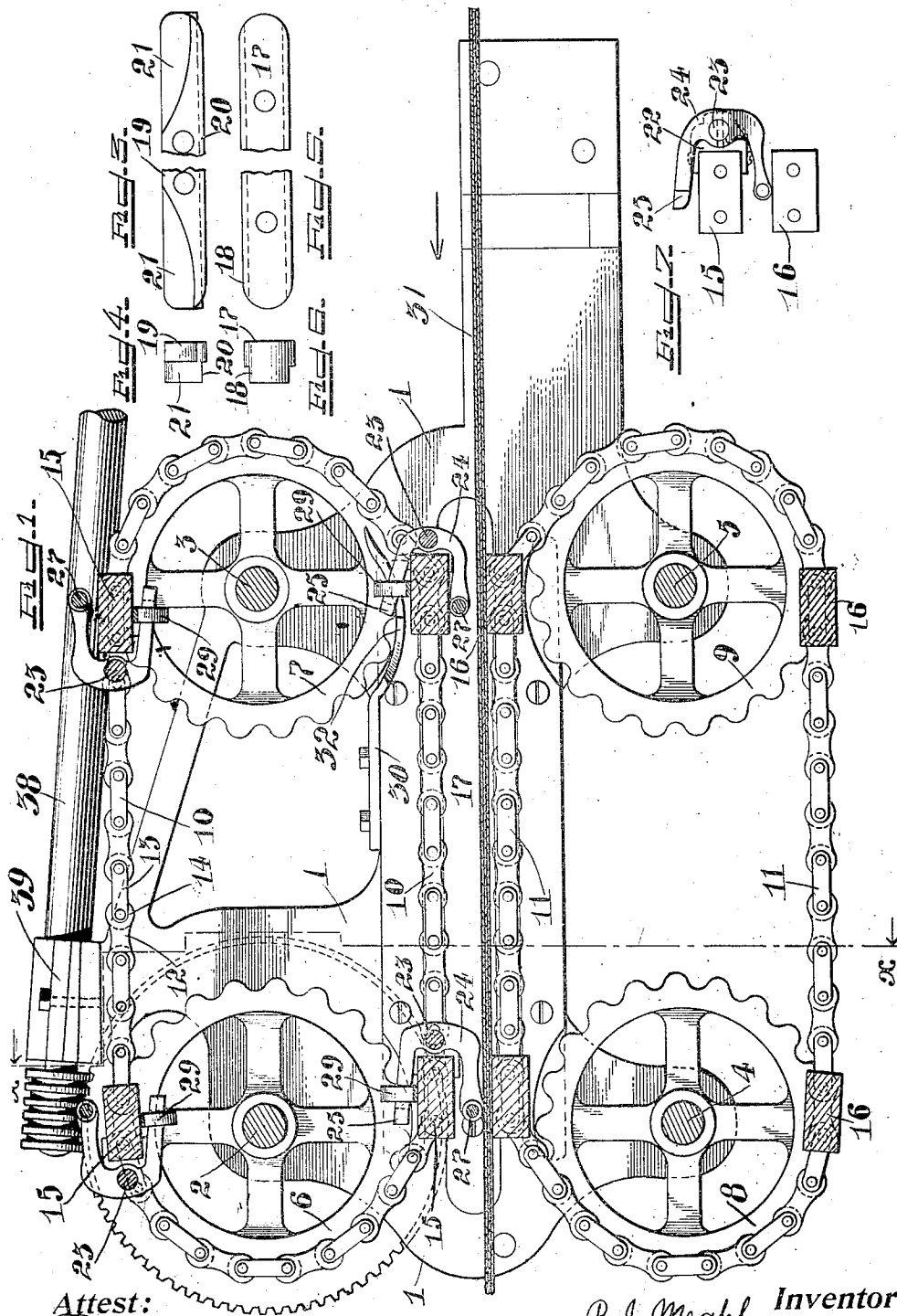


P. J. MEAHL.
PAPER FEED MECHANISM.
APPLICATION FILED OCT. 31, 1908.

943,261.

Patented Dec. 14, 1909.

2 SHEETS—SHEET 1.



Attest:

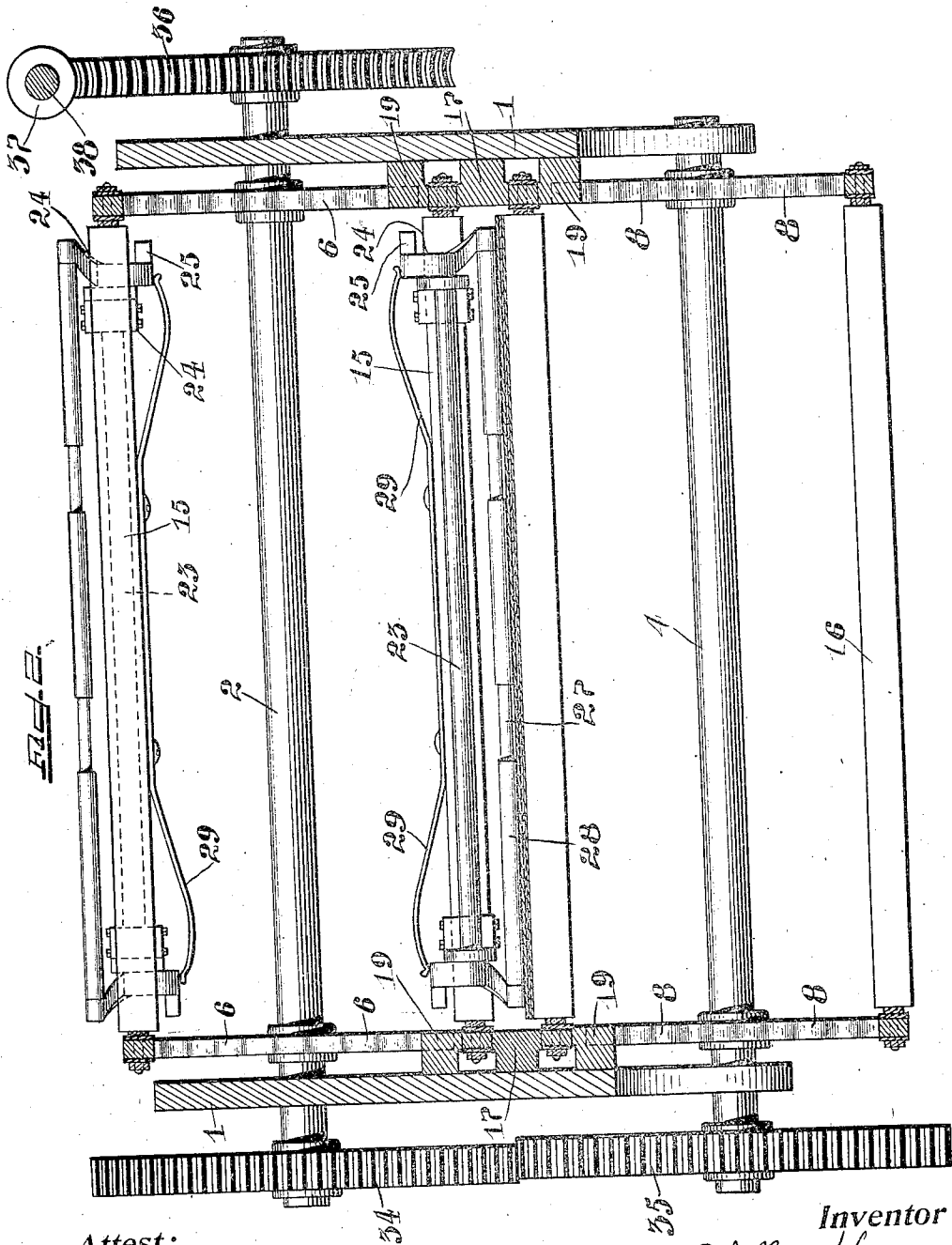
W. S. Ashley
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P. J. Meahl Inventor:
by *Oscar T. Gump* Att'y

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UNITED STATES PATENT OFFICE.

PHILIP JACOB MEAHL, OF BAYONNE, NEW JERSEY.

PAPER-FEED MECHANISM.

943,261.

Specification of Letters Patent.

Patented Dec. 14, 1909.

Application filed October 31, 1908. Serial No. 460,410.

To all whom it may concern:

Be it known that I, PHILIP J. MEAHL, a citizen of the United States, and a resident of Bayonne, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Paper-Feed Mechanism, of which the following is a specification.

This invention relates to improvements in paper feed mechanism for perforating machines such as are used for perforating or slotting note sheets for musical instruments.

The object of my improvement is to provide a new and useful improved machine of this kind, which is simple in construction, effective and reliable in action so as to feed a number of superimposed sheets of paper with absolute uniformity.

In the accompanying drawings in which like characters of reference indicate like parts on all the figures, Figure 1 is a vertical longitudinal sectional view of my improved paper feed mechanism. Fig. 2 is a vertical transverse sectional view of the same on the line *x x* of Fig. 1. Fig. 3 is a detail side view of the end parts of the outer tracks for guiding the sprocket chains. Fig. 4 is an end view of the same. Fig. 5 is a side view of the intermediate track for guiding the sprocket chains. Fig. 6 is an end view of the same. Fig. 7 is a detail end view of two bars on two sprocket chains and a paper gripper mounted on one of the bars.

The entire mechanism is mounted on a frame 1 and in this frame are mounted two upper shafts 2 and 3 and two lower shafts 4 and 5, and on the upper shaft 2 there are fixed two sprocket wheels 6 and on the upper shaft 3 there are mounted two sprocket wheels 7. On the lower shaft 4 there are fixed two sprocket wheels 8 and on the lower shaft 5 there are fixed two sprocket wheels 9. Over each set of sprocket wheels 6 and 7 on the two upper shafts 2 and 3 an endless sprocket chain 10 is passed and a similar endless sprocket chain 11 is passed over each two wheels 8 and 9 in the two lower shafts 4 and 5. The length of these sprocket chains is such that there would be some slack in each chain as will be set forth later on.

The chains are all formed of alternate pairs of links at the pivotal connections of the links. The two chains 10 of the sprocket wheels on the upper shafts 2 and 3 are connected at regular intervals by cross bars 15

secured to links of the sprocket chains and in a like manner the two chains 11 on the sprocket wheels on the lower shafts 4 and 5 are connected at intervals by cross bars 16 the ends of which are secured to the links of the sprocket chains. To the inner surface of each side frame 1 of the machine a horizontal rail 17 is secured, the ends of which are rounded semi-circularly, and form a double track for the rollers 14 of the top and bottom sprocket chains. The top and bottom edges of the rail 17 are under cut as shown at 18, in Figs. 1 and 5 so as to form clear track edges for the said rollers 14. Above and below the rail 17 a rail 19 is also secured to the inner surface of each side frame 1, said rail 19 having the edges adjacent to the top and bottom edges of the rail 17 also under cut as shown at 20.

The edges of the rails 17 and 19 are exactly parallel and separated such a distance that the rollers and the links connected therewith are guided to move absolutely horizontally so as not to interfere with the rotation of the sprocket wheels the outer edges of the rails 19 are provided with curved recesses 21 through which recesses parts of the rims of the sprocket wheels pass. On each bar 15, of the upper pair of sprocket chains, a forked bearing piece 22 is secured at each end of the bar and in these bearing pieces a rock shaft 23 is mounted, on each end of which a U shaped lever 24 is secured, the upper arm of which extends over the upper surface of the corresponding bar 15 and is provided at its end with a laterally projecting lug 25. The lower arm of each U shaped lever 24 projects beneath the corresponding bar 15 and in these lower arms a rod 27 is secured on which are mounted a series of sleeves 28 made of rubber, cloth, leather or similar material. A spring 29 is secured on the top surface of each bar 15 and its ends bear upon the free ends of the upper arms of the U shaped levers 24 on the rock shaft 23 whereby the upper arms are pressed downward and toward the bar 15 and the opposite or lower arms are pressed away from said bar.

A cam track 30 is secured to each side frame in such a manner that this cam track is adjacent to the inner face of each sprocket wheel 7 on the upper rear shaft 3 of the machine and the cam tracks 30 are so positioned that as the cross bars 15 move down-

ward with the rear upper sprocket wheels 7 the lugs 25 of the U shaped levers 24 travel upon the upper edge of the cam tracks 30 whereby said lugs 25 and the upper arms 5 of the U shaped levers 24 are lifted against the tension of the corresponding spring 29 and thus the rods 27 are held raised and away from superimposed sheets of paper 31 resting upon the upper bar 16 of the lower 10 set of sprocket wheels and chains as shown in Fig. 1. The cam track 30 is provided with a lateral recess 32 so that when the lugs 25 on the U shaped levers 24 arrive at the beginning of the recess 32 they snap down 15 through the said recess under the tension of the springs 29 whereby the rods 27 are brought in contact with the paper 31 resting upon the bar 16 of the lower set of chains and sprocket wheels.

Engaging cog wheels 34 and 35 are secured on the upper shaft 2 and lower shaft 4 respectively and a worm wheel 36 is secured on that end of the upper shaft 2 opposite the one carrying the cog wheel 34 25 and this worm wheel is engaged with worm 37 on a shaft 38 suitably mounted in bearing 39 on the machine frame and driven from any suitable intermittent source of power so that when the machine is in operation the outer parts of the chains move in 30 the reverse direction of the paper as indicated by the arrow and the inner parts of the chains move the paper forward.

The operation is as follows: When an 35 upper cross bar 15 and a lower cross bar 16 approach each other they also approach the plane of the paper at a point where the same is to be gripped. Immediately after these two opposite bars namely an upper 40 bar 15 and a lower bar 16 have traveled a short distance horizontally the lugs 25 of the U shaped levers 24 on the upper bar 15 have passed the beginning of the recess 32 in the cam track 30 and the rod 27 is suddenly 45 forced down by the corresponding spring 29, into firm contact with the paper and presses the paper upon the opposite lower bar 16. It will be observed that, as shown in Fig. 1 at the time that the paper is not gripped between the cross bar 16 and the gripping rod 50 27 of the corresponding upper bar 15, the paper is gripped between such a rod 27 and the corresponding lower bar 16 at the opposite end of the horizontal parts of the chains and as soon as the rear gripper rod 55 27 grips and holds the paper resting upon the corresponding lower bar 16, the front gripper begins to move upward with the chains on the sprocket wheels 6 and release 60 the paper, so that the paper is held by the grippers of only one bar while being transferred the length of the horizontal tracks, but is at all times held by means of at least one gripper and is not released by this gripper 65 until it has been grasped and held by the

succeeding gripper. It will also be observed that the gripper does not act to grip the paper until that part of the chain carrying the cross bar on which the gripper is secured and the corresponding parts of the chains 70 to which the opposite cross bar is secured are in horizontal position and to accomplish this the sprocket chains are made slack and the tracks 17 and 19 are made of such a 75 length and so proportioned in relation to the vertical plane through the superimposed shafts 3 and 5 that the ends of these tracks extend beyond this vertical plane and the links of the chains will have been brought into horizontal position by the time that 80 they cross this vertical plane. As the paper is on a horizontal plane and the support for the paper moves in a horizontal plane and the gripper when applied to the paper presses the same upon a support below also 85 in the horizontal plane, it follows that there can be no shifting of the paper by the application of the gripper, that is to say, one or more of the superimposed layers of papers cannot be shifted in relation to the 90 other layers but all must move together. During the time that a gripper holds and carries forward the paper those parts of the sprocket chains, to which the cross bars gripping and supporting the paper are attached, are moved horizontally and are com- 95 pelled to move horizontally because the chains are guided in horizontal tracks formed between the edges of the rails 17 and 19. 100

Having described my invention what I claim as new and desire to secure by Letters Patent is:—

1. In a paper feed device the combination with two sets of sprocket wheels and two 105 sets of chains passing over the wheels, of bars connecting the chains of each set with each other, paper clamping devices mounted on the bars of one set of chains, springs for pressing the clamping devices upon the paper supported by the bars of the other set of chains, means for temporarily lifting the clamping devices against the tension of the springs and then releasing the clamping devices substantially as set forth. 115

2. In a paper feed device the combination with two sets of sprocket wheels and two sets of chains passing over the wheels, of bars connecting the chains of each set with each other, paper clamping devices mounted 120 on the bars of one set of chains, guide tracks for guiding those parts of the chains parallel with and adjacent to the opposite faces of the sheets of paper being conveyed, an intermediate rail and a top and bottom rail 125 forming said guide tracks between them substantially as set forth.

3. In a paper feed device the combination with two sets of wheels and a set of chains passing around each set of wheels of cross 130

bars uniting the chains of each set, rock shafts mounted on the cross bars of one set, U shaped levers on these shafts, clamping rods attached to the lower ends of the levers, 5 lugs on the upper ends of the levers and cam tracks on the frames, and springs secured to the bars and acting on the levers, substantially as set forth.

10 4. In a paper feed device the combination with two sets of sprocket wheels and a set of endless chains passing over each set of wheels, of bars uniting the chains of each set, horizontal tracks for guiding those parts of the chains adjacent to opposite faces of 15 the paper to be fed, the ends of said tracks

extending a slight distance beyond the vertical plane through the axis of the sprocket wheels, paper clamping means on the bars of one set of chains, springs acting on the clamping devices, cams for raising the 20 clamping device when the chains enter the horizontal tracks, said cams being constructed to release the clamping devices immediately after the chains have moved forward in the horizontal tracks.

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Witnesses:

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FRANK E. RAFFMAN.