The roadheader "MIR"

The Roadheader "MIR" (Mining Intelligence Roadheader) sets up on principles of frontal destruction of rocks on all working face, continuous technology and automations of processes. Problems of layout, power supply, travel, stabilization and a thrust are in a new fashion solved in it base.

It provides high-speed drifting of horizontal, slope and raise (with incline from-30 up to +50 grades) mine workings of the rectangular form cross-section from 6 up to 25 m^2. Limiting strength of breaking rocks up to 15 … 20 MPa, speed of drifting of a development is 3...4 m / hour.

Cutting head RH "MIR" (fig. 1) is executed as a bearing diaphragm 1 on which in pairs horizontal drumheads 2 are dressed with the help of shelf brackets 3. The cutting head is collected from consistent precast modules as joined sections (they, as a rule, are eight). All drum heads 2 of adjacent sections are twirled in opposite directions, and two bottom ones are executed as screws and have opposite coiling blades 4. Drum heads are supplied with the destroying tool 5 as roller cutters and axial hydrojacks for their cross motion along working face. In the bottom of bearing diaphragm 1 the aperture 6 is made, to which loading-transport device 7 (auger loader) borders on.

The walking mover creating pressure force to working face up to 2…3 MN, represents the space-thrust system of paired-symmetric hydraulic advancing cylinders (hydrojacks HJ) 8 which are established hingely between a diaphragm 1 and bearing plates (BP) 9. The last are closely crowded to a rocky surface of a development using the HJ. The HJ 8 and BP 9 reciprocate at travel RH, not encumbering the face space of a development.

The RH is equipped with volumetric power high-moment hydraulic drive that excludes the necessity for complex, bulky and expensive reduction gears. For this purpose drum heads 2 of cutting heads are set in by the hydromotors 10 built in them working under the circuit design "stator - wheel". Hydromotors are in pairs connected through divisors of streams by high-pressure hydropipe mains to the block of the hydraulic pumps mounted in the mobile power plant 11, which moves after a combine. For accomplishment of assembly-dismantling and auxiliary operations serves the manipulator 12 on a monorail 13 which is fixed to a roofing with the help of bolting 14.

For support of development anchors (up to 16 piece on 1 m roadway) are used in addition to glass-plastic shell with a cord thickness 10-15 mm and strength up to 100 MPa. Control of RH “MIR” in space is provided with automatically laser directional marker with pinpoint accuracy.

Advantages of RH “MIR” are: continuous and automation of technology, high efficiency and maneuverability, compactness of construction, simplicity of mounting and dismantling, safety and a comfortable work environment in working face, a wide range of application.

Table - Technical-and-economic indexes of RH "MIR"

Parameter	Limits of parameters' changes
The form of working site	Rectangular
Slope of working site, grad	From-30 up to +50
Cross-section of working site in clear, m^2	From 6 up to 25
Strength of rocks on compression, MPa	Up to 200
Feed rate RH on working face, m / min	0-0,1
Type of an edge tool	Roller cutters
Rounding-off radius of working site, m	More than 5
Adjusting power of motors, kWt	200-400
Mass face' parts RH, t	8-10
Drifting rate of working site, m / hour	3-6
Productivity on breaking ground, т/mines	2,0-4,0
Numerical composition of working team	2-3
Labour productivity, m^3/man-day	200 … 300

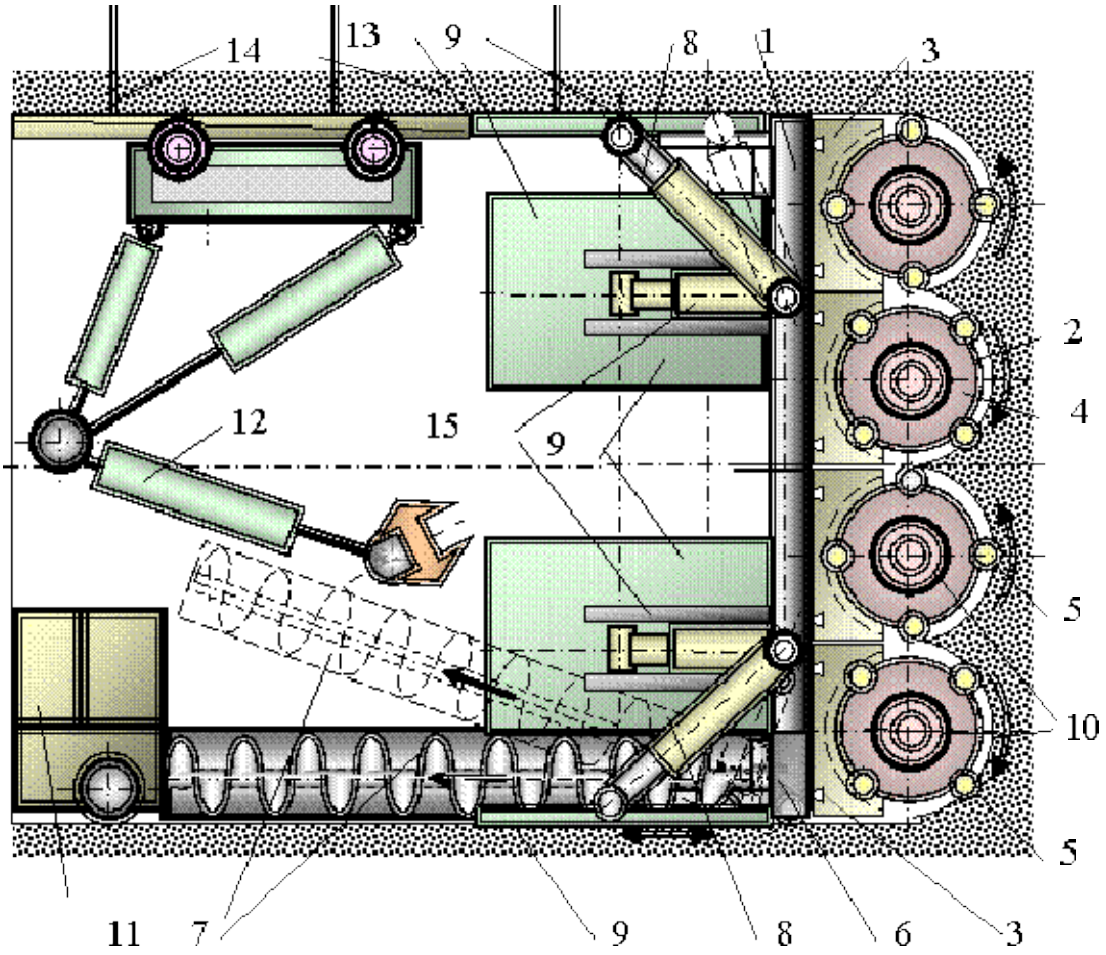

Fig. 1 – General view of frontal roadheader «MIR»