GEORGE R. HANKS AND STANLEY APGAR, OF HIGH BRIDGE, NEW JERSEY; ALFRED R. BENCH, OF EASTON, AND GEORGE L. BIDWELL, OF RIEGELSVILLE, PENNSYLVANIA, ASSIGNEES TO TAYLOR-WHARTON IRON AND STEEL COMPANY, OF HIGH BRIDGE, NEW JERSEY, A CORPORATION OF NEW JERSEY.

SECTIONAL BEATER ROLL.

Application filed March 2, 1923. Serial No. 692,885.

To all whom it may concern:

Be it known that we, GEORGE R. HANKS, STANLEY APGAR, ALFRED R. BENCH, and GEORGE L. BIDWELL, citizens of the United States, residing, respectively, the said GEORGE R. HANKS and STANLEY APGAR, at High Bridge, in the county of Hunterdon and State of New Jersey, the said ALFRED R. BENCH, at Easton, in the county of Northampton and State of Pennsylvania, and the said GEORGE L. BIDWELL, at Riegelsville, in the county of Bucks and State of Pennsylvania, have jointly invented a certain new and useful Sectional Beater Roll, of which the following is a specification.

Beater rolls whereof the knives and their supports are integrally constructed of manganese steel have evidenced by long and continuous service greater efficiency and otherwise marked superiority over the old types of rolls.

Manganese steel offers serious foundry and heat treatment problems especially in the case of castings of ponderous weight and intricate section.

We solve these problems and also provide for adjusting the effective length of the beater roll by constructing the latter in roll sections which are counterparts or in other words interchangeable.

A further merit of the invention resides in the provision of simple, yet effective means for justifying and preserving the alignment of the knives and for locking the sections collectively as a unit.

A further merit of the invention resides in the provision of means for relieving the spiders from driving strains and for reinforcing the knife-carrying elements.

One embodiment of the invention is illustrated in the accompanying drawing, wherein—

Figure 1 is a longitudinal sectional view; and

Fig. 2 a cross sectional view.

According to our invention, interchangeable roll sections 5 are provided the number of such roll sections varying according to the length of roll desired. Each roll section is a casting such as manganese steel or other shock and wear resisting steel, including a knife-carrying roll or cylindrical portion 6, a spider 7 and a hub 8. The hubs 8 are formed with one or more key seats 9 for use in establishing interlocking engagement 55 with the shaft 10, and diametrically opposite each key-seat there is a counterbalance provision 11.

The roll sections have webs 12 starting at the edges of the knife-carrying cylinders 6 and vanishing in the bodies of the spoke elements 13 of the spiders. As indicated in Fig. 2, the webs 12 are offset with respect to the center lines of the spokes, which arrangement operates to relieve the spokes 55 and the spiders as a whole from driving strains and also aids in the uniform distribution of stresses transmitted by the knives 14.

The abutting edges of the roll sections 70 are ground or finished and are substantially ground seated so that when two or more sections are assembled on a common center line support, such as the usual complemental shaft, the knives are co-extensive or continuous. In order to justify and to maintain the alignment of the knives and also to lock the roll sections collectively as a unit, the spiders are formed with registering openings 15 for the passage of, for example, rods 16 the terminals of which are screw-threaded for co-operation with appropriate fastening provisions 17.

End plates or headers 18, with or without the usual bangers 19, are secured to the end roll sections, as by bolts 20.

Having described our invention, we claim—

1. A beater roll embodying ground seated roll sections with integral knives and spokes with shaft receiving elements, and means for justifying and maintaining the alignment of the knives.

2. A beater roll embodying flush fitting open roll sections with integral knives and with integral shaft receiving elements, and means for justifying and maintaining the alignment of the knives, including means for securing the sections as a unit.

3. A beater roll embodying roll sections with integral knives, and means engaging the end roll sections for securing all of the sections as a unit.

4. A beater roll embodying interchange-
able flush fitting roll sections, each section consisting of a unit casting having a knife carrying periphery, spokes, and hub.

5. A beater roll embodying interchangeable ground seated roll sections with integral knives and integral spiders, the spiders having counterbalance provisions.

6. A beater roll embodying interchangeable roll sections with integral knives and spiders, means for effecting substantially fluid-tight engagement of the sections, and means engaging the sections for lining up the knives.

7. A beater roll embodying a shaft, and a series of roll sections each of which is independently locked to the shaft.

8. A beater roll embodying a shaft, a series of roll sections each of which is independently locked to the shaft, and means for securing the roll sections collectively as a unit.

9. A beater roll embodying a shaft, knife carrying cylindrical sections mounted on the shaft, and individual and collective locking provisions for said sections.

10. A beater roll embodying roll sections whereof each is a unit casting of manganese steel with spaced radial supports, means for securing them in substantially fluid tight engagement, and means for relieving them of driving strains.

11. A beater roll embodying mated roll sections the abutting faces of which are substantially ground seated.

12. A beater roll embodying a shaft, a series of roll sections interchangeably mounted on the shaft, and headers secured to the end roll sections.

In testimony whereof, we affix our signatures.

GEORGE R. HANKS.
STANLEY APGAR.
ALFRED R. BENCH.
GEO. L. BIDWELL.