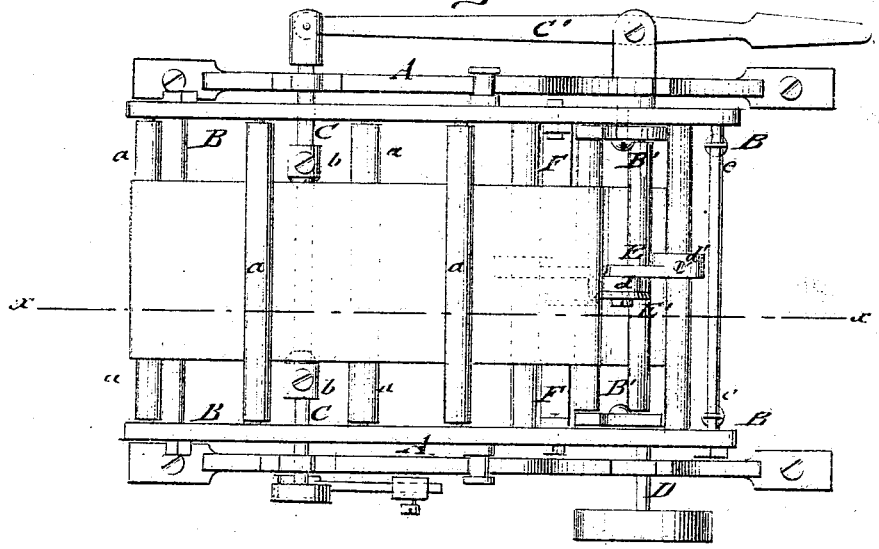
I. FRANK

Machine for Cutting and Winding Paper.

No. 207,411. Patented Aug. 27, 1878.

Fig: 1.



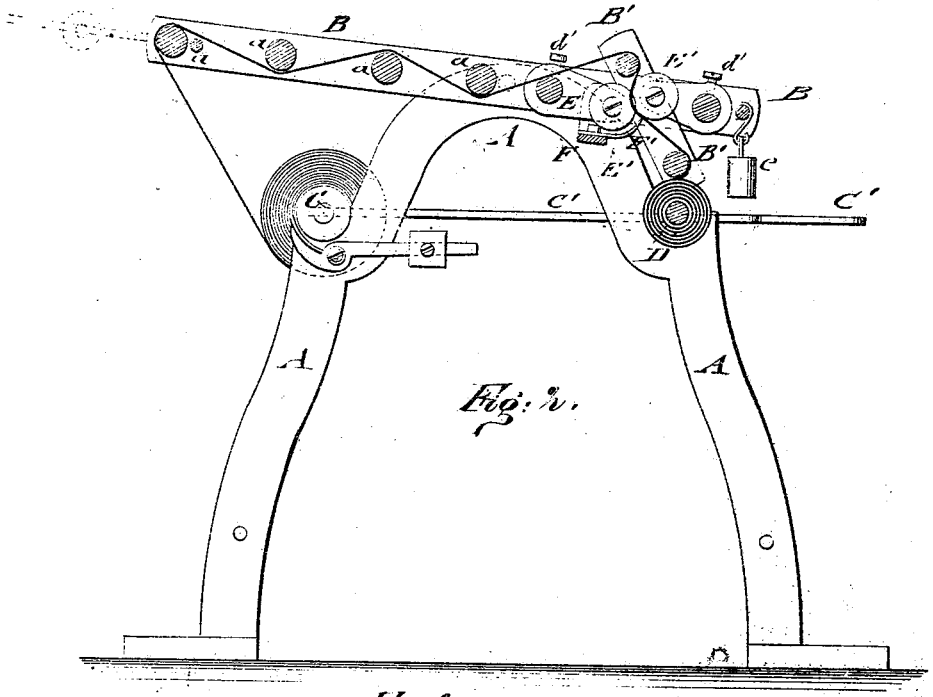
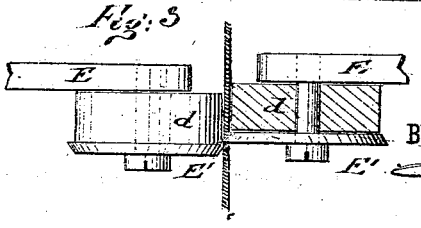


Fig: 2.

Fig: 3



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IGNATZ FRANK, OF NEW YORK, N. Y.

IMPROVEMENT IN MACHINES FOR CUTTING AND WINDING PAPER.

Specification forming part of Letters Patent No. **207,411**, dated August 27, 1878; application filed February 25, 1878.

To all whom it may concern:

Be it known that I, IGNATZ FRANK, of the city, county, and State of New York, have invented a new and Improved Roll-Paper-Cutting Machine, of which the following is a specification:

In the accompanying drawing, Figure 1 represents a top view of my improved roll-paper-cutting machine; Fig. 2, a vertical longitudinal section of the same on line *x x*, Fig. 1; and Fig. 3, a sectional top view of the cutting-knives and friction-pulleys on enlarged scale.

Similar letters of reference indicate corresponding parts.

This invention has for its object to furnish an improved machine for cutting roll-paper, to be used as telegraph-paper, ribbon-paper, hat-binding, and for other purposes, the machine accomplishing the cutting of a number of strips at the same time, and the winding up of the same in a superior and effective manner on the same shaft.

The invention consists of an oscillating frame with guide-rolls for the continuous paper, that is unwound from a shaft at one end of the machine, and wound up on a revolving shaft at the other end, being cut into as many strips as required by sets of disk-shaped knives, turning by elastic friction-pulleys on the ends of adjustable arms of fixed cross-bars of the oscillating frame. To the oscillating frame is attached, at a suitable angle, a supplementary frame with guide-rolls, of which the lowermost roll bears on the strips winding up on the revolving shaft, so as to produce their tight rolling up, in connection with adjustable tension devices. To a cross-bar of the oscillating frame is applied, below the paper to be cut, a number of adjustable fingers, that divide the strips and secure their separate winding up on the revolving shaft. The unwinding-shaft is set laterally by means of a hand-lever, and the shaft provided with a weighted friction-lever, spring, or other brake, for regulating the tension of the paper to be cut.

By referring to the drawing, A represents the supporting-frame of my improved machine for cutting roll-paper. To the uppermost portion of frame A is hung an oscillating frame, B, made of oblong shape, and arranged with a number of lateral guide-rolls, *a*, over which the continuous sheet of paper that is to be cut and wound up into rolls for telegraph or other purposes is guided and stretched, so as to be fed with proper tension to the cutting-knives. The roll-paper to be cut is secured by means of conical and adjustable collars *b* to the unwinding-shaft C, that turns in bearings at one end of the frame A, while a revolving shaft, D, at the other end of the frame A draws the paper through the machine and winds up all the strips thereon.

To fixed cross-bars of the oscillating frame, at one side of the fulcrum, is secured, in sets or pairs, a number of adjustable arms, E, that carry at their outer ends the fixed shafts of the cutting-knives E′.

The cutting-knives are made of disk shape, with sharp edges, that pass slightly one beyond the other, so as to cut the paper fed through between the same.

Adjoining the disk-shaped knives are arranged on the same shafts friction-pulleys *d*, of leather, felting, or other material, which form contact with both sides of the paper, passing through between the same and the knives, so as to cause the continuous revolving of the knives and a clear shear-cut on the paper, without any danger or possibility of the tearing of the paper.

Any number of sets of cutting-knives may be arranged at suitable distances on the cross-bars of the oscillating frame B, and adjusted thereon according to the number and width of the strips to be cut.

When the machine is prepared for work the clamp-screws *d′* of the knife-supporting arms E are loosened, and the knives so adjusted that they lap at one point of their circumference over each other, and that the friction-pulleys of their shafts work with sufficient pressure on the paper to cause the reliable revolving and cutting of the knives. At the same side of the oscillating frame on which the knives are arranged is attached, at suitable angle thereto, a supplementary frame, B′, with top, bottom, and intermediate guide-rolls, over which the paper to be cut is passed before being acted upon by the knives, and finally conducted over the lower roll to the winding-up shaft D.

The lower roll of the supplementary frame B′ bears on the strips of roll-paper as they wind up on the shaft D, so as to produce their tight winding up and the raising of the oscillating frame and knives as the rolls increase in diameter.

As the cutting-knives revolve by the friction with the paper drawn through the machine by the winding-up shaft, their action corresponds always to the speed of the winding-up shaft, without the objectionable features of a separate gear and positive motion. The close proximity of the cutting-knives to the winding-up shaft, together with the action of the lower pressure-roll of the supplementary frame, produces the tight winding up of the strips of paper in uniform manner on one and the same shaft, without the difficulties which were heretofore experienced by the varying speeds of the different winding-up shafts used in roll-paper-cutting machines. The tension of the paper drawn through the machine is regulated by a friction-disk and brake arrangement of the unwinding-shaft C, the brake being either a weighted lever, spring-band, or any other friction device.

The unwinding-shaft C is capable of a limited lateral motion by means of a fulcrumed hand-lever, C′, which admits the lateral adjustment of the paper to the cutting-knives by the operator, and thereby the regular cutting and winding up of the paper without waste. The greater or less pressure of the oscillating frame on the paper rolls during their winding up on the shaft D is regulated by means of adjustable weights *e*, applied to either end of the oscillating frame, so that the rolls may be wound up more or less tight, as required for the purpose for which they are intended. To the oscillating frame B is also attached a fixed cross-bar, F, that extends below the knives, and is provided with as many adjustable fingers F′ as there are sets of cutting-knives used in the machine. These fingers enter between the strips as they are severed by the knives, so as to separate them and prevent any possibility of their lapping over each other or getting entangled with the adjoining rolls. The entire series of strips is thus wound up on one shaft with any desired degree of tightness, and cut in uniform and rapid manner by means of a comparatively simple construction of cutting-machine.

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

1. As an improvement in roll-paper-cutting machines, the combination of the oscillating frame, having web guide-rolls and sets of adjustable cutting-knives, with an unwinding-shaft at one side and a winding-up shaft at the other side of the fulcrum of the oscillating frame, substantially as and for the purpose described.

2. The combination of the oscillating frame, having sets of cutting-knives and a fixed supplementary frame, with guide and pressure rolls, with an unwinding-shaft at one end and a winding-up shaft at the opposite end of the machine, substantially as specified.

3. In a roll-paper-cutting machine, the combination of the oscillating frame, having cross-bars, with laterally-adjustable supports or arms, having fixed shafts, with revolving friction-pulleys and cutting-knives, substantially as and for the purpose set forth.

4. The combination of the oscillating frame, having adjustable cutting-knives and friction-pulleys, and a supplementary frame with contiguous guide and pressure rolls, with an unwinding-shaft, having suitable tension devices, and with a winding-up shaft, substantially as specified.

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Witnesses:
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