



**No. 661,295.**

**Patented Nov. 6, 1900.**

**C. RIGAMONTI & G. TAGLIANI.**

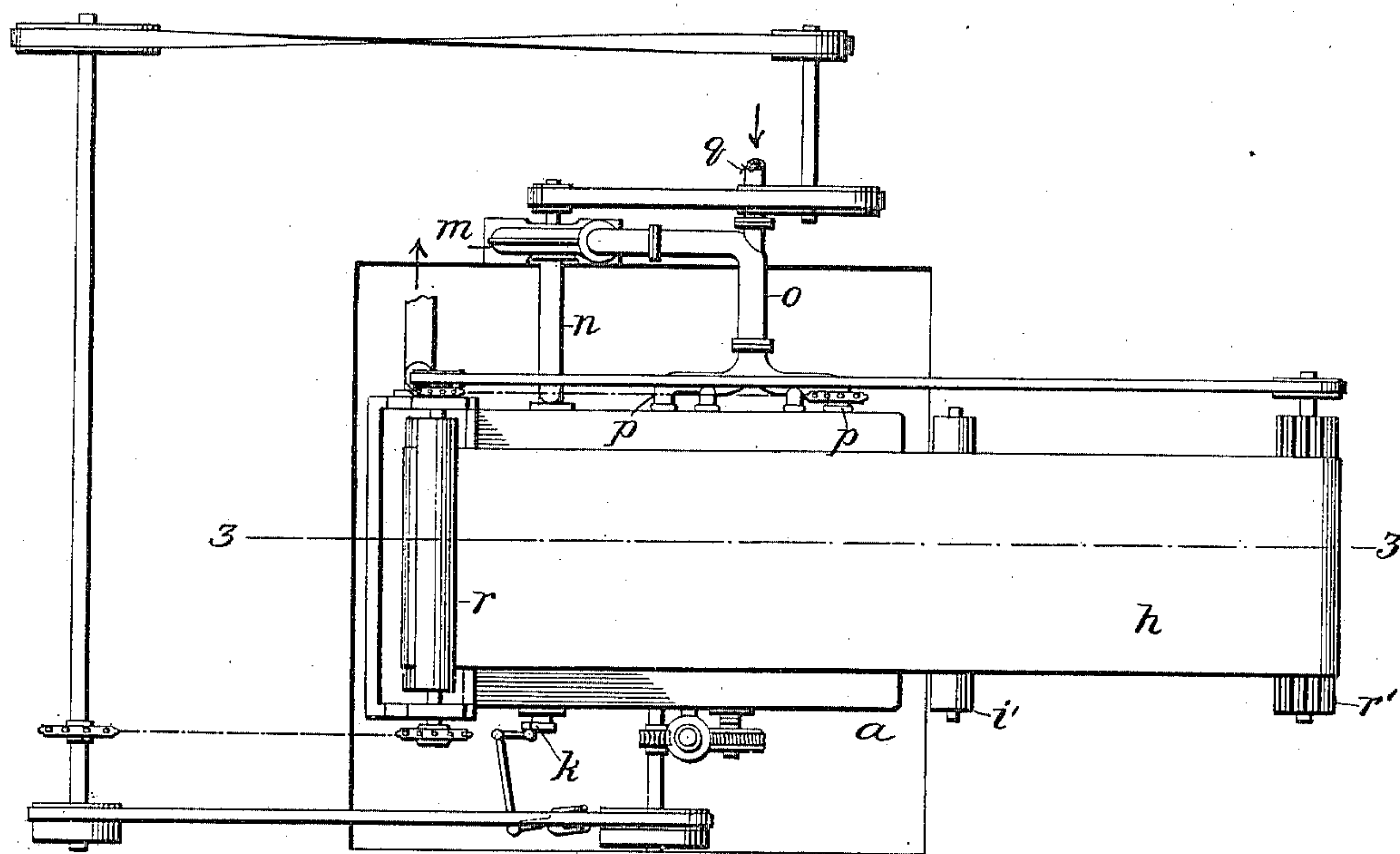
KEIR FOR BLEACHING.

(Application filed Aug. 22, 1900.)

(No Model.)

**4 Sheets—Sheet 2.**

*Fig. 2.*



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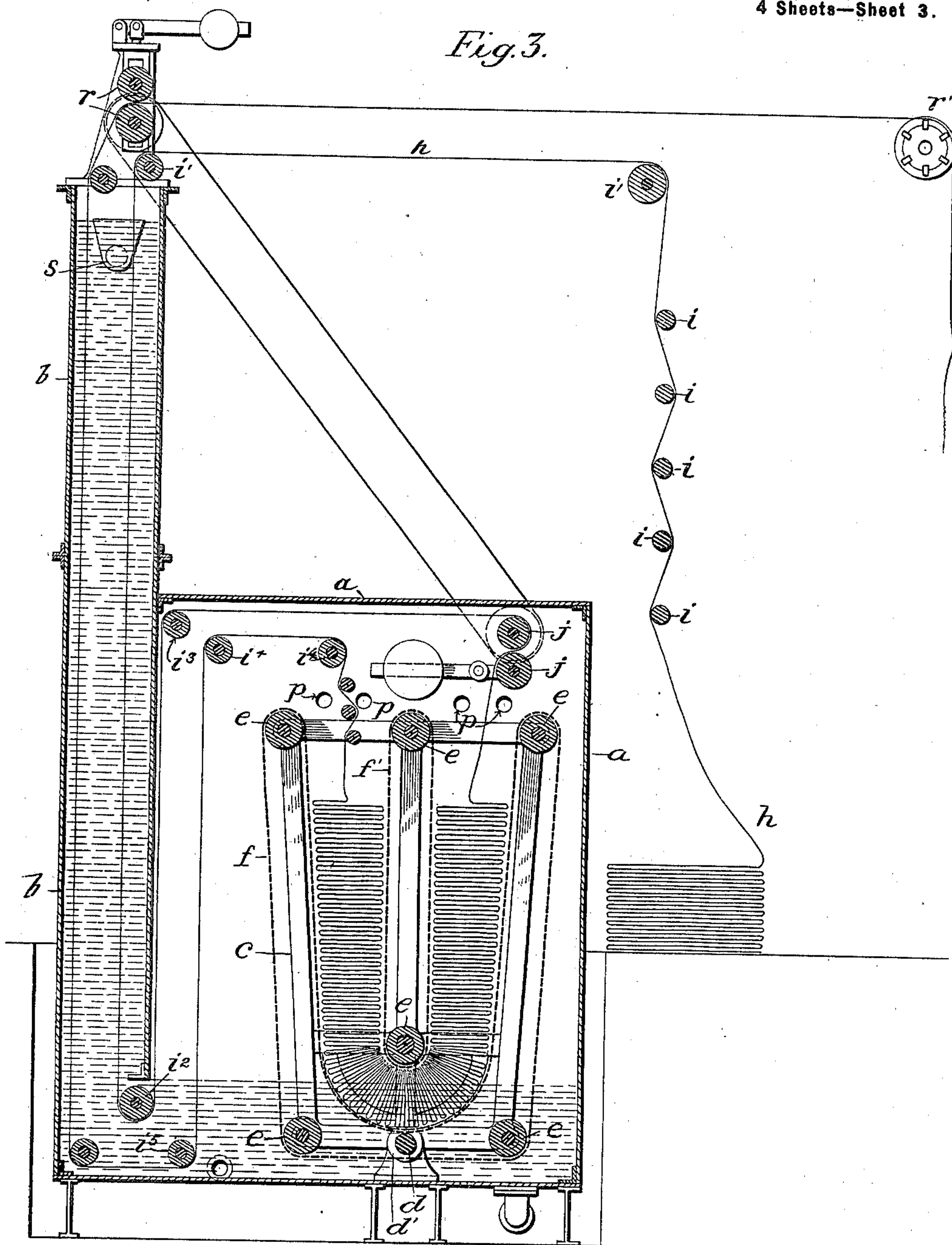
KEIR FOR BLEACHING.

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(No Model.)

**4 Sheets—Sheet 3.**

*Fig. 3.*



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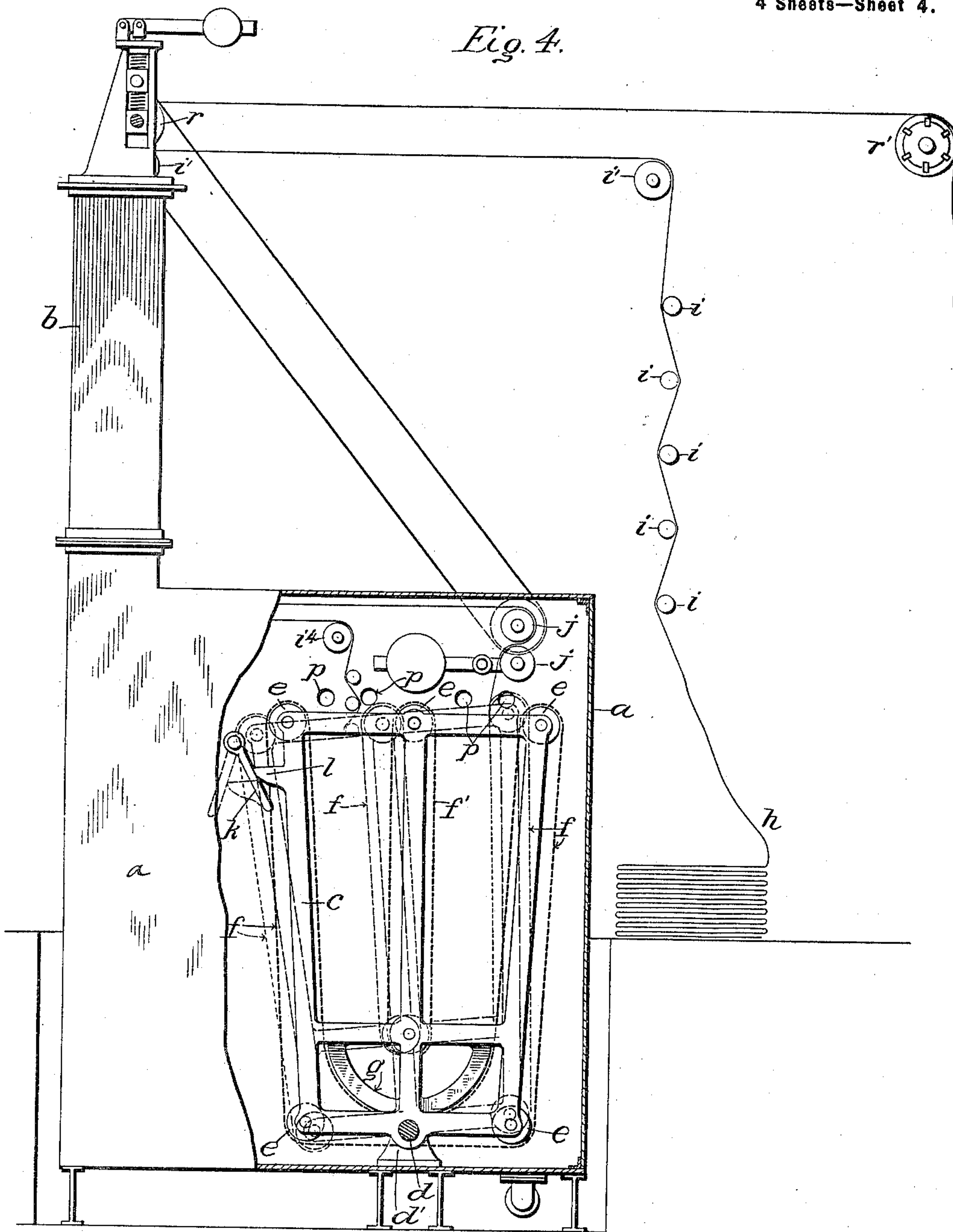
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4 Sheets—Sheet 4.

Fig. 4.



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# UNITED STATES PATENT OFFICE.

CARLO RIGAMONTI AND GIOVANNI TAGLIANI, OF MILAN, ITALY.

## KEIR FOR BLEACHING.

SPECIFICATION forming part of Letters Patent No. 661,295, dated November 6, 1900.

Application filed August 22, 1900. Serial No. 27,650. (No model.)

*To all whom it may concern:*

Be it known that we, CARLO RIGAMONTI and GIOVANNI TAGLIANI, citizens of the Kingdom of Italy, residing at Milan, Italy, have invented certain new and useful Improvements in Keirs for Bleaching Cotton Fabrics, of which the following is a specification.

The tedious and time-consuming intermittent charging of the keirs used in bleaching cotton and other textile fabrics has led within recent years to the substitution of these keirs by continuously-working keirs, so as to simplify the handling of the fabrics and cheapen the treatment of the same. These keirs, however, have the advantage that the boiling of the fabrics is now accomplished in the same perfect manner in which it was accomplished by the old-style keirs and of the continuously-operating keirs, without possessing the disadvantages of either one, so that by much smaller relative dimensions of the keir a much better cleaning of the fabrics is obtained. Another important advantage of our improved apparatus, however, is that the movement of the fabrics through the steam and liquor is regulated by a self-acting stop-motion, by which the motion of the feed-aprons is interrupted without arresting the motion of the fabrics until the proper equilibrium of the fabrics to be treated is obtained.

For this purpose the invention consists of a keir containing a U-shaped channel formed by two parallel endless feed-aprons, in which channel the fabric is piled up, so as to be saturated by the liquor from the top of the keir while being simultaneously subjected to the action of high-pressure steam, and means for imparting motion to the feed-aprons independently of the feed motion of the fabric.

The invention consists, further, of a keir provided with an interior oscillating frame for the ways, endless parallel feed-aprons forming a U-shaped channel supported in said frame, said frame being tilted when one leg of the channel is overweighted by the fabric, and a stop motion actuated by the tilting frame, so as to interrupt automatically the feed of the fabric until the equilibrium of the same in the frame is reestablished.

In the accompanying drawings, Figure 1 represents a side elevation of our improved keir for bleaching cotton fabrics. Fig. 2 is a

plan view of the same. Fig. 3 is a vertical longitudinal section of the same on line 3 3, Fig. 2, through the keir and the traveling feed-aprons; and Fig. 4 is a like section showing the traveling feed-aprons in elevation.

Similar letters of reference indicate corresponding parts.

Our improved keir is constructed of a rectangular casing *a*, of a boiler iron, which is made air and water tight and which is connected at one side with an upwardly-extending trunk *b*, of considerably greater height than the casing, as shown in Figs. 1 and 3. The trunk is open at its upper end, so that the fabrics can be introduced through the same to the interior of the casing *a* and returned to the outside after having been subjected to the cleaning action within the casing. In the casing *a* are arranged two traveling feed-aprons *f f'*, which are preferably composed of two endless aprons made in the nature of folding shutters or of link chains having rounds, the outer feed-apron *f* being approximately of U shape, while the inner feed-apron *f'* is made straight and located centrally between the outer feed-apron, so that they form a U-shaped channel or receptacle in which the fabric is closely piled up across its entire width, as shown in Fig. 3. The piling up of the fabric in the U-shaped channel or receptacle is accomplished in the manner in which the fabric was heretofore piled up in bleaching-keirs of this class.

The guide-rollers *e* of the traveling feed-aprons *f f'* are supported in a frame *c*, which oscillates by a pivot *d* in suitable lugs *d'* at the bottom of the casing *a*, the frame *c* being provided with a nose *l*, (shown in Fig. 4,) by which an automatic stop-motion is actuated.

The apparatus is operated as follows: The fabric *h* is guided in its full width over rollers *i*, which are arranged vertically one above the other, and then conducted over top rolls *i'* to the opening in the upper end of the trunk *b* first in a downward direction through the same and then over a roll *i''* at the lower end of the trunk and over the roll *i'''* in the upper corner of the casing *a*, adjacent to the trunk, to the upper part of the casing, and then between tension-rollers *j j* into the right-hand leg of the U-shaped channel formed by the



traveling feed aprons or chains, then around the rounded-off lower part of the channel, and then through the left-hand leg of the channel. The fabric is piled up in folded  
 5 layers in the U-shaped channel and then carried from the left-hand leg of the channel over top rolls  $i^4$  and bottom rolls  $i^5$  back into the trunk  $b$  and through the same in upward direction through pressure-rollers  $r$   $r$  to the  
 10 outside of the apparatus, and then over guide-rollers  $r'$  for further treatment. The space in the casing  $a$  is partly filled with a lye liquor which under the steam-pressure in the same rises in the trunk  $b$  to some distance  
 15 below its top, at which point a discharge-opening  $s$  for the impure liquor is provided. The liquor is introduced, by means of a steam-injector, which simultaneously heats the liquor, and by spray-pipes  $p$   $p$ , into the casing  $a$  in  
 20 such a manner that it is sprayed over the layers of the fabric piled up in the U-shaped channel and passed through the layers of the fabric to the lower part of the casing. The stem that is introduced with the liquor into  
 25 the casing  $a$  assumes gradually such a pressure that a liquid column is formed by the liquor in the trunk  $b$ . The liquor has to be kept continuously in motion, which is accomplished by a circulating-pump  $m$ , Fig. 2, that  
 30 is connected by a pipe  $n$  with an opening near the bottom of the casing, so as to suck off the liquor and force it through a supply-pipe  $o$  and the perforated spray-pipes  $p$   $p$  back into both legs of the U-shaped channel formed by  
 35 the feed-aprons in the casing  $a$ . As continuously a portion of the impure liquor is passed off through the overflow-opening  $s$  from the apparatus, a corresponding quantity of new liquor has to be supplied. This is accom-  
 40 plished by a pipe  $q$ , which is connected with the injector and which terminates in the supply-pipe  $o$ . In this manner the fabric is intimately saturated with the liquor in the same manner as in the old-style keirs heretofore in  
 45 use. The feed-motion—that is to say, the supplying and conducting off of the fabric  $h$ —has to be such that both legs of the U-shaped channel are always filled evenly with piled-up layers of the fabric, so that the frame  $c$   
 50 retains its vertical position. In case it should happen, however, that the left-hand leg of the U-shaped channel is filled to a greater extent with fabric than the right-hand leg, then the greater weight of the fabric produces  
 55 the tilting of the frame  $c$  toward the left, so that its nose  $l$  abuts against an arm  $k$ , which is pivoted in the side wall of the casing and connected at its outer end with a belt-shifting device. The turning of the arm  $k$  pro-  
 60 duces, therefore, the shifting of the driving-belt from the fast pulley of the traveling feed-aprons to the loose pulley, so that the motion of the feed-aprons is interrupted. The feed and return motion of the fabric, however, is  
 65 not interrupted during the stopping of the

feed-aprons, so that within a short time the weight of the fabric accumulating in the right-hand leg of the U-shaped channel will be sufficient to return the frame  $c$ , and with it the traveling feed-aprons  $f$   $f'$ , into their nor-  
 70 mal vertical positions, so that the driving-belt is automatically shifted from the loose to the fast pulley, and thereby the motion of the feed-aprons resumed. For positively guiding the  
 75 outer feed-apron it is advisable to guide the links of the same in grooved semicircular guide-frames  $g$ , as shown in Fig. 3.

The motion of the feed-aprons is, as before described, independently of the motion trans-  
 80 mitted to the feed-rollers, by which the fabric is moved over the guide-rollers in the keir. The feed and return motion of the fabric is accomplished by means of the feed-rollers  $J$   $J$  in the interior of the casing  $a$  and by the pressure-rollers  $r$   $r$ , located above the upper  
 85 end of the trunk  $b$ , which rollers are rotated at equal velocity. The valved discharge-pipe  $t$  serves for drawing off the liquor from the casing when it is desired to clear the interior of the same.  
 90

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. A keir for bleaching textile fabrics, consisting of a closed casing, endless feed-aprons  
 95 in said casing forming a U-shaped channel, means for imparting motion to the fabric, means for imparting motion to the feed-aprons independently of the feed-motion of the fabric, and means for feeding and piling the fab-  
 100 ric into the channel formed by the feed-aprons, substantially as set forth.

2. A keir for bleaching textile fabrics, consisting of a closed casing provided at one side with a trunk of greater height open at the up-  
 105 per end, two endless feed-aprons forming a U-shaped channel, means for imparting motion to said feed-aprons, means for feeding the fabric into said channel, and spray-pipes above each leg of the channel for supplying  
 110 the liquor to the fabric piled in the same, substantially as set forth.

3. A keir for bleaching textile fabrics, which consists of a closed casing, means for feeding the fabric through the casing, a frame piv-  
 115 oted to said casing, endless feed-aprons forming a U-shaped channel supported by said frame, means for imparting motion to said aprons independently of the feed-motion of the fabric, and means for automatically stop-  
 120 ping or starting the feed-aprons, substantially as set forth.

In testimony that we claim the foregoing as our invention we have signed our names in presence of two subscribing witnesses.

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 GIOVANNI TAGLIANI.

Witnesses:

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