BUILDING THE CHASSIS frame is a pure and simple welding job, only a few of the parts being a little tricky to fit and hold in place while you're pouring rod. In some instances dimensions of parts give only the rough sizes and angles as some filing and hand fitting is essential to get things square with the world before welding. Also, there's some latitude for exercise of your own ingenuity in making and assembling some of the parts. An example is the steering-gear assembly. The original is detailed, and testing has proved it to be serviceable and entirely safe for average use, but, of course, it can be bushed and otherwise elaborated if desired. Also, the inclination of the steering column and placement of the tilting seats have been purposely left to the desires of the individual builder.

Before welding the four members of the basic frame make sure that the assembly is square at the corners and true along the length. Keep in mind that in the assembly the rectangular frame is supported at an angle with the horizontal, its inclination being forward, but that the “bridge” supporting the rear deck rides level. Elevation of the deck framing is determined by the fit and slant of the four supporting members, or legs, as in the exploded view. Once the basic rectangular frame has been assembled and the additional parts No. 30, 31, 32 and 33 have been welded in place, take special note of the placement of the remaining cross members from No. 34 forward, also parts No. 12, which form the foot “well” when all cross members are in place. The full-length members are not dimensioned, as they must be cut, fitted and welded in place individually. Not shown is the fourth member from the front; it's directly over the front axle and is carried on two projections, or legs, made by welding two 2-in, lengths of tubing to parts No. 30. It's important when fitting and installing these members to see that they are at right angles to the lengthwise members and to make sure that all welds are sound, as rigidity and stability of the frame is largely dependent on these members.

Comes then the assembly and installation of the front axle which is almost entirely unitized
from stock materials and parts and is sprung to the frame with two under-slung 3-leaf springs. The fixed spring shackles, parts No. 13, are of the same thickness of material as the free shackles, but note they are a single piece and bent to a U-shape. The free shackles should have grease fittings installed.

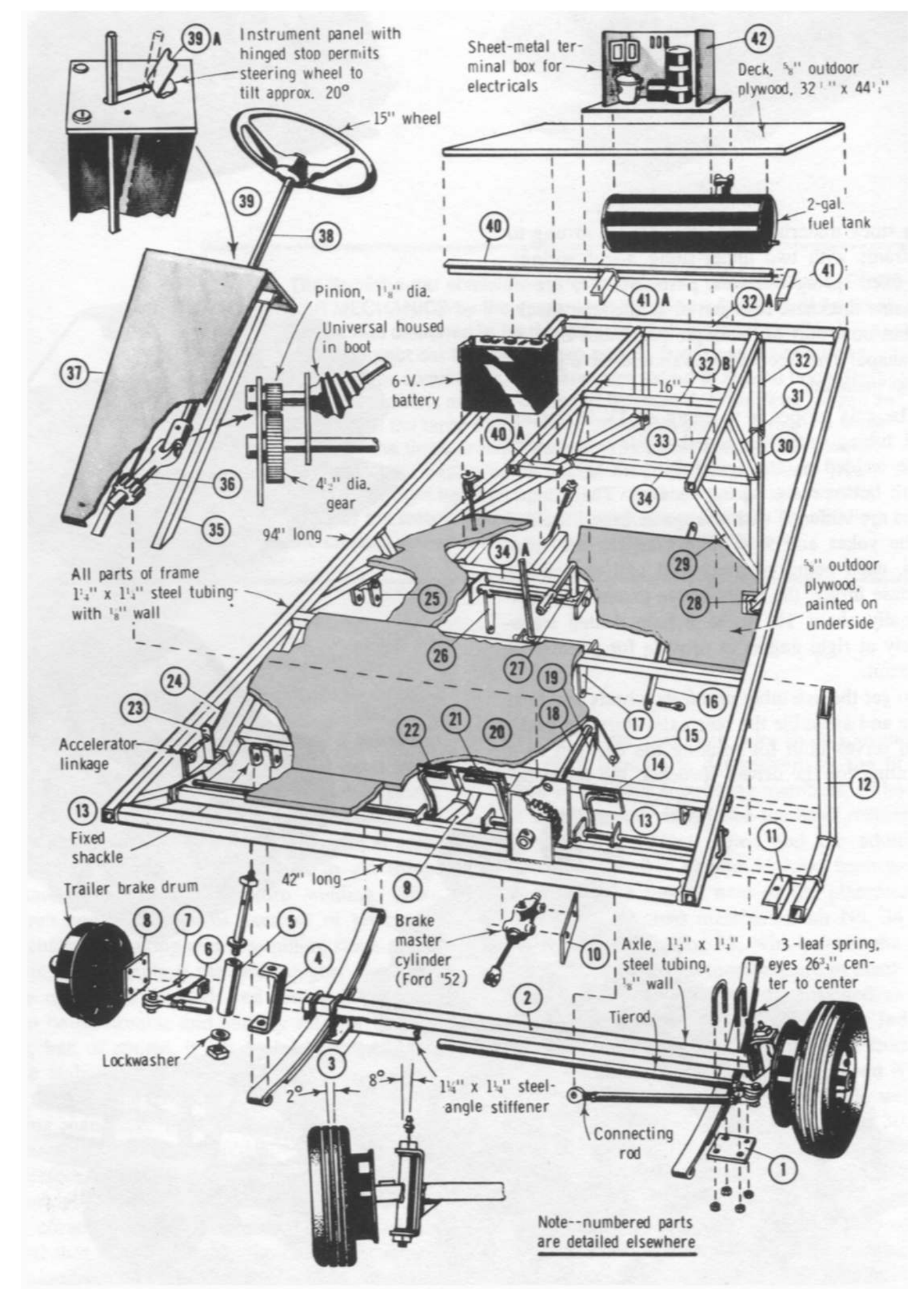
The axle proper is a length of 1/4-in. square steel tubing with the added rigidity of a steel angle welded to the lower face along the full length between the spring mounts. The kingpin yokes are stiffened with triangular braces welded to the yokes and axle. The kingpins are h-in. bolts, each being counterbored and tapped for a grease fitting, the count~rbore extending longitudinally about 11/2 in. to a hole drilled transversely at right angles to provide for passage of lubricant. To get the assembly up on its wheels you next make and assemble the rear axle. Here the brake drum serves both for braking the car and as a mounting for the driven sprocket, the latter being bolted to an anchor ring which slips onto the drum and is either brazed or tack-welded in place. An alternative to the anchor ring is the brazing of four bolt lugs to the drum, spaced equidistantly. Care must be taken to assure that the ring (or lugs) is not only concentric with the drum, but that it turns true. Even a slight wobble may cause undue vibration of the chain at higher speeds. When assembled, the end of the sleeve carrying the plate bolted to the brake drum is welded to upright No. 32. The weld takes the torque, or axle wrap, when the brake is applied.

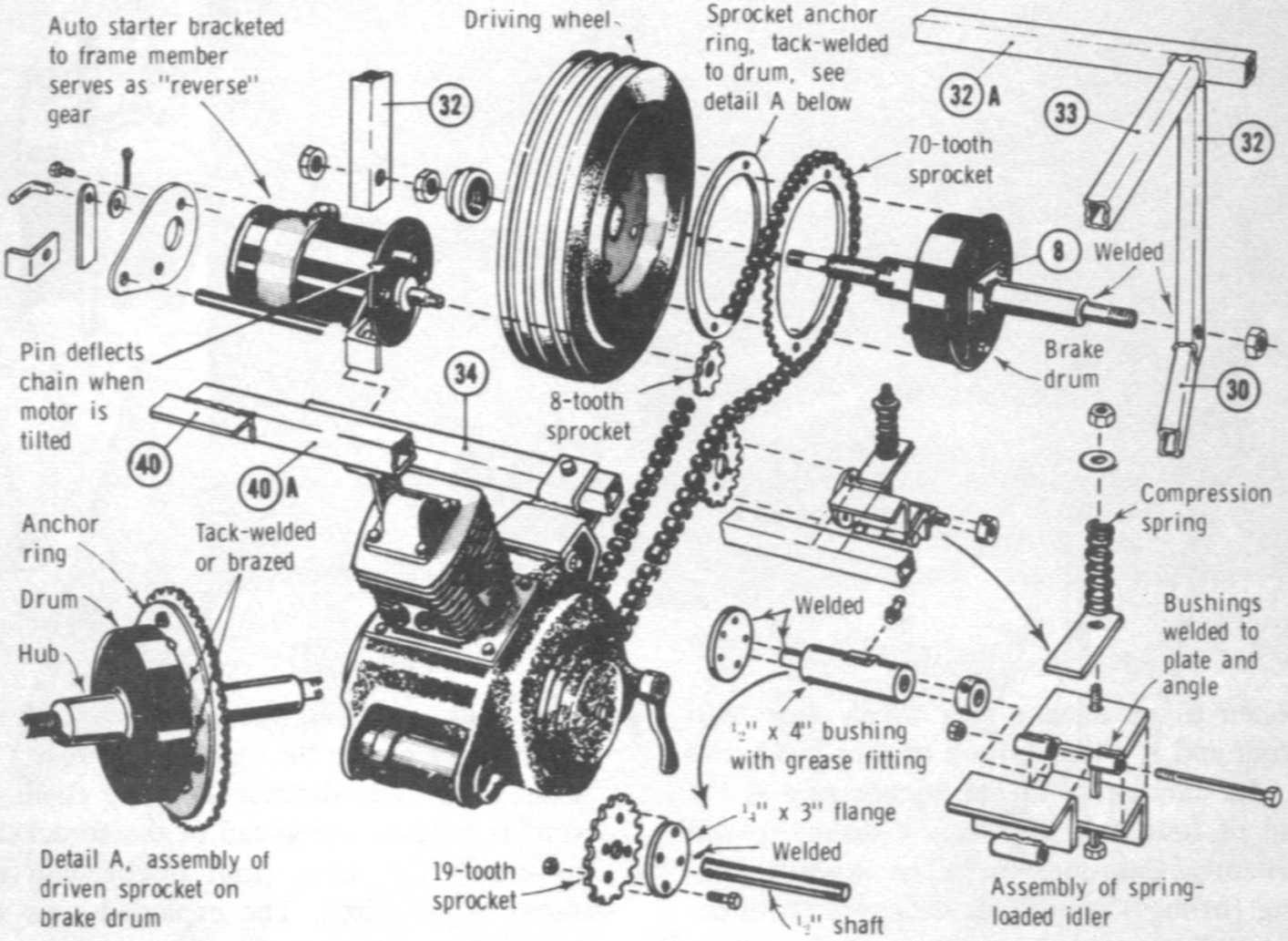
The engine, a Honda Twin Series 150, is bracketed to frame members No. 34 and 40Aand care must be taken to assure that the supporting brackets are in the proper position so that the sprockets line up when the engine is installed. The drive chain is standard cycle chain, the slack being carried on a sprocket idler mounted on a pivoted, spring-loaded bracket. The engine is, of course, equipped with its own starter, generator and transmission built in, but the latter is not provided with reversing gear. To back the car, an auto starter fitted with an 8-tooth sprocket to engage the drive chain is pivoted to the frame just ahead of the drive wheel and is actuated and energized by means of the lever and linkage No. 26 and 27. To back the car, the driver lifts the L-shaped lever, No. 27, which raises the starter by means of the linkage, No. 26. The sprocket on the starter shaft engages the drive chain and, simultaneously, the driver presses the pushbutton switch in the end of the
lever, thus energizing the starter. As the starter is raised the pin on the half-circular disk (bolted to the shaft end) deflects the drive chain downward at a point just ahead of the sprocket, thus preventing the latter from disengaging as the starter is energized. The exploded view of the assembly shows how the starter is pivoted. A ¾-in, rod, threaded at the forward end and fitted with an adjustable yoke, permits correct positioning of the starter. The starter shaft is shortened to about 1-in, projection and is either shouldered and threaded, or the sprocket attached by means of a hub and key or setscrew.

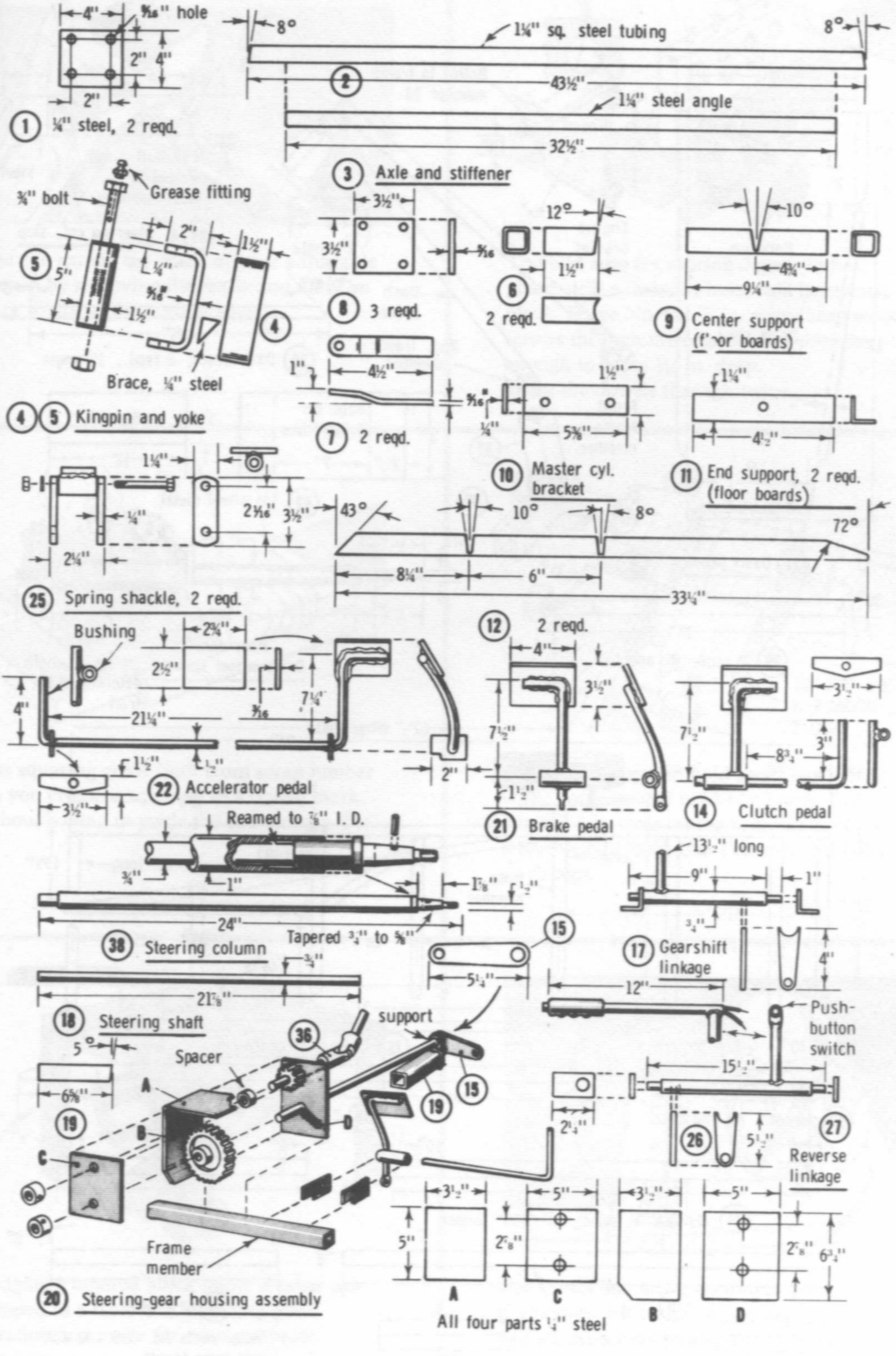
The brake master cylinder is actuated by the center pedal; the left pedal controls the clutch and the right is the accelerator, or gas pedal. Both the latter are similar in construction and assembly, as will be noted in the details. Both actuate the clutch and fuel feed through flexible cable controls, part No. 24, leading from the control arms back along the frame to the clutch and carburetor. The control cables should be attached with wrappings of adhesive tape, or better, by means of U-shaped metal clips fastened with screws turned into tapped holes in the frame members.

The gearshift lever is directly in front of the reverse lever, both being located midway between the seats. The shift linkage consists of the parts No. 16 and 17, the former connected to the shifter arm on the engine. The steering-gear housing is located between the brake and clutch pedals and is shown both in cutaway and exploded views, the housing being welded to the second cross member of the frame. It's a relatively simple assembly but, of course, care must be taken to assure correct alignment of the pinion and gear and the shafting. The steering column passes through an angled slot in the instrument panel stop, part No. 39A. Lifting the stop permits the column and wheel to tilt approximately 200, thus giving easy access to the driver's seat. Installation of the seats, fuel tank, floorboards, battery, rear deck and finally the electricals (according to the Honda manual) completes the chassis.

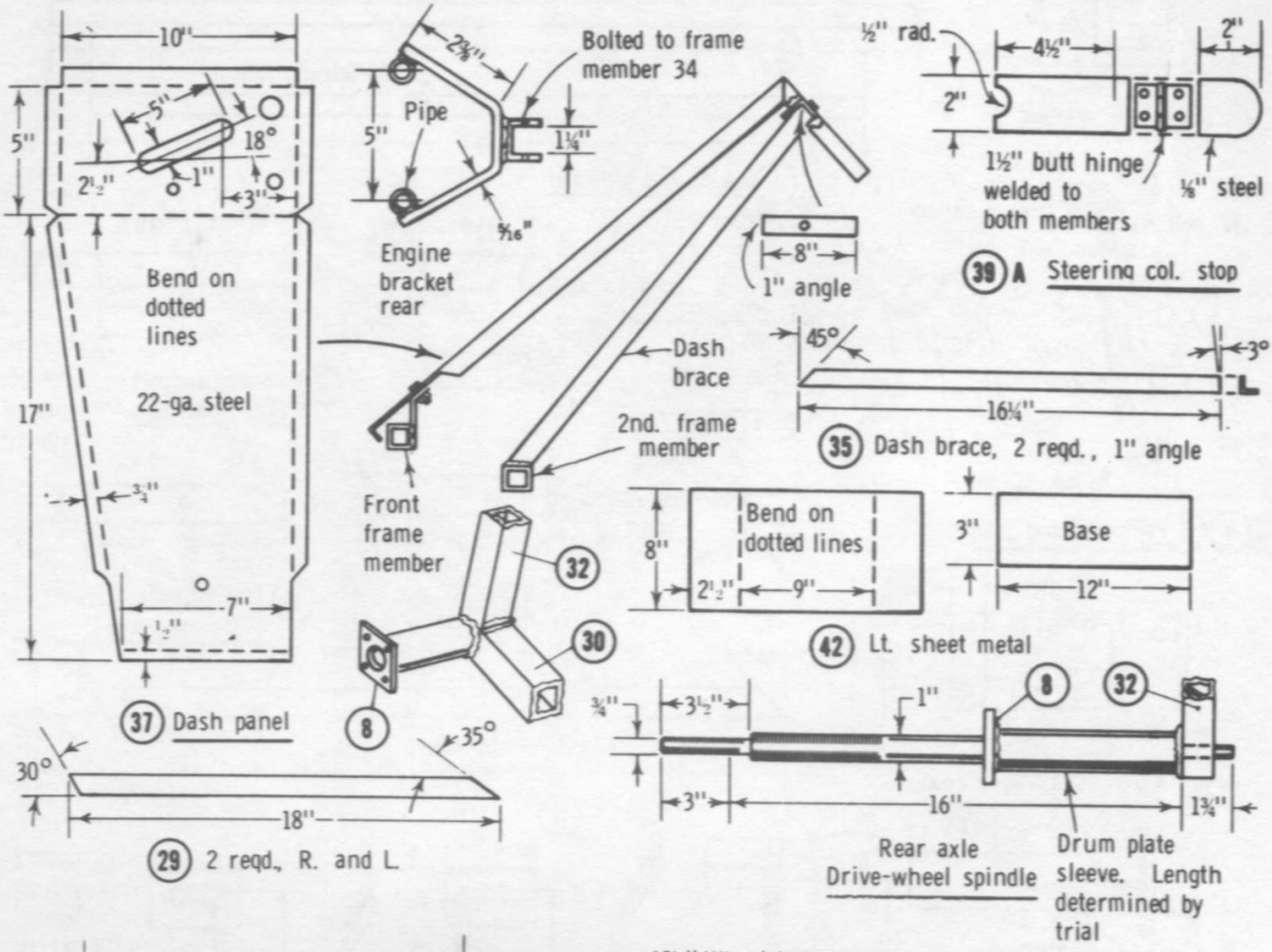
By careful scrounging in an automotive graveyard, you can come up with the parts specified, or adaptable substitutes. The prototype was built with the steering wheel from an old car, the fuel tank from a racing kart, and the bucket seats from a foreign car. All three wheels, including tires (4.80 by 16), brake drums, and leaf springs, were taken from a Gator boat trailer.


39 A
Instrument panel with hinged stop permits steering wheel to tilt approx. 20°
15" wheel
39
38
37
Pinion, 1⅛" dia.
Universal housed in boot
6-V. battery
4½" dia. gear
36
35
94" long
All parts of frame 1¼" x 1¼" steel tubing with ⅛" wall
Accelerator linkage
13
Fixed shackle
Trailer brake drum
8
7
6
5
4
Lockwasher
3
2°
8°
1¼" x 1¼" steel-angle stiffener
42" long
9
Brake master cylinder (Ford '52)
10
2
Axle, 1¼" x 1¼" steel tubing, ⅛" wall
Tierod
Connecting rod
1
3-leaf spring, eyes 26¾" center to center
11
12
24
23
22
21
20
19
18
17
16
15
14
13
25
26
27
34 A
34
33
32 B
16"
32
31
30
29
28
5/8" outdoor plywood, painted on underside
40 A
40
41 A
41
32 A
Sheet-metal terminal box for electricals
42
Deck, 5/8" outdoor plywood, 32 1/2" x 44 1/4"
2-gal. fuel tank
Note--numbered parts are detailed elsewhere


Auto starter bracketed to frame member serves as "reverse" gear
Driving wheel
Sprocket anchor ring, tack-welded to drum, see detail A below
32
32 A
33
32
70-tooth sprocket
8
Welded
Pin deflects chain when motor is tilted
34
8-tooth sprocket
Brake drum
30
40
40 A
Compression spring
Anchor ring
Tack-welded or brazed
Drum
Hub
Welded
Bushings welded to plate and angle
½" x 4" bushing with grease fitting
¼" x 3" flange
Welded
19-tooth sprocket
½" shaft
Detail A, assembly of driven sprocket on brake drum
Assembly of spring-loaded idler



4"
5/16" hole
2"
4"
2"
1 1/4" steel, 2 reqd.
8°
1 1/4" sq. steel tubing
8°
2
43 1/2"
1 1/4" steel angle
32 1/2"
3 Axle and stiffener
3/4" bolt
Grease fitting
2"
1 1/2"
5
5"
1/4"
5/16"
1 1/2"
4
Brace, 1/4" steel
4 5 Kingpin and yoke
3 1/2"
3 1/2"
5/16
8 3 reqd.
1"
4 1/2"
7 2 reqd.
12°
1 1/2"
6
2 reqd.
10°
4 3/4"
9 1/4"
9 Center support (floor boards)
1 1/2"
5/16"
1/4"
5 3/8"
10 Master cyl. bracket
1 1/4"
4 1/2"
11 End support, 2 reqd. (floor boards)
1 1/4"
1/4"
2 1/16"
3 1/2"
2 1/4"
25 Spring shackle, 2 reqd.
43°
10°
8°
72°
8 1/4"
6"
33 1/4"
12 2 reqd.
Bushing
2 3/4"
2 1/2"
4"
21 1/4"
3/16
7 1/4"
1 1/2"
1/2"
3 1/2"
2"
22 Accelerator pedal
4"
3 1/2"
7 1/2"
1 1/2"
21 Brake pedal
3 1/2"
7 1/2"
8 3/4"
3"
14 Clutch pedal
Reamed to 7/8" I. D.
3/4"
1"
1 7/8"
1/2"
24"
Tapered 3/4" to 5/8"
38 Steering column
3/4"
21 7/8"
18 Steering shaft
13 1/2" long
9"
1"
3/4"
4"
17 Gearshift linkage
15
5 1/4"
12"
Push-button switch
5°
6 5/8"
19
support
36
Spacer
A
B
C
D
19
15
Frame member
20 Steering-gear housing assembly
15 1/2"
2 1/4"
26
5 1/2"
27
Reverse linkage
3 1/2"
5"
5"
2 7/8"
3 1/2"
5"
2 7/8"
6 3/4"
A
C
B
D
All four parts 1/4" steel


10"
5"
5"
18°
2½"
1"
3"
Bend on dotted lines
22-ga. steel
17"
¾"
7"
½"
37 Dash panel
2⅝"
Bolted to frame member 34
Pipe
5"
1¼"
5/16"
Engine bracket rear
Front frame member
32
30
8
35°
30°
18"
29 2 reqd., R. and L.
½" rad.
4½"
2"
2"
1½" butt hinge welded to both members
⅛" steel
39 A Steering col. stop
8"
1" angle
Dash brace
2nd. frame member
45°
3°
16¼"
35 Dash brace, 2 reqd., 1" angle
8"
Bend on dotted lines
2½"
9"
3"
Base
12"
42 Lt. sheet metal
¾"
3½"
1"
8
32
3"
16"
1¾"
Rear axle Drive-wheel spindle
Drum plate sleeve. Length determined by trial
62½" Wheel base
94"
31¼"
Axle
30¼"
Body member
40
42" long
13⅝"
22¼"
31¼"
5½"
11¼"
14½"
18"
28⅜"
15¼"
40 A
37½"
16 Gear shift control link
40°
50°
2°
1"
20°
6⅝"
28 2 reqd., R. and L.
65¼"
30 2 reqd., R. and L.
10°
10°
22⅛"
34 No. 34A is same, only 10⅜" longer
2°
¾" hole
⅞"
15"
32 2 reqd.
1¼"
44½"
40
8°
8°
11⅞"
31 2 reqd.
6¾"
6¾"
1¼" steel angle
41 A
Fuel-tank brackets
41
Note--parts No. 32B and 40A are same length