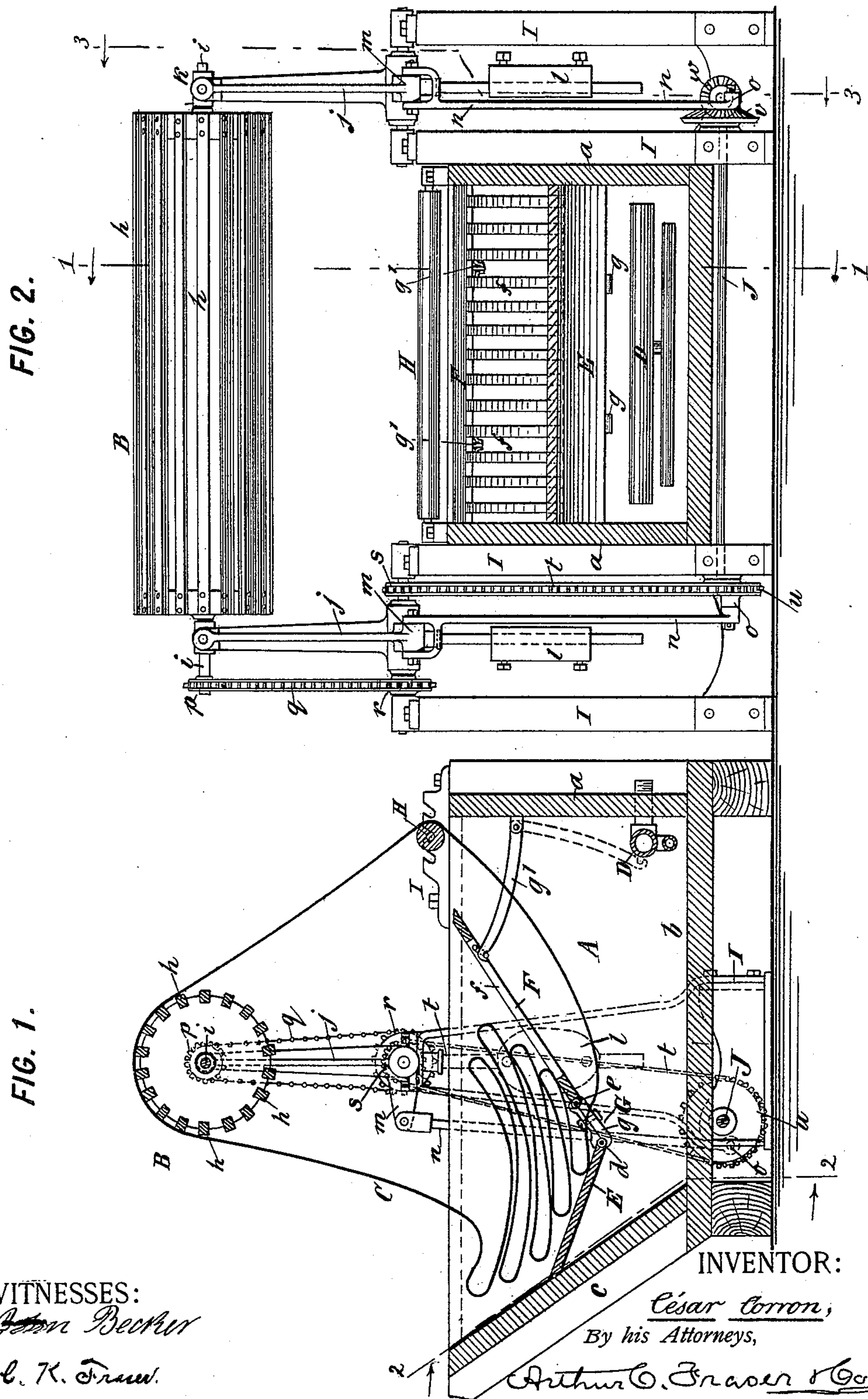


2. Sheets—Sheet 1.

No. 466,223.

Patented Dec. 29, 1891.



WITNESSES:

John Becker  
C. K. French.

INVENTOR:

César Corron,  
By his Attorneys,

Arthur C. Fraser & Co.

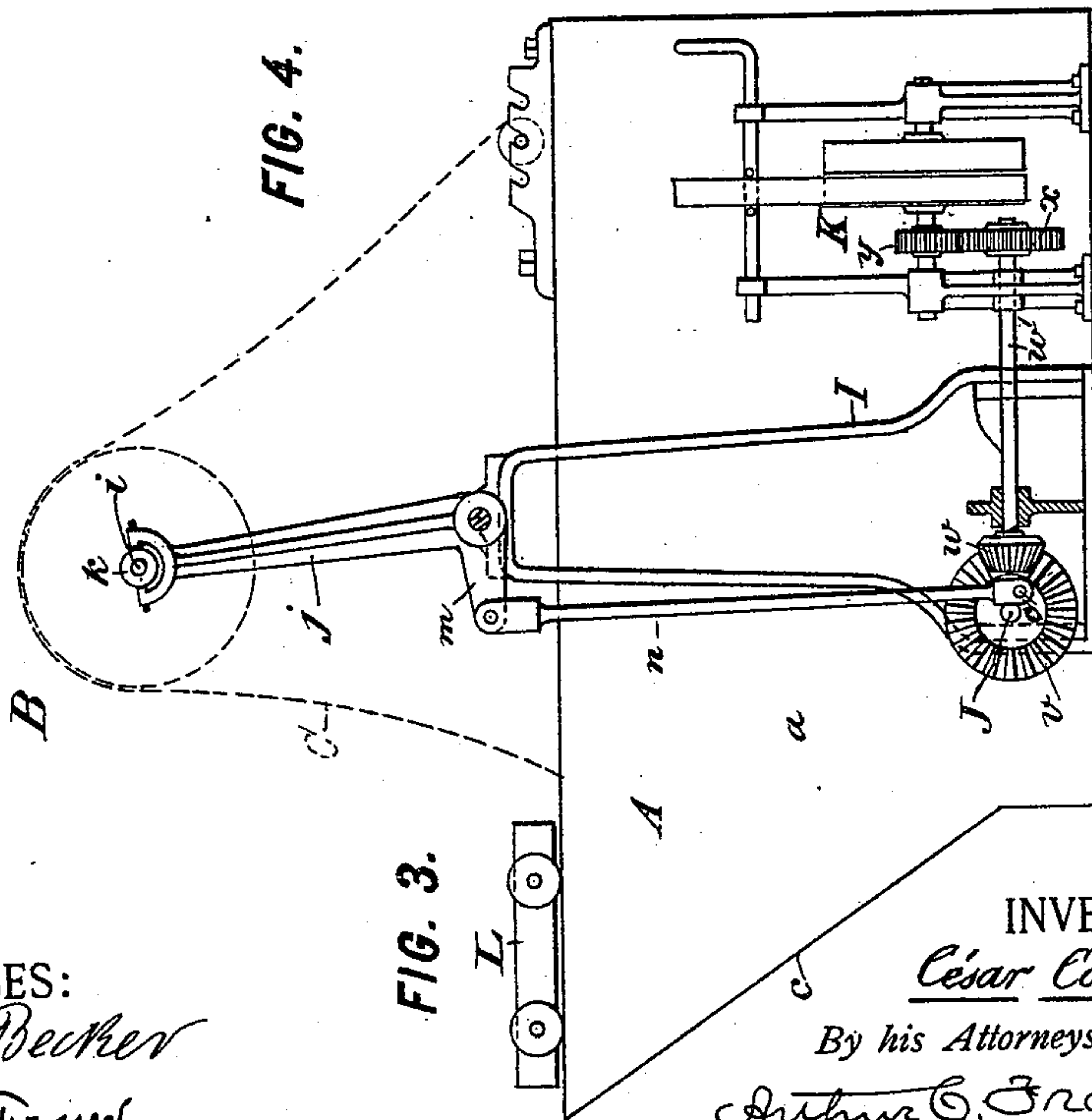
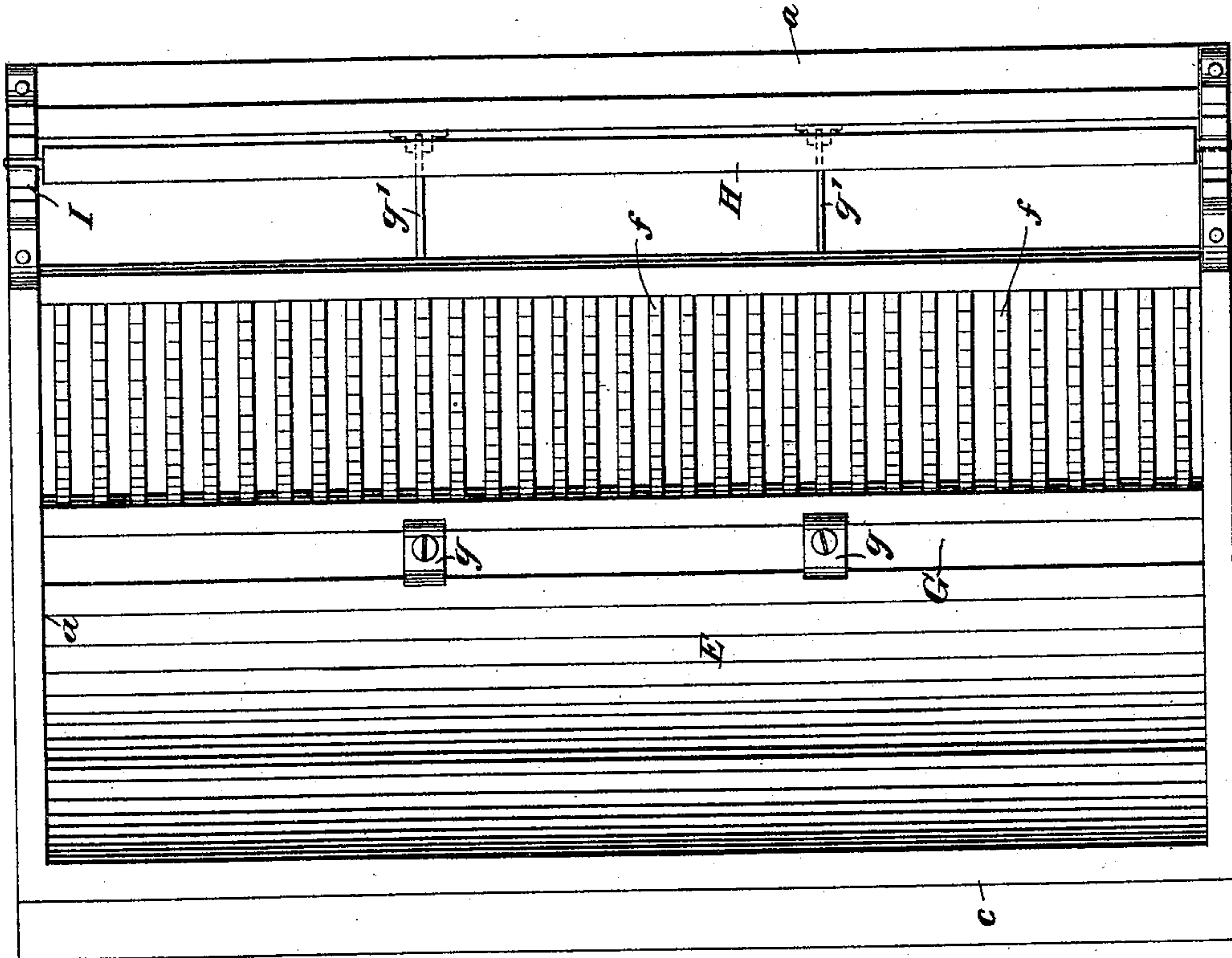
(No Model.)

2 Sheets—Sheet 2.

C. CORRON.  
DYEING APPARATUS.

No. 466,223.

Patented Dec. 29, 1891.



WITNESSES:

*John Becker*  
*L. K. Fraser.*

FIG. 3.

INVENTOR:

*César Corron,*

By his Attorneys,

*Arthur C. Fraser & Co.*



# UNITED STATES PATENT OFFICE.

CÉSAR CORRON, OF PARIS, FRANCE.

## DYEING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 466,223, dated December 29, 1891.

Application filed July 14, 1891. Serial No. 399,498. (No model.)

*To all whom it may concern:*

Be it known that I, CÉSAR CORRON, a citizen of the Republic of France, residing in Paris, France, have invented certain new and useful Improvements in Apparatus for Dyeing, of which the following is a specification.

My improved apparatus is designed for dyeing fabrics and analogous substances in endless pieces, and is most particularly an improvement upon the dyeing apparatus disclosed in my United States Letters Patent No. 430,925, granted June 24, 1890.

The object of my invention is to improve and cheapen dyeing apparatus of the character shown in my said patent, to render it more compact and easy of operation, and to enable the dyeing of a plurality of endless pieces at the same time with the same apparatus without danger of their becoming entangled. To this end, in carrying out the preferred form of my invention I use the well-known revolving feed-roller, movable laterally above the tank, and I provide within the tank two oppositely-inclined surfaces below said roller, arranged with their lower edges adjacent to but out of contact with each other, which surfaces extend across the tank, and I provide cross-pieces at intervals bridging the aperture between said lower edges, together with a passive roller at the rear of one of said surfaces. By this construction, when the cloth has been passed through the aperture around said passive roller and over said feed-roller and its ends then joined, it will by the action of the latter be folded upon said inclined surfaces as it is fed to the tank and will be drawn through the aperture between their lower edges, over said passive roller, and thence to said feed-roller. The different pieces of fabric will be separated by placing them on opposite sides of the cross-pieces bridging said aperture, whereby as they are fed to said surfaces and withdrawn from between the latter they will be kept separated from each other.

Referring to the accompanying drawings, Figure 1 is a vertical cross-section of the preferred form of my improved apparatus for dyeing, cut on the line 1 1 in Fig. 2. Fig. 2 is a vertical longitudinal section thereof, cut on

the line 2 2 in Fig. 1, but with the fabric removed. Fig. 3 is an end elevation thereof, and Fig. 4 is a plan view of the tank alone.

Referring to the drawings, let A represent the dyeing-tank, B the feed-roller, and C the fabric to be dyed. The tank A is preferably constructed of vertical side and rear walls *a*, flat bottom *b*, and inclined front wall *c*. Steam-pipes D are preferably provided for heating the dye-liquor, as is usual.

Within the tank A, I provide one or more inclined surfaces, onto which the cloth or fabric C will be folded and from beneath which it will be withdrawn to return to the feed-roller B. Preferably these surfaces consist of an inclined partition E, sloping outwardly and downwardly from the front wall *c* and terminating at its forward edge in a metallic tube or other suitable edging *d*, the forward edge of the tube coming, preferably, beneath the roller B in its central position. The other surface consists, preferably, of the partition F, which is inclined from near the top of the tank at the rear of the roller B downwardly toward the front and into proximity with the partition E, terminating in a metal pipe or other suitable edging *e*. The partition F is preferably interstitial, being constructed in the form shown of slats *f f*, extending from top to bottom. The aperture G between the lower edges of the inclined surfaces is bridged at intervals by cross-pieces *g g*, two being shown preferably removable, and the fabric C in passing from between the surfaces is placed at one side or the other of these bridges to keep it separated from the fabric on the opposite side thereof.

A passive roller H to the rear of the surface F is provided for guiding the fabric on its return from beneath the surface F through the tank and back to the roller B. This passive roller H is mounted in a bearing-block I, which is variously notched to afford a plurality of bearings for the roller, in order that the latter may be moved toward or from the surface F.

The feed-roller B may be operated in any well-known way. Preferably it is constructed of longitudinal peripheral slats *h*, carried by a shaft *i*, mounted in pivoted tilting arms *j j*,



one of which arms is provided, by preference, with a universal bearing-joint *k* for engagement with said shaft *i*.

At the sides of the machine are two frames  
 5 I I, carrying shafts, on which the arms *jj* are loosely pivoted. Below these shafts the arms *jj* are counterbalanced by adjustable weights *l*, secured to the lower ends of the arms. Crank-arms *m m* project forwardly from the arms *jj*  
 10 and are connected to pitmen *n n*, which extend downwardly and engage crank-pins *o o*, carried on the shaft J, which crosses the tank beneath the latter. As this shaft is rotated the crank-pins are driven round, whereby motion  
 15 is communicated through the pitmen *n n* to the arms *jj*, thereby causing the latter and the feed-roller B to be oscillated back and forth over the tank, and the fabric by this oscillatory movement is caused to fold itself upon the surfaces  
 20 E F as it is fed thereon by the rotation of the feed-roller B. The feed-roller is given its rotary movement through the medium of sprocket-pinion *p* on its shaft, which is driven by the chain belt *q*, which derives motion from the  
 25 sprocket-wheel *r*, fastened rigidly to one of the shafts carrying the arm *j*. To the other end of this shaft is fixed sprocket-pinion *s*, which is driven by belt-chain *t*, which receives motion from sprocket-wheel *u*, fixed on the  
 30 shaft J. The latter may derive its motion from any suitable source; but I prefer to provide a bevel-gear *v* at its opposite end, which gear is in mesh with a bevel-pinion *w*, carried on a shaft *w'* at the side of the machine, which  
 35 shaft has spur-gear *x* at its opposite end meshing with a pinion *y*, driven by the belt-gear K, as best seen in Fig. 4.

In operation the fabric is placed over the feed-roller B and one end is carried through  
 40 the aperture G, thence back of the passive roller H and over the feed-roller, whereupon the two ends are united. The tank A is then filled with dye-liquor or with whatever liquor it is desired to immerse the fabric in, where-  
 45 upon the driving mechanism is set in operation, and the feed-roller B draws the cloth from beneath and between the partitions E F over the roller H and delivers it on top of the partitions E F in the form of loose folds,  
 50 as shown in Fig. 1. One piece of fabric will be carried at one side of one of the cross-pieces *g* and another piece at the other side of such cross-piece, whereupon in operation they will be kept separated throughout the  
 55 dyeing. As the pieces are sufficiently dyed their ends are separated and they are removed.

It will be seen that my invention provides an improved dyeing apparatus which is simple, compact, easy of operation, and in which  
 60 a plurality of pieces of fabric can be dyed at the same time without danger of their becoming entangled.

To further insure the separation of the various pieces of fabric during the dyeing operation, I preferably provide additional guides  
 65 *g' g'*, which may be located in any suitable

manner, but in their preferred form are hinged to the back wall *a* of the tank and when in use extend across the space between  
 70 said wall and the partition F, being supported by hooks on the latter, as shown, or in any other suitable manner, these guides *g' g'* corresponding in position with the guides *g* in the aperture G. Both sets of guides are  
 75 removed (the hinged ones by being unhooked and allowed to fall to the position shown in dotted lines in Fig. 1) when it is desired to dye one piece of fabric stretched to its full  
 80 width.

The fabric may be removed from the tank A by running the well-known carriage L under the feed-roller B and allowing the fabric to be folded on the carriage, as heretofore.

My improved tank is particularly favorable  
 85 to dyeing in a boiling liquor, as the tank is so compact that there is a comparatively small quantity of liquor to be heated, and hence the steam-pipes D can readily raise the temperature to any desired extent.

What I claim is, in an apparatus for dyeing, the following-defined novel features and combinations, substantially as hereinbefore set forth, namely:

1. The combination, with a dyeing-tank  
 95 and a revolving feed-roller arranged above the tank and constructed to be laterally movable thereover, of two oppositely-inclined surfaces within the tank below said roller, arranged with their lower edges adjacent to but  
 100 out of contact with each other, whereby the fabric is fed into said tank and folded on said surfaces by said roller from above and is withdrawn from between the lower edges of  
 105 said surfaces in returning to said roller.

2. The combination, with a dyeing-tank and a revolving feed-roller arranged above the tank and constructed to be laterally movable thereover, of two oppositely-inclined surfaces within the tank below said roller, arranged with their lower edges adjacent to but  
 110 out of contact with each other, and a cross-piece bridging the aperture between said lower edges, whereby when two or more pieces of fabric are fed onto said surfaces and folded  
 115 thereon by said roller they may be withdrawn through said aperture on opposite sides of said cross-piece when returning to said roller and thereby kept apart.

3. The combination, with a dyeing-tank  
 120 having an inclined surface at its front wall, and a revolving feed-roller arranged above the tank and constructed to be laterally movable thereover, of the inclined surface F in said tank below said feed-roller, having its  
 125 lower edge adjacent to but out of contact with said inclined surface at said front wall, and a roller H, arranged in the rear of said inclined surface F, whereby when a piece of fabric is passed through the aperture at the  
 130 front of said surface F, around said roller H, and its ends united over said feed-roller it will be fed and folded by the latter onto said surface F and will return beneath the front



edge of the latter and around the roller H to the feed-roller.

4. The combination, with a dyeing-tank and the oscillatory feed-roller thereover, of  
5 the inclined surfaces E and F within the tank beneath said feed-roller and arranged to leave the aperture G between their lower edges, and the passive roller H at the rear of said surface F, all as and for the purpose set  
10 forth.

5. The combination, with a dyeing-tank and the oscillatory feed-roller thereover, of the inclined surface E, and the interstitial in-

clined surface F within the tank beneath said feed-roller and arranged to leave the aperture 15 G between their lower edges, and the passive roller H at the rear of said surface F, all as and for the purpose set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing 20 witnesses.

CÉSAR CORRON.

Witnesses:

J. MAGUIRE,  
GEORGE H. FRASER.