

가

(Soil Nailing)

top_down steel bar

shotcrete

bottom_up

00)
01)

(101) 1 (1)
(1

(102)
가

가

가

가
가

가

가

가

2

, 3

(1) , (2) , (10) (20) (16)(26)

) (1) , (20) (30) (31)

2) (10) , (11)(11') , (10) , (1

(20) , (21)(21') , (22) ,
(23) (24) ,

(10) (1) (20) (1) 가 .

, (10) (20) (15)(25) (15)(25) , (16)(26) ,
26) (16)(26) (12) (15)(25) (17)(27) (10) (20) (16)(

, (10) (10') , 2 (10)(10')

32 .

, (2)

(2) , (2) 가 .

, 4a ,

(20) (21)(21') (21)(21') 가 , (20)

, (20) (22) , (20)

가 .

, (10) (11)(11') , (10) ,

(12) ,

, 4b 가 () (32) (20) (20) (24)

) , (10) (32) (24) (23) (10) (23) (24)

, (24) (12) .

(10) (32) 가 (10) (11)(11') (10)(1

0') (32) (10) , (12) 4c .

, (16)(26) (12) , (10)

, (20) (10) (15)(25)가 (16)(26) , (16)(26)
 (17)(27)가 (26) (10) (16) (10) (20)
 , 가 (16)(26) (10) (2) ,
 (10) (12)
 , 5 (10)(10') (10)(10') (10)(10') (15)가 (10)(10')
 17)가 (20) 6 (10)
 (20) , (20) 가 (10)
 가 , ,
 가

(57)

1.

(1) (2) , (2) , (10) (20) (16)(26)
 (1) , (20) (30) (31)
) (10) , (11)(11') , (10) , (1
 2) (20) , (21)(21') , (22) ,
 (23) (24) ,
 (10) (1) (20) (1) 가

2.

1 , (10) (20) (15)(25) , (16)(26) (15)
 (25) (17)(27) (10) (20) (16)(26) (12)

3.

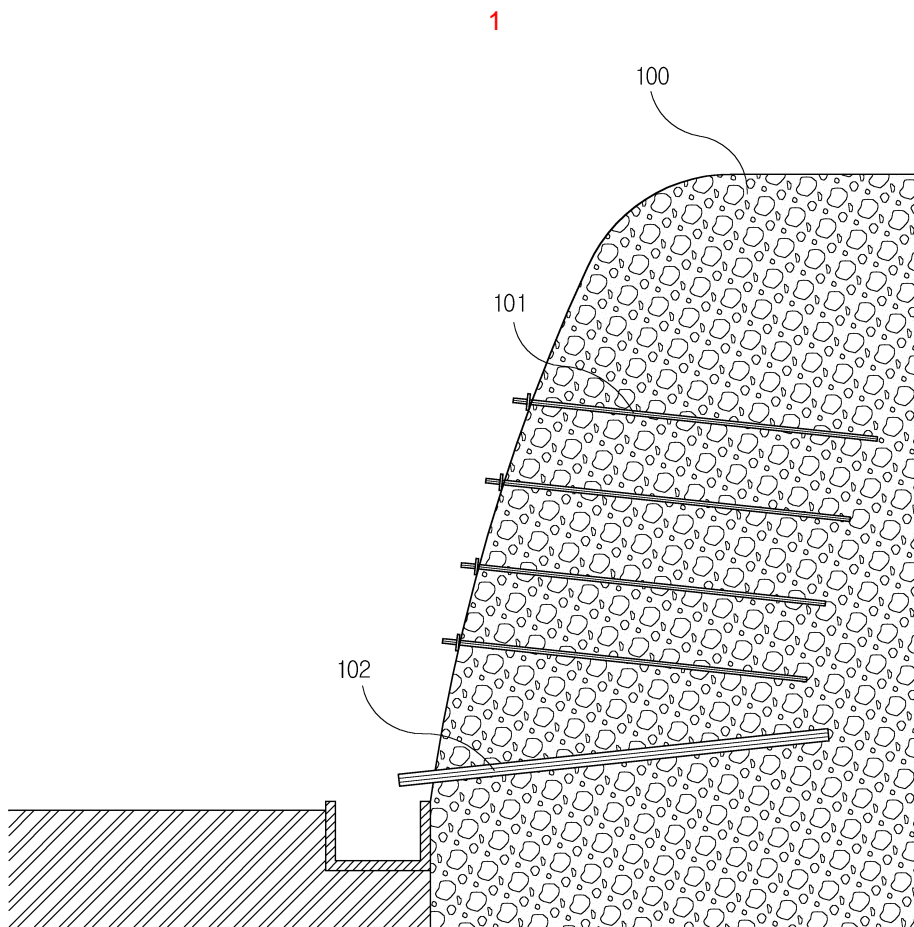
1 ,

(10)

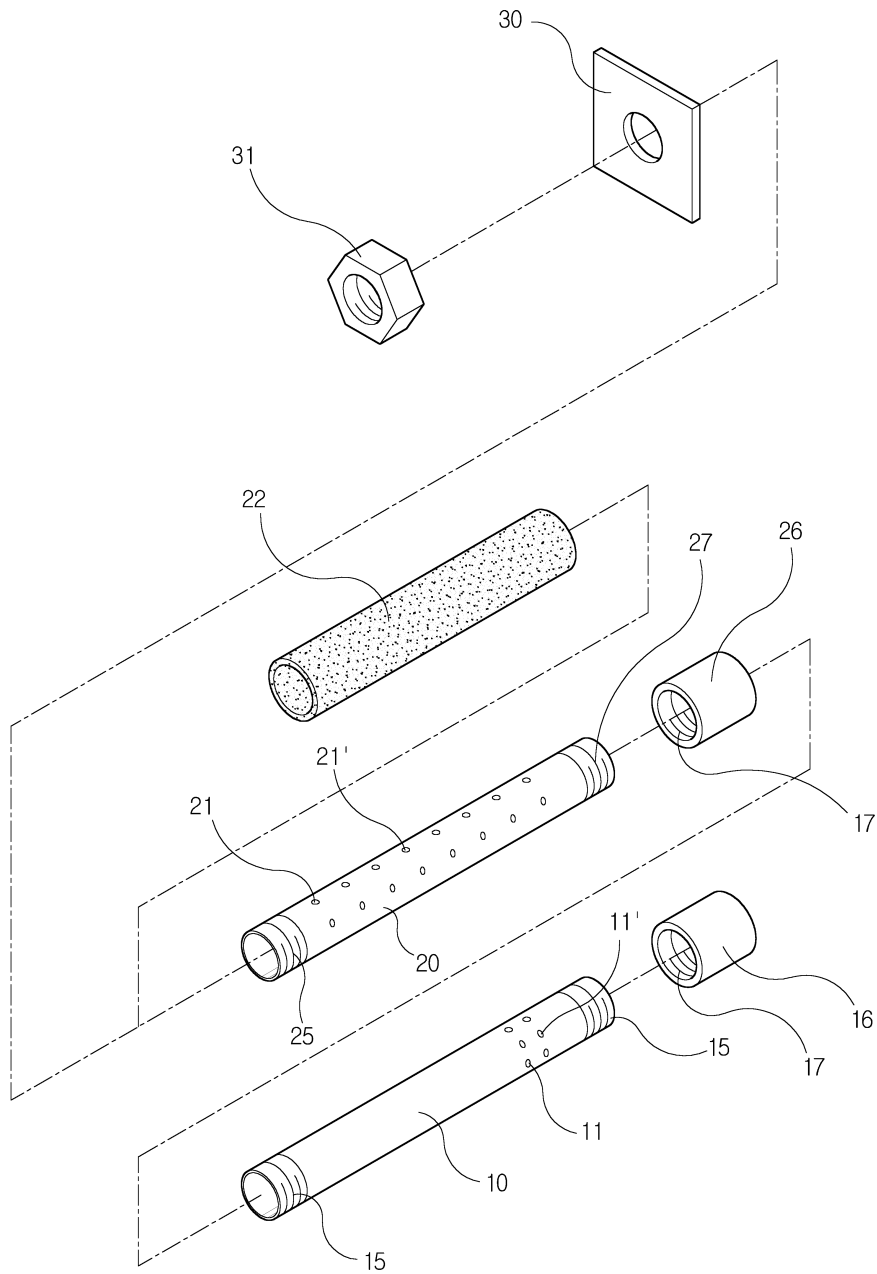
(10')

2

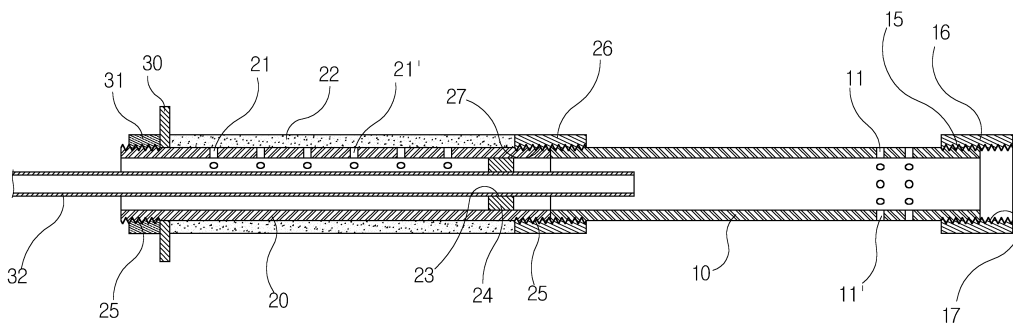
(10)(10')



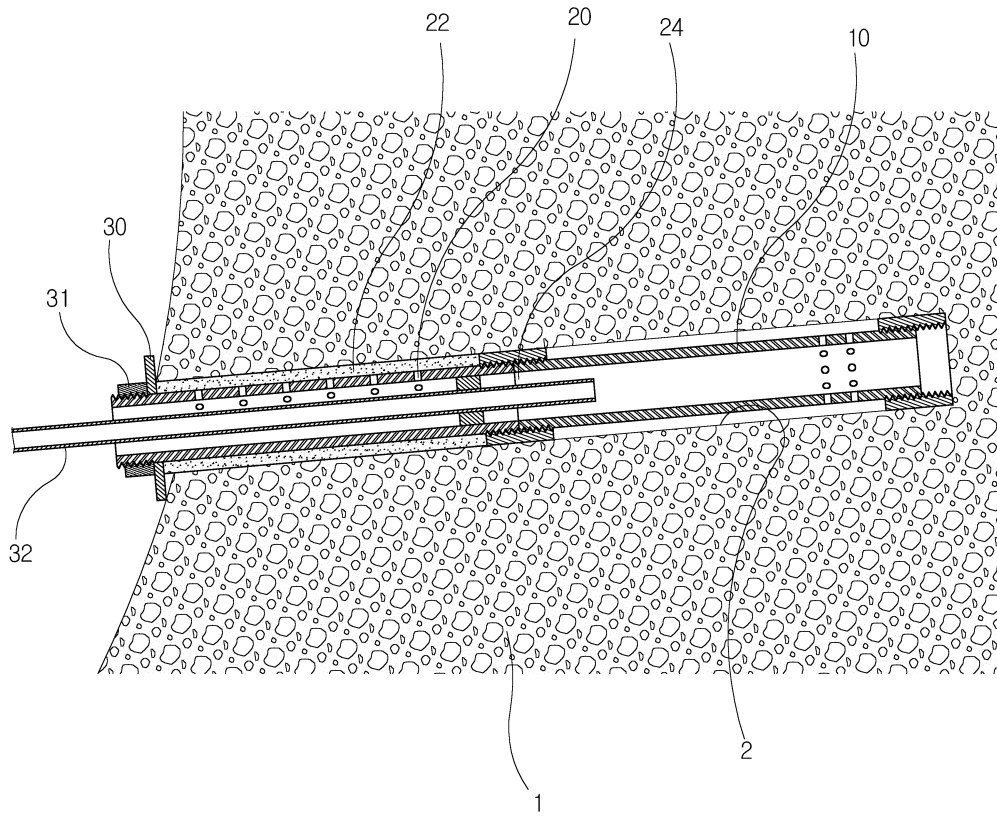
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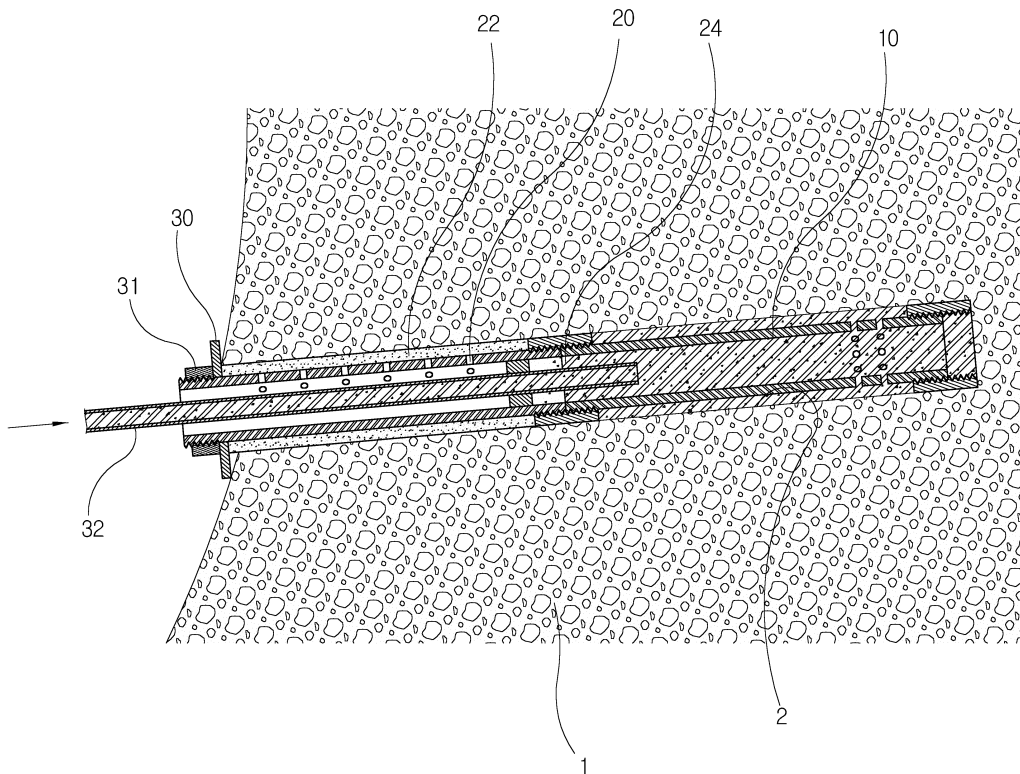
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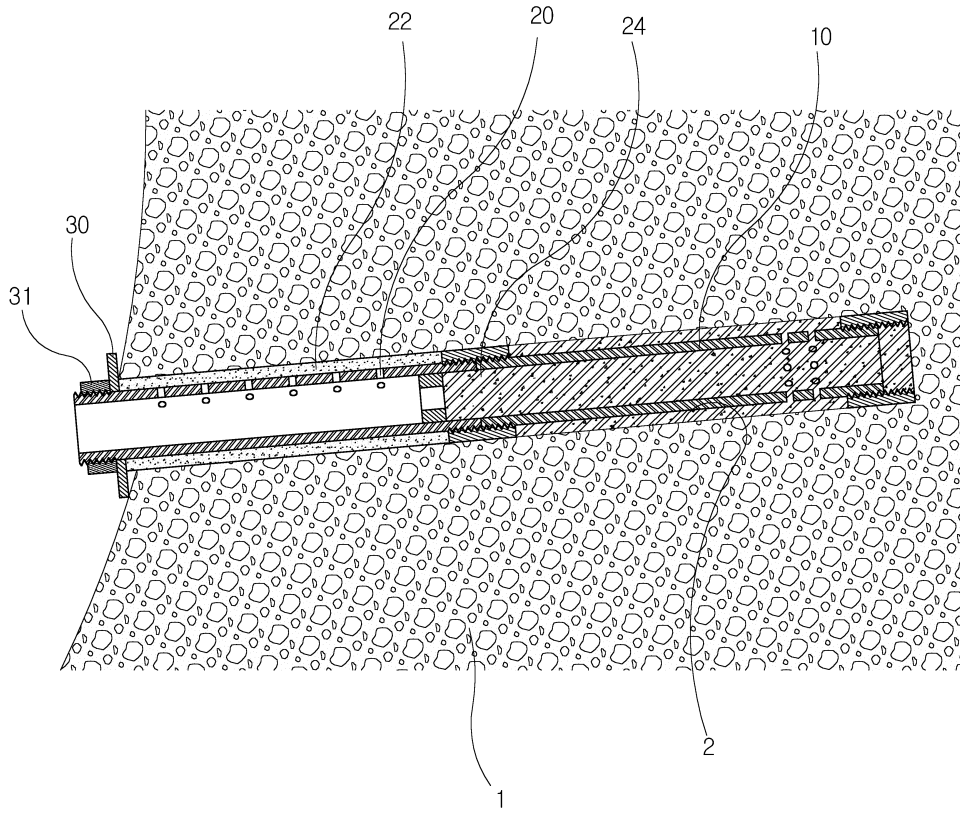
4a



4b



4c



5

