position. Now run the machine until the automatic stop shuts off the machine again. Note whether the machine has stopped in the proper position as indicated in Section 18. Again set the control lever on $\frac{\text{withdraw}}{\text{neutral}}$. After the cradle and work spindle come to rest, record the exact reading of the cradle angle vernier 2 Fig. 12 for future reference.

Now, adjust the finger on the stock-dividing gage so that it will fall into a tooth space at a point between the small end of the tooth and the middle of the face width. The finger is adjusted by loosening the nut 3 Fig. 31 so that the finger assembly may be moved along the slot 4 Fig. 31 to the desired position. Note that the finger assembly has two fingers 6 Fig. 31 which may be rotated to any desired position and secured by the clutch 5 Fig. 31. Use the finger which is most convenient. Tighten nut 3 Fig. 31. The stock-dividing gage may be rotated about the work spindle axis by loosening the three nuts 7 Fig. 31. Rotate the gage until the finger contacts a piece of shim stock which is held between the finger and the side of the tooth which the machine has been set up to cut. The thickness of this shim should be equal to the amount of metal to be removed in cutting, and is usually equal to one-half of the total stock left on the tooth for finishing. In general, a piece of shim stock 0.006″ to 0.008″ will be used. Tighten the three nuts 7 Fig. 31. After tightening the nuts, check the spacing between the stock-dividing finger and the tooth with the piece of shim stock. If a small amount of adjustment is required, it can be made by loosening thumb screw 2 Fig. 31 and adjusting micrometer screw 1 Fig. 31. Now, set the control lever 2 Fig. 33 on "dechuck." After removing the shim from between the stock-dividing finger and the gear tooth, rotate the gear tooth into contact with the finger. The work piece will have rotated the amount of the shim thickness. Move the control handle to the "advance" position, and proceed to finish cut the gear.

After the gear has been completed on the one side, set the control lever on $\frac{\text{withdraw}}{\text{neutral}}$. Check the reading of the cradle angle vernier 2 Fig. 12. This should agree with the value recorded previously. Bring stock-dividing finger down into tooth space. The shim previously used should just fit between the finger and the side of the tooth just cut. If it does not fit perfectly, adjust the stock-dividing finger by using the micrometer screw 1 Fig. 31 until the shim does fit. Remove the first gear and mount a second roughed gear on the arbor. Bring the work against the stock-dividing finger, chuck the work, and proceed to cut the teeth. After this second gear is completed, recheck the stock removed using the shim. Now finish all of the gears to be cut.

After finishing the first side of the tooth, a similar procedure is used for dividing stock on the second side. Follow the procedure described for setting up the first side, namely:

1. Run machine to center of roll, lining up pointer and "center of roll" line on feed cam.
2. Place control lever in "dechuck" position.
3. Shut off hand valves 1 Fig. 30.
4. Mount one of the gears which has been finished on the first side on the arbor.
5. Slowly advance sliding base, positioning gear so that cutter is in center of tooth space.
6. Carefully jog machine until one blade is about in center of tooth space.
7. Rotate gear so that side of tooth to be cut is in contact with cutter blade.
8. Open the two hand valves.
9. Set control lever at $\frac{\text{withdraw}}{\text{neutral}}$.
10. Turn the lever to advance the base a small amount and then return to $\frac{\text{neutral}}{\text{chuck}}$.
11. Run machine until automatic stop shuts off machine.

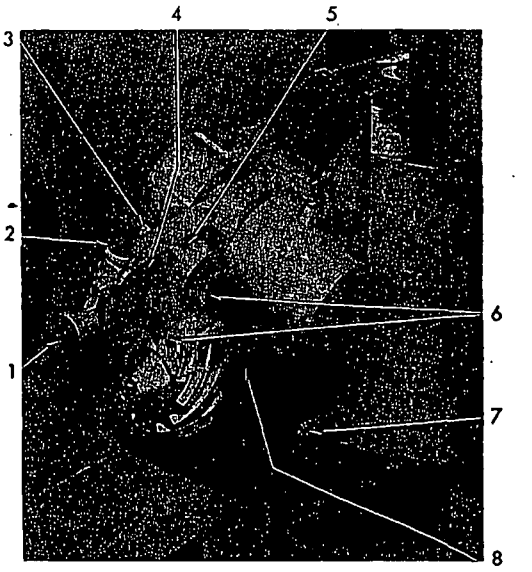

Fig. 31.

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