(No Model.)

J. B. CROSBY.

TRIMMING AND SLITTING MACHINE.

No. 416,829. Patented Dec. 10, 1889.

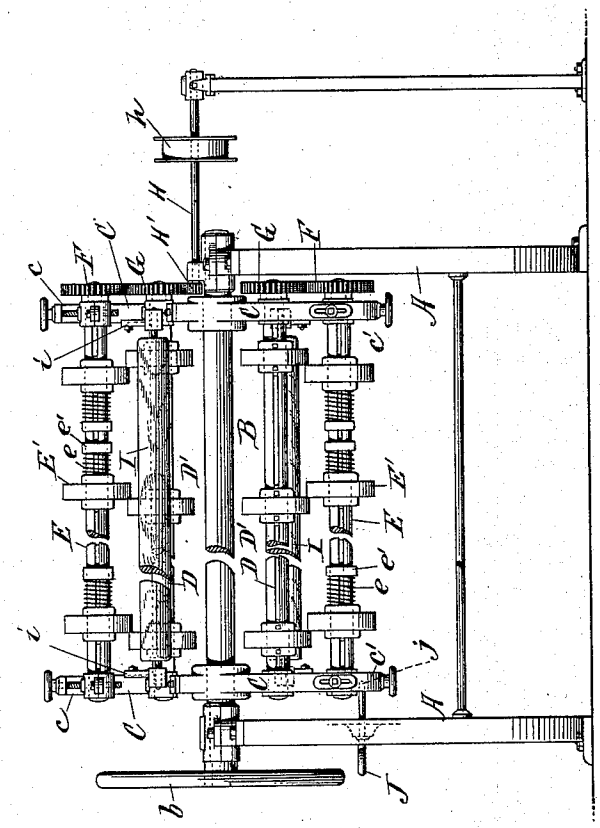


Fig. 2.

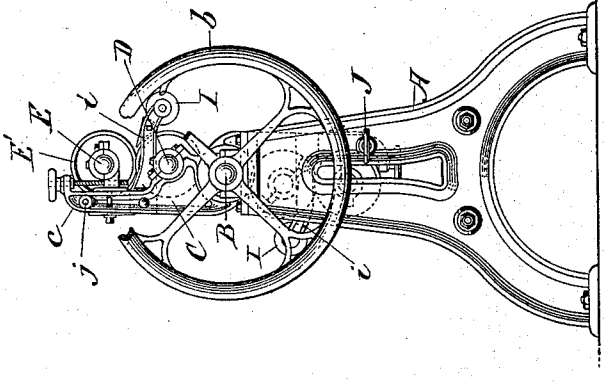


Fig. 1.

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UNITED STATES PATENT OFFICE.

JAMES B. CROSBY, OF NILES, MICHIGAN.

TRIMMING AND SLITTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 416,829, dated December 10, 1889.

Application filed November 12, 1886. Serial No. 218,733. (No model.)

To all whom it may concern:

Be it known that I, JAMES B. CROSBY, a citizen of the United States, residing at Niles, in the county of Berrien and State of Michigan, have invented a certain new and useful Improvement in Trimming and Slitting Machines, which is fully set forth in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of a machine embodying my invention, and Fig. 2 a front elevation of the same.

Like letters refer to like parts in all the figures of the drawings.

My invention relates to machines for trimming and slitting paper, it being intended more particularly to operate upon roll-board or other heavy material in the web as it comes from the paper-machine, and it has for its object to reduce the loss and save the waste entailed by the stoppage necessary with the ordinary trimmer and slitter when it is desired to change the width of cut by changing the distance separating the cutters, or when it may be desired for any reason to have uninterrupted access to the said cutters.

To these ends my invention consists in certain novel features, which I will now proceed to describe, and will then particularly point out in the claims.

In the drawings, in which I have shown my invention practically carried out in one form, A represents the main frame of the machine, which frame is constructed in any suitable manner. Mounted in suitable bearings in said frame is a transverse shaft B, provided with a hand-wheel *b*, by means of which it may be rotated, for the purposes hereinafter described. Upon the shaft B, which may be termed the "supporting-shaft," is mounted a series of supporting-frames, each of which frames carries a set of trimming and slitting mechanism of any approved construction, so that by rotating the said supporting-shaft any one of said supporting-frames may be brought into proper position to operate upon the material. In the present instance I have shown a series of two supporting-frames extending in diametrically opposite directions, the said frames consisting of arms C, secured on said shaft near each end thereof and extending radially therefrom in opposite directions. The arms *c* form one supporting-frame, while the arms *c'* form the other supporting-frame. In each of these supporting-frames is mounted a set of trimming and slitting mechanism. The form of trimming and slitting mechanism which I prefer to employ is that shown, which consists of an inner shaft D, upon which is secured a series of cutters D', the outer ones of which act as trimming-cutters, while the intermediate ones act as slitting-cutters. Each cutter is adjustable on the shaft, so that the cutters composing the series may be arranged at any desired distance apart, and any desired number of intermediate or slitting cutters may be employed. The means of adjustment may be a spline-groove in the shaft and a suitable key and set-screw in the hub of the cutter. An outer shaft E is provided with a corresponding series of cutters E', which act in conjunction with the cutters D', said cutters E' being splined on the shaft E, so as to move longitudinally thereon, but being compelled to rotate along with said shaft. The cutters E' are held in contact with the corresponding cutters D' of the inner series by means of springs *e*, each cutter being provided with a spring *e*, which bears against its hub and against a collar *e'*, secured on the shaft E, said collars being adjustable upon the shaft E to conform to the adjustment of the cutters and also to regulate the action of the springs. The outer shaft is also adjustable toward and from the inner shaft—a construction common in slitting mechanism of the description shown. In fact, the entire slitting mechanism shown is well known, and its construction forms no part of my present invention.

The shafts D and E are provided at one end, preferably at that side of the machine opposite to that at which the hand-wheel *b* is located, with gear-wheels F and G, which mesh with each other, as shown. H represents a continuously-rotating shaft mounted in suitable bearings and provided with a pulley *h* to receive a driving-belt. On the end of shaft H is secured a pinion H', which meshes with that one of the pinions G which is in proper position for the purpose, in order that the rotary motion of the shaft H may be transmitted through said pinion and through the gear-

wheels G and F to the shafts E and D and to the cutters E′ and D′ mounted thereon.

Each supporting-frame is preferably provided with a guide-roller I at the front, over which the material operated upon passes to the cutters. These guide-rollers I are shown in the present instance as mounted in suitable bearings in arms *i*, attached to and extending out from the arms C. A suitable locking device is also employed to prevent accidental rotation of the shaft B, the device which I prefer for this purpose being a locking-pin J, passing through a suitable aperture in the main frame and extending into an aperture *j* in that one of the arms C which may be in position to receive said pin. Withdrawal of the pin permits rotation of the supporting-shaft B in an obvious manner.

The operation of my improved trimming and slitting machine is as follows: In case the material is operated upon in the web as it comes from the paper-machine, the trimming and slitting mechanism is arranged to receive the web as it comes from the calender-rolls, the web passing over the guide-roller I and between the cutters of the upper set of cutting mechanism, when its edges are trimmed and its intermediate portion slit into strips of the desired width. In case it is desired to change the width of the strips, it has heretofore been necessary to break the web and then set the cutters in proper position for producing strips of the desired width. During this operation of adjusting the cutters the web runs to waste, it being impracticable to stop the operation of the paper-machine, and since it takes a long time to effect a proper adjustment of the cutters the waste has heretofore been great. In the case of a light web this loss has been in a measure avoided by arranging a reel or series of reels between the calender-rolls and the slitting mechanism to receive the web temporarily; but with a heavy web—such as roll-board or the like—there has been no means for avoiding the waste, since such material cannot be reeled. By the use of my improved trimming and slitting machine the set or one of the sets of trimming and slitting mechanism which is not in use may be set or adjusted to produce the desired width of cut, and then by breaking the web, withdrawing the locking-pin, and rotating the supporting-shaft by means of its hand-wheel the supporting-frame which carries the already adjusted set of trimming and slitting mechanism may be brought into position to operate immediately upon the material without loss of time or waste of material, thus effecting a great saving in time and material and a corresponding reduction in the ultimate cost of the product. It will be understood, of course, that as each supporting-frame comes into position for work its mechanism receives power from and is actuated by the continuously-rotating shaft and its pinion in an obvious manner.

Although I have described my invention as adapted more particularly for use upon a heavy web as it comes from the paper-machine, still it is obvious that its use is not limited to this particular application, as it is equally well adapted for independent use or for operating upon medium or light materials. For instance, I contemplate its use in a paper-cutter in the same manner as the old slitter. Nor is my invention limited to the particular form of trimming and slitting mechanism shown, or to the number of sets of such mechanism shown. Moreover, it is obvious that various modifications in the details of construction and arrangement of the parts may be made without departing from the principle of my invention; and I therefore do not wish to be understood as limiting myself strictly to the precise details of construction hereinbefore described and shown in the drawings.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a trimming and slitting machine, the combination, with the revoluble supporting-shaft, of two supporting-frames mounted thereon, and a trimming and slitting mechanism mounted on each of said frames and provided each with laterally-adjustable cutters, substantially as and for the purposes specified.

2. In a trimming and slitting machine, a revoluble supporting-shaft, in combination with two supporting-frames mounted thereon, a trimming and slitting mechanism mounted on each frame and consisting of two shafts provided with laterally-adjustable cutters and suitable connecting-gearing, and a continuously-rotating shaft provided with a pinion arranged to mesh with the gearing of that set of mechanism which is adjusted into operative position, substantially as and for the purposes specified.

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Witnesses:
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