M. PARIDON.

MECHANISM FOR STRAIGHTENING AND ASSEMBLING MATCHES, &c.

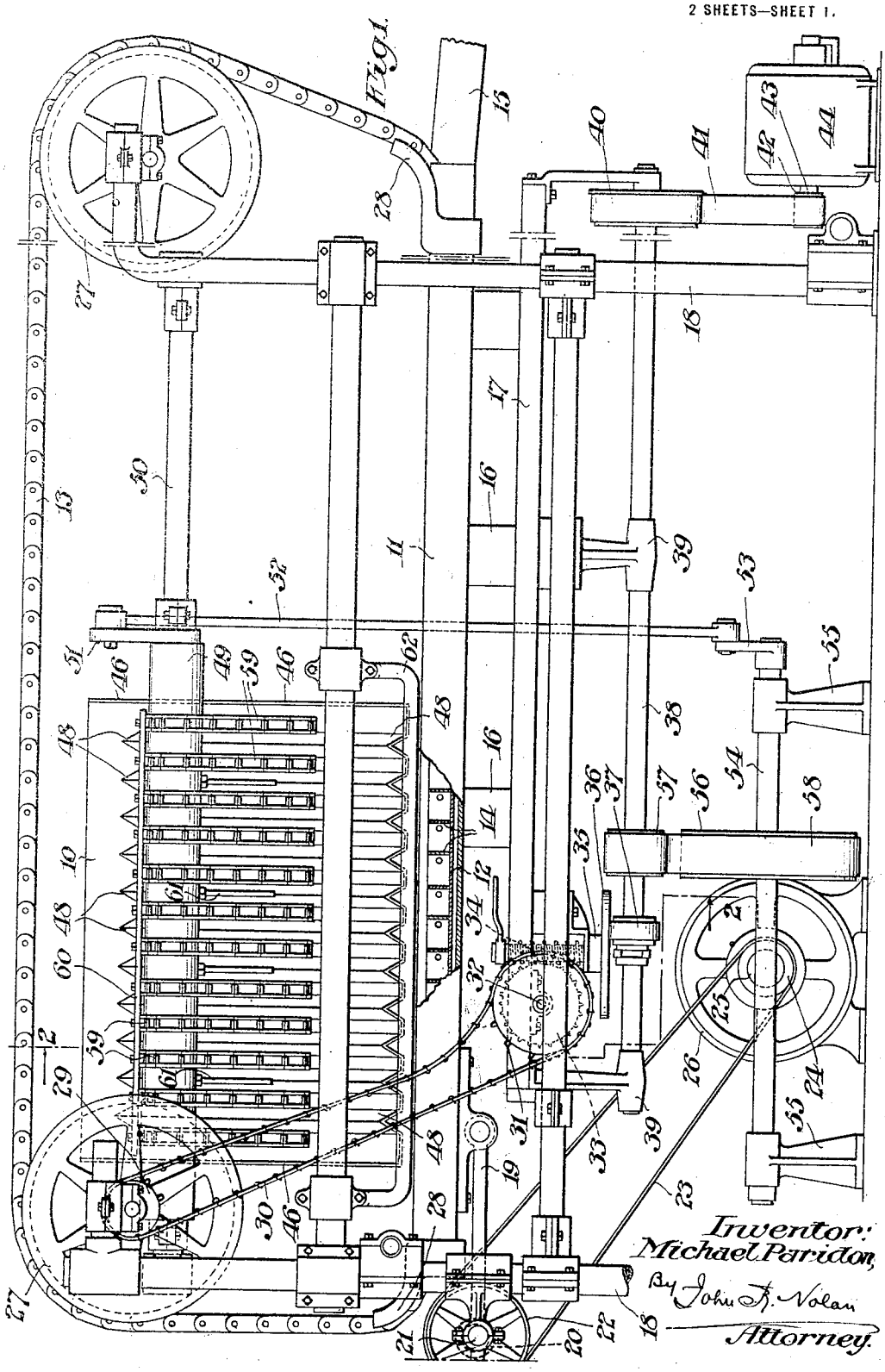
APPLICATION FILED MAR. 18, 1916.

1,236,753.

Patented Aug. 14, 1917.

2 SHEETS—SHEET 1.

Fig. 1.



Inventor:
Michael Paridon,
By John F. Nolan
Attorney.

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2 SHEETS—SHEET 2.

Fig. 2.

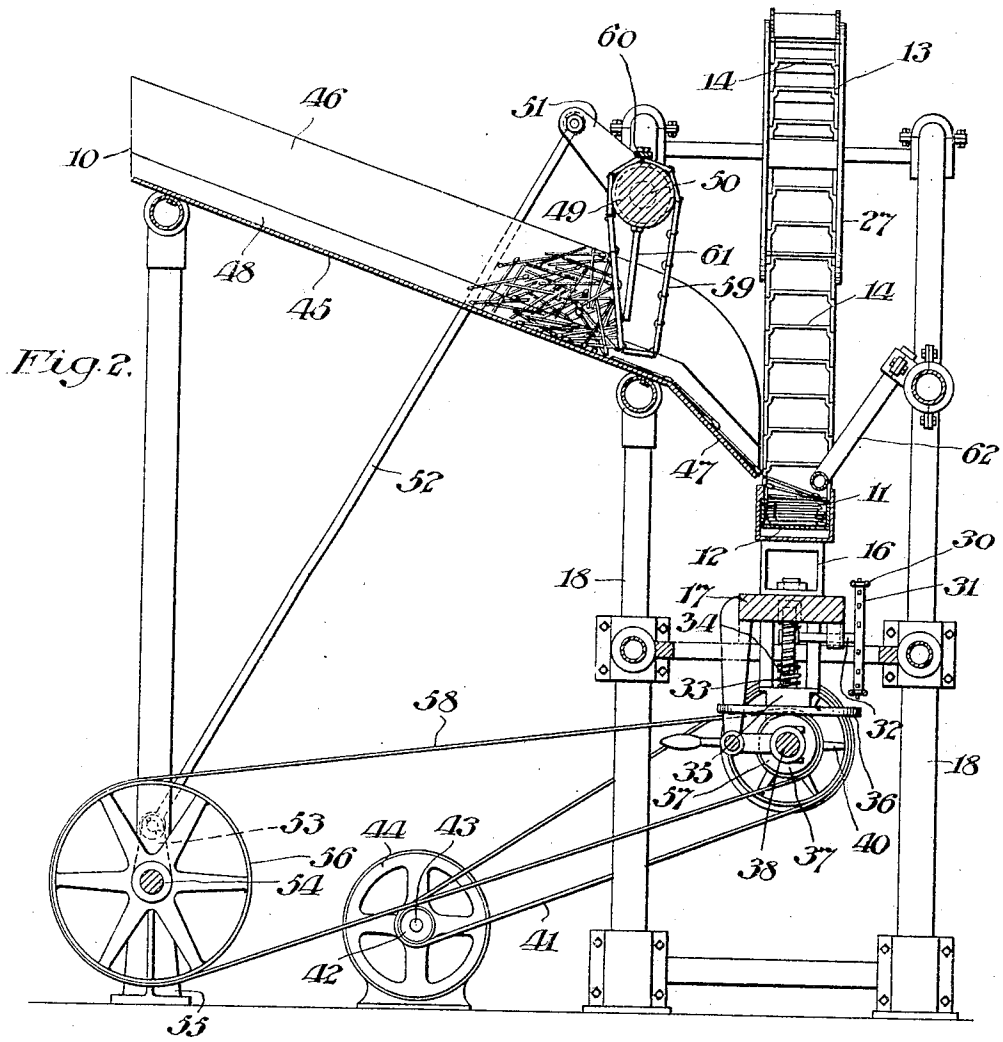


Fig. 3.

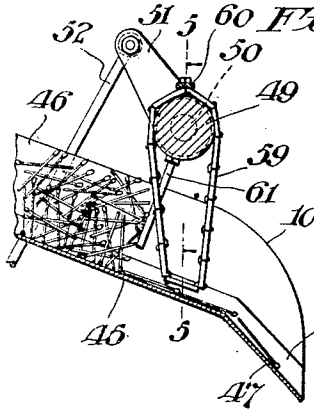


Fig. 4.

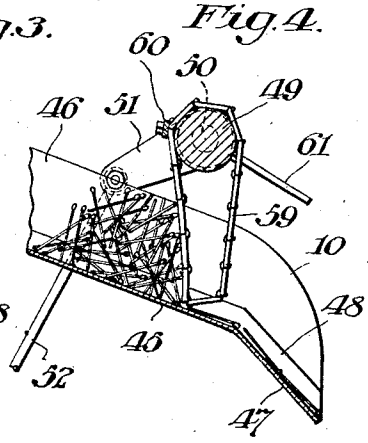
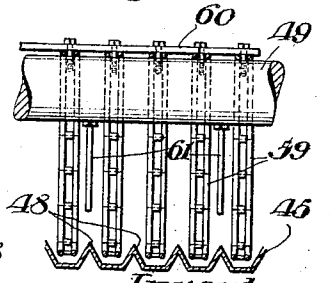


Fig. 5.



Inventor:
Michael Paridon,
By John F. Nolan
Attorney.

UNITED STATES PATENT OFFICE.

MICHAEL PARIDON, OF BARBERTON, OHIO, ASSIGNOR TO THE DIAMOND MATCH COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

MECHANISM FOR STRAIGHTENING AND ASSEMBLING MATCHES, &c.

1,236,753. Specification of Letters Patent. Patented Aug. 14, 1917.

Application filed March 18, 1916. Serial No. 85,030.

To all whom it may concern:

Be it known that I, MICHAEL PARIDON, a citizen of the United States, and resident of Barberton, in the county of Summit and State of Ohio, have invented certain new and useful Improvements in Mechanism for Straightening and Assembling Matches, &c., of which the following is a specification.

The object of this invention is to provide mechanism of simple and efficient construction and operation for straightening and assembling promiscuously mixed matches, splints, tooth picks and analogous objects, in order to facilitate the packing thereof in box trays, or other receptacles.

The invention, generally stated, comprises means for supporting and feeding a pile of jumbled matches, or the like, and means whereby the pile is intermittently lifted in such a manner as to release the individual matches, &c., from the bottom of the pile and arrange them in substantial parallelism with each other preparatory to their delivery to a suitable receiver.

More specifically, the invention comprises a hopper structure having parallel positioning grooves or ways therein for matches, or the like, and flexible agitating means at or adjacent the discharging end of the structure constructed and arranged to shake the contents of said structure and present the matches, &c., progressively to the underlying positioning grooves or ways.

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

In the drawings—

Figure 1 is a front elevation, partly in section, of straightening and assembling mechanism embodying a preferred form of my invention; the mechanism illustrated being especially designed for handling the "waste" match accumulations of match factories.

Fig. 2 is a transverse vertical section, as on the line 2—2 of Fig. 1, showing matches supported within the hopper structure and engaged by the flexible agitating chain.

Fig. 3 is a sectional detail of the discharging end of the hopper; the agitating chain; the bumper rod, and adjuncts, showing said rod positioned to push the bunched matches back from the chain and slightly lift the pile, thus permitting the lowermost straight matches to slide from under the pile.

Fig. 4 is a similar view showing the rod retracted and the matches bunched against the chain in position to be agitated thereby.

Fig. 5 is a vertical section, as on the line 5—5 of Fig. 3.

Referring to the drawings, 10 designates an inclined hopper structure into which a pile of promiscuously mixed matches is dumped or otherwise deposited; such matches thereupon gravitating toward the bottom or discharging end of the structure. This structure constitutes a simple and efficient means for supporting and feeding the pile of matches. In the region of the discharging portion are flexible agitating devices, which will be hereinafter described, whereby the pile of matches is progressively shaken in such a manner that the lowermost matches are progressively separated from the pile and delivered thence endwise and in substantial parallelism to a suitable receiver. This receiver, in the present instance, comprises a horizontal trough 11 having a metal bottom lining 12. An endless blade-conveyer 13 is arranged to travel longitudinally of and through the trough and by means of its spaced blades 14 partition the trough into traveling compartments into which the matches are deposited and therein orderly arranged as rapidly as they are discharged from the hopper structure. The trough is provided at its discharging end with an inclined extension 15 into which the parallelized matches are delivered by the traveling conveyer, such extension thence conducting the matches to any usual or approved box filling mechanism. The trough and conveyer mechanism herein selected for illustrative purposes is substantially the same in construction and operation as corresponding mechanism heretofore used in connection with coöperatively related match making and packing machines.

Briefly described, the trough 11 is slidingly supported on spaced brackets 16 on a horizontal bed 17 which is supported by frame posts 18. One end of the trough is connected by means of a link 19 with a crank or eccentric 20 on a shaft 21 having its bearings in brackets on the proximate

posts. This shaft is provided with a pulley 22 which is operatively connected by means of a belt 23 with a pulley 24 on a drive shaft 25, which, in the present instance, is illustrated as the power shaft of an electric motor 26. By the mechanism just described the trough is rapidly vibrated longitudinally so as to jar the contained matches and settle them compactly within the traveling chain compartments of the trough.

The upper horizontal run of the conveyer 13 is supported upon suitably-disposed pulleys 27, the shafts of which are mounted in appropriate boxes on the frame posts. The lower horizontal run of the conveyer is supported and directed by guides 28 at the respective ends of the trough so as to insure the passage of the conveyer within and longitudinally of the trough. The shaft of one of the pulleys 27 is provided with a sprocket wheel 29 which is connected by means of a chain 30 with a similar wheel 31 on a shaft 32 having its bearings in brackets on the bed 17. The shaft 32 is equipped with a worm wheel 33 with which meshes a worm 34 on a vertical shaft having its bearings in a bracket 35 on the bed. The lower end of the shaft bears a friction wheel 36 with which contacts a brush wheel 37 on a shaft 38 having its bearings in depending brackets 39 on the bed. This shaft 38 is provided at one end with a pulley 40 which is operatively connected by means of a belt 41 with a pulley 42 on a drive shaft 43, which, in the present instance, is the shaft of an electric motor 44. By the mechanism just described motion is transmitted from the shaft 43 to the conveyer. The brush wheel 37 is adjustable as usual toward and from the center of the driven wheel 36 so as to vary the speed of the latter, as desired.

The hopper structure and its associated mechanism for straightening the jumbled matches contained in the hopper and discharging them thence in an orderly manner will now be described.

This hopper structure, in its preferred form, comprises an inclined bottom portion 45 having upstanding end walls 46; the lower or discharging portion of the hopper being abruptly inclined, as at 47, and the whole being suitably supported directly in rear of the receiving trough. The bottom is provided on its upper surface, with parallel grooves or ways, which are conveniently formed by Λ-shaped members 48 arranged on the bottom in spaced parallel relation to each other, as shown. Overhanging the hopper, in rear of its abruptly inclined portion, is a horizontal rocker beam 49, which is preferably formed on or carried by a shaft 50 having its bearings in brackets on the frame posts. Any suitable means for rocking the beam on its longitudinal axis may be employed. In the present instance the shaft 50 is provided with an upwardly and rearwardly extending crank arm 51 which is operatively connected by means of a rod 52 with a crank 53 on one end of a shaft 54 which has its bearings in suitably-disposed standards 55. This shaft is provided with a pulley 56 which is connected with and driven from a pulley 57 on the shaft 38, by means of a belt 58. Loosely hung on the beam, in spaced circumferential grooves therein, are endless chains 59 which are constructed and arranged to depend into the respective grooves or ways in the bottom of the hopper structure, and thus present a yielding barrier to the pile of matches in said structure. A clamp bar 60 affixed to the beam longitudinally thereof bears upon the chains and secures them in place.

The chains are bodily actuated by the rocker beam in such a manner that their depending members are given a positive up and down motion; the pulsating rearward portions of the chains thus bearing against the front of the pile and bodily raising and lowering the matches so as to cause the lowermost matches to settle lengthwise within the grooves. The lowermost links of the chains, as they are lifted, permit the matches thus positioned in the grooves to slide downward into the abruptly inclined portion of the hopper, whence they gravitate into the receiving trough, as seen in Fig. 2. During and as a result of the shaking operation of the chains a continuous uniform feeding of rows of matches from the pile to the receiver is effected.

Depending from the beam are a series of rods 61 (in the present instance four) which, during the rocking of the beam, repeatedly bump against and push back the opposing pile of matches in the hopper, thus preventing them from forcing the flexible chains out of position in respect to the grooves. These rods are so positioned that in their backward swing they slightly lift the opposing pile of matches and thus permit the lowermost matches within the grooves of the hopper to slide from under the pile. (See Fig. 3.) The impact of the rods on the match pile also contributes to the efficient settling of the matches in and longitudinally of the grooves.

62 is simply a bar arranged longitudinally of and above the front of the trough 11 so as to prevent the accidental displacement of the matches as they enter the trough.

While the mechanism above described illustrates a simple and efficient form of embodiment of my invention; it is to be understood that the apparatus may be greatly modified without departing from the spirit of the invention.

The term "splint" or "splints" is used in the appended claims to include matches, tooth picks and similar splint-form articles.

What I claim is—

1. The combination with means for supporting and feeding a pile of promiscuously mixed splints, said means including a bottom portion having longitudinally thereof shallow grooves or ways in parallel relation to each other, of flexible barrier members in the path of the pile, depending into the respective grooves or ways, and means for vertically agitating said members whereby the pile of splints is intermittently lifted and the lowermost splints are progressively freed therefrom and permitted to settle lengthwise within the grooves or ways and escape thence in parallelism beneath and transversely of the said members.

2. The combination with means for supporting and feeding a pile of promiscuously mixed splints, of a series of chains depending across the path of the pile, and means for agitating said chains, whereby the pile is intermittently lifted and the lowermost splints are progressively freed therefrom.

3. The combination with means for supporting and feeding a pile of promiscuously mixed splints, of a flexible agitator in the path of the pile, a bumper member movable against and from the front of the pile, and means for actuating said agitator and bumper member.

4. The combination with means for supporting and feeding a pile of promiscuously mixed splints, of a series of agitating chains depending across the path of the splints, a series of bumper members alternating with the chains and movable against and from the front of the pile, and means for actuating said chains and bumper members.

5. The combination with an inclined receptacle having shallow splint guiding ways extending longitudinally thereof in parallel relation to each other, of flexible agitating members depending into said ways, and means for actuating said members to impart vertical reciprocation thereto.

6. The combination with an inclined receptacle having shallow splint guiding ways extending longitundinally thereof in parallel relation to each other, of a series of suspended chains depending into said ways, and means for agitating said chains to impart vertical reciprocation thereto.

7. The combination with an inclined receptacle having shallow splint guiding ways extending longitudinally thereof in parallel relation to each other, of a series of depending endless chains depending into said ways, and means for vertically reciprocating said chains.

8. The combination with an inclined receptacle having splint guiding ways therein, of a rocker member, means for actuating the same, and chains suspended from said member and depending into the said ways.

9. The combination with an inclined receptacle having splint guiding ways therein, of a rocker beam overhanging said ways, a series of endless chains supported on said beam and depending into the said ways, and means for actuating said beam.

10. The combination with an inclined receptacle having splint guiding ways therein, of a rocker beam overhanging said ways, depending arms on said beam, a series of chains depending from said beam into the ways, and means for actuating said beam.

11. The combination with a splint receiving trough, of an inclined hopper arranged to deliver splints thereto, said hopper having shallow splint guiding ways, flexible elements depending into said ways extending longitudinally thereof in parallel relation to each other, and means for agitating said elements to impart vertical reciprocation thereto.

12. The combination with an inclined hopper having shallow splint guiding ways extending longitudinally thereof in spaced relation to each other, of a vertically movable agitator extending across the path of the splints, and into the respective ways and means for actuating said agitator, whereby the opposing splints are intermittently lifted and the lowermost splints longitudinally positioned in the said ways and permitted to escape thence beneath the agitator.

Signed at Barberton, in the county of Summit and State of Ohio this 16th day of March A. D. 1916.

MICHAEL PARIDON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."