Nov. 27, 1962 A. STÄHLI 3,065,834

DEVICE FOR THE ALIGNING OF PARQUET BLOCKS

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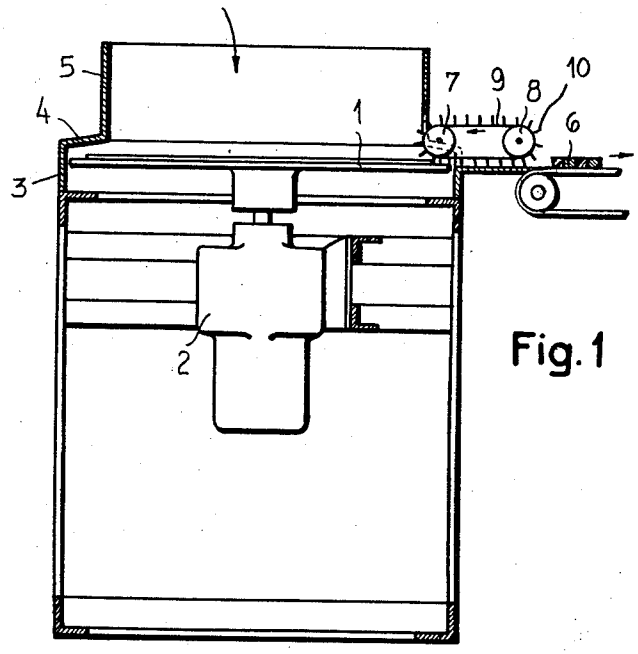


Fig. 1

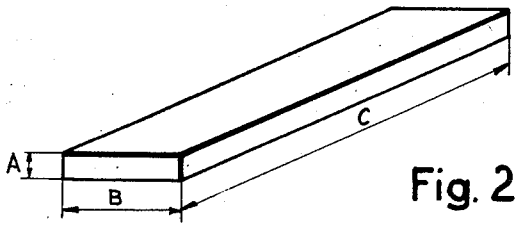


Fig. 2

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Fig. 3

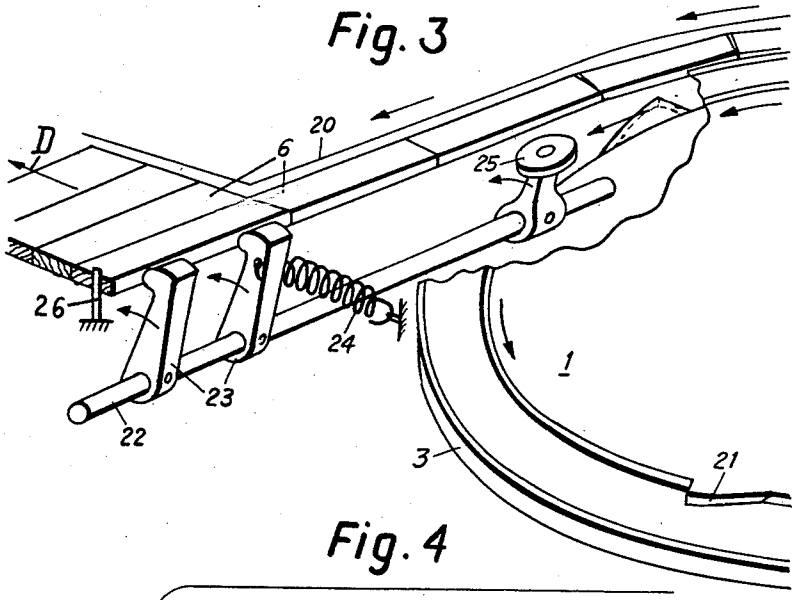
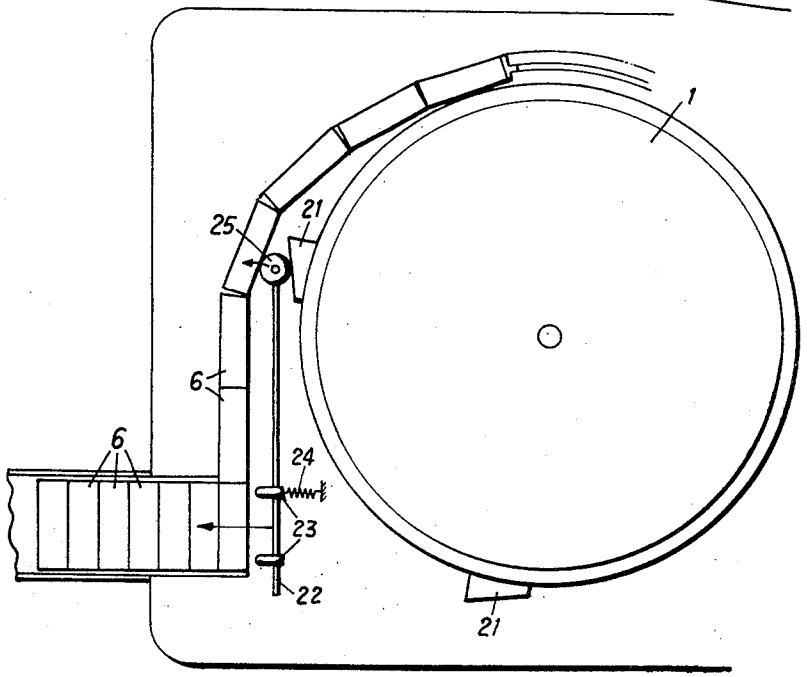


Fig. 4



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Fig.5

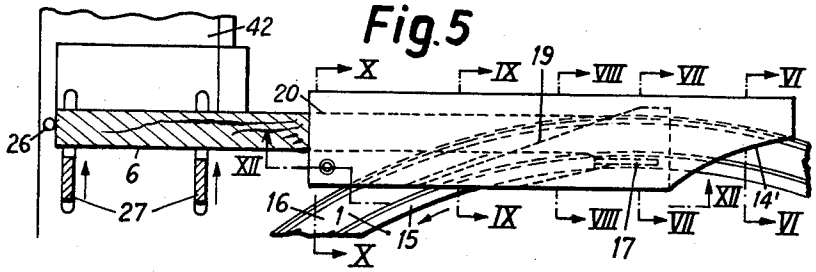


Fig.6

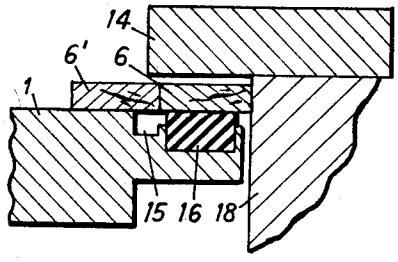


Fig.7

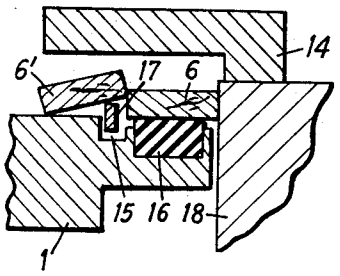


Fig.8

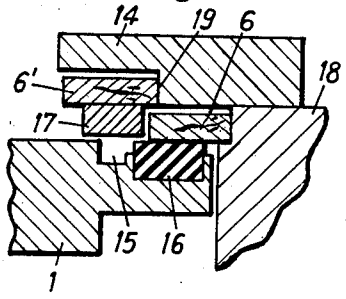


Fig.9

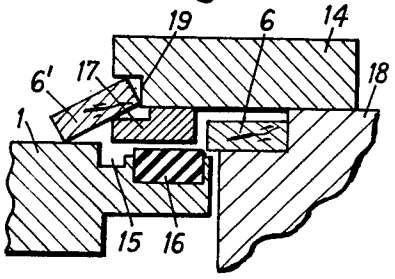
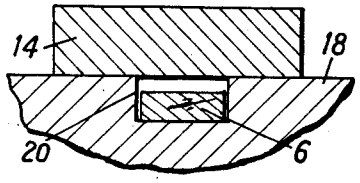


Fig.10



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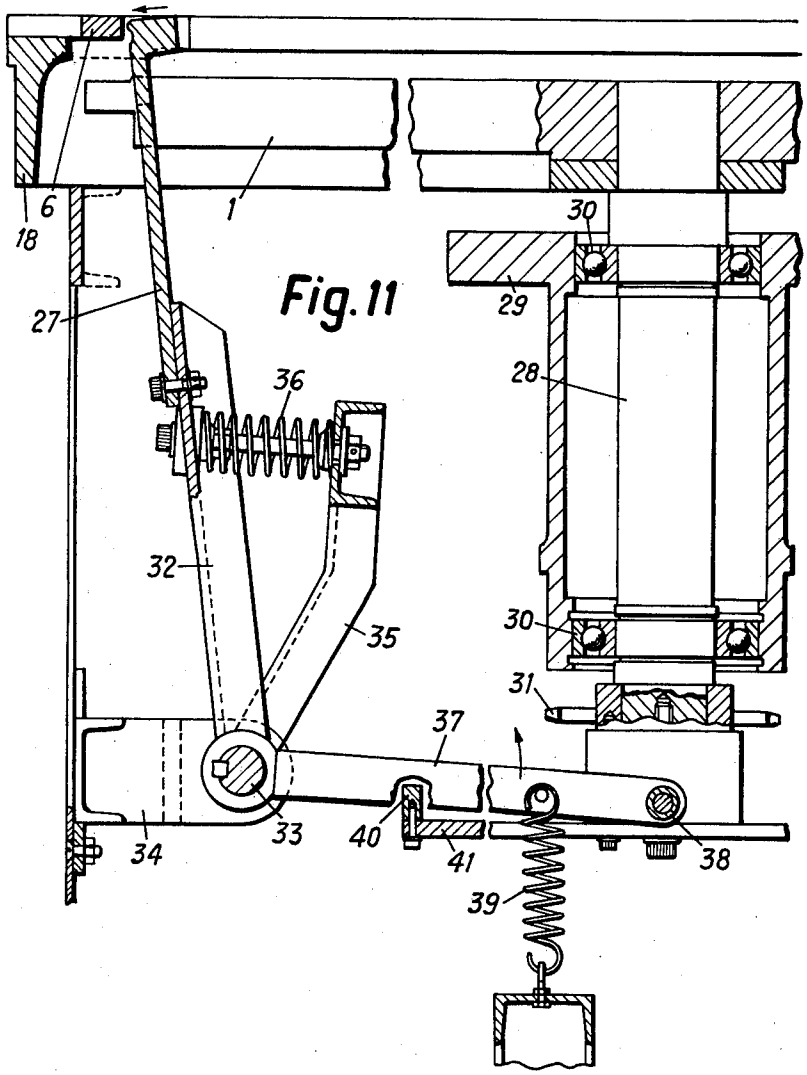


Fig. 11

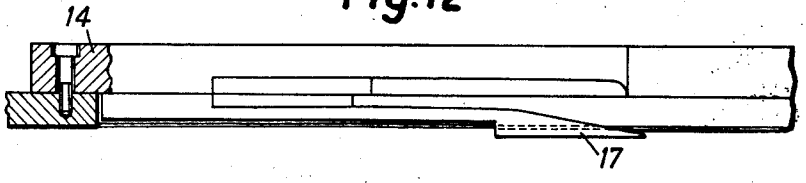


Fig. 12

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Fig.13

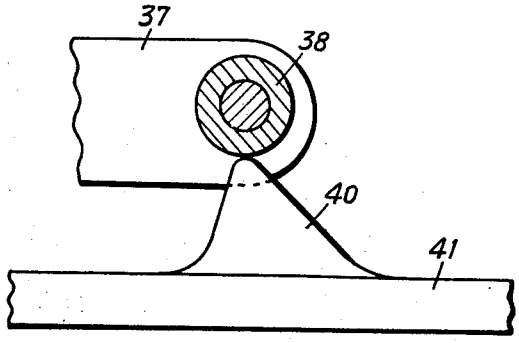
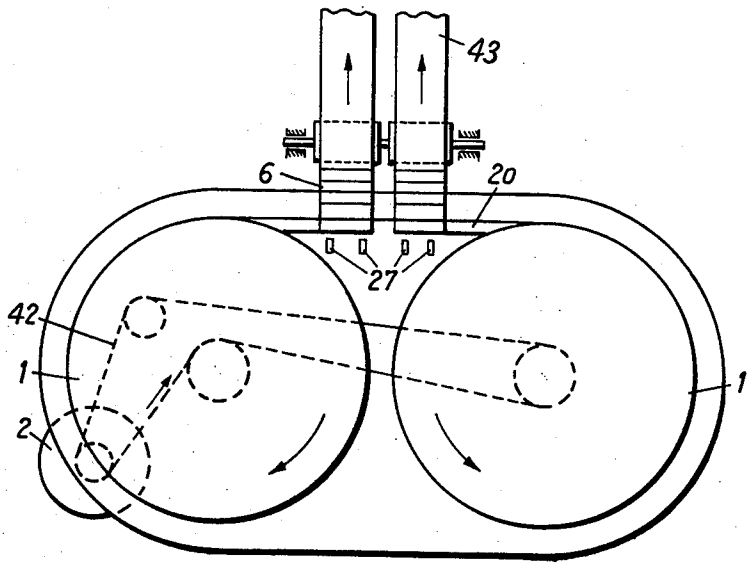


Fig.14



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DEVICE FOR THE ALIGNING OF PARQUET BLOCKS

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Claims priority, application Switzerland June 28, 1958
11 Claims. (Cl. 198—33)

The present invention relates to a method of aligning parquet blocks, and also to a device permitting the performance of such method.

It is a primary object of this invention to provide for a system permitting the production of parquet blocks to be substantially increased over that of any known devices and at the same time reducing space requirements.

It is a further object of this invention to provide for a system which largely eliminates manual operations and permits of a relatively simple and low-cost machine.

It is a still further object of this invention to provide for combining two units so that they feed two parallel conveyor belts arranged closely side by side.

These and other objects of the invention will become more readily apparent from the following description, taken in connection with the accompanying drawings in which:

FIG. 1 shows a cross section through a first embodiment;

FIG. 2 shows a single parquet block in perspective view;

FIG. 3 is a perspective view of a further embodiment;

FIG. 4 is a top view of the embodiment shown in FIG. 3;

FIG. 5 is a top view of a section of a further embodiment;

FIGS. 6 to 10 show various sections of the embodiment shown in FIG. 5;

FIG. 11 is a view, partly in section, of the push-off or shifting system of the embodiment shown in FIG. 5;

FIG. 12 shows a section along the line XII—XII in FIG. 5;

FIG. 13 shows a detail of a lever and a cam producing the shifting motion;

FIG. 14 shows a twin embodiment having two delivery channels.

The disk 1, which has the shape of a flat disk or a shallow cone, rotates about a vertical shaft and is driven by an electric motor 2. Surrounding the periphery of said disk 1 is a stationary cylindrical ring 3 arranged coaxially with respect to said disk. Adjoining the upper edge of said ring 3 is an annular shoulder 4 extending inwardly over the edge portion of the disk 1 at a certain vertical distance therefrom. Above the central opening of said shoulder 4 there is arranged a cylindrical charging funnel 5. The motor 2 and the stationary ring 3 are secured to a housing consisting preferably of angle irons or a casting.

At one place, the stationary ring 3 provides a delivery channel defining an exit or outlet for the aligned wooden parquet blocks 6. Located above the disk 1, as shown in FIG. 1, is an endless conveyor belt 9 running around two rollers 7, 8 provided with horizontal axes, said belt 9 being provided with resilient blade members or other entraining means 10 made, for instance, of rubber in order to transport the parquet blocks 6 substantially in a radial direction transverse to the circumference of the disk 1.

FIG. 2 shows in perspective view a single parquet block 6 of thickness A, width B and length C. The vertical distance between the shoulder 4 and the disk 1 is larger than the thickness A of the parquet blocks 6, so that these can reach the ring 3 only when they are lying flat,

and not when they are lying on top of one another or standing on edge.

An embodiment of this invention is shown in FIGS. 3 and 4. From the exit or outlet of the ring 3, the parquet blocks 6 are passed onto a delivery channel 20 partly curved to conform to a flat spiral shape. The row of parquet blocks is arrested by a stop pin 26, and the parquet block abutting said stop pin is pushed off by two movable push-off levers 23 operated intermittently at regular intervals. The push-off levers 23 are fixed to a rotatable shaft 22 which rotates or oscillates about its longitudinal axis and carrying at some distance from said levers an arm with a cam follower or roller 25. This cam follower or roller 25 interacts with an inclined cam or projection 21 fitted to the disk 1 or to a part attached thereto. The spring 24 tends to draw the push-off levers 23 into such a position that the cam follower 25 rests against the inclined cam or projections 21. When the disk 1 rotates, the cam follower 25 runs onto the inclined cam or projection 21 and thus forces the shaft 22 and the levers 23 firmly fixed thereto to turn in the direction of the arrows shown. As a result, the parquet blocks 6 are shifted by at least the width B of such a parquet block. When the roller 25 has run beyond the peak of the inclined cam or projection 21, the spring 24 draws the push-off levers 23 back to their original position, so that the parquet blocks 6 lying in the delivery channel 20 can advance a block length up to the stop pin 26, whereupon the above-described cycle repeats.

The embodiment represented in FIGS. 3 and 4 has several inclined cams or projections 21, though it would also be conceivable to provide for only a single projection. Instead of projections, it would be feasible to provide for a curved groove and a finger-like member to engage it. The operation of the push-off levers need not necessarily depend on the disk rotation; instead, the push-off mechanism for the parquet blocks 6 could be operated by a drive unit independent of the disk 1.

FIGS. 5 to 13 show a preferred embodiment. The disk 1 is provided with a groove 15 and a rubber ring 16, the latter being arranged at the same or slightly below the level of the disk surface. Instead of rubber, some other suitable material with a coefficient of friction greater than steel might be used.

Rigidly attached to the stationary ring or edge 18 of the housing is a two-section plate member 14 which is provided with shoulder or guide portions 14' and 19. A tongue 17 protrudes into the groove 15 and is so designed that the space between the tongue 17 and the stationary edge 18 is just slightly larger than the width B of a parquet block 6, as shown in FIG. 7. The purpose of said tongue 17 is to separate parquet blocks 6 and 6' lying side by side (FIG. 6) and to permit only the block lying nearest the edge to slip through into the delivery channel 20.

As shown in FIGS. 8 and 9, the parquet block 6' is lifted by the slowly rising tongue 17 and subsequently diverted by the deflecting member or baffle 19 indicated in FIGS. 8, 9 and in FIG. 5 by a broken line. The parquet block 6 lying in the delivery channel 20 (FIG. 10) now slides, propelled by its kinetic energy, against the stop pin 26. Thence, the parquet block 6 is pushed by the two push-off levers 27 at right angles to its long side by at least the amount of a block width.

As shown in FIG. 11, the push-off levers 27 are attached to a bracket section member 32 rotatably mounted on the shaft 33, which is secured by means of a bearing piece 34 to the housing. An angled arm 35 is interlocked with the lever 37 through the shaft 33. Located between the upper end of the arm 35 and the bracket section member 32 is a prestressed compression spring 36. The end of the lever 37 opposite the shaft 33 is provided with a roller 38 which is intermittently lifted by the projection 40 fitted to the disk 41 and subsequently retracted by the

retraction spring 39. The disk 41 is connected to the vertical drive shaft 28 carying the drive sprocket 31 and turning in the ball bearings 30. The ball bearings 30 are fitted in the bearing piece 29 secured to the housing by cross-members or fastening means not shown in the drawing. Arranged on the periphery of the disk 41 several cam projections 40 force the two push-off levers 27 to move forwards at regular intervals, if the disk 1 is rotating. Now, if a parquet block 6 happens to be partly still in the delivery channel 20, i.e. if it is not yet resting against the stop pin 26, this parquet block is not pushed off; instead the spring 36 is compressed and the block 6 will not be pushed off until the next forward movement of the push-off levers 27, i.e. when this block is completely clear of the delivery channel 20. The upper end of the push-off lever 27 is dimensioned to the extent that it is as least as wide as the width B of a block 6, but larger than the thickness A of a wood parquet block 6 or, in other terms, at least as wide as the stroke of the lever, in order to prevent any parquet block from getting behind the push-off levers 27 during the push-off movement.

FIG. 14 shows an embodiment having in a single casing or frame two disks 1 which feed aligned parquet blocks 6 to two belt conveyors 43 positioned side by side. The two disks, which rotate in opposite directions, are driven by a common motor 2 through the endless chain 42. During operation, the parquet blocks 6 are pushed by two pairs of push-off levers 27 onto the two parallel conveyor belts 43, at whose far ends there is an arrangement designed to fit together the parquet blocks crosswise to form parquet squares.

This embodiment functions as follows:

The loose, unoriented parquet blocks 6 coming from the sawing and planing machine are thrown by a bucket or belt conveyor, for instance, into the funnel 5 and drop onto the rotating disk 1. The disk, in a preferred embodiment, has a diameter of about 31 inches and rotates at a speed of about 60 r.p.m. Owing to the centrifugal action, the parquet blocks 6 are flung outwards. Such of the parquet blocks as lie flat pass under the annular shoulder 4 and arrive at the ring 3 or on the rubber ring 16. On the other hand, such of the parquet blocks 6 as come against the shoulder 4 in upright (on edge) or slanting position cannot pass under said shoulder until they have fallen flat. The parquet blocks 6 lying nearest the edge are passed on at the same level through the delivery channel 20, the kinetic energy of every subsequent delivered block being sufficient to push along all the parquet blocks lying in the delivery channel 20. The length of the delivery channel is preferably such that it does not exceed the length C of four parquet blocks. Subsequently, the parquet blocks abutting with their short edge against the stop pin 26 are pushed off by the two push-off levers 27, in a manner as previously described.

It would also be conceivable that the stationary ring 3 is provided not with a single exit, but with two or more exits preferably spaced at 90°, or that two or more rotating disks are arranged one above the other, in which case the unoriented parquet blocks 6 would be fed from above at an angle.

Various changes and modifications may be made without departing from the spirit and scope of the present invention and it is intended that such obvious changes and modifications be embraced by the annexed claims.

Having thus described the invention what is claimed as new and desired to be secured by Letters Patent is:

1. In a device for handling and feeding parquet blocks and the like, at least one rotating disk member rotatable about a vertical axis and adapted to randomly receive parquet blocks, means cooperable with said rotating disk member for supplying a quantity of parquet blocks onto said rotating disk member in random fashion, a housing including a stationary ring coaxially arranged with respect to said rotating disk member provided with at least one delivery channel in registry with said rotating disk member receiving said parquet blocks therefrom, said stationary ring having an inwardly directed shoulder overlying said rotating disk member and spaced at a vertical distance from said rotating disk member smaller than the width of a parquet block yet greater than the thickness of said parquet block, conveying means communicating with said delivery channel, push-off means cooperable with said rotating disk member and said delivery channel for displacing said parquet blocks from said delivery channel onto said conveying means for transfer to another station, said rotating disk being provided with an annular coaxial groove near the periphery thereof and a ring of material with a coefficient of friction greater than steel being provided adjacent the groove.

2. In a device for handling and feeding parquet blocks, a rotating disk member provided with an annular groove rotatable about a substantially vertical axis and adapted to randomly receive parquet blocks, means cooperable with said rotating disk member for supplying a quantity of parquet blocks onto said rotating disk member in random fashion, a housing including a stationary ring coaxially arranged with respect to said rotating disk member provided with at least one tangentially disposed delivery channel communicating with said rotating disk member for tangentially receiving said parquet blocks therefrom, inwardly directed knocking-over-means for parquet blocks resting on their edge, said knocking-over-means extending from the vicinity of said stationary ring in the direction of the central portion of said disk member and overlying said rotating disk member and spaced of a vertical distance from said rotating disk member smaller than the width of a parquet block yet greater than the thickness of said parquet block, a deflecting member carried by said ring of said housing and provided with a downwardly extending tongue portion protruding into said annular groove to separate and deflect parquet blocks lying in abutting relationship to one another in the radial direction of said rotating disk.

3. In a device for handling and feeding parquet blocks in order to tilt over those parquet blocks resting on a longitudinal edge and the like, at least one rotating disk member rotatable about a vertical axis and adapted to randomly receive parquet blocks, means cooperable with said rotating disk member for supplying a quantity of parquet blocks onto said rotating disk member in random fashion, a housing including a stationary ring coaxially arranged with respect to said rotating disk member provided with at least one delivery channel in registry with said rotating disk member receiving said parquet blocks therefrom, said stationary ring having an inwardly directed shoulder overlying said rotating disk member and spaced at a vertical distance from said rotating disk member smaller than the width of a parquet block yet greater than the thickness of said parquet block, conveying means communicating with said delivery channel, push-off means cooperable with said rotating disk member and said delivery channel for displacing said parquet blocks from said delivery channel onto said conveying means for transfer to another station.

4. In a device for handling and feeding parquet blocks and the like according to claim 3, said push-off means including inclined cam means in registry with said rotating disk member, push-off levers including a cam follower communicating with said inclined cam means whereby said push-off levers are oscillated about a longitudinal axis to displace parquet blocks from said delivery channel onto said conveying means.

5. In a device according to claim 3, wherein said delivery channel is arranged tangentially to the rotating disk and beginning at an exit of the rim of said rotating disk, said push-off means being arranged at one end of the delivery channel for moving the parquet blocks cross-

wise of their length by at least the amount of a block width.

6. In a device according to claim 5, said push-off means being operated by rotating cam means cooperating with said rotating disk.

7. In a device according to claim 5, wherein said push-off means includes spring means which are arranged between first lever means pushing the blocks outwardly and second lever means resting against cam means for generating the movement of said levers, the first lever having a width of at least the length of its stroke.

8. In a device according to claim 5, whereby two rotating disks are arranged side by side in a common plane and which rotate in opposite directions, and said conveying means comprises two parallel conveyor belts arranged closely side by side between said two rotating disks.

9. In a device for handling and feeding parquet blocks and the like, at least one rotating disk member provided with an annular groove rotatable about a vertical axis randomly receiving parquet blocks and centrifugally displacing the latter toward the rim of said rotating disk member, means cooperable with said rotating disk member supplying a quantity of parquet blocks thereon in random fashion, a housing including a stationary ring coaxially arranged with respect to said rotating disk member and provided with at least one tangentially disposed delivery channel communicating with said rotating disk member for tangentially receiving said parquet blocks therefrom, a plate member carried by said stationary ring of said housing and provided with a downwardly extending tapered tongue portion protruding into said annular groove to separate parquet blocks lying in abutting relationship to one another in the radial direction of said rotating disk, said tapered tongue portion tilting those abutting parquet blocks nearest to the vertical axis of said rotating disk member and overlying said annular groove.

10. In a device for handling and feeding parquet blocks and the like, at least one rotating disk member provided with an annular groove rotatable about a vertical axis randomly receiving one or more parquet blocks and centrifugally displacing the latter toward the rim of said rotating disk member, a friction member disposed adjacent said annular groove but at a greater radial distance from said vertical axis carried by said rotating disk member, means cooperable with said rotating disk member supplying a quantity of parquet blocks thereon in random fashion, a housing including a stationary ring coaxially arranged with respect to said rotating disk member and provided with at least one delivery channel communicating with said rotating disk member tangentially receiving said parquet blocks therefrom, a plate member having a deflecting member carried by said stationary ring of said housing and provided with a downwardly extending tapered tongue portion protruding into said annular groove to separate parquet blocks lying in abutting relationship to one another in the radial direction of said rotating disk, said tapered tongue portion cooperating with said deflecting member to lift and inwardly deflect in the direction of said vertical axis those abutting parquet blocks nearest to the vertical axis of said rotating disk member and overlying said annular groove, conveying means communicating with said delivery channel, push-off means cooperable with said rotating disk member and said delivery channel for displacing said parquet blocks from said delivery channel onto said conveying means for transfer to another station.

11. In a device for handling and feeding parquet blocks according to claim 10, said push-off means including push-off lever means and cam means in registry with said push-off lever means and said rotating disk member to oscillate said push-off lever means for displacing said parquet blocks.

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