

No. 776,864.

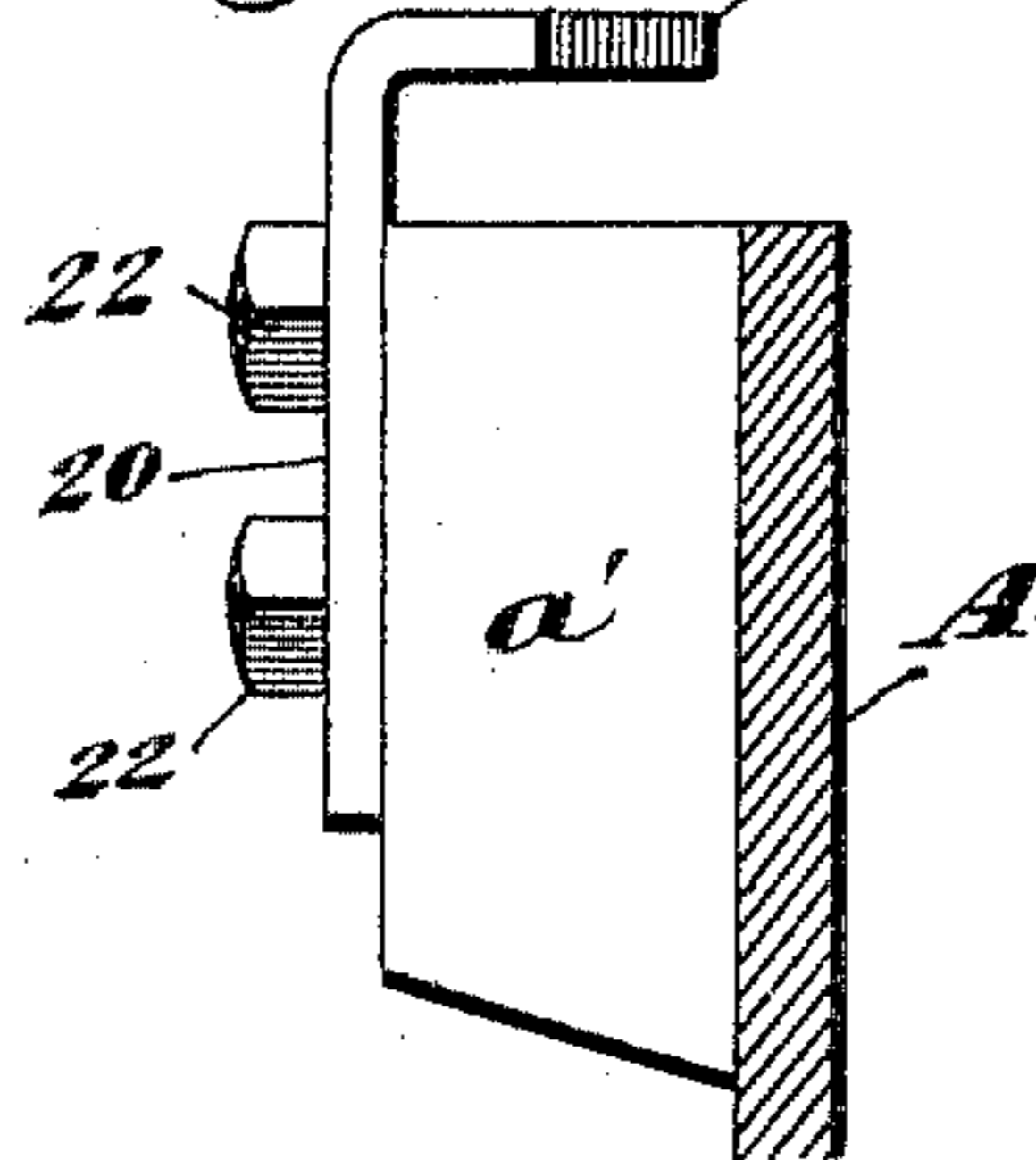
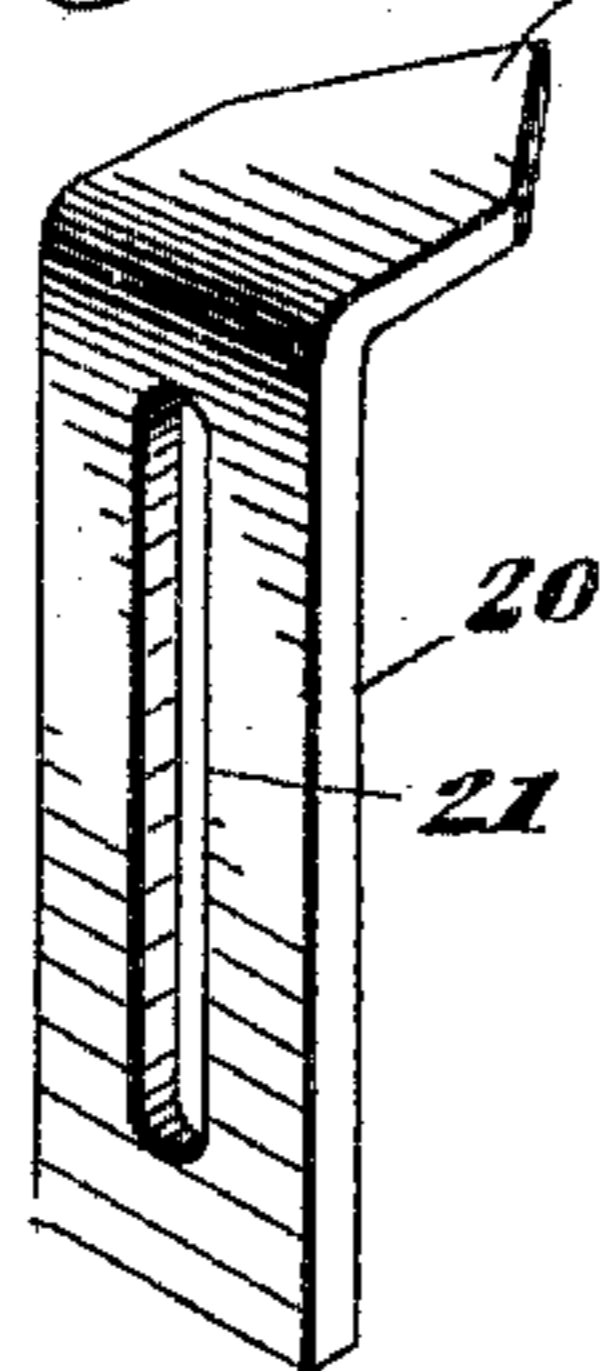
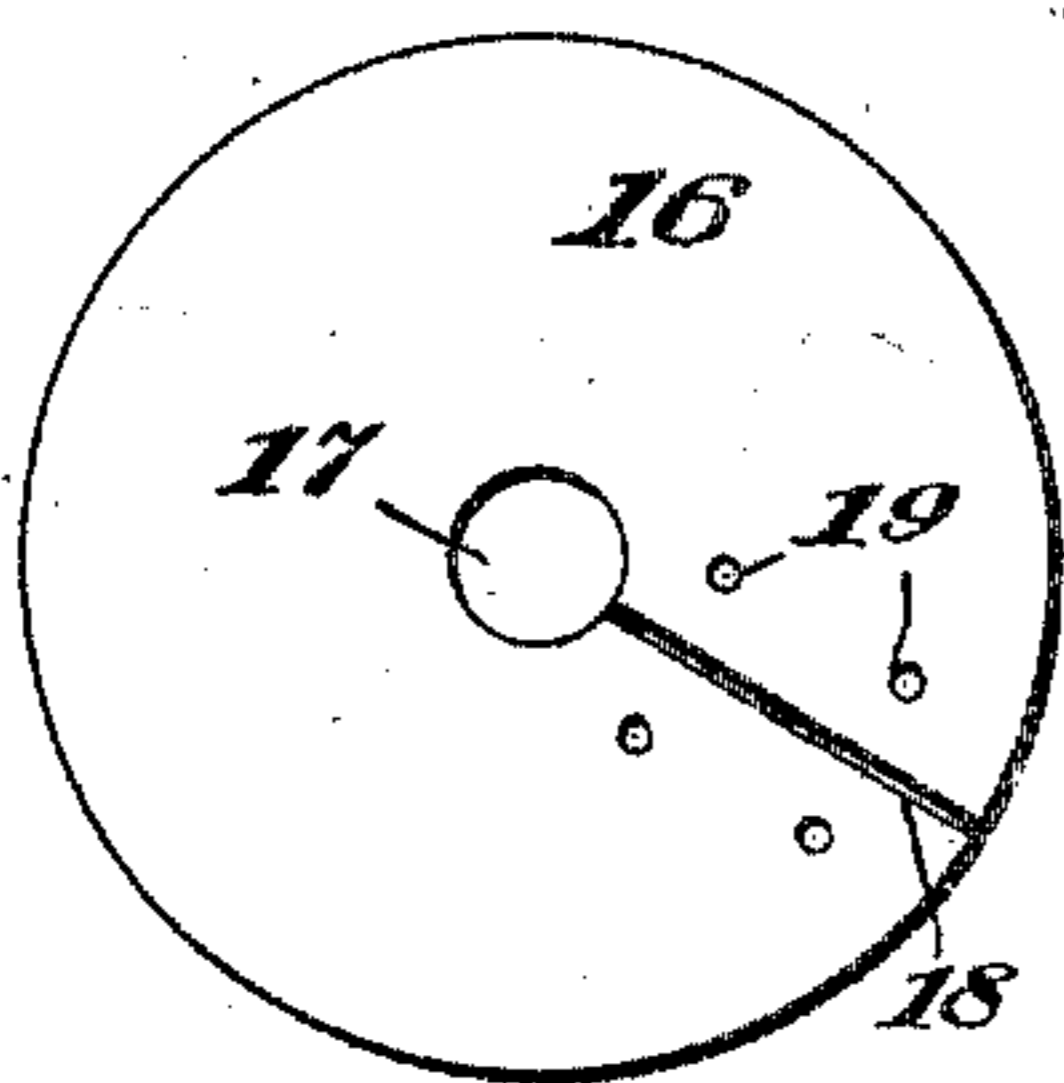
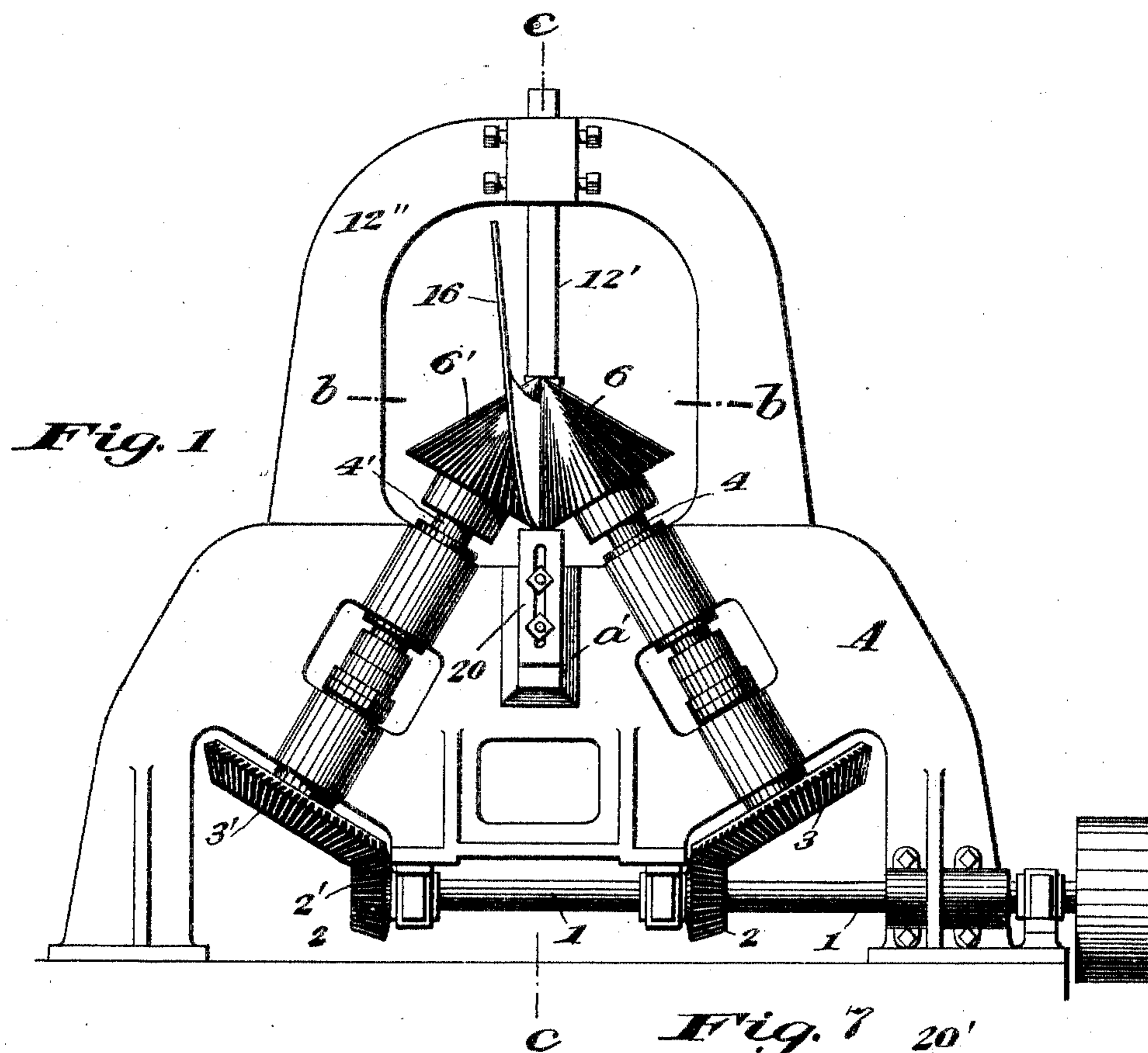
PATENTED DEC. 6, 1904.

J. L. PEDDYCOART.  
FLIGHT FORMING MACHINE.

APPLICATION FILED SEPT. 22, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



*Witnesses*

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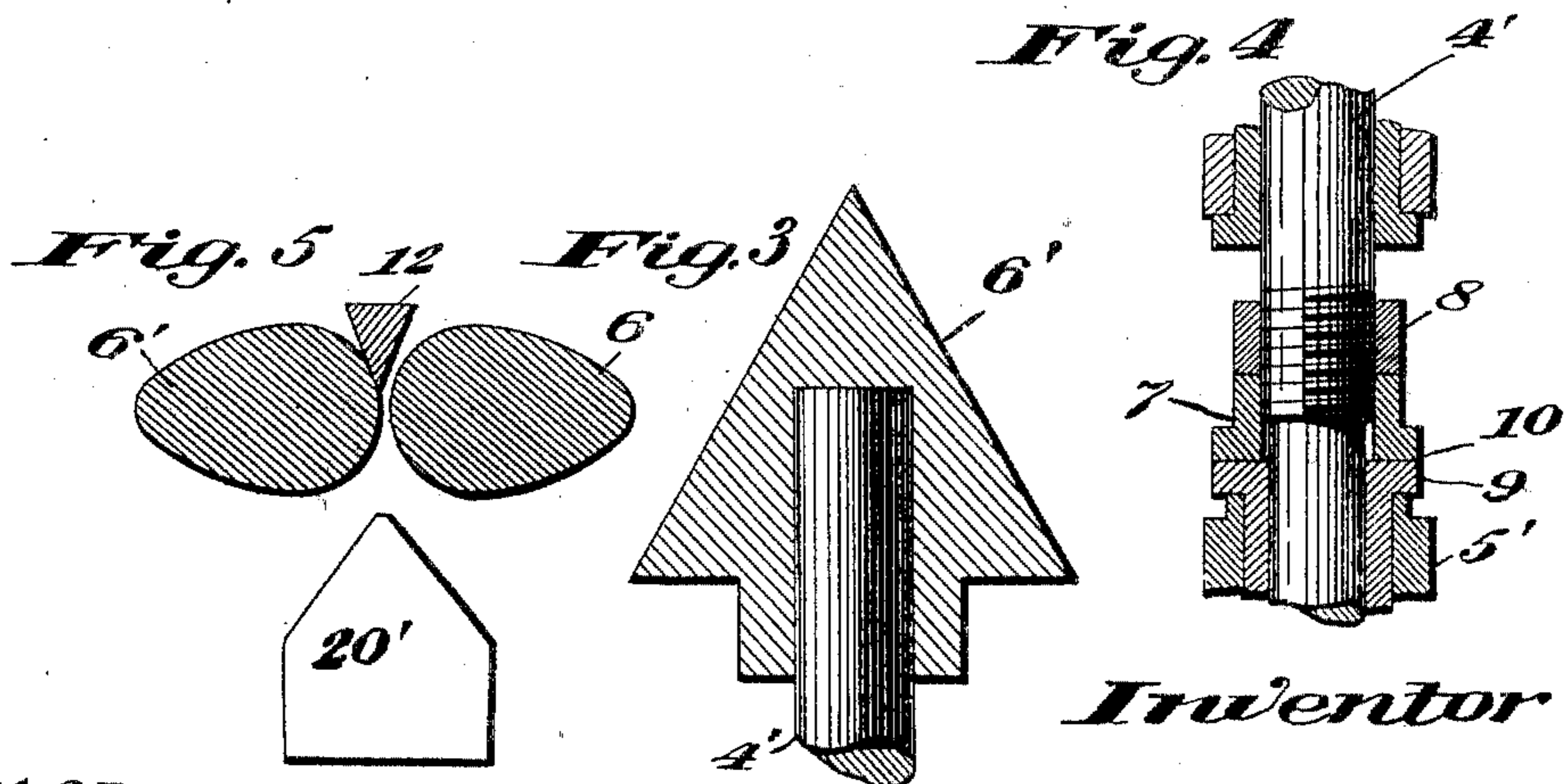
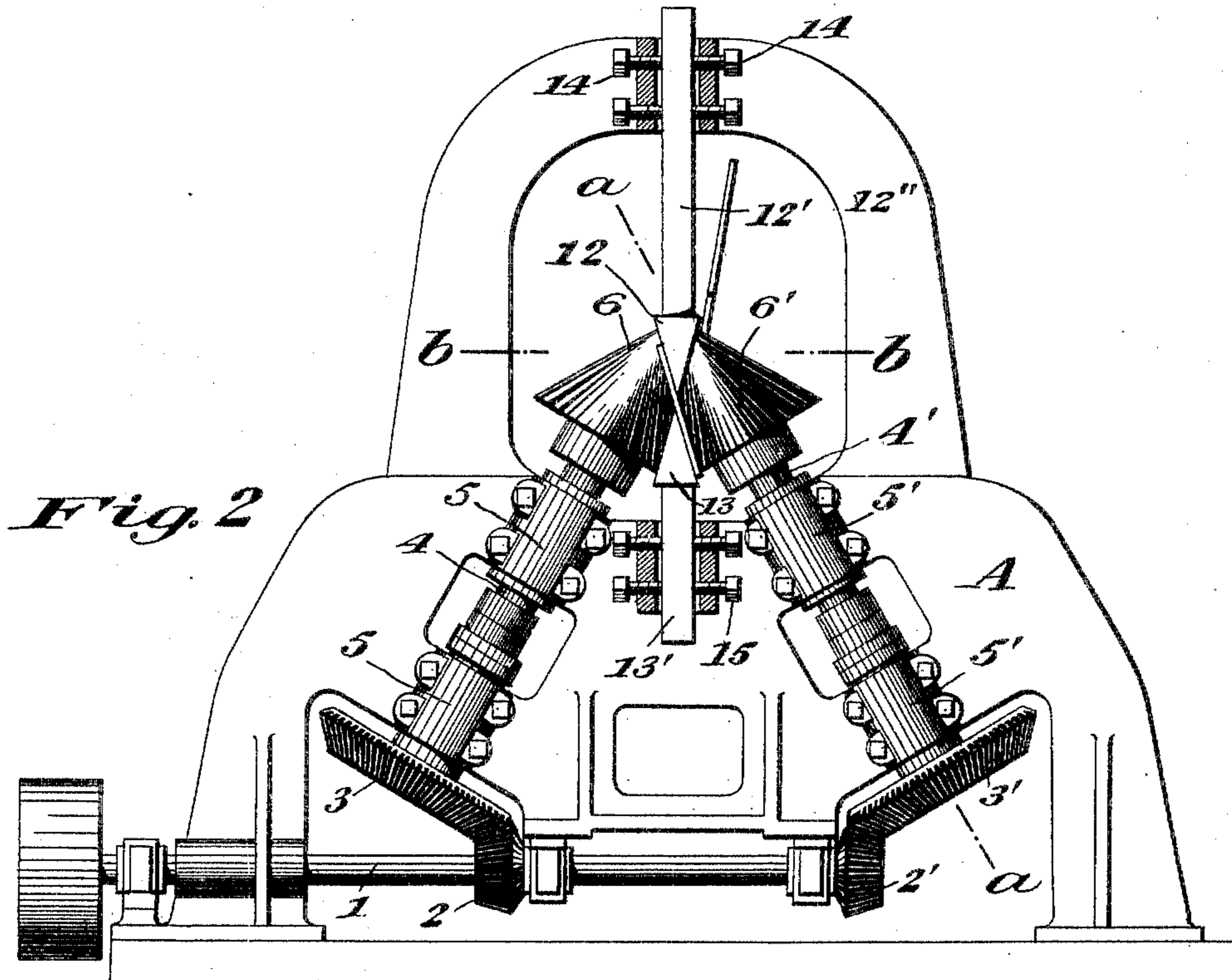
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2 SHEETS—SHEET 2.



*Witnesses*  
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# UNITED STATES PATENT OFFICE.

JOHN L. PEDDYCOART, OF CHICAGO, ILLINOIS, ASSIGNOR TO A. S. PHILLIPS, OF CHICAGO, ILLINOIS.

## FLIGHT-FORMING MACHINE.

SPECIFICATION forming part of Letters Patent No. 776,864, dated December 6, 1904.

Application filed September 22, 1903. Serial No. 174,145. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN L. PEDDYCOART, a citizen of the United States of America, and a resident of the city of Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Flight-Forming Machines, of which the following is a specification.

My invention relates to machinery for forming the spiral flanging or flights which being properly secured together and attached to a central shaft form the worm of a screw conveyor. When such shaft is journaled longitudinally of the box, rotary motion of the shaft causes material placed in one end of the box to be conveyed to the other in the direction and at a speed determined by the character of the screw, whether right or left handed, and by the pitch thereof, as well as by the direction and speed of shaft rotation.

It is the object of my invention to provide apparatus for making the sections of such spiral conveyor from suitable disks by which the pitch and direction of the screw may be varied as desired by slight and simple adjustments, as well as to enable such flights to be made cheaply and speedily and ordinarily without heating the material.

A suitable apparatus for putting in practice the principles of my invention is illustrated in the drawings, in which—

Figure 1 shows a front view of my machine; Fig. 2, a rear view thereof; Fig. 3, an axial section of one of the conical feed-rolls on the line *a a* of Fig. 2. Fig. 4 represents an adjustment of the auxiliary shafts by which the feed-rolls are secured in proper operative position. Fig. 5 is a section of the feed-rolls and upper flight-deflector on the line *b b* of Figs. 1 and 2. Fig. 6 is a detail of a vertical guide. Fig. 7 is a side view of the same with its adjustment, and Fig. 8 represents an annular plate of sheet metal cut and punched preparatory to forming it into a conveyor-flight by the operation of my invention.

Further describing my invention by reference to the drawings, in which like letters and characters of reference denote like parts

throughout, A is a substantial framework or body to which the operative parts of my machine are attached, as hereinafter described.

1 is a main shaft suitably journaled to the framework, to which power may be applied as desired. 2 and 2' are gears mounted on said shaft, which mesh, respectively, with the gears 3 and 3', mounted upon the auxiliary shafts 4 and 4', which in turn are journaled at 5 and 5' to the body of the machine. Upon the extremities of the auxiliary shafts are mounted and secured the feed-rolls 6 and 6', which are shown in enlarged section in Fig. 3 and which upon the rotation of the main shaft are caused by the mechanism described to turn toward each other.

To hold the feed-rolls in the relatively operative positions shown and to adjust the distance between them to accommodate the passage of different thicknesses of metal between said rolls, the means shown in Fig. 4 may be employed. The auxiliary shafts are turned to a smaller diameter at the lower end, and the remaining portion of full size is threaded for a short distance from the shoulder thus formed. A bearing-sleeve 7 is screwed thereover, and a jam-nut 8 above the same may be turned down thereupon to give a secure attachment. A corresponding bushing 9 is inclosed in the box 5 and presents a suitable upward bearing-face at 10 to the correspondingly downward bearing-face of the bearing-sleeve 7. By means of these devices a longitudinal adjustment of the auxiliary shafts may be effected in such a way as to cause the parallel adjacent surfaces of the conical feed-rolls to more or less nearly approach each other to accommodate the use of the device in connection with metals of different thicknesses.

Upper and lower flight-deflectors 12 and 13 with divergent sides are placed in the rear of the feed-rolls and in vertical alinement with each other. These may be of triangular section, and one of the angles should be fitted closely within the internal angles formed by the conical feed-rolls at their line of mutual contact. The upper deflector is carried on the

shank 12', which may be attached to the yoke 12'', extending upwardly from the main frame A, and is laterally adjustable by the set-screws 14. The lower deflector is carried on the 5 shank 13' and is laterally adjustable by the set-screws 15.

A disk ready to be formed into a conveyer or flight by the action of my machine is shown in Fig. 8. It has a central opening 17, a radial slot 18, and punchings 19, and it may be 10 of any desired size and equally well acted upon by my apparatus, provided that when passed through the rolls it is so guided that its actual center will coincide with its center 15 of rotation and also with the intersection of the longitudinal axis of the conical rolls. To effect this result, I provide the feed-gage 20. This is secured, through the medium of a proper spacing-block  $a'$ , to the main frame A, 20 and vertical adjustment thereof is provided by the slot 21 and the set-screw 22. The upper portion of the guide 20' is turned in proper direction and shaped to fit closely between the angles formed by the feed-rolls.

25 When use is to be made of my machine, the guide 20 is given proper vertical adjustment and the deflectors 12 and 13 are adjusted laterally to give the direction and degree of pitch desired in the finished flight. If a 30 right-hand screw is desired, the arrangement shown in the drawings is made. The upper deflector is set nearest to the left-hand roll and the lower deflector is set nearest to the right-hand roll. By reversing the relative 35 positions of the deflectors a left-handed flight may be formed. When set according to the results desired, the disk 16 is opened at the slot 18 sufficiently to permit one of the edges to be gripped by the rolls. The operation of 40 the machine leaves the flight in condition to be assembled with others in a continuous screw about a central shaft.

I have described my invention with reference to a practical and operative embodiment 45 thereof. I do not, however, limit myself to the structural forms or the relations of the parts shown; but

I claim, and desire to secure by Letters Patent, the following:

50 1. In a flight-forming machine, conical feed-rolls, means for simultaneously operating the same and means at the bight of said rolls for simultaneously engaging opposite sides of a circular flight-blank at the respectively 55 outer and inner edges thereof.

2. In a flight-forming machine, conical feed-rolls, means for simultaneously operating the same and a pair of flight-deflectors in vertical alinement with each other at the bight of 60 said rolls.

3. In a flight-forming machine, conical feed-rolls having their adjacent faces substantially parallel to each other, means for simultaneously operating the same, and independently-adjustable flight-deflectors at the bight 65

of said rolls for simultaneously engaging opposite sides, of a circular flight-blank at the respectively outer and inner edges thereof.

4. In a flight-forming machine, conical feed-rolls having their adjacent faces substantially parallel to each other, means for simultaneously operating the same, flight-deflectors 70 in the rear of the rolls, and a feed-gage to engage and direct the flight when operated on by the rolls.

5. In a flight-forming machine, a framework, a main shaft journaled thereto, auxiliary shafts journaled thereto and placed at an angle to each other, conical feed-rolls at the proximate ends of said shafts, gears at the 80 divergent ends of said shafts, gears on the main shaft meshing with the gears on the respective auxiliary shafts, and flight-deflectors in the rear of the feed-rolls.

6. In a flight-forming machine, a framework, a main shaft journaled thereto, auxiliary shafts journaled thereto and placed at an angle to each other, conical feed-rolls at the proximate ends of said shafts, gears on the divergent portions of the said shafts, gears 90 on the main shaft meshing therewith and means for shifting the auxiliary shafts longitudinally in their bearings whereby the pass between the rolls may be varied.

7. In a flight-forming machine, a frame, a 95 main shaft with gears thereon journaled to the frame, auxiliary shafts journaled to the frame at an angle to each other, gears on the auxiliary shafts meshing respectively with the gears on the main shaft, conical feed-rolls on the proximate ends of the auxiliary shafts 100 and deflectors in the rear of said rolls.

8. In a flight-forming machine, a frame, a main shaft with gears thereon journaled to the frame, auxiliary shafts journaled to the frame 105 at an angle to each other, gears on the auxiliary shafts meshing with the gears on the main shaft, conical feed-rolls on the proximate ends of the auxiliary shafts, and adjustable deflectors in the rear of said rolls. 110

9. In a flight-forming machine, a frame, a main shaft with gears thereon journaled to the frame, auxiliary shafts journaled to the frame at an angle to each other, gears on the auxiliary shafts meshing with the gears on the 115 main shaft, conical feed-rolls on the proximate ends of the auxiliary shafts, a feed-gage adapted to engage and control the flight when operated on by the rolls, and flight-deflectors in the rear of the rolls. 120

10. In a flight-forming machine, a frame, a main shaft with gears thereon journaled to the frame, auxiliary shafts journaled to the frame at an angle to each other, gears on the auxiliary shafts meshing with the gears on the 125 main shaft, conical feed-rolls on the proximate ends of the auxiliary shafts, a feed-gage adapted to engage and control the flight when operated on by the rolls, and adjustable flight-deflectors in the rear of the rolls. 130

11. In a flight-forming machine, the combination of shafts at an angle to each other, and conical feed-rolls on the shafts, said shafts being longitudinally adjustable in their bearings whereby the pass between the rolls may be varied and operative means on the main shaft severally connected to the auxiliary shafts.

12. In a flight-forming machine, the combination of conical feed-rolls having adjacent surfaces parallel, and flight-deflectors at the bight of said rolls having divergent sides and in substantial alinement with each other.

13. A machine for forming spiral conveyer-flights from an annular sheet-metal blank of uniform thickness, consisting of conical co-acting feed-rolls, means for gaging the relative position of the blank to be fed thereto, an upward and downwardly projecting former upon the opposite side of said rolls from said gaging means for gaging and deflecting the opposite sides of the blank to bend it in opposite directions as it emerges from the feed-

rolls, and means for adjusting said formers laterally and longitudinally.

14. A machine for forming spiral conveyer-flights from an annular sheet-metal blank of uniform thickness, consisting of conical co-acting feed-rolls, a vertical adjustable gage in front of said feed-rolls and longitudinally-adjustable deflecting-formers behind said rolls arranged to project toward each other.

15. In a machine of the class described, the combination with coacting feed-rolls having their acting faces parallel to each other, of knife-edge deflecting-formers located in operative proximity to said rolls for engaging and deflecting in opposite directions the opposite edges of a sheet-metal blank as it is fed into contact with said formers.

In witness whereof I have hereunto set my hand this 15th day of September, A. D. 1903.

JOHN L. PEDDYCOART.

Witnesses:

C. K. CHAMBERLAIN,  
ANNIE S. PHILLIPS.