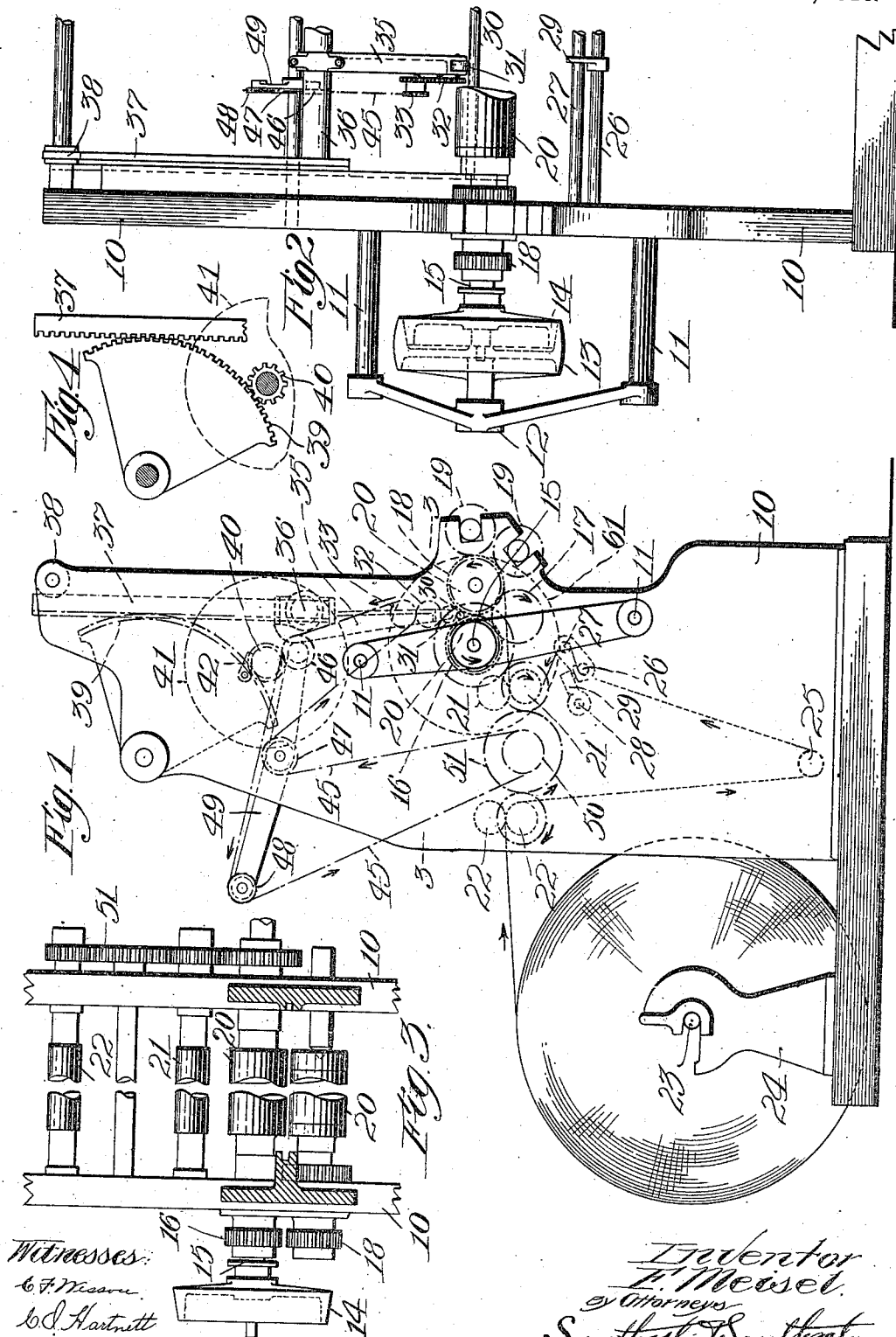


F. MEISEL.
SLITTING AND REWINDING MACHINE.
APPLICATION FILED OCT. 9, 1908.

972,891.

Patented Oct. 18, 1910.



UNITED STATES PATENT OFFICE.

FRANCIS MEISEL, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO MEISEL PRESS & MFG. CO., OF BOSTON, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

SLITTING AND REWINDING MACHINE.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, FRANCIS MEISEL, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Slitting and Rewinding Machine, of which the following is a specification.

This invention relates to a slitting and rewinding machine.

10 The principal objects of the invention are to provide a machine which will slit and rewind all kinds of paper, and certain grades of cloth, and which shall be capable of slitting the same to any width from $\frac{1}{4}$ of an inch up and rewinding it on a shaft; also to provide for guiding the web laterally so as to prevent the waste of trimming wide margins from the edges of uneven rolls; to provide an improved construction for maintaining a uniform rolling pressure on the rewinding roll as it increases in size; and generally to improve the construction and operation of machines of this character.

25 Further objects and advantages of the invention will appear hereinafter.

Reference is to be had to the accompanying drawings, in which—

30 Figure 1 is a side elevation of a machine constructed in accordance with the principles of this invention. Fig. 2 is a fragmentary end view of the same; Fig. 3 is a sectional view on the line 3—3 of Fig. 1 and Fig. 4 is an end elevation showing parts of the interior thereof partly in section.

35 The machine is shown as consisting of mechanism mounted on a frame-work 10 which is provided with projecting supports 11 for a bearing 12 for the driving pulley 13. This pulley is connected with a clutch 14 on the driving shaft 15 of the machine which has a hand-wheel 61 thereon. On the shaft 15 is a gear 16 meshing with a gear 17, driving a gear 18 which meshes with two gears 19 which are mounted on shafts that operate slitters in a well known manner. On the shaft carrying the gears 18 and on the main driving shaft are a pair of winding drums or cylinders 20, preferably located at the front of the machine the purpose of which will be described hereinafter. Located adjacent to the shaft 15 is a pair of rolls 21 driven by gearing from the main

shaft, and also driven by gearing from the main shaft are feed-rolls 22.

55 The paper or cloth is wound from a roll 23, mounted on brackets 24 connected with the main frame through the feed rolls 22 around a loose roll 25 which is located at a distance below these feed rolls to provide a loop, and then up through between a pair of transverse rods 26 and 27, over one of which and under the other the web travels. The latter roll is above and in front of the other, and both are in front of the feed-rolls 22. On another rod 28 are adjustably mounted a pair of guides 29 which can be slid along into any desired position with respect to the rod 26 so as to engage the edges of the paper and properly guide it. The paper then travels between the rolls 21 and over on the right-hand driving drum 20. The surface speed of the slitting cutters and winding drums is slightly greater than the surface speed of the rolls 22 and 21. This difference in surface speed helps to wind the strips into tightly wound rolls. The purpose of the loose loop is to provide for introducing the web properly between the guides so as to prevent waste, which on expensive paper represents a large amount of money. On account of the construction and location of these guides and their relation to the loop, the amount of waste on each side of the web can be reduced, to as low as $\frac{1}{8}$ of an inch, and the paper can be properly introduced into the slitting cutters and wound on the drums from the guides.

80 From the winding drums 20 the paper is wound on a removable rod or shaft 30 which is supported between these drums by friction in accordance with the method known as "surface-winding." On this shaft rests a roller 31 which is connected by gearing 32 or otherwise with a sprocket wheel 33. The roller, gearing, and sprocket wheel are duplicated on the two sides of the machine, and are supported by two arms 35 which are clamped to a shaft 36, but are adjustable laterally thereon. The weight of the arms, the shaft, and the gearing acts upon the shaft 30 in order to serve to keep it tight against the drums and roll the web tightly upon it. The shaft 36 is carried by a pair of racks 37 adapted to slide up and down in the frame and guided by anti-friction

rollers 38 on one side and gear segments 39 on the other which operate them. The segments 39 are operated by a pinion 40 fastened to one end of a short shaft, on the other end of which is a hand wheel 41 for operating it. A pawl 42 engages the pinion 40 for holding the racks and other parts in any desired position. In this way the racks can be lowered so as to bring the roller 31 on the shaft 30 and hold the parts in position by the weight of the superimposed elements, and yet as the paper winds up on the shaft 30 these parts will rise without taking any weight off the shaft. At the same time the sprocket wheel 33 is driven by a long sprocket chain 45 which passes over sprocket wheels 46, 47 and 48 on a rocking arm 49 carried by a frame. One loop of the sprocket chain passes under the wheel 33 and the other under the wheel 50 which is operated by a gear 51 forming part of the series which operates the feed rolls 22. It will be readily understood that as the sprocket wheel 33 rises or falls the arm 49 will swing and the sprocket chain will be kept taut on account of the relative location and arrangement of the several sprocket wheels. The two arms of the lever 49 are equal.

From the above description the operation of the several features of the invention will be readily understood, and it will be seen that a machine is provided in which the waste of trimming the edges of uneven rolls is greatly reduced and in which the winding of the paper or cloth after it is slit on a single shaft is greatly facilitated.

While I have illustrated and described a preferred form of the invention, I am aware that many modifications may be made therein by any person skilled in the art without departing from the scope of the invention as expressed in the claims. Therefore, I do not wish to be limited in all particulars to the details of construction shown and described, but

What I do claim is:—

1. In a slitting and rewinding machine, the combination of a pair of feed rolls for the web, winding cylinders or drums for receiving the web therefrom, and an independent laterally adjustable guide between the feed rolls and winding cylinders or drums for guiding the edges of the web to the cylinders or drums.

2. In a slitting and rewinding machine, the combination of a set of feed rolls, winding cylinders or drums, a guide between the feed rolls and drums, and means for forming a loop between the feed rolls and guide.

3. In a slitting and rewinding machine, the combination of a pair of feed rolls, an idler roller located at a distance from the feed rolls, a rod over which the web passes located in position adjacent to the feed rolls,

whereby the web forms a loop in passing from the feed rolls over said idler roller to the rod, winding drums for receiving the web from the rod, and a guide for the edge of the web located adjacent to said rod.

4. In a slitting and rewinding machine, the combination of a set of feed rolls, an idler roller located at a distance below said feed rolls, a rod located forward of the feed rolls and at a distance above the idler rolls, winding drums for receiving the web from the rod, and a guide for the edge of the web located adjacent to the said rod between the feed-rolls and winding rolls.

5. In a slitting and rewinding machine, the combination of a pair of feed rolls, an idler roller located at a distance from the feed rolls, a rod over which the web passes located in position adjacent to the feed rolls, whereby the web forms a loop in passing from the feed rolls over said idler roller to the rod, a guide for the edge of the web located adjacent to said rod, said guide consisting of a pair of members, and a rod parallel with the first named rod along which said members are adjustable.

6. In a slitting and rewinding machine, the combination of a set of feed rolls, an idler roller located at a distance below said feed rolls, a rod located forward of the feed rolls and at a distance above the idler rolls, and a guide for the edge of the web located adjacent to said rod, said guide comprising a rod parallel with the first named rod, and adjustable members adapted to engage the edge of the web mounted thereon, a rod located forward of the first named rod, a pair of rollers located back of said rods and above them and adapted to receive the web from the third rod, and winding drums located forward of said last named set of rolls.

7. In a slitting and rewinding machine, the combination of a pair of rods for receiving a web, adjustable guides coöperating with one of said rods, means for forming a loop in the web before it engages said last named one of the rods, a set of rollers located adjacent to the rods and adapted to receive the web therefrom, a pair of surface winding drums for receiving the web from the last named set of rollers, slitting cutters located adjacent to one of said drums, and means located between the winding drums for constantly pressing upon a roll formed between them.

8. In a slitting and rewinding machine, the combination of a pair of rods for receiving a web, means for forming a loop in the web before it engages one of the rods, a set of rollers located adjacent to the rods and adapted to receive the web therefrom, a pair of surface winding drums for receiving the web from the last named set of rollers, slitting cutters located adjacent to one of said drums, and means located between the

winding drums for constantly pressing upon a roll formed between them.

9. In a slitting and rewinding machine, the combination of a set of feed rolls, an idler roller located at a distance below said feed rolls, a rod located forward of the feed rolls and at a distance above the idler rolls, a rod parallel with the first named rod, a rod located forward of the first named rod, a pair of rollers located back of said rods and above them and adapted to receive the web from the third rod, and winding drums located forward of said last named set of rolls.

10. In a slitting and rewinding machine, the combination of a vertically movable frame, a rack connected therewith, a segment for operating said rack, an arm on the frame, a roller carried by the arm, and a wheel carried by the arm and having connections for operating the roller in all positions of the frame.

11. In a slitting and rewinding machine, the combination of a reciprocable frame, a roller on the bottom thereof, a wheel on the frame having means for rotating the roller, a wheel mounted in fixed bearings, a single sprocket chain connecting all of said wheels, and a lever having three sprocket wheels thereon over all of which said sprocket

chain is trained, whereby the first wheel will be rotated by the second wheel in all positions thereof.

12. In a machine of the character described, the combination of a movable frame, a wheel thereon, a wheel rotatable in fixed bearings, a tilting lever having a wheel thereon at its point of pivotal support and a wheel at each end, and a single sprocket chain trained over all of said wheels.

13. In combination with a belt and its pulleys, a lever pivoted intermediate its ends to a fixed support above the pulleys, and rollers carried by said lever one on each side of the pivot, both rollers being located at the same distance from the pivot, said rollers receiving the belt.

14. The combination with two pulleys and a belt therefor, of a lever, and pulleys on the lever on opposite sides of the pivot, said belt passing over the pulleys on the lever and having loops for receiving the first two pulleys.

In testimony whereof I have hereunto set my hand, in the presence of two subscribing witnesses.

FRANCIS MEISEL.

Witnesses:

C. A. MEISEL,
GEORGE R. SLADER.