

Sept. 27, 1966

E. MÜNCH

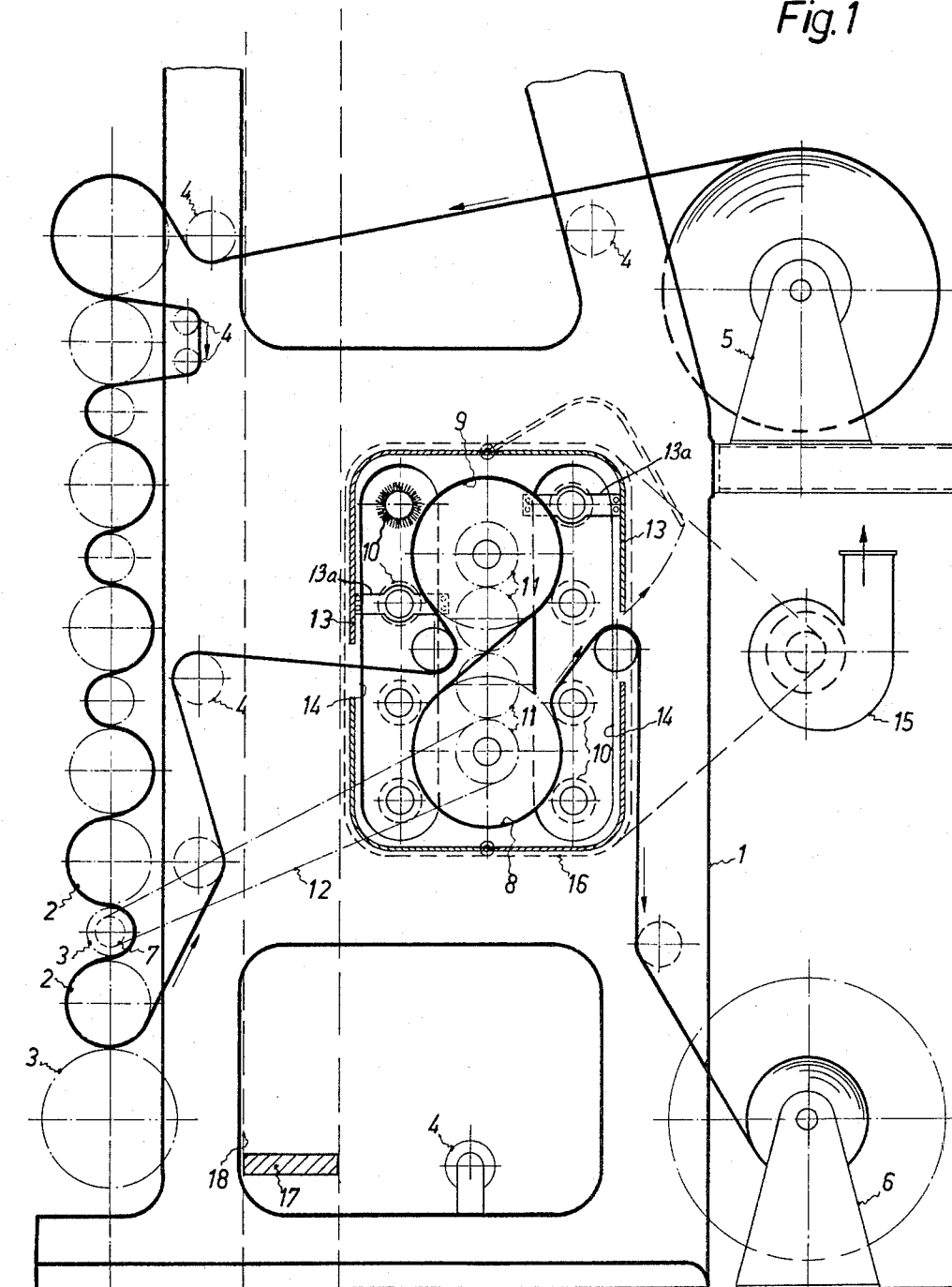
3,274,923

MACHINE FOR TREATING PAPER WEBS, ESPECIALLY
SATINING OR GLAZING CALENDER

Filed Aug. 17, 1964

2 Sheets-Sheet 1

Fig. 1



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Fig. 2

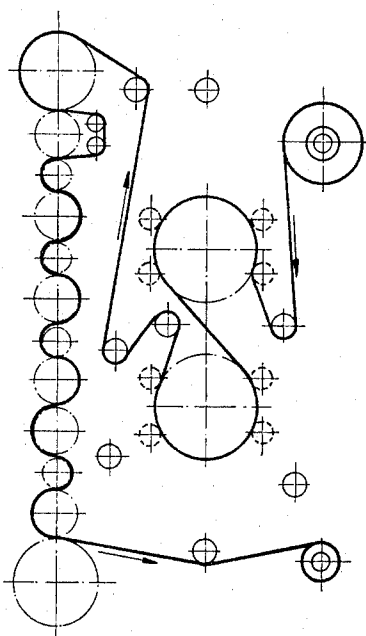


Fig. 3

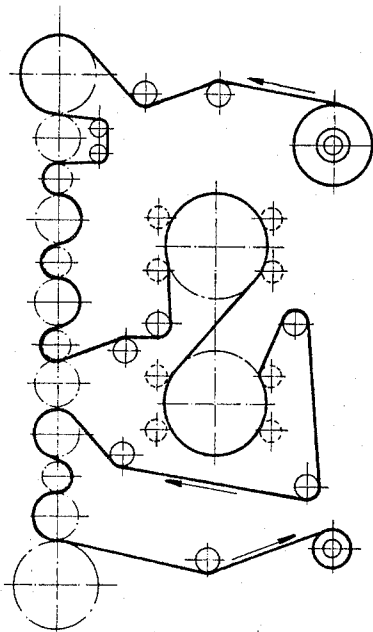


Fig. 4

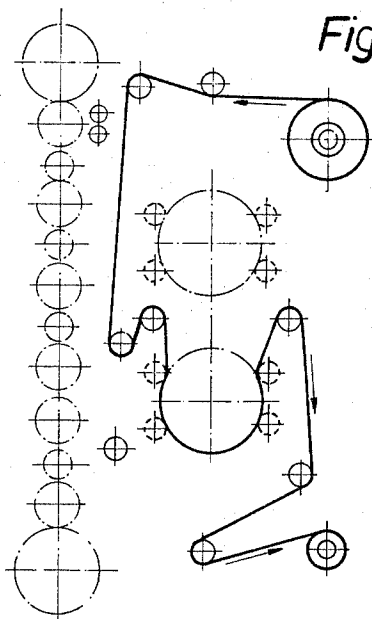
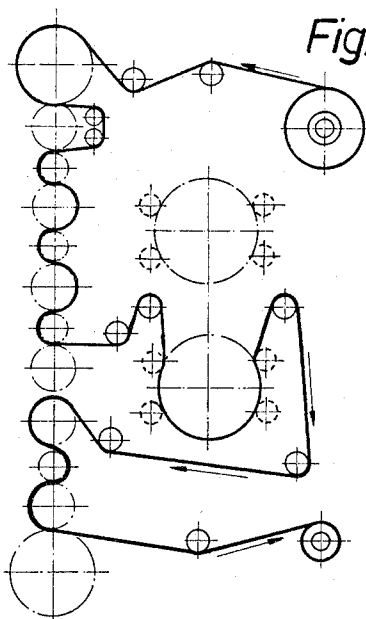


Fig. 5



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MACHINE FOR TREATING PAPER WEBS, ESPECIALLY SATINING OR GLAZING CALENDER

Erhardt Münch, Krefeld-Fischeln, Germany, assignor to Joh. Klenewefers Sohne Maschinenfabrik, Krefeld, Germany

Filed Aug. 17, 1964, Ser. No. 389,951

Claims priority, application Germany, Aug. 24, 1963, K 45,535

2 Claims. (Cl. 100—70)

The present invention relates to a machine for treating paper webs, satining or glazing calender for treating paper webs which are smooth and calendered due to the pressure and the friction between the calender rollers.

It is known to satin-finish the paper web during or after the passage thereof through the calender by means of brushing rollers. The drawback of this known method consists in that only one side of the paper web can be brushed and that there exists no possibility of varying and freely selecting the sequence of the calendaring and brushing operations. With separate brushing machines the further disadvantage is obtained that the continuous working process is interrupted inasmuch as it is necessary to wind and unwind the paper webs and to transport the paper rollers.

It is, therefore, an object of the present invention to overcome the above-mentioned drawbacks.

It is also an object of the present invention to provide a satining calender for treating paper webs by means of which both side of the paper web can be brushed.

It is a further object of the present invention to provide a satining calender according to which the sequence of calendaring the paper web on both sides may be varied and selected in conformity with the specific requirements.

It is still another object of the present invention to provide a satining calender as set forth in the preceding paragraphs by means of which the paper web can be treated in a continuous process without necessitating any additional transport and winding and unwinding operation.

These and other objects and advantages of the present invention will appear more clearly from the following specification in connection with the accompanying drawings, in which:

FIG. 1 represents a section through a satining calender according to the present invention.

FIGS. 2 to 5 respectively diagrammatically illustrate the various possibilities of guiding a paper web through a satining calender according to the present invention.

The satining calender according to the present invention is characterized primarily in that two central rollers, preferably provided with a plurality of brushing rollers distributed over their circumference, are arranged in such a way that by guiding the paper web to be brushed along an S-shaped path around the two central rollers or drums, both sides of the paper web are brushed one after the other.

According to a further feature of the present invention the brushing device is together with the necessary additional devices and, if desired, with the driving elements therefor designed as a separate unit arranged approximately at half the height of the calender on the back side of one of the satining calenders between the two roller stands.

The particular advantage of the above-mentioned arrangement in connection with a satining calender according to the present invention consists not only in a sufficient brushing effect of the device but also in that it affords the possibility of calendaring and brushing the two sides of the paper web selectively and in different sequences while avoiding long deviating paths.

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Referring now to the drawings in detail and FIG. 1 thereof in particular, the satining calender shown therein comprises two lateral stands 1 at the front side of which there is arranged a set of rollers comprising hard chilled iron rollers 3 and elastic rollers 2. Furthermore, the required number of deviating rollers 4 is arranged between the two stands 1, and a winding station 6 and an unwinding station 5 are arranged on the rear side of the calender. Customarily, the third roller from the bottom is driven by means of a coupling 7. Two consecutive elastic rollers at random location of the row or set of rollers bring about a change in the side of the paper web to be treated.

The brushing device according to the present invention comprises two central rollers 8 and 9 preferably arranged one on top of the other. The diameter of the rollers 8 and 9 is so selected that a plurality of brushing rollers 10 of smaller diameter may be arranged along their circumference. In the particular embodiment shown in the drawings, four such brushing rollers 10 are arranged adjacent each central roller. In order to be able to brush both sides of the paper web, the web is guided around the two central rollers 8 and 9 along an S-shaped path so that the drive of the two rollers is by means of a transmission 11 coupled in such a way that the rollers turn in opposite direction with regard to each other. The drive of the two rollers or drums 8 and 9 may be effected through the intervention of a chain or belt drive 12 from the drive of the calender. However, it is also possible to provide a separate synchronized electric drive for the rollers. Preferably, separate electric drives are employed for driving the brushing rollers 10. In this way it is possible not only to vary the speed of the brushing rollers but also to make those brushing rollers which are no longer needed for the operation ineffective in a very simple manner.

According to a further feature of the present invention the brushing device is arranged as a separate unit approximately at half the height of the calender on the back side thereof between the two stands. In this way it is possible first selectively to calender one side of the paper web or both sides of the web one after the other and in different sequence, and then to brush the paper web or vice versa. Some of the various possibilities of calendaring and brushing a paper web according to the arrangement of the present invention are illustrated in FIGS. 2 to 5. While in the arrangement of FIG. 1 both sides of the paper web are first calendered and then brushed. FIG. 2 shows a path of the paper web in which the paper web is first brushed on both sides and then calendered or satined on both sides. FIG. 3 illustrates a path of the paper web in which the right or good side of the paper web is first calendered and subsequently both sides of the paper web are brushed. Following this operation, also the wrong side of the paper web is calendered. FIG. 4 shows a path of the paper web in which first the right or good side of the web is brushed whereas with the arrangement of FIG. 5 first the good side is calendered, then the wrong side is brushed, an finally calendered. As will be evident from the above, the respective process of treating the paper web can be adapted to each desired paper quality and each specific use.

The arrangement of the brushing unit at approximately half the height of the set of rollers or directly adjacent the calender yields the particular advantage that in spite of the variations in the sequence of the working steps, the paper web is between the set of calendaring rollers and the brushing unit guided along relatively short deviating paths. The brushing unit behind the calender rollers is advantageously arranged at such a place that the platform 18 running in vertical guiding means 17 is unimpeded and that it is possible to feed the paper web from the platform into the brushing unit.

Inasmuch as with such brushing devices considerable quantities of dust are produced, according to a further feature of the present invention the unit is combined with a suction device while at the same time designing the calender stand in a particularly advantageous manner. For this purpose, the unit is surrounded on all sides by hoods or lids 13 which are preferably made of several parts, and which are tiltable or detachable, while sufficiently wide passages are left for the feeding and withdrawal of the paper web. Furthermore, the calender stands are on both sides of the bearing means for the central rollers 8 and 9 provided with long passages or aperture means 14 through which not only the admission of air and the withdrawal of dust may be effected but by means of which also the disassembly or the exchange of the brushing rollers 10 will be facilitated. The bearings (two only being shown) for the brushing rollers 10 are indicated by the reference numeral 13a. In the embodiment shown in the drawings, the outside of one calender stand 1 has connected thereto a suction hood 16 which in its turn is connected to a blower 15. The drawn-in fresh air enters into that space of the brushing unit which is enclosed by the hood 13 through the aperture means 14 of the other calender stand 1.

It is, of course, to be understood that the present invention is, by no means, limited to the particular constructions shown in the drawings but also comprises any modifications within the scope of the appended claims.

What is claimed is:

1. In a machine for finishing paper webs, especially for imparting a satin finish to at least one face of a web passing through the machine; roller stand means in the form of spaced frame members, a row of calendering roller means arranged in substantially coplanar relation in the roller stand means at one side of the frame members, paper web supply means and paper web take-up means arranged at the other side of the frame members, and a brushing unit in the roller stand means between the said sides of the frame members and between the ends of said row of calendering roller means so as to have substantially a central location in said roller stand means, said brushing unit comprising a pair of main rollers in adjacent parallel relation, means for driving said main rollers in respectively opposite directions, deviating roller means in the roller stand means including deviating roller means for guiding a paper web therein to and from said main rollers so the paper web can pass around a substantial portion of the periphery of at least one of said main rollers while exposing at least one face of the web for treatment, a plurality of brushing rollers adjacent each main roller and distributed circumferentially thereof about the said portion of the periphery of the pertaining main roller for brushing the face of the paper web exposed on the pertaining main roller, and hood means partially enclosing said main rollers and brushing rollers for conveying air thereover to remove dust generated during the

brushing operation, said frame members having aperture means at the ends of said brushing unit exposing the ends of at least said brushing rollers to facilitate servicing thereof, said aperture means also serving as air inlet and air outlet means for said hood means, and air impelling means connected to the aperture means of at least one of said frame members for moving air through said hood means.

2. In a machine for finishing paper webs, especially for imparting a satin finish to at least one face of a web passing through the machine; roller stand means in the form of spaced frame members, a row of calendering roller means arranged in substantially coplanar relation in the roller stand means at one side of the frame members, paper web supply means and paper web take-up means arranged at the other side of the frame members, and a brushing unit in the roller stand means between the said sides of the frame members and between the ends of said row of calendering roller means so as to have substantially a central location in said roller stand means, said brushing unit comprising a pair of main rollers in adjacent parallel relation, means for driving said main rollers in respectively opposite directions, deviating roller means in the roller stand means including deviating roller means for guiding a paper web therein to and from said main rollers so the paper web can pass around a substantial portion of the periphery of at least one of said main rollers while exposing at least one face of the web for treatment, a plurality of brushing rollers adjacent each main roller and distributed circumferentially thereof about the said portion of the periphery of the pertaining main roller for brushing the face of the paper web exposed on the pertaining main roller, and hood means partially enclosing said main rollers and brushing rollers for conveying air thereover to remove dust generated during the brushing operation, said frame members having aperture means at the ends of said brushing unit exposing the ends of at least said brushing rollers to facilitate servicing thereof, said aperture means also serving as air inlet and air outlet means for said hood means, and suction applying means connected to the aperture means of one of said frame members for causing movement of air through said hood means.

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LOUIS O. MAASSEL, *Primary Examiner*.