Office de la Propriété Intellectuelle du Canada
Un organisme d'Industrie Canada

Canadian Intellectual Property Office
An agency of Industry Canada

CA 2414558 A1 1995/12/14

(21) 2 414 558

(12) DEMANDE DE BREVET CANADIEN
CANADIAN PATENT APPLICATION

(13) A1

(22) Date de dépôt/Filing Date: 1995/05/12

(41) Mise à la disp. pub./Open to Public Insp.: 1995/12/14

(62) Demande originale/Original Application: 2 191 602

(30) Priorité/Priority: 1994/06/06 (254,198) US

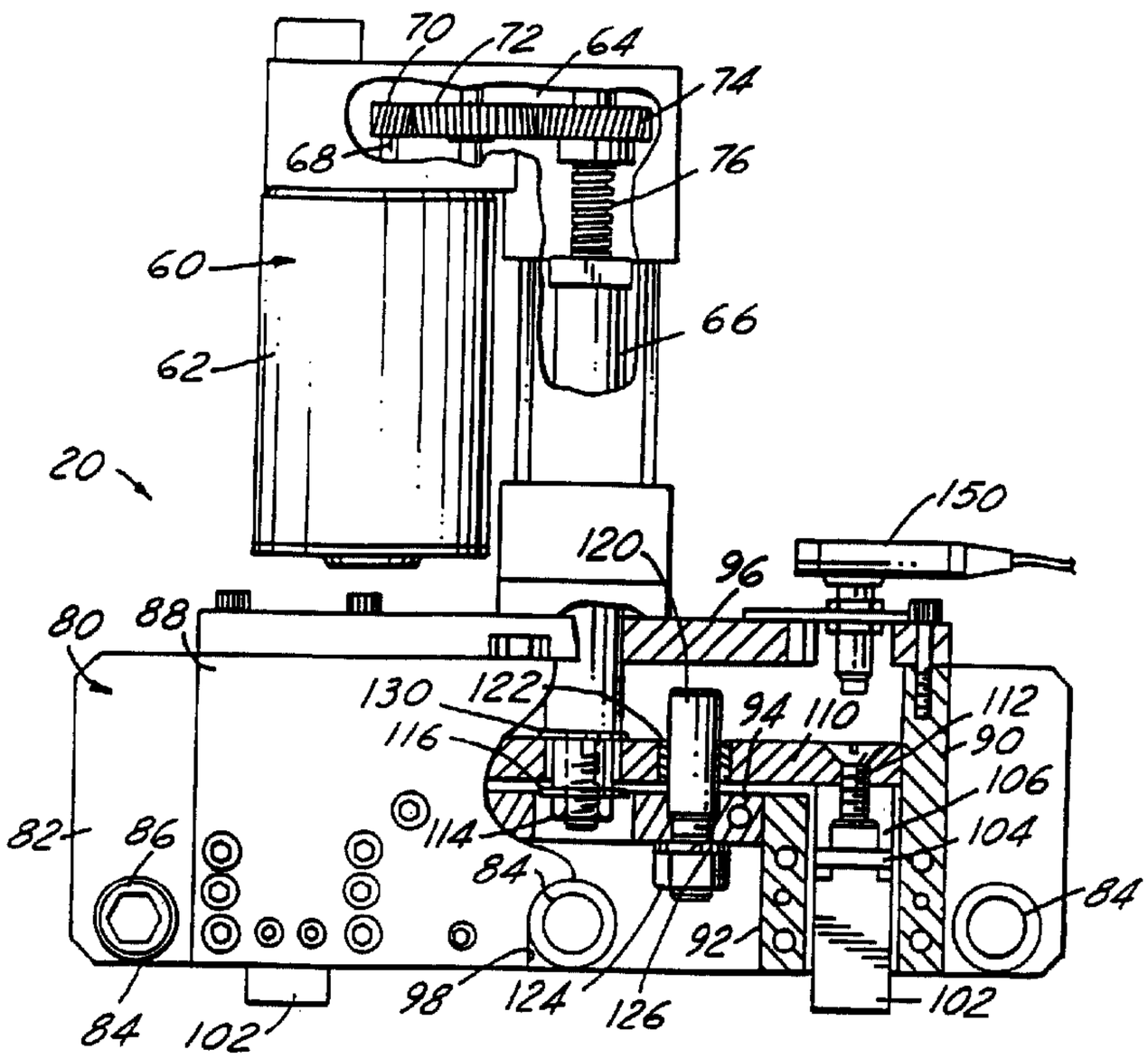
(51) Cl.Int.$^{7}$/Int.Cl.$^{7}$ B29C 45/64, B29C 45/17

(71) Demandeur/Applicant:
INCOE CORPORATION, US

(72) Inventeurs/Inventors:
BOTT, JAMES A., US;
TARR, JOHN W., US

(74) Agent: MACRAE & CO.

(54) Titre : MECANISME ELECTRONIQUE DE SERRAGE DU MOULE
(54) Title: ELECTRIC MOLD CLAMPING MECHANISM




(57) Abrégé/Abstract:
An electric mold clamping apparatus (20) and system are disclosed. A clamping mechanism (80) containing a pair of clamping members (40) is activated by an electric motor (62). The electric motor (62) operates a threaded piston (76) with acme threads which in turn operate a drive plate (110) to extend and retract the clamping members (40). The clamping members (40) are used to hold a mold plate in an injection molding machine (22). The clamping members (40) are pivotally attached to a drive plate mechanism and have a surface which mates with a wedge cam (140) to force the clamping member (40) against the mold plate. The stroke of the clamping mechanism (80) is regulated by an amperage draw on the electric motor (162). A limit switch (162) is used to terminate the end of the retracting stroke. An indicator light (194) is used to indicate the clamping position of the device (20).

# ABSTRACT

An electric mold clamping apparatus (20) and system are disclosed. A clamping mechanism (80) containing a pair of clamping members (40) is activated by an electric motor (62). The electric motor (62) operates a threaded piston (76) with acme threads which in turn operate a drive plate (110) to extend and retract the clamping members (40). The clamping members (40) are used to hold a mold plate in an injection molding machine (22). The clamping members (40) are pivotally attached to a drive plate mechanism and have a surface which mates with a wedge cam (140) to force the clamping member (40) against the mold plate. The stroke of the clamping mechanism (80) is regulated by an amperage draw on the electric motor (162). A limit switch (162) is used to terminate the end of the retracting stroke. An indicator light (194) is used to indicate the clamping position of the device (20).

THE EMBODIMENT OF THE INVENTION IN WHICH AN EXCLUSIVE PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:

1. An electric clamping apparatus for clamping a mold to a platen in an injection molding machine, the apparatus comprising:

a housing;

a pair of movable clamping members positioned in said housing; and

a drive mechanism in operable connection with said clamping members for moving said pair of clamping members from a first position within said housing to a second position wherein at least portions thereof extend outside said housing and are used to clamp the mold to the platen, said drive mechanism comprising:

an electric motor in operative association with said housing;

an elongated threaded shaft member driven by said motor;

a drive plate member connected to said pair of clamping members; and

connection means connecting said shaft member to said drive plate member, said connection means including a flanged bushing, wherein canting of the drive plate relative to said housing and said clamping members is prevented during movement of said clamping members.

2. The electric clamping apparatus as defined in claim 1 further comprising a pair of guide rod members positioned between said drive plate member and said housing.

3. The electric clamping apparatus as defined in claim 2 wherein said guide rod members are mounted in bushings in said drive plate.

4. The electric clamping apparatus as defined in claim 1 wherein said elongated shaft member has acme threads thereon.

5. The electric clamping apparatus as defined in claim 1 further comprising electric circuit means in operative association with said motor for measuring the amperage drawn on said motor during movement of said clamping members.

6. The electric clamping apparatus as defined in claim 1 wherein said clamping members each have wedge surfaces thereon and said housing has mating cam means which operably cooperate with said wedge surfaces to help clamp said clamping members on the mold.

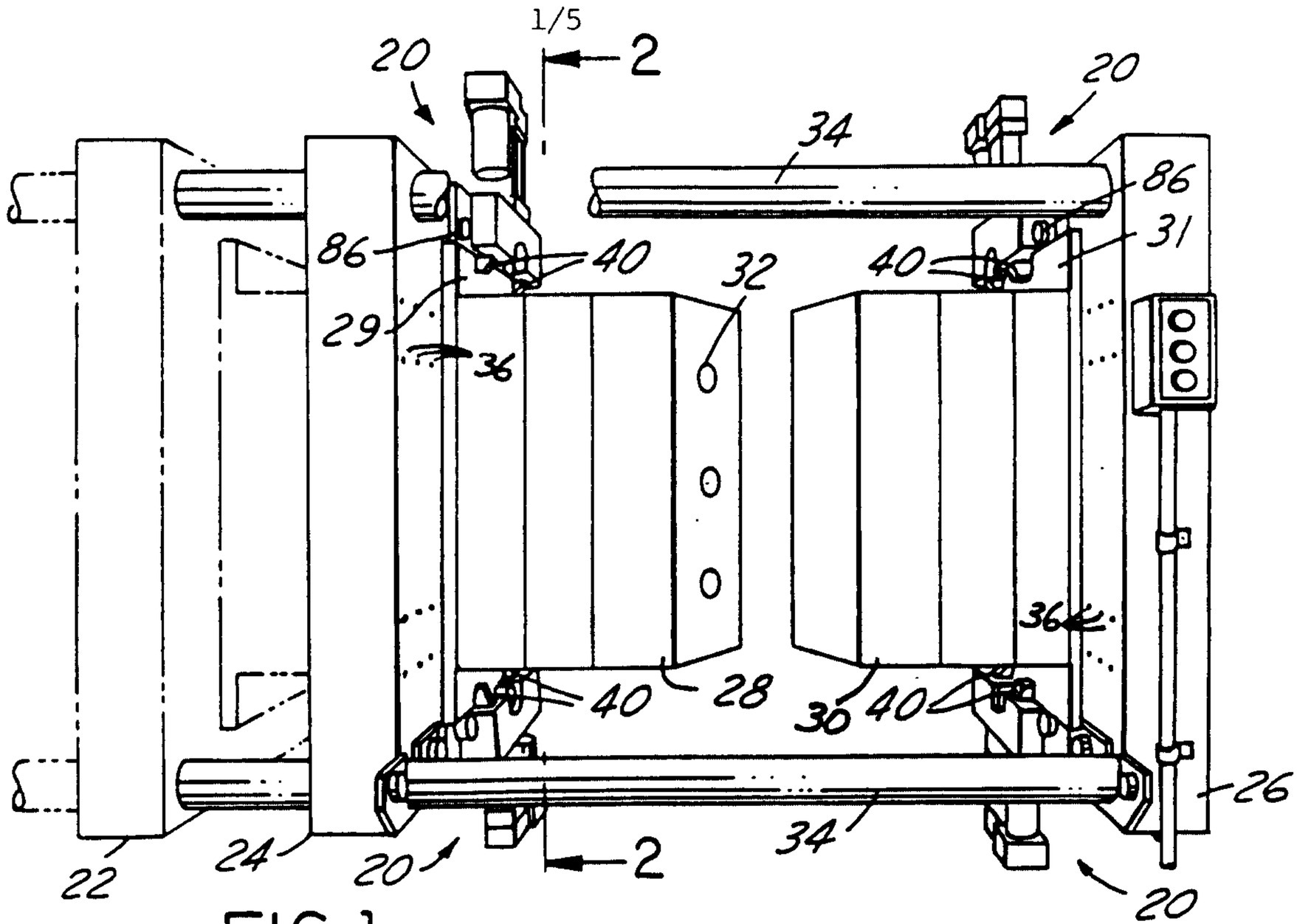

20
2
20
34
86
40
32
86
31
40
29
36
36
40
28
30
40
36
26
22
24
20
2
34
20

FIG. 1

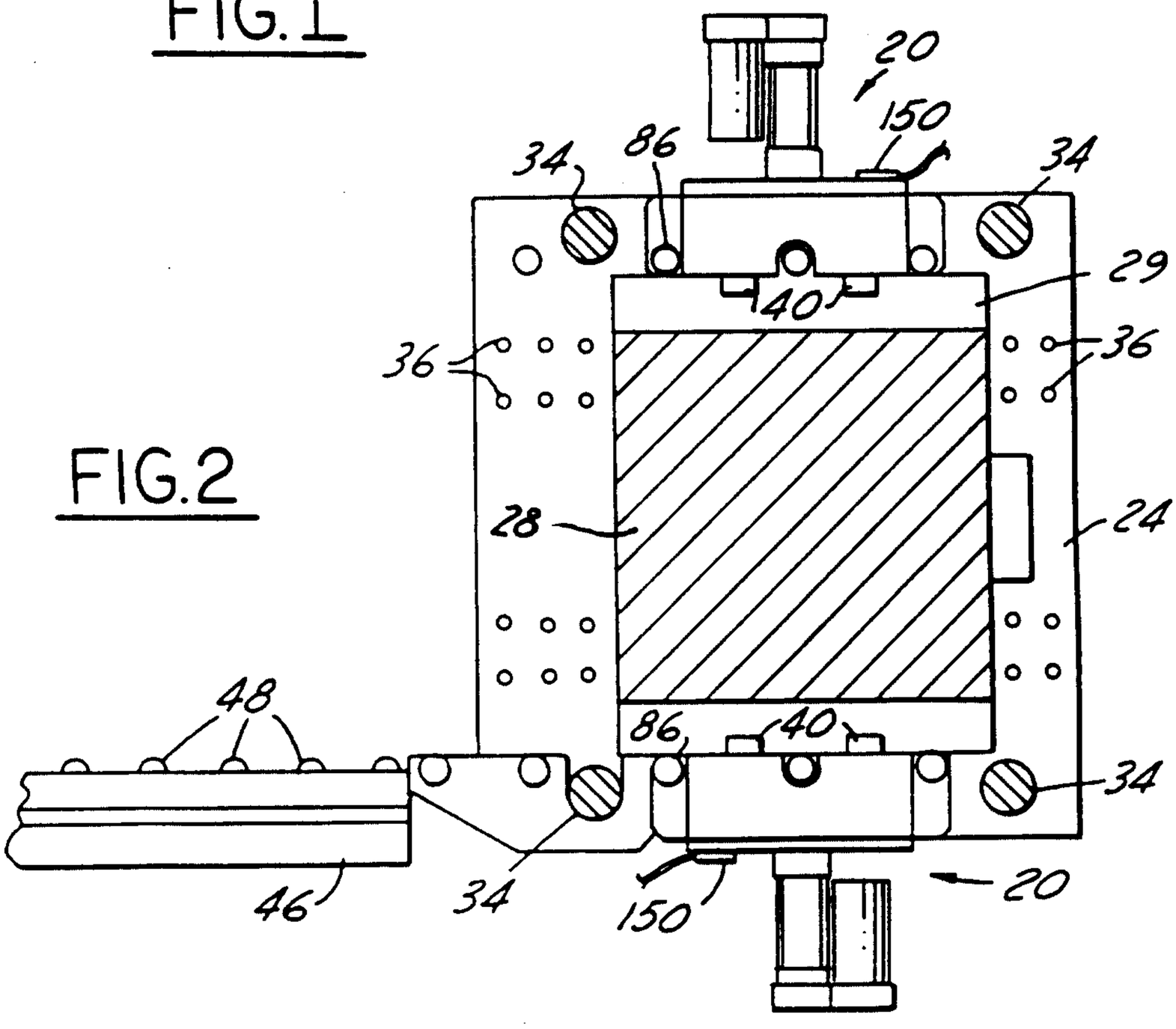

20
150
34
86
34
29
40
36
36
28
24
48
86
40
34
46
34
150
20

FIG. 2

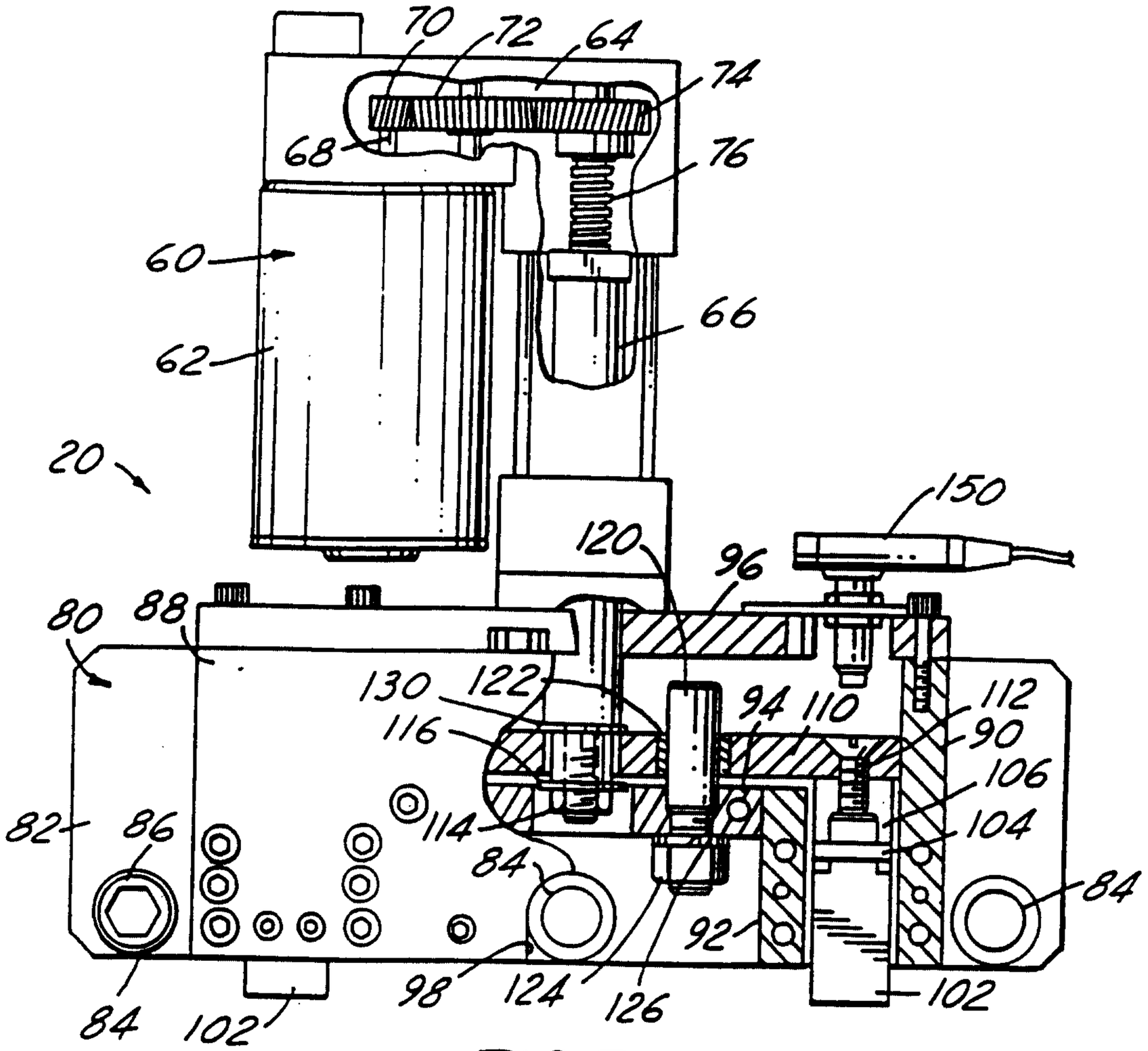

70
72
64
74
68
76
60
62
66
20
150
120
96
80
88
130
122
94
110
112
116
90
106
82
86
114
104
84
84
92
98
124
126
102
84
102

FIG.3

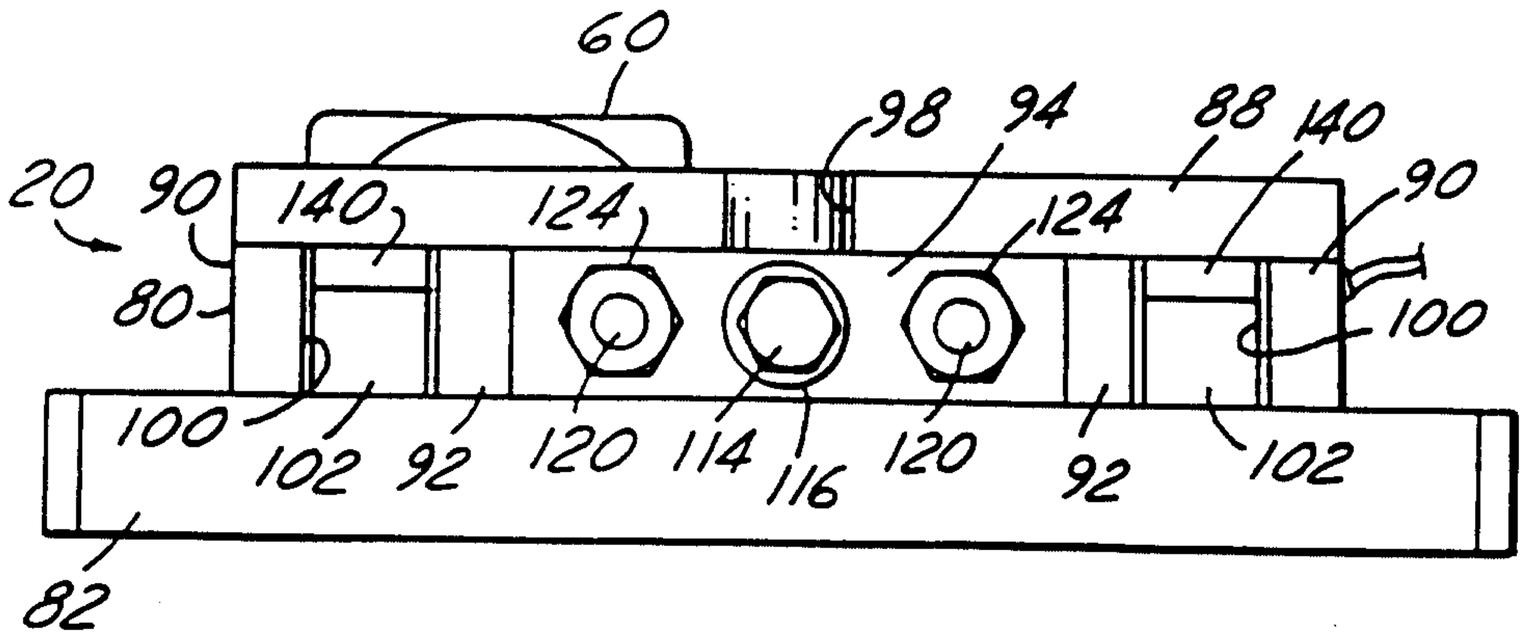

60
98
94
88
140
20
90
140
124
124
90
80
100
100
102
92
120
114
116
120
92
102
82

FIG.4

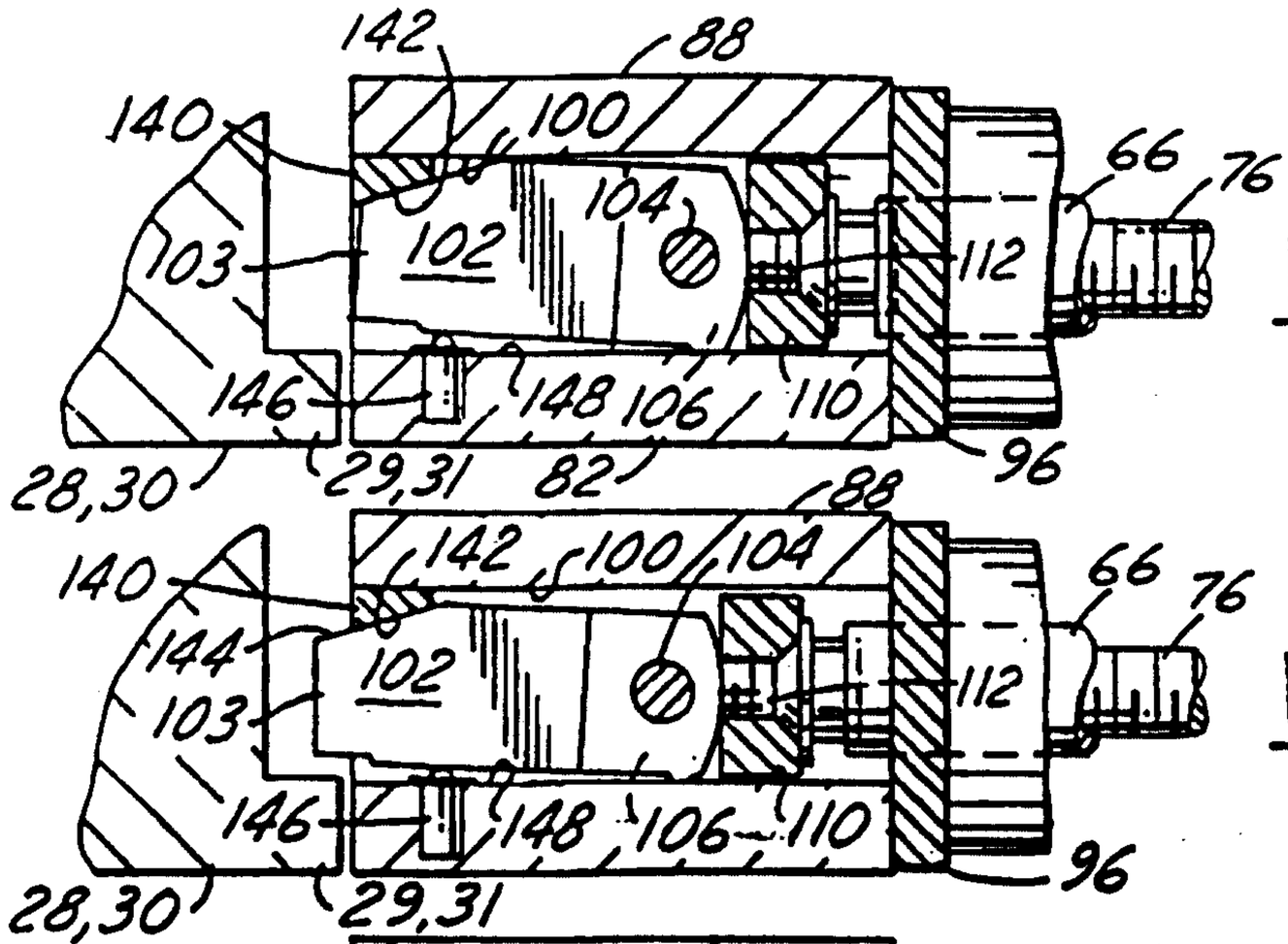



FIG.5




FIG.6

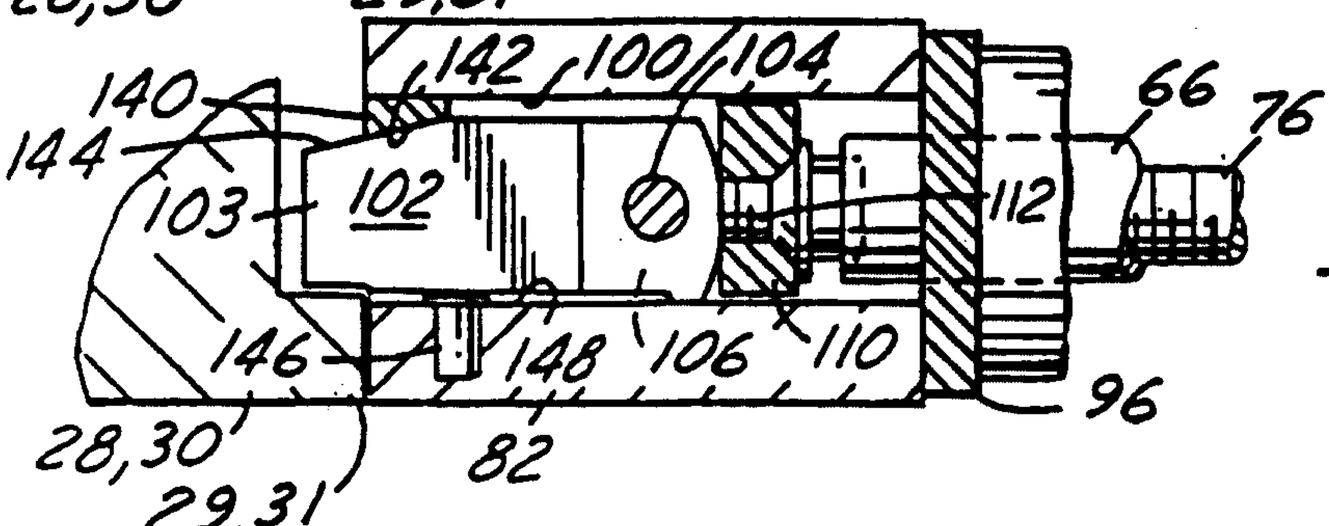



FIG.7

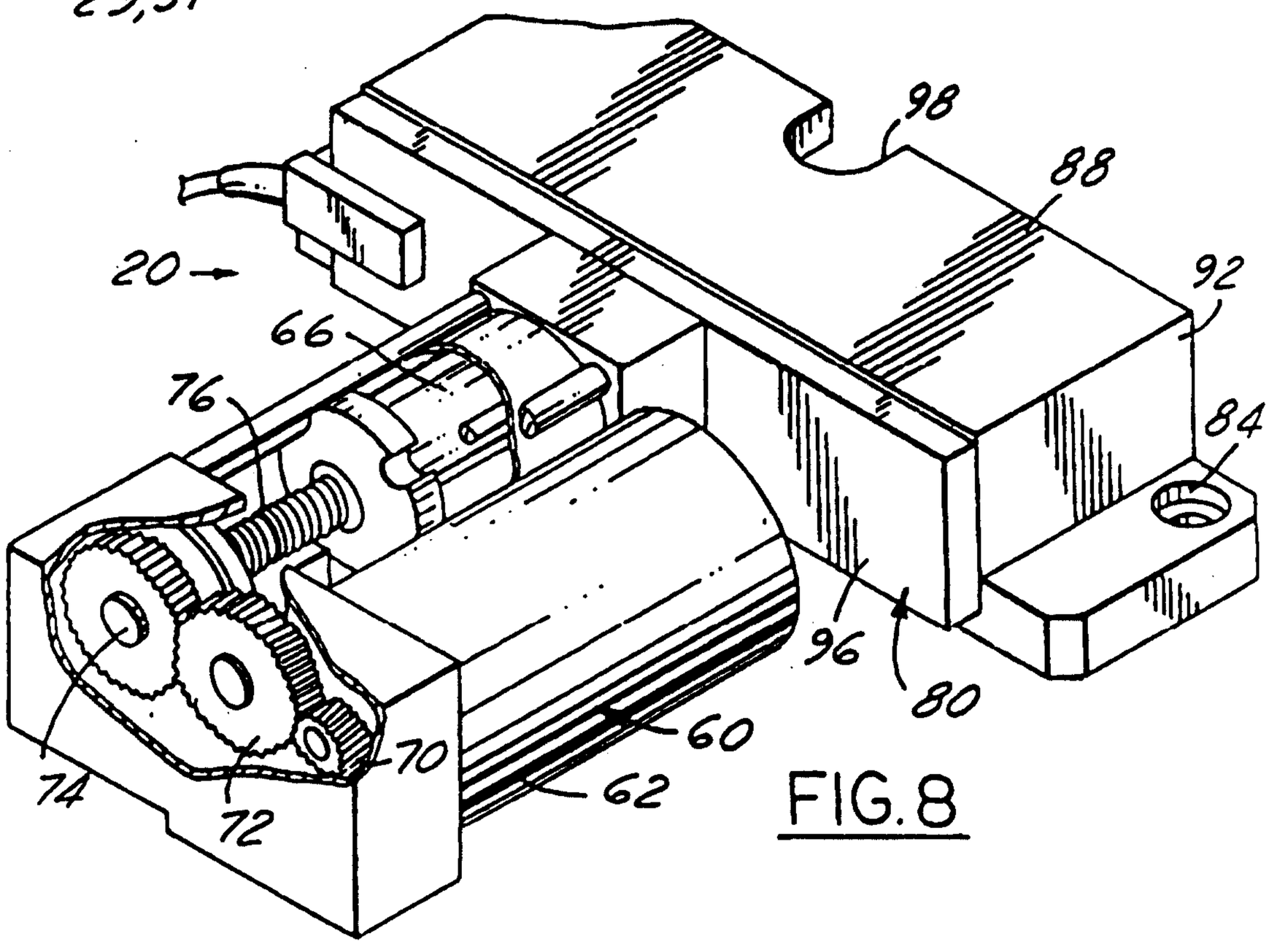



FIG.8

415

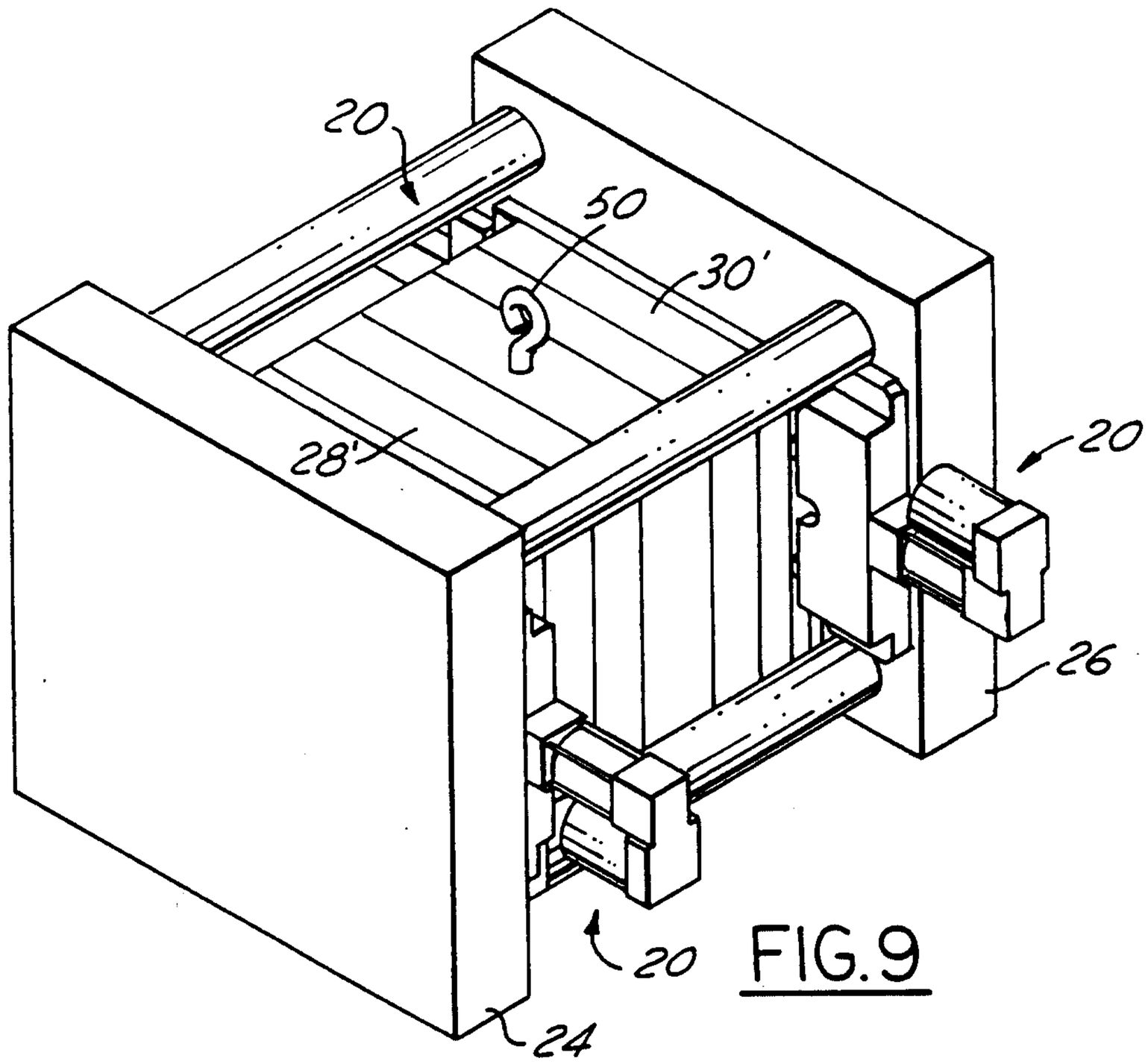



FIG.9

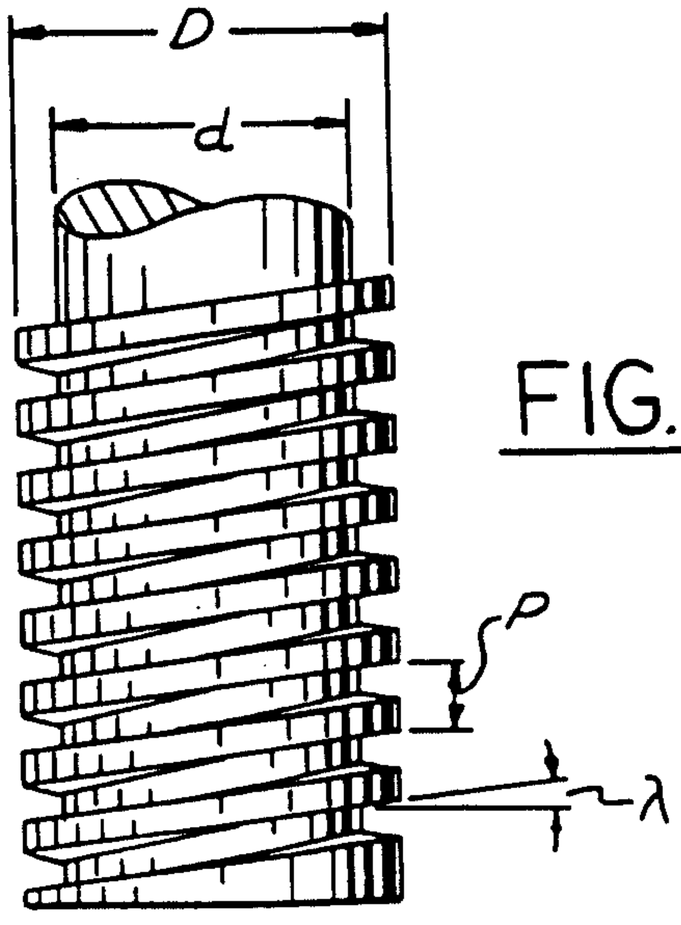



FIG.10

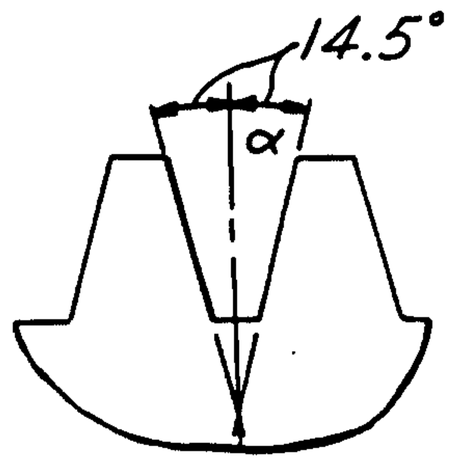



FIG.11

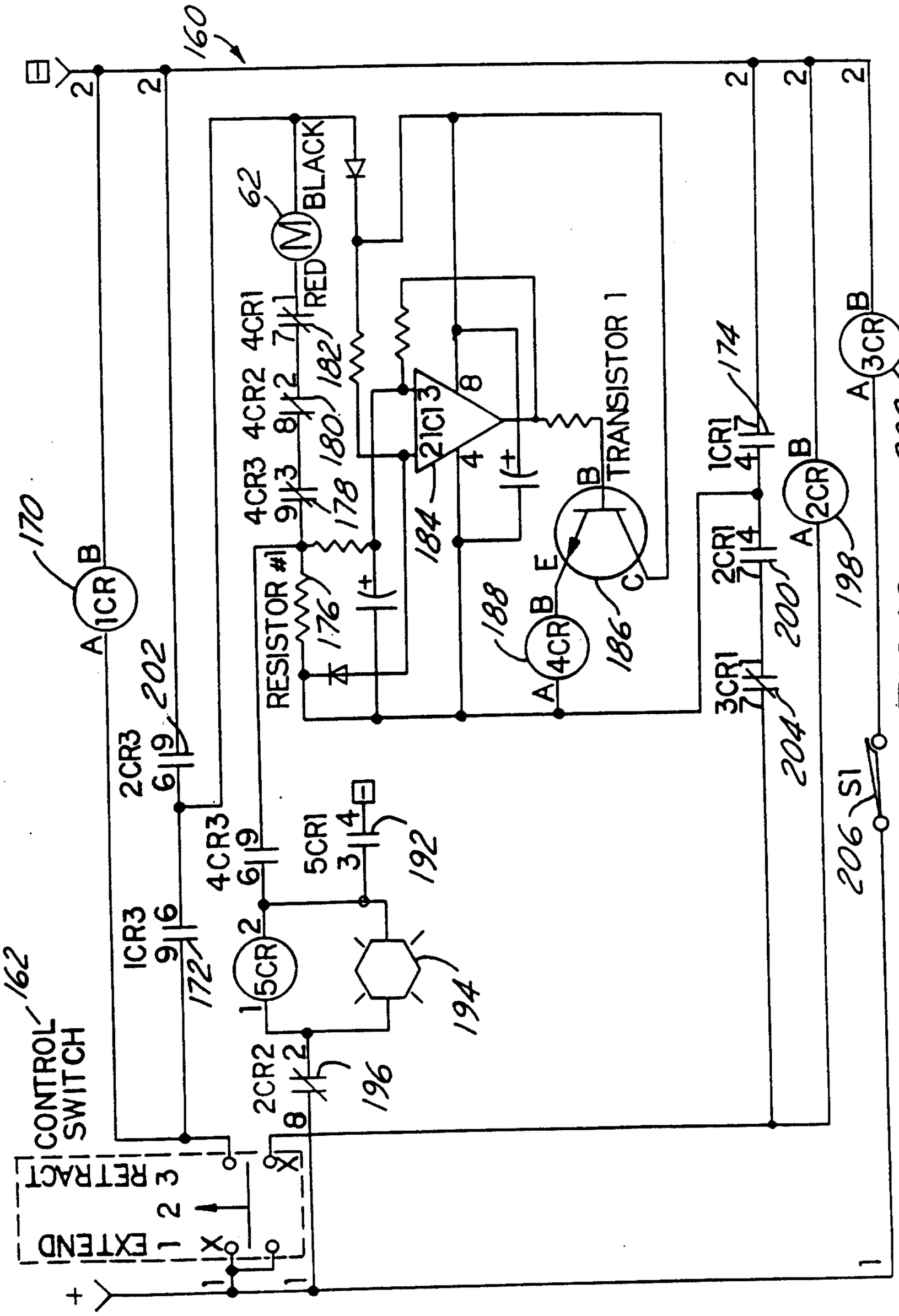
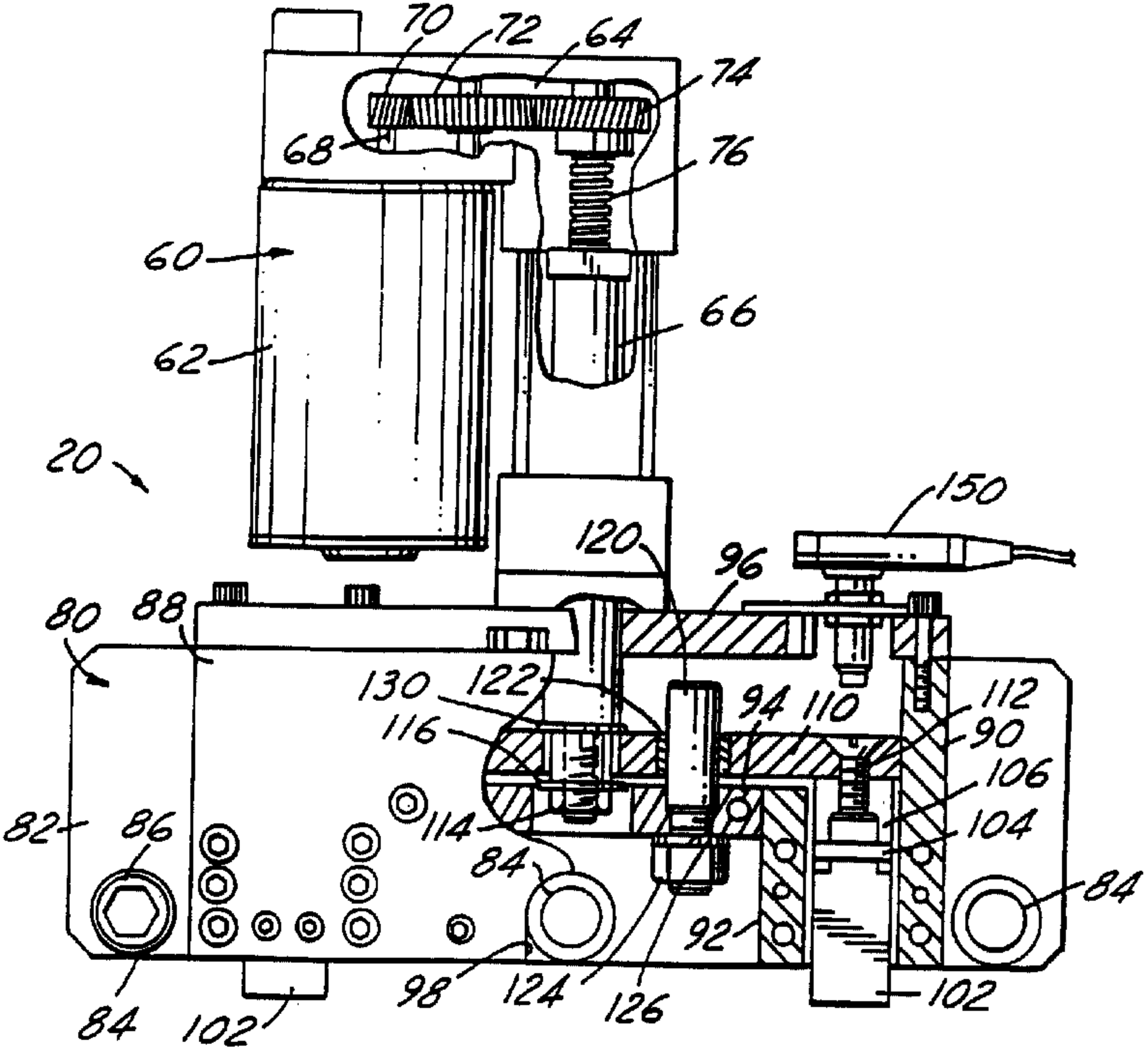

160
170
162
CONTROL SWITCH
RETRACT
EXTEND
1CR
2CR
3CR
4CR
5CR
1CR1
2CR1
3CR1
4CR1
5CR1
1CR3
2CR3
4CR3
1CR2
2CR2
4CR2
4CR3
RESISTOR #1
TRANSISTOR 1
1C1
2C1
RED
BLACK
62
172
174
176
178
180
182
184
186
188
192
194
196
198
200
202
204
206
208
S1

FIG.12


70
72
64
74
68
76
60
62
66
20
150
120
96
80
88
130
122
94
110
112
116
90
106
114
104
82
86
84
84
92
84
98
124
126
102
84
102