

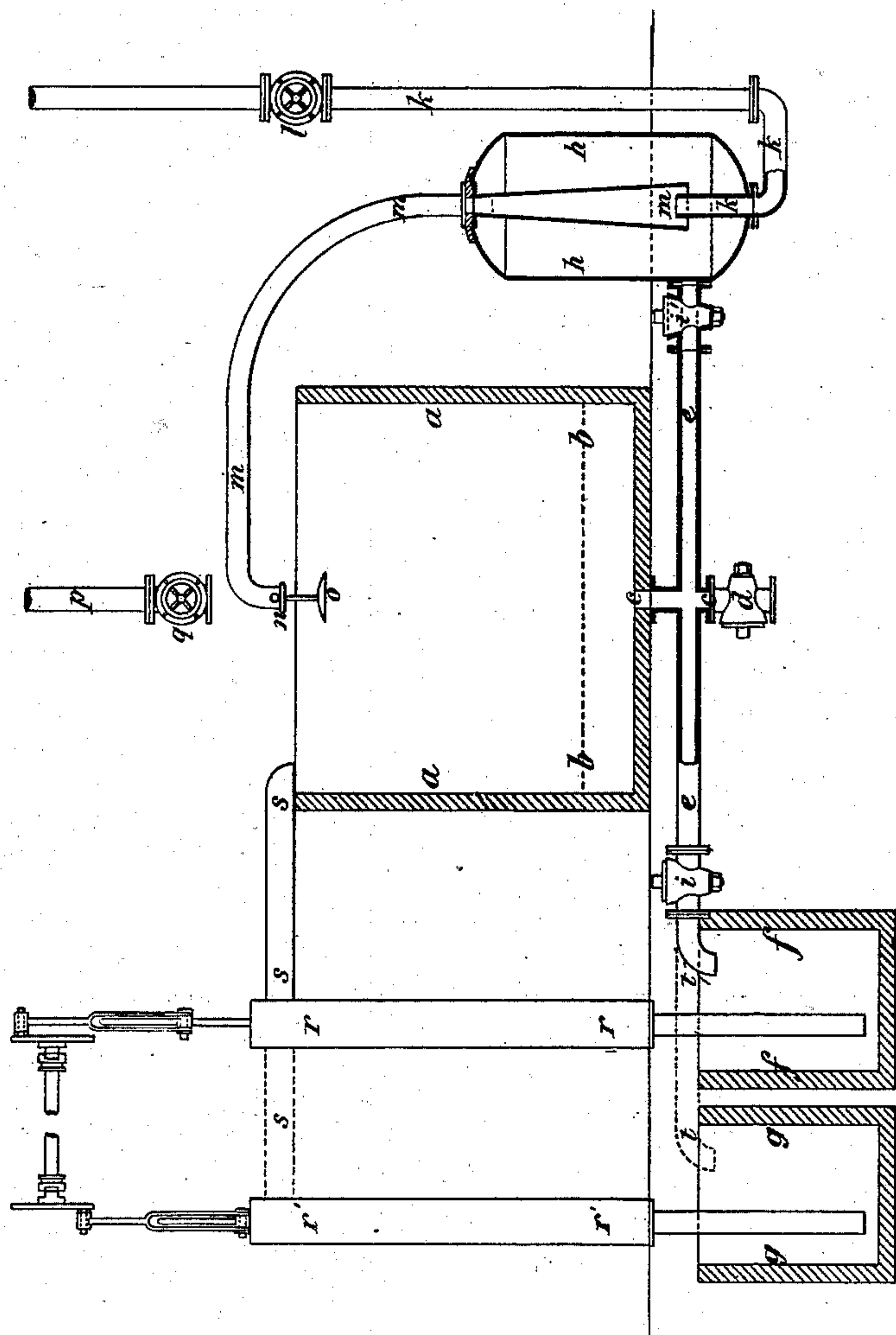
(No Model.)

C. E. BENNETT.

APPARATUS FOR BLEACHING YARN, &c.

No. 258,355.

Patented May 23, 1882.



Witnesses
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UNITED STATES PATENT OFFICE.

CHARLES E. BENNETT, OF BIRCH VALE, NEAR STOCKPORT, COUNTY OF DERBY, ENGLAND.

APPARATUS FOR BLEACHING YARNS, &c.

SPECIFICATION forming part of Letters Patent No. 258,355, dated May 23, 1882.

Application filed February 6, 1882. (No model.) Patented in England January 7, 1880, No. 66.

To all whom it may concern:

Be it known that I, CHARLES EDWARD BENNETT, a subject of the Queen of Great Britain and Ireland, and residing at Birch Vale, near Stockport, in the county of Derby, England, have invented improvements in the construction of apparatus used for bleaching cotton or other yarns, cops, or cloth, (for which I have obtained a patent in Great Britain, No. 66, dated January 7, 1880,) of which the following is a specification.

This invention relates to the bleaching of cotton or other yarns, cops, or cloth in an open keir or vessel; and the principal advantages of the improved construction of apparatus are that the whole process of bleaching—viz., “ashing” or “liming,” “chemicking,” “souring,” soaping, and watering—can be performed without disturbing the contents of the keir, whereas in an ordinary keir, after bleaching—that is, ashing or liming—the contents have to be taken out to be chemicked and soured, and then placed again in the keir if required to be bleached a second time, causing an extra expenditure of labor and time, and the contents of the keir, (whether yarns, cops, or cloth,) not requiring to be disturbed, are kept in one position during the whole time, so that they are not liable to become disarranged or broken, and this is more especially important in bleaching cops.

Such being the nature and object of my said invention, I will now proceed to describe in detail the manner in which the same is to be or may be performed or carried into practical effect, and in order that the same may be clearly understood I have annexed hereunto a partial sectional drawing illustrative thereof, and have marked the same with letters of reference corresponding with those in the following explanation thereof.

I employ an open keir or vessel, *a a*, made of wood or other suitable material, which is supported upon pillars or otherwise, and is provided with a perforated false bottom at *b b*. From the center of the bottom of the keir, below the false bottom, a pipe, *c c*, leads to a waste-tap, *d d*, above which are two branch pipes, *e e*, one leading to the “chemic” well *f f* and “sour” wells *g g* and the other to a closed receiver, *h h*, outside the keir *a a*. Both

these branch pipes are provided with stop-taps *i i*. To the bottom of the receiver *h h* is connected a steam-pipe, *k k*, (provided also with a stop-tap, *l*), and the end of this steam-pipe projects upward and is carried into the open mouth of a conical tube, *m m*, the upper end of which passes upward through the top of the receiver *h h*, where it is bent over and terminates in an open mouth at *n*, above the center of the open keir *a a*, where it is provided with a disk or “spreader,” *o*, for distributing the liquor over the goods. Above the keir there is also a water-pipe, *p*, furnished with a stop-tap, *q*. At the side of the keir *a a* farthest from the receiver are the chemic and sour wells *f f* and *g g*, each provided with a pump, *r r*, and a wooden trough, *s s*, leading into the top of the keir.

The branch pipe *e* before mentioned (leading from the bottom of the keir) may be provided at the end with a piece of elastic tubing, *t t*, so that it can be made to communicate either with the chemic or the sour well *f f* or *g g*, as may be required; or two pipes and two taps may be employed for this purpose, if preferred.

The method of using this apparatus is as follows: All the taps being closed and the yarn, cops, or cloth being placed in the keir *a a*, the water-tap *q* is first opened and the keir filled with water to the desired level. The water-tap *q* is then closed and the necessary quantity of bleaching liquor or powder is added. The steam-tap *l* and that of the pipe *e* communicating between the bottom of the keir *a a* and the receiver *h h* are now opened. The liquor will then commence running from the bottom of the keir into the receiver *h h*, and the steam will force the liquor up the conical pipe *m m*, which distributes it over the top of the keir *a a*, and thus a constant circulation of the liquor through the goods in the keir will be kept up. When the bleaching process has been working long enough then the two last-mentioned taps *l* and *i* must be closed and the waste-tap *d* be opened, so as to let the liquor out of the keir. The water-tap *q* is now opened again and the goods are “showered” with water, after which the water and waste taps *q* and *d* are to be closed and the tap *i* in the branch pipe *e*, leading from the keir to the chemic-well

ff, is to be opened. The chemic-pump *rr* is
 now set to work and will cause a continuous
 circulation of the chemic liquor through the
 goods in the keir *aa*, and when this chemick-
 5 ing process has been carried on long enough
 the pump *rr* is to be stopped, and the liquor
 will flow off into the chemic-well *ff*. The tap
i in the branch pipe *e* is then closed, and the
 water and waste taps *q* and *d* are to be opened
 10 and the goods showered again with water, as
 before. All the taps are then closed with the
 exception of that communicating from the bot-
 tom of the keir to the sour-well *gg*. The "sours"
 pump *r'* is now set to work, which will keep
 15 up a continuous flow of sours, and when
 worked long enough the action of the pump
 is to be stopped and the liquor run off into the
 sour-well *gg*. The tap *i* of the branch pipe *e* is
 then to be closed and the goods showered with
 20 water, as before, after which the water-tap *q*
 is to be closed and the yarn allowed to drain.
 The waste-tap *d* is then to be closed and the
 water-tap *q* opened to fill the keir to the de-
 sired level. Then close the water-tap *q* and add
 25 the necessary quantity of soap. The steam-
 tap *l* and the tap *i'*, communicating between
 the bottom of the keir *aa* and the receiver *h*
h, is then to be opened and the soap-liquor
 will commence running from the bottom of the
 30 keir *aa* into the receiver *h h*. The steam will
 force the liquor up the conical pipe *mm*, which
 distributes it over the top of the keir *aa*, and
 thus a constant circulation of the liquor through
 the goods will be kept up, and when this has
 35 worked long enough the two last-mentioned
 taps (*l* and *i'*) must be closed and the waste-
 tap *d* be opened, so as to let the liquor out of
 the keir. The water-tap *q* is now to be opened

again and the goods are showered with water,
 as before, or they may be washed by hand, if 40
 preferred.

If it is necessary to bleach a second time or
 oftener, the same process can be repeated as
 many times as required without disturbing 45
 the contents of the keir.

I may here observe that, although I recom-
 mend a receiver as the best means of injecting
 the liquor into the keir on account of having
 no pipes inside the keir for the chemic or sours
 to act upon, it is not absolutely necessary to 50
 employ a receiver, as an injector alone will do;
 or the liquor may be thrown from the false bot-
 tom direct up a conical pipe in the center of
 the keir by means of a steam-pipe entering the
 mouth of the conical pipe, as in the receiver, 55
 or as is done in an ordinary iron keir; but in
 this case such steam-pipe and conical pipe
 would have to be either made of lead or else
 be protected by a casing of wood or some suit-
 able composition which would resist the action 60
 of the chemic and sours.

I claim—

The combination of an open keir, *a*, valved
 outlet *c*, and valved branches *e e'* with well or
 wells and corresponding pumps for receiving 65
 the discharged liquids through one branch, and
 a closed vessel, *h*, communicating with the oth-
 er branch, steam-pipe *k*, and pipe *m*, all sub-
 stantially as described.

In testimony whereof I have signed my name 70
 to this specification in the presence of two sub-
 scribing witnesses.

CHARLES E. BENNETT.

Witnesses:

CHARLES DAVIES,
 JNO. S. HUGHES.