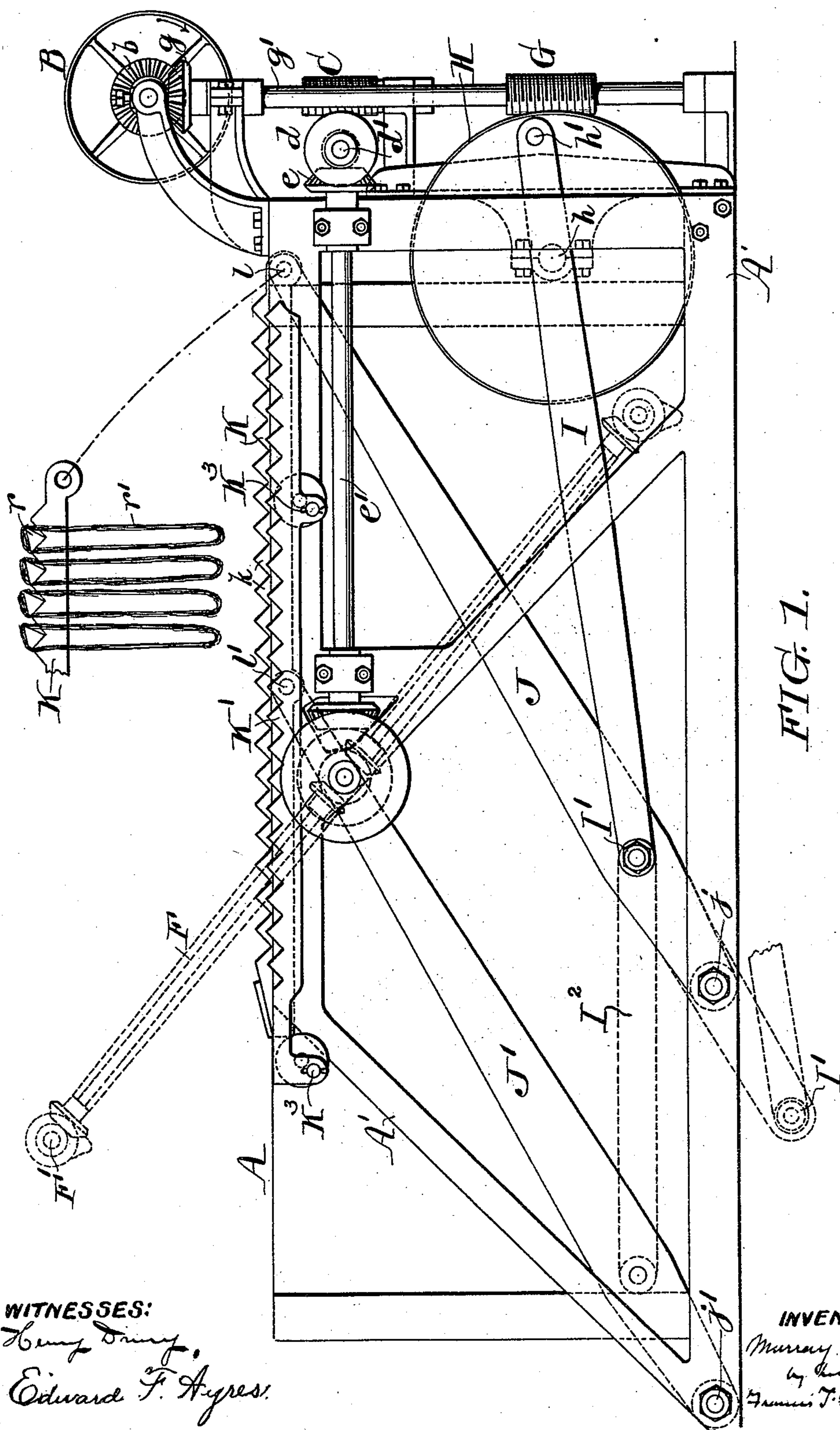


2 Sheets—Sheet 1.

No. 528,584.

Patented Nov. 6, 1894.



WITNESSES:

Henry Denny,
Edward F. Ayres.

INVENTOR!

Murray Bacon
by his atts.
Francis T. Chambers

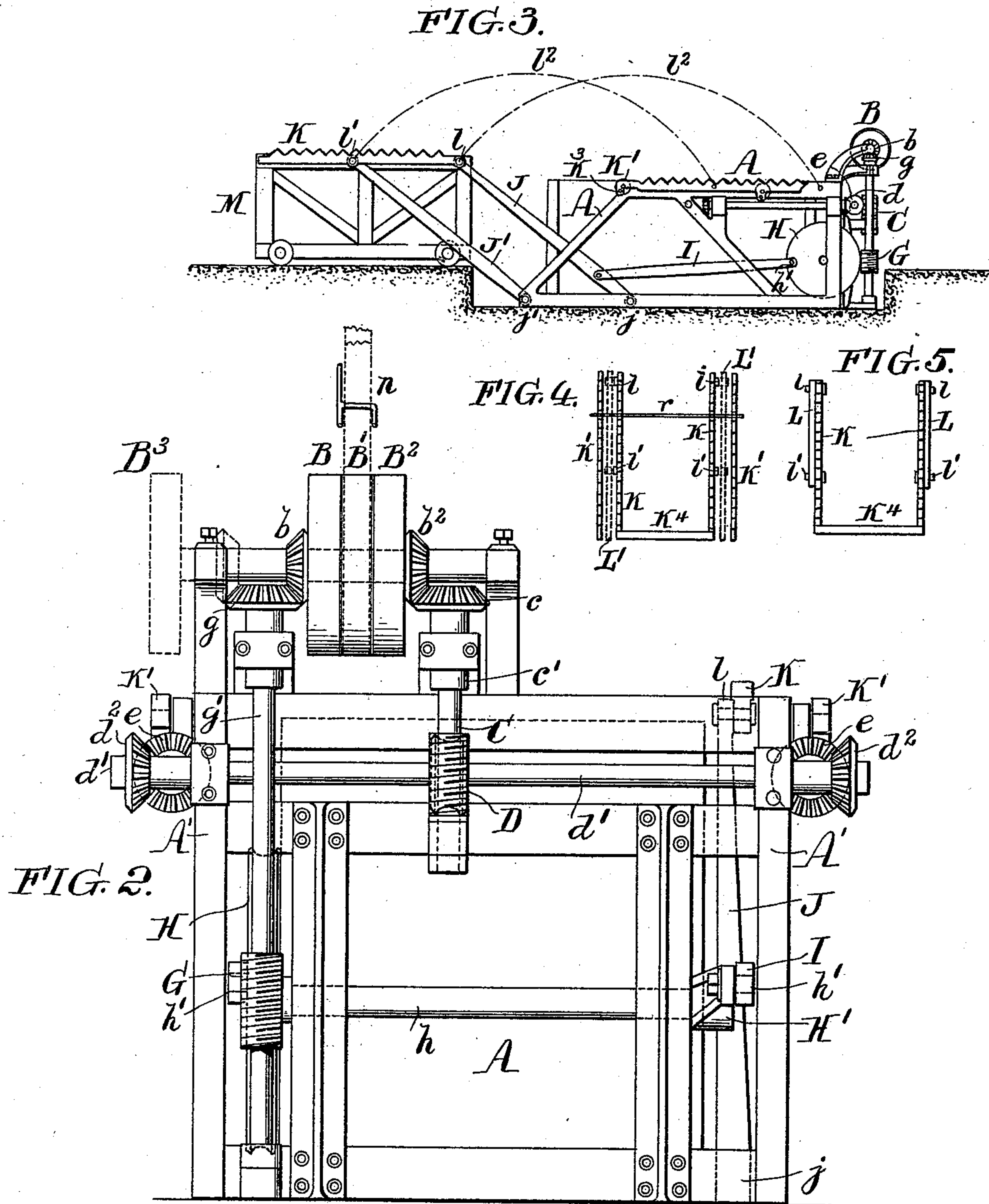
(No Model.)

2 Sheets—Sheet 2.

M. BACON.
DYEING MACHINE.

No. 528,584.

Patented Nov. 6, 1894.



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Murray Bacon
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UNITED STATES PATENT OFFICE.

MURRAY BACON, OF PHILADELPHIA, PENNSYLVANIA.

DYEING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 528,584, dated November 6, 1894.

Application filed January 31, 1894. Serial No. 498,551. (No model.)

To all whom it may concern:

Be it known that I, MURRAY BACON, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia, in the State of Pennsylvania, have invented a certain new and useful Improvement in Dyeing-Machines, of which the following is a true and exact description, reference being had to the accompanying drawings, which form a part thereof.

My invention relates to dyeing machines, and particularly to mechanism for raising the yarns out of the dye liquor, and has for its main object to provide mechanism whereby the yarns may not only be raised from the tank, but carried to one side thereof so that they can be conveniently removed.

My invention is best described in connection with the accompanying drawings, in which—

Figure 1 is a side elevation of a dye tank provided with my improvements. Fig. 2 is an end elevation of a tank, showing the preferred means for operating mechanism both for moving the yarn carrying bars and for lifting them from the tank. Fig. 3 is a side view on a smaller scale with some of the parts removed showing the yarn lifting mechanism in another position. Fig. 4 is a plan view showing one form of yarn bar carrying frame, and Fig. 5 a similar view showing another form of frame, the frames shown in Figs. 4 and 5 being on the scale adopted in Fig. 3.

A is a tank of any suitable size or shape and adapted to hold dye liquor. The yarns as *r* are adapted to be supported in the tank by means of yarn carrying bars *r* which are preferably moved along the edge of the tank by suitable mechanism so as to insure that the yarns will be thoroughly impregnated with the dye liquor. The mechanism I employ for this purpose is preferably that shown in the application of George H. Craven, Serial No. 459,388, filed January 25, 1893, and which consists of a rack *K'* operated by suitable cranks *K*⁸ and which takes all the bars in succession and moves them forward a certain distance at each revolution of the cranks; arms *F* having sockets *F'* being adapted to take single bars as they are brought to one end of the tank by the rack *K'* and carry them back to the other end. In the construction

shown in that application a frame as *K* normally rests on the edge of the tank during the dyeing operation and is adapted to support the yarn carrying bars when they are not being moved by the rack *K'*. In my present invention I provide means for raising the yarn carrying bars out of the tank and carrying them to one side thereof. This raising of the yarn bars is preferably done by the frame *K* which consists, in the construction illustrated in Figs. 1 and 3, of two side bars provided with notches *k* in which the bars *r* rest, and which side bars are preferably connected by means of a cross piece *K*⁴. See Fig. 4. Connected to this frame are means for raising it from the tank and lifting it to one side thereof, so that, as shown in Fig. 3, the yarn may be inspected or deposited upon a truck, as *M*, and removed. These means may be any which are found convenient, but I prefer to arrange suitable arms on the frame of the machine so that the same source of power, which drives the other mechanism of the tank, may be used to operate the arms for raising the frame. As shown in Figs. 1, 3 and 4, arms *J J'* pivoted on the frame *A'* of the machine at *j j'* are secured or pivoted to the frame *K* at *l l'* respectively, so that when the arms are rotated, as indicated by the dotted direction lines in Figs. 1 and 3, the frame will be raised from the tank and carried to one side as shown. In this construction, however, the yarn carrying bars only would be deposited on the truck and the frame would be returned to the tank by the backward movement of the arms *J J'*. In Fig. 5, however, the arms *J J'* are shown pivoted to an auxiliary frame *L L* on which the frame *K* rests, so that the frame *K* may be entirely removed, if desired, with its complement of yarn bars. It is also, of course, obvious, that while it is preferable to employ the rack frame *K* to raise the yarn bars, it is not necessary, since, as shown in dotted lines in Fig. 3, the arms *J J'* may be pivoted to an independent frame *L'* which engages with and lifts the bars. The frame *K* therefore may simply consist of two racks fastened one on each side top edge of the tank.

The preferred form of mechanism for operating the tank is best shown in Figs. 1 and 2. *B B' B*² are pulleys, the pulley *B'* being

loose. The pulley B² through bevel gear b² c transmits motion to a worm C on the shaft c'. This worm C drives a gear D on shaft d' and by means of bevel gears d² e drives the shafts e', one on each side of the tank. The shafts e' drive the arms F and the cranks K³ which serve to move the yarn carrying bars along the tank. The pulley B through gears b and g drives worm G on shaft g'. This drives gear H on shaft h. On the wheel H is a crank pin h' and on a crank H' at the other end of the shaft h a corresponding pin h' as shown in Fig. 2. Pivoted on these pins are arms I which are pivoted to arms J at J' and serve to rotate them, as shown, on the turning of the shaft h.

It will of course be understood that any preferred sort of gearing may be employed, and the gearing shown is simply a very convenient form for effecting the operation desired. The lifting mechanism can of course be driven by an entirely independent motor, as the pulley B³, from that which drives the other mechanisms, but by adopting the construction shown, an important advantage is gained since, one belt being used to drive the pulleys B B², it will be impossible for the lifting mechanism to be put in operation while the racks, or other devices, are engaged in shifting the bars along the edge of the tank. A suitable belt-shifter n is employed to shift the belt from one pulley to another.

Another advantage is that the worm gear G serves as a lock to prevent any movement of the gear wheel H when the worm is not driving it. This enables the operator to raise the yarns out of the dye liquor to drain, or to renew or stuff the liquor, the arms J J' being held securely in any position by the locking action of the worm gear.

It will be noticed that the distance h—h' is less than j—I', that is, the half throw of the crank pin h' is less than the distance from the pivotal point of the arms J to the point where the connecting rod or bar I is pivoted to it, so that a continuous rotary motion of the gear H transmits an oscillating motion to the arms J J'.

In operation, when it is desired to lift and remove the yarns the driving belt is shifted to the pulley B, or if an independent motor is employed to drive the lifting mechanism this is put in operation, and the arms J J' are operated till they are in the position shown in Fig. 3 when the load of yarns can be readily removed and carried off, as by means of the truck M. Another truck can be pushed into place and a new lot of yarns put in position. The motor for operating the arms is again put in operation and the yarns are lifted into the tank by a continuous motion of the motor.

If through inadvertence the shaft h is permitted to continue rotating, the only effect will be to lift the yarns out of and back again into the tank, and so on without danger of breaking anything. The rod I may, of course, be pivoted to the arm J on the other side of

the point j, as indicated in dotted lines, also a bar I² may connect the two arms J J' which, being parallel, will always keep the frame K parallel to the position it has on the tank.

It will be noticed that the arms J J' are preferably pivoted, not to the tank, but on an independent frame A' which enables me to renew the tank or tub without interfering with the means for operating the yarns.

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

1. In a dyeing machine the combination with a tank of a frame adapted to rest on the tank during the dyeing operation and support yarn carrying bars, arms suitably pivoted on the frame of the machine and to the yarn bar supporting frame and means for moving the arms so as to lift the frame from the tank and carry it to one side thereof.

2. In a dyeing machine the combination with a tank of a frame for supporting yarn carrying bars adapted to rest on the edge of the tank, means for moving the yarn carrying bars along the edge of the tank and means for raising the frame and the yarn bars supported thereby from the edge of the tank and carrying them to one side thereof.

3. In a dyeing machine the combination with a tank of a frame for supporting yarn carrying bars adapted to rest on the edge of the tank, means for moving the yarn carrying bars along the edge of the tank and means for raising the frame and the yarn bars supported thereby from the edge of tank and carrying them to one side thereof, said means being so arranged that they cannot both be put in operation at the same time.

4. In a dyeing machine the combination with a tank, a frame adapted to rest thereon during the dyeing operation, two parallel arms J J' pivoted to the frame at one end and also pivoted to the frame of the machine and a connection from a suitable source of power for operating the parallel arms J J' as described.

5. In a dyeing machine the combination with a tank a frame adapted to rest thereon during the dyeing operation, two parallel arms J J' pivoted to the frame at one end and also pivoted to the frame of the machine and a connecting bar I pivoted to one of the arms and adapted to move the arms and the frame connected therewith as described.

6. In a dyeing machine, a tank, means for moving yarn carrying bars along the edge of the tank arms F for carrying the yarn bars to the rear of the tank, means independent of the arms F for raising the yarn carrying bars from the tank, two pulleys, gearing connecting one of the pulleys with the means for moving the bars along the edge of the tank, gearing connecting the other pulley with the raising mechanism and means for shifting a belt from one pulley to the other.

7. In a dyeing machine the combination with a tank, means for moving yarn bars along

the edge of the tank, a frame, on which said bars are adapted to rest arms J J' secured to the frame, and means for operating the arms J J' so as to raise the frame and the yarn carrying bars from the edge of the tank.

5 8. In a dyeing machine, a tank, a frame adapted to rest on the edge of the tank during the dyeing operation and to support yarn carrying bars, means for moving the yarn carrying bars along the edge of the tank, arms J J' secured to the frame, and means, as arm I, operated by crank pin *h'* for operating the arms J J' and the frame, substantially as described.

15 9. In a dyeing machine, a tank, a frame K having suitable notches *k* for supporting and spacing yarn carrying bars, arms J J' secured to the frame and means for operating the arms J J' substantially in the manner specified.

20 10. In a dyeing machine, a tank, a frame adapted during the dyeing operation to rest on the edge of the tank, and support yarn carrying bars, arms J J' secured thereto substantially as specified, a bar I secured to a crank

pin *h'* and adapted to operate the arms J J', the half throw of the crank pin *h'* being less than the distance from the pivotal point *j'* of the arm J to the point I' where the bar I is pivoted to said bar.

30 11. In a dyeing machine, the combination with a worm gear G, of a gear H operated thereby, a tank, a frame for supporting yarn carrying bars above the tank and suitable connections from the gear to the frame whereby the frame is lifted by the rotation of the gear H and held in any desired position by the locking action of the worm.

35 12. In a dyeing machine the combination with a worm gear G, of a gear H operated thereby, a tank, a frame for supporting yarn carrying bars above the tank, arms J J' secured to the frame, a bar I connecting the gear H with one of the arms whereby the frame may be lifted and held in any desired position by means of the worm G and gear H.

MURRAY BACON.

Witnesses:

EDWARD F. AYRES,
D. STEWART.