J. A. CAMERON & J. A. HAWKES.

SLITTING AND REWINDING MACHINE.

APPLICATION FILED AUG. 3, 1915.

1,259,834.

Patented Mar. 19, 1918.

3 SHEETS—SHEET 1.

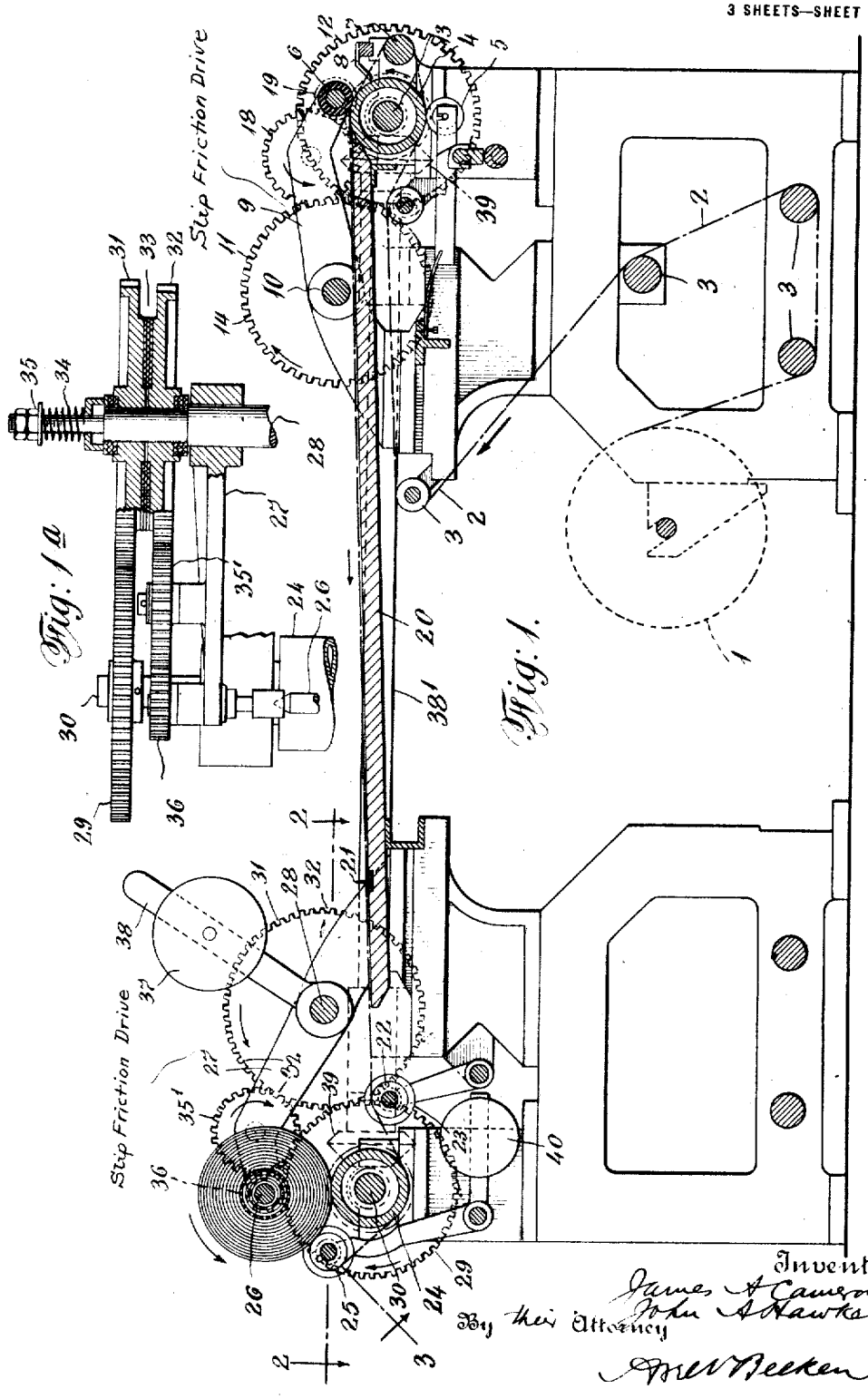


Fig. 1a

Fig. 1.

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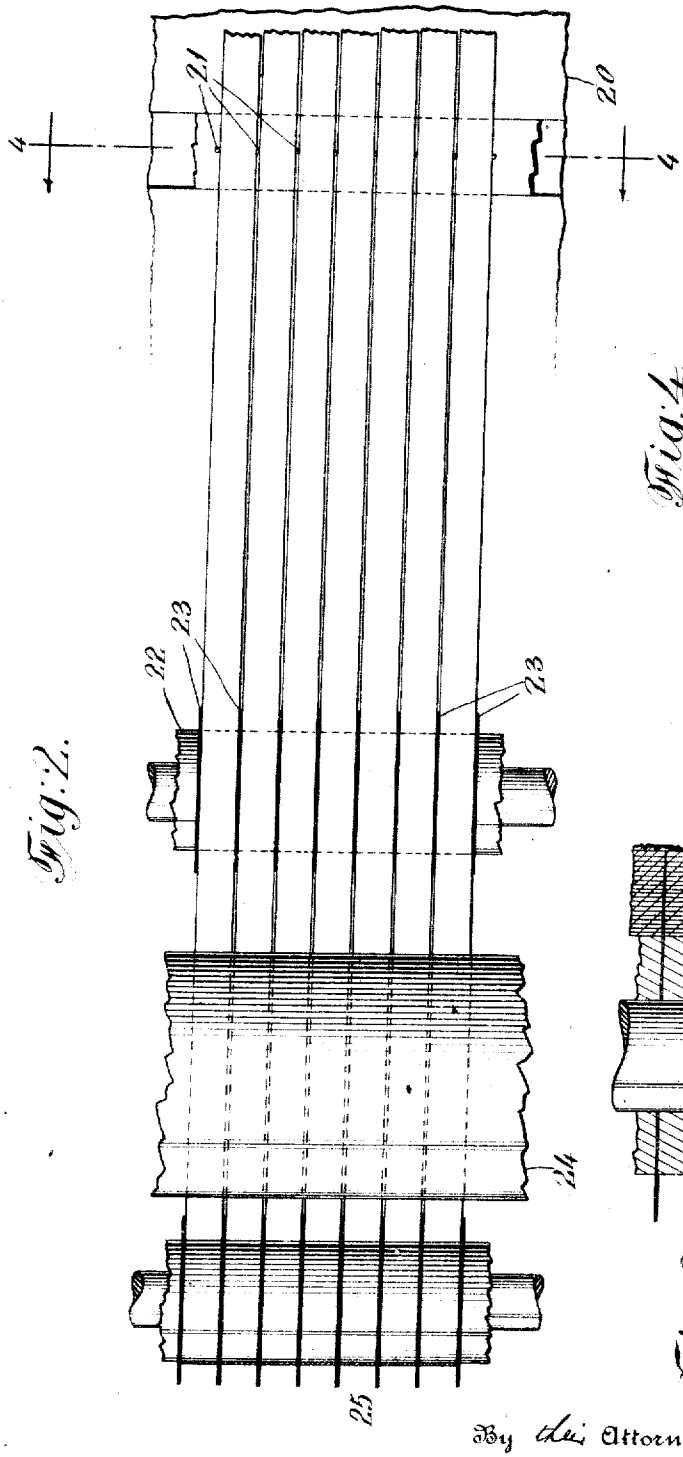


Fig. 2.

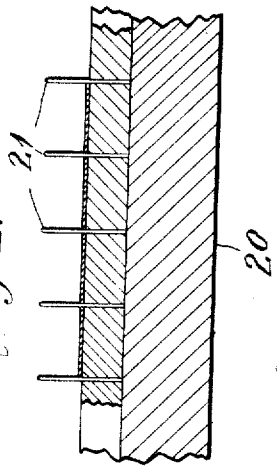


Fig. 4.

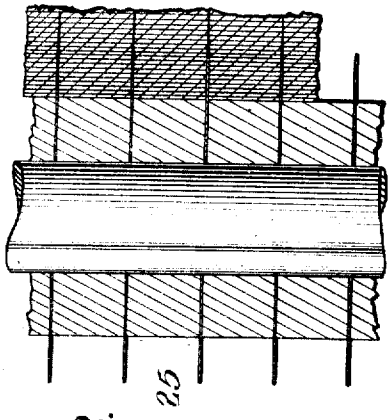


Fig. 3.

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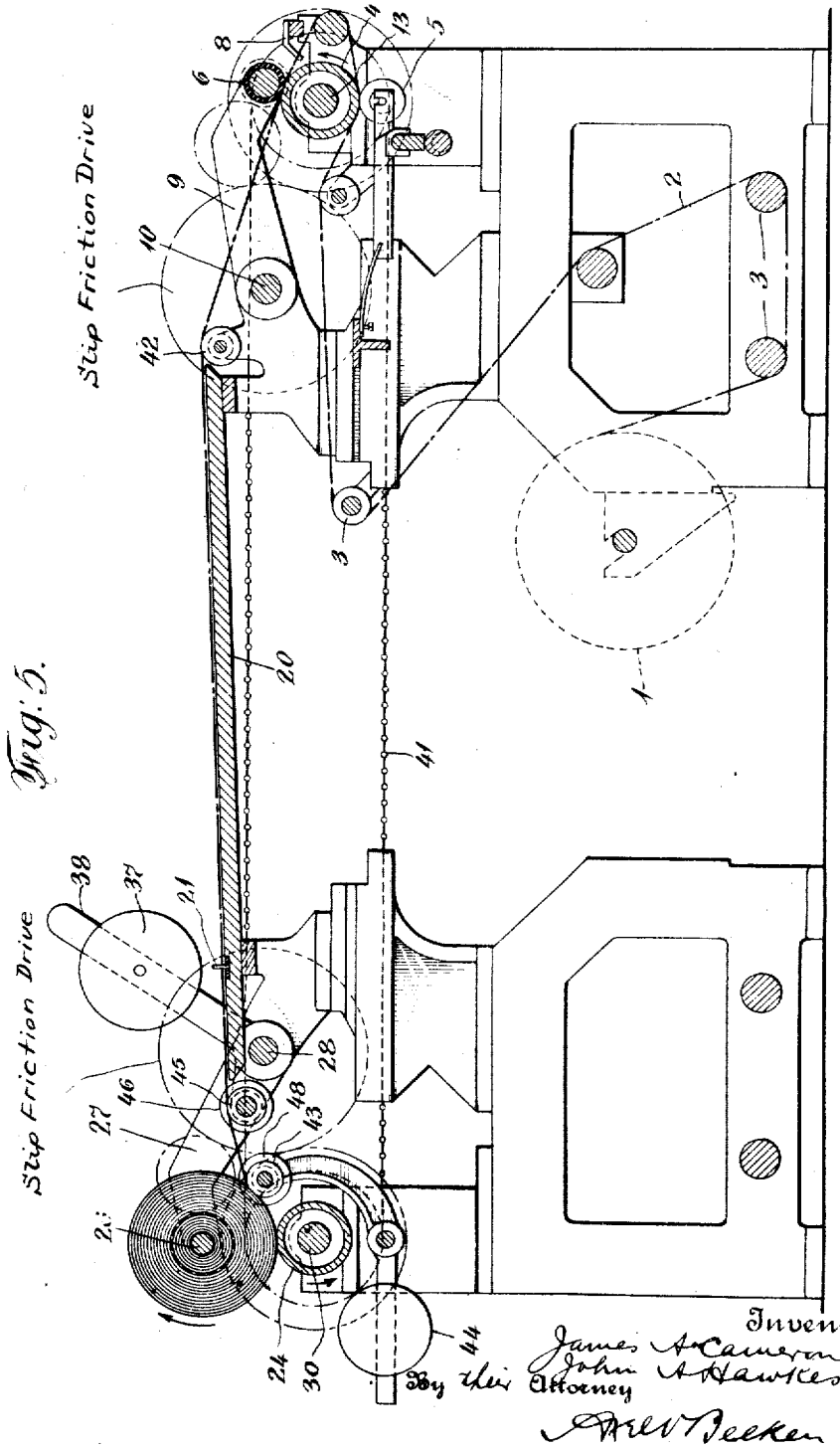


Fig. 5.

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UNITED STATES PATENT OFFICE.

JAMES A. CAMERON, OF BROOKLYN, AND JOHN A. HAWKES, OF NEW YORK, N. Y., ASSIGNORS TO CAMERON MACHINE COMPANY, OF BROOKLYN, NEW YORK, A CORPORATION OF NEW YORK.

SLITTING AND REWINDING MACHINE.

1,259,834. Specification of Letters Patent. Patented Mar. 19, 1918.

Application filed August 3, 1915. Serial No. 43,371.

To all whom it may concern:

Be it known that we, JAMES A. CAMERON and JOHN A. HAWKES, citizens of the United States, and residents, respectively, of the borough of Brooklyn, county of Kings, city and State of New York, and of the borough of Bronx, county of Bronx, city and State of New York, have invented certain new and useful Improvements in Slitting and Rewinding Machines, of which the following is a specification.

The present invention relates to slitting and rewinding machines, and more particularly to machines especially adapted to the slitting and rewinding of paper of tough fiber, or of tacky or adhesive material, or of tin foil.

When cutting tacky or adhesive material or the like it sometimes happens that the edges of the slitted sections will re-adhere after being separated, thereby rendering it difficult to separate the rewound coils. Difficulty is also experienced in separating coils of rewound material when the diameter of the coils is exceedingly large and the width of the slitted sections is exceedingly narrow.

The main object of this invention is to insure the permanent separation of materials of this character after slitting and during the rewinding.

In carrying out this and other objects, the invention consists of the hereinafter claimed features of construction, combination of parts and arrangement of elements, a preferred form of which is disclosed in the accompanying specification and drawings.

In the said drawings:

Figure 1 is a longitudinal vertical sectional view through a machine embodying a preferred form of the invention.

Fig. 1ª is a detail view of one of the slip drive connections interposed in the line of gearing.

Fig. 2 is a fragmentary plan view of the spreading means located adjacent to the rewinding device.

Fig. 3 is a sectional view showing one of the tension and separating rollers projecting between the coils of the rewound material.

Fig. 4 is a transverse sectional view on the line 4—4 of Fig. 2.

Fig. 5 is a view similar to Fig. 1 showing a modified form of the invention.

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

1 indicates the mill roll from which the web of material 2 is led over suitable guide rollers 3 to the backing roller 4 with which coöperates the cutter 5. The members 4 and 5 constitute the slitting means and, as shown, are preferably of the score cut type, the backing roller being glass hardened and harder than the cutter 5.

The slitted sections of the web 2 may now pass directly over the backing roller 4 to the nip roller 6, or they may pass around the guide roller 7 and thence back between the backing roller 4 and nip roller 6. If the material takes the latter course separating blades 8 may be employed which project in between the slitted sections of the material and sever any unsevered threads or fibers.

The nip roller 6 engages with the upper side of the backing roller 4 and is mounted in the arms 9 (only one of which is seen), said arms being pivoted on the shaft 10. The latter, in this instance is provided with a gear 11 which conveniently receives its motion from the gear 12 on the shaft 13 of the backing roller 4. Mounted loose from the shaft 10 is another gear 14 between which and the gear 11 there is a slip friction drive 15, the slippage of which is adjusted by means of the spring 16 and nut 17. The gear 14 meshes with an intermediate gear 18 on one of the arms 9 which in turn is in mesh with the pinion 19 on the nip roller 6. By adjusting the tension of the spring 16 the amount of slippage can be adjusted and consequently the tension of the nip roller 6 on the slitted sections can be varied.

The slitted sections of the web 2 now pass over the table 20 and in between the pins 21 which constitute a comb extending transversely of the table for separating the slitted sections.

22 is a tension roller extending transversely of the machine and provided with separating blades 23 between which the web sections pass, after which they are led underneath the backing roller 24 of the rewinding device, and thence over tension

roller 25 also provided with separating blades, and thence to the rewinding shaft 26. The rewinding shaft 26 is mounted in the arms 27 (only one of which is seen), which arms are pivoted on the shaft 28. By reason of this construction the rewinding shaft 26 will become displaced with respect to the backing roller 24 as the diameter of the rewound coils increase. Motion is imparted to the rewinding shaft by means similar to those which transmit motion to the nip roller 6. That is to say: there is a gear 29 on the shaft 30 of the backing roller 24 which meshes with a gear 31 on the shaft 28. Loosely mounted on this shaft 28 is another gear 32 between which and the gear 31 there is a slip friction device similar to 15. The gear 32 meshes with the intermediate gear 35' on one of the arms 27, which in turn drives the pinion 36 on the rewinding shaft 26. A counterweight 37 is adjustably mounted on the extension 38 of the arm 27 and may be used to counterbalance the weight of the rewound material.

From the foregoing construction it follows that by adjusting the tension of the slip friction devices the material may be led under considerable tension over the backing roller 4 to prevent wrinkling and may be loosely rewound if desired, or vice versa, or the web sections may be fed from the nip roller 6 to the separating and rewinding devices without overpulling by the latter. The provision of a slip friction drive for the nipping roll 6 is chiefly important in that the nipping roller may be driven at a different peripheral speed than that of the backing roller 4 to thereby produce relative motion between the two rollers. This results in causing the nipping roller to exert a rubbing or smoothing action on the web, as will be obvious. In fact by the various independent adjustments described the machine may be suited to work on different materials.

Motion may be imparted to the two ends of the machine by means of the shaft 38' provided with bevel gears 39 which mesh with corresponding bevel gears on the shafts 30 and 13.

In Fig. 1 the tension roller 25 is shown as projecting into the coils of rewound material, thus keeping the web sections separated when rewinding. This tension roller 25 is here shown as being provided with a counterweight 40 which serves to keep it in engagement with the rewound coils.

In Fig. 5 the construction is substantially the same except that a chain 41 is utilized to connect the shafts 30 and 13. Also in this instance rollers 42 and 45 are arranged at either end of the table 20, the roller 45 having separating blades 46, and a tension roller 43 counterweighted at 44 and provided with separating blades 48 extends in between the coils of rewound material. The web sections here pass directly from the table 20 over the roller 45 and thence over the tension roller 43 to the rewinding shaft 26 between the latter and the backing member 24.

What is claimed is:

1. A slitting and rewinding machine comprising: means, including a backing roller, for slitting the web, means for spreading the slitted sections laterally so as to separate them an appreciable distance, means, for rewinding the slitted sections side by side on the same shaft while maintaining them physically separated, including a backing roller and a rewinding shaft, means for positively driving the backing rollers of the slitting means and the rewinding means, a slip friction device for driving the rewinding shaft, means for feeding the slitted sections from the slitting means to the spreading and rewinding means at a speed to prevent over-pulling by the rewinding means, and a slip friction device for the feeding means.

2. A slitting and rewinding machine comprising: means, including a backing roller, for slitting the web, a nip roller co-acting with said backing roller, means for spreading the slitted sections laterally so as to separate them an appreciable distance, means, for rewinding the slitted sections side by side on the same shaft while maintaining them physically separated, including a backing roller and a rewinding shaft, means for positively driving the backing rollers of the slitting means and of the rewinding means, a slip friction device for driving the rewinding shaft, and a slip friction device for driving the nip roller.

3. A slitting and rewinding machine comprising means for slitting a web of material, means for spreading the slitted sections laterally so as to separate them an appreciable distance, and rewinding means including a backing roller, a rewinding shaft adapted to be displaced with relation to the backing roller on which the slitted sections are rewound side by side, a tension roller having separating blades projecting in between the coils of the rewound material, means for driving the rewinding shaft at a speed proportionate to the diameter of the rewound material, and means for feeding the slitted sections from the slitting means to the spreading and rewinding means at a speed to prevent overpulling by the rewinding means.

4. A slitting and rewinding machine comprising slitting means including a backing roller, a nip roller in frictional engagement with the backing roller, means for pivotally supporting the nip roller, gearing for driving said nip roller including a slip friction drive, rewinding means including a backing roller, a rewinding shaft pivotally

supported so as to be capable of being displaced with reference to the backing-roller, gearing for driving said rewinding shaft including a slip friction drive, and means for imparting motion to the gearing for the nip roller and the rewinding shaft.

Signed at New York city (Brooklyn) in the county of Kings and State of New York this 31st day of July, A. D. 1915.

JAMES A. CAMERON.
JOHN A. HAWKES.

Witnesses:
JOHN L. C. MAYER,
EDWIN S. RUNDSON.