No. 724,519. PATENTED APR. 7, 1903.

C. T. TARPENNING.

SHEET METAL BENDING MACHINE.

APPLICATION FILED MAR. 10, 1902.

NO MODEL. 3 SHEETS—SHEET 1.

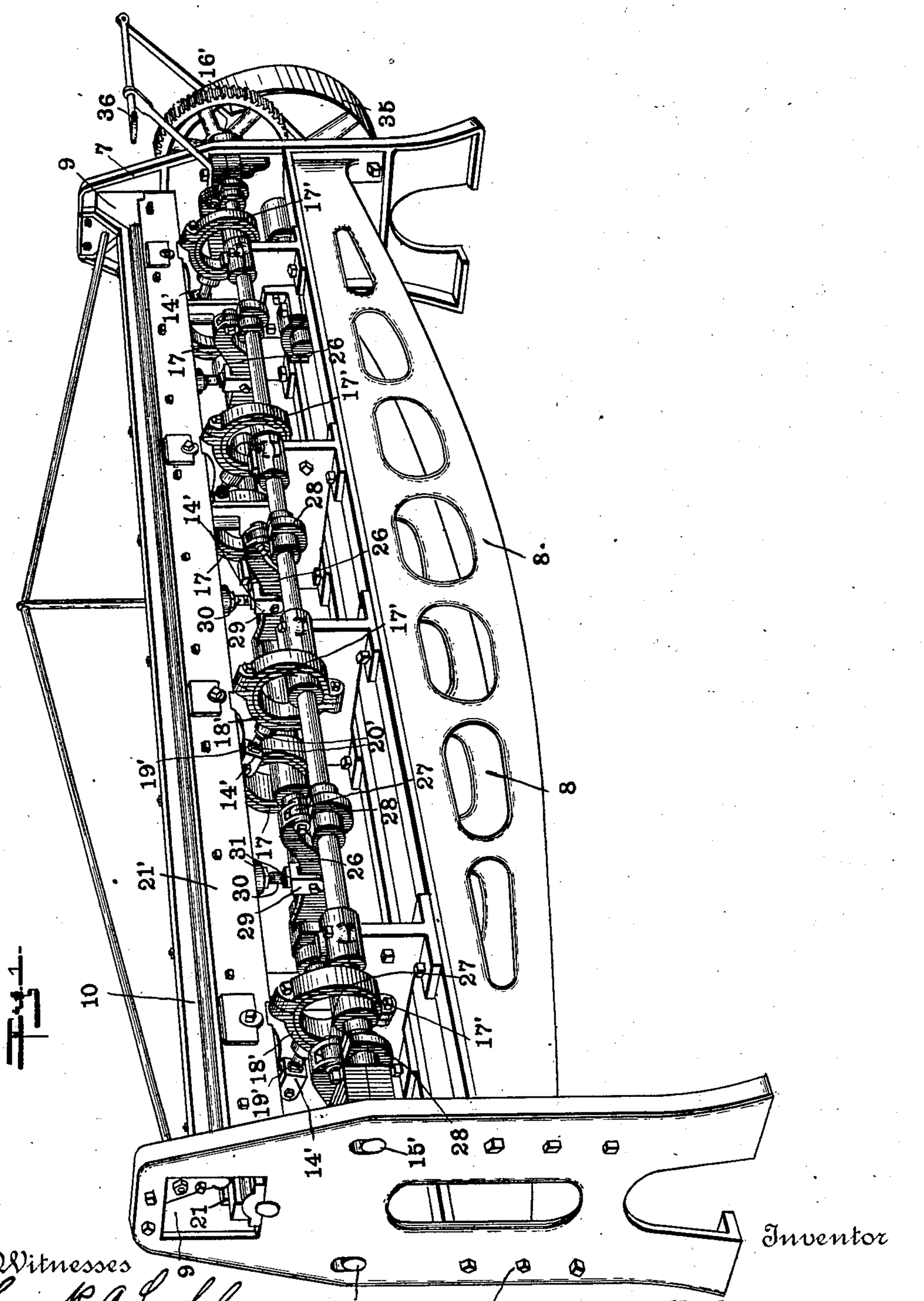

Fig. 1.

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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NO MODEL. 3 SHEETS—SHEET 2.

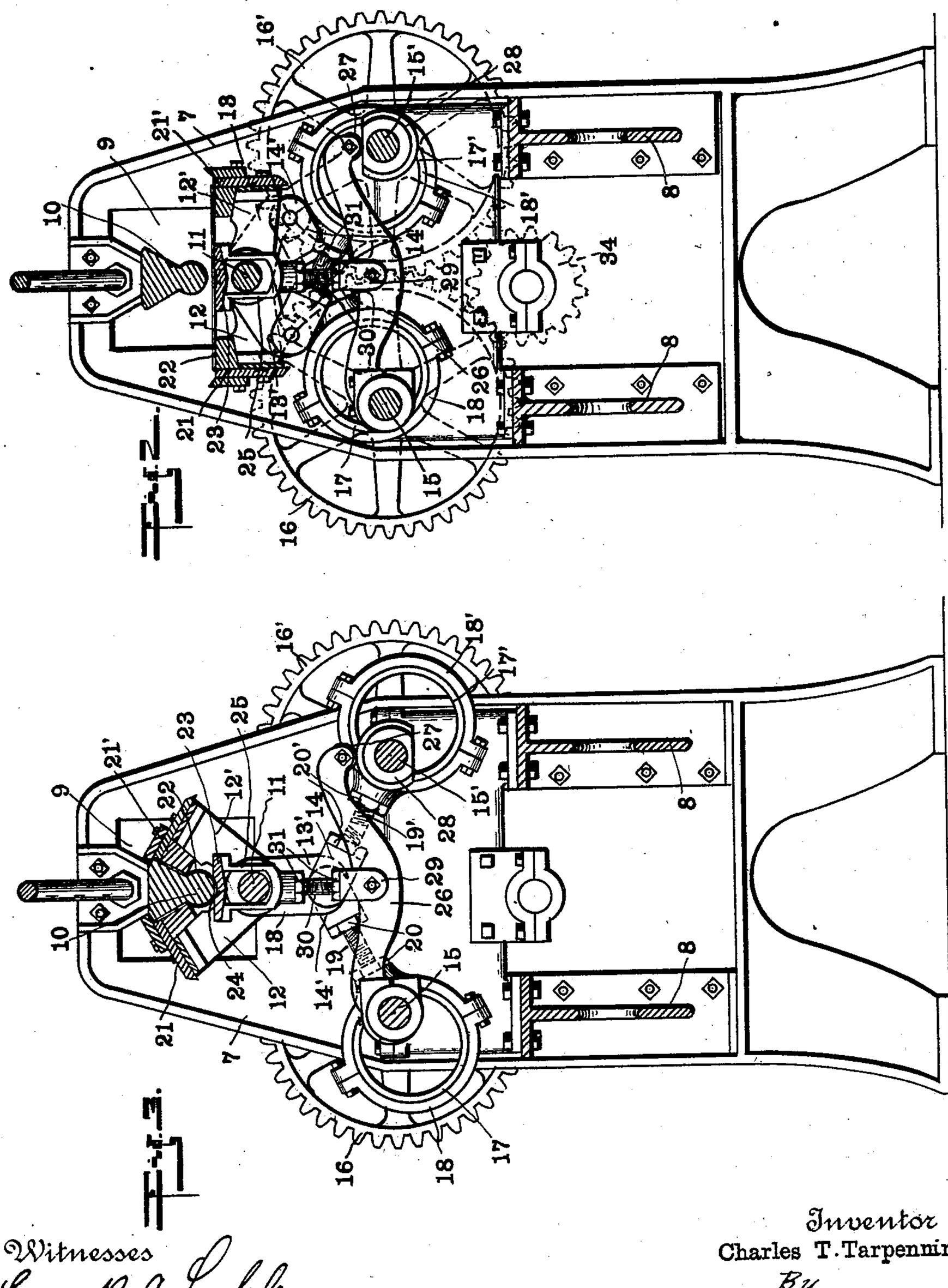

Fig. 2.

Fig. 3.

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NO MODEL. 3 SHEETS—SHEET 3.

Fig. 6.

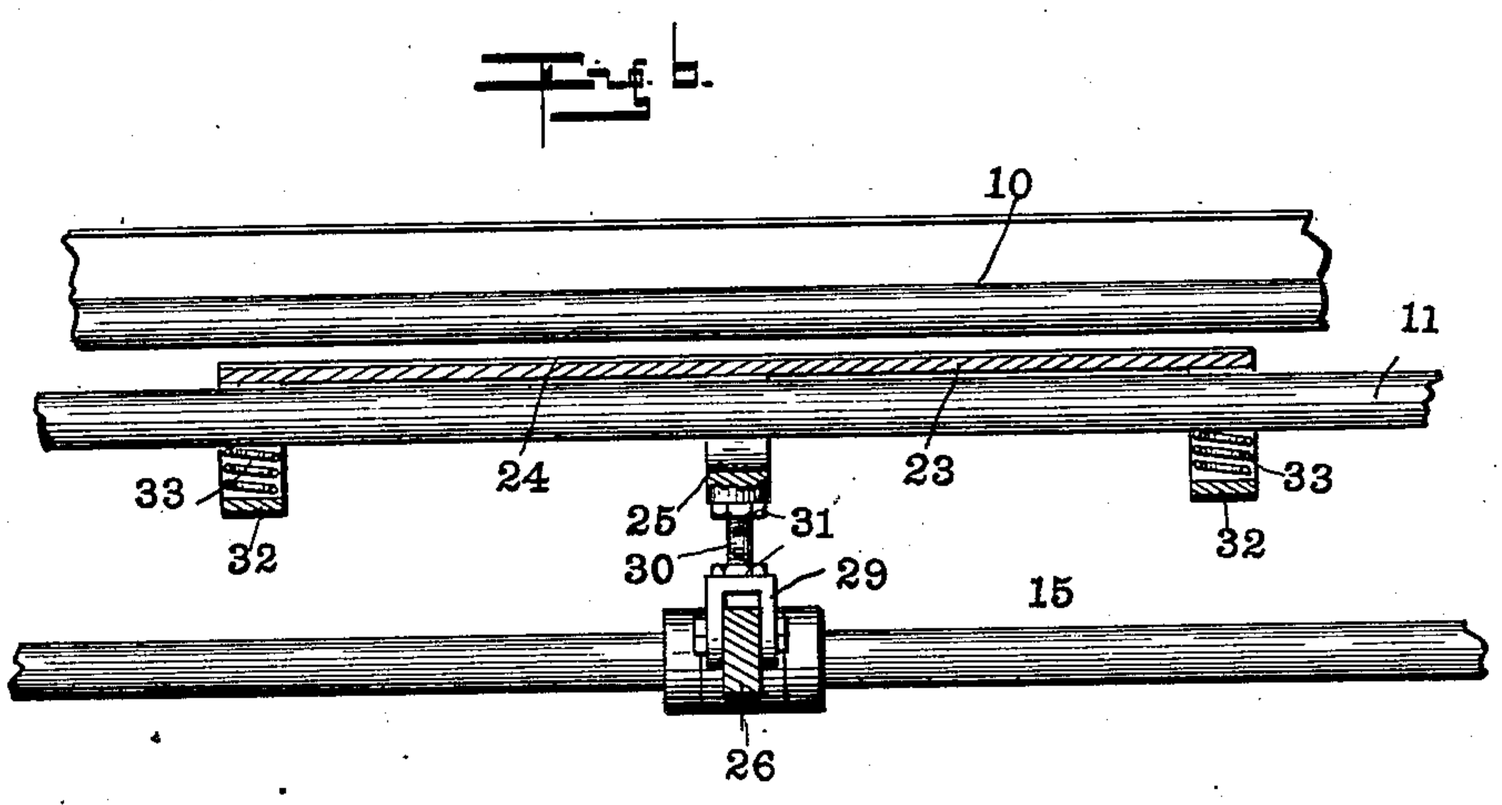


Fig. 4.

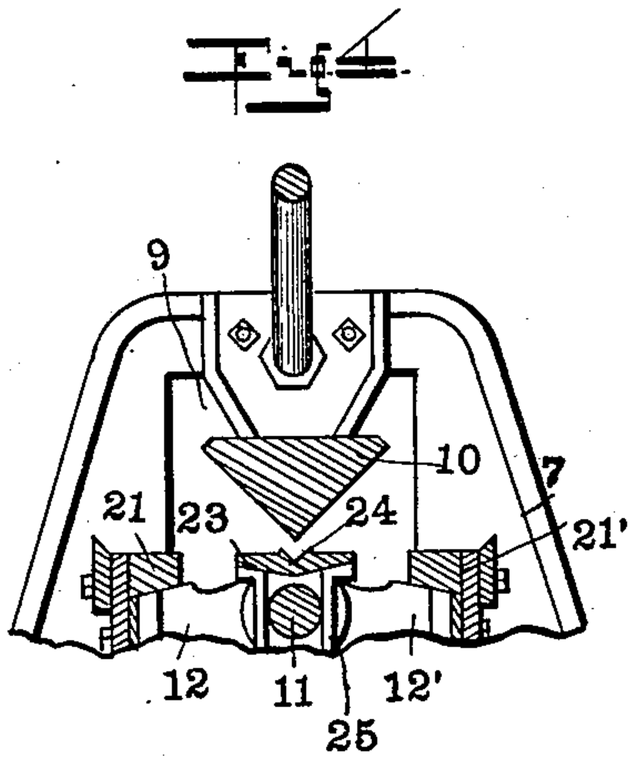
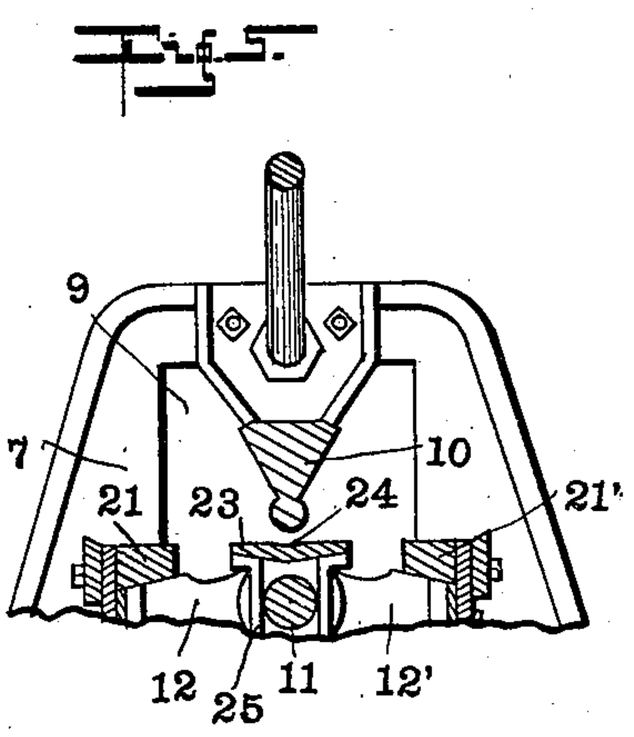


Fig. 5.



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UNITED STATES PATENT OFFICE.

CHARLES T. TARPENNING, OF INDIANAPOLIS, INDIANA, ASSIGNOR OF ONE-HALF TO LOUIS KOSS, OF INDIANAPOLIS, INDIANA.

SHEET-METAL-BENDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 724,519, dated April 7, 1903.

Application filed March 10, 1902. Serial No. 97,398. (No model.)

To all whom it may concern.

Be it known that I, CHARLES T. TARPENNING, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented a new and useful Sheet-Metal-Bending Machine, of which the following is a specification.

My invention relates to an improvement in machines for bending sheet metal into desired forms, especially into saddle-pieces for roofs.

The object of my invention is to provide a machine easily and quickly operated and of such character that different forms may be produced and also such that the metal may be bent uniformly and accurately and when bent may be easily removed from the machine.

The accompanying drawings illustrate my invention.

Figure 1 is a perspective view of the entire machine. Fig. 2 is a transverse vertical section with the jaws in receiving position. Fig. 3 is a similar section with the jaws in closed position. Figs. 4 and 5 are partial transverse sections of modified forms of templets and coöperating jaws. Fig. 6 is a partial longitudinal section.

In the drawings, 7 7 indicate a pair of uprights or standards connected by suitable longitudinal members 8 8, each of said uprights having an opening 9 formed therein near its upper end. Detachably secured to uprights 7 adjacent openings 9 is a bar-templet 10, which is given a cross-section like that to which the sheet metal is to be bent. In practice the machine will be supplied with several templets of different shapes, and any one may be secured in position.

Arranged immediately beneath templet 10 is a rod 11, which extends between the two uprights 7. Pivoted upon rod 11 are several pairs of levers 12 and 12′. Levers 12 and 12′ are provided with operating-arms 13 and 13′, respectively, which are preferably arranged at a slight angle to their respective levers, as shown in Figs. 2 and 3. Pivoted to the ends of arms 13 and 13′ are blocks 14 and 14′, respectively. Arranged parallel to rod 11, at some distance below it, are two shafts 15 and 15′, which shafts are connected, so as to rotate in opposite directions, by means of meshing gears 16 and 16′. Secured to shaft 15 is a series of eccentrics 17, one adjacent each pair of levers 12 and 12′, and secured to shaft 15′ is a similarly-arranged series of eccentrics 17′. Mounted upon each eccentric 17 is an eccentric-strap 18, each of which is connected by a right-and-left screw 19 to one of the blocks 14, the strap-arm thus formed by screw 19 and block 14 being adjustable in length by the movement of the screw 19, the parts being held in adjusted position by means of check-nuts 20. Each eccentric 17′ is provided with an eccentric-strap 18′, each of which is connected by a screw 19′ with one of the blocks 14′, the same being held in position by check-nuts 20′. Secured to the outer ends of the several levers 12 is a jaw 21, which may be made of a single piece or built up of several pieces, as shown in the drawings, the said jaw extending the entire length of the templet 10 and of such form as to coöperate with one side of the templet, as clearly indicated in Fig. 3. Secured to the outer ends of the levers 12′ is a jaw 21′, similar to jaw 21.

It is advisable that some means be provided to retain the sheet 22, which is to be bent, in engagement and alinement with the templet, and for this purpose I arrange between adjacent pairs of levers, above rod 11 and immediately beneath the lower edge of the templet, a support 23, provided along its middle with a groove 24, which conforms with the adjacent portion of the templet. Support 23 is provided at or near its middle with a yoke 25, through which rod 11 passes. Mounted beneath yoke 25 and pivoted upon shaft 15 is a lever 26, provided at its outer end with a roller 27, which lies upon a cam 28, secured to shaft 15′. Cam 28 is provided with one depression and the greater portion of its periphery is concentric with shaft 15′. Pivoted to each lever 26 at its middle is a block 29, which is connected to the adjacent yoke 25 by a right-and-left screw 30, held in adjusted position by means of check-nuts 31. If support 23 be long, I secure to each end thereof a yoke 32, through which rod 11 may pass, and arrange in each of said yokes beneath the bar a spring 33, the said springs operating to keep the support 23 in alinement with templet 10.

Shafts 15 and 15′ are driven simultaneously by any suitable means, such as a pinion 34 and wheel 35, a clutch (not shown) being placed between these parts, if desired, and operated by a handle 36.

In operation eccentrics 17 and 17′ are correspondingly arranged upon the shafts 15 and 15′ and in such manner that when turned to the position shown in Fig. 2 the jaws 21 and 21′ will have been thrown away from the templet and down substantially in line with the supports 23. In this position the cams 28 are brought with their shortest diameters opposite the rollers 27. The operator then places a strip of the material to be bent between supports 23 and the templet 10. By operating a suitable clutch the shafts are then rotated, the first action being to bring the greatest diameters of cams 28 opposite rollers 27, so as to throw levers 26 upward and throw supports 23 close to the templet, and thus hold the strip of material 22 between the support and the templet. The grooves 24 in the supports cause a slight initial bending of the strip. Continued operation of the shafts swings levers 12 and 12′ about rod 11 and throws jaws 21 and 21′ into the position shown in Fig. 3, the said jaws bending the sheet 22, so as to make it conform to the templet. A complete revolution of the shafts brings the parts to the initial positions, in which, if the machine be power-driven, the clutch may be automatically thrown out in any manner well known in the art. The bent strip may then be withdrawn endwise from the templet through one or the other of openings 9 and the operation repeated. Any desired form may be produced by substituting a properly-formed templet.

I claim as my invention—

1. In a bending-machine, the combination with the main body, of a rod secured thereto, pairs of bell-crank levers pivotally mounted upon said rod, a pair of jaws secured to said levers, a pair of shafts, eccentrics secured to said shafts adjacent said levers, eccentric-arms mounted upon said eccentrics and each pivotally connected to the adjacent lever, means for rotating said shafts, and a bar-templet mounted in position to coöperate with said jaws.

2. In a bending-machine, the combination with the main body, of a templet carried thereby, a pair of swinging jaws arranged to coöperate with said templet, a support arranged beneath said templet between the jaws, means for moving said support toward the templet, and means for swinging the jaws into coöperation with the templet.

3. In a bending-machine, the combination with the main body, of a rod secured thereto, pairs of levers pivotally mounted upon said rod, a pair of jaws one secured to each set of levers, a pair of shafts, eccentrics carried by said shafts, connections between said eccentrics and said levers, means for rotating said shafts, a templet mounted in position to cooperate with said jaws, a support mounted beneath the templet and between the jaws, a lever pivoted upon one shaft, connections between said lever and said support, and a cam carried by the other shaft and arranged to engage said lever.

4. In a bending-machine, the combination with the main body, of a templet mounted thereon, a support mounted adjacent the forward edge of said templet, means for moving said support toward and from the templet, a pair of jaws, and means for moving said jaws into coöperation with the templet.

5. In a bending-machine, the combination with the main body, of a templet mounted thereon, a support mounted adjacent the forward edge of said templet and having a portion corresponding in shape to an adjacent portion of the templet, means for moving the support into coöperation with the templet so as to give the material an initial bend, a pair of jaws, and means for moving said jaws into coöperation with the templet.

6. In a bending-machine, the combination with the main body, of a rod secured thereto, pairs of levers pivotally mounted upon said rod, a pair of jaws one secured to each set of levers, a pair of shafts, eccentrics carried by said shafts, connections between said eccentrics and said levers, means for rotating said shafts, a templet mounted in position to cooperate with said jaws, a support mounted beneath the templet between the jaws and having a portion corresponding in shape to an adjacent portion of the templet, a lever pivoted upon one shaft, connections between said lever and said support, and a cam carried by the other shaft and arranged to engage said lever.

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