Jan. 2, 1923.

1,440,975

E. W. DUSTON.
STRIP METAL FILING MACHINE.
FILED FEB. 25, 1922.

4 SHEETS-SHEET 1

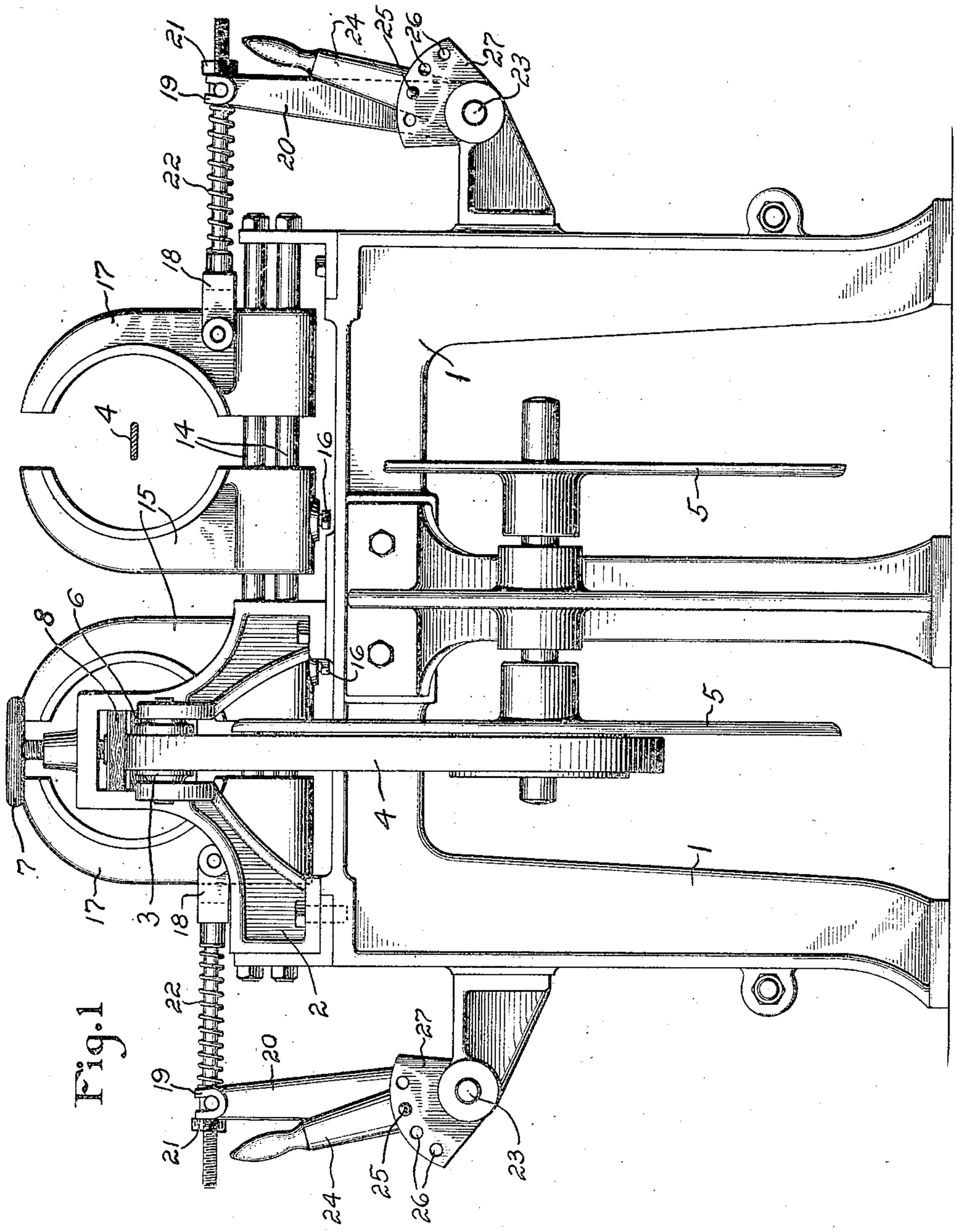

Fig. 1

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4 SHEETS-SHEET 2

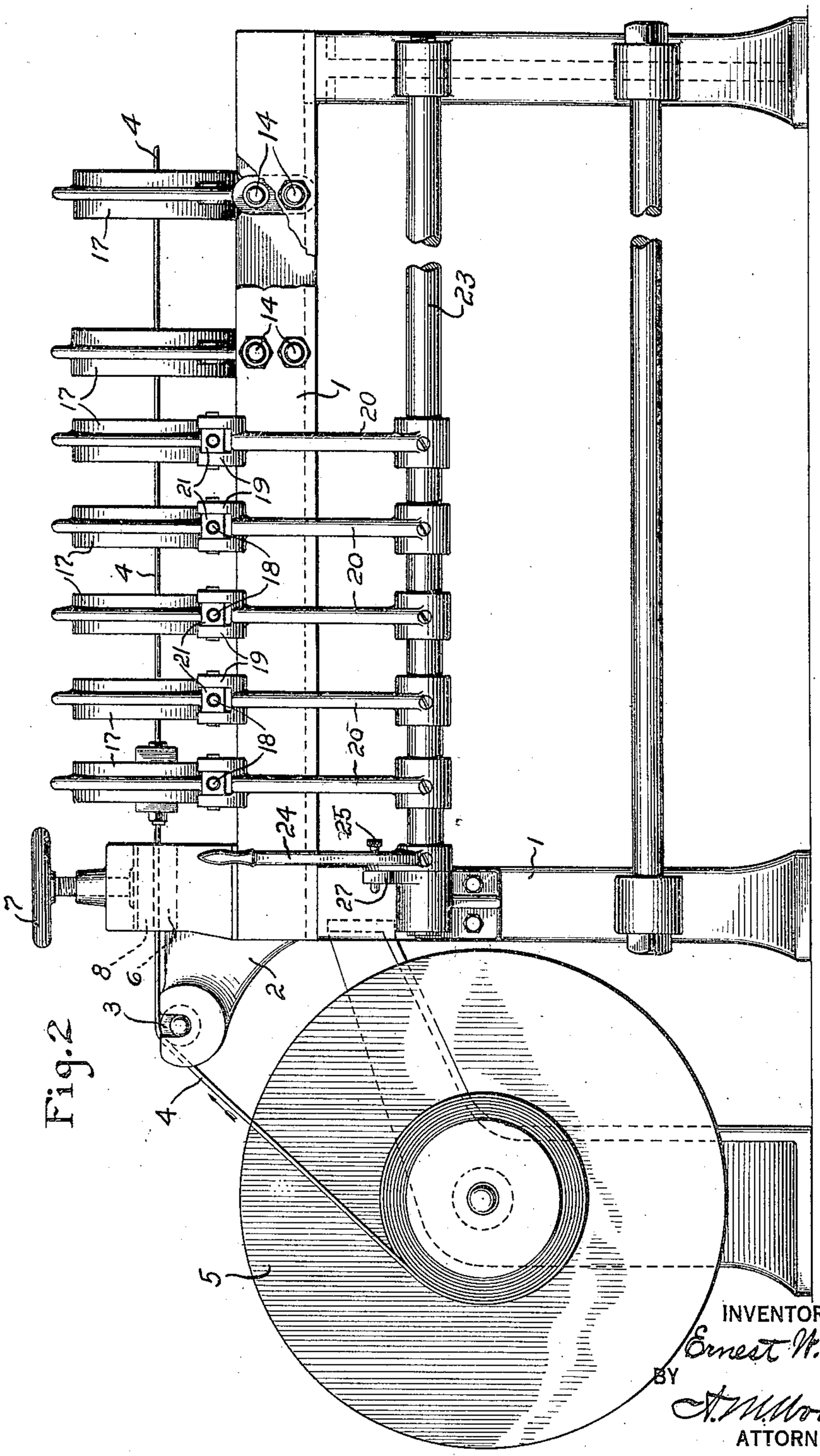

Fig. 2

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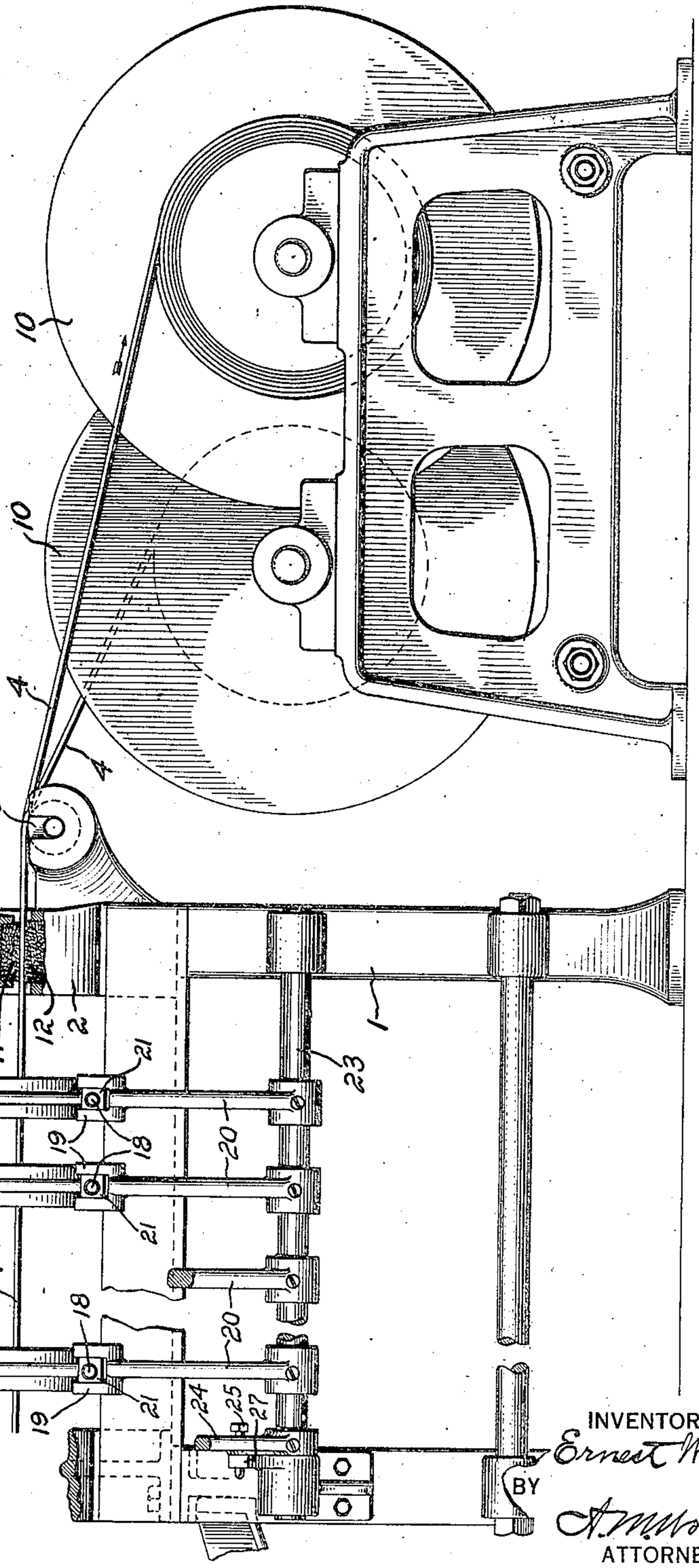
4 SHEETS-SHEET 3

Fig. 3



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4 SHEETS-SHEET 4

Fig. 4

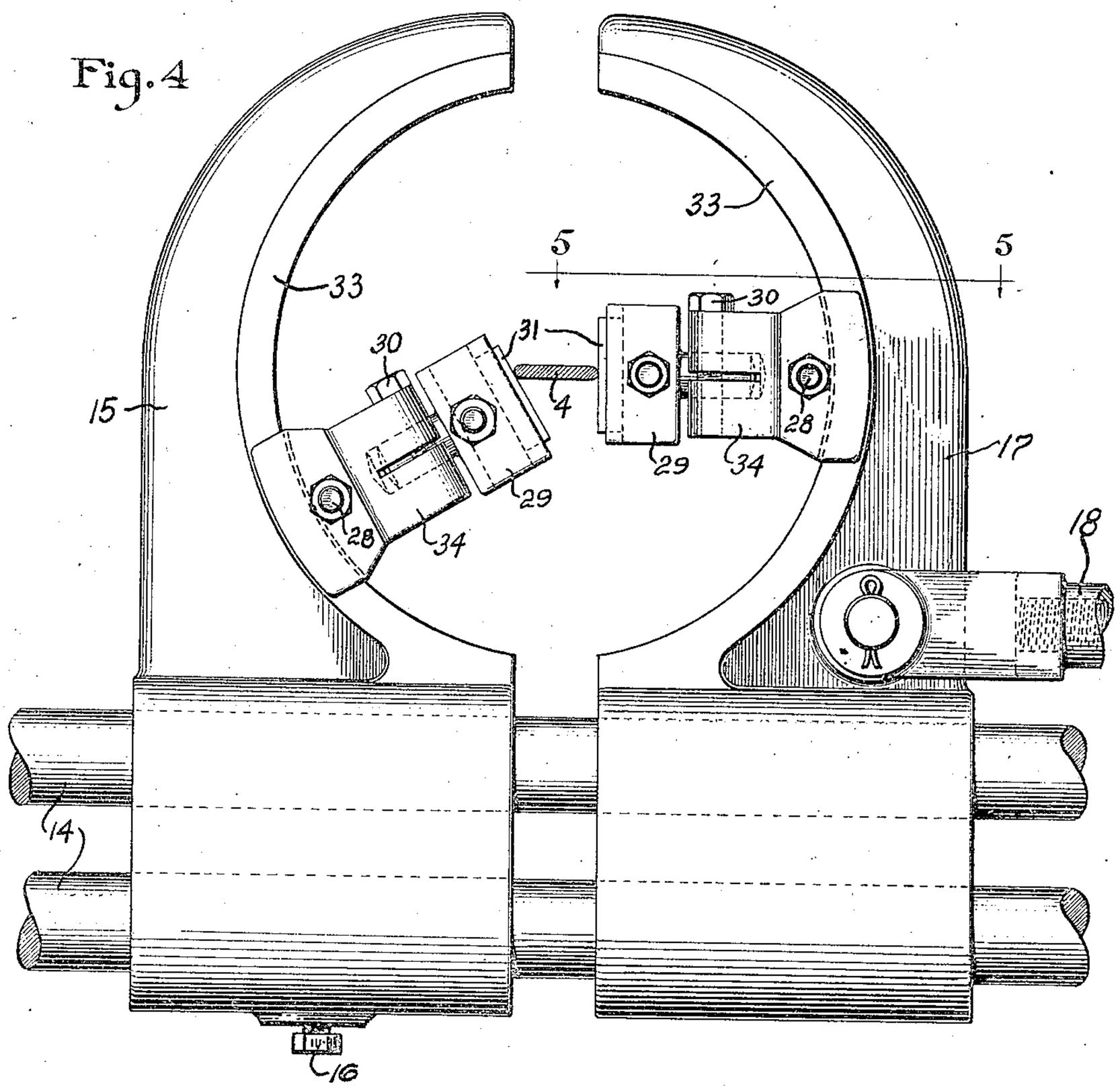
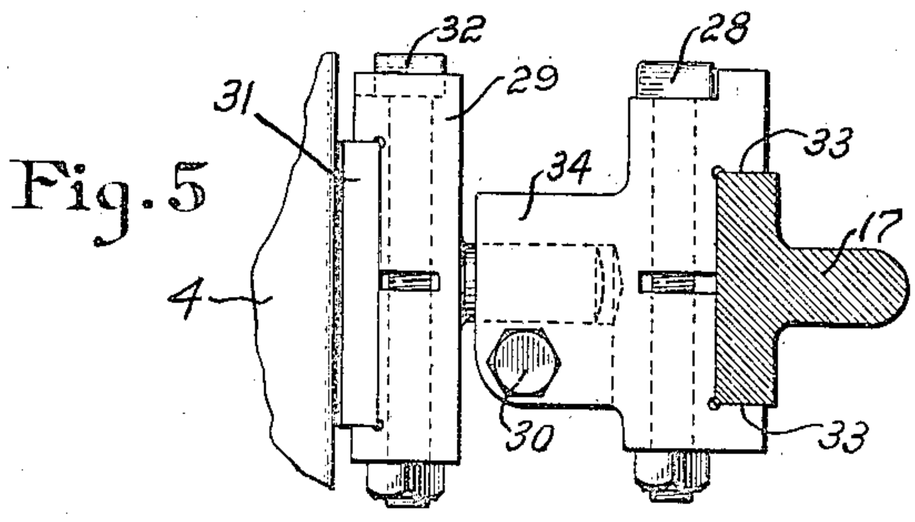


Fig. 5



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Patented Jan. 2, 1923. 1,440,975

UNITED STATES PATENT OFFICE.

ERNEST W. DUSTON, OF LAKEWOOD, OHIO, ASSIGNOR TO E. W. BLISS COMPANY, OF BROOKLYN, NEW YORK, A CORPORATION OF MARYLAND.

STRIP-METAL-FILING MACHINE.

Application filed February 25, 1922. Serial No. 539,190.

To all whom it may concern:

Be it known that I, ERNEST W. DUSTON, a citizen of the United States, residing at 1539 Riverside Road, Lakewood, county of Cuyahoga, State of Ohio, have invented an Improvement in Strip-Metal-Filing Machines, of which the following is a specification.

This invention relates to strip metal filing machines, and has for its object to provide a machine wherein long strips of flat metal, as for example spring steel for motors, may be filed to a uniform width and cross section. Considering cold rolled strip steel for instance, this material is supposed to be furnished by the manufacturer to a reasonably uniformity of width and cross section, but in actual experience it is found that there is considerable variation both in width and in cross section. For many purposes, including the manufacture of flat coil springs for motors, greater uniformity is required, and also uniformity of cross section. Generally it is desired to have the edges of this material of uniformly rounded or oval contour, and I have devised the machine shown in the accompanying drawings for filing such material to the width and contour desired.

The machine consists generally of a frame carrying a reel for the material to be filed which is led therefrom through a number of filing heads each carrying one or more files disposed at desired relative angles to the edge or edges of the strip, together with means at the other end for pulling the strip through the heads in the desired tension. The files in each head are relatively adjustable according to the work to be done, and may be of graduated degrees of fineness, so that the strip will be delivered by the machine and finished in the desired form much more rapidly and economically than has heretofore been accomplished.

In the accompanying drawings,

Figure 1 is an end view of a double machine for filing two strips at once,

Figure 2 is a side view showing the entering end,

Figure 3 is a side view showing the discharge end,

Figure 4 is a detail of one of the filing heads, and

Figure 5 is a section on the lines 5—5 of Figure 4.

1 represents the frame of the machine carrying at one end the standard 2 provided with a guide roller 3 over which the strip 4 runs from the reel 5. The standard 2 is provided with upper and lower resistance blocks 6, 8, whose pressure is controlled by hand wheel 7 to cause the strip to be placed in tension when drawn through the machine by the power driven winding up reel 10. See Figure 3. The discharge side of the machine is provided with felt pads 11, 12, whose pressure is controlled by hand wheel 13, which act to wipe and polish the strip as it leaves the machine.

Each filing head is mounted on transverse rods 14 and consists of a jaw 15 adjustable on the rods by set screw 16 and a slidable resiliently pressed jaw 17. The jaw 17 is connected by links 18 sliding through forks 19 at the ends of levers 20 and adjustable relatively to the levers 20 by nut 21 to control the pressure of spring 22, the object being to enable the entire head 17 in case of a wide or unusually hard place on the strip to yield outwardly against the compression of spring 22, while nut 21 holds the entire head from sliding in too far. The levers 20 are mounted on longitudinal rock shaft 23 which is rocked by hand lever 24 provided with latch screw 25 engaging in holes 26 in segment 27. The adjustment by lever 24 gives a rough adjustment while adjustment by nut 21 gives a fine adjustment with just the desired amount of spring pressure on the jaw 17. The jaws 15, 17, are each provided with circular tracks 33 to which are slidably clamped slides 34 by means of bolts 28. The slides 34 are provided with split sockets in which the file supports 29 are rotatably mounted and clamped by bolts 30. The file supports 29 are also split to carry the files 31 which are clamped therein by bolts 32.

As shown in Figure 4, two of these heads cooperate being preferably set at angles to each other as shown, and each successive head will have its two files set at different angles so that if the strip has passed a number of heads, each has been filed to a round or the desired contour on one or both edges without at any time being kinked or twisted. Thus both edges can be filed alike or one can be flat and the other rounded or the flat side can be of any desired angle to the face

of the strip or even the edges can be filed to angles. Also, the files can be progressively of increasing fineness as the strip passes through the machine so that the final touches will be very light and very fine, this also being assisted by the capacity for adjusting the yielding jaw of each head. In some cases the files can be replaced by guide plates or instead of files it might be desired to use polishing stones, I intending to include herein within the term files any device having the function of polishing the surface while including its function as a guide resisting the thrust from the other side. Different weights and thicknesses of strips can be accommodated by relative spacing of the jaws, independently of the adjustment for pressure effected by nut 21. The spacing of the jaws at the top will be useful in inserting and withdrawing the strip in case it is not desired to thread it through the succession of heads, while the mounting of the file or guide supports on circular tracks on each jaw furnishes a convenient means for adjusting the angularity of the files relatively to the strip.

Various modifications and changes may be made in the specific construction described without departing from the scope of the appended claims.

What I claim is:

1. In a machine for filing a strip, means for feeding the strip under tension, filing means acting on the edge thereof, means opposite the filing means for slidably contacting with the opposite edge of the strip, one of said means being yieldable, and means for supporting the filing means arranged to allow angular adjustment of said means relative to the plane of the strip.

2. In a machine for filing a strip, means for feeding the strip under tension, oppositely disposed stationary files, and means for supporting said files arranged to allow angular adjustment of said files relative to the plane of the strip.

3. In a machine for filing a strip, means for feeding the strip, opposed curved jaws each carrying a file contacting with an edge of the strip, and means for mounting the files so that they may be adjusted on the curve of the jaws.

4. In a machine for filing a strip, means for feeding the strip under tension, and edge files arranged to engage said strip in succession, said files being of progressively increasing fineness.

5. In a machine for filing a strip, means for feeding the strip under tension, and pairs of opposed edge files arranged to engage said strip in succession and at different angles relative to the strip, said files being of progressively increasing fineness.

6. In a machine for filing a strip, means for feeding the strip under tension, and edge files arranged to engage said strip in succession and at different angles relative to the strip.

7. In a machine for filing a strip, strip feeding means and a pair of jaws each adapted to carry a file, one jaw being yieldingly pressed toward the other, said files being circularly adjustable relatively to the strip.

8. In a machine for filing a strip, a pair of jaws, one being fixed and the other yieldingly pressed inward toward the other, each jaw having a track, and a head adjustable on the track.

9. In a machine for filing a strip, pairs of filing heads each carrying a file and so arranged that the files engage the strip in succession, the files of each pair being so adjustable relatively to the strip that they may be arranged to operate on different portions of the strip edges, and means for pulling a strip through said heads in edge contact with the files.

10. In a machine for filing a strip, a transverse support carrying a jaw having a curved track, a file adjustably secured on the track, a cooperating jaw slidable on the support and having a curved track, means for adjustably securing a file on said track, and means for controlling the pressure of the sliding jaw.

11. In a machine for filing a strip, a transverse support carrying a jaw, a file means for adjustably securing the file on the jaw, a cooperating jaw slidable on the support, means for adjustably securing a file on said jaw, the adjustable securing means for the files being arranged to allow angular adjustment of the files relatively to the strip, a spring pressing one jaw toward the other, and means for varying the spacing of the jaws independently of the spring.

In testimony whereof I affix my signature.

ERNEST W. DUSTON.