No. 647,053. Patented Apr. 10, 1900.

H. M. UNDERWOOD.

MACHINE FOR TRIMMING WALL PAPER.

(Application filed Aug. 2, 1899.)

(No Model.) 3 Sheets—Sheet 1.

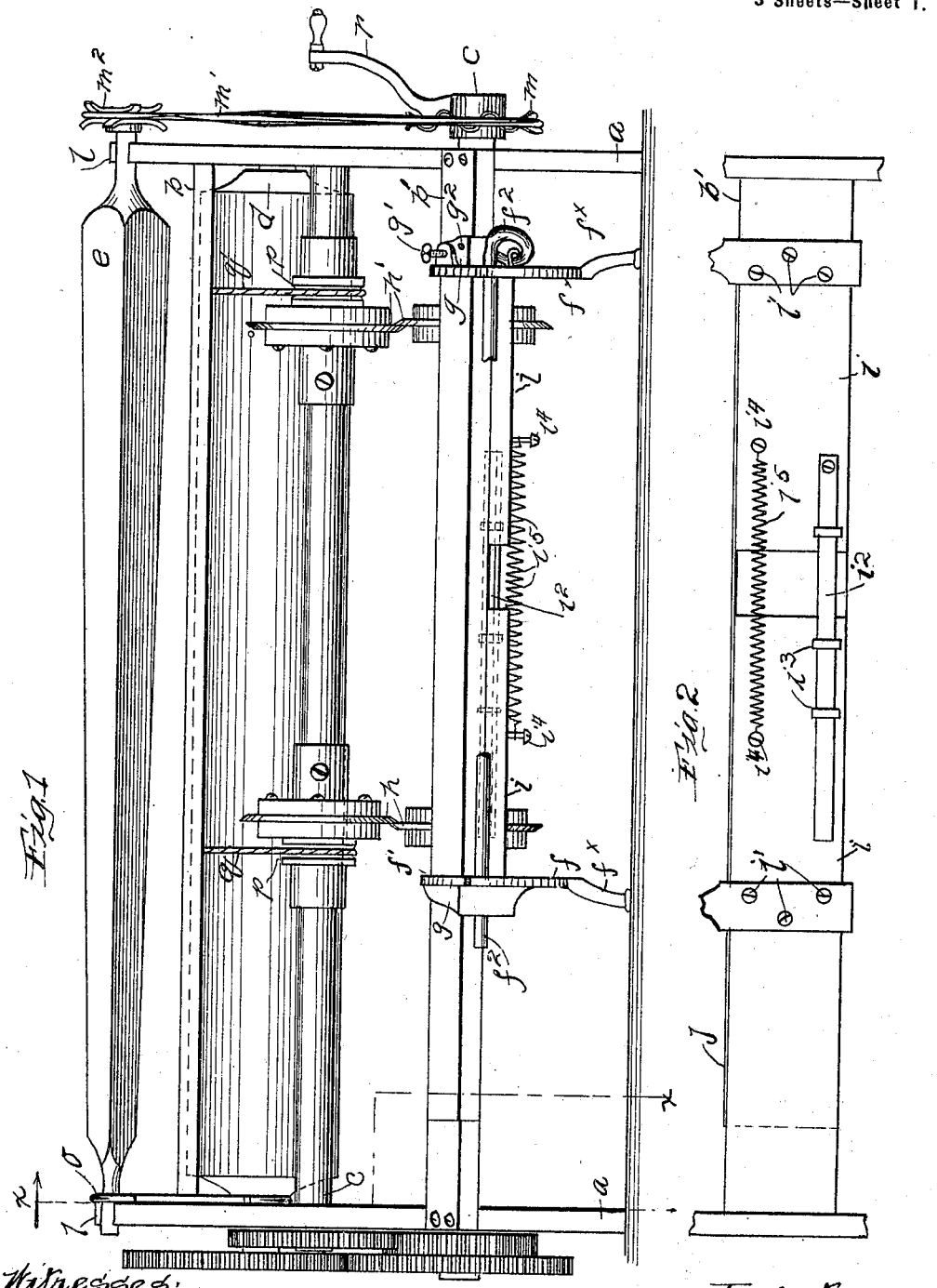

Fig. 1

Fig. 2

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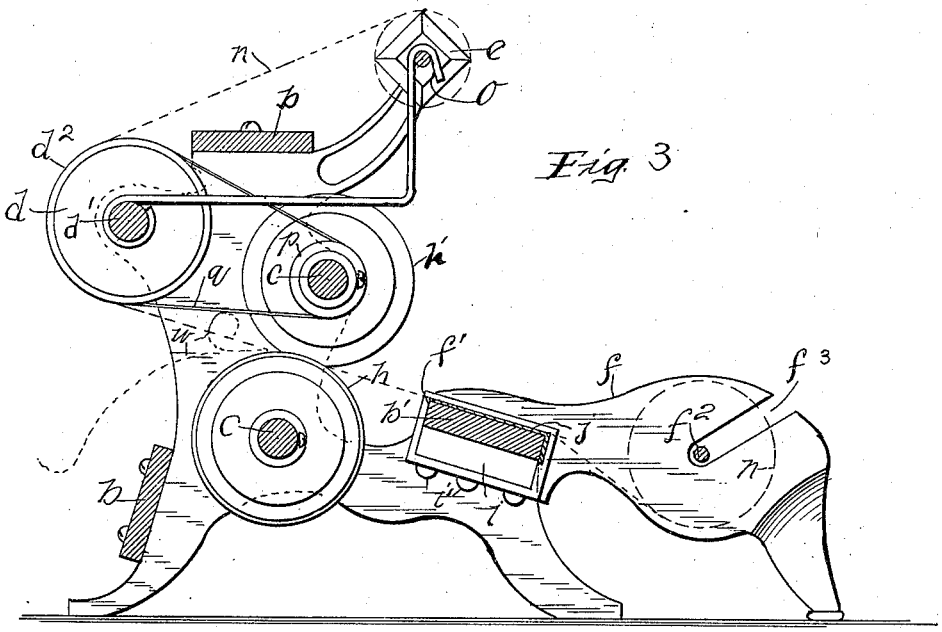

Fig. 3

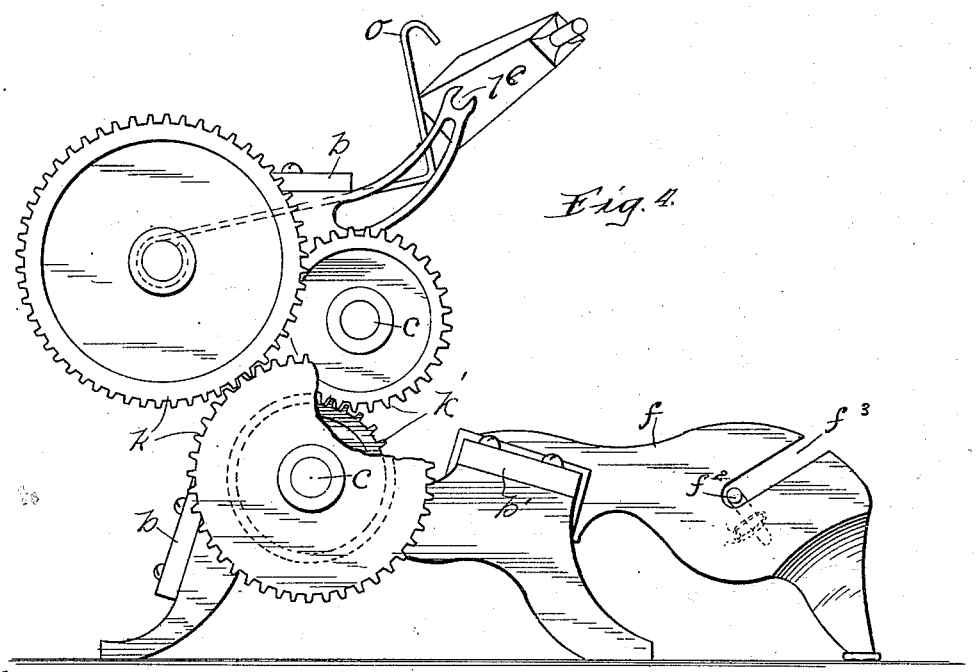

Fig. 4.

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3 Sheets—Sheet 3.

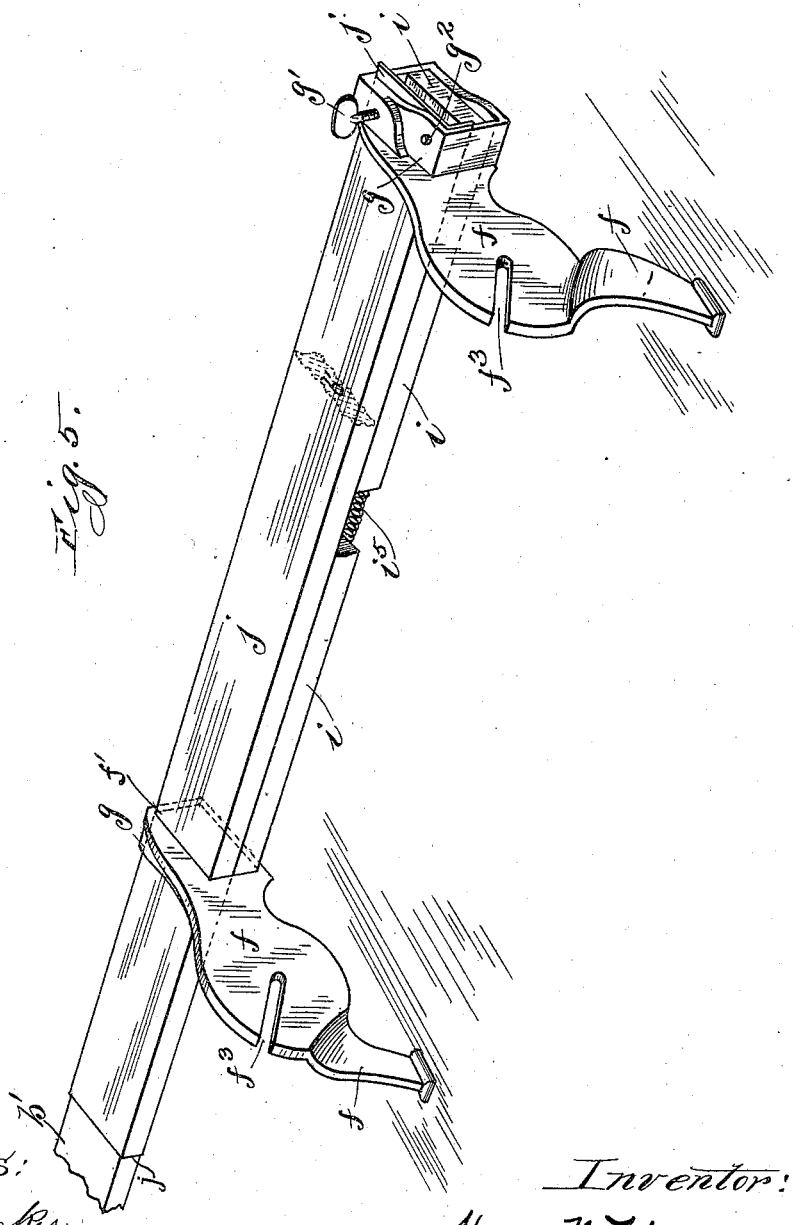

Fig. 5.

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UNITED STATES PATENT OFFICE.

HENRY M. UNDERWOOD, OF WAUKEGAN, ILLINOIS.

MACHINE FOR TRIMMING WALL-PAPER.

SPECIFICATION forming part of Letters Patent No. 647,053, dated April 10, 1900.

Application filed August 2, 1899. Serial No. 725,857. (No model.)

To all whom it may concern:

Be it known that I, HENRY M. UNDERWOOD, a citizen of the United States, residing at Waukegan, in the county of Lake and State of Illinois, have invented certain new and useful Improvements in Machines for Trimming Wall-Paper, which are fully set forth in the following specification, reference being had to the accompanying drawings, forming a part hereof, and in which—

Figure 1 shows my said new wall-paper trimmer in front elevation. Fig. 2 shows a detached view of the under side of the adjustable paper guard and guide or paper-protector. Fig. 3 shows a transverse section of Fig. 1 on the cutting plane $x\,x$. Fig. 4 shows the gear-wheels in end view, the conical winding-spindle being partly removed from the machine and a part of the gearing broken away. Fig. 5 shows in perspective the adjustable paper-guides f, guard j, and adjustable guide-holders.

Like letters of reference denote like parts.

The object of my invention is to improve the construction and operation of my earlier patented paper-trimmers; and to attain said desirable end I construct my said new machine in substantially the following manner, namely:

I make two metallic standards a, which are secured together by three strips of wood b, b, and b', thus forming a frame for carrying the parallel uniform-diametered shafts c, a speed-governing roller or drum d on a shaft d', and a winding rod, spindle, or drum e to receive the trimmed paper. Upon the strip or supporting-bar b' are mounted longitudinally-adjustable paper-guides f, below which on a rod f^2 the roll of paper to be trimmed is mounted and passes to the circular and longitudinally-adjustable cutters h and h'. Said guides are provided at their upper ends with large square openings or eyes f', through which freely passes the supporting-strip b', and in each of said eyes is also held the outer end of a guide-holder i, held by screws i' through said eyes parallel to and under the supporting-strip b'. Slots f^3 admit the rod f^2, loaded with a roll of paper n. On the under side of one of the wooden guide-holders i is also secured an alinement-guide i^2, preferably of metal, which passes through loops or staples i^3, secured in the opposite guide-holder i, and in each of said guide-holders i is also secured a screw or stud i^4, each of which holds an end of a tensioned spring i^5. To the upper and outer edges of the guides f are lugs g, integral with said guides and surrounding the eyes f', and through the one nearest the crank r passes a set-screw g' to fixedly hold its guide f to the bar or strip b', and a pin or rivet g^2 also passing through the said lug and through a sheet-metal guard or paper-protector j, thus securing said guide-holder and guard together. The opposite or free end of said protector j passes freely through the eye f' of the opposite guide f, and its front part projects down over the front edge of the supporting-bar b'. The metallic guard j supports the paper undisturbed in its longitudinal motion, while at the same time an adjustment may be made longitudinally to the moving paper, so as to bring it to the intended line at the cutters, this being done without crinkling, folding, or other injury, which is the case when the guides f alone are relied on, and the paper-support is simply a bar b', which necessarily remains fixed.

Rotary shears or cutters h h', of usual form and construction and adjustable longitudinally, are mounted on the shafts c, and behind and above the upper shaft c is a governing shaft or drum d on a shaft d', actuated through the slightly-unequal gear-wheels k, one of which is fixed to the lower shaft c on the end opposite to that on which the crank r is attached. Said cutters, being actuated by said unequal gears k', present thereby constantly-changing wearing-surfaces, which are thus kept in the best working condition, and about directly over the supporting-bar b' is a winding-spindle e, held in open or forked bearings l, one journal of said spindle being provided with a belt-pulley m^2 on the pulley m on the driving-shaft. Said drum d is covered with a rough cloth d^2 to increase the friction of the paper n, (shown in the broken line,) passing from the rod f^2, where it is a roll put on the machine, thence unrolled and passed between the cutters h h', thence under the drum d, and up and around the winding-spindle e. Said governing-shaft d is of about the same diameter as the cutters at their pitch-circle or points of intersection of the cutting edges,

and its arrangement in the gearing k is such that it will run slightly slower than said cutters—practically about one-ninth slower—and its mounting is such that its lower face or edge, the point of contact of the shears, and the top of the metallic guard j are all in or nearly in the same plane. Said differential gearing of the shears and slower gearing of the roller d causes the cutters to part the paper without producing fuzz, which interferes with the appearance of the trimmed paper. The tapering spindle e winds the trimmed paper, and as the roll increases the crossed belt m' slips more and more, as it is arranged to do, to prevent tearing or faster running of the paper than it is delivered by the feed-governing drum d. The average speed of the spindle e is to be about the same as that of the drum d. Pulleys p, just outside of the cutters h h', carry cord belts q q' over the drum d, against which the waste or separated strip of paper w curls, and which carry said waste outwardly and cause it to fall outside of the machine, thereby preventing entanglement of said material with the working mechanism. The belt m' holds one end of the winding-spindle e into its bearings, and a hook o, secured to the shaft of the drum d and hinged thereon, holds the other journal of said spindle in its bearings. Handles $f^{\times}$ are attached to the outer and lower edges of the guides f, which are grasped when moving said guides f longitudinally on their supporting-bar b'.

To use the machine, first set the rotary cutter h' with its belt q' to its longitudinal position on the axle, then set the right-hand guide f and hold it by the set-screw g', set the cutter h if it is to be used, and if not then set it out of the way to the left, put a roll of paper on the rod f^2, and bring the opposite guide f against the end of the roll by means of a properly-tensioned contracting spring i^5, and then pass the end of the paper through the machine, through the cutter h', and around the back of the drum d and allow it to wind on the spindle e, while turning the crank r. If two cuts are to be made at the same time, set the cutter h and its belt q to their proper places and otherwise manage, as before, for a single cut. If the paper needs adjustment to cut on the proper lines, loosen the set-screw g' and take hold of the handle $f^{\times}$, which will enable you to pull at it in the right direction and move paper-protector guides and paper-roll longitudinally to its proper place while the machine is at work. By means of my said construction I am enabled to split a roll of paper into as many strips, plus one, as there are cutters provided therefor, and all the strips so cut may be rolled around the winding-spindle at the same time. I am also enabled to split rolls of paper with border designs into their respective borders.

What I claim is—

1. The combination with spring-connected roll-holding paper-guides, of a longitudinally-adjustable sheet-metal guard secured to one of said guides and slipping freely through a hole in the opposite guide, substantially as specified.

2. The combination with spring-connected paper-roll-carrying guides, of a longitudinally-adjustable sheet-metal guard secured to one of said guides, a supporting-bar and a set-screw in the guide holding said guard, substantially as specified.

3. The combination with a supporting-bar and a longitudinally-adjustable sheet-metal guard thereon, of paper-guides longitudinally adjustable on said supporting-bar, and means to adjust and hold to place one of said guides, substantially as specified.

4. The combination with a supporting-bar and longitudinally-adjustable paper-guides, one fixedly adjustable and the other automatically adjustable, of spring-actuated longitudinal guide-holders fixedly attached to said paper-guides and a guiding-rod connected to said guide-holders, substantially as specified.

5. The combination with differentially-geared rotary cutters, of paper-guides, one fixedly adjustable and the other automatically adjustable to said fixed guide, a longitudinally-adjustable sheet-metal guard secured to said fixedly-adjustable guide, longitudinal guide-bars fixed to said paper-guides, and a guiding-bar to said longitudinal guide-bars, substantially as specified.

6. The combination with rotary cutters, of a feed-governing drum and endless belts and pulleys near the outer sides of said cutters on the cutter-shaft, said belts on said pulleys and said feed-governing drum to deposit the trimmings, substantially as specified.

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Witnesses:
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