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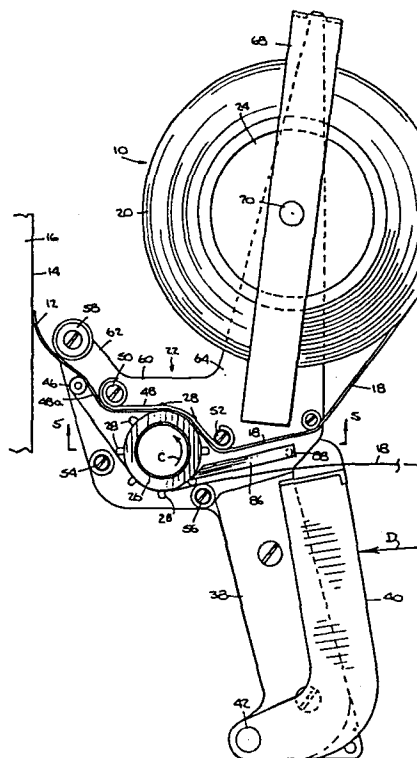
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54 Target applicator.

57 A target applicator for applying adhesive coated targets (12) mounted on a backing strip (18) to a surface (14) of an article of merchandise (16) and comprising a frame (22) on which a coil (20) of the target backing strip (18) is mounted, a trigger (38) which moves a gear rack to turn a drive gear and a drive spindle which operates through a one way clutch mechanism to turn a sprocket (26) to advance the strip (18) to a reversing element (46) where the targets (12) become peeled off and positioned in front of a pressure element (58) which presses the target against the surface (14) and allows it to be pulled off from the backing tape while advancing the tape. A novel arrangement incorporating a single clutch to perform two clutching functions and a novel print mechanism actuation arrangement are also disclosed.



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TITLE

TARGET APPLICATOR

CROSS REFERENCE TO
RELATED APPLICATION

This application contains subject matter related to subject matter disclosed in United States application entitled Target Applicator in the name of Natan Spektor, filed on even date herewith.

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BACKGROUND OF THE INVENTION

Field of the Invention

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This invention relates to applicator devices and in particular it concerns a novel target applicator for affixing targets to articles of merchandise for protecting same against theft.

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Description of the Prior Art

Electronic article surveillance systems have come into general use by stores and libraries for the protection of merchandise and books from theft. Examples of such

20

1 systems are shown in United States patents No. 3,500,373
and No. 4,326,198. As shown in those patents, each
article or book to be protected has affixed thereto a
"target" having special electrical characteristics which
5 produce a predetermined disturbance in an electromagnetic
field generated at an exit from the store or library.
When an article or book with such target is taken through
the exit, the resulting field disturbance is detected by a
receiver and the receiver in turn actuates an alarm.

10

Some article surveillance systems use targets which
comprise a thin elongated strip of metal, such as
permalloy, having a high magnetic permeability and a low
saturation level. Other systems use targets which
15 comprise a resonant electrical circuit which may be formed
as a printed circuit. Such targets may be affixed to the
articles or books by means of an adhesive; and, in order
to apply a large number of targets to a large number of
articles, it has been proposed to mount the adhesive
20 coated targets on a release surface of a continuous
backing strip and then to dispense the targets from the
strip using an applicator mechanism similar to the
conventional label applicator guns used in supermarkets.
Examples of conventional label applicator guns are shown
25 in United States Patents No. 3,814,651 and No. 4,094,724.

It has been found that certain problems are encountered in
connection with the dispensing of electronic targets from
a backing strip by means of a label applicator gun. These
30 problems result from the fact that the targets often vary
as to length, thickness and stiffness and they may not be
in precise registry with the applicator gun sprocket holes
on the backing strip.

35

SUMMARY OF THE INVENTION

1 According to one aspect of the present invention there is
provided a novel target applicator which comprises a
support frame for holding a coiled backing strip having a
release surface on which targets are held by an adhesive.
5 A drive mechanism is provided on the support frame for
advancing the backing strip; and a trigger is also mounted
on the frame for actuating the drive mechanism. A revers-
ing element and guide elements are arranged on the frame
so that as the backing strip is advanced in the forward
10 direction the guide elements guide the backing strip
around the reversing element to cause its direction to
change abruptly while the targets carried on the strip
proceed forwardly without change in direction and become
peeled off from the strip. A pressure element is provided
15 on the frame to engage the peeled off portion of a target
and press it against the surface of an article of merchan-
dise. There is also provided a clutch mechanism arranged
on the frame to permit the backing strip to be pulled
forwardly, independently of the drive mechanism, by a
20 target whose peeled off portion is adhered to the surface
of the merchandise as the pressure element is moved along
the surface. This construction permits the backing strip
to be advanced by any desired amount by operating the
trigger until a target becomes partially peeled off from
25 its backing strip. The target may then be pressed against
the surface of the article or book to which the target is
to be applied; and then by pulling the pressure element
along the surface, the target may be pulled free of the
backing strip and pressed onto the surface in one opera-
30 tion without further actuation of the trigger. It is not
necessary that the individual targets have any particular
special relation to each other or to any registration
holes or indicia on the backing strip; and, in fact, the
target strips do not even have to have the same length.

1 According to another aspect of the invention the backing
strip drive mechanism comprises a sprocket which engages
holes in the side of the backing strip and the guide
elements are arranged to guide the strip over one portion
5 of the sprocket as the strip advances from a supply spool
to the reversing element and to guide the strip over
another portion of the sprocket as the strip returns from
the reversing element. This arrangement serves to main-
tain the backing strip in proper lateral position so that
10 it will not separate from the driving mechanism and so
that the targets will be positioned correctly relative to
the pressure element.

According to a still further aspect of the invention there
15 is provided a first one way clutch mechanism between the
drive mechanism and the trigger to allow the trigger to
advance the backing strip by any desired amount and there
is also provided a second one way clutch mechanism between
the drive mechanism and the frame to prevent reverse
20 movement of the backing strip when the trigger is released.

BRIEF DESCRIPTION OF THE DRAWINGS

Preferred embodiments of the invention have been chosen
25 for purposes of illustration and description and are shown
in the accompanying drawings forming a part of the speci-
fication, wherein:

Fig. 1 is a side elevation view, partially cut away, of a
30 target applicator according to one embodiment the present
invention;

Fig. 2 is a fragmentary view showing a portion of the
target applicator of Fig. 1;

1 Fig. 3 is a side elevation view, also partially cut away,
showing the opposite side of the applicator of Fig. 1;

Fig. 4 is a rear elevational view of the target applicator
5 of Fig. 1;

Fig. 5 is an enlarged section view taken along line 5-5 of
Fig. 1;

10 Fig. 6 is a section view taken along side 6-6 of Fig. 5;

Fig. 7 is a section view taken along line 7-7 of Fig. 5;

Fig. 8 is a fragmentary perspective view showing a backing
15 strip drive mechanism and clutch used in the embodiment of
Fig. 1;

Fig. 9 is a view taken along line 9-9 of Fig. 8;

20 Fig. 10 is a perspective view showing a target dispensed
by the applicator of Fig. 1;

Fig. 11 is a side elevational view of a target applicator
according to a second embodiment of the present invention;

25 Fig. 12 is a view similar to Fig. 11 but showing a differ-
ent step in the operation of the target applicator;

Fig. 13 is a top view of the target applicator of Fig. 11;

30 Fig. 14 is a section view taken along line 14-14 of Fig.
11; and

Fig. 15 is a section view taken along line 15-15 of Fig.
35 11.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

1 As shown in Fig. 1, a target applicator 10 according to
the present invention dispenses a target 12 onto a surface
14 of an article of merchandise 16. The target 12 is
coated with an adhesive which secures it to the surface
5 14. The adhesive also holds the target 12 to a continuous
elongated backing strip 18 which is arranged in a coil 20
mounted on the applicator. As can best be seen in Figs. 8
and 9, a plurality of targets 12 are mounted in succession
along the backing strip 18. As shown, the targets 12 are
10 arranged end to end along the backing strip 18. The
targets are coated on the side facing the backing strip
with an adhesive, and the side of the strip on which the
targets are mounted is provided with a release coating
which allows the targets, with the adhesive, to be easily
15 pulled away. As can be seen in Figs. 9 and 10 the targets
each comprise an active portion 100 sandwiched between
upper and lower cover portions 102 and 104. The lower
cover portion 104 is coated with adhesive on both sides to
hold the cover portions and active portion together and to
20 hold the target assembly to the backing strip 18. In the
embodiment shown, the active portion 100 is a thin
elongated strip of a material, such as permalloy, having a
high magnetic permeability and a low magnetic saturation
characteristic. Such target strips are used in electro-
25 magnetic type article surveillance systems such as
described, for example, in United States Patent No.
4,326,198. There may also be provided a continuous
deactivation element which extends along the active
portion 100 or a plurality of spaced apart deactivation
30 elements distributed along the length of the active
portion. Such deactivation element or elements, when
properly magnetized, are used to prevent the active
portion 100 from operating as a target. Thus when a
protected article is validly purchased a sales clerk with

1 a special magnetizing device can magnetize the
deactivation element or elements and then the article
carrying the target can be taken past the detection system
without actuating the alarm.

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The active portion 100 of the target may alternatively be
formed of a small resonant circuit made of a wire loop and
a capacitor or it may be formed as a printed circuit; in
which cases the target is used in radio frequency type
10 article surveillance systems such as described, for
example, in United States Patent No. 3,500,373. In either
case, the active portion 100 of the target makes it
stiffer than the backing strip 18; and when the backing
strip is bent abruptly at the reversing element 46, the
15 target assembly will peel away from the release surface of
the backing strip. The adhesive will remain on the
surface of the lower cover portion of the target so that
the target can be pressed onto and adhered to the surface
14 of an article of merchandise.

20

The target applicator 10 comprises a frame 22 on which a
spool 24 is mounted. The spool 24 carries the backing
target strip: coil 20. A drive mechanism is provided on
the frame 22 to engage the backing strip 18 and advance it
25 in a forward direction from the coil 20. The drive
mechanism comprises a sprocket 26 having teeth 28 which
engage holes 30 along one edge of the backing strip 18.
As can be seen in Fig. 3, a drive gear 32 is mounted on
the frame 22 in axial alignment with the sprocket 26. A
30 drive rack 34 is held in engagement with the gear 32 by
means of a drive rack roll 36. When the drive rack 34
moves forwardly, i.e., in the direction of the arrow A in
Fig. 3, it causes the drive gear 32 to turn in a clockwise
direction as shown by the arrow B in Fig. 3. This in turn
35 causes the drive sprocket to turn in the same direction
(i.e. counterclockwise as shown by the arrow C in Fig. 1).

1 The frame 22 is formed with a handle 38; and a trigger 40
is attached to the bottom of the handle by means of a
pivot 42. As shown in Fig. 3, the upper end of the
trigger 40 is attached by means of a further pivot 43 to
5 the end of the drive rack 34. A trigger return spring 44
is attached to the handle 38 and presses the trigger 40
outward toward a retracted position as shown in Fig. 3.
When the trigger and handle are squeezed, the trigger is
moved inwardly in the direction of the arrow D as shown in
10 Fig. 3 to cause the rack 34 move forwardly and turn the
gear 32 and the sprocket 26 as above described.

As shown in Fig. 1, a reversing element 46 and a guide
plate 48 are also mounted on the frame 22. The guide
15 plate 48 curves over the upper side of the sprocket 26 and
at each end it is curled around and held to screws 50 and
52 which project out from the side of the frame. As can
be seen in Fig. 1, the backing strip 18 on which the
targets 12 are carried, passes from the coil 20 under the
20 screw 52 and is guided by the guide plate 48 onto the
upper portion of the drive sprocket 26 so that the
sprocket teeth 28 enter the holes 30 in the strip to drive
it forwardly. The guide plate 48 is formed with a slot 49
(Fig. 8) through which the sprocket teeth 28 can project
25 as the sprocket 26 rotates. The slotted guide plate 48
provides positive engagement of the sprocket teeth 28 with
the holes 30 in the target backing strip 18. This is
especially advantageous where, for example, the holes 30
have become covered over with a film of the pressure
30 sensitive adhesive from the targets. It will also be
appreciated that the guide arrangement permits positive
advancement of the backing strip 18 with the targets 12
without danger of jamming when targets of various
thickness and stiffness are being dispensed.

1 The strip 18, upon leaving the drive sprocket, passes
under the screw 50. From there the strip passes over and
around the reversing element 46 which causes the strip to
abruptly change direction. The targets 12, however, which
5 are relatively stiff, do not bend around the reversing
element 46 with the strip 18 but instead they move in a
straight line and peel away from the release surface of
the strip as shown in Fig. 1.

10 The backing strip 18, after leaving the reversing element
46, passes over a further guide element 54 and onto the
lower portion of the drive sprocket 26. Here again the
sprocket teeth 28 enter the holes 30 in the strip to
assist in driving the strip forwardly. The strip 18 then
15 passes over a final guide element 56 and exits out through
the back of the applicator 10.

A pressure element 58 is mounted on the frame 22 just
above the reversing element 46 to engage a peeled off
20 portion of the target 12. The pressure element 58 is used
to press the target 12 against the surface 14 of the
merchandise 16. As can be seen in Fig. 1, a portion 48a
of the forward end of the guide plate 48 is not curled
around the screw 50 but instead extends toward the revers-
25 ing element 46 to guide the targets 12 so that they do not
accidentally pass behind the pressure element 58.

A clutch mechanism, described hereinafter, is also mounted
on the frame 22 to permit the backing strip 18 to be
30 pulled forwardly, independently of the drive mechanism, by
the target 12 when the pressure element 58 is moved along
the surface 14 and the target is becoming adhered to the
surface as shown in Fig. 2.

35 As can be seen in Figs. 3 and 4, the frame 22 comprises
essentially a flat metal plate formed with a central body

1 portion 60. The pressure element 58, which is in the form
of a roller, is mounted on an upwardly and forwardly
projecting extension 62 of the body portion. The handle
38 extends downwardly from the rear of the body portion 60
5 and an spool support 64 extends upwardly from the rear of
the body portion 60. A spool spindle 66 is affixed to
project outwardly from the support 64 and serves as an
axle for the spool 24. A plate 68 is also mounted on the
spool spindle so that the spool 24 and coil 20 are sand-
10 wичed between the plate and the spool support 64. A
screw 70 is threaded into the outer end of the spindle 66
to hold the plate 68 on the spindle 66.

The drive mechanism is best seen in Figs. 5-8. As shown
15 in Fig. 5, a sleeve 74 projects through the body portion
60 of the frame 22 and is secured in place by means of
screws 75 which pass through a flange 76 on one end of the
sleeve 74. A drive spindle 78 extends through one end of
the sleeve 74 and is connected to turn with the drive gear
20 32. The opposite end of the drive spindle 78 is formed
with an enlargement 80 beyond the opposite end of the
sleeve 74. The drive sprocket 26 is tubular and it fits
over both the sleeve 74 and the enlargement 80 of the
drive spindle 78. As can be seen, the inner surface of
25 the sprocket 26 has different portions thereof aligned,
respectively, with the sleeve 74 and with the enlargement
80 of the drive spindle 78. A roller type sprocket drive
clutch 82 is mounted between the enlargement 80 of the
drive spindle 78 and the inner surface of the drive
30 sprocket 26. This drive clutch is of well known
construction and it allows free relative movement in one
direction between the two members it interconnects but it
prevents relative movement between those members in the
opposite direction. A suitable roller clutch is the
35 Torrington one way roller clutch type RC-061008, available
from the Torrington Company of Torrington, Connecticut.

1 The drive clutch 82 as shown in Fig. 6, is arranged such
that when the drive spindle 78 is rotated in a counter-
clockwise direction, the clutch engages and prevents
relative movement between the enlargement 80 of the
5 spindle 78 and the drive sprocket 26 so that the sprocket
26 will also turn in a counterclockwise direction and
advance the backing strip 18 forwardly. However, when the
drive spindle 78 turns in a clockwise direction, as when
the trigger 40 is released and the drive rack 34 moves
10 rearwardly, the drive clutch 82 disengages and permits the
spindle 78 to turn clockwise without turning the drive
sprocket 26. In addition, the drive sprocket 26 may
continue to turn in the counterclockwise direction, as
when the backing strip 18 is being pulled forwardly, while
15 the spindle 78 remains stationary or turns in a clockwise
direction. This arrangement permits the target 12 to be
advanced by an amount sufficient to peel off the backing
strip 18 from a portion of the target so that that portion
of the target can be pressed against and adhered to the
20 surface 14 of the article 11. Then, by continuing to
press against the surface 14, and drawing the applicator
along the surface, the target will be pulled off while
advancing the strip 18 independently of trigger movement.

25 There is also provided a reverse prevention clutch 84
between the sleeve 74 and the drive sprocket 26. The
reverse prevention clutch 84 is of the same construction
as the drive clutch 82; and it is arranged, as shown in
Fig. 7, to permit the drive sprocket 26 to rotate freely
30 in the counterclockwise direction but it prevents reverse
movement of the drive sprocket 26 relative to the non
rotating sleeve 74.

It will be appreciated that the above described arrange-
35 ment of the clutches 82 and 84 serve as a ratchet to
permit the trigger 40, which operates through the drive

1 rack 34 and the drive gear 32, to turn the drive spindle
78, to cause the drive sprocket 26 to turn in a direction,
i.e. counterclockwise, causing the target strip 18 to feed
5 position and causes reverse rotation of the drive gear 32,
the sprocket 26 does not experience any reverse rotation.
Thus it is possible, by moving the trigger back and forth,
to advance the target strip 18 by any desired amount. It
will be appreciated that this arrangement makes it
10 possible to control the feed of the targets 12 so that
they do not have to be precisely positioned on the backing
strip 18 nor do they need to be precisely registered with
the sprocket holes 30 along the strip 18.

15 A stripping blade 86 is mounted by means of a screw 88 on
the frame 22 and presses up against the sprocket 26 just
beyond the location where the backing strip 18 leaves the
lower portion of the sprocket. The stripping blade serves
to prevent the strip from adhering to and being carried
20 around the sprocket by any adhesive which may become
deposited on the sprocket surface.

The operation of the applicator will now be described. As
shown in Fig. 1, the applicator 10 is positioned so that
25 the pressure element 58 faces the surface 14 of the
article 16 on which a target 12 is to be applied. The
trigger 40 is then squeezed to operate the drive mechanism
so that the backing strip 18 is advanced from the coil
20. When a target 12 reaches the reversing element 46,
30 its relative stiffness prevents it from bending around the
reversing element and the target peels away from the strip
and proceeds forwardly up to and in front of the pressure
element 58. At this point the applicator 10 is pressed
against the surface 14 so that the pressure element 58
35 presses the peeled off portion of the target 12 against
the surface 14. The adhesive on the target causes it to

1 stick to the surface 14. The applicator 10 is then drawn
downwardly with the pressure element 58 continuing to
press the target 12 against the surface 14 and the target
becomes pulled out from the applicator and onto the
5 surface 14 while advancing the backing strip 18. This
advancement of the backing strip is automatic and
independent of any trigger movement and is accomodated by
the clutch 82.

10 It will be noted that the target 12 is dispensed not by
the action of the trigger 40 but rather it is dispensed by
becoming pulled out from the applicator gun. This
arrangement makes it possible to dispense target elements
of any desired length. Also, since the trigger is
15 actuated only for the purpose of advancing the target 12
until it is brought into dispensing position in front of
the pressure roll 58, it is not necessary to have any
particular registration between the holes 30 in the
backing strip 18 and the targets 12.

20 It will be noted that when the trigger 40 turns the
sprocket 26, the target strip 18 is pulled by the sprocket
26 both before and after the strip reaches the reversing
element 46. This distributes and minimizes stress on the
25 strip and reduces the likelihood of tearing at the
sprocket holes 30. Moreover, because the strip 18 is
advanced in great part by the pulling of the target 12 out
from the applicator gun, the tension on the strip is
transferred through the sprocket 26 to the empty backing
30 strip beyond the reversing element to ensure positive
drive of the empty strip beyond the reversing element.

The overall construction of the embodiment of Figs. 11-15
is like that of the above described embodiment except for
35 the provision of a modified clutch arrangement and the
provision of a label print mechanism. To the extent that

- 1 the other parts of the embodiment of Figs. 11-15 are the same as their counterparts in the preceeding embodiment, like reference numbers are used.
- 5 As can be seen in Figs. 11 and 13, the frame 22 is elongated in the region between the coil 20 and the sprocket 26 and a print mechanism 90 is mounted on the frame between the coil and the sprocket. The print mechanism is not new per se and it may comprise any
- 10 commercially available print mechanism used with label dispensers.
- A print plate 92 is supported alongside the frame 22 just below the print mechanism by means of posts 94 and 96.
- 15 The target strip 18 with targets 12 mounted thereon passes from the coil 20 over the print plate 92 and under the print mechanism 90 toward the sprocket 26.
- The print mechanism 90 is pivotally mounted on a post 98
- 20 on the frame 22; and a spring 108, which extends between a post 109 on the frame and a post 110 on the print mechanism, causes the print mechanism to press down on the target 12 which is lying over the print plate 92.
- 25 As shown in Fig. 12, an arcuate slot 112 is formed in the frame 22 just above the trigger 40. A triangular cam 114 and a cylindrical ink roller 116 project out through the slot 112 from an extension 40a of the trigger 40. When the trigger is pressed forward, as shown in Fig. 12, the
- 30 cam 114 engages the lower portion of the print mechanism 90 and causes it to pivot about the post 98 and lift up off the target 12 on the print plate 92. The gear rack is configured so that no teeth engage the drive gear 32 during this initial movement of the trigger 40.
- 35 Accordingly the sprocket 26 will not cause any movement of

1 the target strip 18 until the cam 114 has lifted the print
mechanism 90 up off the target 12 on the print plate 92.
At the same time, the ink roller 116 rolls along the
underside of the print mechanism and applies ink to the
5 print elements on the bottom of the mechanism. When the
trigger 40 is released the cam and ink roller are moved
back in the slot 112 away from the print mechanism 90; and
the spring 108 causes the print mechanism to hit down
against the target 12 on the printing plate 92 and mark
10 the target. However, as long as the trigger 40 is held in
its forward position, targets of any length may be
dispensed while the print mechanism is held up off the
target strip 18. Only when the trigger 40 is released
does the print mechanism 90 return and hit down on another
15 target. It will be appreciated that this arrangement
permits accurate and automatic indexing of printing on
targets of different lengths.

Because of the novel clutching arrangement, the sprocket
20 26 remains stationary when the trigger 40 is released and
the target 12 does not move on the printing plate 92 so
that when the print mechanism 90 hits down on the target a
clear imprint is made with no blurring.

25 Turning now to Fig. 14 it will be seen that the sprocket
26 is provided with a single one way clutch 118 having
rollers 120 which extend part way onto the fixed sleeve 74
and part way onto the enlargement 80 of the drive spindle
78.

30 When the drive gear 32 is turned by movement of the
trigger 40 in the forward direction, as shown in Fig. 12,
the clutch rollers 120 lock between the housing of the
clutch 118 and the drive spindle enlargement 80 so that
35 the sprocket 26 is turned with the drive gear 32. During
this movement the portion of the rollers 120 which extend

1 over the fixed sleeve 74 slide around the sleeve.
Thereafter, when the trigger 40 is released and rotates
the drive gear 32 in the reverse direction, the clutch
rollers 120 are released from the drive spindle
5 enlargement 80, allowing it to rotate in the reverse
direction without driving the sprocket 26. Should the
sprocket 26 begin to move in the reverse direction, the
portion of the clutch rollers 120 which extend between the
housing of the clutch 118 and the fixed sleeve 74 become
10 engaged between these two elements so that the sprocket 26
cannot be reversely rotated.

It will be noted that in the embodiment of Figs. 11-15,
the single one way clutch 118 serves to produce clutching
15 between the drive spindle enlargement 80 and the sprocket
26 as well as between the sprocket 26 and the fixed sleeve
74. In utilizing a single clutch mechanism for these two
clutching functions, the outer diameters of the enlarged
portion 80 of the drive spindle and of the fixed sleeve 74
20 should be closely matched. Also, it is preferred to
arrange the enlarged portion 80 of the spindle and the
fixed sleeve 74 so that three fourths of the length of the
clutch rollers 120 extend over the surface of the enlarged
portion 80 and one fourth of the length of the clutch
25 rollers extend over the outer surface of the fixed sleeve
74. A suitable roller clutch for this purpose is the
Torrington RC-040708 roller clutch available from the
Torrington Company of Torrington, Connecticut.

30 It will be appreciated from the foregoing that the novel
target applicator of this invention is simple in construc-
tion and it accommodates targets which may be irregularly
positioned on the backing strip. Moreover, the novel
applicator of this invention is relatively free of
35 problems of jamming and misapplication of targets due to
slippage or loss of engagement of the backing strip 18
with the drive mechanism.

CLAIMS

- 1 1. A target applicator (10) for adhesively applying
electronic article surveillance system targets (12) to
articles of merchandise (16), said targets being held by
an adhesive to a release surface on a continuous backing
5 strip (18) coiled on a spool (24), said target applicator
comprising,
a support frame (22) for carrying said spool (24)
with said backing (18) strip and targets (12),
a drive mechanism (32, 34, 36, 80, 82, 84, 118, 26)
10 mounted on said support frame (22) for engaging said
backing strip (18) and advancing same in a forward
direction,
a trigger moveably (40, 42, 43, 44) mounted on said
frame for actuating said drive mechanism,
15 a reversing element (46) and guide elements (48, 50,
52, 56) arranged on said frame (22) so that, as said
backing strip (18) is advanced in a forward direction,
said guide elements guide (48, 50, 52) said strip around
said reversing element (46) to cause its direction to
20 change abruptly while targets (12) carried on said strip
proceed forwardly without change in direction and become
peeled off said strip (18),
a pressure element (58) mounted on said frame (22)
to engage a peeled off portion of a target (12) and press
25 it against a surface (14) of an article of merchandise
(16),
and a clutch mechanism (74, 76, 78, 80, 82, 84, 118,
120) on said frame for permitting said backing strip to be
pulled forwardly, independently of said drive mechanism
30 (32, 34, 36, 80, 82, 84, 118, 26), by a target whose
peeled off portion is adhered to said surface (14) when
said pressure element (58) is moved therealong.
2. A target applicator according to Claim 1 wherein
35 said clutch mechanism (74, 76, 78, 80, 82, 84, 118, 120)

1 comprises a one way clutch (82) between said trigger (40)
and said drive mechanism (32, 34, 36, 80, 26, 118).

3. A target applicator according to Claim 1 wherein
5 said drive mechanism (32, 34, 36, 80, 26, 118) includes a
sprocket (26) mounted on said frame (22) and having teeth
(28) which engage holes (30) formed along said backing
strip (18).

10 4. A target applicator according to Claim 3 wherein
said clutch mechanism (74, 76, 78, 80, 82, 84, 118, 120)
comprises a one way clutch (82, 118) between said trigger
(40) and said sprocket (26).

15 5. A target applicator according to Claim 1 wherein
said drive mechanism (32, 34, 36, 80, 82, 84, 118, 26)
includes guide elements (48, 50, 52, 56) arranged on said
frame (22) to guide the strip (18) over one portion of the
sprocket (26) as the strip (18) advances from the spool
20 (24) to the reversing element (46) and to guide the strip
over (18) another portion of the sprocket (26) as the
strip (18) advances beyond the reversing element (46).

~~6. A target applicator according to Claim 3 wherein the~~
25 ~~drive mechanism (32, 34, 36, 80, 83, 84, 118, 26)~~
comprises a drive spindle (78) rotatably mounted on said
frame (22), a drive gear (32) on said drive spindle, a
gear rack (34) extending between said trigger (40) and
said drive gear (32) and a one way clutch (82, 118)
30 between said drive spindle (78) and said sprocket (26).

7. A target applicator according to Claim 3 wherein
said drive mechanism (32, 34, 36, 80, 82, 84, 118, 26)
includes a second one way clutch mechanism (84) between
35 said frame (22) and said sprocket (26) for preventing

1 reverse rotation of said sprocket (26) upon return
movement of said trigger (40).

5 8. A target applicator according to Claim 3 wherein a
tubular fixed sleeve (74) extends through and is fixed to
said frame (22), a drive spindle (78) extends through said
fixed sleeve (74) and is rotatable therein, said sprocket
(26) having a tubular portion extending over said drive
10 spindle (78) and said fixed sleeve (74) with different
regions of the inner surface of said tubular portion
aligned with corresponding surfaces of said drive spindle
(78) and said fixed sleeve (74), respectively, a first
clutch mechanism (82) positioned between the aligned
surfaces of said spindle (78) and said sprocket (26) and a
15 second clutch mechanism (84) positioned between the
aligned surfaces of said fixed sleeve (74) and said drive
spindle (78), said clutch mechanisms (82, 84) being
arranged to permit said sprocket (26) to rotate in a
direction relative to said drive spindle (78) and said
20 fixed sleeve (76) and corresponding to advancing movement
of said backing strip (18) but to inhibit relative
movement between said sprocket (26) and said drive spindle
(78) and said fixed sleeve (76) in the reverse direction.

25 9. A target applicator according to Claim 8 wherein
said drive mechanism (32, 34, 36, 80, 82, 84, 118, 26)
includes guide elements (48, 50, 52, 56) arranged on said
frame (22) to guide the strip (18) over one portion of the
sprocket (26) as the strip advances from the spool (24) to
30 the reversing element (46) and to guide the strip (18)
over another portion of the sprocket (26) as the strip
(18) advances beyond said reversing element (46).

35 10. A target applicator according to Claim 9 wherein
said drive mechanism (32, 34, 36, 80, 82, 84, 118, 26)
includes a drive gear (32) on said drive spindle (78) and

- 1 a gear rack (34) meshed with said drive gear (32) and
mounted to be moved by movement of said trigger (40) to
turn said drive gear (32) and said spindle (78).
- 5 11. A target applicator according to Claim 8 wherein
said clutch mechanisms (82, 84) are roller clutches.
12. A target applicator for adhesively applying
electronic article surveillance system targets (12) to
10 articles of merchandise (16), said targets (12) being held
by an adhesive to a release surface (16) on a continuous
backing strip coiled on a spool (24), said target
applicator comprising,
- 15 a support frame (22) for carrying said spool (24) with
said backing strip (18) and targets (12),
- a drive mechanism (32, 34, 36, 118, 26) mounted on said
support frame (22) for engaging said backing strip (18)
20 and advancing same in a forward direction,
- said drive mechanism (32, 34, 36, 118, 26) including a
sprocket (26) mounted on said frame (22) and having teeth
(28) which engage holes (30) formed along said backing
25 strip (18),
- a trigger (40) moveably mounted on said frame (22) for
actuating said drive mechanism (32, 34, 36, 118, 26),
- 30 a reversing element (46) and guide elements (48, 50, 52,
56) arranged on said frame (22) so that, as said backing
strip (18) is advanced in a forward direction, said guide
elements (48, 50, 52, 56) guide said strip (18) around
said reversing element (46) to cause its direction to
35 change abruptly while targets (12) carried on said strip

1 proceed forwardly without change in direction and become
peeled off said strip (18),

a pressure element (58) mounted on said frame (22) to
5 engage a peeled off portion of a target (12) and press it
against a surface (14) of an article of merchandise (16),

and a clutch mechanism (118) on said frame for permitting
said backing strip to be pulled forwardly, independently
10 of said drive mechanism (32, 34, 36, 118, 26), by a target
(12) whose peeled off portion is adhered to said surface
(14) when said pressure element (58) is moved therealong,

said clutch mechanism (118) comprising a fixed cylindrical
15 part (74) fixed to said frame (22) and a rotatable
cylindrical part (78) arranged to be rotated by movement
of said trigger (40), said fixed cylindrical part (74) and
said rotatable cylindrical part (78) having the same outer
diameter and being coaxially mounted adjacent each other,
20 said sprocket (26) having an axial opening extending over
said cylindrical parts (74, 78), a one way roller clutch
(118) having a housing fixed in the axial opening of said
sprocket and roller elements (120) which each extend
partially over said fixed cylindrical part (74) and said
25 rotatable cylindrical part (78).

13. A target applicator according to Claim 12 wherein
said roller elements (120) extend for about one fourth of
their length over said fixed cylindrical part (74) and for
30 about three fourths of their length over said rotatable
cylindrical part (78).

14. A target applicator according to Claim 12 wherein
said fixed cylindrical part (74) is a tubular sleeve and

1 wherein said rotatable cylindrical part (78) has a spindle
which extends through said sleeve.

15. A target applicator for adhesively applying
5 electronic article surveillance system targets (12) to
articles of merchandise (16), said targets (12) being held
by an adhesive to a release surface on a continuous
backing strip (18) coiled on a spool (20), said target
applicator comprising,

10 a support frame (22) for carrying said spool (20) with
said backing strip (18) and targets (12),

a drive mechanism (32, 34, 36, 80, 82, 84, 118, 26)
15 mounted on said support frame (22) for engaging said
backing strip (18) and advancing same in a forward
direction,

a trigger (40) moveably mounted on said frame (22) for
20 actuating said drive mechanism (32, 33),

a reversing element (46) and guide elements (48, 50, 52,
56) arranged on said frame (22) so that, as said backing
strip (18) is advanced in a forward direction, said guide
25 elements (48, 50, 52, 56) guide said strip (18) around
said reversing element (46) to cause its direction to
change abruptly while targets (12) carried on said strip
(18) proceed forwardly without change in direction and
become peeled off said strip (18),

30 a pressure element (58) mounted on said frame (22) to
engage a peeled off portion of a target (12) and press it
against a surface (14) of an article of merchandise (16),

35 a clutch mechanism (82, 84, 118) on said frame (22) for

1 permitting said backing strip (18) to be pulled forwardly,
independently of said drive mechanism, by a target (12)
whose peeled off portion is adhered to said surface (14)
when said pressure element (58) is moved therealong,

5

a print mechanism (90) mounted on said frame (22) for up
and down movement and resiliently biased to press down on
target elements (12) carried on a backing strip (18) along
said frame, and

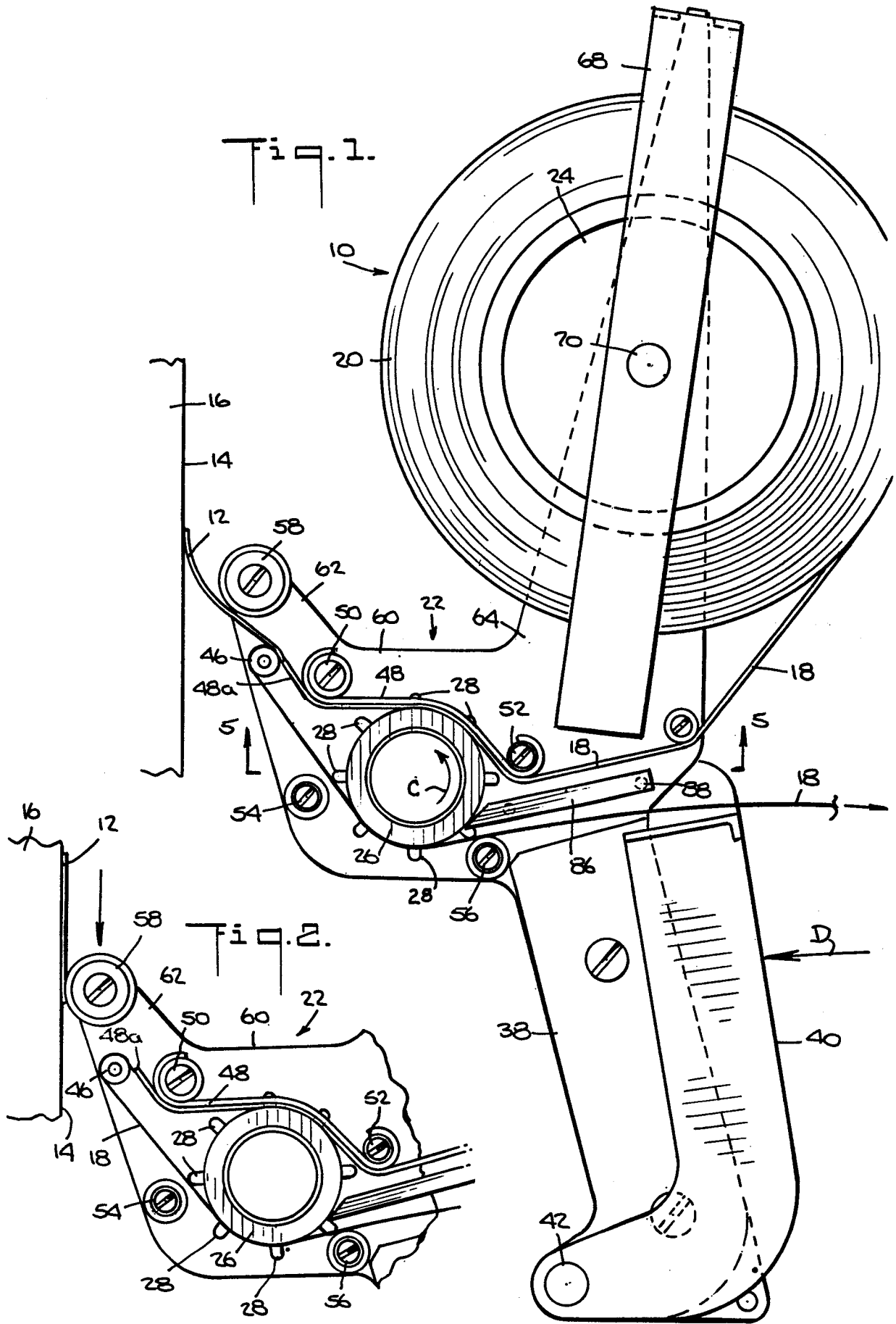
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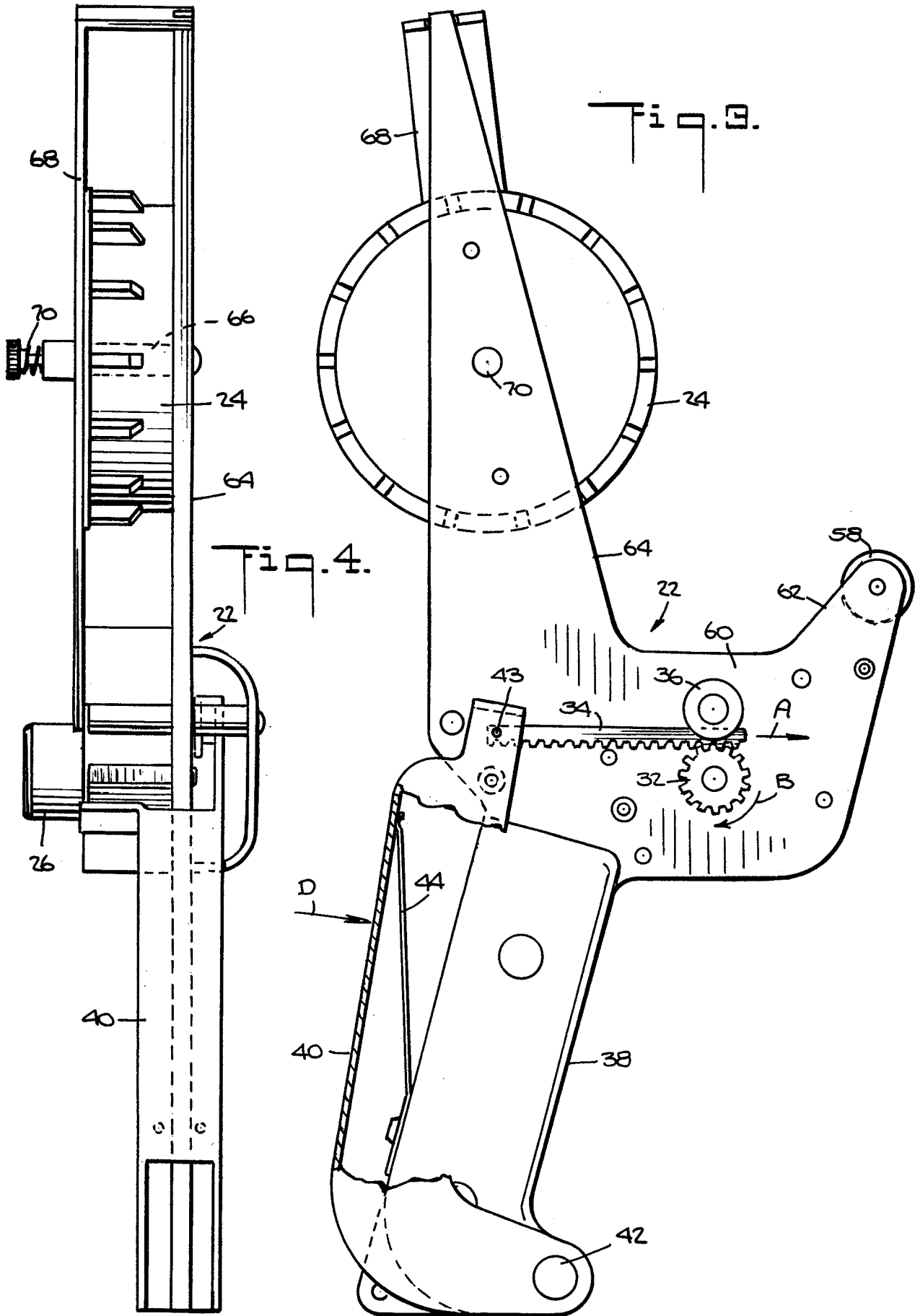
a cam element (114) mounted on said trigger (40) to move
therewith along a path which engages said print mechanism
(90) to lift same up off said target elements (12) when
the trigger (40) is moved.

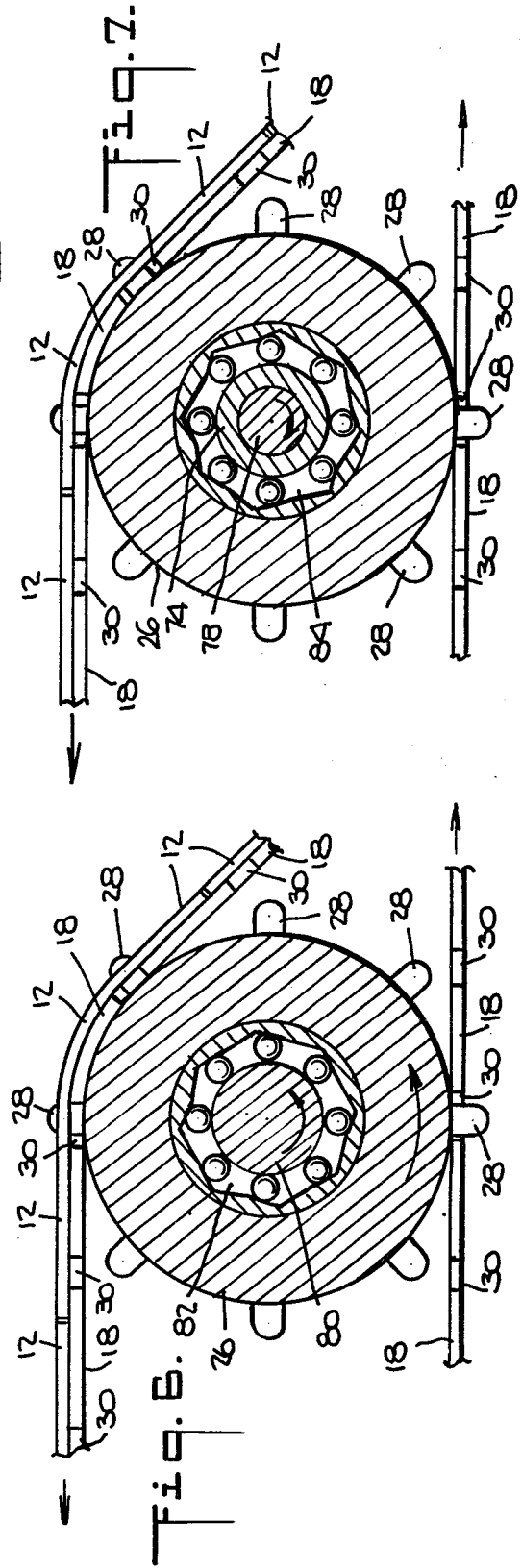
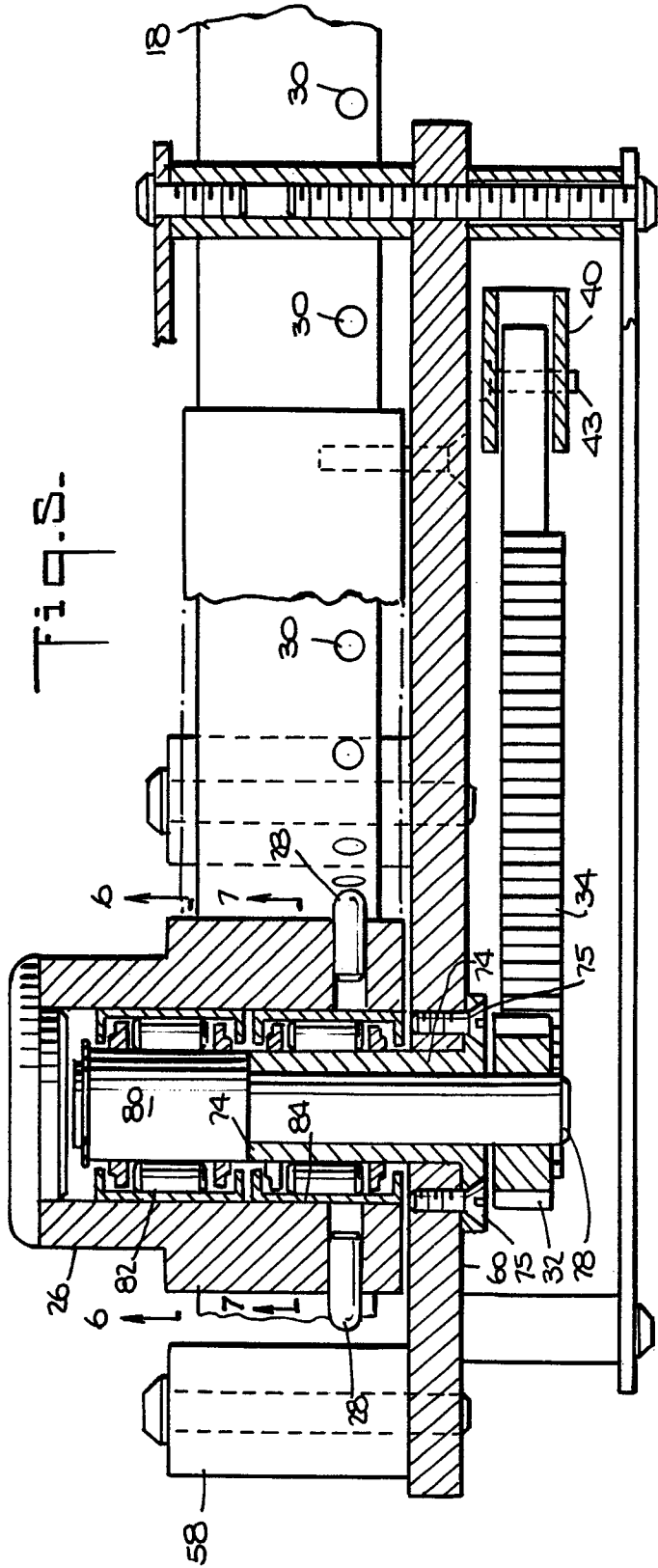
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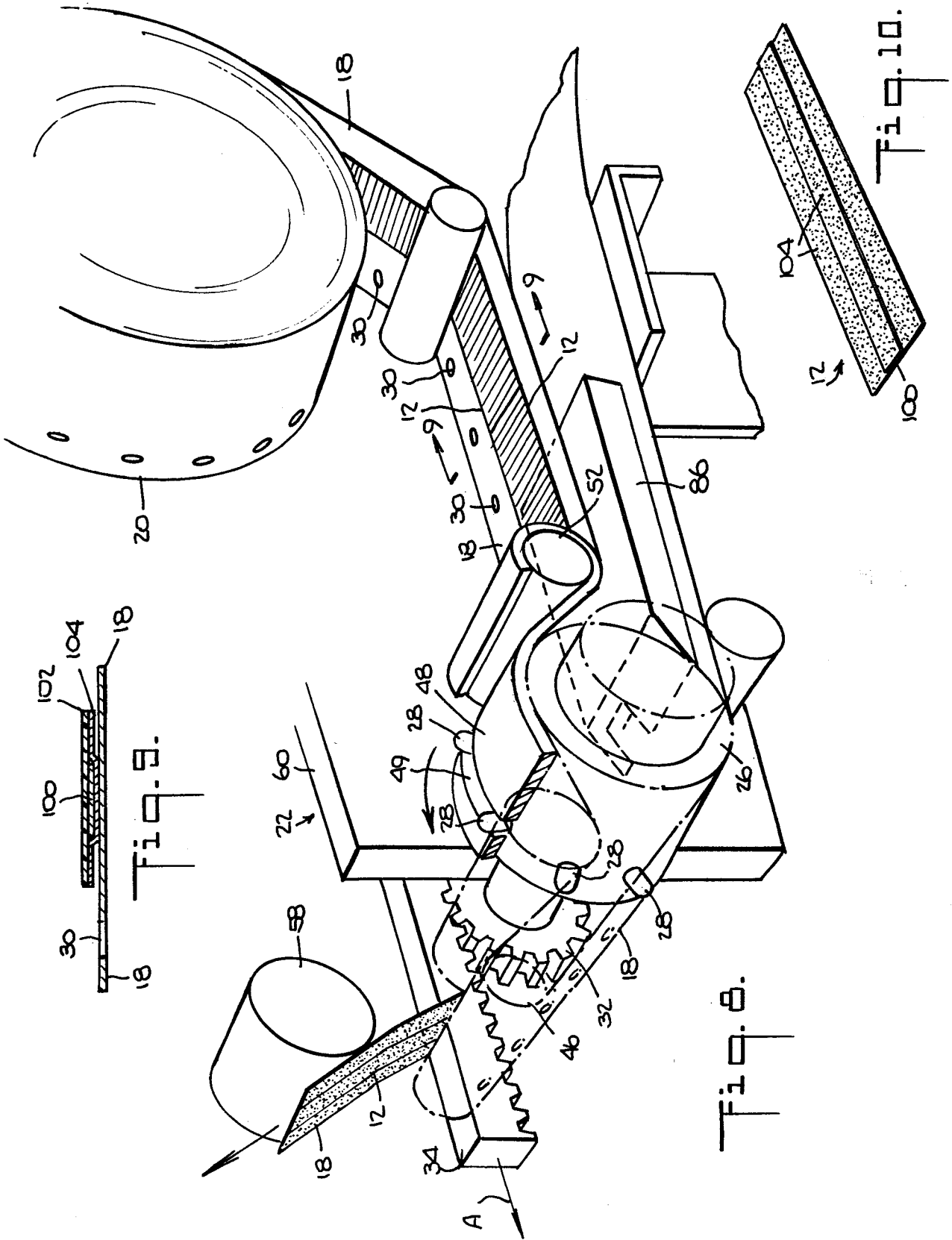
16. A target applicator according to claim 15 wherein an
ink applicator (116) is arranged to move with said cam
element (114) to apply ink to said print mechanism (90)
when the trigger (40) is actuated.

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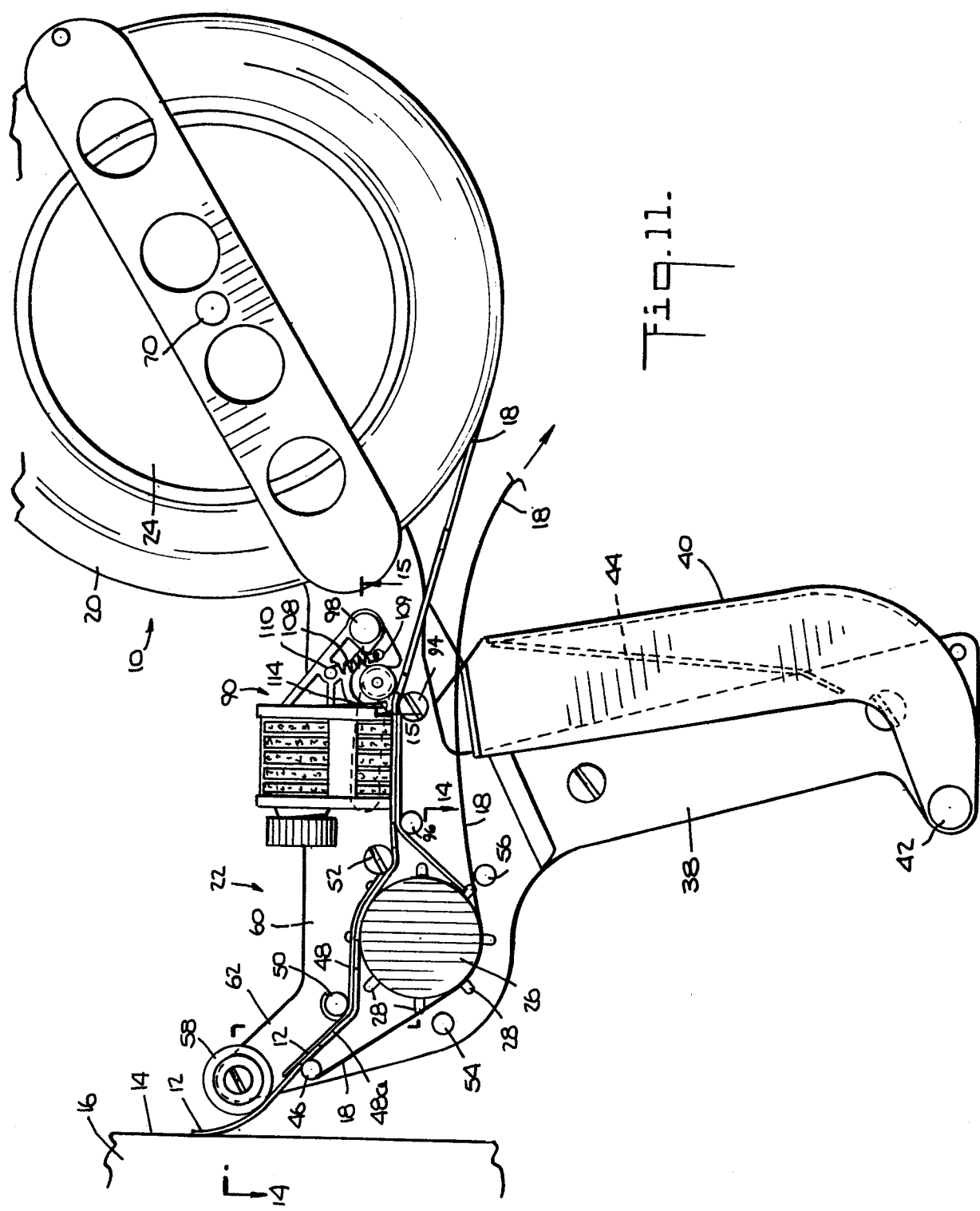


Fig. 11.

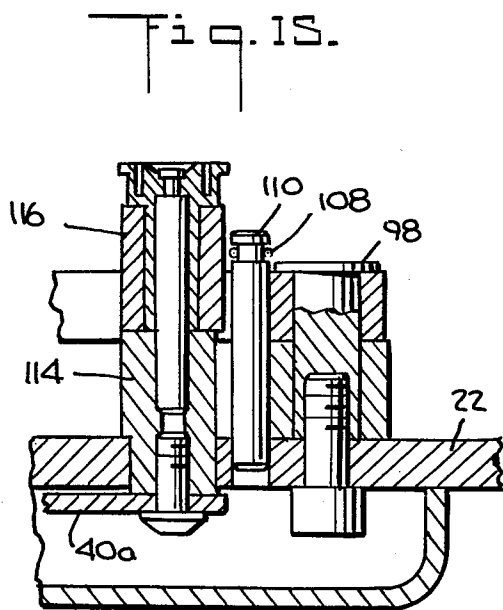
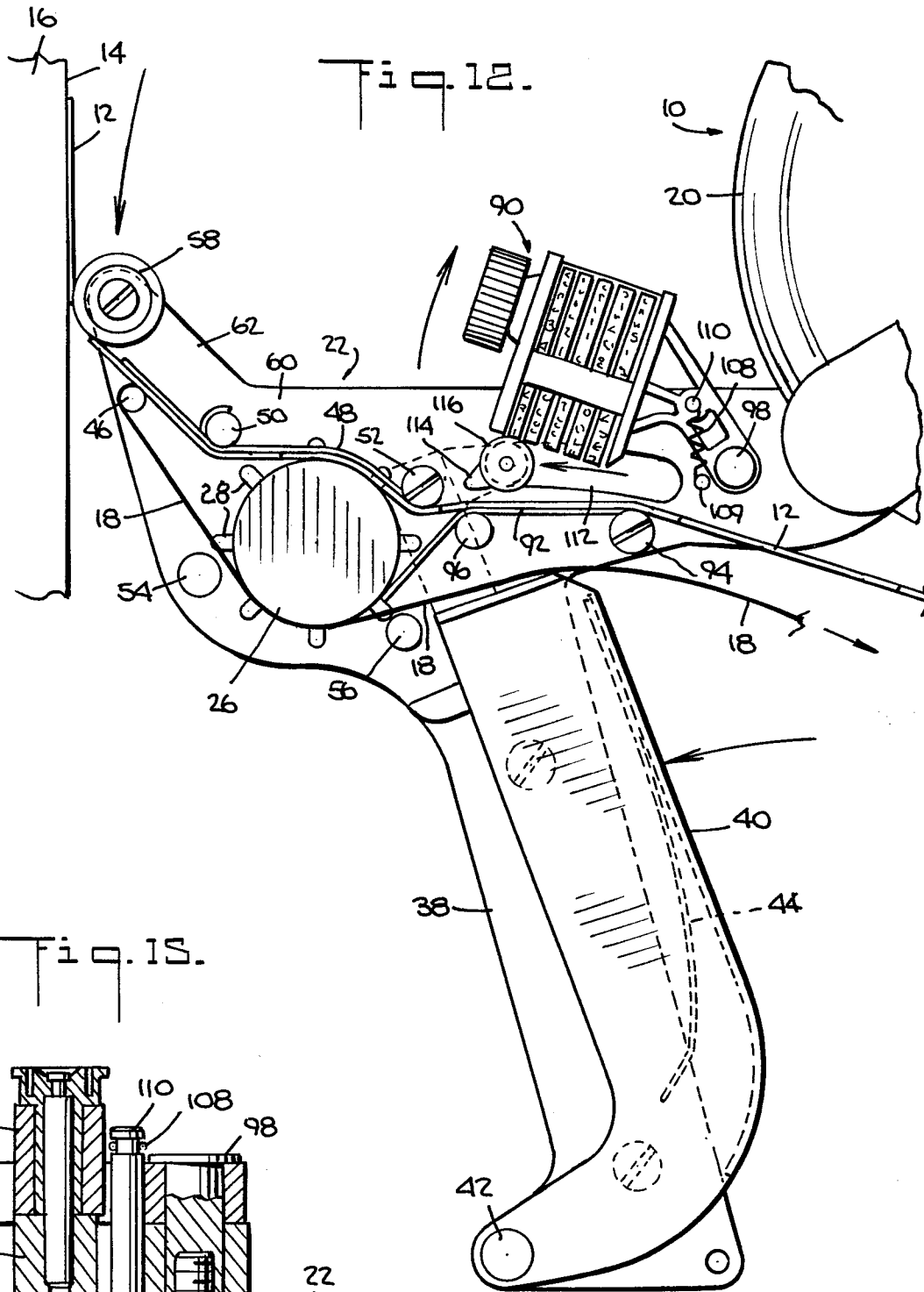


Fig. 13.

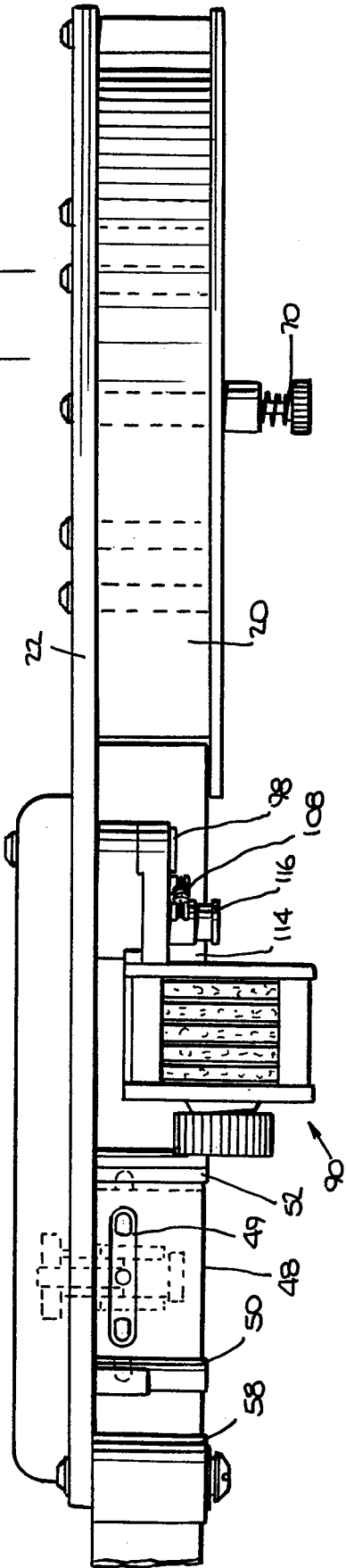


Fig. 14.

