No. 710,441. Patented Oct. 7, 1902.

A. J. DIESCHER.

APPARATUS FOR SLITTING AND PILING SHEETS.

(Application filed Feb. 4, 1901.)

(No Model.) 3 Sheets—Sheet 1.

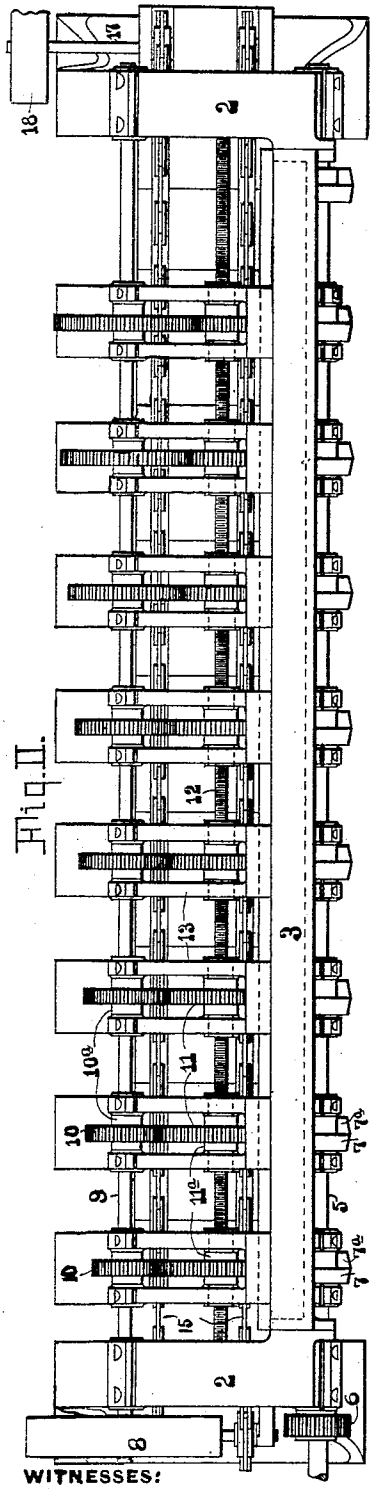


Fig. II.

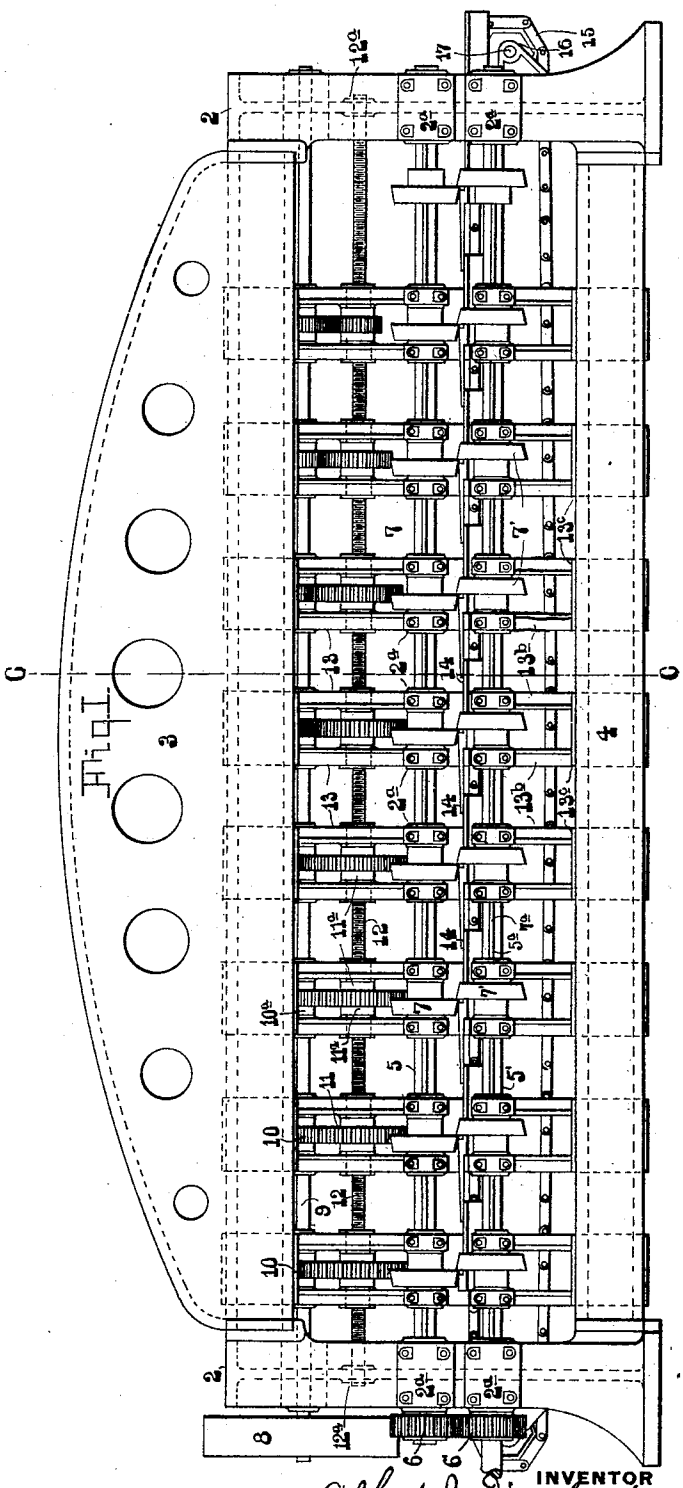


Fig. I.

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Fig. IV.

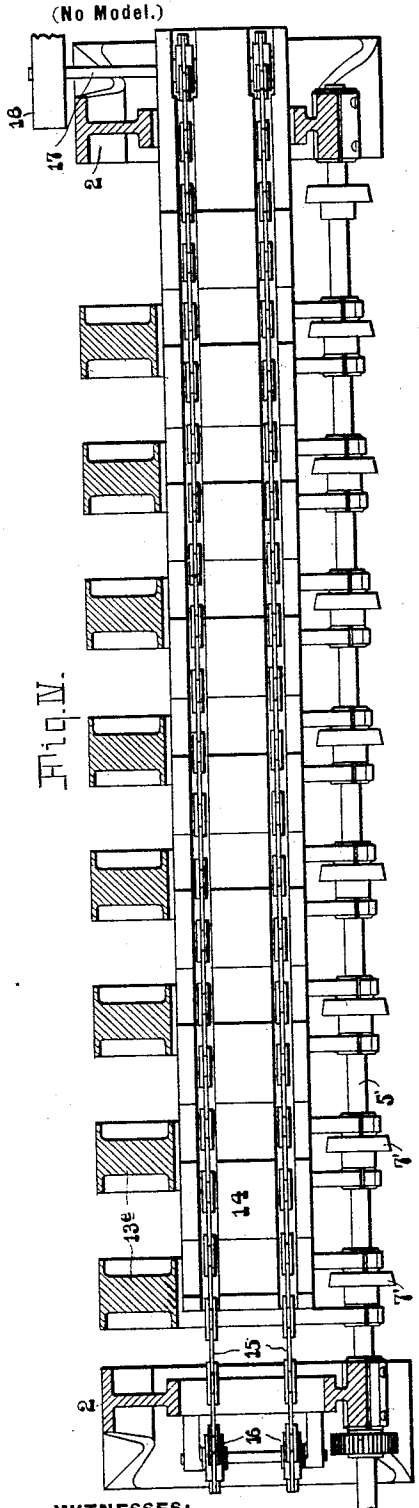
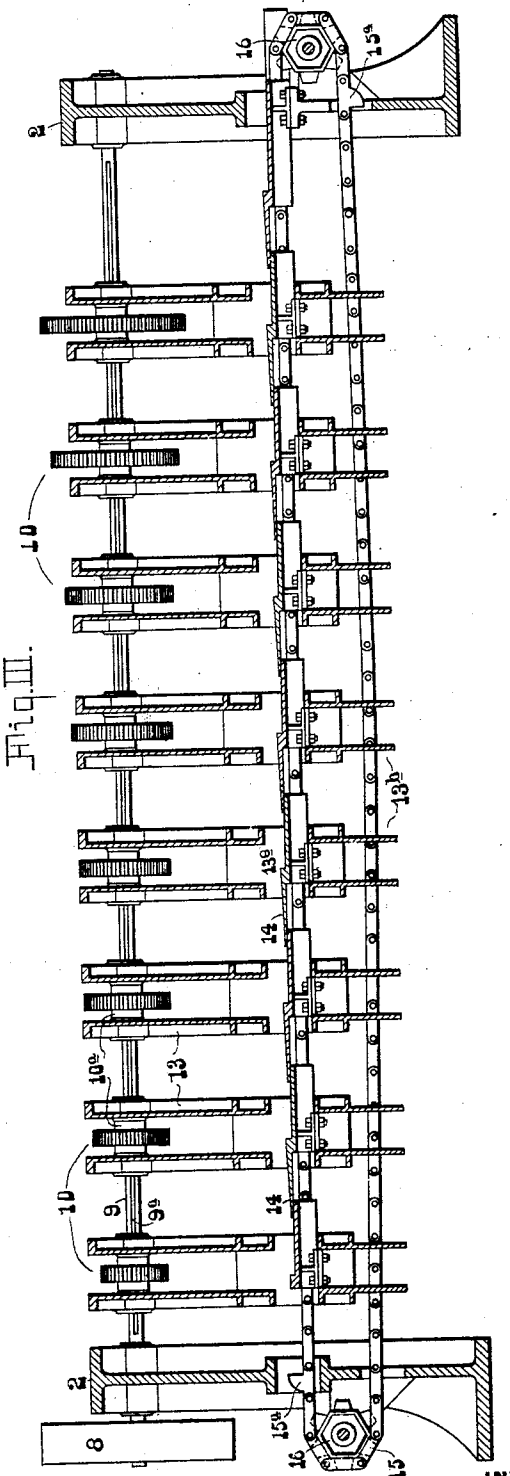


Fig. III.



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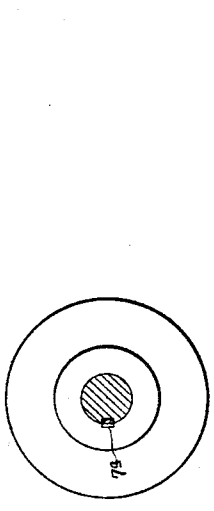


Fig. VII.

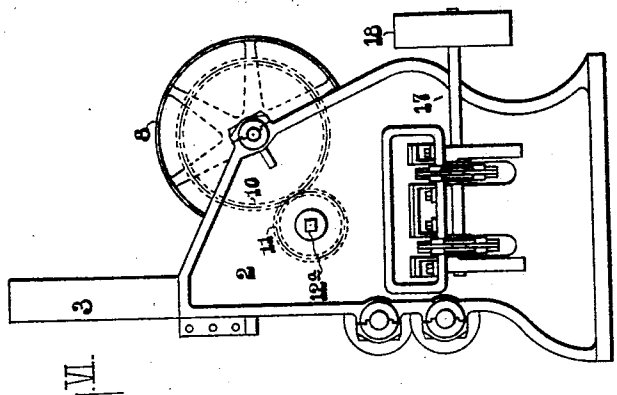


Fig. VI.

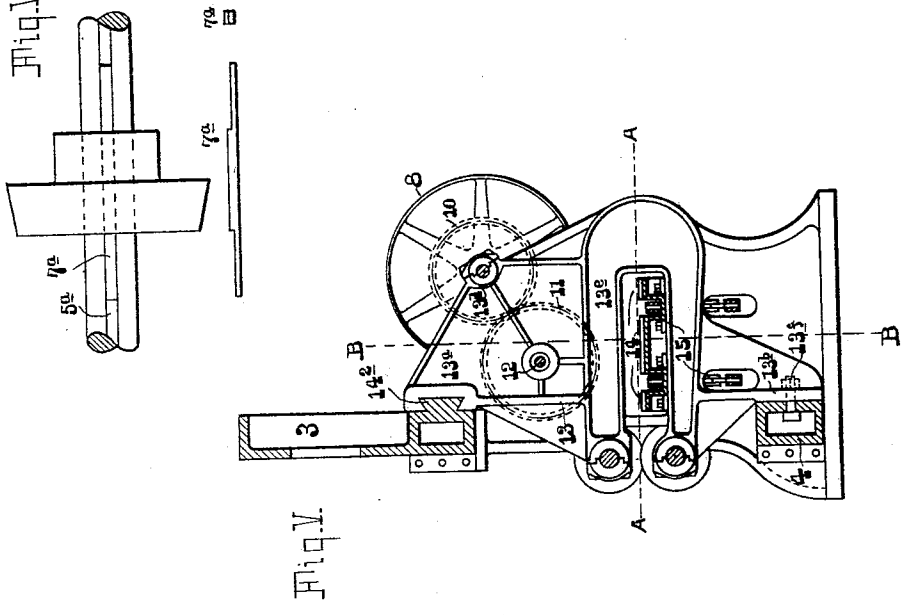


Fig. V.

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UNITED STATES PATENT OFFICE.

ALFRED J. DIESCHER, OF PITTSBURG, PENNSYLVANIA.

APPARATUS FOR SLITTING AND PILING SHEETS.

SPECIFICATION forming part of Letters Patent No. 710,441, dated October 7, 1902.

Application filed February 4, 1901. Serial No. 45,828. (No model.)

To all whom it may concern:

Be it known that I, ALFRED J. DIESCHER, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented or discovered new and useful Improvements in Apparatus for Slitting and Piling Sheets, of which the following is a specification.

In the accompanying drawings, which make part of this specification, Figure I is a side elevation of my slitting and piling machine. Fig. II is a plan of the same. Fig. III is a vertical section on line B B of Fig. V. Fig. IV is a horizontal section on line A A of Fig. V. Fig. V is a vertical section on line C C of Fig. I, and Fig. VI is an end view of the machine. Fig. VII is a detail view showing a method of mounting a shear on the shear-shaft.

The purposes of my invention, most generally stated, are to devise a slitting-machine for cutting up plates or sheets into sections; second, mechanism whereby the machine is rendered adjustable to cut sections of greater or less length, and, third, piling mechanism for assembling in a pack such severed sections. I accomplish this general result by means of the apparatus now described in detail.

In the accompanying drawings, which make part of this specification, 2 2 are duplicate end housings, as seen most clearly in Fig. VI. 3 is a top beam, and 4 a bottom beam, which, with the housings, constitute the frame of the machine.

I will first describe the mechanism for shearing. Mounted in suitable boxes 2^a 2^a on the front of the end housings and on the sliding housings, hereinafter described, are two longitudinal parallel shafts 5 and 5′, one above the other and driven by gear 6 6′. Each of these shafts bears a series of rotary cutters 7 7 and 7′ 7′, each pair constituting a rotary shear. All the cutters are mounted on their respective shafts so as to be capable of a longitudinal movement thereon for setting the shears at any required distance apart. This is most readily done by providing a longitudinal keyway in each shaft, as seen in Fig. VII at 5^a, and making the cutters with a key to fit said way, as shown at 7^a, Fig. VII. The cutters are kept from slipping by fitting neatly in between the boxes 2^a 2^a on the sliding housings.

The next subdivision of mechanism is that for adjusting the length of the cuts or for spacing the cutters. This is done as follows: 8 is one of two reverse-pulleys driving shaft 9, having keyway 9^a, on which are set gear-wheels 10 10 of regular increasing diameter capable of longitudinal movement along shaft 9 and meshing with the nut-gears 11 11, engaging with worm 12, set in square bearings 12^a 12^a in the housings 2 2. Suitable collars 10^a 10^a and 11^a 11^a on their respective gears 10 10 and 11 11 are fitted in between the parallel sides of the sliding housings 13 13, which have, as seen in Fig. V, upward extensions 13^a 13^a to engage the dovetail 14^2 on the top beam 3, downward extensions 13^b 13^b, which by flanges 13^c 13^c engage and slide upon the bottom beam 4, rearward extensions 13^d 13^d, which act as bearings for the shaft and worm 12, and central horseshoe-shaped sections 13^e 13^e, within which latter are assembled the piling-table and feeding-chains, hereinafter described. The several pairs of gears are so calculated and cut that revolutions on the worm 12, while increasing or decreasing, as may be required, the distance between the pairs of cutters, shall do so uniformly, so that they are always the same relative distances apart. For instance, while one revolution of the shaft 9 may advance the first nut-gear one thread on the worm 12 it will advance the next nut two threads, the third three threads, &c. The sliding housings advance with the nut-gears, which are set neatly in the forks of said housings, thus proportionately advancing the cutters. The range of cut of the machine is therefore only limited by the length of the movements possible on the shafts 5 5′. After the housings are adjusted at the proper distances they are clamped there by set-screws 13^f 13^f to the lower beam 4.

The third subdivision of the mechanism is the piling feature. As the sheets are pushed through the machine from front to back and drawn through by the action of the cutters the cut pieces fall upon a receiving-table 14

of peculiar construction. This table extends for the length of the machine through the series of horseshoes 13^e 13^e in the sliding housings 13 13. As seen in Figs. III and IV, this table consists of a series of pairs of flat and inclined faces following each other, forming a drop at the end of each pair. The said faces are attached to the sliding housings and are adjustable with them. The tapered or inclined part of each face lies upon a horizontal portion of its neighboring face, so that when the faces slide back and forth with the housings one face slides at one end on a neighboring face. The above-mentioned pairs of faces are so located with reference to the shears that each severed portion will fall upon both faces of a pair and with the forward end of one section slightly higher than the rear end of the preceding section, so as to easily mount and ride over the preceding section when given a longitudinal motion. This motion is given to the sections by the lugs 15^a 15^a, mounted on the feeding-chains 15 15, moved by sprocket-wheels 16 16, driven from shaft 17 and pulley 18. These sprocket-chains run in recesses parallel to and a little below the longitudinal edges of table 14, said table being somewhat narrower than the width of the sheets, so as to permit the lugs 15^a 15^a engaging with the rear ends of said sheets.

After the sections are severed and the chain commences to move the rear end of section one is engaged by lugs 15^a 15^a and pushed over and upon section two. The rear ends of the combined sections one and two are in like manner engaged and said sections superposed in like manner upon section three, and so on until the entire pack is formed. The pack may then be carried by the chain conveyer or in any other way to any desired spot.

The operation of the entire assembled machine, briefly stated, would be as follows: The shears having been set as previously described to cut the desired lengths, the sheet is pushed longitudinally until it comes against some definite stop at a fixed point. (Not shown.) The sheet is then fed horizontally to the series of shears and passing through the same falls upon the table and the successive sections are gathered up and piled and carried forward, as described in detail heretofore.

The shearing machinery is adapted to cut up plates, sheets, or other like material, while the piling machinery can be used for any flat article.

Many changes in form, proportion, and arrangement can be readily made by the skilled artisans in the mechanism disclosed.

Another form of shearing mechanism may be used in connection with the piling mechanism, or vice versa, or each used singly without the other.

Having described my invention, I claim—

1. In a slitting-machine, the combination of a frame; a pair of rotary shafts supported in said frame; a series of cutters mounted on each of said shafts; housings adapted to move longitudinally in said frame and rotary feeding mechanism for adjusting the cutters mounted in and traveling with said movable housings.

2. In a slitting-machine, the combination of a frame; a pair of rotary shafts supported in said frame; a series of cutters mounted on each of said shafts and capable of a longitudinal adjustment thereon; housings adapted to move longitudinally in said frame and rotary feeding mechanism for adjusting the cutters mounted in and traveling with said movable housings.

3. In a slitting-machine, the combination of a frame; a pair of rotary shafts supported in said frame; a series of cutters mounted on each of said shafts and capable of a longitudinal adjustment thereon; housings adapted to move longitudinally in said frame; and rotary gearing for adjusting the cutters mounted in and traveling with said movable housings.

4. In a slitting-machine, the combination of a frame; a series of rotary cutters supported in said frame; a series of housings adapted to move longitudinally in said frame; and a series of intermeshing pairs of gear-wheels mounted in said housings for adjusting said cutters.

5. In a slitting-machine, the combination of a frame; a series of rotary cutters supported in said frame; a series of housings adapted to move longitudinally in said frame; and a series of pairs of gears having an increasing ratio mounted in said housings for adjusting said cutters.

6. In a slitting-machine, the combination of a frame; a series of rotary cutters supported in said frame; a series of housings adapted to move longitudinally in said frame and a series of pairs of gears having an increasing ratio mounted in said housings and a worm upon which one of each gear of a pair turns as a nut for adjusting said cutters.

7. The combination of a series of shears, a piling-table having a series of adjustable inclined surfaces each terminating in a drop formed thereon and an endless traveler for moving the sheared sections along said table.

8. In piling mechanism, the combination of a table-support, having a series of adjustable stepped surfaces formed thereon and an endless traveler for moving longitudinally along said support the articles to be piled.

9. In piling mechanism, the combination of a table or support, having a series of pairs of alternate flat and inclined adjustable surfaces each terminating in a drop formed thereon and an endless traveler for moving longitudinally along said table the articles to be piled.

10. In piling mechanism, the combination of a table, having a series of adjustable in-

clined surfaces each terminating in a drop formed thereon and endless side feeding-chains running longitudinally of said table to move and pile the articles thereon.

11. The combination of a series of shears, a piling-table having a series of adjustable inclined surfaces each terminating in a drop, and continually-operating means for automatically moving the sheared sections along the table.

Signed at Pittsburg this 30th day of January, 1901.

ALFRED J. DIESCHER.

Witnesses:
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