

# GALLING - SHOT PEENING OF THE BOLTS

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## **ABSTRACT:**

Of course for some particularities in the field of Shot peening we using special tools. Many specific items, parts of plants, devices in electric machines require particular tools for Shot Peening. On the figures 1 and 2 is one mechanism for Shot Peening of Bolts often called as well galling. Such device must enable us to treat external surface of bolts. Screw thread surfaces to be prepared for further function to be clean and free of any dirties and metallic substances. With normal Shot Peening is ont possible on satisfied manner to do Shot Peening threaded surfaces of bolt. Therefore special device for Galling - Shot Peening of Bolts should be applied for this work. Fig. 1 presents one device what gives the chance to be whole surface correct covered. This machine with small outlines to be fixed in one metallic box. On this way is very easy tranfered to the place where is some quautity of bolts for treatment.

## **KEY WORDS:**

Galling, Screwpeening, thread, metalllic surface, Bolts diameter.

## GALLING OF BOLTS

One pipe with flanges connected with housing of Gear for rotation of bolt. This pipe indicated as nearly 4" diameter has one Slot for jets bringing with necessary speed Shots shelling on the active surface of that bolts. During checking for acceptance correct produced Screw threaded surfaces often is finding some failures on the thread and steps of bolts. In some cases necessary removing some dirties or remained metallic parts. After such acceptance controlling bolts can come decision for correction. Galling - Shot Peening of Bolts is one appliance for to reach accurate bolt dimension. This prolongs the bolts fatigue life and inhibits stress corrosion on cracking. That means important additional benefit of enhanced resistance to fatigue and corrosion. Normal is necessary to take in consideration connection between residual compressive stresses Surface hardness, effect of Coverage with other necessary parameters to follow continual Shot peening. Naturally is necessary to have in mind all technical characteristics such bolts. One bolts for civil engineering going in concrete Can be with diameters from  $\varnothing$  30 mm to the  $\varnothing$  60-80 mm. So huge diameter in accordance with German and other European rules requires special treatment of these huge bolts before their installation or assembly in metallic structures - bridges, floating platforms and tower etc.

## GALLING DEVICE

On the fig 1. we see three gears for driving of this device for workmanship of bolts. Size of device depending of the length and diameter. Electric motor drives over gears and shafts other two gears placed on the fixed supports - bearings for continual work. On the intermediate gear is connected one chamber for treatment (fig.2). One slot of the shell is cutted to be free mobile moving of jet for in horizontal direction left - right. Snail transfer bringing jet with shots media for workmanship of bolts surface. main girder item 6 is sliding over fixed plate item 5. Snail gear bringing jet with shot media along the slot and covering this bolts surface. Inside in this pipe chamber is bolt rotating by Snail transfer. System lubrication item 2 assures rotation all three gears with its bearings. Nozzles item 15 down on the bottom of pipe receiving Shot media. They are connected with flexible pipe of suction system by fans for further

separation of Shots. Some of them deformed not going again in proces, instead coming new metarial. Lubrication (pos. 2) of sliding guide and all bearing is very important for continual wok. Of course ventilating system must removed from this working space all dust what can because dangerous for people performing job. Galling of bolts we can arrange with equal rotation and horizontal moving of jet. Each device is designed for strictly defined length and diametere of bolts.

FIG. 2. GALLING OF BOLTS  
SCREWTHREAD PEENING

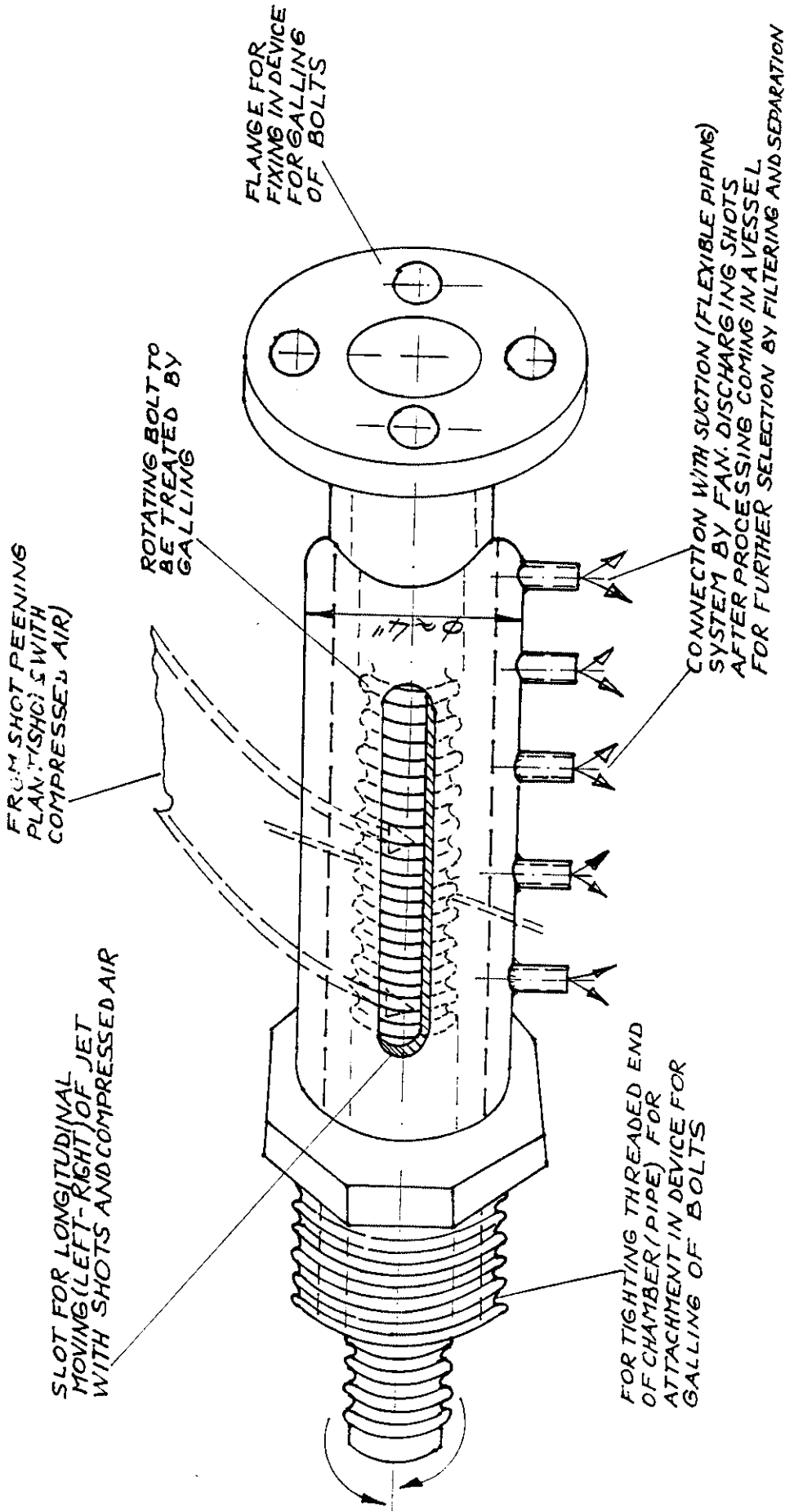
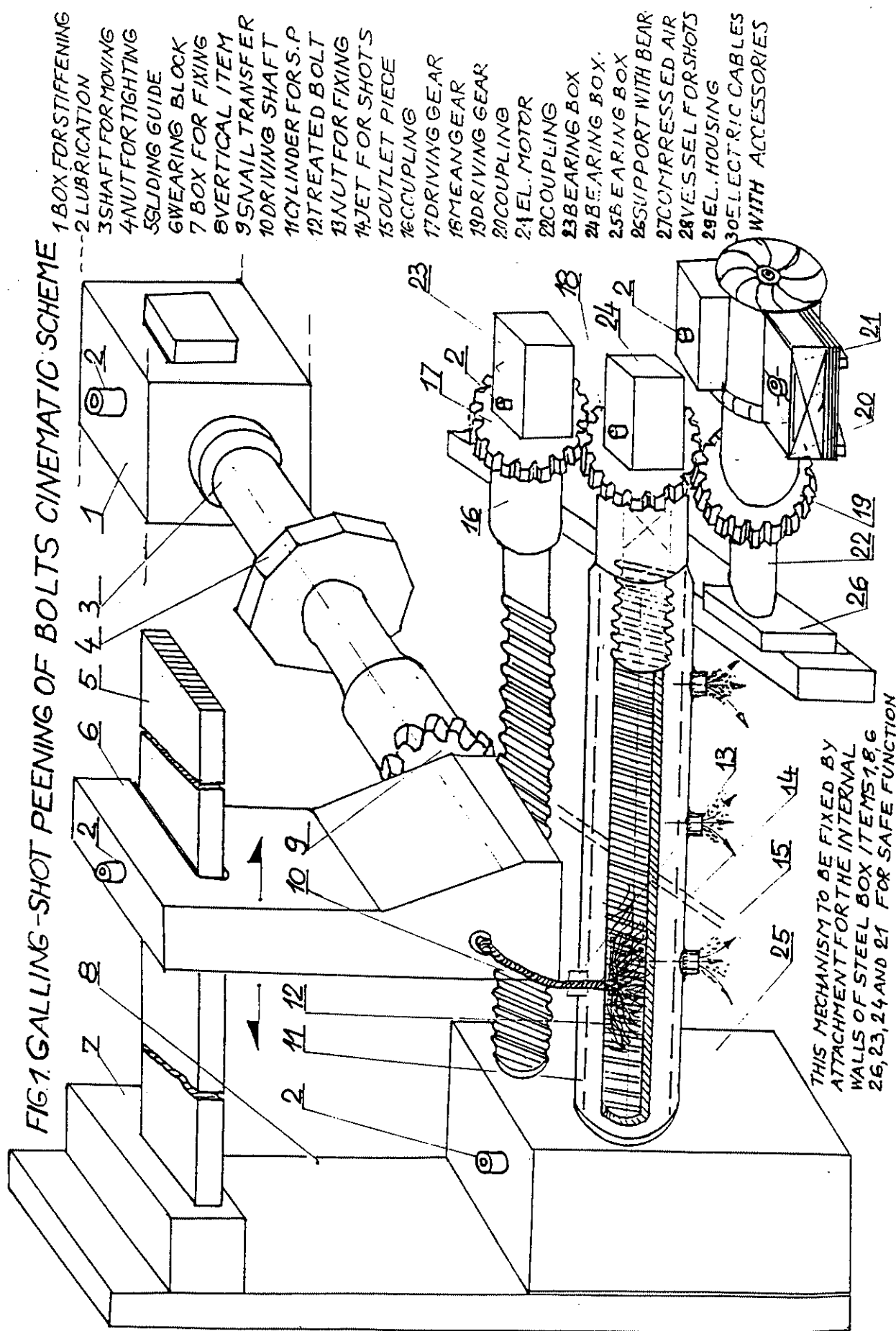


FIG. 1. GALLING - SHOT PEENING OF BOLTS CINEMATIC SCHEME



- 1 BOX FOR STIFFENING
- 2 LUBRICATION
- 3 SHAFT FOR MOVING
- 4 NUT FOR TIGHTING
- 5 SLIDING GUIDE
- 6 WEARING BLOCK
- 7 BOX FOR FIXING
- 8 VERTICAL ITEM
- 9 SNAIL TRANSFER
- 10 DRIVING SHAFT
- 11 CYLINDER FOR S.P.
- 12 TREATED BOLT
- 13 NUT FOR FIXING
- 14 JET FOR SHOTS
- 15 OUTLET PIECE
- 16 COUPLING
- 17 DRIVING GEAR
- 18 MEAN GEAR
- 19 DRIVING GEAR
- 20 COUPLING
- 21 EL. MOTOR
- 22 COUPLING
- 23 BEARING BOX
- 24 BEARING BOX
- 25 BEARING BOX
- 26 SUPPORT WITH BEAR.
- 27 COMPRESSED AIR
- 28 VESSEL FOR SHOTS
- 29 EL. HOUSING
- 30 ELECTRIC CABLES WITH ACCESSORIES

THIS MECHANISM TO BE FIXED BY ATTACHMENT FOR THE INTERNAL WALLS OF STEEL BOX ITEMS 1, 8, 6, 26, 23, 24 AND 21 FOR SAFE FUNCTION