Nov. 22, 1927. 1,649,960

E. M. KRATZ

FEED DEVICE FOR FILM FORMING MACHINES

Filed Feb. 16, 1927 2 Sheets-Sheet 1

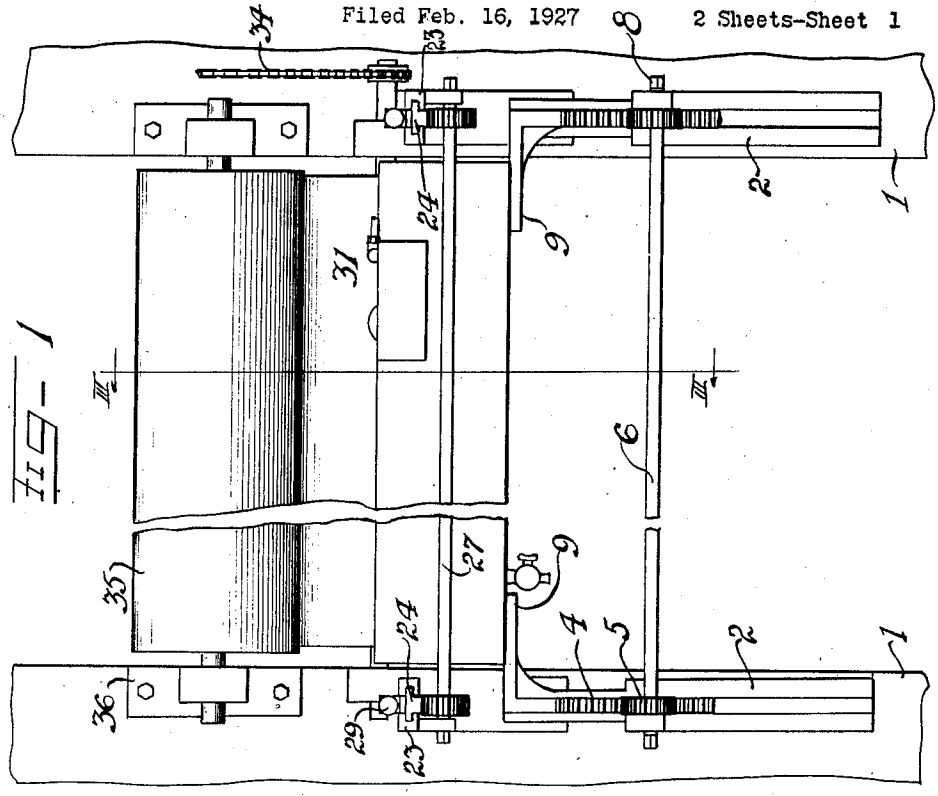


FIG. 1

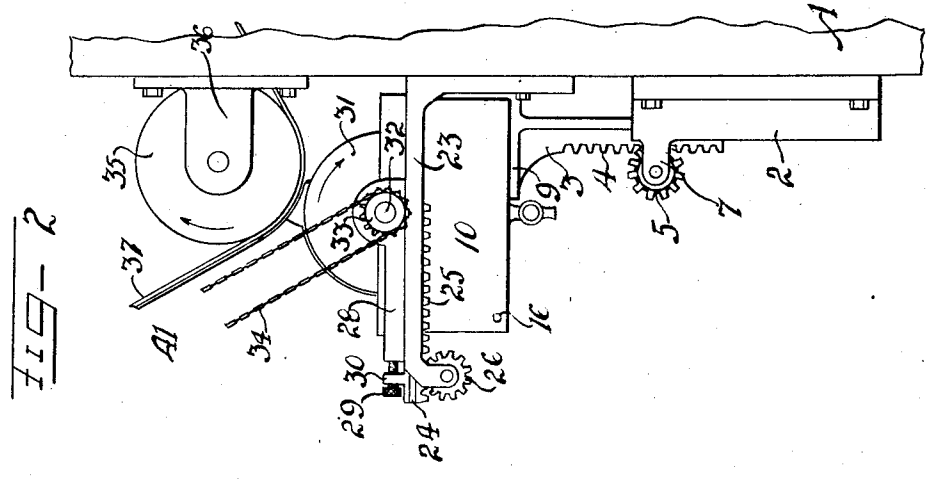


FIG. 2

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Fig-3

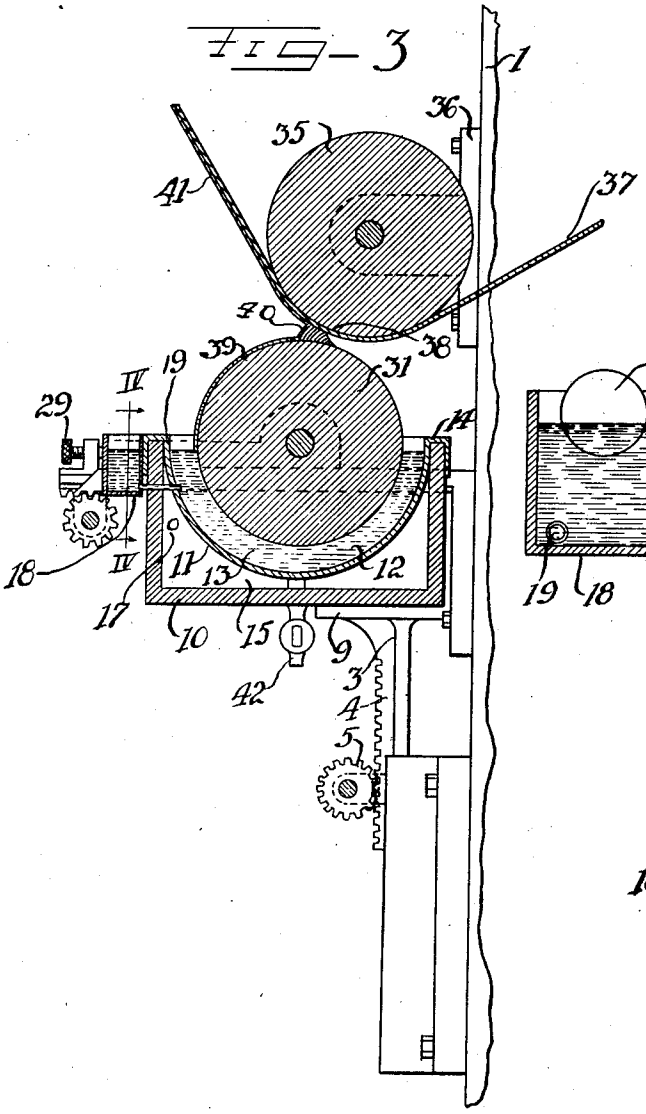


Fig-4

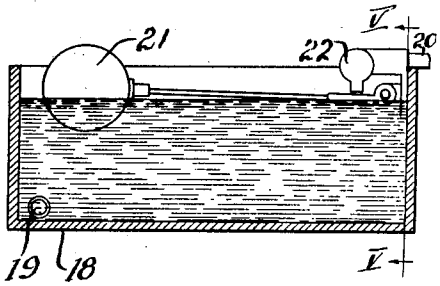
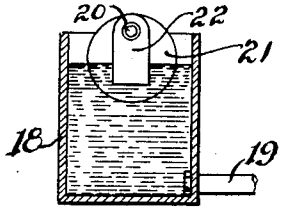


Fig-5



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UNITED STATES PATENT OFFICE.

EDOUARD M. KRATZ, OF CHICAGO, ILLINOIS, ASSIGNOR TO MARSENE PRODUCTS COMPANY, A CORPORATION OF ILLINOIS.

FEED DEVICE FOR FILM-FORMING MACHINES.

Application filed February 16, 1927. Serial No. 168,687.

This invention relates to a feed device for film forming machines, and more particularly machines of the type suitable for the manufacture of thin gelatin composition sheets.

In my application entitled "Transparent paper machine", Serial No. 49,970, filed August 13, 1925, I have described an entire machine suitable for the manufacture of transparent paper of gelatin composition. The present application relates to an improved feed device for use in a machine such as described in my former application.

It is an object of this invention to provide a simple and practical feed device for use in the manufacture of extremely thin transparent sheets of gelatin composition, and to provide improved adjusting and regulating device in connection therewith.

Other and further important objects of this invention will become apparent from the following description and the appended claims.

On the drawings:

Figure 1 is a broken front elevational view of a feed device embodying the principles of this invention.

Figure 2 is a side elevational view of the same.

Figure 3 is a sectional view taken substantially on line III—III of Figure 1.

Figure 4 is an enlarged sectional view taken substantially on line IV—IV of Figure 3.

Figure 5 is a sectional view taken on line V—V of Figure 4.

As shown on the drawings:

The reference numeral 1 indicates a pair of spaced vertical supporting members upon which there are mounted a pair of guide brackets 2. In each of said guide brackets 2 there are slidably supported a rack bar 3 having teeth 4 adapted to be engaged by a ratchet gear 5. Said ratchet gears 5 are mounted upon a shaft 6 supported in bearings 7 which are integrally formed on the brackets 2. The ends of said shaft 6 extend beyond the bearings 7 and are squared as at 8 to receive a crank or socket wrench by means of which the shaft 6 may be rotated to adjust the height of the rack bars 3.

The upper end of each of said rack bars 3 is provided with a platform 9 to which there is secured a rectangular shaped tank 10. Said tank 10 is provided with an inner semi-cylindrical shell 11 forming a receptacle 12 for containing a film forming composition 13. Said shell 11 is suitably supported on the side walls of the tank 10 by bending said shell 11 over the edges of said side walls as at 14. Between the inner shell 11 and the outer walls of the tank 10 there is provided a chamber or jacket 15 through which a heating fluid may be circulated, to maintain the film forming composition at any desired temperature. An inlet pipe 16 and outlet pipe 17 are provided for this purpose.

At the front side of the tank 10 there is provided a float chamber 18 communicating with the inner receptacle 12 by means of a pipe 19 and provided with a fluid control intake 20. The fluid control may be of any standard type comprising a float 21 and a valve 22 controlled thereby.

A pair of brackets 23 secured to the supports 1 extend on each side of the tank 10. Each of said brackets 23 is provided with a horizontal guideway in which are slidably mounted a rack bar 24 having teeth 25 on its lower face. A ratchet gear 26 mounted upon a shaft 27 is adapted to engage the teeth 25 of each of said rack bars 24. Said rack bars 24 are thus horizontally adjustable upon rotation of the shaft 27. A bearing block 28 rests upon each of the rack bars 24 and is held against relative movement by means of a bolt 29, said bolt 29 being threadingly engaged by a lug 30 integral with said rack bar 24, and one end of said bolt 29 being loosely secured in the front end of the bearing block 28. Movement of the rack bars 24 accordingly effects horizontal adjustment of the bearing blocks 28, finer adjustment being secured by means of the bolts 29.

In each of the bearing blocks 28 there is rotatably journalled a lower feed roll 31, adapted to be partially immersed in the film forming composition 13. One end of the roll shaft 32 is provided with a sprocket gear 33 adapted to be driven by means of a chain 34 to any suitable source of power (not shown).

An upper idle roll 35 is mounted from bearing brackets 36 secured to the supports 1 in parallel vertically offset position relative to the lower roll 31. Around said roll 35 there is trained a belt 37 upon which the

film is adapted to be formed. Said belt 37 engages the lower surface 38 of said roll 35 and is held in tight contact therewith. As the lower feed roll 31 revolves, it picks up a film 39 of composition and forms a pond 40 of the composition between the upper surface of the feed roll 31 and the surface of the belt 37. The feed roll 31 should be adjusted into close proximity to the belt 37 but out of actual contact therewith. The viscosity of the film forming composition is such as to form a thin uniform coating 41 on the under-surface of the belt 37. This coating 41 is hardened, dried and stripped from the surface of the belt 37 in the manner described in my application above referred to. The purpose of making the tank 10 vertically adjustable independent of the feed roll 31 is to facilitate the cleaning of the tank. A drain 42 passing through the bottom of the tank 10 and the shell 11 permits the inside of the shell 11 to be drained and thoroughly washed out from time to time. The adjusting means provided for the lower feed roll 31 is necessary to obtain an even and uniform coating of the film upon the belt 37. It should be noted that horizontal adjustment of the feed roll 31 is effective in changing the relative distance between the surface of the roll 31 and the upper stationary roll 35 because of the offset relation between said rolls. The finer adjustment provided by the bolts 29 makes possible a very accurate alignment of the rolls 31 and 35.

I am aware that many changes may be made, and numerous details of construction may be varied through a wide range, without departing from the principles of my invention, and I therefore do not purpose limiting the patent granted hereon, otherwise than necessitated by the prior art.

I claim as my invention:

1. In a film forming machine, a pair of upper and lower cooperating rolls, a belt traveling tightly around the upper roll and out of contact with said lower roll, a receptacle for containing a film forming composition in which the lower roll is adapted to be partially immersed, means for driving said lower roll to elevate the film forming composition into contact with said belt to form a film thereon, and means for adjusting said lower roll relative to said upper roll.

2. In a film forming machine, a receptacle for containing a film forming composition, a roll rotatably mounted in said receptacle and partially immersed in said composition, a belt adapted to travel in close proximity to but out of contact with the upper surface of said roll and means for driving said roll to elevate said composition into contact with said belt to form a film thereon, said belt being rigidly reinforced at the point of contact with said composition.

3. In a film forming machine, a receptacle for containing a film forming composition, a roll rotatably mounted therein and adapted to be partially immersed in said composition, an upper roll vertically offset from said first roll and spaced therefrom, and an endless traveling belt trained around said upper roll and adapted to receive the composition from said first roll.

4. In a film forming machine, a receptacle for containing a film forming composition, a roll rotatably mounted therein and adapted to be partially immersed in said composition, an upper roll vertically offset from said first roll and spaced therefrom, an endless traveling belt trained around said upper roll and adapted to receive the composition from said first roll, and means for horizontally adjusting said first roll to vary the distance between the surfaces of said rolls.

5. In a film forming machine, a tank for containing a film forming composition, an endless traveling belt upon which the film is adapted to be formed, a stationary idle roller against the lower surface of which said belt is adapted to be trained, and a feed roll rotatably immersed in said composition and adapted to form a pond of said composition between the upper surface of said roll and the portion of said belt in contact with said idle roll.

6. In a film forming machine, a feed device comprising a supporting frame, a tank adjustably supported therefrom for vertical movement, a feed roll independently mounted from said support and adapted to extend into said tank, an upper roll stationarily mounted from said support, and means for horizontally adjusting said feed roll to vary the distance between the surfaces of said rolls.

7. In a film forming machine, a feed device comprising a tank, an inner semi-cylindrical shell therefor forming a receptacle and spaced from the walls of said tank to provide a jacket for containing a heating fluid, an inlet conduit for conducting a film forming composition to the inner receptacle and float control means for regulating the height of the composition in said receptacle.

In testimony whereof I have hereunto subscribed my name at Port Edwards, Wood County, Wisconsin.

EDOUARD M. KRATZ.