DEVELOPMENT AND ANALYSIS OF COMPRESSED BENDING PROCESS IN A DIE WITH AN ELASTIC PUNCH

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A die design has been developed for compressed bending of sheet articles and cutting blanks off a strip in one stroke of the press. The die provides increased thickness of material in the bending area, reduction of the radius of bending and spring back, which improves the strength, rigidity, quality and life of the articles as well as labour productivity. The procedure for calculating the basic parameters of article production process is given. The die design has been patented.

Compressed bending, die design, elastic punch, spring back, increased thickness of material.

References

- 1. Komarov, A. D. A die for compressed bending of sheet articles / A. D. Komarov, V. A. Barvinok, Ye. V. Ovtchinnikova et al. // Kuznetchnoshtampovotchnoye proizvodstvo.-Moscow: Machinostroyeniye, 2005. No. 12. pp. 12-17.
- 2. Pat. 46954 Russian Federation, B 21 D 22/10. Die for cutting off blanks and sheet article bending / A. D. Komarov, V. K. Moiseyev, Ye. V. Ovtchinnikova et al. No. 2004138433/22; appl. 27.12.2004; publ. 10.08.2005, Bul. No. 22. 3 pp.
- 3. Pat. 65797 Russian Federation, B 21 D 22/10. Die for cutting off blanks and compressed bending of sheet articles / A. D. Komarov, Ye. V. Ovtchinnikova, I. S. Tkatchenko. No. 2006136695/22; appl. 16.10.2006; publ. 27.08.2007, Bul. No. 24. 5 pp.
- 4. Romanovsky, V. P. Reference book on cold stamping / V. P. Romanovsky.-Leningrad:
 Machinostroyeniye, 1971 782 pp.
- 5. Komarov, A. D. Stamping of sheet and tubular articles by polyurethane / A. D. Komarov. Leningrad: LDNTP, 1976. 36 pp.
- 6. Panova, L. P. Impact of urethane elastomer structure on the working

- properties of an elastic die / L. P. Panova, G. P. Orlenko // Press forging. 1972. No. 6. pp. 26 28.
- 7. GOST 22191 83. Buffers with rubber springs for sheet presswork dies // Collection of GOSTs (State Standards) "Buffers and buffer holders for sheet presswork dies" GOST 22188 83 GOST 22202 83. Moscow: Izdatelstvo standartov. 1983. 104 pp.
- 8. GOST 22201 83. Polyurethane springs for sheet presswork dies // Collection of GOSTs (State Standards) "Buffers and buffer holders for sheet presswork dies" GOST 22188 83 GOST 22202 83. Moscow: Izdatelstvo standartov. 1983. 104 pp.
- 9. Komarov, A. D. Analysis of rectilinear boards spring back under compressed bending of sheet articles by elastic medium / A. D. Komarov, V. A. Barvinok, A. V. Sokolova, A. A. Sharov // Press forging. 1998. No. 12. pp. 8 11.
- 10. Patent 64115 Russian Federation, B 21 D 22/10. Die for sheet article bending / A. D. Komarov, V. K. Moiseyev, A. Yu. Kostenyuk, Ye. V. Ovtchinnikova. No. 2006141265/22; appl. 21.11.2006; publ. 27.06.2007, Bul. No. 18. 4 pp.

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