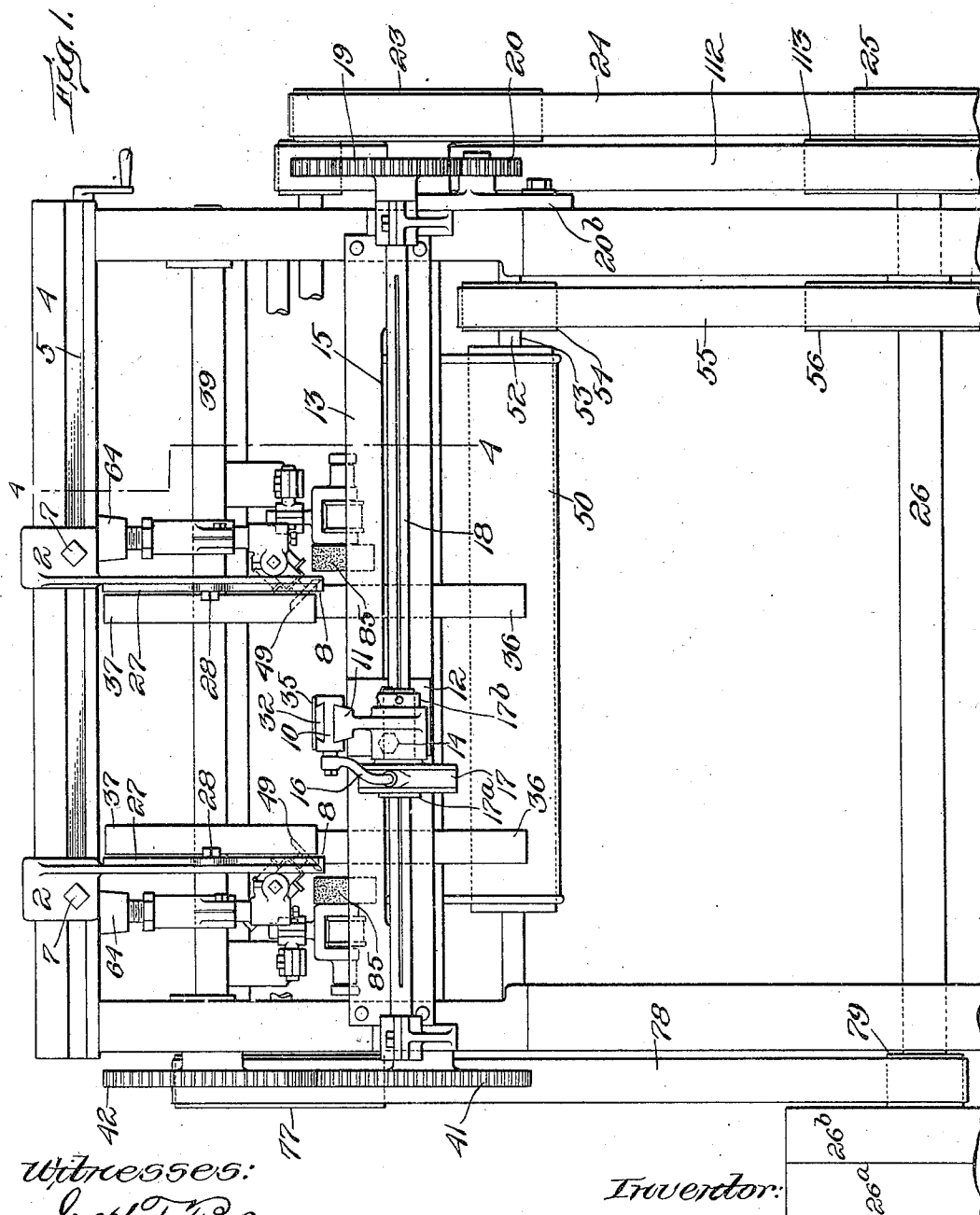


C. H. CADIEU.
MOUNT TRIMMING MACHINE.
APPLICATION FILED JULY 24, 1908.

949,110.

Patented Feb. 15, 1910.

6 SHEETS—SHEET 1.



Witnesses:
Joseph T. Brannan.
May Hughes

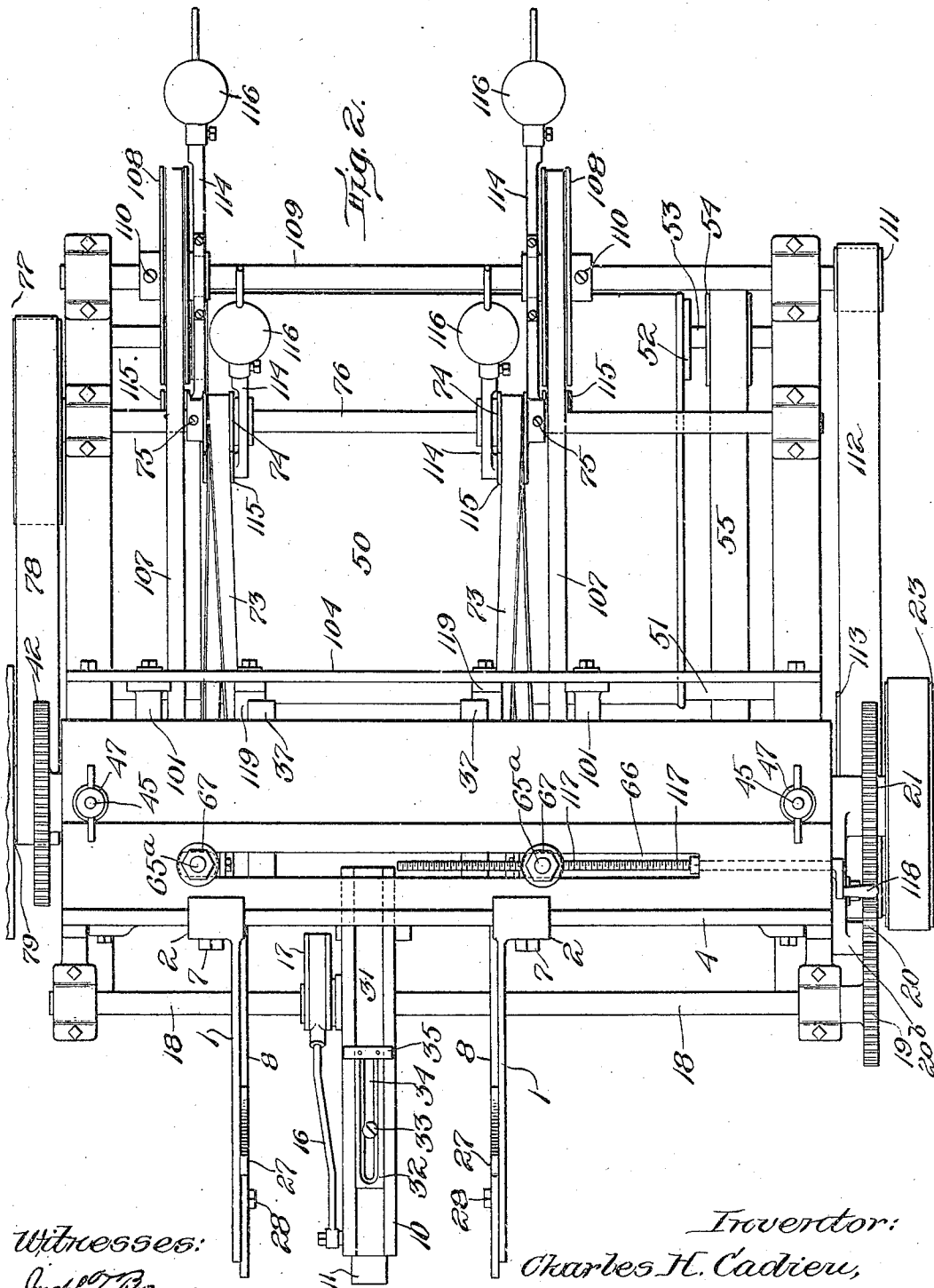
Inventor:
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by
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5 SHEETS—SHEET 2.



Witnesses:
Joseph T. Brennan,
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5 SHEETS—SHEET 3.

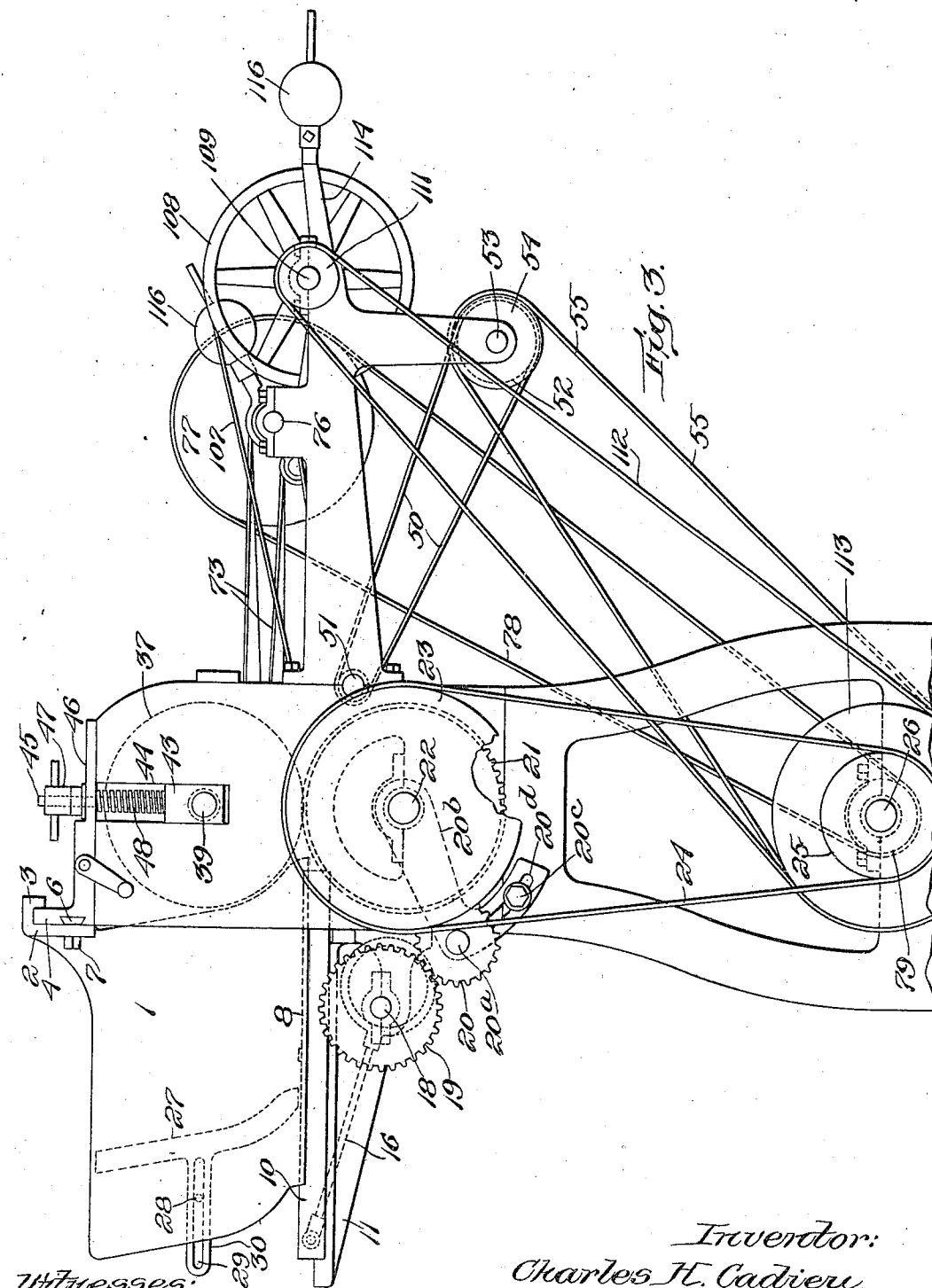


Fig. 3.

Witnesses:
Joseph T. Brown,
May Nyhan

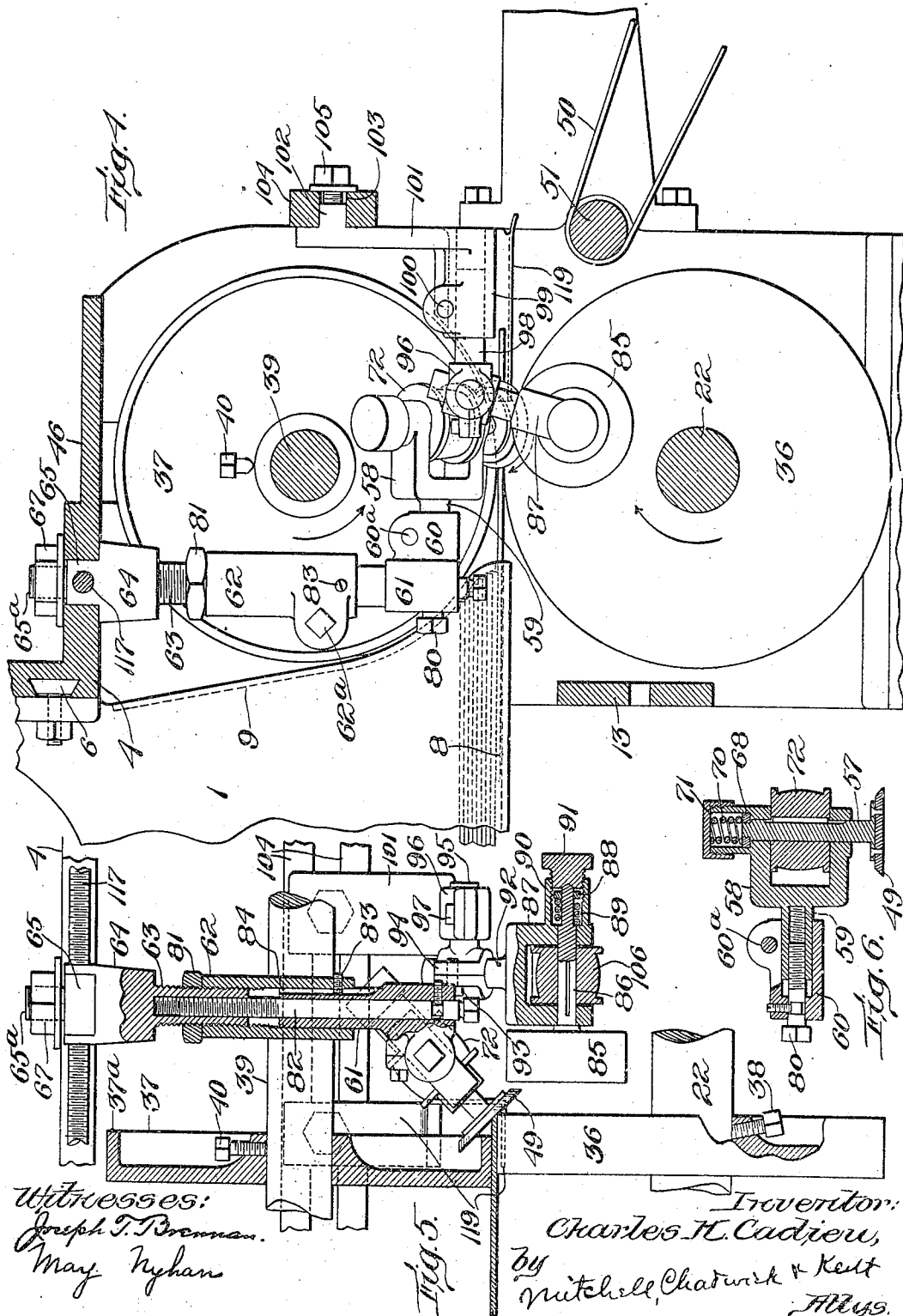
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5 SHEETS—SHEET 4.

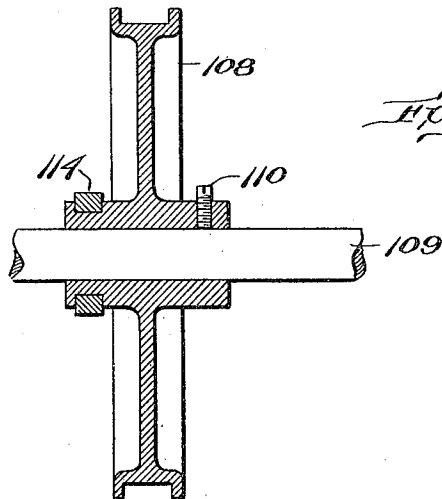
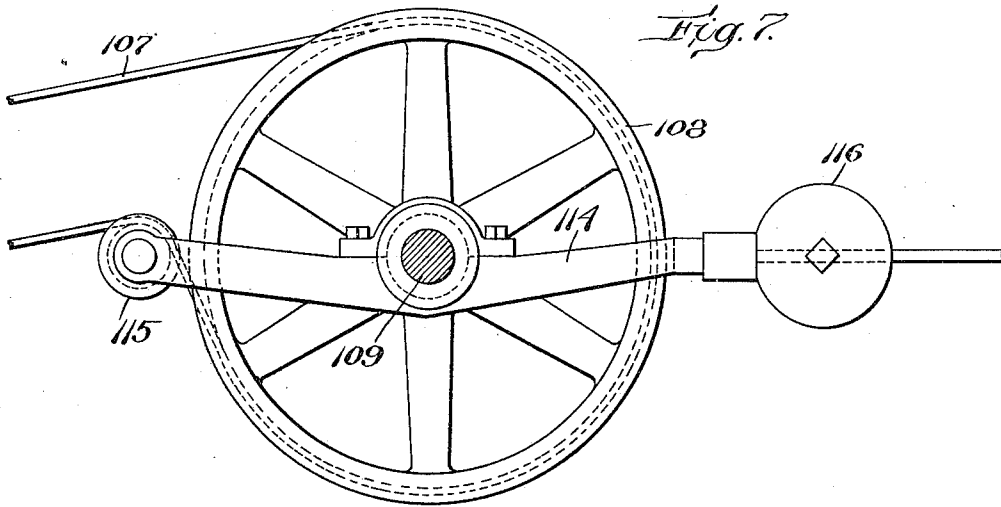


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Patented Feb. 15, 1910.

5 SHEETS—SHEET 5.



Witnesses:
Joseph T. Brennan.
May Nyham

Inventor:
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UNITED STATES PATENT OFFICE.

CHARLES H. CADIEU, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO THE HOUSH COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION OF MAINE.

MOUNT-TRIMMING MACHINE.

949,110.

Specification of Letters Patent.

Patented Feb. 15, 1910.

Application filed July 24, 1908. Serial No. 445,136.

To all whom it may concern:

Be it known that I, CHARLES H. CADIEU, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented new and useful Improvements in Mount-Trimming Machines, of which the following is a specification.

Referring to the accompanying drawings: Figure 1 is a front elevation of my improved mount trimming machine. Fig. 2 is a plan view of the machine shown in Fig. 1. Fig. 3 is an end elevation of the machine shown in Figs. 1 and 2. Fig. 4 is a section on line 4—4 of Fig. 1. Fig. 5 is a front view partly in section and partly in elevation of the parts shown in Fig. 4. Fig. 6 is a sectional view of one of the cutters and its support. Figs. 7 and 8 are details hereinafter described.

Machines for trimming photograph mounts have, as heretofore constructed, been objectionable in that the mounts were bent by a presser-belt around a rotating drum while being trimmed which not only set the mounts in a curved shape, but also acted to crimp each mount upon the interior of the bend and to stretch and crack it upon the exterior of the bend. Moreover, such machines, so far as I know, have only been capable of operating upon single ply or card mounts upon which the photographs are pasted, and could not be used as a practical matter, upon two ply mounts comprising a back sheet and a mat pasted together around their edges and between which the photograph or photographs are inserted, mainly because the usual opening or openings made in the mat so weaken that sheet or ply that the mount cannot be bent as is necessary in such machines without breaking the mat.

The object of my invention is to provide an improved trimming machine which will operate upon any kind of photograph mount, especially two ply mounts, without injury to the latter, and also to provide a machine of this kind which may be used to trim mounts of any ordinary size.

My improved mount trimming machine comprises a cutter for trimming the side of the mount, and a pair of driven rolls which feed the mounts past the cutter without bending them and also serve to support and hold the mounts at the point where the cutter acts thereon while the mount is being

trimmed. In the best form of my invention the mounts are automatically fed one at a time to the feed rolls above referred to from a hopper within which a pile of untrimmed mounts is placed.

Other features of my invention are hereinafter pointed out.

A pile of mounts to be trimmed is placed within a hopper consisting of two plates 1, 1 each integral with and projecting from a block 2 having a hook 3 engaging the upper edge of a cross-bar 4 forming part of the frame of the machine. The bar 4 is made with a lengthwise slot 5 to receive blocks 6 that are tapped to receive the inner ends of screws 7 by which the blocks 2 are clamped in fixed positions on bar 4 with the plates 1 separated a distance equal to the width of the mounts that are to be trimmed. Along its lower edge each plate 1 is made with an inwardly projecting lip 8 which extends under and supports one side of the pile of mounts, while at its front or inner upright edge plate 1 is made with an inwardly projecting lip 9 extending from the top of the plate to a point just above the inner end of the lip 8 so as to leave a passageway between the two lips, see Fig. 4, through which the lowermost mount is fed to the trimming mechanism by a reciprocating feed slide 10. The slide 10 is made on its under side with a lengthwise dovetail slot to receive a dovetailed arm 11 projecting from a plate 12 secured by bolts 14 to a cross-bar 13 forming part of the frame of the machine. The bolts 14 extend through a slot 15 extending lengthwise of the cross-bar 13 so that when the plates 1 are adjusted, the plate 12, arm 11, and slide 10 can be shifted so as to occupy a central position between the two plates 1 however the latter may be placed. The slide 10 is connected by a rod 16 with an eccentric 17 fast to one end of a sleeve 17^a splined to a shaft 18. The sleeve 17^a extends through the arm 11 and has fastened to its other end a collar 17^b so that when arm 11 and slide 10 are shifted as described above, the eccentric 17 is moved with them.

Fixed to one end of shaft 18 is a gear 19 driven through an idler 20 by a gear 21 fixed to a shaft 22. The shaft 22 carries a pulley 23 driven through a belt 24 by a pulley 25 fixed to the main shaft 26 of the machine which is provided with fast and loose pulleys 26^a and 26^b. Through the mechanism

just described the slide 10 is reciprocated beneath the pile of mounts, said pile being held against forward displacement by the lips 9 in front of the pile and against rearward displacement by two plates 27 at the rear of the pile. Each plate 27 is secured to the inner face of its plate 1 by a screw 28 extending through a slot 29 in an arm 30 projecting rearwardly from the plate 27.

On its top side the slide 10 is made with a lengthwise groove 31 to receive a block 32 fixed in place by a screw 33 extending through a slot 34 in said block 32. To the top of block 32 is fixed a thin cross-bar 35 which is above the top surface of slide 10 so as to constitute a shoulder for engaging the rear end of the lowermost mount of the pile to shove the latter forward through the passageways between the adjacent ends of the two pairs of lips 8 and 9 between two pairs of feed rolls 36 and 37 which are part of the trimming mechanism. The rolls 36 are fixed to the shaft 22 with provision for adjustment lengthwise thereof by screws 38 so that they may be positioned to accord with the adjustment of plates 1. For the same reason the rolls 37 are fixed to a shaft 39 with provision for adjustment lengthwise thereof by screws 40.

Fixed to one end of the shaft 22 is a gear 41 which drives a gear 42 fixed to the shaft 39 of the upper rolls 37. The shaft 39 is journaled in blocks 43 free to slide vertically in slots 44 in the frame of the machine. Each block 43 has fastened to it the lower end of a threaded rod 45 which extends upwardly through an extension 46 of the bar 4 and carries at its upper end a nut 47. These two nuts 47 limit the approach of rolls 37 to the rolls 36. Between the blocks 43 and the extension 46 are interposed coiled springs 48 which serve to exert a yielding downward pressure on the rolls 37. Each time the slide 10 moves forward it feeds the lowermost mount forward out of the hopper and between the two pairs of rolls 36 and 37, and the latter, which are driven in the direction of the arrows, Fig. 4, propel the mount forward as its sides are trimmed by a pair of opposed cutters 49 and discharge the trimmed mount upon an endless traveling apron 50. The apron 50 is mounted upon two drums 51 and 52, the latter being fixed to a shaft 53 carrying a pulley 54 driven through a belt 55 by a pulley 56 fixed to main shaft 26. A suitable receptacle may be provided at the lower end of the apron 50 to receive the mounts discharged therefrom. Each cutter 49 is fixed to the lower end of a spindle 57 journaled in a yoke 58 having a stem 59 clamped in a split socket 60 by a screw 60^a. The socket 60 is made with a stem 61 clamped in the lower end of a split sleeve 62 by a screw 62^a, said sleeve being interiorly

threaded at its upper end to receive a threaded stud 63 projecting downwardly from a block 64. The block 64 at its upper end is made with a tongue 65 projecting into a slot 66 formed in cross-bar 4 parallel with slot 5, and with a threaded stud 65^a to receive a nut 67 by means of which block 64 is clamped in fixed position. It will thus be seen that each cutter 49 is carried by a holder that may be adjusted toward and from each other on the frame of the machine when the positions of the rolls 36 and 37 are changed.

The upper end of each spindle 57 carries a collar 68 against which bears a spring 70 arranged within a chamber 71 provided in yoke 58. The purpose of this spring is to yieldingly press the cutter 49 against the corner of the roll 36 with which it co-operates. To each spindle 57 is splined a pulley 72 continuously driven through a belt 73 by a pulley 74 fixed by a screw 75 to a shaft 76 so as to be adjustable lengthwise of the latter. The shaft 76 carries at one end a pulley 77 driven through a belt 78 by a pulley 79 fixed to main shaft 26.

The stem of each yoke 58 is made hollow and interiorly threaded to receive the inner end of an adjusting screw 80 swiveled in the socket 60, the outer end of said screw being squared to receive a wrench by means of which the screw is operated. By loosening screw 60^a and operating screw 80 the cutter 49 can be accurately positioned relatively to a line passing through the centers of both rolls 36 and 37 whereat the mounts are most firmly held by the two rolls while the cutters 49, driven in the direction indicated by the arrow in Fig. 4, trim the opposite edges of the mount. Each cutter 49 is held against swinging bodily on the axis of sleeve 62 by a check nut 81 on stud 63, but by loosening this check nut the cutter may be thus bodily shifted to adjust it relatively to roll 36. The stud 63 is made hollow and interiorly threaded to receive the upper threaded end of a screw 82 swiveled in stem 61, and the lower exterior end of this screw 82 is squared to receive a wrench by means of which it is operated to adjust stem 61 vertically when screw 62^a is loosened. In order to prevent relative rotary movement between sleeve 62 and stem 61 said sleeve carries a pin or screw 83 projecting into a lengthwise groove 84 provided in stem 61. From the above it will now be clear that the cutters 49 besides being bodily adjustable to accommodate changes in the positions of the rolls 36 and 37 are also universally adjustable so as to be accurately positioned with relation to the rolls 36 and so that the angle at which the edge of the mount is trimmed may be varied at will.

Since the cutting stroke of each cutter 49 is upward, it is necessary, in order to secure

a clean cut, that the upper rolls 37 bear upon the mount very close to the cutter, and for this reason the upper rolls 37 are each made with a flange 37^a extending toward the cutter. Of course when the cutters 49 are set to cut an unbeveled or perpendicular edge which, however, is seldom the case with photograph mounts, then the roll 37 can be set close to if not in contact with the cutter 49 but when the cutters 49 are set at an angle to produce a beveled edge on the mount as shown in the drawings, then the rolls 37 may be set so that the flange 37^a extends under the cutter as shown in Fig. 5, and closer to the point of cutting than it would be possible to place a solid roll, the space within the flange 37^a serving as a recess into which the cutter 49 can project. Alongside of each cutter 49 is provided a cutter grinding wheel 85 fixed to one end of a spindle 86 journaled in a yoke 87. The other end of spindle 86 carries a collar 88 engaged by a spring 89 which normally holds wheel 85 out of engagement with cutter 49. The spring 89 is arranged within a hollow boss 90 which is interiorly threaded to receive a nut 91 against which the end of spindle 86 is held by spring 89. When it is desired to sharpen the cutter 49 the operator screws nut 91 inwardly while the cutter is in operation, thereby shifting the spindle 86 endwise and carrying wheel 85 against the cutter. The yoke 87 is made with a stem 92 clamped by a screw 93 within a split sleeve 94. This sleeve 94 is made with a stem 95 perpendicular to stem 92 and clamped in a split sleeve 96 by a screw 97. The sleeve 96 is made with a stem 98 clamped within a split socket 99 by a screw 100. The socket 99 is part of a bracket 101 made also with a tongue 102 projecting into a slot 103 provided in a cross-bar 104 forming part of the frame of the machine. The bracket 101 is clamped to bar 104 by a screw 105 and as will be clear, by loosening this screw the bracket 101 and grinder wheel carried thereby may be shifted bodily when the cutters and rolls are shifted. It will also be clear that the support for each grinder roll provides for universal adjustment of the latter to adapt it to any position of the cutter 49 with which it coöperates. On each spindle 86 is splined a pulley 106 driven through a belt 107 by a pulley 108 fastened to a shaft 109 with provision for adjustment lengthwise of the latter, by a screw 110. The shaft 109 carries at one end a pulley 111 driven through a belt 112 by a pulley 113 fast to the main shaft 26. The hub of each pulley 74 and 108 has loosely pivoted on it, as shown in Figs. 7 and 8, a lever 114 carrying at one end a pulley 115 and at its other end an adjustable weight 116, said lever, weight and pulley constituting a belt tightener which main-

tains a proper tension in the belt of the pulley on whose hub the lever is pivoted. The belts 73 and 107 are longer than the distance between pulleys 106 and 108 or pulleys 72 and 74 so that the cutters and grinders are free to be adjusted on their holders as may be required and at the same time the belt tighteners just described automatically keep the belts under proper working tension whatever that adjustment may be. When the cutter-holders and grinder-holders are shifted on the frame of the machine in adapting the latter to operate on mounts of another size, then it is only necessary for the operator to shift the pulleys 74 and 108 on their shafts, the belt tighteners being carried by the hubs of those pulleys do not require the attention of the operator.

Long mounts take a longer time to pass through the rolls 36 and 37 than do shorter mounts and since it is desirable and most economical to have the blanks both long and short follow one another as close as possible out of the hopper 1, 1 to the trimming mechanism, I have herein provided for regulating the speed of operation of feed slide 10 according to the length of the mount being operated upon so that said slide may be operated at a relatively faster speed when short mounts are being trimmed and at a relatively slower speed when long mounts are being operated upon. To this end the idler 20 is mounted on a stud 20^a projecting from a frame 20^b that is pivotally hung upon the shaft 22. The frame 20^b is locked to the main frame of the machine with idler 20 in mesh with gear 19 by a screw 20^c extending through a slot 20^d in said frame 20^b. When mounts of another length are to be operated upon the screw 20^c is loosened and idler 20 lowered and gear 19 replaced by a gear of another size appropriate to the speed desired for feed shaft 18. The frame 20^b is then swung back and clamped in position by screw 20^e. At the same time the operator adjusts the block 32 on slide 10 to correspond with the changed position of the rear or outer edge of the pile of mounts, shifting said block inwardly on slide 10 if shorter mounts are to be operated upon and outwardly if longer mounts are to be operated upon. Of course the plates 27 will at the same time be correspondingly adjusted.

The tongue 66 of the block 64 which is part of the holder of the cutter at the right of the machine, Fig. 1, is made with a transverse threaded aperture through which extends the inner end of a screw 117 journaled near its outer end in the cross-bar 4. At its outer end the screw 117 carries a crank handle 118 through which said screw is rotated to shift the right hand holder toward and from the other or left hand cutter holder when the nut 67 is loosened.

As the mounts emerge from the rolls 36 and 37 they pass onto guides 119 fastened to the bar 104 with provision for adjustment lengthwise thereof, and from said guides they fall upon the apron 50.

The most convenient arrangement of parts is to have one pair of rolls 36 and 37, its cutter, grinder and guide, permanently located at the limit of its outward adjustment as shown at the top of Fig. 2, and to adjust only the slide 10 and the other pair of rolls 36 and 37 with the latter's complementary mechanism when altering the machine to adapt it to mounts of another width.

From the above description it will be seen that I have provided a machine which will accurately and uniformly trim and bevel the edges of photographic mounts of any ordinary width and length without in any way marring or injuring the latter, and which is particularly adapted to operate upon mounts made of two pieces of material pasted together.

The main feature of my improved machine is that the engagement of each cutter and its feed rolls with the mount is, in effect, concentrated at the same point on the latter so that the rolls not only feed the mount past the cutter and hold said mount in proper position to be operated upon by the cutter, but they also prevent the cutting thrust or pressure of the cutter from bending the mounts.

What I claim is:

1. A machine for trimming photograph mounts and the like, comprising a rotatable cutting disk revolving in one plane, and a pair of opposed feed rolls revolving in another plane, the mount engaging portions of all of said parts being concentrated substantially at the cutting point.

2. A machine for trimming photograph mounts and the like, comprising a pair of rotatable cutting disks and two pairs of opposed feed rolls cooperating with the cutting disks, the mount engaging portions of each cutting disk and its cooperating feed rolls being concentrated substantially at the cutting point of said disk.

3. A machine for trimming photograph mounts and the like, comprising a pair of cutting disks for trimming the opposite sides of a mount, and one or more pairs of opposed feed rolls for engaging the opposite faces of the mount immediately between and adjacent the cutting disks so that the mounts are fed and trimmed without being bent.

4. A machine for trimming photograph mounts and the like comprising a hopper for holding a pile of mounts; a feed slide; two pairs of feed rolls for engaging and supporting the opposite edges of the mounts without bending the latter; means to reciprocate the feed slide to deliver the mounts from the hopper to the feed rolls; a pair of

cutters arranged outside of the feed rolls, the cutters and rolls being alined crosswise of the direction of feed with each cutter engaging the mount at a point immediately alongside of the adjacent pair of feed rolls and means to operate the feed rolls to carry the mounts past the cutters.

5. A machine for trimming photograph mounts and the like comprising a hopper for holding a pile of mounts; a feed slide; two pairs of feed rolls for engaging and supporting the opposite edges of the mounts without bending the latter; means to reciprocate the feed slide to deliver the mounts from the hopper to the feed rolls; a pair of cutters arranged outside of the feed rolls the cutters and rolls being alined crosswise of the direction of feed with each cutter engaging the mount at a point immediately alongside of the adjacent pair of feed rolls; means to operate the feed rolls to carry the mounts past the cutters, and means to regulate the action of the feed slide to adapt the machine to operate upon mounts of different lengths.

6. A machine for trimming photograph mounts and the like comprising a hopper for holding a pile of mounts; a feed slide; two pairs of feed rolls for engaging and supporting the opposite edges of the mounts without bending the latter; means to reciprocate the feed slide to deliver the mounts from the hopper to the feed rolls; a pair of cutters arranged outside of the feed rolls the cutters and rolls being alined crosswise of the direction of feed with each cutter engaging the mount at a point immediately alongside of the adjacent pair of feed rolls; means to operate the feed rolls to carry the mounts past the cutters, and means to provide for adjustment of one of the two pairs of feed rolls and its cutter toward and from the other pair and its cutter to adapt the machine to operate on mounts of different widths.

7. A machine for trimming photograph mounts and the like comprising a hopper for holding a pile of mounts, said hopper being made in two parts adjustable toward and from each other to accommodate mounts of different widths; a feed slide at the bottom of said hopper; two pairs of feed rolls for engaging and supporting the opposite edges of the mounts without bending the latter, said pairs of rolls being adjustable toward and from each other to adapt them to operate upon mounts of different widths; means to reciprocate the feed slide to deliver the mounts from the hopper to the feed rolls; means to operate the feed rolls; a pair of rotary cutters arranged outside of and cooperating with the feed rolls, said cutters being adjustable toward and from each other, and means to operate the cutters.

8. A machine for trimming photograph

mounts and the like comprising a hopper for holding a pile of mounts, said hopper being made in two parts adjustable toward and from each other to accommodate mounts of different widths; a feed slide at the bottom of the hopper; a support for the feed slide adjustable crosswise of the hopper according to changes made in the width of the latter; two pairs of feed rolls for engaging and supporting the opposite edges of the mounts without bending the latter, said pairs of rolls being adjustable toward and from each other to adapt them to operate upon mounts of different widths; means to reciprocate the feed slide to deliver the mounts from the hopper to the feed rolls; means to operate the feed rolls; a pair of rotary cutters arranged outside of and cooperating with the feed rolls, said cutters being adjustable toward and from each other, and means to operate the cutters.

9. In a machine of the character described, in combination two pairs of feed rolls adjustable toward and from each other; a pair of rotary cutters, each cooperating with one of the pairs of feed rolls; means to support said cutters with provision for adjustment toward and from each other and also with provision for adjustment of each cutter on its support relatively to its pair of feed rolls; a cutter-driving shaft; a pair of driving pulleys mounted on and adjustable lengthwise of said shaft; belts connecting the driving pulleys with the cutters; and belt tighteners carried by the pulleys and engaging the belts of the latter.

10. In a machine of the character described, in combination two pairs of feed rolls adjustable toward and from each other; a pair of rotary cutters each cooperating with one of the pairs of feed rolls; means to support said cutters with provision for adjustment toward and from each other and also with provision for adjustment of each cutter on its support relatively to its pair of feed rolls; a cutter driving shaft; a pair of driving pulleys mounted on and adjustable lengthwise of said shaft; belts connecting the driving pulleys with the cutters; belt tighteners carried by the pulleys and engaging the belts of the latter; a pair of grinders, one adjacent each cutter; means to support said grinders with provision for bodily adjustment with the cutters and also with provision for adjustment of each grinder on its support relatively to its cutter; a grinder driving shaft; a pair of driving pulleys mounted on and adjustable lengthwise of said shaft; belts connecting

said driving pulleys with the grinders, and belt tighteners carried by said pulleys and engaging the belts of the latter.

11. A machine of the character described comprising, a pair of hopper sections; two pairs of feed rolls; means to feed the mounts from the hopper sections to the feed rolls; means to operate the feed rolls; a pair of rotary cutters cooperating with the feed rolls to trim the mounts; a pair of rotary grinders for the cutters; a pair of actuating devices for the cutters, and a pair of actuating devices for the grinders, the elements of all said pairs being arranged in two opposed groups adjustable toward and from each other to operate upon mounts of different widths.

12. A machine of the character described comprising a pair of hopper sections for supporting the sides of a pile of mounts; a reciprocating feed slide for supporting the middle of the pile of mounts; two pairs of feed rolls to which the mounts are delivered by the feed slide; means to operate the feed rolls; means to reciprocate the feed slide; a pair of rotary cutters cooperating with the feed rolls to trim the mounts; a pair of rotary grinders, one for each cutter; a pair of actuating devices, one for each cutter, and a pair of actuating devices, one for each grinder, the elements of all of said pairs being arranged in two opposed groups adjustable toward and from each other to operate upon mounts of different widths.

13. A machine of the character described comprising a pair of hopper sections for supporting the sides of a pile of mounts; a reciprocating feed slide between the two hopper sections; a pair of feed rolls to which the mounts are delivered by the feed slide; means to operate the feed rolls; a pair of rotary cutters cooperating with the feed rolls to trim the mounts; a pair of rotary grinders, one for each cutter; a pair of actuating devices, one for each cutter; a pair of actuating devices, one for each grinder, and means to regulate the speed of the reciprocating feed slide according to the length of mount being operated upon, the elements of all of the said pairs being arranged in two opposed groups adjustable toward and from each other to operate upon mounts of different widths.

Signed by me at Boston, Massachusetts, this 15th day of July, 1908.

CHARLES H. CADIEU.

Witnesses:

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JOSEPH T. BRENNAN.