July 22, 1969 K. ZUBER 3,456,581

DEVICES FOR DRYING GLUED PENCIL BLANKS

Filed Nov. 1, 1966 2 Sheets-Sheet 1

Fig:1

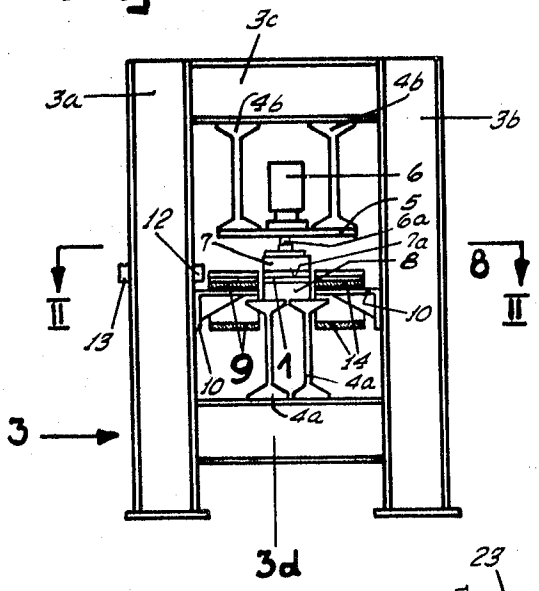


Fig:6

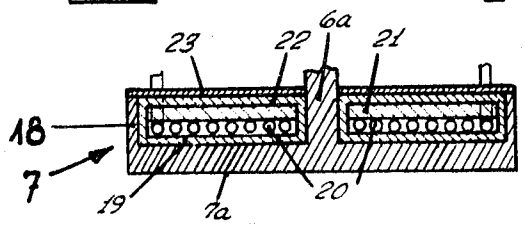
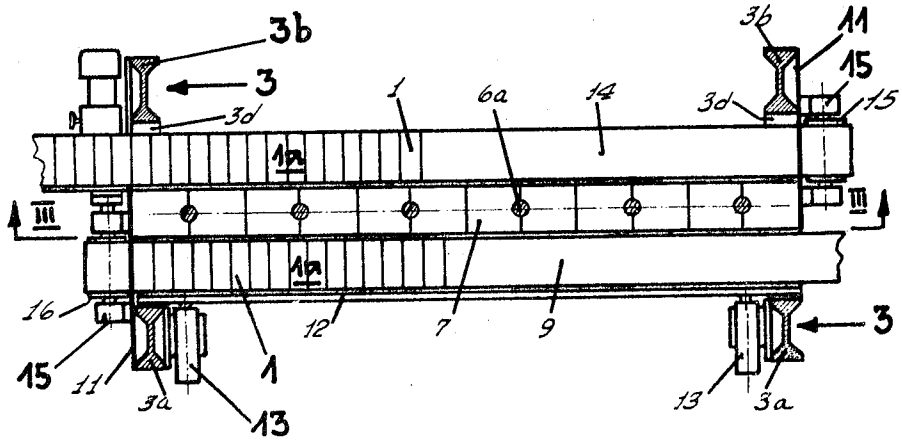


Fig:2



July 22, 1969 K. ZUBER 3,456,581

DEVICES FOR DRYING GLUED PENCIL BLANKS

Filed Nov. 1, 1966 2 Sheets-Sheet 2

Fig:3

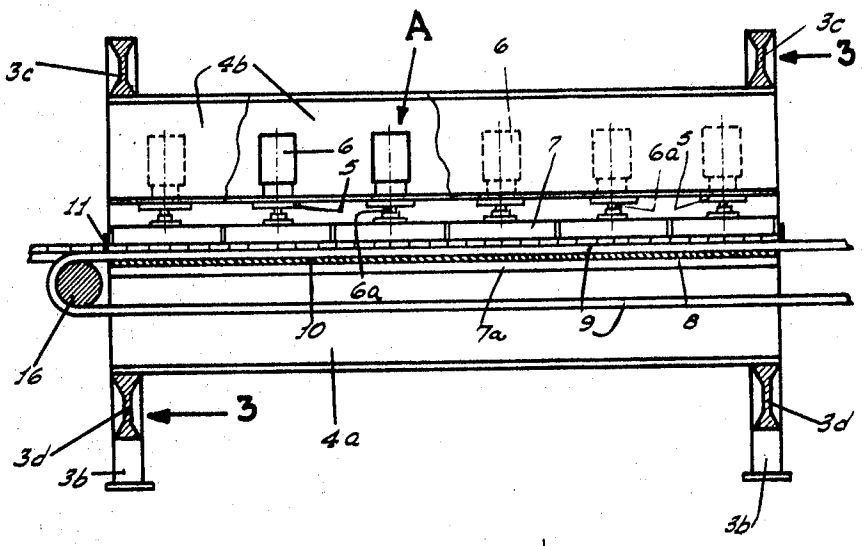


Fig:4

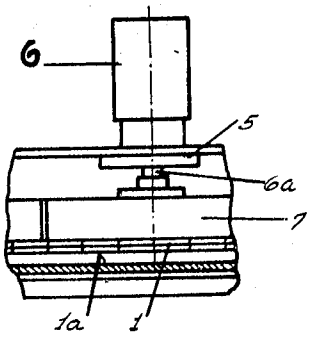
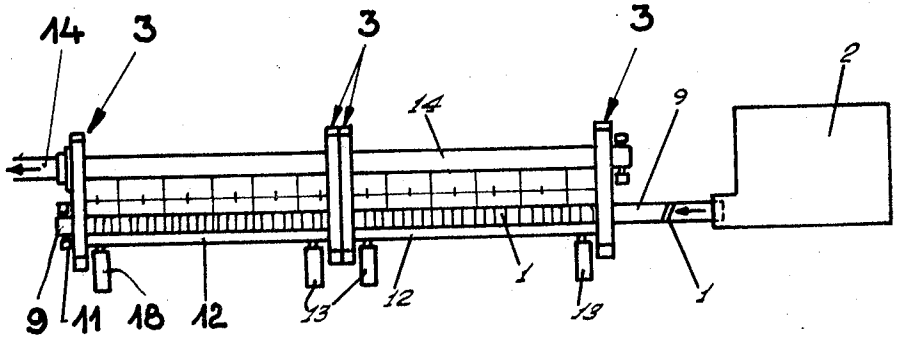


Fig:5



United States Patent Office 3,456,581
Patented July 22, 1969

3,456,581

DEVICES FOR DRYING GLUED PENCIL BLANKS

Karl Zuber, Nuremberg, Germany, assignor to Bleistiftmaschinenbau Dipl.-Ing. Karl Zuber, Nuremberg, Germany, a German company

Filed Nov. 1, 1966, Ser. No. 591,279
Claims priority, application Germany, Mar. 29, 1966, B 86,407
Int. Cl. B30b 15/34, 15/32; F26b 9/04
U.S. Cl. 100—93 4 Claims

ABSTRACT OF THE DISCLOSURE

A device for drying glued pencil blanks including at least one pair of superimposed pressure plates with one of the plates of each pair being movable towards and away from the other plate of each pair and at least one of the plates adapted to be heated. A support for glued blanks next to the pressure plate is provided together with a pusher adapted to reciprocate the feed blanks in which the length of the support, the pressure plates and the pusher in a direction perpendicular to the direction of movement of the pusher is a multiple of one external dimension of the glued blank.

This invention relates to a device for drying glued pencil blanks having at least one pair of pressure plates, which are arranged with their pressure surfaces opposite one another, are movable relatively to one another in the direction of a perpendicular to their pressure surfaces, are stationary when the glued blanks are pressed in and at least one of which is adapted to be heated, and having a support for glued blanks next to the pair of pressure plates and a pusher which is movable over the support towards the pressure plate and back again.

A usual glued blank has two identical rectangular wooden pieces of small thickness, and in whose surface defined by length and breadth longitudinal grooves are formed. The two wooden pieces placed with the longitudinal grooves opposite one another enclose in the grooves the leads of the pencils to be manufactured. Between the pieces placed against one another there is a layer of glue which is still not dry. In order to dry the glue quickly so that the two wooden pieces are stuck sufficiently firmly to one another, it is customary to press the blank, i.e. press the wooden pieces against one another and in addition heat them above room temperature. A known device not belonging to the generic type defined for drying glued pencil blanks, which has a caterpillar press for pressing the glued blanks, has the disadvantage over the device of the type defined that a uniform pressure as required to set the glue can be achieved only with a very complicated construction and therefore prohibitive costs. The pressure generators together with the pressure plates and the glued material located therein would have to rotate. The electrical energy for the pressure generators would have to be supplied by means of sliding contacts. This disadvantage cannot be avoided by making the pressure plates, although participating in the rotation, roll on pressure rollers during the pressing operation. Apart from economic considerations on account of the costs of such a construction, this solution is in any case not acceptable because a constant pressure as required for setting of the glue cannot be obtained because of the rolling of individual pressure plates on rollers. There is the additional point that in such a construction, the providing of the rotating pressure plates with heat energy would present considerable difficulties and incur economically prohibitive costs.

In another known device for drying glued pencil blanks, the pressure surface of the pressure plates corresponds

substantially to the base area of the blanks to be treated. This known device has a rotatable frame similar to a wheel, on which the pressure generators are arranged radially. The pistons with their pressure plate act radially from the inside towards the outer pressure plate which is fixed rigidly to the wheel member. Each pressure member presses so many glued blanks placed with their bases upon one another. The wheel frame is moved on intermittently. At a certain point each pressure member is rendered pressureless after locking of the wheel, so that new glued blanks to be dried can be introduced and these push the dried blanks out on the other side.

One disadvantage of this known device consists in that on account of the necessary arrangement of the pressure generators, one pressure generator per pencil blank area is required. Thus in order to obtain an output approcahing that of the invention described below, approximately 75 hydraulic cylinders would have to be arranged radially, which with a usual base flange width of 160 mm. for the requisite cylinders, would necessitate an internal circumference of $75 \times 160 = 12{,}000$ mm. or 12 m. This would correspond to an internal diameter of approximately 4 m. Such a mammoth wheel can scarcely be moved by a stepping mechanism of the necessary 100 switchings per minute. Thus this device does not offer a solution to the problem either. In addition the pressure energy, for which only oil comes into consideration, would have to be supplied to the radial pressure generators expensively by way of a hollow axle with corresponding ducts.

To avoid the disadvantages of the known devices mentioned, the object of the invention consists in providing a device of the type defined with which continuous operation is possible. The device is for this purpose characterized according to the invention by the feature that the length of the support, of the pressure plates and of the pusher in the direction perpendicular to the direction of movement of the pusher is a multiple of one external dimension of a glued blank.

One feature of the device according to the invention is that the pressure plates of one pair are stationary, apart from their pressing movements, that is movements in the direction of a perpendicular to their pressure surfaces. When the glued blanks to be dried are being heated, the pressure plates are stationary. In order that the device with this feature is economical, it is advantageously so designed that several pressure plates are arranged next to one another. During the drying time of one batch of glued blanks pressed by the pressure plates, the next batch of blanks is brought on the support to a point in front of the pressure plates so that they lie next to one another in rows and when the pressure plates are opened, can be pushed in one go between the plates by means of the pusher. The last mentioned feature is advantageous because the heating members bear against the bases of the blanks. If the heating members were to bear on the side or end surfaces of the blanks transversely to the direction of feed, then they would have to be removed for insertion of the blanks. If the heating members were to bear on the side or end surfaces of the blanks in the direction of feed, then the blanks before being inserted would have to be aligned very accurately with the heating members and the heating members would necessitate a very large overall length of the device. The advantages of the last-mentioned feature may therefore only be fully felt if the further feature is provided that the pressure plates are used as heating members, in which case they are preferably heated by resistance heating means.

In a preferred embodiment of the device according to the invention, several pressure plates each movable by means of a hydraulic drive and arranged next to and almost touching one another are provided opposite one large stationary pressure plate in the form of a table

plate in one piece. The movable pressure plates have a pressure area corresponding to a multiple of the base area of the blanks of 7 times 18.4 cm. and each press their blanks with a force of approximately 2000 kg. Both the pressure plate designed as a table plate and the movable pressure plates are capable of being heated. Between the pressure plates the glued blanks are placed in two layers and are therefore heated symmetrically from above and below.

The accompanying drawings show a device according to the invention which can be supplemented by means of prefabricated units and which with a low overall length has an output of uniformly pressed blanks which can be increased as desired.

In the drawings:

FIGURE 1 is a front view of the device.

FIGURE 2 is a section along the line II—II of FIGURE 1.

FIGURE 3 is a section along the line III—III of FIGURE 2.

FIGURE 4 is the fragment A of FIGURE 3.

FIGURE 5 is a top view of a supplemented embodiment of the device, and

FIGURE 6 is a section through a pressure plate.

The device shown has curved frame casings **3** having two vertical standards **3***a*, **3***b* which are joined to the top by a cross-head **3***c* and at the bottom by a cross-support **3***d*. Bottom press supports **4***a* are mounted at one end on the cross-supports **3***d* of two oppositely arranged frame supports, approximately in the middle thereof. Two upper press supports **4***b* arranged at a distance from one another substantially opposite the bottom press supports **4***a* are arranged on the cross-heads **3***c* of both frame carriers or supports. The vertical standards **3***a*, **3***b*, the cross-head **3***c*, the cross-support **3***d*, the bottom press support **4***a* and the upper press support **4***b* are in each case double T girders.

On the bottom press supports **4***a* is located a pressure plate designed as a table-plate **8**, which extends in one piece from one frame casing **3** to the other. The upper press supports **4***b* arranged at a distance from one another are joined on their underside by six supporting plates **5** each at a distance from one another. On each supporting plate **5** is provided a hydraulic drive **6**, and piston rod **6***a* thereof projects downwardly through the supporting plate. On the projecting end of each piston rod **6***a* is arranged a pressure plate **7** movable by means of the hydraulic drive **6**.

Six movable pressure plates **7** are arranged next to one another in a row with slight play between one another. Their pressure surface amounts to a sixth of base area **1***a* of a glued blank **1** in each case. Their width corresponds to the length of one blank. Both the pressure plate designed as a table plate **8** and the movable pressure plates **7** are capable of being heated by electric resistance heating means like the plate of a furnace.

At the level of the pressure plate designed as a table plate **8** is arranged on one side of the pressure plate on the vertical standards **3***a* a supporting plate **10** extending between two frame casings **3**. A rod-like pusher **12** is arranged parallel with the supporting plate and slightly higher than the latter. The pusher **12** is capable of being moved by a hydraulic drive **13** which is arranged on each vertical standard **3***a*.

A conveyor belt **9** of the belt conveyor lies with its upper stringer on the supporting plate **10**. At its end located in the conveying direction is provided transversely thereto a stop **11**. Its opposite end extends beyond the supporting plate **10** and takes glued blanks delivered by a gluing machine **2** producing the glued blanks **1**.

On the side remote from the feed conveyor belt **9** is provided a withdrawal conveyor belt **14**. This is guided at its end near the gluing machine outside the frame casing **3** around a roller **16** mounted in holders **15**. The feed

conveyor belt **9** is in the same way at its end located in the conveying direction guided about a roller **16**.

The gluing machine **2** delivers pairs of glued blanks placed on one another to the feed conveyor belt **9** preferably at intervals. The blanks **1** supplied are situated substantially obliquely to the feed conveyor belt **9** and are placed by the latter against the stop **11** or against blanks **1** already adjoining the stop **11**. The feed conveyor belt running below the deposited blanks **1**, owing to its friction with the blanks lays them closely next to one another. The deposited blanks **1** rest with their base surface on the support, i.e., the feed conveyor belt, with their longitudinal side perpendicular to the direction of movement of the belt and only in a single row with respect to the direction of feed. The feed conveyor belt may also end in front of the supporting plate **10**, which is then arranged higher, and push the blanks onto the supporting plate. There is still in this case parallel change-over in rows and coupling of the continuously operating gluing machine with the discontinuous drying press.

While the feed conveyor belt **9** is being loaded with blanks, the movable pressure plates **7** press glued blanks towards the table plate **8** and heat them. When the pressed blanks are dry, then the movable pressure plates **7** are withdrawn upwards. Then the pusher **12** pushes the blanks located on the feed conveyor belt **9** onto the table plate **8** and the dried blanks located there onto the withdrawal conveyor belt **14**, even if they are stuck to the table plate. During this time the pusher located on the feed conveyor belt **9** prevents the new blanks delivered by the gluing machine **2** from being guided in front of the pressure plates. During the drying time of the newly inserted and pressed blanks, a new batch of undried blanks is collected on the conveyor belt. As the exposed time of the glue is approximately 5 to 8 minutes, the stay of the blanks on the conveyor belt during the drying period does not harm them.

The movable pressure plate **7** shown in FIGURE 6 is provided with a bottom disc **17** having a pressure area **7***a*, which is connected at its center to the piston rod **6***a* and has on the piston rod side an external web **18**. In the space enclosed by the web **18** there is provided on the bottom disc an electrically insulating layer **19**. On this are located insulated resistance wires **20** which become heated when current is passed therethrough. On the wires is located a heat insulating layer **22** which also covers the inner surface of the web **18** and the piston rod **6***a*. The space enclosed by the web **18** is covered at the top by a cover **23**.

I claim:

1. A device for drying glued pencil blanks having at least one pair of pressure plates, which are arranged with their pressure surfaces opposite one another, are movable relatively to one another in the direction of a perpendicular to their pressure surfaces, are stationary when the glued blanks are pressed in and at least one of which is adapted to be heated, and having a support for glued blanks next to the pair of pressure plates and a pusher which is movable over the support towards the pressure plate and back again, characterized by the feature that the length of the support, of the pressure plates and of the pusher in a direction perpendicular to the direction of movement of the pusher is a multiple of one external dimension of a glued blank.

2. The device as claimed in claim **1**, characterized by the feature that the upper stringer of a conveyor belt is provided next to the pair of pressure plates.

3. The device as claimed in claim **2**, characterized by the feature that the upper stringer is provided as said support and a stop is provided at the end of the pressure plates located in the conveying direction transversely to the conveying surface of the upper stringer.

4. The device as claimed in claim **1**, characterized by the feature that several movable pressure plates arranged next to one another are provided opposite one large

stationary pressure plate designed as a table plate in one piece.

References Cited

UNITED STATES PATENTS

1,454,520	5/1923	Purcell	198—31
1,472,185	10/1923	Mollenhauer	100—93 XR
2,537,918	1/1951	Skoog.	
2,661,100	12/1953	Ashford	214—16.4
2,943,353	7/1960	Fraula et al.	100—215 XR
3,079,607	3/1963	Jureit.	
3,288,057	11/1966	Loewenfeld	100—218 XR

PETER FELDMAN, Primary Examiner

U.S. Cl. X.R.

34—144; 100—218; 144—28, 281; 198—31; 214—16.4