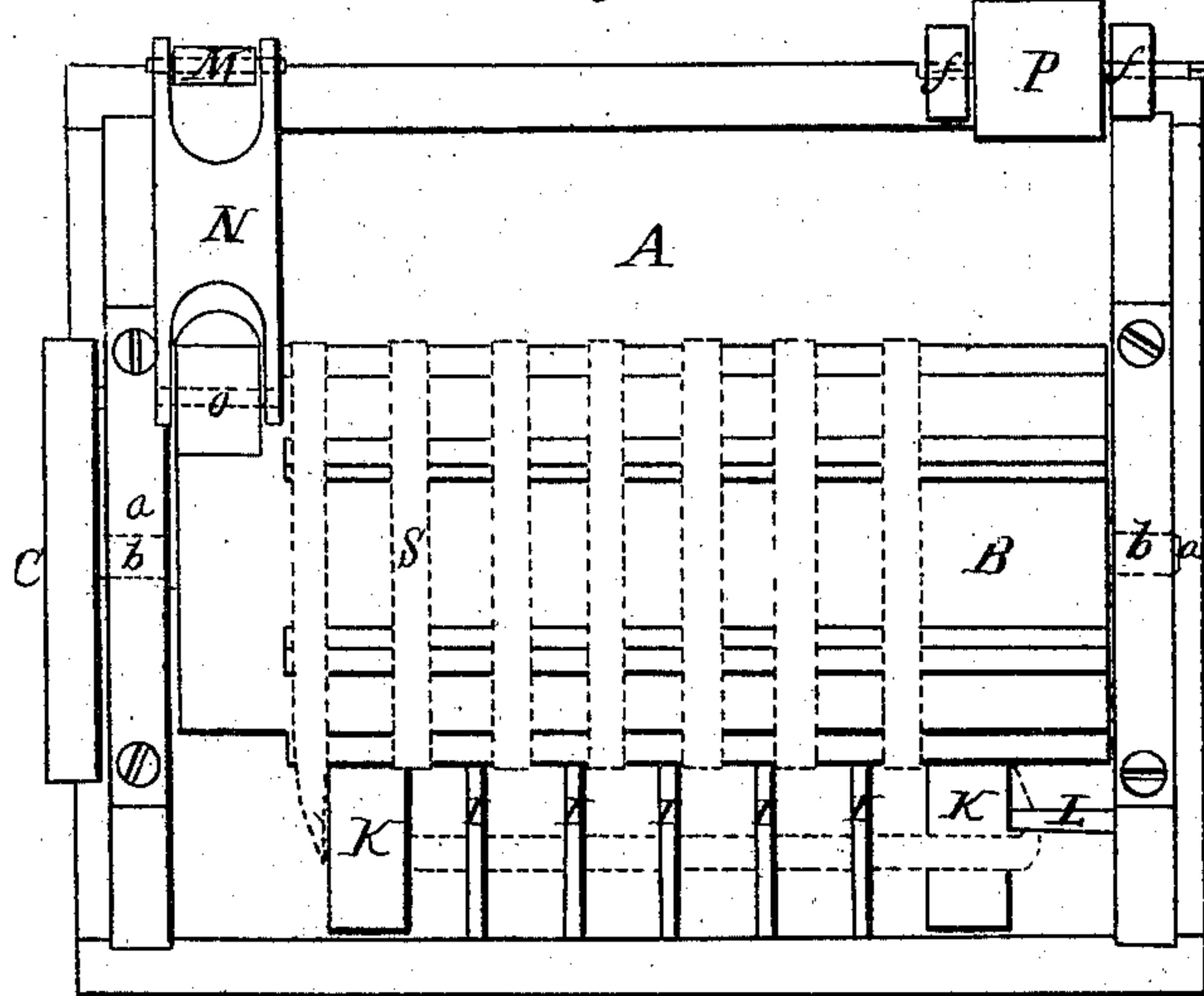
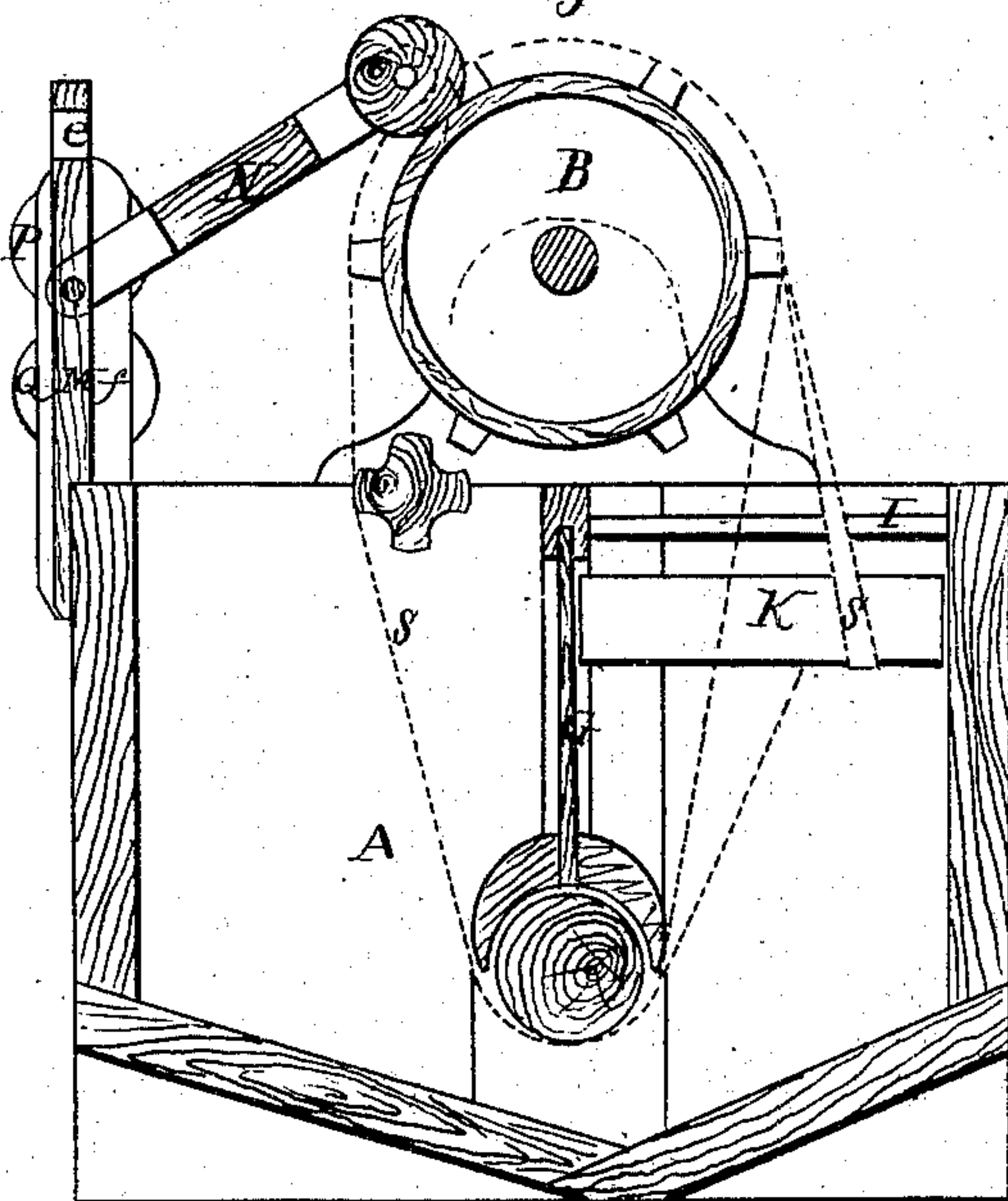


*H Burrows*  
*Dyeing Apparatus*  
*No 74985* *Patented March 3 1868*

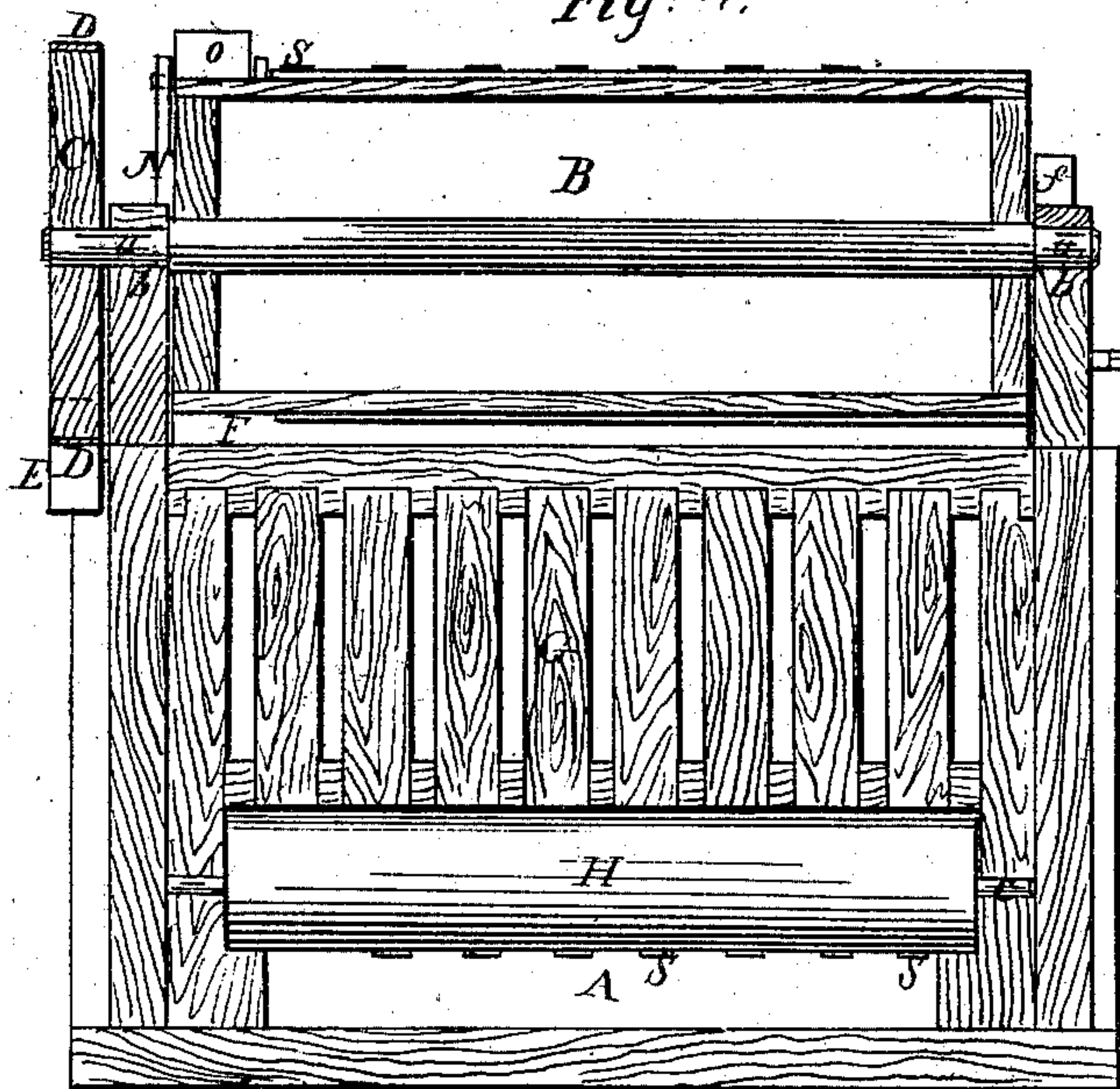
*Fig. 1:*



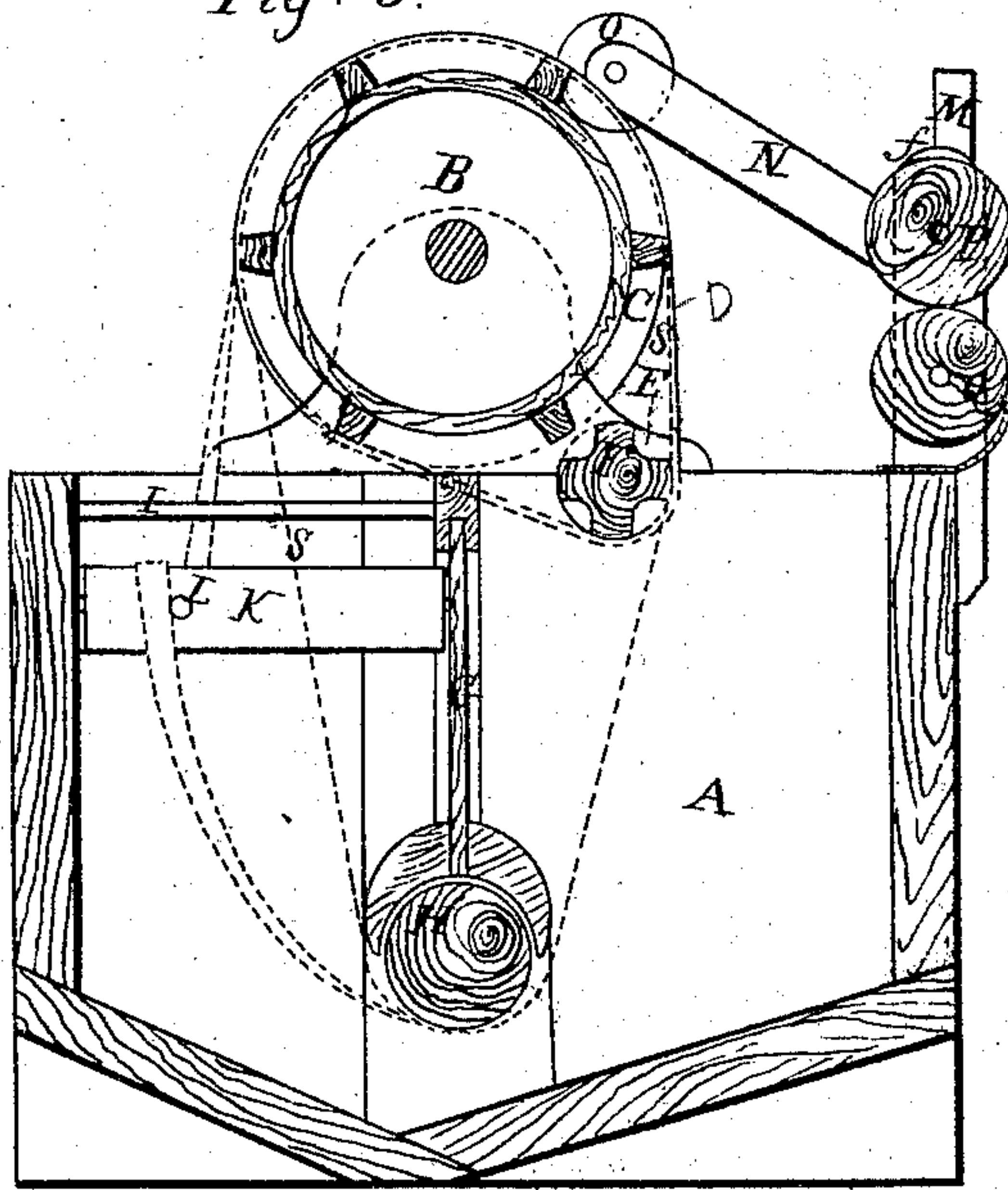
*Fig. 2*



*Fig. 4.*



*Fig. 3.*



*Witnesses.*

*Samuel N. Piper*  
*J. R. Snow*

*Inventor:*

*H. Burrows.*

*by his attorney.*

*R. H. Eddy*



# United States Patent Office.

HENRY BURROWS, OF LOWELL, MASSACHUSETTS.

*Letters Patent No. 74,985, dated March 3, 1868.*

## IMPROVED APPARATUS FOR DYEING PIECE GOODS.

*The Schedule referred to in these Letters Patent and making part of the same.*

### TO ALL PERSONS TO WHOM THESE PRESENTS MAY COME:

Be it known that I, HENRY BURROWS, of Lowell, in the county of Middlesex, and State of Massachusetts, have invented a new and useful Apparatus for Dyeing "Piece Goods;" and I do hereby declare the same to be fully described in the following specification, and represented in the accompanying drawings, of which—

Figure 1 is a top view,

Figures 2 and 3 are transverse sections, and

Figure 4 is a longitudinal section of it.

In such drawings, A denotes a kettle, vat, or reservoir for containing dyeing-liquid. Lengthwise over the said reservoir A, a ribbed cylinder, drum, or roller, B, is arranged, and has its journals *a a* supported in boxes or bearings *b b*, erected on the ends of the reservoir. A pulley, C, fixed on the shaft of the said drum B, carries an endless belt, D, which travels on a smaller pulley, E, fixed on the shaft of another and smaller ribbed roller, F, arranged with respect to the drum B in manner as represented in figs. 2 and 3, and of equal or about equal length with it. This roller F is for the purpose of preventing any of the coils of the piece of cloth, while loose and being subjected to the action of the apparatus, from passing underneath and adhering to the lower part of the drum B.

A grating, G, extends across the reservoir A, from end to end, and underneath the roller B, and has beneath it another roller, H, whose lower edge is placed a short distance above the bottom of the reservoir. The axis of the roller H is parallel to that of the roller B, and the journals *c c* of such roller H are to be so applied to the ends of the reservoir as to be capable of being freely revolved therein.

Furthermore, there extends from the upper bar of the grate-frame, to one side of the reservoir, a series of guide-bars, I I I, &c., such series being flanked by two round guide-bars or rollers, K K, which are arranged, with respect to the series, in manner as shown in figs. 1, 2, and 3. An arm or guide, L, also projects from one end of the reservoir toward one of the rollers K, in manner as shown in the drawings. There is also attached to one side of the reservoir a post, M, having an eye or hole, *e*, through its upper part. To this post a forked arm, N, is hinged, so as to be capable of being turned upward in a vertical plane. Such arm carries a roller, O, which rests on the curved surface of the drum B, near one end thereof.

Two squeeze-rollers, P Q, arranged as represented, and having their shafts sustained in two posts, *f f*, extended up from one side of the reservoir, may be applied to such reservoir, for the purpose of effecting the removal of a piece of goods from it after such piece may have been dyed. These rollers also serve to expel from the piece the surplus dyeing-liquid, and cause it to fall back into the reservoir. A crank is to be applied to the shaft of the lower roller, to enable such roller to be put in revolution.

To introduce a piece of cloth, S, into the apparatus, one end of the piece is to be passed through the eye *e*, and thence carried through the inner fork of the arm H, and between the roller O and the drum B, the roller O being next brought down so as to rest on the piece and press it closely in contact with the drum. Next, by revolving the drum, the piece may be drawn into the reservoir as fast as circumstances may require. The end of the piece is next to be passed down underneath the next adjacent roller K; thence to and over the other roller K; next, it should be carried down against the outer side of the arm L; thence down underneath the roller H; thence up to and against the roller F and over the drum B; thence down against the inner side of the next adjacent roller, K; next, down underneath the roller H; next, up against the roller F; next, over the drum B; thence down between the first and second of the guide-bars I; thence around the roller H and the drum B, and down between the second and the third of the guide-bars I, the same being continued until finally the two ends of the piece are to be sewed or tied together. By revolving the drum, the coils of the whole piece will be caused to revolve and pass into and out of the reservoir, or the dyeing-liquid, when therein, the process being kept up until the thorough dyeing of the piece of cloth may be effected.

By means of this apparatus, a belt of cloth, composed of several pieces stitched together, may be run through the dyeing-liquid, or a piece woven long enough to make several of such pieces of any given number of yards. Each may be run through and dyed by it.

The advantage of this machine over the common dyeing-machine, in which, in order to dye several separate pieces of cloth, each of them has to be extended about and hung from the drum of the machine, and have its

two ends tied together, so as to make of it an endless belt, as it were, is, that it saves the waste which results from the imperfect dyeing of each of the pieces where tied at its ends. In my machine, the whole piece or band of cloth is carried in a helix about the rollers and between the guide-bars, and thus can be dyed to better advantage and with more expedition.

What I claim as my invention, is—

The combination as well as the arrangement of the series of guides I, and either bars or rollers K, with the reservoir, its drum B, and roller H, the whole being to operate together as described, with a piece of cloth applied to them, in manner as set forth.

I also claim the arrangement and combination of the guide-arm L with the system of guides I, bars or rollers K, drum B, roller H, and reservoir A.

I also claim the combination and arrangement of the pressure-roller O and forked arm N, or the same and the post M with the reservoir, its drum, rollers, and guides, arranged as set forth.

I also claim the combination and arrangement of the roller F with the reservoir A, the drum B, the roller H, and the system of guides I, or I and K, applied to the said reservoir, and arranged with the drum B and roller H, substantially as specified.

HENRY BURROWS.

Witnesses:

R. H. EDDY,

F. P. HALE, Jr.