May 24, 1927. 1,629,977

E. SNYDER

BLOCK FEEDING MECHANISM FOR MATCH MACHINES

Filed July 3, 1926 2 Sheets-Sheet 1

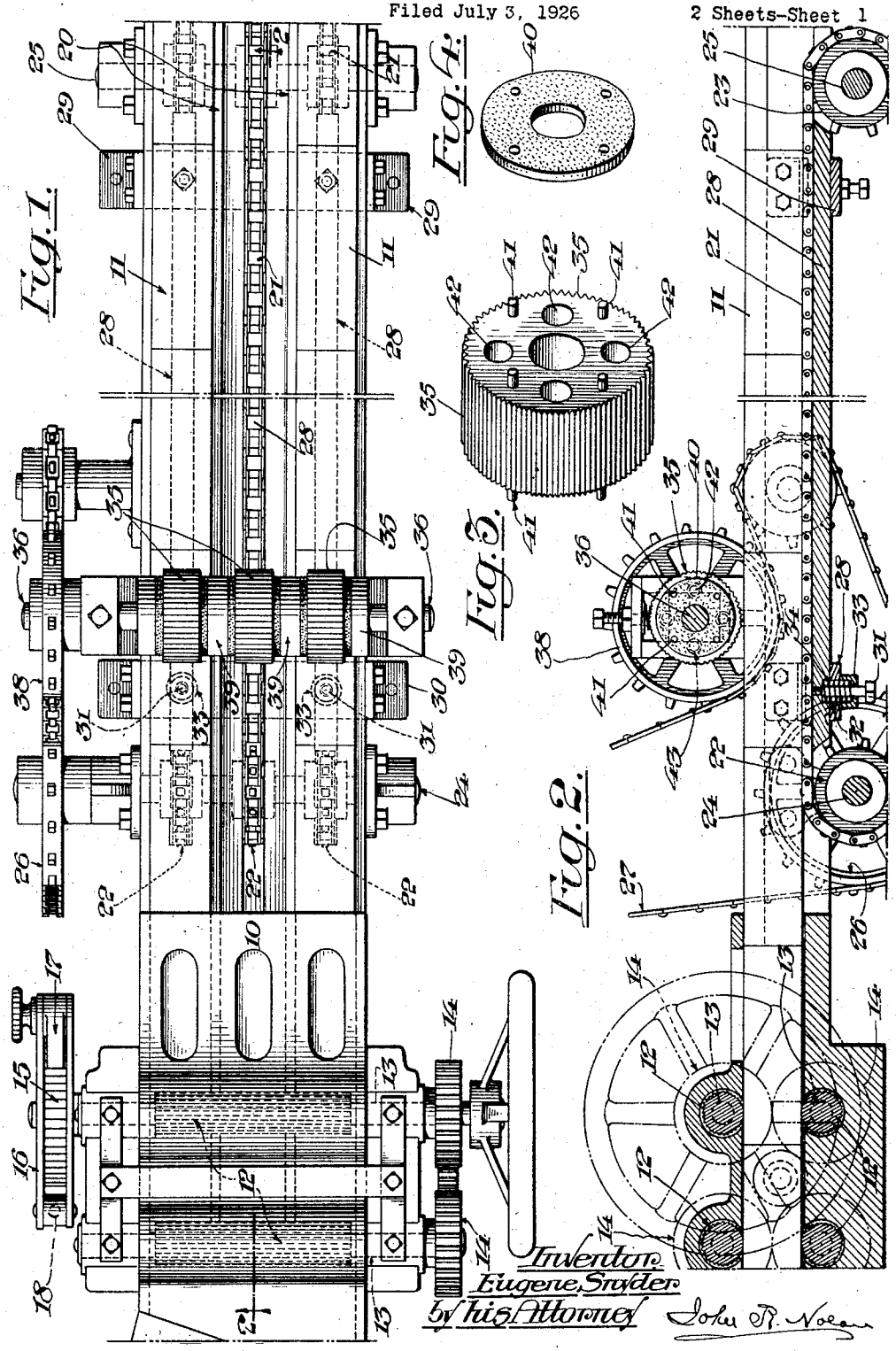


Fig. 1.

Fig. 4.

Fig. 3.

Fig. 2.

Inventor:
Eugene Snyder
by his Attorney
John R. Nolan

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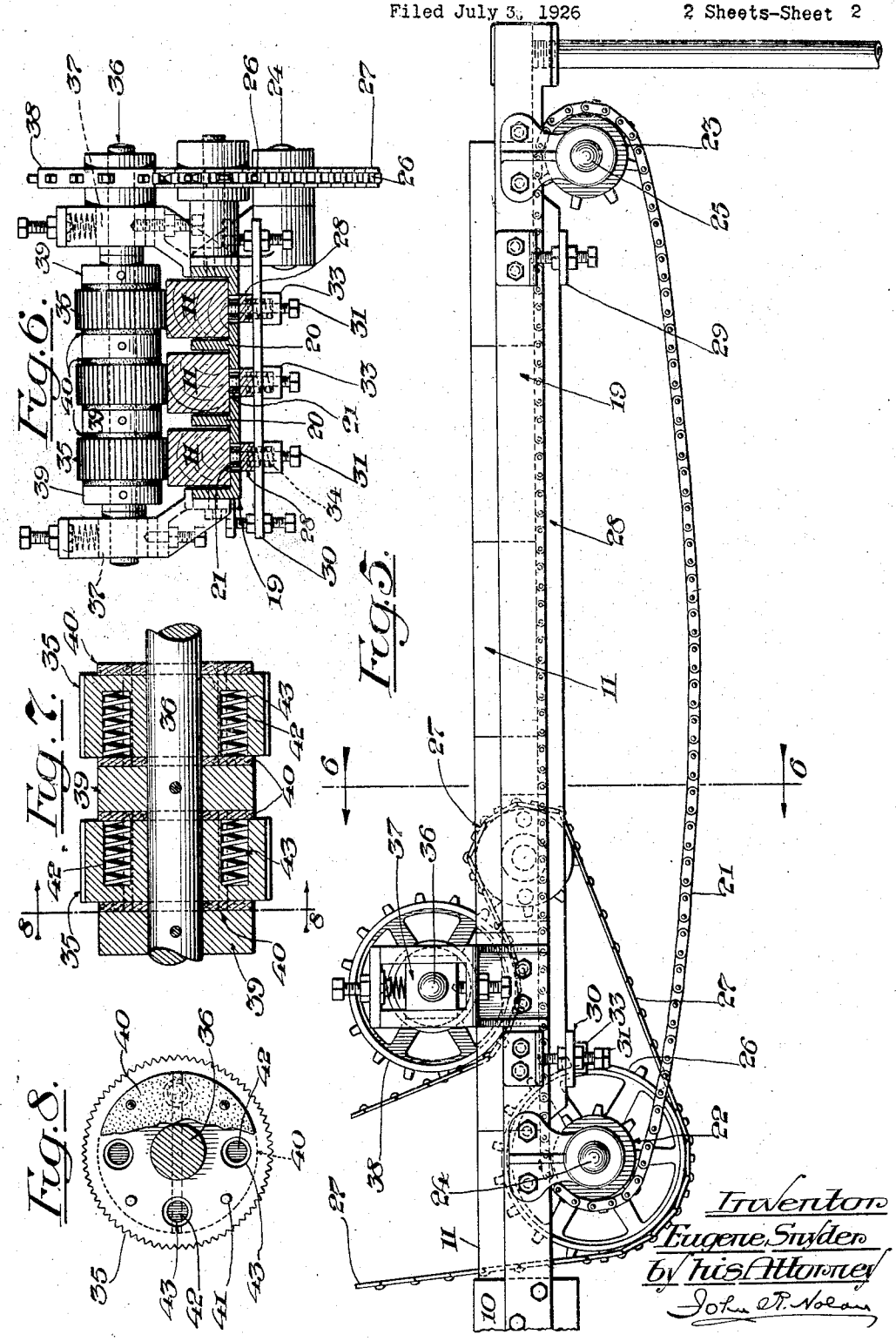


Fig. 6.

Fig. 7.

Fig. 8.

Fig. 5.

Inventor
Eugene Snyder
by his Attorney
John R. Nolan

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UNITED STATES PATENT OFFICE.

EUGENE SNYDER, OF BARBERTON, OHIO, ASSIGNOR TO THE DIAMOND MATCH COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

BLOCK-FEEDING MECHANISM FOR MATCH MACHINES.

Application filed July 3, 1926. Serial No. 120,260.

This invention relates to block-feeding mechanism for match machines of that class wherein blocks of wood are delivered to feed rolls and thereby intermittently moved to devices which cut successive rows of splints from the blocks and insert the splints in a suitable carrier.

The object of my invention is to provide a block delivery mechanism of simple and efficient construction whereby blocks arranged end to end, are uniformly advanced to the feed rolls irrespective of differences in the height of succeeding blocks or of the presence of spaces or gaps between adjacent blocks as they progress to the rolls.

The invention, in its preferred form herein illustrated, comprises a block-feeding trough; an endless chain having its active run arranged to travel in the bottom of the trough toward the main block feed rolls, which chain is adapted to support and carry the blocks contained in the trough; a vertically movable resilient support for the active run of the chain, and a novel frictionally controlled feed mechanism adapted to act upon the tops of the blocks and co-act with the chain to effect the proper delivery of the blocks to the feed rolls.

The invention also comprises novel features of construction and combinations of parts, all of which will be hereinafter described and claimed.

In the drawings—

Figure 1 is a plan of a portion of the block-supply trough and associated parts equipped with block-feed mechanism embodying my invention.

Fig. 2 is a longitudinal vertical section of the apparatus, as on the line 2—2 of Fig. 1.

Figs. 3 and 4 are views, enlarged, of one of the frictionally controlled feed-rolls and one of its friction washers, respectively.

Fig. 5 is a side elevation of the trough and the block feed mechanism thereof.

Fig. 6 is a vertical section through said trough and mechanism, as on the line 6—6 of Fig. 5.

Fig. 7 is a vertical section, enlarged, through a pair of the frictionally-controlled feed rolls, and adjuncts.

Fig. 8 is a transverse section as on the line 8—8 of Fig. 7, the friction washer being partly broken away.

Referring to the drawings, 10 designates a portion of a guide structure adapted to receive blocks of wood, 11, and direct them to the path of the usual splint cutters of the match machine. Intermittently rotatable feed rolls 12 are arranged in pairs within said structure and are adapted to engage the blocks (11) at top and bottom and positively advance them step-by-step to the path of the cutters. In the present instance, the shafts or trunnions 13 of the rolls, which have their bearings in the sides of the structure 10, are geared together for concurrent rotation by a train of gears 14 at one side of the structure. One of the shafts or trunnions is provided at the opposite end of the structure with a ratchet wheel 15 and an oscillating lever 16 whereof one arm carries a pawl 17 in engagement with the teeth of the ratchet wheel. The other arm of the lever is connected to and operated by a reciprocating link 18 to effect the intermittent rotation of the ratchet wheel and its shaft, such motion being transmitted thence through the gearing to the feed rolls, as usual.

The block-supply trough 19 leading to the guide structure 10 is illustrated as provided with two spaced parallel partitions 20 which afford three longitudinal channels whereby three rows of blocks are directed simultaneously to the guide structure. The bottoms of the respective channels are longitudinally slotted to accommodate the upper runs of endless conveyer chains 21 which engage the respective rows of blocks and impel them toward the delivery end of the trough. These chains are supported on sprocket wheels 22, 23 borne by shafts 24, 25 located beneath and adjacent the respective ends of the trough, the inner shaft 24 being equipped with a sprocket wheel 26 about which passes a chain 27 which is driven from a suitable source of power in such manner as to effect the requisite travel of the conveyer chains. The upper runs of these chains rest upon parallel supporting bars 28, which, instead of being rigidly supported from end to end as heretofore, are mounted and arranged to exert yielding upward pressure against the opposing runs of the conveyer chains and the contiguous rows of blocks as the latter are being advanced to the delivery end of the trough. In the present instance the outer ends of the bars 28 are fixed to a stationary cross-bar 29 located beneath the adjacent end of the trough, the length of the bars 28 permitting

their limited vertical motion at their inner or forward ends. These forward ends overlie a cross-bar 30 which is spaced below and fixed to the underside of the trough. Each bar 28 has secured thereto the upper end of a depending bolt 31 which extends freely through an aperture 32 in the bar 28, and through an apertured socket piece 33 fast on the underside of the cross-bar. Seated in the socket piece so as to bear against the underside of the longitudinal bar 28 is a compression spring 34 which loosely encircles the bolt and tends to maintain the free end of the bar 28 and the overlying run of the conveyer chain yieldingly raised.

Instead of the overhanging and swinging chain mechanism heretofore employed for engaging and advancing the rows of blocks adjacent the delivery end of the trough, I provide a series of spaced-apart feed rolls 35 against which the blocks are firmly pressed by the spring actuated bar 28, thus effecting the co-operative engagement of the chains 21 and rolls 35 with the opposing lower and upper surfaces respectively of the blocks. These rolls, which are peripherally serrated or milled, are loosely mounted at spaced intervals on a transverse shaft 36 which is journaled in suitably supported boxes 37 at the respective sides of the trough. This shaft 36 is driven concurrently with the conveyer chains 21, preferably by the engagement of the drive chain 27 with a sprocket wheel 38 on one end of the shaft 36. Fast on the shaft, in the spaces between the adjacent rolls 35, and also at the outer faces of the side rolls, are metal collars 39 against which friction washers 40 of fibre mounted on the rolls, are yieldingly pressed. The rolls 35 are provided with laterally projecting pins 41 and the washers are suitably perforated and loosely fitted on the pins. This connection ensures the rotation of the washers with the rolls, and since the washers are of fibre there is no liability of their "seizing" the collars. Each of the rolls is formed with a series of spaced-apart transverse sockets 42 in which are seated compression springs 43 which, bearing against the opposing washers, insure the requisite frictional contact of the washers and the collars.

The speed of the shaft 36 is such that when the rolls are free to rotate therewith, the peripheral speed of the rolls corresponds with the lineal speed of the conveyer chains, which latter speed is greatly in excess of that of the main block feed rolls 12. Hence the conveyer chains and the rolls 35 advance the interposed blocks much faster than the block feed rolls 12 will receive them, but since the rolls 35 are frictionally mounted on the shaft as above described the requisite slippage of the rolls 35 is ensured to compensate for the speed differential of the main block feed rolls. Inasmuch as the shaft 36 is continuously rotating, any gap that may exist between succeeding blocks (e. g. caused by interrupted feeding by the operator) while they are passing from the rolls 35 to the rolls 12, will be closed; and as the springs 34 tend normally to raise the bars 28 and the upper runs of the chains 21 differences in the height of succeeding blocks are compensated for and a uniform feeding of the blocks is maintained.

It is to be understood that my invention is not limited to the details of construction herein disclosed, as the mechanism may be modified within the principle of the invention and the scope of the appended claims.

I claim—

1. In block-feeding mechanism for match machines, the combination with block feed rolls, supporting and operating elements therefor, and a block-supply trough leading to said rolls, of block-impelling means including an endless conveyer having its active run extending longitudinally of the bottom of the trough, a transverse shaft overhanging the trough in advance of said rolls, a feed roll loosely mounted on said shaft, a frictional connection between said roll and shaft, means for concurrently driving said shaft and conveyer at a higher speed than the block-feed rolls, and means for yieldingly raising the active run of the conveyer and pressing the blocks into engaging relation with the frictionally connected feed roll.

2. In block-feeding mechanism for match machines, the combination with block feed rolls, supporting and operating elements therefor, and a block-supply trough leading to said rolls, of block-impelling means including an endless conveyer having its active run extending longitudinally of the bottom of the trough, a transverse shaft overhanging the trough in advance of said rolls, a feed roll loosely mounted on said shaft, a frictional connection between said roll and shaft, means for concurrently driving said shaft and conveyer at a higher speed than the block-feed rolls, a bar underlying and supporting the active run of the conveyer, said bar being fixed at its end to the trough, and a spring resiliently supporting the free end of the bar so as to raise the active run of the chain and press the blocks into engaging relation with the frictionally connected roll.

3. In block-feeding mechanism for match machines, the combination with block feed rolls, supporting and operating elements therefor, and a block-supply trough leading to said rolls, of block-impelling means including an endless conveyer having its active run extending longitudinally of the bottom of the trough, a transverse shaft

overhanging the trough in advance of said rolls, a feed roll loosely mounted on said shaft, collars fast on said shaft and embracing the roll, friction washers interposed between the respective collars and the roll, means for concurrently driving said shaft and conveyer at a higher speed than the block-feed rolls, and means for yieldingly raising the active run of the conveyer and pressing the blocks into engaging relation with the said loosely mounted feed roll.

4. In block-feeding mechanism for match machines, the combination with block feed rolls, supporting and operating elements therefor, and a block-supply trough leading to said rolls, of block-impelling means including an endless conveyer having its active run extending longitudinally of the bottom of the trough, a transverse shaft overhanging the trough in advance of the rolls, a feed roll loosely mounted on said shaft, collars fast on said shaft and embracing the roll, friction washers interposed between the respective collars and the roll, means for concurrently driving said shaft and conveyer at a higher speed than the block-feed rolls, a bar underlying and supporting the active run of the conveyer, said bar being fixed at its end to the trough, and a spring resiliently supporting the free end of the bar so as to raise the active run of the chain and press the blocks into engaging relation with the said loosely mounted feed roll.

Signed at Barberton, in the county of Summit and State of Ohio, this 30 day of June, A. D. 1926.

EUGENE SNYDER.