

Jan. 17, 1961

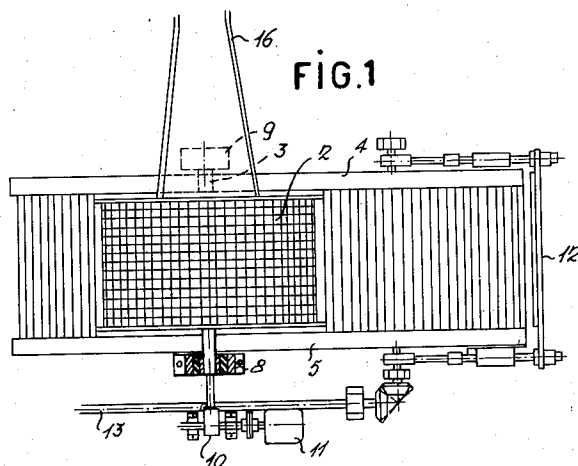
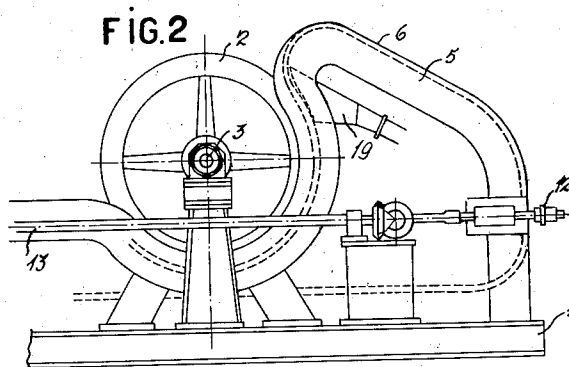
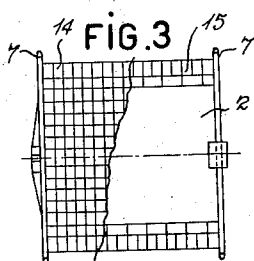
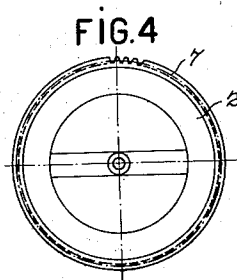
E. ZILVER

2,968,386

DEVICE FOR INSERTING MATCH SPLINTS IN A MATCH SPLINT HOLDER

Filed June 22, 1956

2 Sheets-Sheet 1



Inventor
Edwin Zilver
by Stevens, Davis, Miller & Knicker
his attorney

Jan. 17, 1961

E. ZILVER

2,968,386

DEVICE FOR INSERTING MATCH SPLINTS IN A MATCH SPLINT HOLDER

Filed June 22, 1956

2 Sheets-Sheet 2

FIG.5

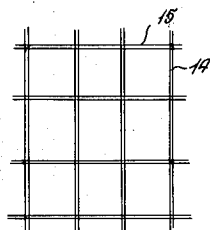


FIG.6

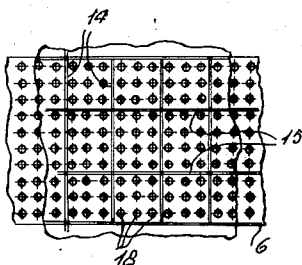


FIG.7

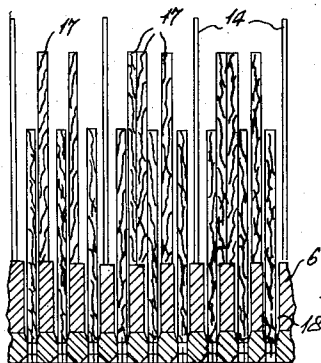


FIG.9

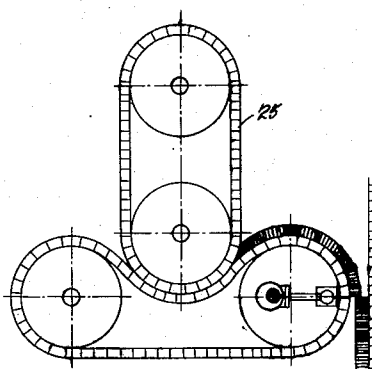
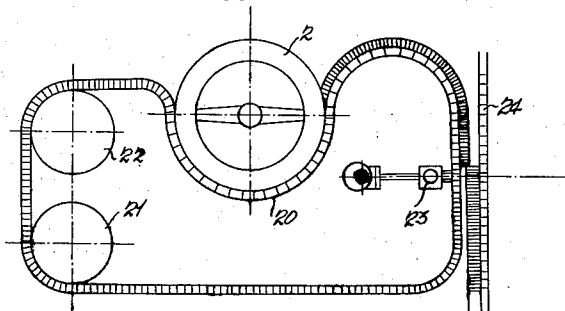


FIG.8



Inventor
Edwin Zilver
by Stevens, Davis, Miller & Keeler
his attorney

1

2,968,386

DEVICE FOR INSERTING MATCH SPLINTS IN MATCH SPLINT HOLDER

Edwin Zilver, The Hague, Netherlands, assignor to N.V. Inland, Rotterdam, Netherlands, a corporation of the Netherlands

Filed June 22, 1956, Ser. No. 593,263

Claims priority, application Netherlands June 29, 1955

6 Claims. (Cl. 198—33)

This invention relates to a device for inserting match splints into a match splint holding means, such as a conveyor or intermediate means provided with a plurality of holes for receiving match splints and aims at providing a device of this kind by means of which the holes in the splint holding means or conveyor means can be quickly and accurately filled.

This is achieved in the device according to the invention in that the said device comprises a rotating match splint container having a plurality of partitions extending in radial and longitudinal direction so that spaces are formed in which the match splints assume a position substantially parallel to each other, the match splints leaving the device to be inserted into the holes of the match splint holding means, such as a conveyor or similar means. The match splints may be brought into the said container, either continuously or discontinuously, by means of a filling channel or hopper and during rotation of the container they arrive into the spaces between the partitions from where they enter the holes of the splint holding means or conveyor means. Upon further rotation of the container the match splints which have not entered a hole in the splint holding means, fall downwards thus entering again between other partitions of the container. By this arrangement it is prevented that such a large number of match splints enter between these partitions that these match splints get jammed so that the portions of the splint holding means for carrying and conveying the match splints corresponding with the spaces formed by the partitions and having been filled by jammed match splints do not receive any more match splints.

The container according to the invention may be constructed in various ways. It is possible, for example, to give said means the form of a drum or to compose said means of a number of elements combined to an endless conveyor belt. The cross section of said means may be round, polygonal, triangular, oval, etc.

The container may be rotated continuously as well as discontinuously. A preferred embodiment of the device according to the invention is characterized in that along a considerable portion of the rotating container a path is provided for the splint holding means or conveyor means to be filled, these holding means or conveyor means having such a driving system that they are moved at the same speed as the rotating container. Consequently, quite a long time is available for filling the holes of the conveyor or intermediate means. It is preferred to have the driven splint holding or conveyor means drive the container.

According to the invention the splint holding or conveyor means can be moved so far along the circumference of the container that the match splints which are not in

2

the holes of the splint holding or conveyor means already drop from the spaces between the partitions. In order to ensure that the match splints in the holes of the splint holding or conveyor means do not drop from the holes, a suction system may, according to the invention, be provided near the end of the path according to which the splint holding means are guided past the rotating container. This suction system exercises a suction force on the match splints arranged in the holes so that the latter are prevented from dropping out of the holes and any match splints which have not been inserted sufficiently far into the holes are sucked into these holes.

If required, the endless container may be provided at its outer periphery with holes corresponding with the holes of the splint holding or conveyor means but being of somewhat larger dimensions so that substantially no suction force can be exercised on the other match splints in the spaces between the partitions and said match splints may easily drop from these spaces. It is obvious that also without the use of a container provided with such holes the suction force on the other match splints in the spaces between the partitions cannot be strong since these spaces are already closed by the portions of the splint holding or conveyor means between the holes.

A preferred embodiment of the device according to the invention is characterized in that the rotating means is provided with a vibrator vibrating said means in the axial direction.

The invention will be described below with reference to the accompanying drawings showing diagrammatically by way of example three embodiments of the device according to the invention.

Fig. 1 shows a top plan view of the device according to the invention with a container drum in which the match splints are brought directly into the match splint carriers.

Fig. 2 shows a side view of this device.

Fig. 3 shows the drum partly in side view and partly in axial section.

Fig. 4 is an end view of this drum.

Fig. 5 shows a portion of the outer drum wall on an enlarged scale.

Fig. 6 shows such a drum portion with underlying match splint carriers.

Fig. 7 is a section through a drum portion with an underlying carrier portion.

Fig. 8 shows an embodiment in which intermediate means are filled by a drum.

Fig. 9 shows a side view of a collecting means in the form of an endless belt.

The apparatus shown in Figs. 1-7 comprises a frame 1, in which a container 2, constructed as a drum, is rotatably mounted on a shaft 3. In the frame 1 a guide path 4, 5 is provided for conveyor means 6 which constitutes a match splint holding means for carrying and conveying the splints and which may consist, in a manner known per se, of carriers provided with holes. As may be seen from Fig. 2, these guide paths 5 are arranged in such manner that they extend along a considerable portion of the circumference of the drum 2. The match splint carriers 6, which are driven in a manner not shown, drive the drum 2. For this purpose this drum is equipped at its front and rear ends with toothed discs 7 engaging recesses in the match splint carriers.

On the shaft 3 of the drum 2, which is mounted in

3

elastic bearings 8, 9, there is arranged an eccentric 10 driven by a motor 11. This arrangement makes the drum vibrate in the axial direction. The amplitude of these vibrations is only a small one and may be of a magnitude of 1 mm.

Figs. 1 and 2 further show a ramming device 12 driven by a driving shaft 13.

The cylindrical circumferential part of the drum 2 is formed by a plurality of partitions 14 and 15, respectively, extending in radial and longitudinal direction. These partitions are constructed in a manner known per se for hoppers so that match splints 17 introduced by a filling device 16 into the drum 2 may only enter the spaces formed by these partitions in a radial direction as shown in Fig. 7 on an enlarged scale. Fig. 5 shows a view of part of the drum on an enlarged scale whereas Fig. 6 shows a view of such a drum portion with an underlying match splint carrier 6 provided with holes 18.

The above described device operates as follows:

The match splints 17 fed into the drum by the filling device 16 drop between the spaces formed by the partitions 14 and 15 and enter the holes 18 of the match splint carriers 6. This is promoted by the vibration of the drum. Due to the fact that the match splint carriers 6 and the drum 2 are driven at the same speed and the match splint carriers are guided along a large portion of the drum circumference, there is much time available so that all holes 18 of the match splint carriers 6 are reliably filled. When the drum 2 continues its rotating movement, the match splints in the spaces between the partitions 14 and 15 which are not in the holes 18 will drop downwards and will fall into other spaces formed by the partitions 14 and 15. The match splints 17 stuck in the holes 18 will remain therein. In order to achieve this with more certainty a suction device 19 may be provided at the end of the guide path and through said suction device a suction force may be exercised on the match splints 17 in the holes 18.

It is obvious that the filling device 16 may be dispensed with. In that case it is necessary to introduce regularly by hand a fresh quantity of match splints into the drum.

Fig. 8 shows an embodiment of the device according to the invention in which the drum 2 introduces match splints into splint holding carrying and conveying means 20 provided with holes. The splint holding means are guided along a large portion of the drum circumference by means of a guide means, such as the rollers 21 and 22, the drum and the splint holding means moving at the same speed. An ejecting device 23 pushes the match splints out of the splint holding means 20 into match splint carriers 24.

Fig. 9 shows an embodiment, in which the drum 2 is substituted by a container 25 constructed as an endless belt. For the rest this device may be constructed in the same way as the device shown in Fig. 8.

Obviously, the invention is not restricted to the devices described above and shown in the drawings by way of examples but they may be modified in many ways without departing from the scope of the invention.

I claim:

1. In combination with a match splint holding means provided with a plurality of holes, each of which is adapted to hold one match splint, a device for inserting match splints in the match splint holding means, said device comprising a rotatably arranged cylindrical splint container having a circumferential wall formed with a plurality of holes through which the splints may pass, each of said cylindrical splint container holes being of a cross section to receive a plurality of match splints and being aligned with a plurality of said individual match splint holes at one time, said holes of the container being formed by a plurality of partition walls extending crosswise and longitudinally of said container, said partition walls defining separate spaces in which the match splints assume a position substantially parallel to each other

4

and to the partition walls, a guide path for the match splint holding means being arranged at least along a part of the circumferential wall of said container and in close proximity to said container, and driving means for driving the match splint holding means and the container at the same speed.

2. A device according to claim 1, in which the partition walls are arranged in means forming an endless belt.

3. In combination with a match splint holding means provided with a plurality of holes, each of which is adapted to hold one match splint, a device for inserting match splints in the match splint holding means, said device comprising a rotatably arranged cylindrical splint container having a circumferential wall formed with a plurality of holes through which the splints may pass, said holes of the container being formed by a plurality of partition walls extending crosswise and longitudinally of said container, said partition walls defining separate spaces in which the match splints assume a position substantially parallel to each other and to the partition walls, a guide path for the match splint holding means being arranged at least along a part of the circumferential walls of said container and in close proximity to said container, driving means for driving the match splint holding means and the container at the same speed, and a suction system provided near the end of the part of the guide path arranged along the container wall.

4. In combination with a match splint holding means provided with a plurality of holes, each of which is adapted to hold one match splint, a device for inserting match splints in the match splint holding means, said device comprising a rotatably arranged cylindrical splint container having a circumferential wall formed with a plurality of holes through which the splints may pass, said holes of the container being formed by a plurality of partition walls extending crosswise and longitudinally of said container, said partition walls defining separate spaces in which the match splints assume a position substantially parallel to each other and to the partition walls, a guide path for the match splint holding means being arranged at least along a part of the circumferential walls of said container and in close proximity to said container, driving means for driving the match splint holding means and the container at the same speed, and agitating means provided for vibrating the container.

5. In combination with a match splint holding means provided with a plurality of holes, each of which is adapted to hold one match splint, a device for inserting match splints in the match splint holding means, said device comprising a splint drum rotatably arranged on a substantially horizontal axis and provided with a circumferential wall having a plurality of holes through which the splints may pass, each of said splint drum holes being of a cross section to receive a plurality of match splints and being aligned with a plurality of said individual match splint holes at one time, said holes of the drum being formed by a plurality of partitions extending in radial and longitudinal direction of said drum, said partitions defining spaces in each of which the match splints assume a radial position substantially parallel to each other, a guide path for the match splint holding means arranged along a part of the circumferential wall of said drum and in close proximity to said drum and driving means for driving the match splint holding means and the drum at the same speed.

6. In combination with a match splint holding means provided with a plurality of holes, each of which is adapted to hold one match splint, a device for inserting match splints in the match splint holding means, said device comprising a rotatable cylindrical splint container formed by an endless belt having a plurality of holes through which the splints may pass, each of said cylindrical splint container holes being of a cross section to receive a plurality of match splints and being aligned with a plurality of said individual match splint holes at

5

one time, said holes in the belt being formed by a plurality of partitions extending in cross and longitudinal direction of said endless belt, said partitions defining spaces in which the match splints assume a position substantially parallel to each other and to the partition walls, a guide path for the match splint holding means arranged at least along a part of the wall of said endless belt and in close proximity to said endless belt and driving means for driving the match splint holding means and the endless belt at the same speed.

10

6

References Cited in the file of this patent

UNITED STATES PATENTS

203,125	Donnelly -----	Apr. 30, 1878
740,990	Parker -----	Oct. 6, 1903
952,512	Clinton -----	Mar. 22, 1910
2,293,121	Dudley -----	Aug. 18, 1942
2,696,927	Copping -----	Dec. 14, 1954

FOREIGN PATENTS

199,826	Germany -----	June 27, 1908
---------	---------------	---------------