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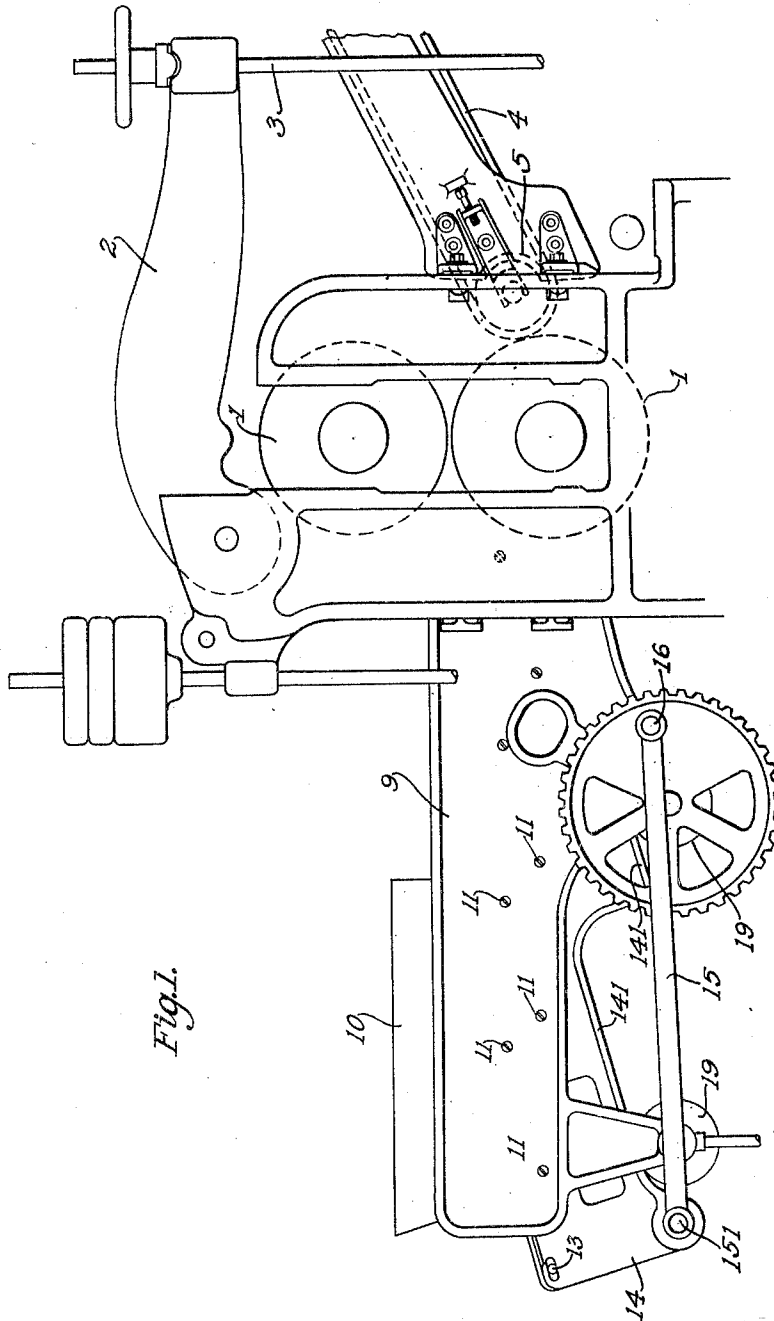
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SQUEEZE ROLL FEEDER MECHANISM

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2 Sheets-Sheet 1



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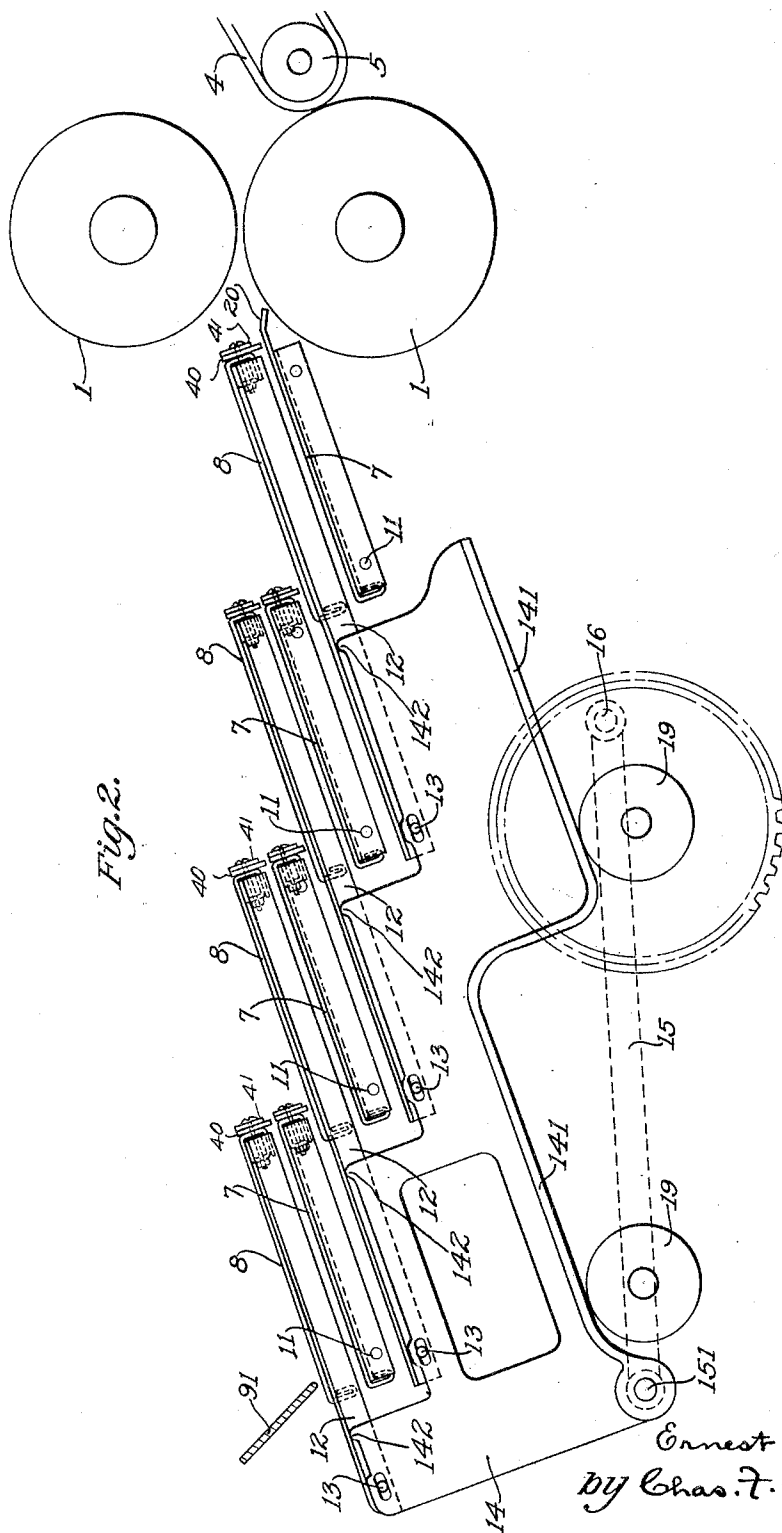
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Fig. 2.



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# UNITED STATES PATENT OFFICE

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## SQUEEZE ROLL FEEDER MECHANISM

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The invention consists in the combination with squeeze or feed rolls employed for operating upon loose stock, for example fibrous material, of feeder mechanism delivering the stock into the bite of a pair of cooperating opposing rolls, comprising a plurality of plates overlapping one another in a series constituting a stock-supporting platform or table and having combined with them means for causing movement of the plates edgewise in and out relative to one another so as to advance the stock progressively over their surfaces and into the said bite.

The invention solves the problem of feeding wet loose stock, such for instance as wool or cotton, to squeeze rolls employed for expressing liquid from such stock. The invention is applicable in the manufacture of textile materials, in various processes wherein it becomes necessary to press out a liquid therefrom, as for example following the washing, bleaching, dyeing, &c., of such materials in a loose state.

In common practice, the loose fibrous or other material required to pass between feed or squeeze rolls is fed into the bite of a pair of cooperating opposing rolls by means of a continuous traveling apron which passes around a supporting roll adjacent the said bite. When wet stock is being fed, a drawback in connection with this type of feeding means is the tendency of wet stock carried forward by the apron to adhere to the apron, so that portions of the stock, instead of leaving the apron at the squeeze rolls and passing into the bite of the latter, remain adherent to the apron surface and are carried down between the said supporting roll and the lower squeeze roll. Such portions usually fall to the floor, necessitating their being gathered up from time to time. The portions which land on the floor become more or less soiled and mixed with impurities, rendering them waste and lessening their value.

In stock handling mechanism having my invention incorporated therein a traveling aprong such as aforesaid is dispensed with, and, instead, a platform or table comprising as aforesaid a series of overlapping plates having combined therewith means for causing

movement of the plates edgewise in and out relative to one another is employed. In consequence of the relative movements of the plates, the stock which is deposited upon such platform or table is moved progressively along the series, and into the bite of the squeeze-rolls. The final plate of the series extends into close proximity to the bite of the rolls, so that the stock is pushed accurately into the said bite, and there is no opportunity for the stock to drop at the receiving side of the lower squeeze-roll.

An illustrative embodiment of the invention is shown in the accompanying drawings, in which:—

Fig. 1 shows in side elevation a pair of squeeze-rolls, and their delivery apron, having associated therewith a series of plates movable relatively to one another according to the invention.

Fig. 2 is a side view of the working parts, with framework and weighting devices omitted.

Having reference to the drawings:—

A pair of squeeze-rolls is indicated at 1, 1. Fig. 1 shows a lever 2 which serves to apply pressure to press the rolls toward each other. In practice, the said lever 2 has combined therewith a weight (not shown) connected to a rod, such as 3, that is hung upon the lever. At 4 is indicated an ordinary delivery apron, supported by a pair of rolls, one of which is shown at 5, such apron being intended to receive upon its upper surface the stock which has passed between the squeeze-rolls 1, 1.

In this illustrative embodiment, the combination of plates constituting the platform or table aforesaid comprises, essentially, a sequence of plates 7, 7, arranged with their rear edges facing toward the squeeze-rolls, and a second sequence of plates 8, 8, which individually alternate with the respective plates 7, 7, all assembled in a stepped series. The plates 7, 7, are disposed in parallel planes, spaced apart vertically; the plates 8, 8, are located intermediate the plates 7, 7, parallel with them. The lip 20 projecting from the rear portion of the last plate 7 extends into close proximity with the lower squeeze-roll, with

its edge closely adjacent the bite of the pair of rolls. Wipers 40, held in place by strips 41, and bolted to the turned-under working edges of the plates of each sequence, prevent the stock from entering between the plates.

5 The said platform or table serves as the bottom of a hopper having side-walls 9, Fig. 1, with upwardly-flaring continuations 10. The material which is to be fed to the squeeze-rolls is dropped upon the platform or table, and  
10 will be supported by the particular plate-surfaces which happen to be exposed thereto.

The relative movement among the plates of the platform or table by means of which the stock is advanced or fed to the squeeze-rolls involves in the present instance edge-  
15 wise reciprocations of the interleaved plates of one of the said sequences with relation to the plates of the other sequence. To this end, the plates 8, 8, are reciprocated edgewise relative to the plates 7, 7, toward and from the squeeze-rolls. The plates 7, 7, are shown as fastened at their ends by means of screws 11,  
20 11, to the side-walls 9. The movable plates, 8, 8, may be given their reciprocating movement in any suitable or preferred manner. Herein, such movement is given to them through connection at each side of the hopper with a longitudinally movable carriage-plate  
25 14 to which an endwise reciprocating movement is imparted by means of a pitman 15 and rotating crank 16, these devices being duplicated at the opposite sides of the hopper. The pitman 15 is connected pivotally to  
30 the carriage-plate 14 at 151.

The movable plates 8, 8, are connected with the reciprocating carriage-plates 14 by means of arms 12, 12, which, at each side of the hopper, are engaged with the corresponding  
35 carriage-plate at or near the ends of the said arms by means of pivotal screw-pins 13, 13, while the arms 12, 12, rest at intermediate points in the length of the arms upon prominences 142, 142, upon the top edges of the  
40 carriage-plates, to hold each plate 8 clear of the next underlying stationary plate and insure ease of movement thereof while bearing its burden of the hopper contents.

In the illustrative embodiment the plate-series, as an entirety, extends horizontally, and the respective plates (stationary and movable) incline upwardly individually toward the squeeze-rolls. The movement of the movable plates, accordingly, is at the  
45 same inclination. In order to provide for this inclined direction of movement of the movable plates, provision is made for guiding the carriage plates 14 in such manner that as they move endwise they shall shift bodily in correspondingly inclined paths.  
50 To this end, each carriage-plate 14 is provided herein with inclined edges 141, 141, which rest on rolls 19, 19. Such rolls afford support to the carriage-plates, and as the  
55 carriage-plates move longitudinally and the

inclines pass over the rolls the movement of the carriage-plates is given a vertical component resulting in travel of the carriage-plates and movable plates in inclined paths that are parallel with the planes of the plates. 70

In the drawings the plates 8, 8, are represented as at the end of their movement toward the rolls 1, 1, and consequently as projected out from under the stationary plates into positions overlying the stationary plates. 75 In this relation of the plates, stock falling into the hopper will be received upon the top surfaces of the projected movable plates 8, 8. By movement of the movable plates 8, 8, in the direction away from the rolls, 80 the said plates are retracted under the stationary plates 7, 7. In the course of this movement the portion of stock which came to rest upon the top of a moving plate will be detained by, as the case may be, either 85 the rear edge of the particular stationary plate 7 which extends over such moving plate, or the lower edge of the inclined back-board 91 at the rear end of the hopper, so that such portion of stock will drop from the rear edge 90 of the said moving plate upon the stationary plate next below the said moving plate. By the movement next ensuing of the plates 8, 8, in the direction toward the rolls, the said plates will be projected from under the sta- 95 tionary plates and the inclined back-plate 91, and as each moving plate passes out over the top of a stationary plate, the leading edge of such moving plate will push ahead of it the portion of stock which rests on such sta- 100 tionary plate so that such portion will drop upon the advancing top of the next succeeding moving plate, or, in case of the last stationary plate, will be pushed from the latter into the bite of the squeeze-rolls. 105

In brief, through the reciprocating movements of the movable plates 8, 8, the stock resting upon the platform or table, and advanced step by step from one stationary plate to another, finally will be pushed by positive 110 action from the last stationary plate directly into the bite of the squeeze-rolls.

By means of the devices of the invention it is possible to obviate the drawbacks which are attendant upon the employment of a feed- 115 apron, since the thin delivery edge 20 of the last stationary plate may be extended practically into the bite of the squeeze-rolls, while the use of a feed-apron involves employment of a supporting roll of substantial diameter about which the apron passes at its delivery 120 end in changing direction, and this substantial diameter precludes location of the roll and the said portion of the apron close to the bite. 125

What is claimed as the invention is:—

1. Apparatus for handling loose stock comprising, in combination with a pair of rolls, feeder mechanism receiving the stock, consisting in pairs of plates, one plate of each 130

pair being movable, and the successive pairs being arranged in a stepped series, and means for moving the movable plate of each pair to cause it to feed stock from off such pair and onto the next succeeding pair, and from the terminal pair into the bite of the rolls.

5 2. Apparatus for handling loose stock, comprising the combination with a pair of rolls, of feeder mechanism for receiving and delivering the said stock into the bite of the said rolls, including a plurality of stationary and movable plates alternating in an interleaved sequence, and actuating means to project and retract said movable plates.

15 3. Apparatus for handling loose stock comprising the combination with a pair of cooperating opposing rolls, of feeder mechanism for receiving and delivering the stock into the bite of the said pair of rolls, including a plurality of pairs of overlapping plates, at least one plate of each of said pairs being movable edgewise back and forth relative to the other, and means for moving said movable plates.

25 4. Apparatus for handling loose stock comprising the combination with a pair of squeeze rolls, of feeder mechanism for receiving and delivering the said stock into the bite of the said rolls consisting of fixed plates and edgewise moving plates alternating in overlapping relation, and means to effect movement of said last named plates to cause stock resting upon the plates to be fed into the bite of said squeeze rolls.

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