

2 Sheets--Sheet 1.

J. S. COOKE.

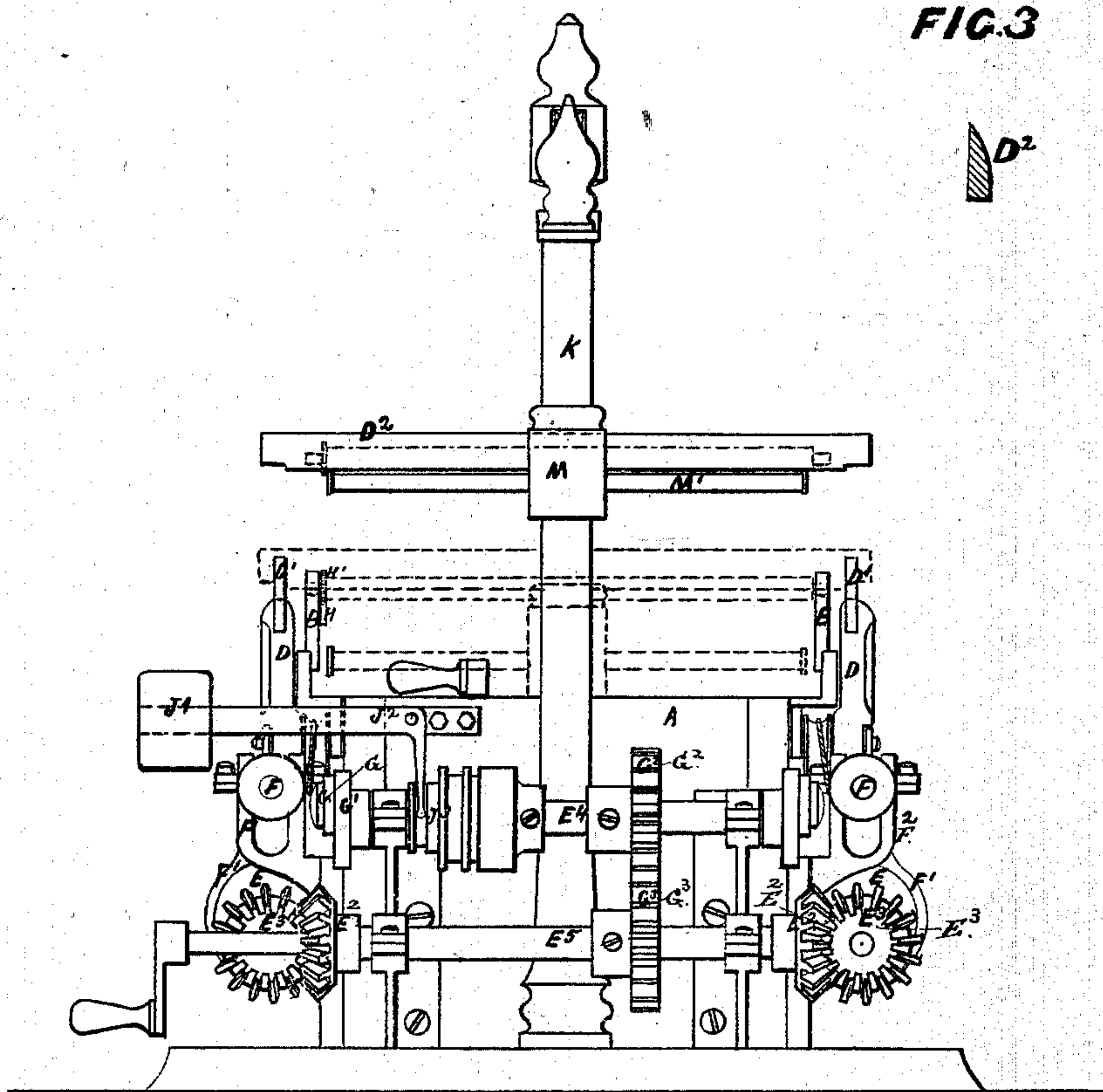
Apparatus for Dyeing Wool, Silk, Cotton, &c., in
the Skeins.

No. 146,320.

Patented Jan. 13, 1874.

FIG 1

FIG 3



Inventor

James S. Cooke

Witnesses

Walter Brinerley
Patent Agent
Halifax Bradford
Charles Brayshaw
Bradford.

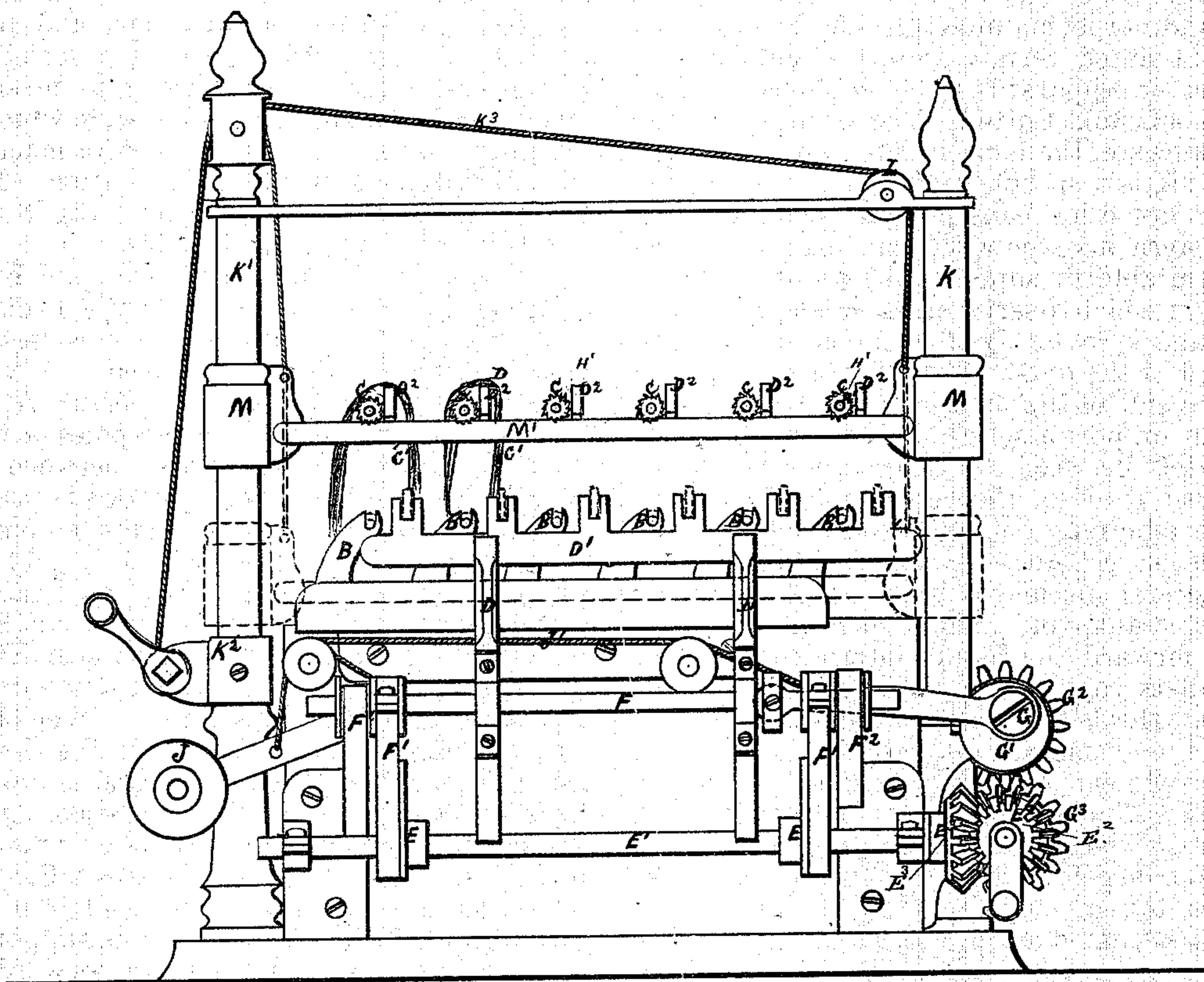
J. S. COOKE.

Apparatus for Dyeing Wool, Silk, Cotton, &c., in
the Skeins.

No. 146,320.

Patented Jan. 13, 1874.

FIG 2



Inventor

James S. Cooke

Witnesses

Walter Brierley

Patent Agent

Halifax Bradford

Charles Brayshaw

Bradford

UNITED STATES PATENT OFFICE.

JAMES S. COOKE, OF LIVERSEDGE, ENGLAND.

IMPROVEMENT IN APPARATUS FOR DYEING WOOL, SILK, COTTON, &c, IN THE SKEIN.

Specification forming part of Letters Patent No. **146,320**, dated January 13, 1874; application filed July 19, 1873.

To all whom it may concern:

Be it known that I, JAMES SAMUEL COOKE, of the firm of Cooke Sons & Law, of Liversedge, in the county of York and Kingdom of England, carpet manufacturers and merchants, have invented certain Improvements in Machinery or Apparatus to be employed in Dyeing Wool, Silk, Cotton, Flax, or other fibrous substances in the hank or skein, of which the following is a specification:

This invention consists of an ordinary dyeing cistern or vessel with bearers fixed on each side suitable to support a series of rollers or bars, on which a series of the hanks of fibrous substances to be dyed are placed and suspended in the dye-liquor. A frame is applied to each side of the cistern having bearers suitable to support a series of poles or rods intermediately between the rollers, each pole passing also through the series of hanks on one of the adjoining rollers, respectively. These frames have both a rising and falling as well as a lateral motion given to them by eccentrics or cranks and rods in such manner as to draw forward the hanks intermittently over the rollers, catches being provided to take into ratchet-wheels fixed on the rollers to hold them at each movement, thus turning the hanks or drawing them through the liquor in the cistern in a similar manner as is now done by hand, the hanks or skeins being prevented from coming in contact with the sides of the cistern by a roller supported longitudinally upon bearings fixed at or near the top of each side of the cistern. A standard is fixed at or near each end of the cistern, and to one of these is attached a winch-roller driven by a small pinion geared into a larger spur-wheel, the small pinion being operated by an ordinary winch-handle. From the winch-roller two chains proceed over pulleys in a cross-head supported at a sufficient elevation above the cistern, and from this cross-head a frame or creel is suspended by means of the two chains for the purpose of carrying the poles and rollers together with the hanks or skeins, and for lowering and lifting the same into and out of the cistern, as required, and the arrangement is such that when the hanks are in the cistern the frame or creel lies dormant immediately below and in readiness to lift the said poles and rollers by means of the winch.

Such being the nature and object of this my said invention, I will now proceed to describe the same in detail; and in order that the same may be clearly understood, I have hereunto annexed two sheets of drawings, and have marked the same with figures and letters of reference, the same letter referring to the same part in the various views or figures, in which—

Figure 1 is an end elevation of a machine constructed according to my invention. Fig. 2 is a side view of the same, and Fig. 3 is a detail of one of the rods or poles.

A is the dyeing cistern or vessel, and B are the bearings fixed on each side of the machine. These bearers support a series of rollers, C, on which the hanks C' are placed. D D are frames, one at each side of the cistern A, the bearers D¹ of which support the poles or rods D², as shown, within the spaces between the rollers. Each of these poles or rods is passed through the series of hanks on the adjoining roller, respectively. The frames D D have both a rising and falling as well as a lateral motion given to them by the eccentrics E E on the shaft E¹, actuated by the bevel-gear E² E³. The eccentrics E E are connected to the cross-shaft F by the eccentric straps F¹. The shaft F is thus caused to rise and fall in the slotted bearings or guides F² F², the lateral motion of the frames and poles and hanks being obtained through the agency of the cranks G, attached to the disks G¹ and to the cross-shaft F. The motion of the crank-shaft is derived from the spur-wheels G² G³, and so the hanks supported on the rollers and poles are drawn forward intermittently over the rollers' stage by stage-catches H and ratchet-wheels H' being applied to the end of each roller C to prevent the slipping backward of the roller and hank. J J are counterbalance-weights, communicating, by means of the cords or chains J¹, with the shaft F, for the purpose of assisting the eccentrics to raise the said shaft-frame, poles, and yarn. At J² is shown a bell-crank lever, the end of the lower arm being received within the groove of the friction-clutch J³. The other arm of the crank carries an adjustable weight, J⁴, for keeping the friction apparatus J³ in contact and driving the machine, the weight J⁴ being so adjusted that should the hanks become entangled, or from other cause the machine be deranged, then the additional power

required to drive the same becomes greater than the friction apparatus will give, and so the going parts of the machine cease to move, and breakage and loss are avoided. K and K¹ are standards. To the standard K¹ is fixed the winch and roller K², the chains or cords K³ from which are passed over the guide-pulleys L L, and to the guides M of the frame or creel M', the latter being for the purpose of lifting the rollers C, poles, and hanks out of and above the dyeing-cistern, the catch-wheel N and catch P being employed for holding the said creel, rollers, poles, and hanks above the dyeing-cistern while the hanks are draining or when the machine is not in operation, the said creel being of further utility for lowering and immersing the hanks from time to time during the preparation of the dyeing matter within the vessel A, and to facilitate the placing and replacing the hanks on the poles.

In the drawings I have shown the creel partially raised on the standards K K¹, the hanks, rollers, and poles being carried, as described, above the vessel A; and in such drawings the said creel is also shown in dotted lines at its lowest or dormant position; or, in lieu of the eccentrics E E, for lifting the frames and poles, bell-crank levers, actuated by tappets from the shafts E⁴ and E⁵, may be employed.

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

1. The frames D, operated by the eccentrics E E and the connecting-straps F¹, substantially as shown and described.

2. In combination with the shaft-frame D and poles D², the counterbalance-weights J J and eccentrics E E, substantially as and for the purposes set forth.

3. In combination with the frame D and poles D², the cranks G G and disks G¹, substantially as and for the purposes described and set forth.

4. In combination with the rollers of dyeing apparatus, such as described, the catches H and ratchet-wheels H', arranged and operating substantially as and for the purposes described and set forth.

5. The combination of the friction-clutch J¹, bell-crank lever J², and adjustable weight J⁴, substantially as and for the purposes specified.

JAMES S. COOKE.

Witnesses:

WALTER BRIERLEY,
Patent Agent, Halifax and Bradford.
CHARLES BRAYSHAW, *Bradford.*