No. 722,093. PATENTED MAR. 3, 1903.

F. L. FISHER.

MACHINE FOR TRIMMING WALL PAPER.

APPLICATION FILED DEC. 16, 1901.

NO MODEL. 4 SHEETS—SHEET 1.

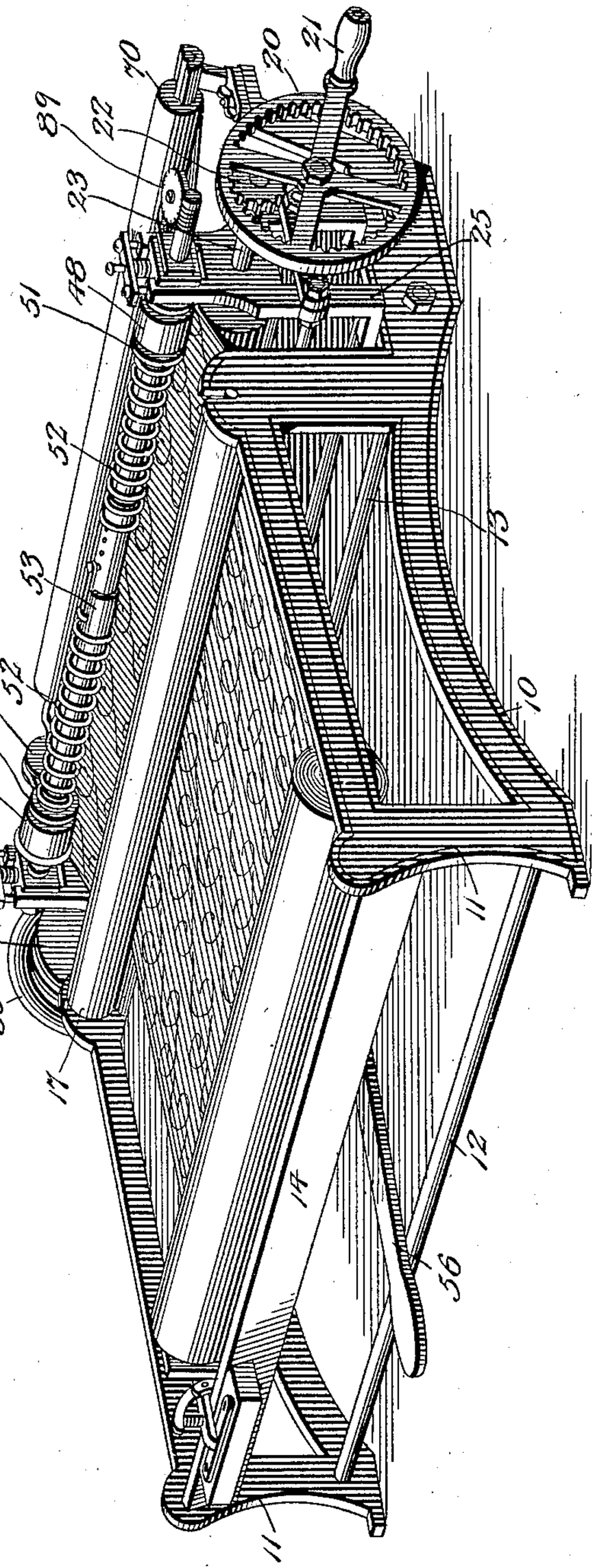

Fig. 1.

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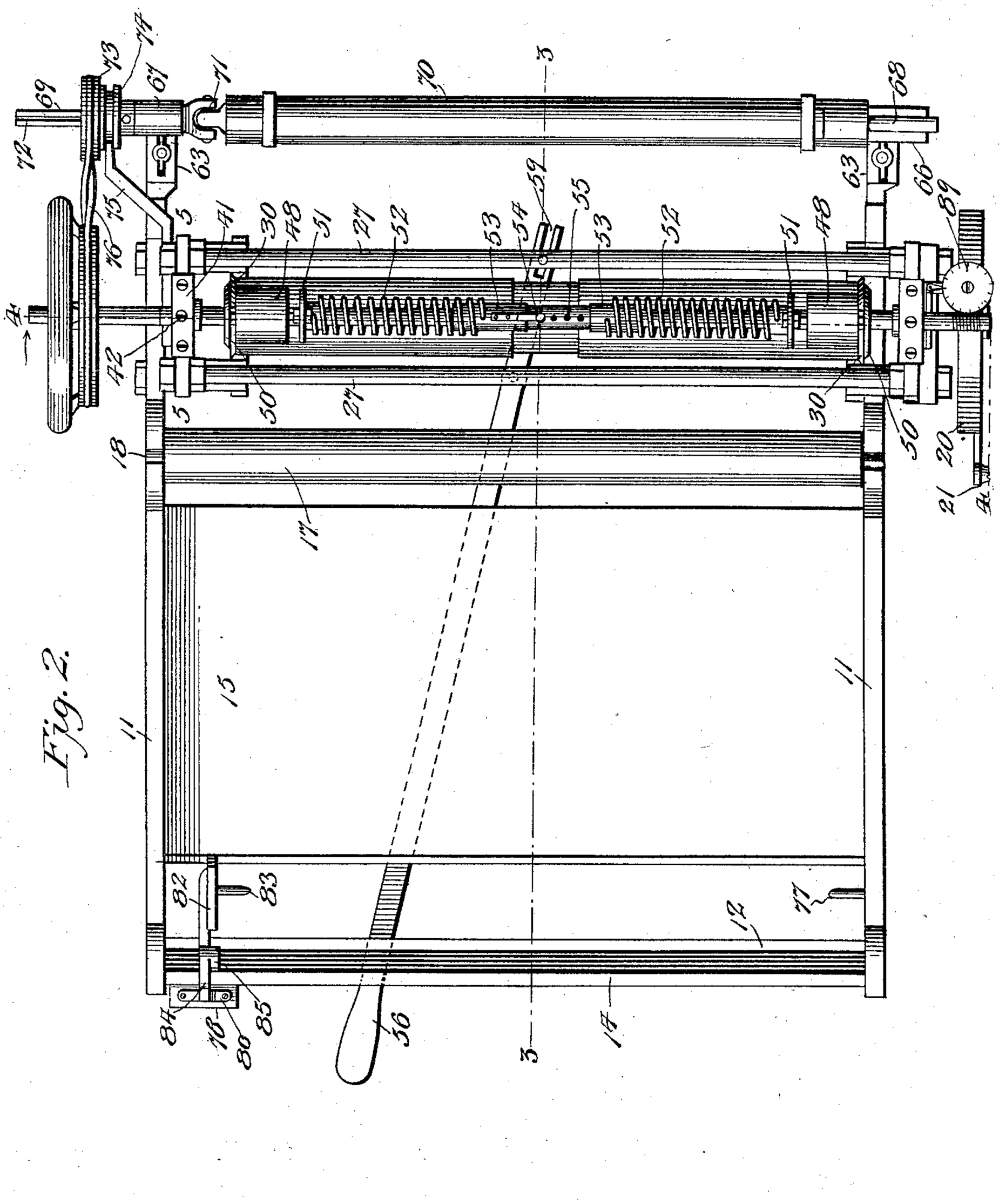

Fig. 2.

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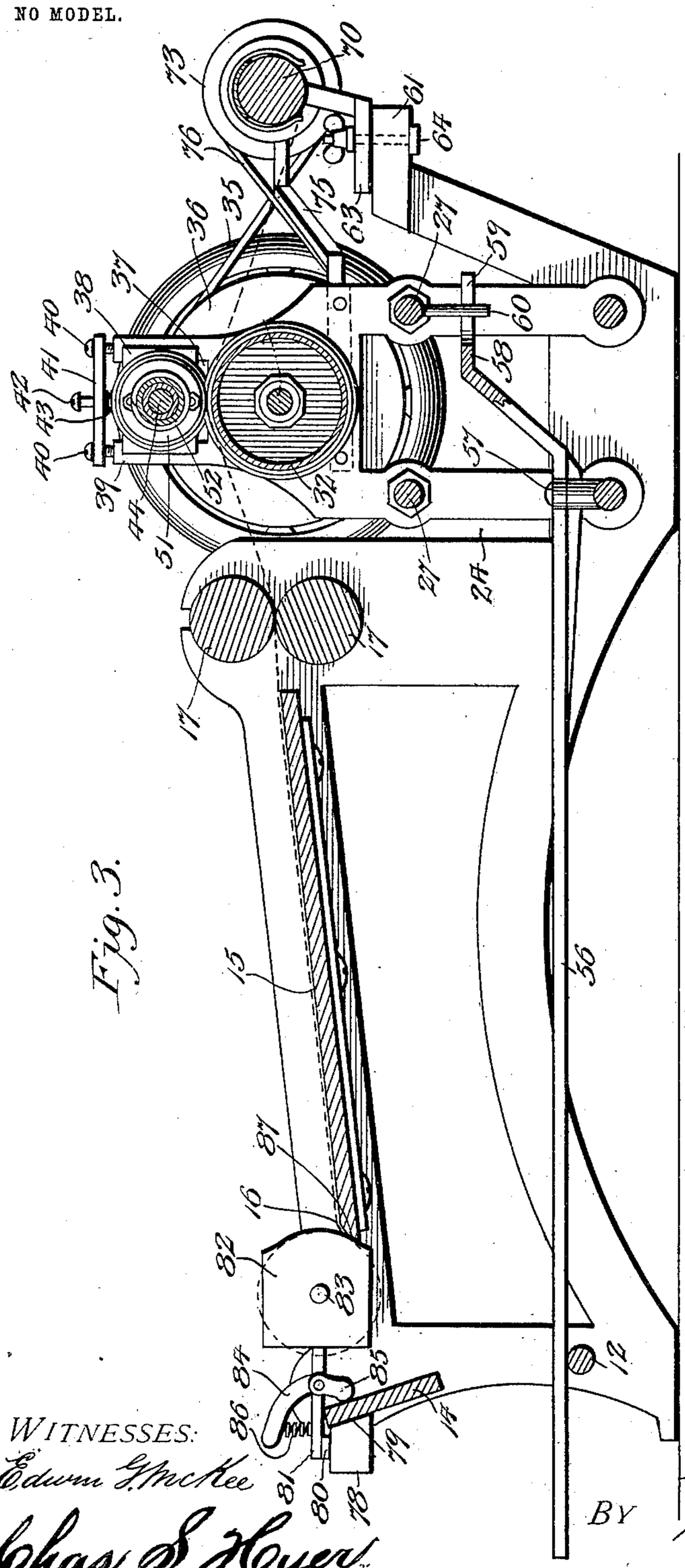

Fig. 3.

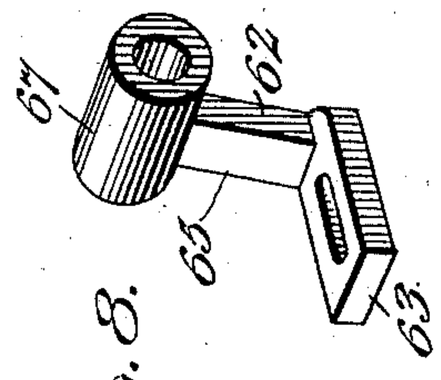

Fig. 4.

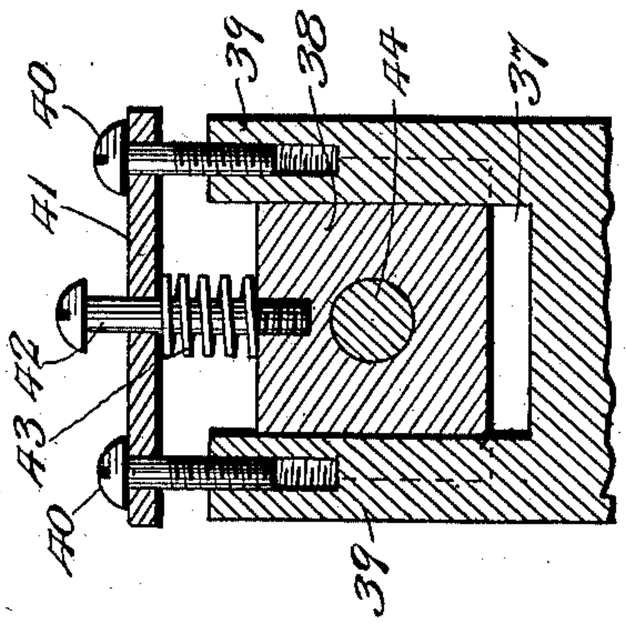

Fig. 5.

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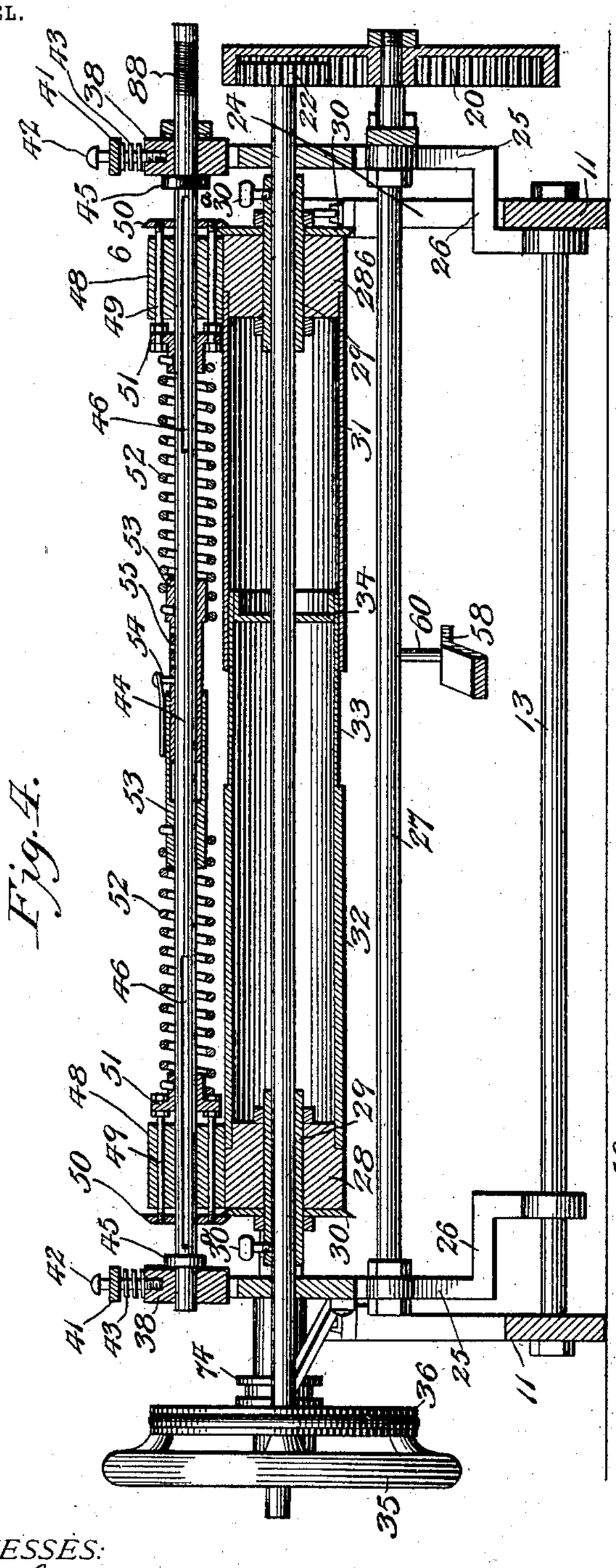

Fig. 4.

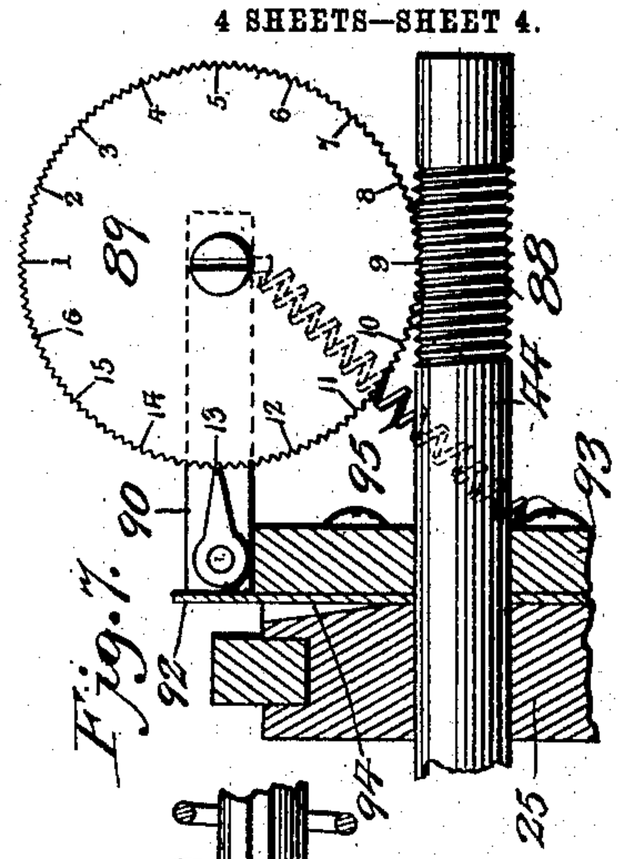

Fig. 7.

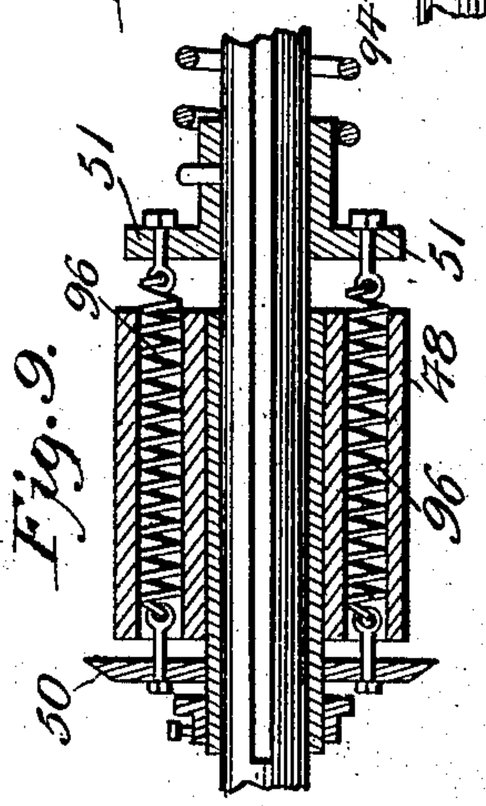

Fig. 9.

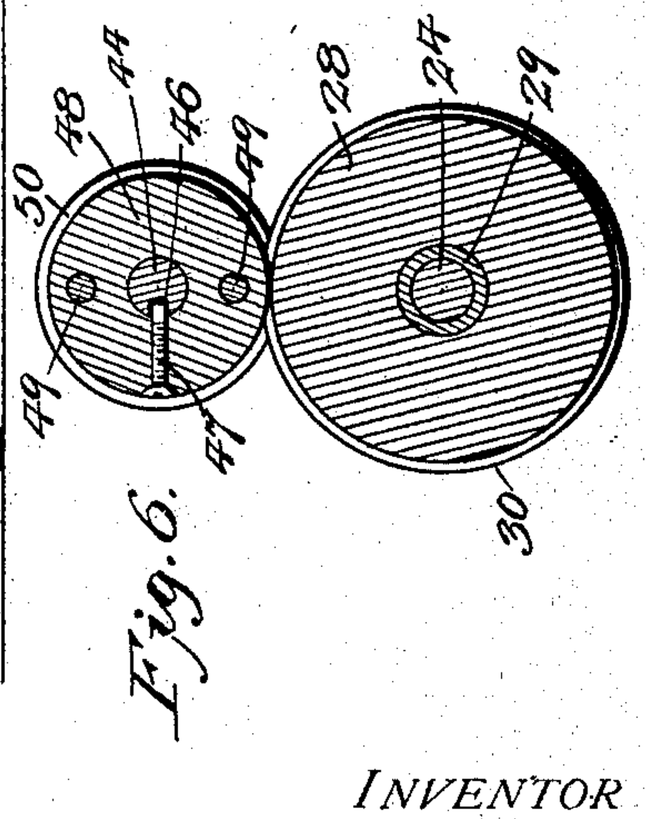

Fig. 6.

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UNITED STATES PATENT OFFICE.

FRANK L. FISHER, OF CUMBERLAND, MARYLAND.

MACHINE FOR TRIMMING WALL-PAPER.

SPECIFICATION forming part of Letters Patent No. 722,093, dated March 3, 1903.

Application filed December 16, 1901. Serial No. 86,141. (No model.)

To all whom it may concern:

Be it known that I, FRANK L. FISHER, a citizen of the United States, residing at Cumberland, in the county of Allegany and State of Maryland, have invented new and useful Improvements in Machines for Trimming Wall-Paper, of which the following is a specification.

This invention relates to a machine for trimming wall-paper and the like whereby wall-paper of different widths may be trimmed or cut.

The primary purpose of the present improvement is to include in a machine for trimming wall-paper and the like an organization of adjustable elements under the convenient control of an operator to compensate for variations in the widths of the paper to be cut as well as irregularities or contingencies that may present themselves in different kinds of wall-paper either before the cutting operation is begun or after it is in progress and to carry on such cutting operation so that ragged or feather edges will be avoided and a regular and reliable feed to the cutting devices ensue.

The secondary purpose and aim of the present machine is to simplify the construction of the contributing elements and reduce the number of parts as far as is practicable without detracting from effectiveness in the cutting operation.

With these and other objects and advantages in view the invention consists in the construction and arrangement of the several parts, which will be more fully hereinafter described and claimed and subject to a wide range of modification in the form, proportions, dimensions, and minor details without departing from the principle involved.

In the drawings, Figure 1 is a perspective view of a paper-trimming machine embodying the features of the invention. Fig. 2 is a top plan view of the same. Fig. 3 is a longitudinal vertical section on the line 3 3 of Fig. 2. Fig. 4 is a transverse vertical section on the line 4 4 of Fig. 2. Fig. 5 is a longitudinal vertical section on the line 5 5 of Fig. 2. Fig. 6 is a section on the line 6 6 of Fig. 4. Fig. 7 is a sectional plan view, on an enlarged scale, showing a registering mechanism. Fig. 8 is a detail perspective view of one of the bearing-brackets for the winding-roll. Fig. 9 is a transverse vertical section of a part of the machine, showing a modification in the construction.

Similar numerals of reference are employed to indicate corresponding parts in the several views.

The numeral 10 designates a frame comprising in its simplified form opposite side members 11, which are spaced apart and connected by tie-rods 12 and 13, engaging the lower portions thereof, and also by the several mechanisms which will be hereinafter more fully explained. At the front end of the machine the members 11 of the frame are rigidly connected by a cross-support 14, which is inclined inwardly and serves as a guide as well as a support. The members 11 are also rigidly connected by a bed 15, upwardly inclined from the front portion of the machine and having its front edge beveled, as at 16, and located at a suitable distance from the transverse support 14. In rear of the rear terminal of the bed 15 are a pair of vertically-alined guide-rolls 17, the uppermost of which is freely removable by having the end trunnions 18 thereof fitted in vertical slots 19, opening out from the upper edges of the adjacent portions of the members 11, the said upper roll 17 being of sufficient weight to keep it down in place during the operation of the machine and holding the paper fed between both rolls with sufficient tension in advance of the cutting mechanism to avoid slipping or crumpling, and thereby insuring a regular and positive feed. The guide-rolls 17 are not driven or revolved except by the frictional engagement therewith of the paper passing therebetween.

On one side of the machine and suitably connected to the rear portion of one of the members 11 is an annular gear or drive wheel 20, provided with a crank-handle 21, and meshing with the said gear or drive wheel is a pinion 22 on the one end of a drive-shaft 23. The members 11 above the points where the tie-rods 13 are secured to the same are formed with upwardly-opening enlarged recesses 24, and therein are mounted adjustable carriers 25, one in each recess, and through the upper parts of said carriers the shaft 23 extends. Each of the carriers is formed with a pair of

inwardly-extending angular feet 26. The feet of the carriers extend inwardly and downwardly on the inside of the lower portions of the members 11 and slidably engage the tie-rods 13, and above the said tie-rods the carriers are connected for simultaneous and quick adjustment by a pair of cross-rods 27.

Secured on the shaft 23 inside of the planes of the members 11 of the frame are heads 28, having sleeves or hubs 29, fastened to said shaft by set-screws 30, each head being provided with an outer disk cutter or shear 30^a. Cylinder-sections 31 and 32 are rigidly secured to the respective heads 28, the section 32 being longer than the section 31 and having its inner extremity circumferentially reduced, as at 33, to fit within the inner extremity of the section 31 for telescopic adjustable purposes, the inner end of the section 31 having a flanged bearing-disk 34 immovably secured therein, through which the shaft 23 extends, and by this means the cylindrical sections are prevented from sagging at their intermediate portions. On the end of the shaft 23 opposite that carrying the pinion 22 a band-wheel 35 is keyed and has a grooved ring 36 at the inner portion thereof for a purpose which will be presently explained.

The carriers 25 have lower legs continuing into the feet 26 and intermediate solid body portions through which the shaft 23 extends, the upper extremities of the said carriers being reduced in width and formed with vertical slots 37, opening outwardly through the top edges thereof to receive vertically-immovable boxes 38, which are suitably grooved at their ends to loosely fit over the side walls of the slots 37. By slotting or bifurcating the upper extremities of the carriers, as set forth, a pair of arms 39 are formed in each instance, and in the upper ends of the said arms are vertically-disposed set-screws 40, passing through an adjusting-bar 41, through which a headed post 42 centrally extends, the bar being capable of movement on the post. Each post 42 has its lower end secured to the center of the upper edge of the box 38, and between the bar 40 and said upper edge of the box a spring 43 is interposed and surrounds the post, the tension of the spring being controlled by adjusting the screws 40, and thereby regulating the tension on the boxes. In the boxes 38 a spindle 44 is mounted and provided with collars 45, bearing against the inner faces of the said boxes to prevent sliding movement of the spindle in the latter. The opposite extremities of the spindle 44 inside of the collars 45 are formed with grooves 46, extending longitudinally thereof, and engaged by set-screws 47, carried by heads 48, which are held in contact with the heads 28 below and adjustable longitudinally of the spindle through the medium of the screws 47 to vary the distance apart of the said heads. The heads 48 are frictionally driven by the heads 28, with which they are held in invariable or constant contact, and extending through each head is a pair of holding-rods 49, which are free to slide and have their outer terminals attached to a disk cutter or shear 50, held in overlapped relation to the disk cutter or shear 30^a below, the shears 30^a and 50 being beveled to effectively carry out the shearing operation, and the disk or shear 50 yieldingly bears against the disk or shear 30^a. The inner extremities of the holding-rods 49 are secured to a sleeve 51, slidable on the spindle 44, and have the outer end of a helical spring 52 secured thereto and surrounding the said spindle. The inner end of the spring 52 is fastened to a lock-sleeve 53, having a spring-actuated snap-stud 54 on the inner extremity thereof. The one sleeve 53 telescopically fits within the other and is provided with a series of apertures 55 to removably receive the snap-stud 54 on the opposite sleeve, and to attain the telescopic movement of one sleeve in relation to the other it is constructed of less diameter than the other, as clearly shown by Fig. 4. It will be seen that the disk cutters or shears 50 are held by the springs 52 in yielding contact with the disk cutters or shears 30^a, and the resistance to movement of the said disk cutters or shears 50 is regulated by adjusting the sleeves 53, this adjustable yielding contact of the disk cutters or shears 50 against the disk cutters or shears 30^a rendering the cut of the paper operated upon by the said cutters or shears more effective.

To shift the carriers 25 and the mechanisms carried thereby uniformly and equally in relation to the bed 15 and transversely of the machine, a lever 56 is employed and extends under the bed 15 and outwardly beyond the front end of the machine. As clearly shown by Fig. 3, the said lever 56 is fulcrumed, as at 57, on the forward tie-rod 13, and in rear of said tie-rod the lever is deflected upwardly at an angle and rearwardly in a horizontal plane to provide a shifting arm 58, having its rear horizontal terminal formed with a longitudinal slot 59, through which loosely extends a depending pin 60, fast to the rear tie-rod 27. It will be observed that the movement of the lever 56 in opposite transverse directions will correspondingly shift the carriers 25 and the parts carried thereby, and by this means wall or other paper having varying widths can be accommodated. Furthermore, this united adjustment of the cutting mechanism accommodates a particular disposition of the paper on the original rolls, from which it is unwound and fed to the machine, and the adjustment of the disk cutters or shears, through the medium of the cylindrical sections 31 and 32 and the heads 48, accommodates varying widths of paper regularly fed over the center of the bed 15. The united shifting of the cutting devices through the lever 56 adapts the machine to conform to any irregularities that may be apparent to the operator while the paper is being fed from the original roll, and such adjustment may

be carried on without affecting the motion of the machine, which is a material advantage in expeditious work, and particularly in trimming certain classes or makes of wall-paper.

The rear ends of the members 11 of the frame are projected rearwardly and have upper horizontal rests 61, and on said rests bearing-brackets 62 are adjustably disposed and have horizontally-slotted feet 63, engaged by clamping-bolts 64, passing therethrough and through the rests 61. From the feet 63 arms 65 project upwardly and rearwardly and support bearing devices, one of which is in the form of a semicylindrical seat 66, as shown by Fig. 2, and the other a sleeve 67, as clearly shown by Fig. 8. These bearing devices receive the spindles 68 and 69, projecting from the opposite extremities of a winding-roll 70, the spindle 69 being connected with the roll by a universal joint 71 and also formed with a longitudinal groove 72 for the adjustment of a band-wheel 73, mounted thereon and having an inner clutch-groove 74, which is engaged by the rear end of an outwardly and rearwardly extended clutch-arm 75, rigidly secured to the adjacent carrier 25 and movable simultaneously with the latter, the outer portion of the band-wheel 73 having a grooved rim which is always held in longitudinal alinement with the rim 36 of the band-wheel 35, and engaging the said rims is a crossed belt 76, said belt imparting to the winding-roll 70 a proper direction of movement. The universal joint 71 forms a hinge connection for the winding-roll 70, so that the spindle 68 can be raised from the bearing device 66 when it is desired to remove the cut paper from said winding-roll.

Secured to and projecting inwardly from one of the members 11 of the frame is a trunnion-stud 77 to fit in the one end of a roll of paper to be cut by the machine, said stud 77 being located adjacent to the support 14.

For convenience in applying rolls of paper to be treated by the machine and to compensate for differences in the length of said rolls it is necessary to provide an adjustable holding means for the end of each roll opposite that engaged by the trunnion-stud 77. The means devised for this purpose comprises a clamping-block 78, with an inner beveled edge 79, and on the block is a supporting-strip 80, to which is secured the front end of a rearwardly-extending arm 81, carrying a butt plate or board 82 at its inner end, from which a trunnion-stud 83 projects inwardly and normally in alinement with the opposite stud 77. On the inner edge of the arm 81 a clamping-lever 84 is pivotally mounted and has a lower offset head 85, which is adapted to contact with the rear side of the support 14, the head of the said lever being held down normally by a spring 86, interposed between the under portion of the front end thereof and the arm 81 below. When this holding means or mechanism is applied, the beveled edge 79 of the block 78 bears against the front side of the support 14, and the head 85 of the lever engages the rear side of said support, and by this disposition of the said parts the holding means or mechanism is prevented from having a rocking movement, but can very readily be adjusted longitudinally of the support 14 to compensate for variations in the length of the rolls of paper to be cut. When the block 78 and head 85 of the lever 84 are in engagement with the support 14, as set forth, the rear under edge 87 bears against the front beveled edge 16 of the bed 15 to prevent any possible downward movement of the plate 82, the said edge 87 of the plate 82 being curved to practically engage the beveled edge 16 of the bed 15. This holding means or mechanism can be easily pushed up to engage the end of a roll of paper and may be applied to any point along the length of the support 14, and in view of the lightness of structure of the said means or mechanism the operator can apply the same with one hand, while holding the roll of paper to be operated upon with the other hand, and hence the paper to be cut can be expeditiously arranged in operative relation to the machine. After the roll of paper has been placed in engagement with the trunnions 77 and 83 the loose end thereof is drawn over the bed 15 through the guide-rolls 17 and between the cutting disks or shears 30^a and 50 and started to wind in a proper direction on the winding-roll 70. The shaft 23 is then set in motion through the gearing, (heretofore explained,) and the paper is gradually fed between the heads 28 and 48 and simultaneously trimmed or cut, and during this cutting operation the paper is prevented from sagging or bearing inwardly and downwardly at the center by the cylindrical sections 31 and 32, and therefore the cutting operation will always be regular and the edges of the paper trimmed in straight lines. The gearing is shown arranged for manual operation; but it will be understood that it may be driven by power, if desired, by applying a belt over the annular gearing 20 or by connecting up the said gearing to driving mechanism in any other suitable manner.

The improved machine also embodies a measuring mechanism, and to accommodate the application of said mechanism one end of the spindle 44 is projected outside the outer face of one of the members 11 and formed with a worm 88, and meshing with said worm is a worm wheel or disk 89, which is horizontally disposed and adjustably carried by an arm 90, fulcrumed to a portion of the adjacent carrier 25. The worm-wheel 89 is free to rotate on the arm 90 and is regularly divided by lines representing feet, yards, or the like, and coacting therewith is an indicator 91, fixed on the said arm 90. The arm 90 is turned against a back spring 92, similar to a knife-blade, the said back spring being secured to an adjacent portion of the carrier and with the arm 90 held in position by a securing-bar 93, the carrier being cut away,

as at 94, adjacent to the said spring 92, to permit the latter to move inwardly. By this means the arm 90 can be thrown rearwardly to disengage the worm-wheel 89 from the worm 88 and will be held in its rearward adjustment by the spring 92. The worm-wheel 89 is moved rearwardly against the resistance of a spring 95, secured to the outer extremity of the arm 90 and to an adjacent portion of the bar 93, the said spring 95 serving to positively maintain the worm-wheel 89 in operative mesh with the worm 88. The spindle 44 is rotated through the heads 48 thereon by the heads 28, secured to the shaft 23, and the parts are so timed and proportionately arranged that a certain number of revolutions of the spindle 44 will actuate the worm-wheel 89 to indicate that a certain length of paper has passed between the heads 28 and 48 and been trimmed or cut. As the spindle 44 is held exclusively by the boxes 38, the bar 93 and remaining portions of the measuring mechanism are secured to the box 38, adjacent to the driving mechanism for the shaft 23, so that when the spindle 44 is adjusted vertically the measuring mechanism will be correspondingly adjusted.

In Fig. 9 a slight modification in the construction of a part of the mechanism is shown and is intended to replace the holding-rods 49, said modified structure comprising helical springs 96, movable through the heads 48 and attached at opposite terminals, respectively, to the disk cutters or shears 50 and the sleeves 51. This modification renders the disk cutters or shears 50 more sensitive in their yielding contact with the disk cutters or shears 30.

In the operation of the machine the paper is fed over the bed 15 from the roll at the front extremity thereof and through the rolls 17 to the adjustable cutting devices heretofore explained and from the latter passes to the winding-roll 70. As before explained, if the edges of the paper be uneven or the print in any wise irregular a regular cutting operation may be performed by adjusting the cutting mechanism through the medium of the lever 56, which is in convenient reaching distance of the operator. To accommodate different widths of paper, the cutting devices may be adjusted transversely of the machine in view of the structure heretofore explained.

By means of the foregoing mechanism the paper will be trimmed straight for butting, because the devices for holding the original roll of paper and the winding-spindle are not shifted, but simply the drive-wheel for the winding-roll. By means of the adjustment of the cutters or shearing-disks paper which is not printed straight may be regularly cut in straight lines to correspond to the irregularities. Furthermore, the paper is prevented from sagging at the center when undergoing the trimming operation by the cylindrical sections 31 and 32, as heretofore explained. There is no waste of paper in starting or finishing the trimming operation, and the parts are so relatively disposed that the extremity of the paper operated on after the original roll is exhausted will be held reliably until the full length of the strip is cut and finished. The parts are also so proportioned that every turn of the gear 20 will cause one yard of the paper to be trimmed. Of course other proportions may be adopted at will and the measurements varied as desired.

Having thus fully described the invention, what is claimed as new is—

1. A paper-trimming machine comprising paper holding and winding means at opposite points for maintaining the paper operated upon in a straight line, and adjustable cutting devices intermediate of the said means unitedly shiftable to compensate for irregularities in the print of the paper and having individually-adjustable parts to accommodate variations in the width of the paper operated on.

2. In a paper-trimming machine of the class set forth, the combination of transversely-shiftable carriers having cutting mechanism supported thereby, and supporting means and a winding device for the paper operated upon disposed on opposite sides of the carriers and maintained in positive alinement irrespective of the adjustment of the said carriers.

3. In a paper-trimming machine of the class set forth, the combination of paper feeding and cutting devices including a drive-shaft having heads adjustably mounted thereon carrying cutting-disks, cylindrical sections connected to said heads and telescopically engaging each other, a spindle above the shaft having heads adjustable thereon to engage those on said shaft, cutting devices held in adjustable and resilient relation to the heads of the spindle and in contact with the cutting devices carried by the heads on the shaft, and means on opposite sides of the said cutting mechanism for holding the paper to be trimmed and for winding the latter after it is trimmed.

4. In a paper-trimming machine of the class set forth, the combination of opposite pairs of interacting cutting-disks, the uppermost of said disks at each side being vertically adjustable and yieldingly held in contact with the lower disks, a drive-shaft having heads adjustably mounted thereon, heads connected to the upper cutters and frictionally driven by the said heads on the drive-shaft, and means for holding a roll of paper to be trimmed and for winding the trimmed paper.

5. In a paper-trimming machine of the class set forth, the combination of transversely-shiftable carriers having a drive-shaft and cutting devices supported thereby and movable to and from each other to compensate for the width of paper operated upon, the upper cutting devices also being vertically adjustable in the said carriers, and means for

holding a roll of paper to be trimmed and for receiving and winding the paper after the trimming operation.

6. In a paper-trimming machine of the class set forth, the combination of a frame, transversely-shiftable carriers mounted in the said frame, a drive-shaft supported by the said carriers and having thereon cutting devices which are longitudinally adjustable in relation to each other and a part of the same also vertically movable, and means for feeding the untrimmed and receiving the trimmed paper located on opposite sides of the drive-shaft and cutting devices.

7. In a paper-trimming machine of the class set forth, the combination of a drive-shaft having a head adjustably mounted thereon and carrying cutters, inwardly-extending cylindrical sections secured to said heads, upper cutters coacting with those on the drive-shaft, transversely-shiftable carriers supporting the said shaft and cutters, and means for feeding the untrimmed and receiving and winding the trimmed paper.

8. In a machine of the class set forth, the combination of a drive-shaft having cutting devices longitudinally adjustable thereon and provided with telescoping sleeves extending inwardly therefrom, a vertically-adjustable spindle above said drive-shaft also carrying cutting devices longitudinally adjustable thereof and coöperating with the cutting devices of the drive-shaft, the one extremity of the spindle being projected beyond the one side of the machine and having worm-threads thereon, a rotatable disk carrying numerals and coöperating with a pointer and provided with peripheral teeth continually held in mesh with the worm-threads on the spindle, and means for feeding the untrimmed and receiving and winding the trimmed paper.

9. In a machine of the class set forth, the combination of a drive-shaft, having cutting devices thereon, a vertically-adjustable spindle above said drive-shaft also carrying cutting devices coöperating with those on said drive-shaft, the one extremity of the spindle being projected beyond one side of the machine and having worm-threads thereon, a measuring-disk coöperating with a pointer and having peripheral teeth held in continual engagement with the worm-threads on the one end of the spindle, and means for feeding the untrimmed and receiving and winding the trimmed paper.

10. In a machine of the class set forth, the combination of a drive-shaft having heads longitudinally mounted thereon and provided with inwardly-projected telescoping sleeves, a vertically-adjustable spindle disposed above the said drive-shaft and also having heads longitudinally adjustable thereon and maintained in adjustable contact with the heads on the drive-shaft, the adjustment of the heads on the spindle being independent of the adjustment of said spindle in a vertical direction, and means for feeding the untrimmed and receiving and winding the trimmed paper.

11. In a paper-trimming machine of the class set forth, the combination of cutting and winding devices, a bed over which the paper to be trimmed is fed, a front inclined support at a distance in advance of the front edge of the said bed, a stud stationarily held at one side of the frame of the machine, and a butt-plate slidably mounted on the said inclined support and having a stud projecting inwardly therefrom in alinement with that carried by the frame of the machine, the said butt-plate also having an arm secured to a block to bear against the outer side of the inclined support, and a clamping member to removably engage the inner side of said support.

12. In a paper-trimming machine of the class set forth, the combination of cutting and winding devices, of a bed having a front downwardly-inclined edge, an outwardly-inclined support in advance of the bed and devices for engaging the opposite ends of a roll of untrimmed paper, one of said devices having a butt-plate firmly bearing against the front inclined edge of the bed and provided with a rearwardly-projecting arm carrying a block and a spring-actuated clamp to take over opposite sides of the said support.

13. In a paper-trimming machine of the class set forth, the combination of cutting devices including a drive-shaft having a band-wheel thereon, a winding-roll having a band-wheel adjustable on one end portion thereof, the cutting devices being unitedly shiftable transversely of the machine, means between a portion of the cutting devices and the band-wheel on the winding device for causing simultaneous shifting movement of said parts, a crossed belt engaging the band-wheel on the drive-shaft and winding-roll, and means for feeding untrimmed paper to the cutting device.

In testimony whereof I affix my signature in presence of two witnesses.

FRANK L. FISHER.

Witnesses:
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