

(No Model.)

S. SPENCER.

APPARATUS FOR DYEING, SIZING, AND WRINGING YARN.

No. 332,964.

Patented Dec. 22, 1885.

FIG. 1.

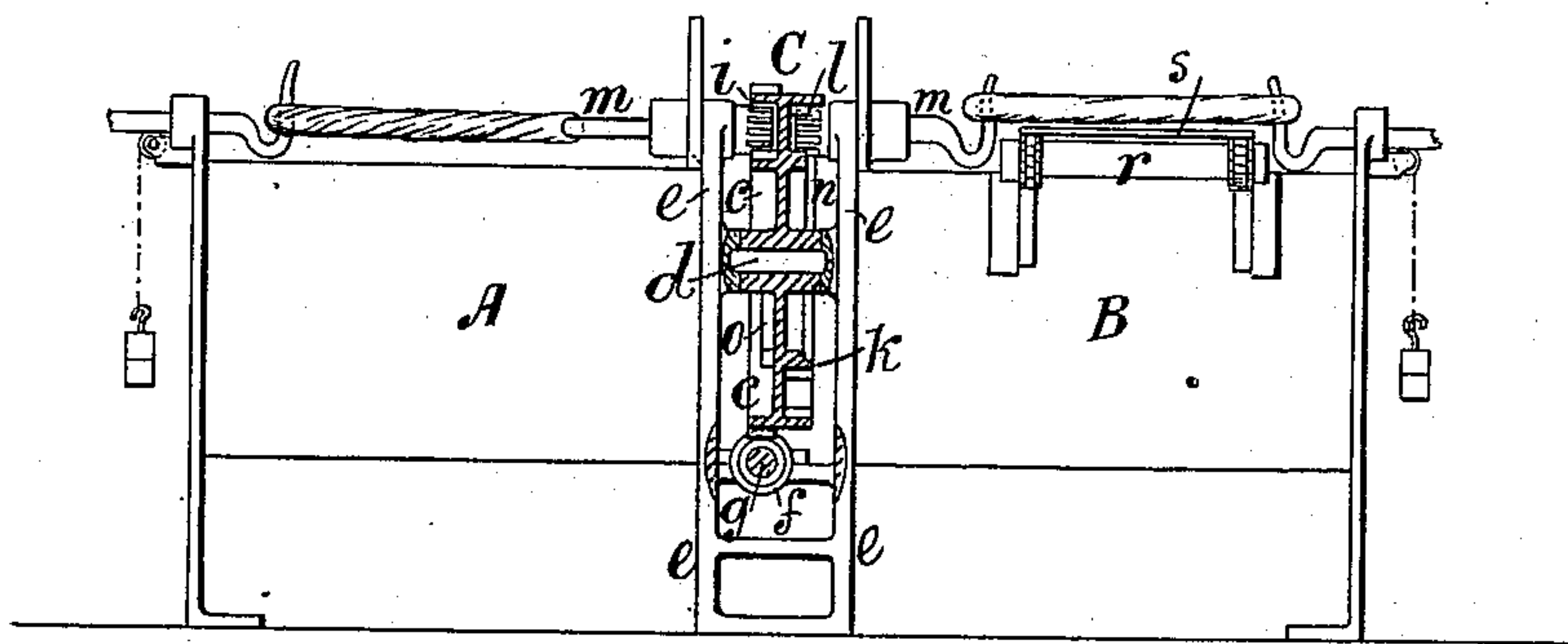


FIG. 2.

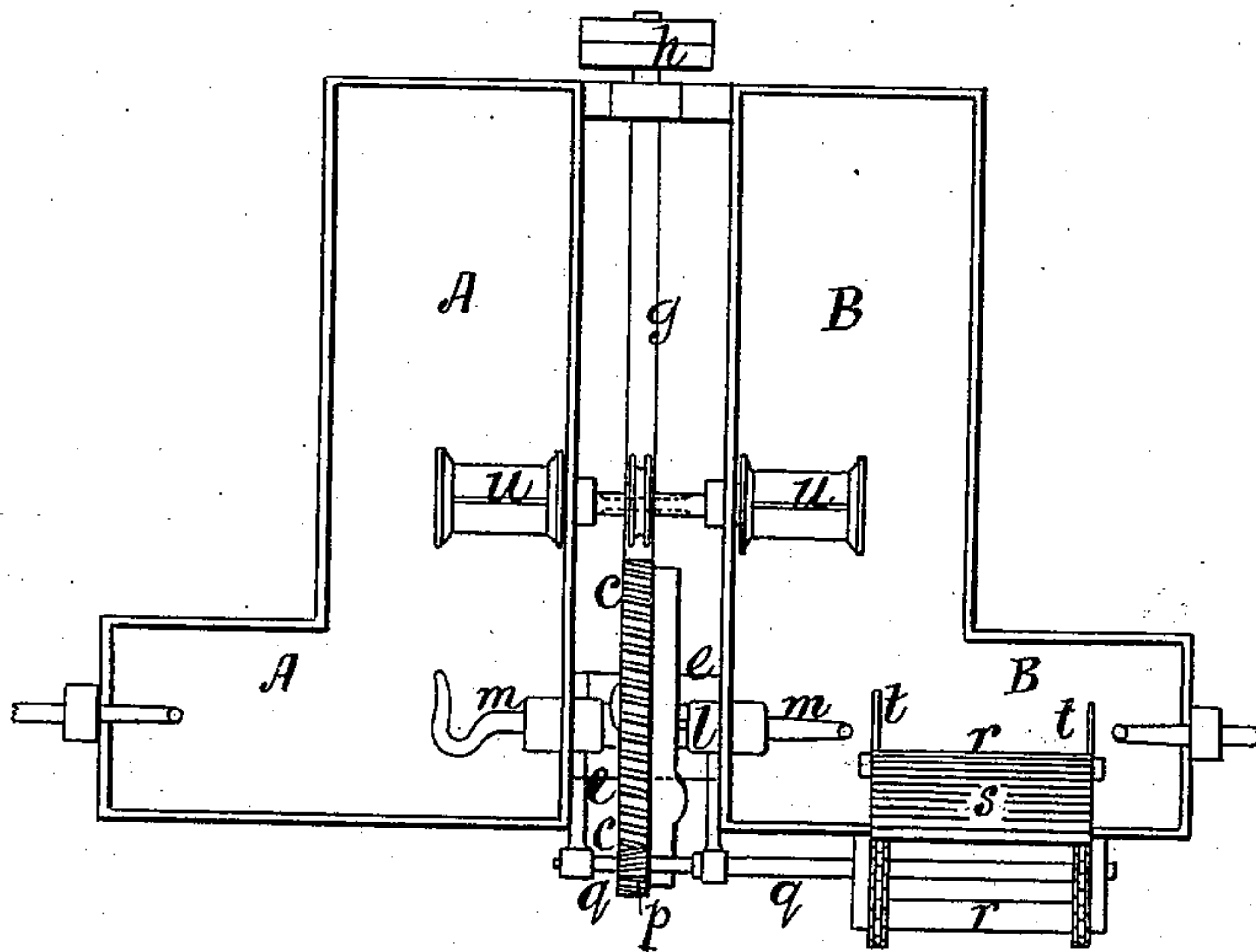


FIG. 3.

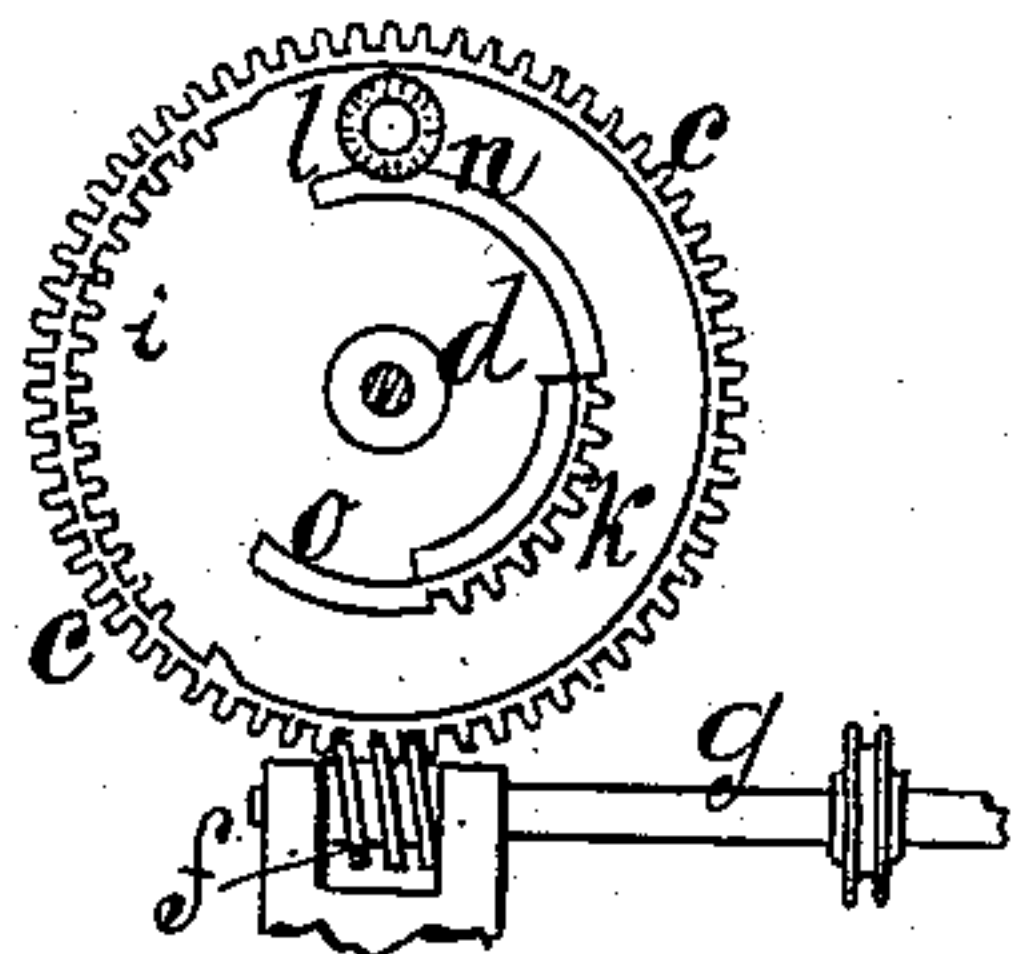
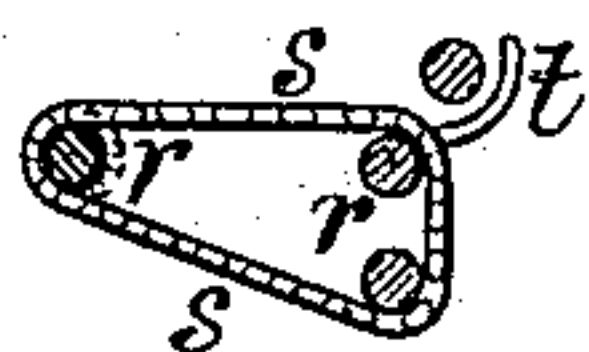


FIG. 4.



Witnesses:  
John E. Parker  
James J. Tobin.

Inventor:  
Samuel Spencer  
by his Attorneys  
Brown &amp; Co.

# UNITED STATES PATENT OFFICE.

SAMUEL SPENCER, OF RADCLIFFE BRIDGE, COUNTY OF LANCASTER,  
ENGLAND.

## APPARATUS FOR DYEING, SIZING, AND WRINGING YARN.

SPECIFICATION forming part of Letters Patent No. 332,964, dated December 22, 1885.

Application filed August 24, 1885. Serial No. 175,202. (No model.) Patented in England August 5, 1882, No. 3,746.

*To all whom it may concern:*

Be it known that I, SAMUEL SPENCER, a subject of the Queen of Great Britain, and residing at Radcliffe Bridge, in the county of Lancaster, England, have invented Improvements in Machinery or Apparatus Employed in the Dyeing, Sizing, and Wringing of Hanks, (and for which I have obtained a patent in Great Britain, No. 3,746, dated August 5, 1882,) of which the following is a specification.

This invention consists of apparatus employed in the dyeing, sizing, and wringing of hanks in dyeing or sizing operations, and has for its object to effect the rotation, dwell, and reversal of the rotating hooks; and to effect the removal of the hanks from the hooks I employ a double internal segmental spur-wheel having cast or formed on each side spur-segments, which are concentric with the axis of the wheel, and external and internal segments gearing alternately with pinions on the hook-spindles, whereby the hooks are caused to rotate in opposite directions to twist and untwist the hanks. The hooks are caused to dwell after each movement by means of curved surfaces, which prevent the rotation of the said pinions. The hank is removed from the hooks by means of fingers attached to a traveling apron, which receives the hank and delivers it into a receptacle.

In order that this invention may be fully understood, I have attached hereunto a sheet of drawings illustrative of a sizing-machine constructed in accordance with the invention.

In the said drawings, Figure 1 represents a sectional elevation, and Fig. 2 a plan, of the machine, Fig. 3 being a detached view of the reversing-motion.

In the said figures, or in some of them, A B are two vats or cisterns of an ordinary or suitable construction, between which cisterns is mounted the reversing-motion C. A worm-wheel, *c*, is mounted upon a shaft, *d*, which is secured in a framing, *e*, which is fixed to the two vats. A worm, *f*, fixed or formed upon a shaft, *g*, gears with the said worm-wheel, and the said shaft is provided with flat and loose strap-driving pulleys *h*, whereby the worm-wheel is caused to revolve. The wheel *c* is formed or provided on each side with a seg-

ment of internal spur-teeth, *i*, and with a segment of external spur-teeth, *k*. These segments engage alternately with spur-pinions *l* on the spindles of the hooks *m m*, whereby the said hooks are caused to rotate first in one direction and then in the other, the segments on one side of the wheel driving one hook and the segments on the other side driving the other hook. On each side of the wheel are cast or fixed curved surfaces or segments, without teeth, *n* and *o*. One of the teeth in each pinion is shorter than the others, and the parts are so proportioned as that at each dwell of the hook the short teeth shall be opposite to one or the other of the two segments *n o*, as represented in Fig. 3. In this case the said short tooth enables the segment *n* to come into contact or nearly into contact with the tooth which is on each side of the short tooth, so that the pinion is prevented from turning until, by the rotation of the wheel, the said segment has passed away, so as to leave the pinion free to turn. The shroud of each pinion is formed with a tooth with which a projection on the wheel comes in contact at the required times, to start the rotation of the pinion; but this may be dispensed with if not considered to be necessary. A pinion, *p*, fixed on the shaft *q*, gears with the teeth of the worm-wheel *c*, and on this shaft and upon two carrier-rollers, *r r*, is mounted an endless apron, *s*. To this apron are fixed two curved fingers, *t t*. (Seen in Fig. 4, which is a sectional view of the said apron.) The rotation of the shaft *q* causes the apron to have a traveling motion, and the parts are so proportioned as that during each dwell of the hook after the untwisting movement the fingers *t* come below the hank, as in Fig. 4, and lift the hank off the hooks. By the continued movement of the apron the hank is carried over the edge of the vat, and is deposited in a receptacle, which may be conveniently placed to receive it.

The action of the machine is as follows: The worm-wheel *c* rotates continuously in one direction, and the hooks are revolved by the action of the teeth *i* in one direction to wring hanks. The segments *o* then hold the pinion to give the dwell of the hooks to allow time for the "wiping-off." The hooks are then rotated



in a reverse direction by the action of the teeth *k*, to untwist the hanks. The hooks then make a longer dwell, during which the pinions are held by the longer segments *n*, the hanks being removed and replaced with fresh hanks during this interval. The removal of one hank is effected by hand, the other hank being removed by the action of the apron, as hereinbefore described.

10 In the example the vat B is supposed to be for sizing and the vat A for "washing-off;" but this will be varied according to the use for which the machine is intended, and in some cases one or both of the vats will contain dye.

15 I may apply a taking-off apron to both vats, instead of to one only. The spur-segments are by preference so situated on the wheel *c* as that one hook shall commence to rotate a little before the other; or they may be so arranged as that one hock shall be twisting while the other is untwisting.

The machine is provided with bobbins *u*, to hold hanks, as is usual, these bobbins receiving a revolving motion from the driving-shaft.

I wish it to be distinctly understood that I 25 lay no claim to either of the hereinbefore-described parts of my invention separately.

I claim as my invention—

The combination of the wheel *c*, having internal and external spur-segments and hold- 30 ing-segments *n* *o*, with hooks, of which one has a pinion, *l*, the traveling apron, and fingers for removing the hanks, substantially as and for the purpose set forth.

In testimony whereof I have signed my name 35 to this specification in the presence of two subscribing witnesses.

SAMUEL SPENCER.

Witnesses:

GEORGE DAVIES,  
JOHN HUGHES.