July 12, 1932. G. STRECKER 1,867,335

CROSS CUTTER

Filed Sept. 5, 1931

Fig. 1

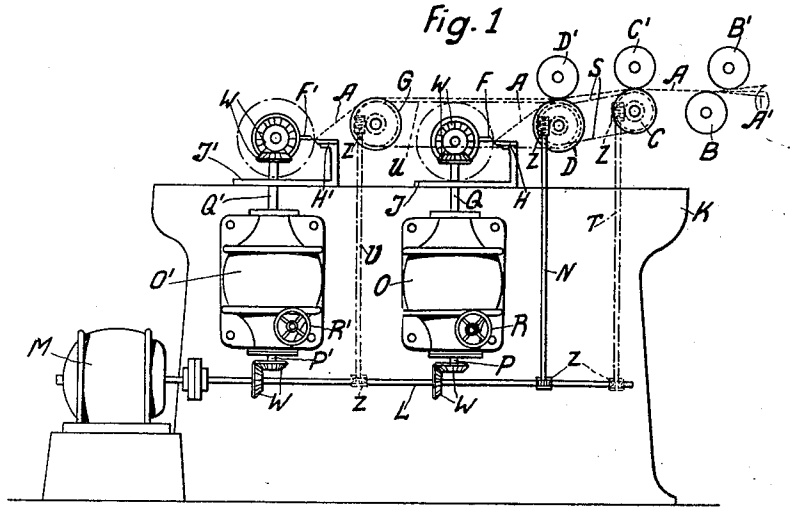
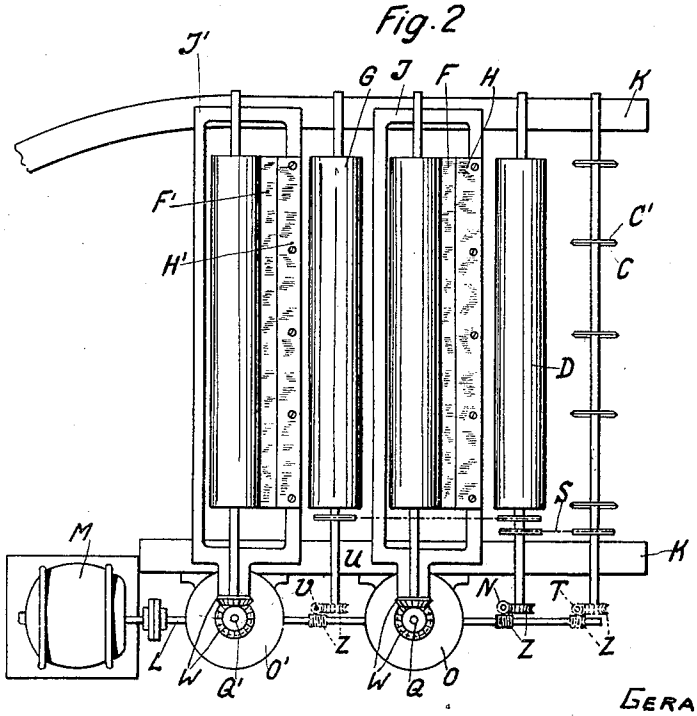


Fig. 2



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CROSS CUTTER

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The present invention relates to improvements in the known cross cutters for uniformly moving webs of paper or the like with one or more rotary cross cutters, and consists in a particularly suitable construction of the drive for the rotary parts.

According to the present invention there is provided for this purpose a single main driving shaft arranged parallel to the direction of feed of the web and located on one longitudinal side of the machine frame, which shaft rotates on the one hand the feed roller for the web through the medium of a vertical intermediate shaft, and on the other hand the rotary cross cutter or cutters through a gear with a transmission ratio, variable without steps, of which the driving and driven shafts are arranged vertically.

In the accompanying drawing Figures 1 and 2 illustrate diagrammatically in plan and side elevation a double cross cutter constructed in accordance with the invention.

The web A to be cut, which may consist of one or more layers A′, passes as usual first between supply rollers B, B′, to a longitudinal cutter C, C′, which for example divides it into four strips in order then to be engaged by a conveying roller D co-operating with a counter roller D′. The conveying roller conducts for example two strips of the web A directly to the rear rotary cross cutter F, whilst the remaining strips are conducted to the front cross cutter F′, which also rotates, by passing them over an intermediate shaft G. The two rotary cross cutters F, F′ are together with the corresponding stationary cross cutters H, H′ mounted as usual in a frame J, J′ which are capable of being rocked in a horizontal plane.

Whereas the rear frame J need only be capable of rocking through a small angle, as is necessary for forming a cut extending at right angles to the direction of movement of the web A, the front frame J′, as is otherwise mostly usual, can be rocked about a substantially larger angle so that by means of the cross cutter H′ it is also possible to produce diagonal cuts, i. e. cuts extending at an angle to the direction of movement of the web A.

The shafts of the supply rollers B, B′, of the longitudinal cutter C, C′, of the feed and counter rollers D, D′, and of the intermediate roller G rotate in bearings provided on the machine frame K and which for the sake of clearness are not illustrated. The shafts of the rotary cross cutters F, F′ are mounted in bearings which are provided on the frames J, J′ and are also not illustrated.

For driving all the rotary parts there is provided according to the present invention a single main shaft L which is arranged parallel to the direction of movement of the web A and on one longitudinal side of the machine frame K, this shaft for example being preferably coupled directly to an electric motor M. The shaft L rotates the feed roller D through a vertical intermediate shaft N and drives the rotary cross cutters F, F′ through a gear O, O′ of known construction with a variable transmission ratio without steps, the driving and driven shafts P, P′ and Q, Q′ respectively being vertical and preferably co-axial. The gears O, O′ are secured to the machine frame K itself and the adjustment of their transmission ratio may, for example, be effected by hand wheels R, R′.

The frames J, J′ are rotatable about the driven shafts Q, Q′ of the gears O, O′. The longitudinal cutter C, C′ is driven from the main driving shaft L through the feed roller D by means of a belt F, a chain, a train of toothed wheels, or, as shown by chain dotted lines, through a second vertical intermediate shaft T.

The intermediate shaft G is driven from the main driving shaft L through the feed shaft D, for example, by means of a belt U, a chain, or, as shown in chain dotted lines, by a third vertical intermediate shaft V.

The transmission of the rotary movements may be effected by bevel wheels W or worm gearing Z.

The invention is not limited to the example of construction illustrated and described above. For example in a corresponding manner cross cutters may be provided with three or more rotary cross cutters.

I claim:—

1. In a cross cutter for uniformly moving webs of paper and so forth having a machine frame, a main driving shaft arranged parallel to the direction of feed of said web and arranged on one longitudinal side of said machine frame, a feed roller for said web, a vertical intermediate shaft between said main shaft and said feed roller, a rotary cross cutter, and variable speed gearing without steps between said main driving shaft and said cross cutter, said variable gearing including a vertical driving and driven shaft.

2. In a cross cutter for uniformly moving webs of paper and so forth having a machine frame, a main driving shaft arranged parallel to the direction of feed of said web and arranged on one longitudinal side of said machine frame, a feed roller for said web, a vertical intermediate shaft between said main shaft and said feed roller, a plurality of cross cutters, and a plurality of variable transmission gears without steps located one between said main driving shaft and each of said rotary cross cutters, each of said transmission gears including a vertical driving and driven shaft.

3. In a cross cutter for uniformly moving webs of paper and so forth having a machine frame, a main driving shaft arranged parallel to the direction of feed of said web and arranged on one longitudinal side of said machine frame, a feed roller for said web, a vertical intermediate shaft between said main shaft and said feed roller, a rotary cross cutter, and variable speed gearing without steps between said main driving shaft and said cross cutter, said variable gearing including a vertical driving and driven shaft, said last mentioned driving and driven shafts being arranged co-axially.

4. In a cross cutter for uniformly moving webs of paper and so forth having a machine frame, a main driving shaft arranged parallel to the direction of feed of said web and arranged on one longitudinal side of said machine frame, a feed roller for said web, a vertical intermediate shaft between said main shaft and said feed roller, a plurality of cross cutters, and a plurality of variable transmission gears without steps located one between said main driving shaft and each of said rotary cross cutters, each of said transmission gears including a vertical driving and driven shaft, said last mentioned driving and driven shafts in each of said transmission gears being arranged co-axially.

5. In a cross cutter for uniformly moving webs of paper and so forth having a machine frame, a main driving shaft arranged parallel to the direction of feed of said web and arranged on one longitudinal side of said machine frame, a feed roller for said web, a vertical intermediate shaft between said main shaft and said feed roller, a rotary cross cutter, and variable speed gearing without steps between said main driving shaft and said cross cutter, said variable gearing including a vertical driving and driven shaft, said transmission gear being secured to said machine frame.

6. In a cross cutter for uniformly moving webs of paper and so forth having a machine frame, a main driving shaft arranged parallel to the direction of feed of said web and arranged on one longitudinal side of said machine frame, a feed roller for said web, a vertical intermediate shaft between said main shaft and said feed roller, a plurality of cross cutters, and a plurality of variable transmission gears without steps located one between said main driving shaft and each of said rotary cross cutters, each of said transmission gears including a vertical driving and driven shaft, said transmission gears being secured to said machine frame.

7. In a cross cutter for uniformly moving webs of paper and so forth having a machine frame, a main driving shaft arranged parallel to the direction of feed of said web and arranged on one longitudinal side of said machine frame, a feed roller for said web, a vertical intermediate shaft between said main shaft and said feed roller, a rotary cross cutter, and variable speed gearing without steps between said main driving shaft and said cross cutter, said variable gearing including a vertical driving and driven shaft, a stationary cross cutter cooperating with said rotary cross cutter and a frame in which said rotary and said stationary cross cutter are mounted, said frame being rotatable in a horizontal plane about said last mentioned driving and driven shafts.

8. In a cross cutter for uniformly moving webs of paper and so forth having a machine frame, a main driving shaft arranged parallel to the direction of feed of said web and arranged on one longitudinal side of said machine frame, a feed roller for said web, a vertical intermediate shaft between said main shaft and said feed roller, a plurality of cross cutters, and a plurality of variable transmission gears without steps located one between said main driving shaft and each of said rotary cross cutters, each of said transmission gears including a vertical driving and driven shaft, a plurality of stationary cross cutters, said stationary cross cutters cooperating one with each of said rotary cross cutters, a plurality of frames, each of said frames having mounted therein one of said rotary cutters and its associated stationary cross cutter, said frames being each rotatable in a horizontal plane about their respective last mentioned vertical driving and driven shafts.

9. In a cross cutter for uniformly moving webs of paper and so forth having a machine frame, a main driving shaft arranged parallel to the direction of feed of said web and

arranged on one longitudinal side of said machine frame, a feed roller for said web, a vertical intermediate shaft between said main shaft and said feed roller, a rotary cross cutter, and variable speed gearing without steps between said main driving shaft and said cross cutter, said variable gearing including a vertical driving and driven shaft, a longitudinal cutter and means for driving said longitudinal cutter from said main driving shaft.

10. In a cross cutter for uniformly moving webs of paper and so forth having a machine frame, a main driving shaft arranged parallel to the direction of feed of said web and arranged on one longitudinal side of said machine frame, a feed roller for said web, a vertical intermediate shaft between said main shaft and said feed roller, a plurality of cross cutters, and a plurality of variable transmission gears without steps located one between said main driving shaft and each of said rotary cross cutters, each of said transmission gears including a vertical driving and driven shaft, a longitudinal cutter and means for driving said longitudinal cutter from said main driving shaft.

11. In a cross cutter for uniformly moving webs of paper and so forth having a machine frame, a main driving shaft arranged parallel to the direction of feed of said web and arranged on one longitudinal side of said machine frame, a feed roller for said web, a vertical intermediate shaft between said main shaft and said feed roller, a rotary cross cutter, and variable speed gearing without steps between said main driving shaft and said cross cutter, said variable gearing including a vertical driving and driven shaft, a longitudinal cutter and means for driving said longitudinal cutter by said feed roller.

12. In a cross cutter for uniformly moving webs of paper and so forth having a machine frame, a main driving shaft arranged parallel to the direction of feed of said web and arranged on one longitudinal side of said machine frame, a feed roller for said web, a vertical intermediate shaft between said main shaft and said feed roller, a plurality of cross cutters, and a plurality of variable transmission gears without steps located one between said main driving shaft and each of said rotary cross cutters, each of said transmission gears including a vertical driving and driven shaft, a longitudinal cutter and means for driving said longitudinal cutter by said feed roller.

13. In a cross cutter for uniformly moving webs of paper and so forth having a machine frame, a main driving shaft arranged parallel to the direction of feed of said web and arranged on one longitudinal side of said machine frame, a feed roller for said web, a vertical intermediate shaft between said main shaft and said feed roller, a rotary cross cutter, and variable speed gearing without steps between said main driving shaft and said cross cutter, said variable gearing including a vertical driving and driven shaft, a longitudinal cutter, and a vertical shaft located between said main driving shaft and said longitudinal cutter for the purpose of driving the same.

14. In a cross cutter for uniformly moving webs of paper and so forth having a machine frame, a main driving shaft arranged parallel to the direction of feed of said web and arranged on one longitudinal side of said machine frame, a feed roller for said web, a vertical intermediate shaft between said main shaft and said feed roller, a plurality of cross cutters, and a plurality of variable transmission gears without steps located one between said main driving shaft and each of said rotary cross cutters, each of said transmission gears including a vertical driving and driven shaft, a longitudinal cutter, and a vertical shaft located between said main driving shaft and said longitudinal cutter for the purpose of driving the same.

15. In a cross cutter for uniformly moving webs of paper and so forth having a machine frame, a main driving shaft arranged parallel to the direction of feed of said web and arranged on one longitudinal side of said machine frame, a feed roller for said web, a vertical intermediate shaft between said main shaft and said feed roller, a rotary cross cutter, and variable speed gearing without steps between said main driving shaft and said cross cutter, said variable gearing including a vertical driving and driven shaft, a plurality of longitudinal cutters and means for driving said longitudinal cutters from said main driving shaft.

16. In a cross cutter for uniformly moving webs of paper and so forth having a machine frame, a main driving shaft arranged parallel to the direction of feed of said web and arranged on one longitudinal side of said machine frame, a feed roller for said web, a vertical intermediate shaft between said main shaft and said feed roller, a plurality of cross cutters, and a plurality of variable transmission gears without steps located one between said main driving shaft and each of said rotary cross cutters, each of said transmission gears including a vertical driving and driven shaft, a plurality of longitudinal cutters and means for driving said longitudinal cutters from said main driving shaft.

17. In a cross cutter for uniformly moving webs of paper and so forth having a machine frame, a main driving shaft arranged parallel to the direction of feed of said web and arranged on one longitudinal side of said machine frame, a feed roller for said web, a vertical intermediate shaft between said main shaft and said feed roller, a plurality of

cross cutters, and a plurality of variable transmission gears without steps located one between said main driving shaft and each of said rotary cross cutters, each of said transmission gears including a vertical driving and driven shaft, an intermediate roller between each two of said rotary cross cutters and means for driving said intermediate roller from said main driving shaft.

In testimony whereof I have affixed my signature.

GERALD STRECKER.