No. 786,759. PATENTED APR. 4, 1905.

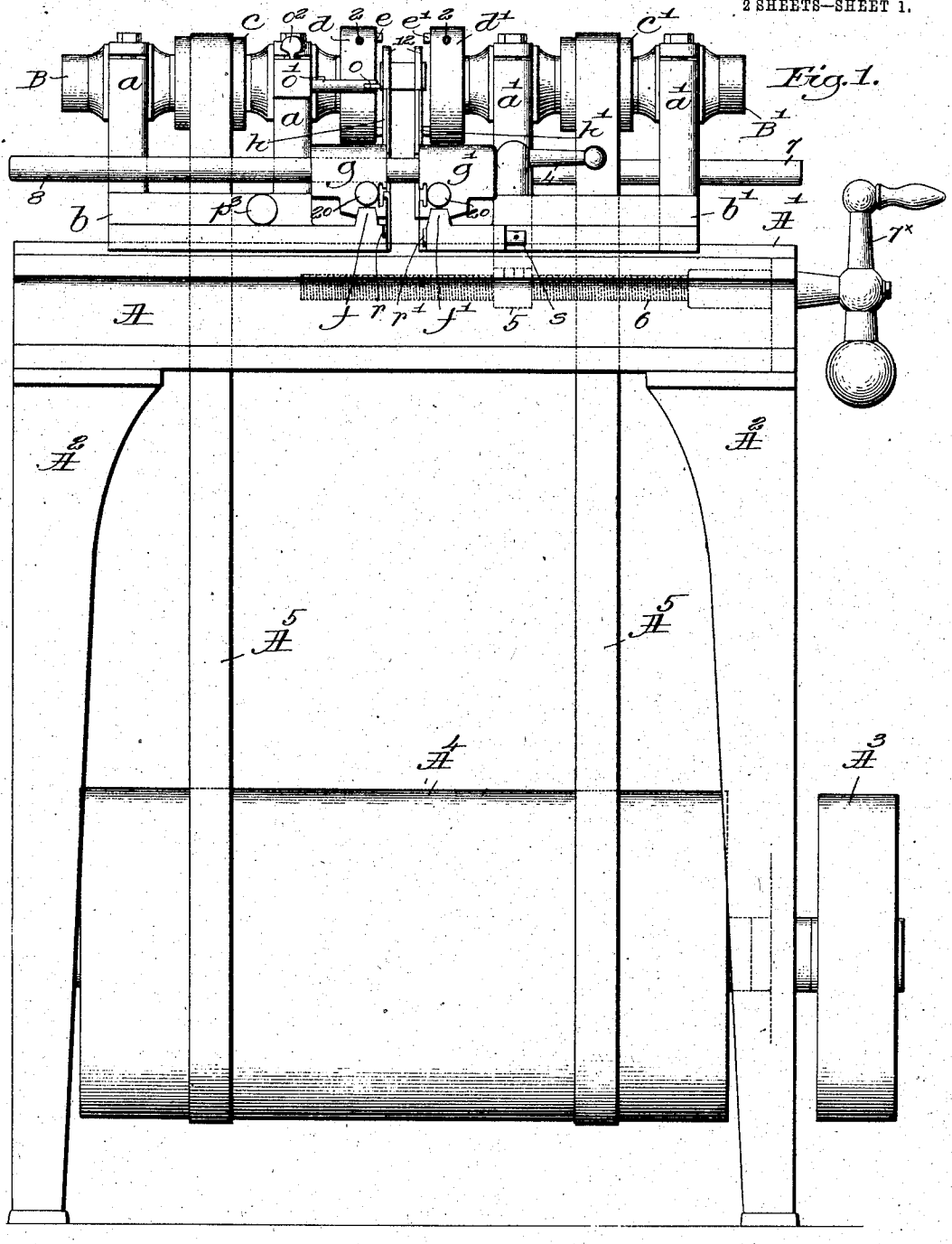
H. C. HANSEN.

MACHINE FOR TRIMMING PARALLEL SURFACES.

APPLICATION FILED DEC. 18, 1903

2 SHEETS—SHEET 1.

Fig. 1.



Witnesses:
Fred. S. Crumbaf.
S. Wm. Sutton.

Inventor.
Hans C. Hansen,
by Lovejoy & Gregory
Attys.

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2 SHEETS—SHEET 2.

Fig. 2.

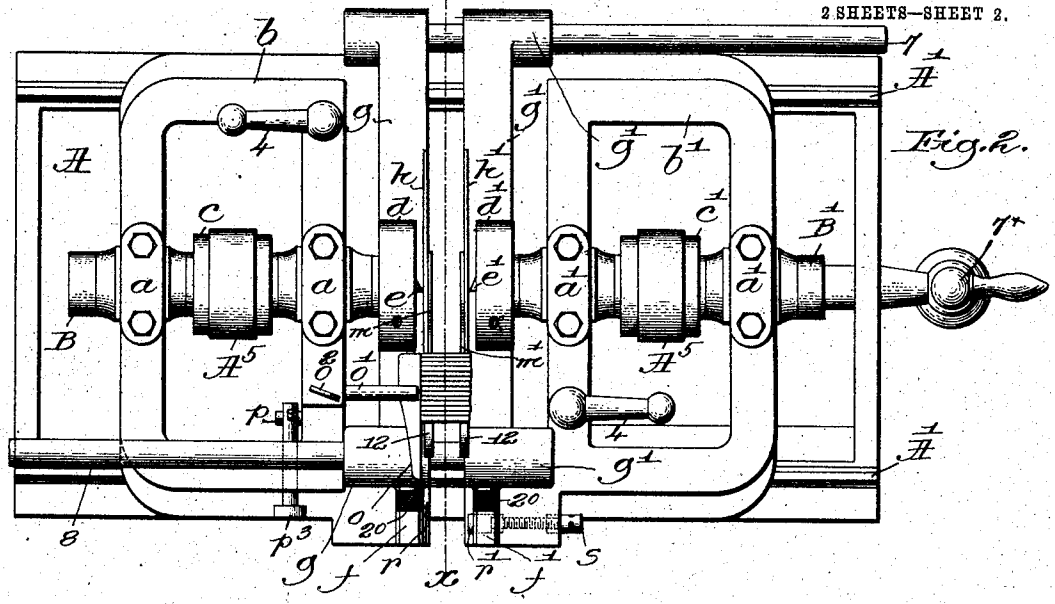


Fig. 3.

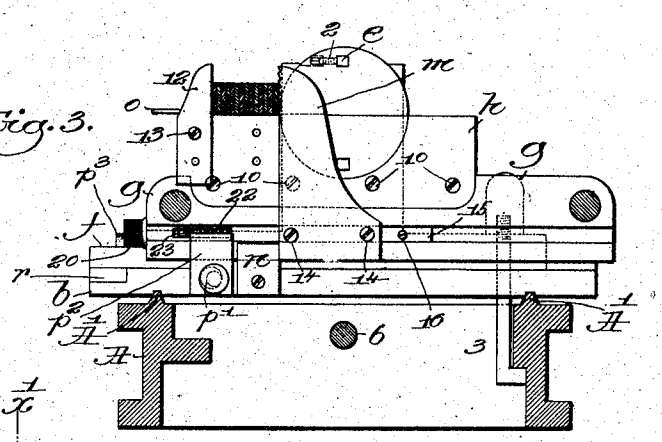


Fig. 4.

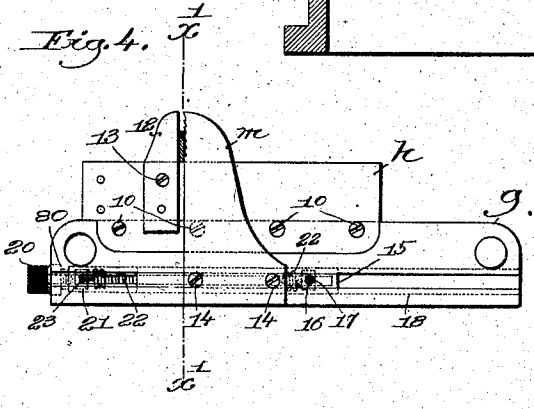
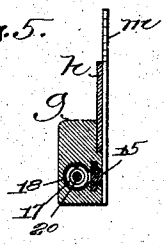


Fig. 5.



Witnesses:
Fred. L. Grunlaf.
L. Wm. Lutton.

Inventor.
Hans C. Hansen,
by Crosby & Gregory
Attys.

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No. 786,759. Patented April 4, 1905.

UNITED STATES PATENT OFFICE.

HANS C. HANSEN, OF NEWTON, MASSACHUSETTS.

MACHINE FOR TRIMMING PARALLEL SURFACES.

SPECIFICATION forming part of Letters Patent No. 786,759, dated April 4, 1905.

Application filed December 18, 1903. Serial No. 185,620.

To all whom it may concern:

Be it known that I, HANS C. HANSEN, a citizen of the United States, residing at Newton, in the county of Middlesex and State of Massachusetts, have invented an Improvement in Machines for Trimming Parallel Surfaces, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

The machine to be herein described has been devised for trimming parallel surfaces, the machine having many uses, among which may be stated the trimming parallel of the ends, sides, or edges of electrotypes, metal or wood slugs, or so-called "furniture" for printers' use, matrices, &c., wherein it is desired that the ends, sides, or edges of any article of metal or wood be trimmed exactly parallel.

Figure 1, in side elevation, represents one of my improved trimming-machines; Fig. 2, a plan view thereof; Fig. 3, a section in the line x, Fig. 2. Fig. 4 is a detail showing the holder with material to be trimmed; and Fig. 5, a section in the line x', Fig. 4.

Referring to the drawings, A represents a bed, shown as having parallel guideways A′ and sustained by a suitable stand A^2, the stand having suitable bearings for a shaft having a pulley A^3, that may be driven by a belt or in any other usual way. This shaft is shown as having a drum A^4 to receive a plurality of belts A^5, said drum and belts being represented as the driving means for a plurality of spindles B B′ to be described. Instead, however, of driving these spindles by belts from a drum the spindles may be driven by any other usual or suitable means for imparting a rotary motion from one to another shaft, as by gearing. The spindles shown are mounted, respectively, in suitable bearings a a', rising from carriages b b', each having its under side grooved to slide on the longitudinal parallel ways A′. Said spindles have suitable pulleys c c', over which, as herein shown, are extended the driving-belts A^5, and said spindles are driven in the same direction at any desired speed, that depending upon the size of the drum A^4 with relation to the size of the pulleys c and c'. Each spindle has a cutter-head d d', and the contiguous faces of said head have suitable openings for the reception of one or more like cutters e or e', each tool being clamped to said head in its working adjustment by a clamp-screw 2, (shown by dotted lines in Fig. 3,) said clamp-screw entering a threaded hole in the head, the end of the clamp-screw contacting with the shank of the cutter.

Each carriage b and b' has a clamping device, shown as a hooked rod 3, screw-threaded at its upper end to receive a handled nut 4, and by turning this nut either of the carriages may be clamped on the bed, thus locating the path of movement of the cutters at any desired distance apart. I have also shown the carriage b' as having depending from its bottom a nut 5, that engages the threads of a screw-threaded rod 6, having a handle $7^\times$, and when the handled nut holding that carriage in place is loosened I may adjust that carriage toward and from the carriage b, then stationary, for any desired extent, or, if I prefer, I may release the handled nut of the carriage b and slide the latter on its ways on the bed and then lock it again in its adjusted position.

Each carriage b b' has a track f f' (see Fig. 1,) that crosses the guideways A′ at a distance above the same. The tracks f and f' receive, respectively, transverse slides g g', the slide g at one side of the bed having fixed to it a rod 7, (see Fig. 2,) that enters a hole in the contiguous end of the other slide, g', and the slide g' at the front of the bed, as shown in Fig. 1, has a connected rod 8, that is extended through a hole in the contiguous end of the other slide, g. These rods, one carried by each slide and entering a hole in the other slide, act to permit the spreading apart of these slides and yet insure the exact parallelism of movement of one slide with relation to another and practically making the two slides into one, capable, however, of adjustment one slide toward the other. It will be understood that each slide occupies always exactly the same relation to its carriage under all adjustments of the carriages and slides, and the slides are moved one away from or toward the

other only by a corresponding movement of the carriages.

Each slide g g' has a like work-rest h h', (shown best in Fig. 4,) each rest being attached to its own slide by suitable screws 10. Each work-rest has fixed to it one member 12 of work-holding means, said member being connected with its rest by a screw 13 or otherwise. The other member of the work-holding means comprises a movable jaw m m', both alike, each one carried by a longitudinal slide g g'.

Each member m or m' is attached, as herein represented, by screws 14 with a gib 15 (see Fig. 5) of irregular cross-section, fitted to be moved longitudinally in a groove of the slide g. One end of the gib, as shown in Figs. 3 and 4, has a screw 16, that enters a threaded hole in the boss of a ring 17, that is free to slide in a round hole 18 made in the slide g or g'. The round hole through the slide from one to its opposite end also receives a screw 20, that receives on its threaded part a nut 21, to which is joined one end of a spiral spring 22, the opposite end of said spring being connected with the ring 17 referred to. The screw 20 is extended through a bearing 80, (see Fig. 4,) and when the screw is rotated the nut 21 is moved longitudinally in the hole 18, and therefore by rotating the screw in one or the other direction the stress of the spring 22 and the force with which it pulls on the ring 17, connected with the gib of the member m or m' of the work-holder, may be varied. This screw enables the material to be acted upon to be properly and securely clamped, whatever its thickness and whether one or a plurality of pieces of stock are held together in a bunch, that the opposite ends of one or a plurality of pieces of metal or wood may be trimmed parallel, thus making all of them of exactly the same length. To load up the rest with one or a plurality of pieces of metal or wood, the opposite ends of which are to be trimmed parallel, I engage one or the other of the slides g or g' and move the same laterally together on the bed A, pulling the same, let it be supposed, toward the left from the position Fig. 3. In this movement the lower end of the movable members m' will meet a stop n, there being a like stop for each member that will arrest the movement of said member with its vertical face adjusted outside the path of movement of the trimming-tools, and by continuing the outward movement of the slide while the members m m' are stopped the members 12 may be moved away from the members m m' until ample space is afforded between the clamping members or jaws of the work-holder in which to insert the material to be trimmed, one or more pieces, according to the work to be done. Immediately the work to be trimmed has been laid upon the rests the user of the machine will release his hold upon the slides and will let the springs 22 assume control of the work-holding means, and said springs will thoroughly clamp and hold fixedly the material the opposite ends of which is to be trimmed while the trimming takes place.

It will be understood that the bearings b and b' will be adjusted one with relation to the other at the proper distance apart to provide for trimming parallel the opposite portions of any material to be trimmed and of any length, the length being limited only by the length of the bed A.

In practice it will be understood that the path of movement of the tools will be a little closer together than required for the length of the articles the ends of which are to be trimmed parallel, and consequently said material when forced by the user of the machine pressing upon the slides g g' will be brought into the path of movement of the cutters, and the cutters acting simultaneously on opposite ends of the material being trimmed will trim both ends parallel.

To aid in alining the ends of a number of pieces the ends of which are to be trimmed simultaneously parallel, I have provided one of the carriages, as b, with a gage o, (see Fig. 2,) having a shank o', that may be locked in any position of adjustment of the gage by a set-screw o^2.

Sometimes it is desirable to lock the slides in their outward position in opposition to the stress of the spring 22, while the work to be acted upon is put in position in the work-holder, and to provide for so locking the slides I employ a shaft p, having an eccentric p'. (Shown by dotted lines, Fig. 3.) The eccentric enters a hole in a clamp p^2, that is carried by but vertically movable with relation to one of the carriages, as b. The upper end of this clamp has an inturned end that engages a shoulder of one of the slides, as g. When the shaft p is turned partially, as it may be by pulling outwardly a headed stud p^3, slotted at its inner end to engage a projection extended from said shaft, the eccentric will be turned downwardly from the position Fig. 3, causing the clamp to descend and by its projecting upper end engage the shoulder of the slide and lock it in open position until such time as it may be desired that the spring 22 assume control of the work-holder to properly hold the work to be trimmed.

It will be understood that the slides and carriages will be adjusted longitudinally of the bed A at the proper distances apart to insure trimming parallel the ends of stock and yet leave the stock of exactly the desired length. As a means for readily determining the length of the article whose ends are to be trimmed parallel I have provided the carriages with length-determining means, said means comprising two gages r r', one of which, as r', is controlled as to its position on the slide g' by

a screw s. Whenever, therefore, it is desired to trim stock and leave the same of a predetermined length, I have only to select a piece of material for a pattern of just the desired length or standard and place it between the gages, turning the screw 6 until said gages contact with the ends of the pattern, and then the carriage which was moved will be locked in working position. This done, the machine may be started, and the tools will cut a series of pieces of stock of exactly the same length as the piece used for the pattern.

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

1. In a machine of the class described, two carriages each containing a shaft having a cutter-head provided with a cutter, means to adjust said carriages to place the cutter-heads at desired distances apart, and adjustable rests for the stock the opposite ends of which are to be trimmed parallel by said cutters, and work-holding means connected with said rests including fixed and movable members having parallel faces, and means to adjust said members to adapt them to receive and clamp the stock to be trimmed.

2. In a machine of the class described, carriages movable longitudinally with relation to each other, a shaft mounted in each carriage, each shaft having a cutter-head to carry a trimming-cutter, rests mounted on said carriages, and sustaining work-holding means, said rests and work-holding means being mounted on and movable with said carriages when the latter are being adjusted to act on work of different lengths, and means to adjust the work-holding means transversely of the carriages to clamp and hold the work to be acted upon.

3. In a machine of the class described, a bed, carriages sustained on said bed, shafts in said carriages, each shaft having a cutter-head to carry a trimming-cutter, a slide mounted on each of said carriages and sustaining work-rests and work-holders, said slides being movable with the carriage when adjusting the latter to the length of the stock to be acted upon, and means to adjust said slides transversely with relation to said carriages, substantially as described.

4. In a machine of the class described, a bed, carriages sustained on said bed, shafts in said carriages, each shaft having a cutter-head to carry a trimming-cutter, slides sustaining work-holders, said slides being mounted on said carriages and movable longitudinally therewith, and guide-rods extended respectively from one of said slides and passing through the other of said slides.

5. In a machine of the class described, two carriages each having a transverse track, a rotary shaft mounted in bearings in each of said carriages, a cutter-head carried by each shaft and provided with a cutter, a slide mounted on each transverse track of said carriages, work-holders sustained thereon, and means to adjust said carriages and their work-holders transversely to the longitudinal axes of said shafts.

6. In a machine of the class described, rotatable cutter-heads each having a trimming-cutter, movable carriages sustaining the shafts of said cutter-heads, transverse tracks one on each carriage, gages to coact with a pattern or "standard" of the desired length that the cutter-heads may be located exactly at the proper distance apart to trim parallel the ends of and leave stock exactly of the length of the pattern, and stock-holding means movable on said transverse tracks at right angles to the axis of rotation of the shafts carrying said cutters that the tools acting simultaneously upon opposite ends of the stock may trim the same parallel.

7. In a machine of the class described, cutter-heads each having a trimming-cutter, slides having work-holding means and movable transversely of the axis of rotation of said cutter-heads, springs acting normally to close the work-holder onto the stock, and means to lock the slides in their outward position.

8. In a machine of the class described, rotatable cutter-heads having each a trimming-cutter, clamps having work-holders, each work-holder comprising a jaw movable longitudinally of said clamp, and stops to arrest one of said jaws just outside the path of movement of the trimming-cutters when said slides are moved transversely of the longitudinal axis of the cutter-head into position to receive the stock to be acted upon, the remaining member of the clamp being capable of being moved farther to separate the members of the clamp for the proper distance to receive the work, and a spring to cause the members of the clamp to embrace and hold the work.

9. In a machine of the class described, two carriages, tracks to sustain the same, each carriage having a transverse track, a shaft mounted in each carriage and having a cutting-tool, slides mounted on said transverse tracks, means for slidably connecting said slides, one with the other, and work-rests sustained by and movable with said slides transversely of the cutter-carrying shafts.

10. In a machine of the class described, two carriages, tracks to sustain the same, each carriage having a transverse track, a shaft mounted in each carriage and having a cutting-tool, slides mounted on said transverse tracks, means for slidably connecting said slides one with the other, and work-rests sustained by and movable with said slides transversely of the cutter-carrying shafts, and means to clamp the work sustained on said work-rests.

11. In a machine of the class described, a plurality of cutter-heads each having a cutter, and

two slides, parallel tracks sustaining said slides, each slide having a connected rod extended through the other slide.

12. In a machine of the class described, a plurality of cutter-heads each having a cutter, and two slides, parallel tracks sustaining said slides, each slide having a connected rod extended through the other slide, a work-rest and jaw fixed to each slide, and a movable spring-held jaw also sustained by each slide.

13. In a machine of the class described, a plurality of cutter-heads each having a cutter, and two slides, parallel tracks sustaining said slides, each slide having a connected rod extended through the other slide, a work-rest and jaw fixed to each slide, and a movable spring-held jaw also sustained by each slide, and stops to arrest the outward movement of the spring-held jaws before the completion of the outward movement of said slides and their fixed jaws.

14. In a machine of the class described, a plurality of cutter-heads each having a cutter, and two slides, parallel tracks sustaining said slides, each slide having a connected rod extended through the other slide, and means to clamp said slides in position to receive the work to be trimmed.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HANS C. HANSEN.

Witnesses:
GEO. W. GREGORY,
EDITH M. STODDARD.