

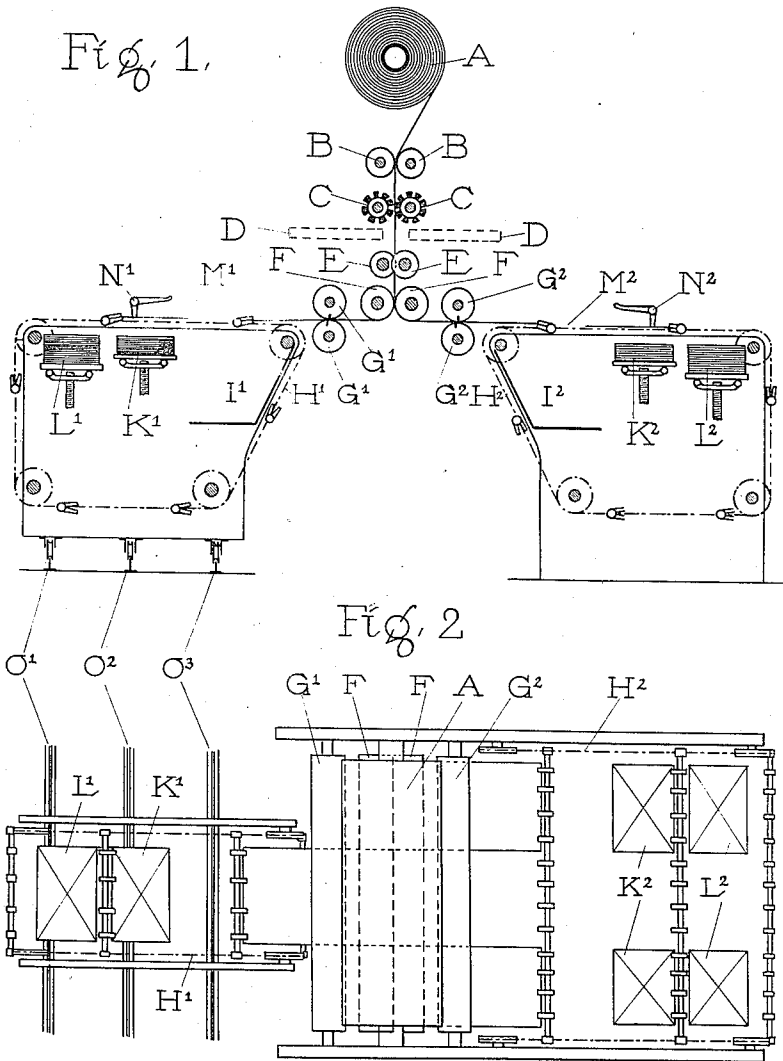
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MECHANISM FOR PRODUCING ASSORTED PILES OF PAPER SHEETS.

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1,205,282.

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Witnesses:

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# UNITED STATES PATENT OFFICE.

GEORG SPIESS, OF LEIPZIG-REUDNITZ, GERMANY.

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Specification of Letters Patent.

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Application filed June 24, 1914. Serial No. 847,044.

*To all whom it may concern:*

Be it known that I, GEORG SPIESS, a citizen of the Empire of Germany and a resident of Leipzig-Reudnitz, Germany, have invented certain new and useful Improvements in Mechanism for Producing Assorted Piles of Paper Sheets, of which the following is a specification.

This invention has reference to mechanism for producing assorted piles of paper sheets.

Heretofore the paper finished by the calendering machines in form of rolls was cut into sheets by means of cross-cutters and the sheets were then piled up. For economical reasons from ten to sixteen webs of paper are simultaneously conveyed to the cross-cutters to increase the efficiency of the machine and obtain an adequate production relative to the cost of the plant.

By reason of the uneven tension exerted on the moving paper webs while being conveyed to the cutters it repeatedly occurs that webs are torn or frayed or form folds or wrinkles which latter may increase by the action of the pressure beam of the cross-cutter. It is an empirical fact that under the described conditions from 15% to 30% of defective sheets are found in the pile formed from the paper cut by the cross-cutters. This necessitates a very tedious and careful sorting of the pile. The finished piles, therefore, are transported from the cross-cutters to the sorting room where the sheets are assorted, either by hand or the piles are brought upon a second machine which mechanically effects the sorting. Such a machine must be provided with an adjusting device for the single sheets coming from the pile and running over the course of observation of the sorting machine.

It is the purpose of the present invention to overcome the described defects and to avoid such a large percentage of defective sheets in the first pile as well as rendering it unnecessary to retransport the first pile which incurs an increased cost. This has been primarily attained, according to the present invention, by producing a machine which effects all the required phases of the method in a single operation. The web running off from a roll is cleaned on both sides and cut first lengthwise and then crosswise to form sheets. Each single sheet is then freed from scraps during its further transportation and conveyed over a course of observation whereupon the defective sheets are

collected to form a separate pile and the good sheets farther on placed upon a pile table.

In order to render the invention entirely clear reference is had to the accompanying drawing in which:

Figure 1 represents in elevation a device for producing assorted piles of sheets of paper embodying in desirable form the present improvements. Fig. 2 is a plan view of the same.

Similar characters of reference denote like parts in all the figures.

The paper roll A, as it comes from the calenders, is mounted above the machine. The unrolling web of paper is passed between two guide rollers B, B. The web then is seized by the rotary brushes C, C which free it from dust and part of the adhering scraps. The dust and scraps are removed by means of the endless bands D, D. The web thus cleaned now enters between the rotary knives E, E and is divided thereby in the longitudinal direction. The divided web strips are then conveyed in opposite directions passing a separate set of rollers F, F and enter between the rotary cross-cutters G<sup>1</sup>, G<sup>2</sup> to form sheets which are then conveyed into the sorting machine.

The paper webs usually have a width of three meters. Assuming that a web has been longitudinally cut into two web strips then the sheets formed therefrom have a width of one meter and a half and may be observed in one sorting machine. However, if the web has been divided into three web strips then the observation of the separated sheets must take place, in every instance, in two separate sorting machines which are preferably arranged at both sides of the conveying mechanism. The second sorting machine is preferably constructed for the broadest sheets so that it may take up the broader sheets when only two web strips of different width have been formed. In order to render it possible that this sorting machine may take up the sheets of either of the two lateral strips or of the middle one, when three strips have been formed, this machine is laterally movable on rails, as hereinafter described.

In a machine adapted to convey the web strips in opposite directions, the said strips, after having passed the guide rollers F, F diverting them in opposite directions, are cut into sheets of a certain length by means

of the cutting cylinders  $G^1$ ,  $G^2$ . The sheets are then conveyed into the sorting machines. This is effected by means of the grippers attached to an endless chain  $H^1$  forming part of the sorting machine shown to the left on the drawing and by grippers on the chain  $H^2$  forming part of the sorting machine, shown to the right. The sheets conveyed into the sorting machine to the left pass over a course of observation  $M^1$ , and the sheets conveyed into the sorting machine to the right over a course of observation  $M^2$  after the still adhering scraps have been removed in known manner and allowed to fall into the spaces  $I^1$ ,  $I^2$  respectively. The defective sheets are now deposited upon the waste pile  $K^1$  in the left machine and  $K^2$  in the right machine by means of the releasing devices  $N^1$ ,  $N^2$ . The perfect sheets, however, are further transported and collected upon the piles  $L^1$  and  $L^2$  respectively. In the machine illustrated the sorting machine shown to the left is movable upon the rails  $O^1$ ,  $O^2$ ,  $O^3$ . Therefore, this sorting machine may be shifted so as to take up the sheets formed of one lateral web strip as well as those formed of the middle one, according to what web strips are diverted to the left side.

I claim as my invention:

1. A machine for producing assorted piles of defective and perfect sheets of paper in series in one continuous operation comprising means for cutting each clean web into sheets, means for passing along the cut clean sheets for observation and selection, means for releasing the selected defective sheets, and means for directly piling the defective sheets and then the perfect sheets.
2. A machine for producing assorted piles of defective and perfect sheets of paper in series in one continuous operation comprising means for cutting each clean web into strips, guide rollers for diverting the web strips in opposite directions, cutting cylinders adjoining said guide rollers to form sheets, means for passing along the cut clean sheets for observation and selection, means for releasing the selected defective sheets, and means at both sides of the machine for directly piling the defective sheets and then the perfect sheets.
3. A machine for producing assorted piles

of defective and perfect sheets of paper in series in one continuous operation comprising means for cutting each clean web into strips, guide rollers for diverting the web strips in opposite directions, cutting cylinders adjoining said guide rollers to form sheets, means for passing along the cut clean sheets for observation and selection, means for releasing the selected defective sheets, stationary means near one set of cutting cylinders for piling directly the defective and then the perfect sheets, and a second means near the second set of cutting cylinders adapted to be shifted laterally so as to receive the sheets passing on one or the other side of the middle sheets.

4. A machine for producing assorted piles of defective and perfect sheets of paper in series in one continuous operation comprising means for cutting each clean web into strips, guide rollers for diverting the web strips in opposite directions, cutting cylinders adjoining said guide rollers to form sheets, an endless chain with grippers at each side of the machine to convey the sheets over a course of observation and selection, a release for defective sheets at each side, means for piling the defective sheets and a pile table at each side for collecting the perfect sheets.

5. In a machine for producing piles of defective sheets and perfect sheets of paper in series in one continuous operation, means for producing the sheets, means for passing along the clean sheets for observation, means for selecting the perfect and defective sheets, and means for piling the defective and perfect sheets separately.

6. In a machine for producing piles of defective and perfect sheets of paper in series in one continuous operation, means for conveying the webs in opposite direction, means for producing sheets therefrom, means for passing each set of sheets over a course of observation, means for selecting, releasing and piling the defective sheets, and means for piling then the perfect sheets.

Signed at Leipzig, Germany, this 5th day of June, 1914.

GEORG SPIESS.

Witnesses:

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