J. A. CAMERON & G. B. BIRCH.

SLITTING MACHINE.

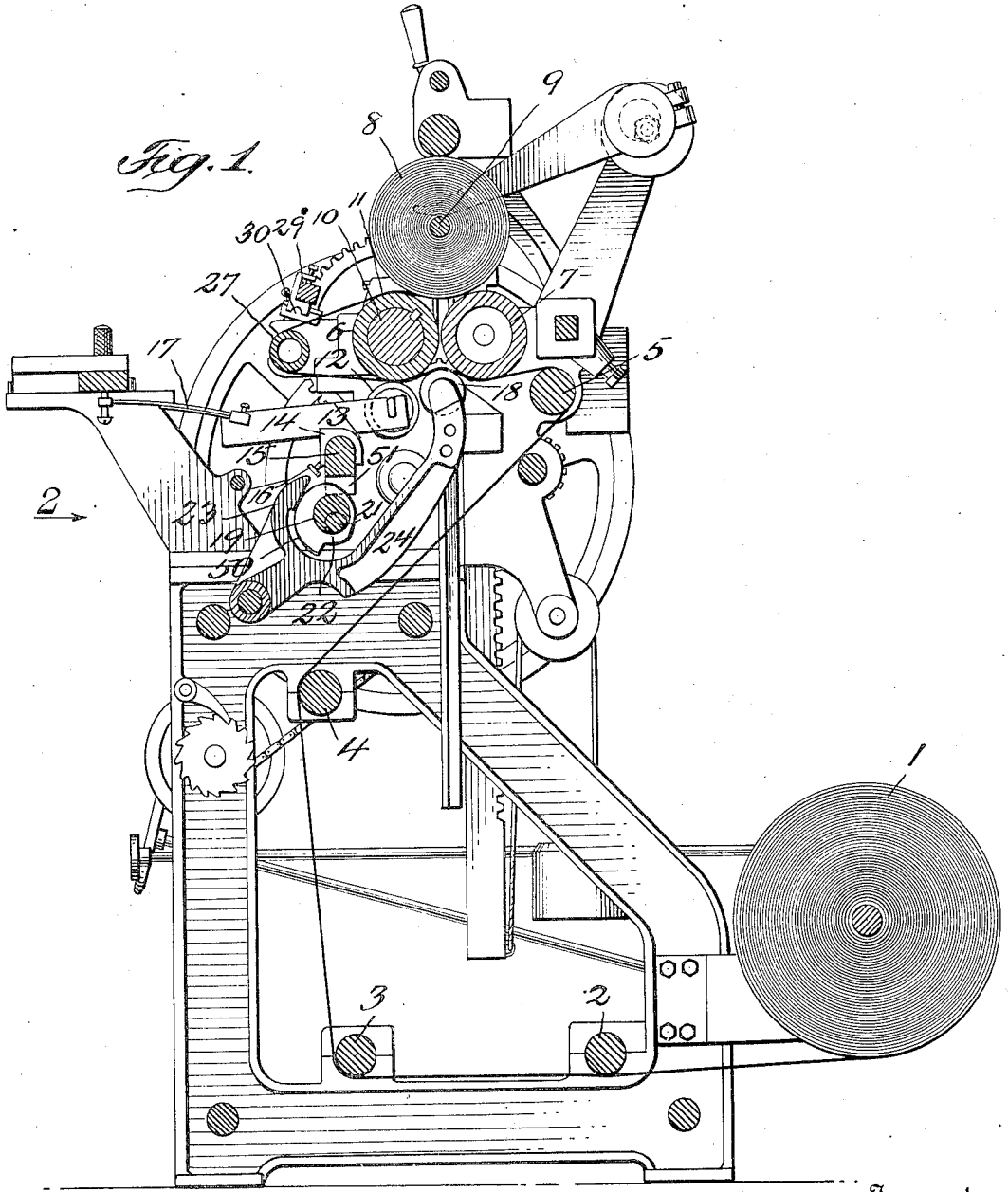
APPLICATION FILED APR. 7, 1913.

1,116,795.

Patented Nov. 10, 1914.

2 SHEETS—SHEET 1.

Fig. 1.



Witnesses:
Julius Mack.
Teresa V. Lynch.

Inventors
James A. Cameron &
Gustaf Birger Birch
By their Attorneys
Brock Becker & Smith

J. A. CAMERON & G. B. BIRCH.

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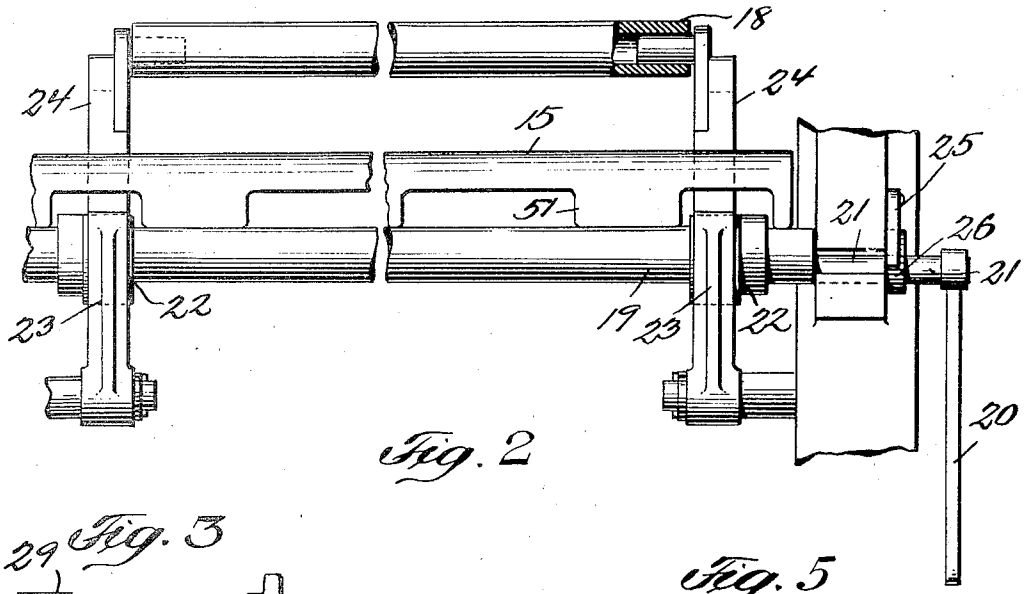


Fig. 2

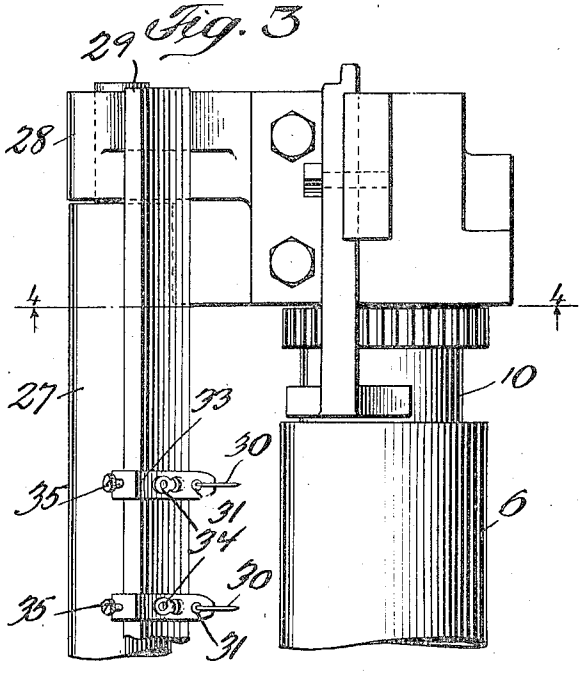


Fig. 3

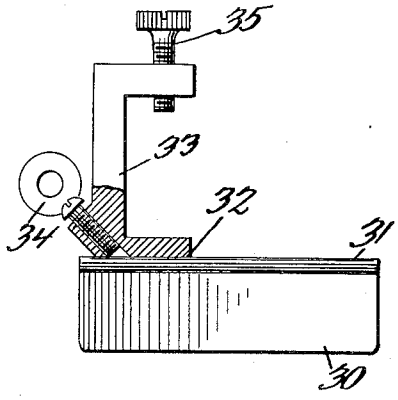
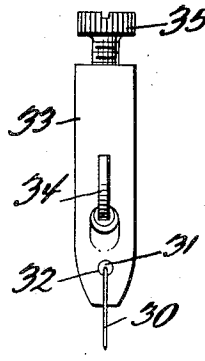


Fig. 5

Fig. 6



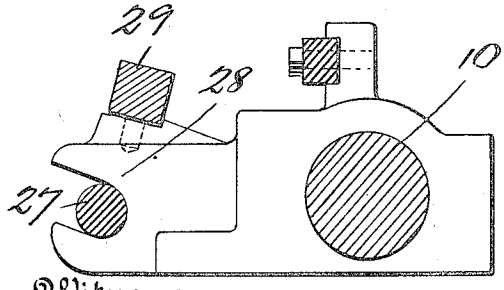


Fig. 4

Witnesses:

Julius Smith

Teresa V. Lynch

Inventors

James A. Cameron &

Gustaf Birger Birch

By their Attorneys

Brock Reeken & Smith

UNITED STATES PATENT OFFICE.

JAMES A. CAMERON AND GUSTAF BIRGER BIRCH, OF NEW YORK, N. Y., ASSIGNORS TO CAMERON MACHINE COMPANY, A CORPORATION OF NEW YORK.

SLITTING-MACHINE.

1,116,795. Specification of Letters Patent. Patented Nov. 10, 1914.

Application filed April 7, 1913. Serial No. 759,449.

To all whom it may concern:

Be it known that we, JAMES A. CAMERON and GUSTAF BIRGER BIRCH, both citizens of the United States, and residents of the borough of Brooklyn, in the county of Kings, city and State of New York, have invented certain new and useful Improvements in Slitting-Machines, of which the following is a specification.

The present invention relates more particularly to web slitting machines and has for its main object the production of means whereby the web will be slit without distortion out of the plane of severance, and whereby a greater efficiency will be produced without decreasing the accessibility of the parts.

It has been established that a surface rewind and a score cutter produce the best results, the score cutter preventing the slit sections from overlapping so that they can be properly rewound, and the surface rewind pulling with equal force on all the slit sections so that no distortion takes place out of the plane of severance. It happens, however, that at times the fabric is creased or wrinkled when it reaches the cutting or slitting device, and therefore no matter how accurate the cutting device operates, a slight distortion will still take place owing to the imperfections of the fabric itself.

Accordingly one feature of the present invention resides broadly in providing means for smoothing out the wrinkles of the fabric before it passes through the slitting device. Preferably this is accomplished by having a cutting member provided with a smooth surface, either consisting of a plurality of spaced disks, or, as shown in the present instance, a plurality of closely abutting rings constituting substantially one continuous surface, and by having a score cutter engage therewith, together with means for causing the web of material to be guided into engagement with the smooth surface of the cutting member at a point in advance of the point of engagement of the cutter with the cutting member. The means for smoothing out the wrinkles consist preferably of guiding means or deflecting means which turn the web out of the straight path and guide it against the cutting member at a point in advance of the point where the cutter acts against the same. Preferably the guiding or deflecting means is interposed beneath and between two surface rewinding rolls one of which acts as the cutting member. Suitable means are provided for moving this guiding means into and out of engagement with the web.

Another feature of the invention resides in interrelated means comprising in part an actuating means whereby the cutter may be brought into engagement with the cutting member and the web guiding or web tension means may be brought into engagement with the web, the parts being so arranged that the operating means for the web tension means are moved a predetermined distance while the operating means for the cutter move a variably greater distance or may continue to act to increase the pressure on the spring-seated cutter while the web tension means remain at rest.

Under certain conditions, such as when cutting cloth, it sometimes occurs that a few threads of the adjacent sections of the web will not be severed by the slitting device. Under these conditions it is desirable to guide the slit sections away from the cutting member before rewinding the same so as to expose the web for a distance in an unsupported layer and to have separating knives, preferably angularly disposed to the run of the web, extend in between the slit sections so as to sever any remaining threads.

Other features of construction and arrangement of parts and combination of elements will appear as the specification proceeds.

In the drawings the invention is embodied in a concrete form, but changes may of course be made without departing from the scope of the invention.

In the said drawings: Figure 1 is a vertical sectional view of a slitting machine embodying the invention. Fig. 2 is a detail view of the means for moving the cutter and web guiding or tension device. Fig. 3 is a plan view of a part of the improved separating means employed. Fig. 4 is a section on the line 4—4 of Fig. 3. Figs. 5 and 6 are detail views of the separating knife used.

Similar characters of reference indicate corresponding parts in the several views.

1 indicates the supply of web to be slit, the web being threaded around the guide rolls 2, 3, 4 and 5. From the roll 5, the web usually runs straight to the rewinding roll 6, the latter together with the rewinding roll 7 rotating in the same direction as 6,

supporting the slitted sections 8 on the rewinding means or spindle 9 in a manner well understood, the web being thereby advanced between the members 6 and 12.

The cutting member 6 consists in this instance of a shaft 10 having rings 11 secured thereto, said rings being in close abutting end to end engagement. The surface of the rings 11 is smooth and harder than the score cutter 12 so that the latter will not cut grooves in the surface of the ring 11. The cutter 12 is rotatably mounted in the arm 13 which is loosely pivoted on the spacing member 14 adjustably secured to the rail 15 by means of screw 16. 17 indicates a spring for holding the score cutter in spring-pressed engagement with the cutting member 6.

18 is a web tension member which is located underneath the rolls 6 and 7 and intermediate the same, which, when in its raised position, shown in Fig. 1, serves to guide or deflect the web out of its straight path and into engagement, preferably with both rolls 6 and 7, without pinching the web between 18 and 6 or 7, the web engaging with the roll 6 at a point in advance of the point where the cutter 12 acts against the same. This causes wrinkles in the material to be smoothed out so that the material will be cut evenly and without distortion out of the plane of severance.

Suitable means are provided for bringing the member 18 into and out of engagement with the web and the cutter 12 into and out of engagement with the roll 6. These means may take many forms. As here shown, an actuating member 19, shown as a rotatable shaft provided with a handle 20, is utilized. This shaft 19 constitutes a cam or eccentric by having eccentric extensions 21, only one of which is shown, which rest in suitable bearings. On the shaft 19 rest the abutments 51 carried by the rail 15. The shaft 19 further carries two cams 22 which engage the overhanging portion 23 of the pivoted levers or arms 24, which latter carries the member 18. The cams 19 and 22 are so arranged with respect to each other that they will act on the operating members (15 and 24) of the cutter 12 and member 18 respectively, and by turning the handle 20 the said members 12 and 18 are brought into engagement with the roll 6 and web respectively substantially simultaneously. Owing to the shape of the cams 22, which have a portion 50 concentric with the center of the eccentric 21 or with the center of rotation of the rotatable member, the operating means for the member 18 will move only a certain predetermined distance. After this point has been reached the actuating handle 20 may be moved a variably greater distance without affecting the position of the member 18, but with the effect that the cams 21 continue to act on the member 15 to put the cutter 12 under the variably requisite pressure. When the parts have been brought to the proper position, the pawl 25 is dropped into the ratchet 26 on the shaft 19 thereby maintaining the parts in the position to which they have been adjusted.

27 indicates a roll mounted loosely in the open bracket 28 (Fig. 4). In certain cases the slit sections of the web may be led from the roll 6 around roll 27 and then back to 6 again and to the rewinding means for the purpose of exposing the fabric in a single unsupported layer. Extending above the roll 27 is the inclined rail 29 on which are secured separating knives 30 which extend angularly or obliquely in between the slit sections of the web for the purpose of cutting any unsevered threads. Preferably these knives 30 are made of sheet material with a bead or stiffening member 31 at the top, and are slid into the groove 32 of the bracket 33 where they are held in position by means of the tightening screw 34. The bracket 33 is clamped to the rail 29 by means of the screw 35.

What is claimed, is:

1. In a machine of the character set forth, a cutter, two rewinding rolls adapted to engage with the surface of the slit web to rewind the same, one of said rolls acting as a cutting member against which the cutter acts, and means located below the two rewinding rolls and intermediate the same for guiding the web into engagement with the surface of the roll constituting the cutting member at a point in advance of the point of engagement of the cutter with the cutting member.

2. In a machine of the character set forth, a cutter, two rewinding rolls adapted to engage with the surface of the slit web to rewind the same, one of said rolls acting as a cutting member against which the cutter acts, means located below the two rewinding rolls and intermediate the same for guiding the web into engagement with the surface of the roll constituting the cutting member at a point in advance of the point of engagement of the cutter with the cutting member, and means for shifting the guiding means into and out of engagement with the web.

3. In a machine of the character set forth, a cutting member having a smooth surface, a cutter adapted to act against said surface, means for advancing a web of material between the cutter and cutting surface, means for guiding the web into engagement with the surface of the cutting member at a point in advance of the point of engagement of the cutter with he cutting member, and interrelated means for moving the cutter toward and away from the cutting member

and the guiding means toward and away from the web substantially simultaneously.

4. In a machine of the character set forth, a cutting member, a cutter, web tension means, operating means for moving the cutter toward and away from the cutting member, operating means for moving the web tension means toward and away from the web, and an actuating device common to both operating devices adapted to move the operating device for the tension means a predetermined distance and adapted to move the operating means for the cutter a variably greater distance.

5. In a machine of the character set forth, a cutting member having a smooth surface, a cutter adapted to act against said surface, means for advancing a web of material between the cutter and cutting surface, means for guiding the web into engagement with the surface of the cutting member at a point in advance of the point of engagement of the cutter with the cutting member, operating means for moving the cutter toward and away from the cutting member, operating means for moving the guiding means toward and away from the web, and an actuating device common to both operating devices adapted to move the operating device for the guiding means a predetermined distance and adapted to move the operating means for the cutter a variably greater distance.

6. In a machine of the character set forth, a cutting member, a spring-seated cutter adapted to engage therewith, web tension means, and interrelated means for carrying the cutter and web tension means into engagement with the cutting member and web concurrently and then to increase the tension on the cutter while the web tension means remains at rest.

7. In a machine of the character set forth, a cutting member, a spring-seated cutter adapted to engage therewith, web tension means, a rotatable member, and cams on said member adapted to carry the cutter and web tension means into engagement with the cutting member and web respectively and then to increase the tension on the cutter while the web tension means remains at rest.

8. In a machine of the character set forth, a cutting member having a smooth surface, a cutter coöperating therewith, rewinding means for the slitted web, means, interposed between the cutting member and the rewinding means, for exposing the slit fabric in a single unsupported layer, and a separating knife adapted to extend in between the slit sections of the web while the latter is traveling in an unsupported layer.

9. In a machine of the character set forth, a cutting member having a smooth surface, a cutter coöperating therewith, rewinding means for the slitted web, means, interposed between the cutting member and the rewinding means, for exposing the slit fabric in a single unsupported layer, and a separating knife extending angularly to the run of the web in between the slit sections of the web while it is traveling in an unsupported layer.

10. In a machine of the character set forth, a cutter, two smooth-faced rewinding rolls rotating in the same direction adapted to engage with the surface of the slit web to rewind the same, one of said rolls acting as a cutting member against which the cutter acts, and means located below the two rewinding rolls and intermediate the same for guiding the web into engagement with the surfaces of both rewinding rolls, the web engaging with the rewinding roll constituting the cutting member at a point in advance of the point of engagement of the cutter with the cutting member.

11. In a machine of the character set forth, a cutter, two rewinding rolls adapted to engage with the surface of the slit web to rewind the same, one of said rolls acting as a cutting member against which the cutter acts, a fabric exposing roll coacting with one of said rewinding rolls, and a knife device obliquely set between said last-mentioned rolls to sever unsplit threads, said knife device comprising a knife blade of sheet material having a bead at the top, a grooved supporting member into which the blade fits, and means for securing the blade in position in the supporting member.

12. In a machine of the character set forth, a cutting member, a spring seated cutter adapted to engage therewith, web tension means, a rotatable member eccentrically mounted, operating means for the cutter actuated by said eccentric rotatable member, and cams on said rotatable eccentric member adapted to move the web tension means.

13. In a machine of the character set forth, a cutting member, a spring seated cutter adapted to engage therewith, web tension means, a rotatable member eccentrically mounted, operating means for the cutter actuated by said eccentric rotatable member, and cams on said rotatable eccentric member adapted to move the web tension means, said cams having a portion concentric with the center of rotation of the rotatable member.

Signed at Brooklyn in the county of Kings and State of New York this 13th day of March A. D. 1913.

JAMES A. CAMERON.
GUSTAF BIRGER BIRCH.

Witnesses:
FRANK C. RISSELT,
JOHN P. CODY.