

Feb. 28, 1939.

E. FERRANTI

2,148,611

METHOD OF AND DEVICE FOR CONTINUOUS DYEING

Filed Jan. 12, 1937

2 Sheets-Sheet 1

Fig. 1.

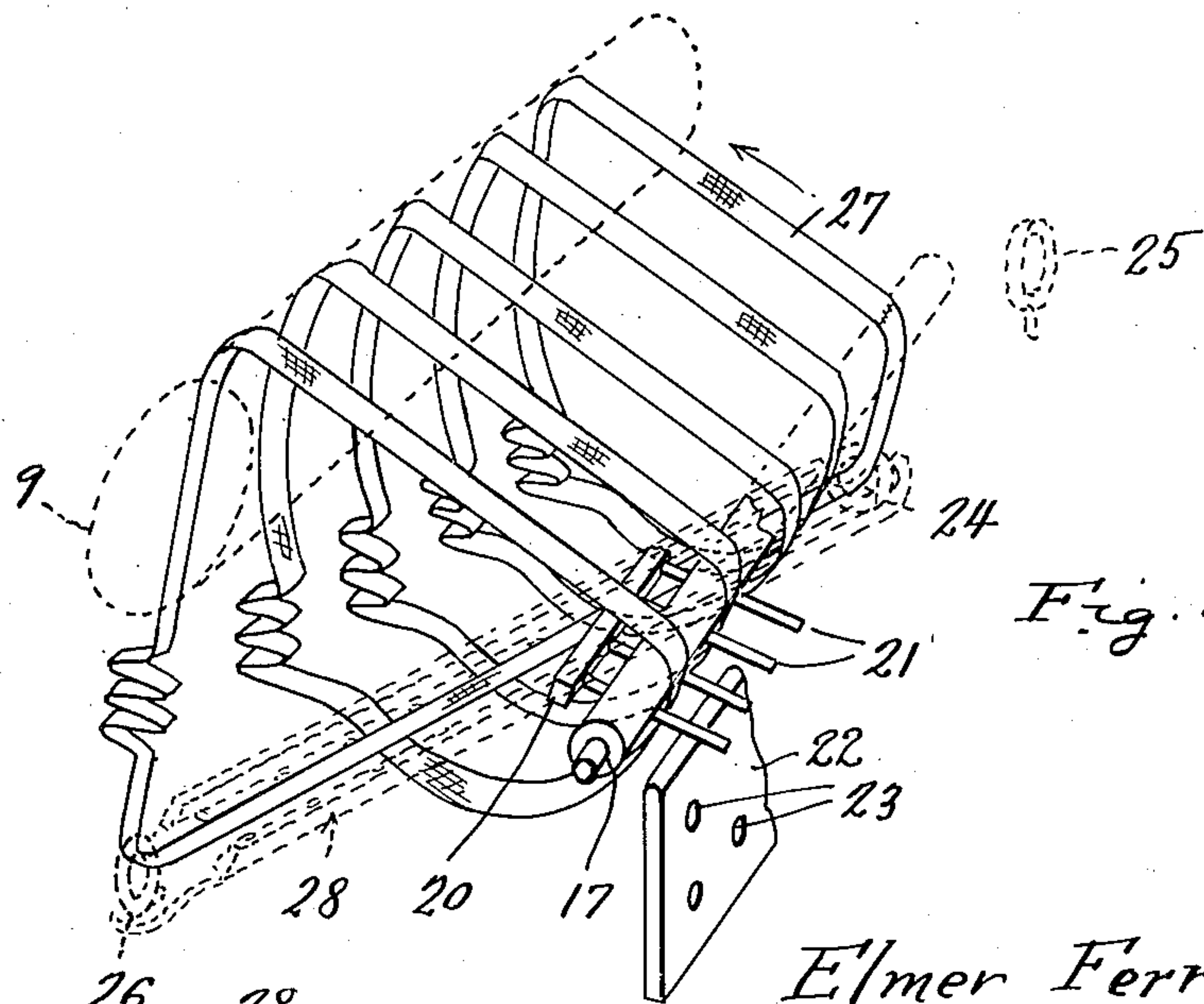
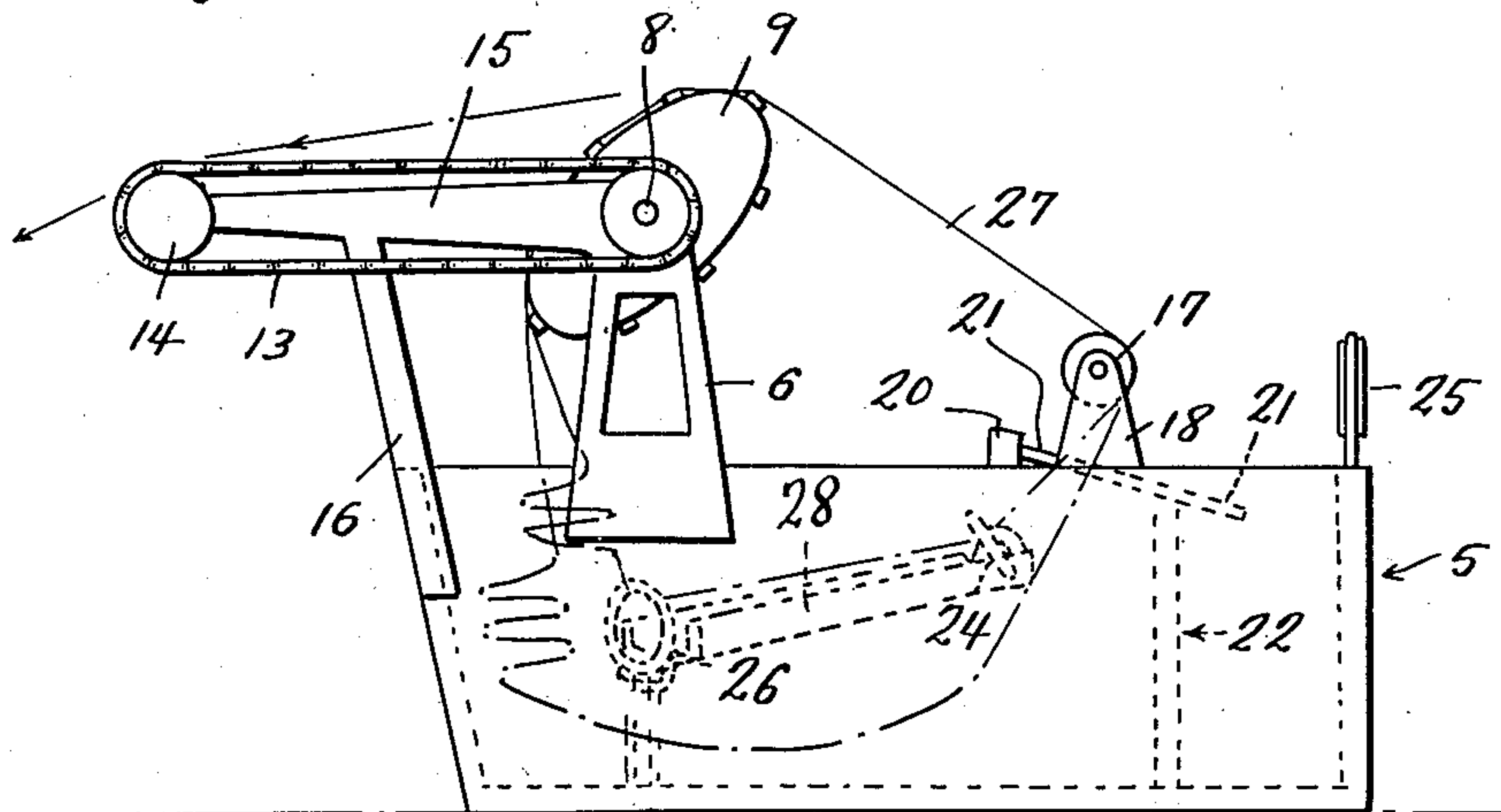


Fig. 3.

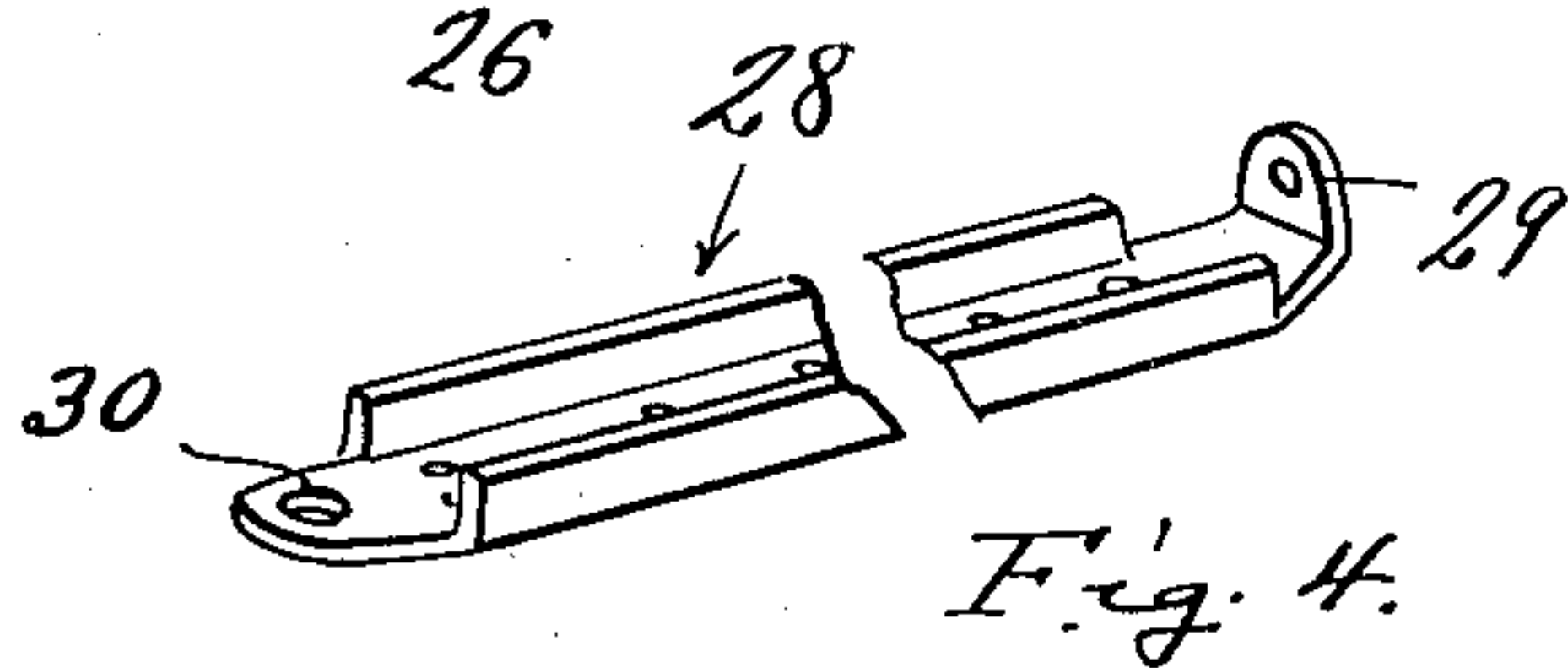


Fig. 4.

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2 Sheets-Sheet 2

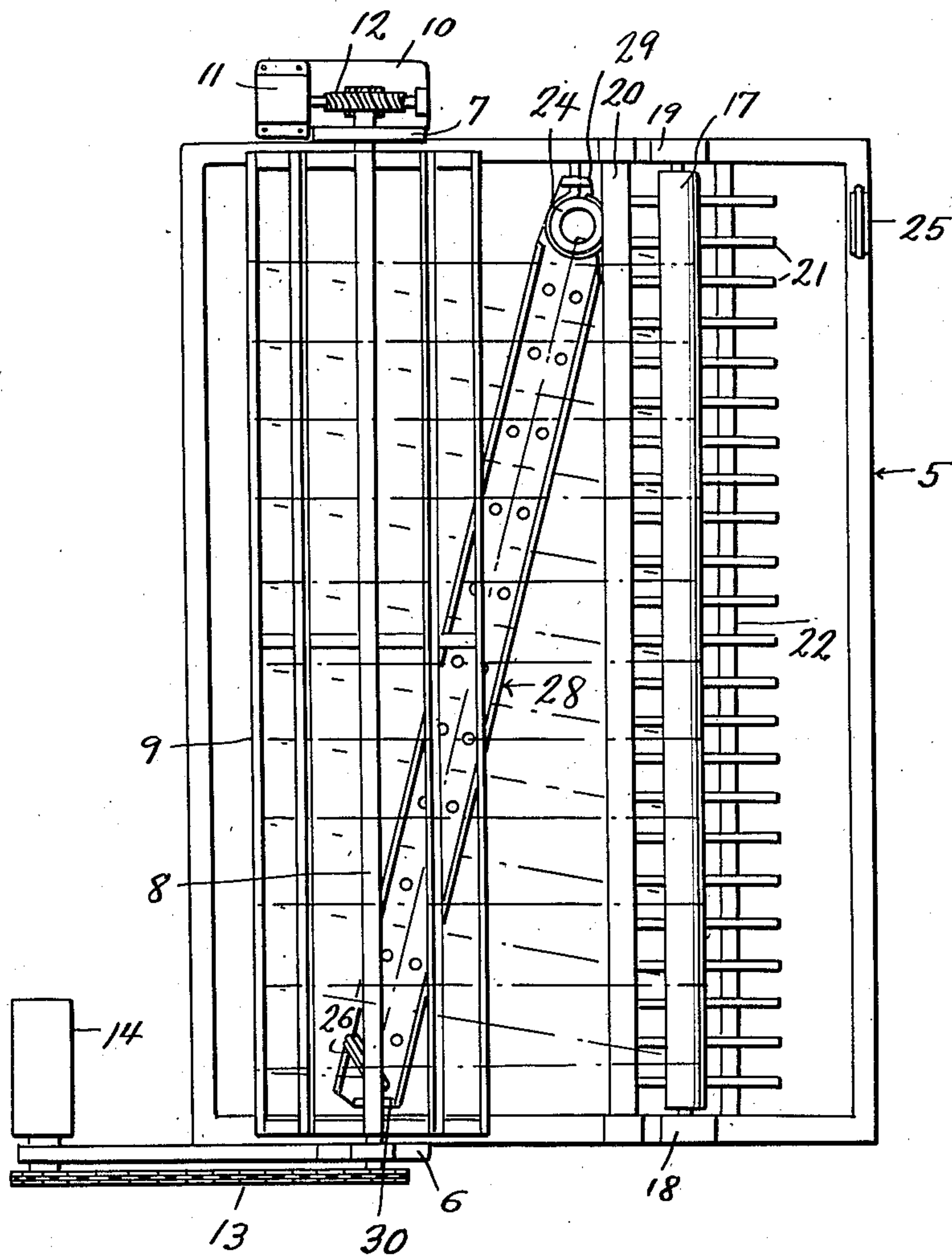


Fig. 2.

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# UNITED STATES PATENT OFFICE

2,148,611

## METHOD OF AND DEVICE FOR CONTINUOUS DYEING

Elmer Ferranti, Paterson, N. J., assignor of ten  
per cent to Andrew Mainardi, Paterson, N. J.,  
and forty per cent to Chester E. Puco, Totowa  
Borough, N. J.

Application January 12, 1937, Serial No. 120,285

2 Claims. (Cl. 8—151)

My invention relates generally to apparatus for dyeing cloth and the like, and particularly to apparatus for dyeing cloth and the like in a continuous operation, the cloth being dyed being arranged in a substantially continuous strip instead of in separate pieces, and an important object of the invention is to provide apparatus of this character which eliminates the necessity for and saves the time and labor ordinarily consumed in attaching and disconnecting the pieces of cloth or the like in putting them through the dye box and through the drying box.

Another important object of my invention is to provide apparatus of the character indicated above which eliminates the necessity to run the dye fluid from the dye box and enables the conservation of the dye fluid for additional dyeing operations, thereby eliminating the loss and wasting of large quantities of dye chemicals, as well as water.

Other important objects of my invention will be apparent from a reading of the following description taken in connection with the drawings, wherein for purposes of illustration I have shown a preferred embodiment of my invention.

In the drawings:—

Figure 1 is an end elevational view showing an embodiment of my invention.

Figure 2 is a top plan view of Figure 1.

Figure 3 is a perspective diagrammatic view showing the manner in which the cloth is handled in the machine.

Figure 4 is a fragmentary perspective view of the trough.

Referring in detail to the drawings, the numeral 5 generally designates a dye box which may be of conventional form and capacity, and in which the dyeing according to the present method is performed with the aid of structural additions to the dye box, as herein disclosed.

The numerals 6 and 7 severally designate brackets on the ends of the dye box which support the opposite ends of the shaft 8 on which is mounted the oval cross section reel 9. A platform 10 on the bracket 7 supports a suitable motor 11 which drives the shaft 8 through gearing 12. The opposite end of the shaft 8 is provided with a sprocket wheel over which is trained a sprocket chain 13 or other equivalent operative connection, which sprocket chain is also trained over one end of the roller 14, the said roller being supported on the outer end of a horizontal support arm 15 which is connected to the bracket 6 and is further supported and braced by a brace 16 which is fastened to the corner or end of the dye box 5 as

clearly shown in Figure 1; whereby the roller is driven at the same speed as the shaft 8.

A small diameter roller 17 has its opposite ends journaled in the bearings 18, 19 on the opposite ends of the dye box, so that the roller is supported above the top of the dye box as illustrated in Figure 1. Along and under the roller 17 is the longitudinal support 20 from which extend the guiding and separating fingers 21 which are in a declining position as indicated in dotted lines in Figure 1 and rest the lower end portions thereof on the longitudinal support 22 in spaced relation to the side of the dye box. The support 22 is in the nature of a partition in the dye box which is provided with openings 23 therein as indicated in Figure 3 of the drawings.

At one end of the dye box there is attached the pot eye 24 which is arranged in a horizontal position adjacent the longitudinal member 20 and slightly below the same, and transversely aligned with this pot eye is a second pot eye 25 which is mounted on the upper edge of the side of the dye box adjacent the fingers 21; and a third vertically and angularly disposed pot eye 26 rises from the floor of the dye box adjacent the end of the dye box opposite the position of the pot eye 24, as indicated in Figures 2 and 3. The pot eye 25 is employed only in starting the continuous strip of cloth into the dyeing device.

A trough 28 having a perforated bottom, wide enough to permit the cloth 27 to lie and slide along the said bottom, is suspended in a diagonal generally horizontal position in the dye box between the pot eyes 24 and 26. The trough has at one end the bracket 29 for mounting that end on the pot eye 24 and at the opposite end the bracket 30 mounting the said opposite end on the pot eye 26, whereby the trough is suspended above the bottom of the dye box and below the top of the dye bath therein. Other means may be used for suspending the trough if desired, that shown and described being one of convenience and efficiency.

The strip of cloth or the like is passed through the pot eye 25 until all of the goods desired to be dyed has been paid out or the end thereof reached. The leading end of the strip is then passed over the reel 9 over the roller 17 at the front of the dye box and upwardly between selected ones of the guide fingers 21, and then around the roller 17, and around the reel 9, then through the pot eye 26, along the trough 28 and through the pot eye 24. The opposite ends of the strip are then connected and the dyeing operation is performed



by turning the reel 9 until the desired dyeing has been achieved.

To remove the dyed cloth from the machine, the first seam at the end of the roller is opened, and one end of the strip is then passed over the oval reel 9 and back and over the roller 14 and is then led to such apparatus as may be necessary or may be provided to remove the dyed goods. It is estimated that a time saving of approximately forty percent results in most installations of the invention over old methods of dyeing.

When another strip is to be dyed, the end of such strip is attached to the trailing end of the dyed strip 27 and as the strip 27 runs off the machine as described in the preceding paragraph, it draws the new strip into position in the machine.

Although I have shown and described herein a preferred embodiment of my invention, it is to be definitely understood that I do not desire to limit the application of the invention thereto, and any change or changes may be made in the materials, and in the structure and arrangement of parts, within the spirit of the invention and the scope of the subjoined claims.

What is claimed is:—

1. Apparatus for dyeing strip material, said apparatus comprising a dye box, a non-circular cross section reel supported on said dye box, a roller arranged substantially parallel on said dye box to said reel and laterally spaced therefrom, both said reel and said roller being located in

planes above the level of dye in the dye box, strip guiding fingers on the dye box and extending across the axis of and below said roller, a first eye on said dye box adjacent one end of the roller for initially guiding the strip material onto the reel and roller, a second eye adjacent the same end of and below the roller within the dye box, a third eye on the opposite end of and within the dye box and beneath the opposite end of said reel, and a perforated generally horizontal trough suspended at its opposite ends on said second and third eyes to convey the strip material from one end of the reel diagonally across to the opposite end of the roller below the level of the dye in the dye box and above the bottom of the dye box.

2. A method of uniformly dyeing a plurality of strips of fabric material, said method comprising feeding the leading end of the first strip into a dye bath, causing said first strip to take a spiral course through the dye bath on a substantially horizontal axis while periodically lifting and lowering the strip so as to cause pendent portions of the convolutions of the spiral to alternately rise and fall through the dye bath besides spirally therein, substantially evenly spacing the convolutions of the spiral course, supporting a flight of the strip to extend from one end of the spiral course to the opposite end of the spiral course, and moving said flight substantially horizontally through the dye bath within and spaced from the convolutions of the spiral course.

ELMER FERRANTI.